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Los Angeles

Rehabilitating the Safety Net:
Polio and Chronic Disease Management
In Los Angeles County

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in History

by

Alexander Evan Kertzner

2023

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2023

ABSTRACT OF THE DISSERTATION

Rehabilitating the Safety Net:

Polio and Chronic Disease Management

In Los Angeles County

by

Alexander Evan Kertzner

Doctor of Philosophy in History

University of California, Los Angeles, 2023

Professor Joel T. Braslow, Chair

My dissertation investigates the polio epidemics' impact on the Los Angeles County healthcare system's management of chronic disease. It emphasizes how the county's safety net for chronic patients was shaped by an interaction between the following: (1) a high local polio incidence during the 1920s, late 1940s, and early 1950s; (2) the National Foundation for Infantile Paralysis' strategy of establishing regional rehabilitation centers for respirator-dependent polio patients; (3) Seventh-Day Adventist physician leaders' involvement in the local polio effort; (4) a post-World War II increase in federal funding for research and hospital construction which benefitted hospitals that provided rehabilitation services.

My dissertation begins by examining how California's experience of epidemic polio during the 1920s prompted the establishment of the Crippled Children's Services (CCS). A statewide program that was administered by the counties, the CCS helped families pay for medical care following the 1927 polio epidemic. After the Social Security Act was enacted in 1935, the CCS evolved into California Children's Services. The CCS today uses a combination of federal, state, and county funds in financing care for children with designated chronic conditions, such as cerebral palsy.

Epidemic polio again provided the impetus for the county's expansion of its safety net when major epidemics migrated westward across the United States during the 1940s. Los Angeles' problems managing care for respirator-dependent polio patients were part of a new period characterized by large outbreaks in the Central and Western United States. As a voluntary organization, the National Foundation for Infantile Paralysis (NFIP) raised millions of dollars, which it used to establish regional centers that rehabilitated respiratory patients. In the NFIP Respiratory Center, rehabilitation was a multispecialty team-based approach that served the objectives of helping to patients become independent of iron lungs to the greatest extent possible, to improve their physical functioning, and to become integrated into their communities. Many of the physicians who had leadership roles at Rancho Los Amigos, the Los Angeles center, were educated at the College of Medical Evangelists, an Adventist medical school in Loma Linda, California. A Protestant Christian denomination with a unique emphasis on medical missionary work, Adventism advocated for a clinical approach that had much in common with rehabilitation in chronic disease management. As the 1950s mass polio vaccinations began, Rancho Los Amigos' rehabilitation leaders anticipated losing financial support from the National Foundation.

They thus began looking to federal sources for funding and adapted the infrastructure that they built in response to polio to rehabilitate chronic conditions such as heart disease and stroke.

During the 1960s and 1970s, Rancho Los Amigos would obtain its current position as the rehabilitation center of the Los Angeles County's municipal health system. However, it was also a public hospital with a mandate to care for the underserved. At this time, Rancho's patient base included increasing numbers of chronic patients from low-income minority communities. By the 1970s, Los Angeles was maintaining a safety net which was providing costly specialized rehabilitative services to some of the county's most underserved residents. During this decade, the Los Angeles municipal system experienced large funding cuts in response to inflation. Since then, the county has repeatedly explored the option of turning Rancho Los Amigos into a private nonprofit hospital. Facing a spiraling deficit, the Los Angeles County Board of Supervisors ordered Rancho Los Amigos' closure in 2003 (an order that was later reversed by a federal appellate judge.)

Through focusing on how polio shaped the management of chronic disease in Los Angeles County, my dissertation provides a local history of the national shift towards rehabilitation during the 1940s and 1950s. It also elucidates a process, which occurred during the AIDS epidemic and the COVID-19 pandemic, by which infectious disease outbreaks affect the American welfare state's expansion. But my dissertation additionally reveals the shortcomings of clinical science in responding to the social problems that are connected to chronic illness. The years that Rancho Los Amigos was a highly regarded rehabilitation center were some of the years that it was the most fiscally fragile. When the federal judge eventually ruled against its closure, she did so based on the premise that without Rancho Los Amigos, large numbers of

medically-complex Medicaid patients would lose access to the advanced level of care that they needed.

The dissertation of Alexander Evan Kertzner is approved.

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2023

Dedication

In memory of Dora Weiner

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I thank my parents for serving as "informal" committee members. My father, Richard, first suggested that I study the topic of the history of polio. My mother, Karen, helped me in planning how to develop this topic into a dissertation and thoroughly proofread and commented on each chapter's draft. I also thank my brothers Michael and Peter for their insights.

I am grateful to a number of people who provided valuable comments on portions of my dissertation, including Sheryl White Scott, Marcia Meldrum, Elisa Muniz, Barron Lerner, Margaret Jacob, John Warner, Marion Moser Jones, Allison Hoffman, Mary Yeager, Michael Weismeyer, Theodore Kastner, and Henry Lamberton. There were many others who helped me. To those who I did not mention, I express my gratitude for your feedback.

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I lastly thank the UCLA History Department and Albert Einstein College of Medicine for accommodating my nontraditional academic path and helping me to simultaneously pursue a rich education in both the clinical and social sciences.

Preface

I became interested in the history of polio over a decade ago after sitting in on a graduate seminar with the late historian of medicine Dora Weiner. Weiner entitled her course "The Citizen Patient" in reference to the French revolutionaries' argument that citizenship infers a right to access healthcare. While Weiner's expertise was in nursing orders and hospital care in 18th century France, she nonetheless supported my study of charities and welfare organizations in Los Angeles. In the process, I became fascinated by a fundamental shift that occurred during the twentieth century towards the American Social Security system, which was federal but also driven by local politics. President Franklin Roosevelt devised Social Security to fulfill the "principle to use the agencies of government to assist in the establishment of means to provide sound and adequate protection against the vicissitudes of modern life." While aiming to advance the "security of the men, women, and children of the Nation," due to underlying structural constraints, it has ended up helping some and leaving others out.[1] I began to see that a fundamental tension played out in the establishment of America's organization of welfare. Conservatives, who believed in an unregulated marketplace, argued that government programs should be limited and cost-effective to maximize economic productivity. Liberals, by contrast, believed that government should regulate the economy to advance equity.

Dora Weiner studied health care for blind children in Revolutionary France and encouraged me in narrowing my focus to study the history of polio. Accepted into the UCLA history of medicine doctoral program, I began my dissertation by investigating how California's Crippled Children's Service, a program that aided polio patients, developed into the state's California Children's Services (CCS) Title V Social Security program for children with life-

[1] Franklin Roosevelt, "Fireside Chat," June 28, 1934. < https://www.ssa.gov/history/fdrstmts.html> Accessed August 6, 2023.

limiting chronic conditions, which is operated by Medicaid in partnership with counties. In the process of conducting archival research, I was surprised to learn more about polio's pervasive influence on California's joint federal/state system of social provision. For instance, during the 1950s, when President Eisenhower further expanded Social Security, a local public hospital known as Rancho Los Amigos transitioned from being a distinguished polio center to part of a federally funded network of rehabilitation centers for spinal cord injury, stroke, and other disabling conditions.

Unlike in post-World War II Europe, the United States' welfare programs did not originate to provide sweeping protections for the population at large. They were enacted incrementally and were a compromise between countervailing conservative and liberal worldviews. As a result, while expanding access to healthcare, they also restrict benefits to designated groups. For example, both the Title V program and Rancho Los Amigos today provide chronic patients with highly technological advancements that originate within the United States' corporate healthcare system. However, when considered at the population level, they reflect a system that is inequitable in its distribution of benefits and ill prepared to respond to underlying social determinants of health.

I temporarily put my dissertation writing on hold after beginning medical school at Albert Einstein College of Medicine. My education in the Bronx gave me exposure to chronic illness in one of the unhealthiest counties in all of New York State, which was an experience that strengthened my appreciation of the story I was writing. In no small part, our borough's public health problems were historically conditioned by 1950s urban planning decisions. Like many other planners of the era, New York's visionary and infamous planner Robert Moses bulldozed minority communities to make way for the Cross Bronx Expressway, a freeway that separated

white and nonwhite residents spatially. The additional disruptions caused by redlining, white flight, and policies condoning segregation have been well documented. Largely because of the discriminatory practices of the era, the Bronx's predominately nonwhite residents suffer disproportionately high levels of hospitalizations for asthma and other chronic diseases. While racial disparities exist throughout the United States, the Bronx's large numbers of minorities gave such inequities a visibility in our hospitals as the COVID-19 pandemic began. Indeed, our borough's high mortality rates during the pandemic were arguably the byproduct of the pollution, food insecurity, and limited healthcare that resulted from our residents' disenfranchisement.

I returned to Los Angeles for my family medicine residency and became an active part of the world I had previously contemplated in my dissertation research. As the only residency within a community hospital taking care of the San Fernando Valley's large, underserved population, my program has enabled me to see significant numbers of individuals whose chronic diseases were never properly managed and who become admitted when they become fulminant. While we are a community hospital, we provide a more advanced level of care than other hospitals in the Valley; local hospitals therefore transfer their medically complex patients into our stroke center, cardiac catheterization laboratory, pediatric trauma center, and pediatric and adult intensive care units. But we also transfer our most seriously ill patients to academic centers like Ronald Reagan UCLA Medical Center, Mattel Children's Hospital, LAC USC Medical Center, and Children's Hospital Los Angeles, which provide an even more advanced level of care.

I remember two of my patients, both of whom came in for complications related to previously undetected malignancies. Both of my patients were also unhoused, and I suspect, had intellectual disabilities. While they had Medicare Part A, which covered their inpatient hospital

bills, they lacked Part B, which pays for outpatient care. We provided multiple blood transfusions to correct their severe anemia, but we were unable to refer either patient to outpatient oncologists. Our social workers unsuccessfully tried to help our patients to obtain insurance for outpatient care while they were hospitalized. However, once they were medically stable, we had to discharge them. We ultimately sent them to skilled nursing homes with instructions to go to a university-affiliated public hospital, like Olive View, if they became ill while they lacked provider insurance. Sadly, in Los Angeles, academic county hospitals are often the only institutions that can connect underinsured residents like my patients to the highly specialized care that they need to manage their conditions.

One of my other patients, a 38-year-old woman who never had consistent primary care, came to our service only after her chronic vomiting became intractable. Dismissed during her previous emergency room visits as a pain medication seeker for her vague lower leg and abdominal pain, no physician had comprehensively worked up her symptoms. Only after we ordered an MRI, did she learn she had invasive cervical cancer that compressed the nerves to her lower extremities and her ureters, causing her urine to back up into her kidneys.

I have now become my patient's primary physician and am currently coordinating her outpatient care with a variety of cancer specialists. Caring for my patient has put me face to face with the injustice that many African Americans, like my patient, experience in healthcare settings where racial bias restricts their access to necessary medical care. Connecting my patient, who is on Medicaid, to specialists has also been challenging. In the process, I have encountered delays that would not have occurred if she had a higher paying Medicare or commercial plan.

As I now approach the completion of my dissertation, I have emphasized certain aspects of my story that resonate with problems I have observed both in the Bronx and Los Angeles. For

instance, in studying how Social Security developed in Chapter 1, I have engaged with my experiences in writing about how our inequitable healthcare delivery model is connected to a historical pattern in organizing welfare that preceded the program's development. I also write with sympathy for my story's protagonist John Affeldt in my last chapter. Having built Rancho into a categorical rehabilitation center during Social Security's postwar expansion, he ended his administrative career operating in the political world of the subsequent decades. At this time, the public system faced enormous budget cuts in response to inflation. He thus came to terms with the reality of the scarcity of resources within the public system- which is a reality that I encounter daily.

Until recently, many had thought that the United States had arrived at a crossroads. Early in the pandemic, liberal politicians, energized by a Democratic president's election, pushed for sweeping legislation affecting healthcare, the environment, and the economy, with the objective of making the United States more equitable. As inflation took hold and the public grew wary of the Biden administration's policies, commentators expected a landslide victory for conservatives in the midterm elections. The election's outcome demonstrated that the American public is far more divided than previously assumed. In the years to come, one can expect more partisan gridlock rather than sweeping change.

Many of my colleagues from my residency program believe that a national single payer system is the only solution to the problems that we confront in caring for our patients. Undoubtably, a national Medicare program for all ages would reduce cost growth and improve access to care. However, my experiences operating in a world with entrenched healthcare interests (and my own reading of history) have made me skeptical that drastic political change is possible at the present time. Historically, the expansion of healthcare in the United States has

occurred gradually. And local governments (which work in conjunction with the federal government) have spearheaded public programs that improved access to care. I believe that this pattern, which I describe in my dissertation, will affect the political world that I operate within as a primary care physician and advocate.

In many ways, the American healthcare system is broken. However, despite its deeply problematic aspects, there is good that I have seen through my residency. In working with multiple pediatric specialists in our NICU and PICU, I have seen how California's Title V program saves parents thousands of dollars in paying for their children's treatment. The Title V program has also helped both of our units to remain open and serve complex pediatric patients in the outskirts of the Los Angeles metropolis.

In addition, my work in our adult ICU has made me grateful that Rancho Los Amigos is a specialized rehabilitation center. As both a public hospital and rehabilitation center, I know it will provide my underinsured patients with the advanced technologies they need, which are a product of our system of corporate medicine. While I wish we had a better way of addressing the social determinants that contribute to my stroke patients' hypertension, I appreciate how Rancho's unique identity is connected both to the polio epidemics and the mid-century Social Security expansion.

My dissertation's final draft expresses both the despair and the hope that I have often felt in serving the chronically ill. It has also helped me to consider how I can influence health policy three years into an ongoing pandemic. My congestive heart failure, hypertensive, diabetic, and cancer patients still have significant morbidity and mortality when infected with COVID-19. My story has helped me to consider how I might work through the policymaking process and effect change on their behalf while dealing with a polarization that is in no way

Vita

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Moadel-Robblee, Alyson, Fernando Camacho, Gabrielle Milner, Alexander Kertzner, Nicholas Schlecht. “Peer Navigation-delivered Loving-kindness meditation: A Pilot Project.” Complementary Therapies in Medicine 57, 2021.

Introduction

The history of polio in Los Angeles is of global historical significance. In a region that journalist Carey McWilliams once called "a land of magical improvisation," polio gave rise to rehabilitation medicine, and in the process, upended centuries-old ideals governing social provision in the Western world.[2]

Like other American cities, Los Angeles' healthcare safety net had Western European roots. Its first county hospital was founded in 1856 by the Sisters of Charity, who contracted with public officials to care for sick residents.[3] Believing that helping the disadvantaged was a moral obligation, the order's founder, French priest Vincent de Paul proclaimed: "We are ministers of the poor; God has chosen us for them."[4] In confronting the infectious disease that accompanied metropolitan Los Angeles' early development, the Sisters of Charity and other religious groups worked to create a social safety net for the city's most vulnerable residents. For example, during the 1860s and 1870s smallpox epidemics, the Sisters and the Hebrew Benevolent Society worked together to provide healthcare and food to the sick.[5] Inspired by a similar ethical worldview, their interfaith effort reflected an understanding that an effective response to disease involves supporting those without resources, which often suffer disproportionately from the economic consequences of ill health.

[2] Carey McWilliams, *Southern California: An Island on the Land* (Salt Lake City: Peregrine Smith, 1973), 21.
[3] M. R. Cousineau and R. E. Tranquada, "Crisis & commitment: 150 years of service by Los Angeles county public hospitals," *Am J Public Health* 97, no. 4 (Apr 2007), 607.
[4] D.T. McColgan, *A Century of Charity: The First One Hundred Years of the Society of St. Vincent de Paul in the United States* Vol. 1 (Milwaukee: Bruce, 1951), 1.
[5] Catherine Waymost, Brett Arena, and Frances Feldman, *On the Wings of Angels: The Role of Religious Organizations in the Development of Human Services in Early Los Angeles, 1850-1900,* (Los Angeles: St. Vincent Medical Center, 2000).

During these decades, Los Angeles installed a railroad connection to San Francisco and finished constructing terminuses to two transcontinental railroad lines.[6] Los Angeles' population surged after it became part of the nation's growing railroad network and county authorities thereafter became more powerful in tackling the epidemics that accompanied the city's industrialization. In 1878, the county organized a new public hospital under secular control, along with a poor farm.[7]

Whereas Los Angeles' first county hospital's approach to poverty originated in Catholic France, the poor farm's system of relief was a product of post-Reformation England. When Henry VIII dissolved the monasteries, he inadvertently compromised the "ideal that a society should take care of its sick poor," which historian Victoria Sweet noted, "originated in those monastic hospitals and infirmaries of the Middle Ages."[8] Almost overnight, the previous system characterized by a harmony of social orders, within which both the benefactor and the beneficiary had a natural place, gave rise to a new system in which dependency no longer had a divine purpose. The English government instituted a harsh series of measures punishing beggars, which were only alleviated with the Poor Law of 1601, which assigned local parishes responsibility for assisting "worthy" classes of dependents, including poor children and the physically disabled.[9]

---

[6] Janet L. Abu-Lughod, *New York, Chicago, Los Angeles: America's Global Cities* (Minneapolis: U of Minnesota Press, 1999), 137-138; Robert M. Fogelson, *The Fragmented Metropolis: Los Angeles, 1850-1930* (Berkeley: U of California Press, 1993), 67; Natalia Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939* (Berkeley, Los Angeles, and London: University of California Press, 2006), Kindle Edition, 4.
[7] Cousineau and Tranquada, "Crisis & commitment," 607.
[8] Victoria Sweet, *God's Hotel: A Doctor, a Hospital, and a Pilgrimage to the Heart of Medicine* (New York: Riverhead, 2012), 36.
[9] Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity from Antiquity to the Present* (London: W.W. Norton and Company, 1999), 239-240; Richard H. Shryock, *The History of Nursing: An Interpretation of the Social and Medical Factors Involved* (Philadelphia: Saunders, 1959), 155-159; Walter I. Trattner, *From Poor Law to Welfare State, 6th Edition: A History of Social Welfare in America* (New York: Free Press, 2007), 8-12.

During the American Colonial Era, Boston and other Northeastern cities incorporated this English model into their systems of governance. In founding the County Farm, Los Angeles also transplanted this system, in which local officials separated "deserving" relief applicants from the "unworthy" by placing them in institutions deterring vagrancy.[10]

My dissertation studies how the 1950s polio epidemics turned Los Angeles' early approach to social provision on its head. While it was initially founded as the County Farm, Rancho Los Amigos became one of fourteen National Foundation for Infantile Paralysis (NFIP) Respiratory Centers in response to the costs of providing care to rising numbers of iron lung patients. A nonprofit organization founded by President Franklin Roosevelt, the NFIP raised millions of dollars for polio research and patient care in Los Angeles County. Through acquiring funding from the NFIP and federal sources, chief physician John Affeldt supported the work of orthopedic surgeons Vernon Nickel and Jacquelin Perry. Both Nickel and Perry had distinguished careers in the Physical Medicine and Rehabilitation (PM&R) specialty and adapted the infrastructure that they built in response to polio to rehabilitate chronic conditions such as spinal cord injury and stroke.

While being upheld as an emblem of the PM&R specialty's success, Rancho Los Amigos remained a public hospital with a mandate to serve the indigent. As the local polio incidence declined following the 1950s mass vaccination campaigns, John Affeldt advocated for funding by arguing that Rancho's clinical approach reduced public expenditures on convalescent patients by rehabilitating them into the community and enabling them to work.

[10] Jonathan Hughes, *The vital few: The entrepreneur and American economic progress*, (Oxford: Oxford University Press, 1986), 469; Michael B. Katz, *In the shadow of the poorhouse: A social history of welfare in America* (New York: Basic Books, 1996), Kindle edition, 14-15, 19, 23; Porter, 238.

In employing clinical rehabilitation to obviate chronic patients' dependence on public assistance, Affeldt changed Los Angeles' traditional approach to social provision. Chronic patients no longer needed religious charity nor required secular officials' scrutiny; scientific rehabilitation made previously hopeless classes of dependents independent and medicine itself gave rise to a new social order. My dissertation studies how Los Angeles' polio experience generated this new ethic governing social provision. In the process, it elucidates the factors that led policymakers and clinicians to create Los Angeles County's contemporary safety net for chronic disease patients.

I.

John Affeldt was not the first medical leader who used scientific medicine to manage chronic illness. Over half a century earlier in New York City, Simon Baruch faced opposition when using science to change the predominant approach to chronic disease management at the Montefiore Hospital for Chronic Illness. Established in 1885 by elite members of New York City's Jewish community, Montefiore traditionally employed a convalescent approach to caregiving, in line with the founders' preferences. Baruch's vision ultimately prevailed. By the time of its 50th anniversary in 1935, Montefiore boasted of having a 742-bed hospital in the Bronx and a 250-bed unit in Westchester County. A Columbia University affiliated hospital, Montefiore was a specialized research, teaching, and medical institution that served both pediatric and adult chronic patients.[11]

During the 1930s, New York City Mayor Fiorello La Guardia made Simon Baruch's strategy into New York City's official approach to chronic disease management. In a 1935 radio

[11] George Weisz, *Chronic Disease in the Twentieth Century: A History* (Baltimore: Johns Hopkins University Press, 2014), Kindle edition, 64-65.

address, La Guardia declared that "a government sponsored program" funding medical institutions was the solution to the high incidence of chronic disease that was threatening to make the United States into "a nation of invalids." As a part of his reform agenda, LaGuardia constructed a municipal chronic disease hospital, which he named after his Commissioner of Hospitals, S.S. Goldwater. Founded in 1937, Goldwater Hospital was what historian of medicine George Weisz dubbed "the crowning jewel of New York City's Chronic Health agenda."[12]

By the late 1950s, John Affeldt's rehabilitation hospital had become a part of the American Chronic Disease Movement that began earlier in New York City. However, by this time, the movement had become connected to President Eisenhower's welfare reform program. Following World War II, the United States and European powers evaluated their systems of social provision that had come into existence in response to industrialization. While European nations adopted universal protections against poverty, the United States expanded its Social Security system so that it could better manage the costs of supporting chronic disease patients. In doing so, President Eisenhower instituted a federal-state matching program that greatly increased funding for rehabilitation hospitals.[13]

Rancho Los Amigos both gave rise to, and was shaped by, Eisenhower's federally funded and locally administered program. Los Angeles County's 1940s and 1950s polio epidemics resulted in large numbers of chronic iron lung patients who were costly for the NFIP to support. Rancho's combined system of pulmonary and orthopedic rehabilitation served to reduce the NFIP's expenditures on convalescent care by helping many polio patients gain a level of function that led to their discharge from the hospital. The new problems that these former patients

[12] Ibid, 69-73.
[13] "How to Make a Social Safety Net for the Post-Covid World," 6 March 2021, *The Economist*. <https://www.economist.com/leaders/2021/03/06/how-to-make-a-social-safety-net-for-the-post-covid-world> Accessed October 30, 2021; Hughes, 462-503.

experienced after discharge, including a lack of accommodations and difficulty finding employment, led Affeldt to work with staff in implementing a vocational rehabilitation program. Rancho's system of medical care and vocational education not only enabled polio patients to become economically self-sufficient but theoretically reduced the county's costs of providing public assistance. Following the 1954 Vocational Rehabilitation Act's passage, Rancho's single disease rehabilitation program received funding to become an integral part of President Eisenhower's expanded system of social provision. In the process, Rancho Los Amigos' historical mission was transformed from assisting indigent residents into rehabilitating them off assistance.

II.

My account of how a city's encounter with an infectious disease helped give rise to a revision in a national system of social provision is the central component within a general history of polio in Los Angeles. My dissertation begins in 1912, when Los Angeles was a budding metropolis and encountered an unyielding epidemic that disrupted city life. It ends by studying how the 1950s epidemics transformed chronic disease management in a region that had become a global city, a term used by academics to denote a worldwide economic power. In this context, rehabilitation medicine originated as an approach to dealing with dependency in a modern American city.

My dissertation focuses on two periods of time and their aftermaths; each of which was an epoch in the history of modern Los Angeles and constituted a stage in polio's local evolution. As epidemiologists Geraldine Edwards, William Clark, and Robert Drake have observed, California "experienced two quite distinct periods of rising incidence, set off by several years of

low frequency." Beginning in 1921 and ending in 1934, the First Epidemic Period witnessed polio climb to a peak incidence of 56/100,000. Starting in 1936, the Second Epidemic period likewise saw polio incidence reach a height of 56/100,000 in 1948. However, as Edwards, Clark, and Drake have written: "The sharp fall in case rates observed in the years following the 1934 epidemic was not repeated," as following 1948, "successive years of relatively high incidence were noted." They continue: "In fact, between 1949 and 1954 three years (1952-53-54) could easily be classified as epidemic."[14] Indeed, the high polio incidence during these years was the most decisive in shaping the county's chronic disease management strategy today.

The First Epidemic Period began during a period of rampant population growth in Los Angeles. Attracted to the vibrant regional economy, migrants sought employment in the various local industries that characterized the 1920s Los Angeles metropolis, working in its port complex, oil refineries, and motion picture studios. But in the process, officials contended with the increased infectious disease transmission that accompanied such demographic shifts. During this period, known by historians as the infectious disease era, authorities established a permanent county health department that had the power to regulate disease prevention across the metropolis. Los Angeles' disease control strategy of the time was a legacy of the Progressive Movement. Largely a middle-class solution to the disparities in wealth that accompanied industrialization, progressive reformers assigned scientific expertise a role in preventing disease and disability; rehabilitation medicine, introduced by reformers and orthopedists within the military during World War I, became incorporated into the municipal strategy against polio.[15]

[14] G.B. Edwards, W. Clark, and R. Drake, *Poliomyelitis in California during the pre-vaccine period* (California State Department of Public Health, 1958), 7.
[15] Beth Linker, *War's Waste: Rehabilitation in World War I America* (University of Chicago Press, 2011); Michael McGerr, *A Fierce Discontent: The Rise and Fall of the Progressive Movement in America* (New York: Simon and Schuster, 2010); John H. Warner, "The Fall and Rise of Professional Mystery: Epistemology, authority and the emergence of laboratory medicine in nineteenth-century America." In Andrew Cunningham and Perry Williams, *The laboratory revolution in medicine* (Cambridge: Cambridge University Press, 2002): 110-141.

The fact that the polio epidemics predominately affected children gave the public health challenge a unique cultural meaning. During the Progressive Era, the federal government created important national programs, which served to help American families deal with the unsettling changes brought by industrialization.[16] Some of the era's welfare institutions included the Children's Bureau and the social insurance and rehabilitation programs for World War I veterans. Because polio affected children, an integral part of the family unit, it is not surprising that the polio epidemics led to an assistance program for children in California that later became incorporated into the Social Security system.

Polio was different from other diseases which historically carried stigmas by virtue of the patient populations that they affected. Historian David Rothman has written that "Polio, at least after the 1920s, was not defined as an affliction bred by neglect, poor diet, inadequate housing, or immoral conduct; it was not akin to tuberculosis (the disease of the ghetto), let alone cirrhosis (the disease of alcoholics)."[17] Unlike other chronic illnesses, which were shaped by lifestyle habits and impoverished living conditions, polio infected blameless children and prominent figures, such as President Roosevelt. In a society in which officials awarded assistance based on the legitimacy of applicant's needs, the polio patient's entitlement to support often went unquestioned. Polio was thus an exceptional disease in that it predominately affected privileged patient populations. As a result, especially during California's Second Epidemic Period, local epidemics prompted the creation of a remarkable safety net healthcare system in Los Angeles.

[16] Linker, 31.
[17] David J. Rothman, *Beginnings count: the Technological Imperative in American Health Care* (New York: Oxford University Press, 1997), 55.

The Second Epidemic Period was characterized by a demographic shift into Los Angeles, which likely impacted polio's course through the region during this time. Edwards, Clark, and Drake have written:

> (One) factor which may have influenced the incidence of poliomyelitis, as well as other communicable diseases in California, was the high rate of population movement into the state. In the 20 years after 1933, the population nearly doubled and a large share of the increase was made up for young adults with growing families. Thus, a steady influx of new susceptible individuals, both from migration and from a high birth rate, may have been important in maintaining high endemic levels.[18]

World War II influenced both the population increase that heightened the polio incidence and the county's response to polio during and after the Second Epidemic Period. The defense industry's wartime expansion in Southern California precipitated the increased migration that made Los Angeles into a national polio epicenter. In dealing with increased numbers of "severe" iron lung cases, the NFIP and the county substantially invested in rehabilitation medicine at Rancho Los Amigos. During the 1950s, a time in which wartime scientific breakthroughs convinced policymakers that investment in biomedicine served national interests, Rancho Los Amigos acquired substantial government funding for research and facility construction. In the process, its professionals and researchers cultivated a multi-specialty clinical approach. Rehabilitation at Rancho was rooted in the laboratory, drew heavily from wartime clinical advancements, and was connected to academia and industry. However, in contrast with other clinician scientists, Rancho's rehabilitation researchers did not work exclusively on treating isolated organ systems. They rather strove to help the iron lung patient to function physically, psychologically, and socially, with the goal (if possible) of becoming economically self-sufficient.

[18] Edwards, Clark, and Drake, 8-9.

By the 1950s, rehabilitation medicine had matured from being an orthopedic approach into its own independent specialty, Physical Medicine and Rehabilitation. As Rancho Los Amigos transitioned into rehabilitating conditions like heart disease and stroke, its clinical approach, which developed in response to polio, now contributed to how the PM&R specialty managed chronic disease. As historian Richard Verville has written, PM&R is distinguished from other clinical specialties for its focus on the integrated physical, psychological, and social function of an individual with a disability. In addition, PM&R employs an "interdisciplinary team" approach within a "system" linking "multiple facilities and agencies."[19] As we will see, various aspects of city life, including Los Angeles' unorthodox religious environment, its tradition of popular medicine, and its local industries, from Hollywood to aerospace, informed the process by which this innovative clinical approach took shape.

III.

In telling the story of how Los Angeles' unique polio experience sparked a revision of the social safety net, my dissertation focuses on two public hospitals: County (or General) Hospital and Rancho Los Amigos. Both institutions dealt with poverty and chronic disease through a traditional Western model of care. Polio, with its disproportionate incidence among the middle and upper classes, brought into the county system a more influential clientele than the indigent patients who had historically used both hospitals. During the 1948 epidemic, NFIP official Hart E. Van Riber noticed polio's democratizing effect within the Los Angeles public hospital system. Visiting County Hospital, he remarked "There has never been any place in the world where so

[19] Richard Verville, *War, Politics, and Philanthropy: the History of Rehabilitation Medicine* (Lanham: University Press of America, 2009), 2-3.

many patients have been kept alive in respirators as in this contagious disease building that was built for the indigent poor, but now caring for the children of millionaires as well."[20]

It is easy to understand how a hospital administrator like John Affeldt could embrace rehabilitation as the solution to chronic disease during the postwar era, a time of widespread belief in science's promise. During the 1950s, polio rehabilitation at Rancho Los Amigos was also fiscally sustainable, especially given the abundant support that it received from the NFIP and federal sources. Rancho Los Amigos' success story was one of many celebrated achievements during this time, along with other stories within the military and the civilian workforce, that inspired belief in rehabilitation as an agent of social change.

Demographic, economic, and political shifts beginning in the 1960s collectively undermined faith in the postwar rehabilitation project. During this time, in which Los Angeles became a worldwide economic power, the city also became exceedingly diverse. The Immigration Act of 1965 brought into Los Angeles an influx of immigrants from the Pacific nations and Mexico, who made the city into a microcosm of the global population. As the polio incidence decreased, County Hospital and Rancho Los Amigos again served those without support in the community, but now in a region increasingly nonwhite and with marked income inequality.[21] In a 2017 study, Amylis Towfighi, the director of neurological services within the county health department, with her colleagues commented on the demographic that Rancho Los Amigos today serves. She has written that in comparison with other local hospitals, County Hospital and Rancho care for a population that is "younger, more frequently male, nonwhite, current smokers, hypertensive, and diabetic." The county's chronic patients are also "less likely

[20] "County Hospital's Technique on Polio Wins High Praise," 9 November 1948, *Los Angeles Times.*
[21] Abu-Lughod, 273-278; Robert Gottlieb, *Reinventing Los Angeles: Nature and Community in the Global City* (MIT Press, 2007), Kindle edition, location 265-266.

to take antithrombotics and statins before admission and have worse serum lipid and glycemic rates."[22]

As the expansionary 1950s and 1960s gave way to the inflationary 1970s, the state and county government drastically curtailed the municipal healthcare budget. Such changes disappointed advocates' hope that government investment in scientific rehabilitation would obviate dependency within the county system. Into recent times, the county has struggled to find adequate funding to make its scientific, technologically advanced program of rehabilitation accessible to its most marginalized residents. And unlike polio, chronic conditions such as heart disease and stroke are often connected to socioeconomic disadvantage. In their study, Towfighi and her colleagues concluded that, in comparison with local hospitals serving the affluent, "the younger age and higher prevalence and poorer treatment and control of vascular risk factors likely reflect differences in access to care, socioeconomic status, lifestyle habits, competing needs, cultural barriers, and health literacy;" importantly, the "higher prevalence of risk factors among racial or ethnic minorities may account for the disparities in stroke risk."[23]

My dissertation concludes by noting how such problems in chronic disease management were rooted in the county's neglect of its disadvantaged communities in the decades during which it simultaneously built an exceptional polio response. Problematic elements in metropolitan Los Angeles, including pervasive racial segregation, antiimmigration sentiment, a lack of investment in low-income communities, as well as unrestrained industrialization, ultimately confounded the rehabilitation social experiment. In telling this history, my dissertation notes rehabilitation's shortcomings in responding to the structural problems that shape ill health.

[22]A. Towfighi et al., "Tale of 2 Health-care Systems: Disparities in Demographic and Clinical Characteristics between 2 Ischemic Stroke Populations in Los Angeles County," *J Stroke Cerebrovasc Dis* 26, no. 6 (Jun 2017), 1357.
[23] Ibid, 1361.

IV.

This dissertation addresses a topic that can be investigated from multiple subfields. It analyzes how a new field of inquiry emerged in the context of the polio epidemics through the perspective of the history of medicine, science and technology studies (STS), history of religion, economic history, health policy, and disability studies. I have assembled each perspective to investigate how interactions between civic leaders, medical authorities, hospitals, financing groups, and advocacy organizations played out to give rise to rehabilitation medicine. Each subfield provides a distinct prism, which when brought together, allows us to analyze the launching of new institutional relationships, an important topic as we see similar interactions form in more recent times with the American welfare system's continued expansion.

My dissertation's chapter structure advances this methodological approach. It is composed of nine chapters, arranged into three sections, which organize perspectives from various subfields. Part I, which consists of Chapter 1 through 3, studies institutional relationships at the macro political level. Chapter 1 chronicles Los Angeles' response during the First Epidemic Period between 1921 and 1934; it focuses on how child health advocates and state officials worked to create California's Crippled Children's Services. Initiated in response to the increasing polio incidence during the 1920s, it became incorporated into the Children's Bureau's federal-state assistance program for children with disabilities following the enactment of Title V of the Social Security Act. Similar to when it was first enacted to help polio patients' families during the Great Depression, the Title V program helps families to pay the considerable expenses of treating chronic pediatric conditions, such as cerebral palsy, congenital heart disease, and leukemia.[24]

[24] Moira Inkelas, "Incentives in a Specialty Care Carve-Out" (Ph.D. diss., RAND Graduate School, 2001), 19-25.

Chapter 1 ends with the stories of County Hospital essential healthcare workers who contracted polio during the 1934 epidemic. Through their stories, we see how rehabilitation medicine was historically one component of a multifaceted industrial response to a disease, which like workplace accidents, impacted labor. In the United States, cultural values privileging children for their eventual employability inspired the creation of a remarkable safety net for pediatric chronic patients. However, as we will see in the essential workers' account, women, racial minorities, and other groups lacked access to the same protections afforded white children.

Chapter 2 shifts focus and studies how Los Angeles County's system of social provision for polio patients further evolved during the late 1930s and 1940s. It begins with the story of the NFIP's founding in 1938 and studies how it came to coordinate Los Angeles' efforts against polio during California's Second Epidemic Period between 1936 and 1948.

While telling the story of how the county responded to polio, this chapter also uses the Los Angeles experience as a case study to examine how President Roosevelt's advocacy on behalf of polio patients impacted rehabilitation medicine at a national health systems level. Ruth Stein, a clinician researcher and advocate for persons with disabilities, commented on advocacy organizations' impact on social provision. In describing pediatric advocacy organizations' significance, she has written:

> For most of the 20th century, children were classified according to the clusters of diseases treated by each medical subspecialty. Advocacy organizations grew up around each category, resulting in the development of condition-specific services, benefits, and research priorities. These groups assumed prominence at different points and advocated for special needs and benefits for their specific conditions, a phenomenon we have seen recently for children with autism.[25]

[25] R. Stein, "The 1990s: A Decade of Change in Understanding Children with Ongoing Conditions." *Archives of Pediatrics & Adolescent Medicine* 165, no. 10 (2011): 880.

In the case of Roosevelt's NFIP, advocates' elite socioeconomic statuses and their emphasis on polio patients' worthiness enabled them to achieve their political objectives. We will again refer to this topic in the epilogue in discussing how lobbyists successfully pushed for the Ryan White CARE Act's passage, which created a national system of social support for HIV patients.

Chapter 3 studies how the post-World War II era impacted both the NFIP's rehabilitation program for iron lung patients and the broader political system within which it was embedded. In this context, the NFIP embraced scientific rehabilitation as the solution to the financial problems that it incurred in funding costs associated with iron lung patients' hospitalization. As a powerful organization with ties to the nation's financial, political, and medical leaders, the NFIP used its relationship with Harvard scientists to establish the Mary MacArthur Respiratory Center. Affiliated with Boston Children's Hospital, it became a laboratory for Harvard Department of Physiology researchers. While a pulmonology fellow within this department, John Affeldt was initiated into a professional community which depended upon federal and nonprofit support to develop technologies responding to the leading health problems of the time. Before Affeldt arrived, the department's faculty had performed research addressing the need to oxygenate World War II pilots in high altitude flight and breathe for the causalities of the war against polio. At a time in which researchers used science's political currency to influence policymaking, the Harvard physiologists were not only distinguished scientists, but government advisors and administrative leaders.

The postwar era was a pivotal time in which the contemporary welfare state developed in both the United States and Western Europe.[26] While European powers adopted national health

[26] "Covid-19 has transformed the welfare state. Which changes will endure?" 6 March 2021, *The Economist.* < https://www.economist.com/briefing/2021/03/06/covid-19-has-transformed-the-welfare-state-which-changes-will-endure > Accessed October 30, 2021.

insurance programs, America's different historical trajectory dated to the late 19th century. Commenting on the distinct forms that the European and American welfare bureaucracies took, historian Peter Wagner noted that in Europe the "large-scale bureaucratic-hierarchical social organization" was "overarchingly powerful;" however, "the giant business corporation and other forms of private organization… became an increasingly dominant feature of U.S. society."[27] Stephen Strickland, Paul Starr, and Rosemary Stevens have studied how factors such as lobbying by powerful interest groups shaped a system with strong biomedical research programs and privatized healthcare institutions, at the expense of effective public health programs.[28]

This trend is particularly relevant for our story. In his work *Chronic Disease in the Twentieth Century: A History*, historian George Weisz has noted that prior to 1960, "large-scale public and political concern with chronic disease was largely an American phenomenon." He has written that, in the American context, "a variety of groups found (chronic disease) a useful category for pursuing their quite distinct goals and eventually for coalescing around a policy of healthcare expansion."[29]As we will see, President Truman and other advocates for reform used the concept of "chronic disease" in emphasizing the need for a stronger public healthcare system. In contrast, interest groups, including the American Medical Association (AMA) and the NFIP, appropriated the term in advocating for a system, which while predominately privatized, depended upon abundant federal funding for biomedical research. Health policy expert Mark Peterson has studied how dominant healthcare interests formed coalitions with politicians to

[27] Peter Wagner, "The Uses of the Social Sciences." In *The Cambridge History of Science*, edited by Theodore M. Porter and Dorothy Ross, 7:545. The Cambridge History of Science. Cambridge: Cambridge University Press, 2003.
[28] Paul Starr, *The Social Transformation of American Medicine* (New York: Basic Books, 1982); Rosemary Stevens, *In Sickness and in Wealth: American Hospitals in the Twentieth Century* (Baltimore: John Hopkins University Press, 1999); Stephen P. Strickland, *Politics, Science, and Dread Disease* (Cambridge: Harvard University Press, 1972).
[29] Weisz, 11.

successfully block legislation establishing national health insurance.[30] Policymakers instead sponsored a corporate, technologically driven approach to chronic disease that was palatable to healthcare interests. Observing how rehabilitation developed in this political context helps us to understand its inadequacies as a solution to poverty, which is what it later became over the course of the Kennedy and Johnson presidential administrations.

Beginning in Part II, the dissertation describes how subspecialty rehabilitation, which developed in isolation from Los Angeles' underserved communities, became the framework guiding chronic disease management within its public healthcare system. In investigating how Los Angeles' polio epidemics gave rise to this change, we narrow our study to focus on John Affeldt, a key county administrative leader who instituted the shift. Part II (which includes Chapters 4 through 6) focuses on Affeldt's religious background, internal medicine residency training, and pulmonology fellowship at the Harvard Department of Physiology; at the local level, it studies how the narrow clinical problems that he encountered within the laboratory were embedded within the broader social, political, and economic context.

Chapter 4 begins during the late 1930s, when influenced by his mother, a devout Seventh-Day Adventist, Affeldt decided that he wanted to become a physician. He chose to attend medical school at the College of Medical Evangelists (now the Loma Linda University School of Medicine), an Adventist educational institution in Southern California. Seventh-Day Adventist clinical thinking understood chronic illness as affecting the individual person as an integrated unit of body, mind, and soul. Dissatisfied with the secular educational model in nineteenth century medical schools, Adventist leaders established an institution that could better equip their physicians to become missionaries.

[30] M.A. Peterson, "Political influence in the 1990s: From iron triangles to policy networks." *Journal of health politics, policy and law* 18, no. 2 (1993): 395-438.

Through living in the Southern California Adventist community, Affeldt learned a clinical approach that had much in common with the approach that the NFIP sponsored in its rehabilitation centers. Having taken shape in sanitariums for the chronically ill, Adventist medicine advocated that the physician address the problem of convalescence, which was contrary to God's design for an active, healthy lifestyle. While the National Foundation was by no means an advocacy organization for the disenfranchised, it did acknowledge the harmful psychological effects of prolonged convalescence in an iron lung. Like Adventists, who emphasized that clinicians address social issues like alcohol dependency, the Foundation also invested in vocational rehabilitation in response to problems like unemployment.

Chapter 5 follows Affeldt as he began his internal medicine residency at County Hospital in 1946. During this time in which Los Angeles had become notorious for its polio epidemics, Affeldt trained at the institution that cared for all the county's infectious cases. Here, he became exposed to respiratory acidosis in iron lung patients, a clinical problem that defined his administrative career. As chief resident, Affeldt helped researchers from the Harvard Department of Physiology conduct a study of a controversial technology. Invented by Albert Bower, chief of the Communicable Disease Unit, and Ray Bennett, an engineer who designed breathing apparatuses for high altitude flight, the CO2 analyzer became locally applied in managing respiratory acidosis. When a conflict erupted between the County Hospital staff and the Harvard scientists over the device's efficacy, Affeldt mediated between both groups. Impressed by Affeldt's abilities, the Harvard scientists invited him to take part in a pulmonary fellowship within their department.

Chapter 6 examines John Affeldt's fellowship training at Harvard between 1949 and 1951 and his involvement in fascinating research projects that addressed respiratory polio and

nerve gas exposure. With funding from the NFIP and the Department of Defense, Affeldt collaborated with scientists, such as distinguished cardiologist Stanley Sarnoff. Like other physiologists at Harvard, Sarnoff worked within an academic system characterized by multidisciplinary collaborations involving clinician scientists, defense officials, engineers, and businessmen. As a member of such a community, Sarnoff not only conducted research and directed the National Institute of Health's cardiovascular physiology lab but developed commercial products. The chapter ends by returning to Los Angeles, where county officials requested that the NFIP help manage its overwhelming numbers of respiratory patients. After being sent by the NFIP and Harvard to investigate the county's problems, Affeldt was offered the position of chief physician at Rancho Los Amigos, which the foundation had decided to make into a polio rehabilitation center.

Part III, which includes Chapters 7 through 9, shifts its focus outward from John Affeldt to Rancho Los Amigos and Los Angeles County. It examines how the various trends identified in the previous section intersected through Affeldt to make rehabilitation into the county's approach to chronic disease management. Chapter 7 begins in 1951, just after Affeldt became the polio center's chief physician. It traces how he worked with a multidisciplinary team to implement Harvard's scientific approach within Rancho Los Amigos. In conveying how subspecialty rehabilitation originated at Rancho during this time, the chapter tells the story of the infrared CO2 analyzer, a rehabilitation technology that exemplified what STS scholars refer to as a "boundary object."

In their influential article on the Berkeley Museum of Vertebrate Zoology, sociologists Susan Leigh Star and James R. Griesemeyer articulated a fundamental challenge that scientists encounter in sharing knowledge, which locally derived, must have "integrity across time, space

and local contingencies." They proposed the concept of the boundary object to describe how distinct communities share knowledge even though it possesses "different meanings" in "different social worlds." Whether these "worlds" are separated by geographic and linguistic boundaries, or exist within distinct professions and academic disciplines, boundary objects like specimens "inhabit several intersecting social worlds and satisfy the informational requirements of each of them."[31]

Numerous technologies studied in this dissertation, from the iron lung to Bower and Bennett's positive pressure device, fit this description. However, we will only examine the CO2 analyzer as a boundary object in detail. In doing so, we can see how the various influences studied in the previous chapters came together to generate rehabilitation. Introduced during World War II, the CO2 analyzer "satisfied" the German industrial-military complex's need to safely manufacture resources during Germany's wartime mobilization. Following the Allied air raids, it became available to American engineer Max Liston through Department of Defense research networks. Affeldt's Harvard mentor James Whittenberger worked with Liston in adapting the analyzer to fulfill his need to manage respiratory acidosis within the "social world" of pulmonology. When Affeldt became a Harvard fellow, he worked with Whittenberger and Liston in modifying its use to assess iron lung patients' ventilatory statuses. Affeldt and Clarence Collier, a colleague from the College of Medical Evangelists, then continued calibrating the analyzer at Rancho Los Amigos. Their success enabled orthopedic surgeons to provide respiratory polio patients with access to life-saving reconstructive surgeries, such as the spinal fusion. Significantly, this clinical "team-based" approach that fostered the CO2 analyzer's

[31] S.L. Star and J.R. Griesemer, "Institutional ecology, 'translations' and boundary objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social studies of science* 19, no. 3 (1989): 387-388, 393, 412.

application in orthopedic surgery became a defining feature of how rehabilitation evolved at Rancho Los Amigos in the subsequent decade as it became a chronic disease rehabilitation center.

While Chapter 7 focused on rehabilitation's origins at the clinical level, Chapters 8 and 9 broaden our perspective to see how this form of inquiry became connected to Eisenhower, Kennedy, and Johnsons' political agendas. We begin Chapter 8 with a general history of the American chronic disease movement after World War II. We then shift our focus to Los Angeles, where administrators at Rancho Los Amigos recognized the necessity of acquiring alternative sources of funding to the NFIP with the polio mass vaccination campaigns. During the mid-1950s, Affeldt cultivated a relationship with Office of Vocational Rehabilitation director Mary Switzer and depended upon her office's support to fund its vocational rehabilitation program. By the end of the 1950s, Switzer became one of Affeldt's most influential backers in his efforts to transition Rancho Los Amigos from an NFIP Respiratory Center into a chronic rehabilitation hospital. As polio faded from public view, the NFIP urged that policymakers embrace its block grant model of support in dealing with the rising threat of chronic illness. The NFIP upheld Respiratory Centers like Rancho Los Amigos, which had already transitioned to depending upon federal assistance, as exemplifying a new national system of social provision equipped to meet the challenges of the chronic disease era.

Chapter 9 focuses specifically on Rancho Los Amigos' transition into a chronic disease rehabilitation center. The hospital benefitted from seemingly limitless investment, especially after President Johnson signed the Social Security Amendments of 1965, which established Medicare and Medicaid. However, it struggled to achieve adequate support when officials reduced the county healthcare budget in response to the spiraling inflation of the 1970s. By this

time, Affeldt had worked his way from being Rancho's chief physician to director of the Los Angeles County Health Department. In learning to operate within a world where constrained finances dictated health policy, he became focused on ensuring the public hospital system's survival rather than advocating on behalf of his earlier vision of social reform.

The dissertation culminates in 2003, when county officials ordered Rancho Los Amigos' closure. While their effort was ultimately reversed by a federal appellate court, Affeldt came to believe that, in such a precarious situation, it was in Rancho's interest to divorce itself from the public hospital system. Affeldt's position reflected a loss of faith in the underlying political system that gave rise to rehabilitation; by this time, rehabilitation had diverged from the macro political environment that had previously sustained it.

Affeldt's perspective that Rancho should no longer be a public hospital reflected his pragmatic realism; children and adults with complex needs were better served within a nonprofit or privatized model than a public hospital system on the verge of collapse. The other national rehabilitation centers that were built during the postwar era, including the Rusk Institute in New York, the Kessler Institute in New Jersey, and the Texas Institute of Rehabilitation largely took patients who were privately insured to offset the costs of those on Medicaid. If Rancho became private, many patients on public insurance would indeed be turned away; however, other complex Medicaid patients would retain access and the hospital would remain solvent.

V.

While historically conditioned, Affeldt's changing perspective provides lessons for today. Not long after the first cases were detected, COVID-19 caused disproportionate morbidity and

mortality among underserved groups, especially racial and ethnic minorities, a fact that experts attribute to a lack of access to care and the presence of comorbidities.[32] The pandemic highlighted before the public how problems, such as racial segregation, have created an urban landscape rife with healthcare disparities. COVID-19's toll on the economy also inspired bipartisan calls to temporarily expand the social safety net. A variety of proposals aimed at alleviating the pandemic's adverse economic effects passed into law, including moratoriums on evictions and funding for childcare. In March 2021, *The Economist* described the pandemic as a historical event, which like the Great Depression and World War II, provided European and American governments with the opportunity to "recast the relationship between the state and its citizens."[33]

Affeldt's experiences provide guidance in addressing dilemmas that we are again facing during this historical moment, in which there is an openness to upgrading the social safety net, but also real political and economic constraints. In attempting to serve medically complex patients, should we advocate for population-based interventions like in European systems? Or should we employ a more utilitarian strategy, serving those with the greatest needs by investing in cost-effective programs that expand access incrementally, but in the process, unfortunately leave out substantial proportions of the underserved? Such questions are important in considering how to best navigate the political divide in advocating for chronic patients. Medicare's hospital insurance funding is currently projected to be used up by 2028 and the Social Security trust fund

[32] Jon Kamp et al, "One Million Deaths: The Hole the Pandemic Made in U.S. Society," 31 Jan 2022, *Wall Street Journal*.
[33] Centers for Disease Control and Prevention (U.S.) "Temporary Halt in Residential Evictions To Prevent the Further Spread of COVID-19" 4 September 2020, *Federal Register*. <https://www.federalregister.gov/documents/2020/09/04/2020-19654/temporary-halt-in-residential-evictions-to-prevent-the-further-spread-of-covid-19>; "How to make a social safety-net for the post-covid world," *The Economist*; Claire Cain Miller, Alicia Parlapiano, and Madeleine Ngo, "Child Care Disruptions as Record Funding Nears an End," 21 June 2023, *New York Times*.

will likely run out of funding by 2035.[34] In such an environment, advocates will need to justify healthcare expansion while also recognizing the necessity of operating under constrained budgets.

While rehabilitation ultimately failed to address the multiplicity of social determinants that shape chronic disease, and even proved to be limited in reducing healthcare expenditures, Affeldt's project had a significance that overshadowed rehabilitation's shortcomings. Into recent times, persons with disabilities from underserved communities have called attention to Rancho Los Amigos' vital role in enabling them to access specialized care that they cannot access at other hospitals. Affeldt's contribution thus deserves acknowledgement as an affirmation of rehabilitation's humanitarian value based on its personal impact on those with unserved needs. His story is an account of how capable leaders creatively worked around obstacles to advance measures that enabled those who are most underserved to access the advanced medical care that they need.

At its best, the history of rehabilitation is a story about a distinctly American attempt to erect a better system of social provision for those left out within an industrial economy. And it is a story that does not necessarily have to end. As the industrialized world again deals with the threat of infectious disease, hindsight can inform our own contribution to how we improve health for those with the greatest needs.

VI.

This is an American story. My dissertation gives a perspective on problems in the United States healthcare system through the experience of one epidemic. My dissertation's introduction

[34] Mark Miller, "Fixing Social Security and Medicare: Where the Parties Stand," 23 Feb. 2023, *New York Times*.

would be incomplete without acknowledging my study's place with the historical literature on polio, as previous works have not focused on polio's connection to the American welfare state.

The foundational work in the historiography on polio, John Paul's *A History of Poliomyelitis*, employed a similar approach to works in the history of medicine prior to the 1970s, which traced scientific medicine's evolution through great physicians' discoveries. Although it was published in 1971, Paul's comprehensive account chronicled the accumulation of knowledge about polio through the discoveries that ultimately led to Salk and Sabins' vaccines.[35]

Questions about the polio experience's social aspects first entered the analysis after a generation of professional historians, trained in approaches that had emerged during the 1970s, took up writing about polio. Perhaps the most pioneering writer in the historiography is Naomi Rogers. Her first work *Dirt and Disease: Polio Before FDR*, analyzed attitudes associating polio with dirt and immigrants during New York's 1916 polio epidemic.[36] Not only have Rogers' writings shown how cultural values and attitudes impact medicine, but she has also, along with United States historian Stephen Mawdsley, studied how constructs like race, disability, and gender affected the American polio response.[37] Naomi Rogers additionally published a few articles and a book on Sister Elizabeth Kenny, an Australian nurse who introduced an unorthodox and controversial form of polio rehabilitation involving heat and massage.[38]

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[35] John R. Paul, *A History of Poliomyelitis* (New Haven: Yale University Press, 1971).
[36] Naomi Rogers, *Dirt and Disease: Polio Before FDR* (New Brunswick: Rutgers University Press, 1992).
[37] Stephen E. Mawsley, "'Dancing on Eggs' Charles Bynum, Racial Politics, and the National Foundation for Infantile Paralysis, 1938-1954."*Bulletin of the History of Medicine* 84, no 2 (2010): 217-247.
[38] Janet Golden and Naomi Rogers, "Nurse Irene Shea Studies the 'Kenny Method' of Treatment of Infantile Paralysis, 1942-1943" *Nursing History Review* 18 (2010): 189-203; N. Rogers, "'Silence Has Its Own Stories': Elizabeth Kenny, Polio, and the Culture of Medicine" *Social History of Medicine* 21 (2008): 145-161;" Naomi Rogers, *Polio Wars: Sister Kenny and the Golden Age of American Medicine* (Oxford: Oxford University Press, 2014).

Some of the works that have done the most to bring the patient's experience into the historiography reflect a disability studies perspective. Disability studies initially began in the 1980s, as an analytical research base for the disability rights movement, but has since attracted academics who understand disability, like race and gender, as a construct that shapes social categories.[39] Informed by a disability studies perspective, Daniel Wilson, a professor of history at Muhlenberg College, has written extensively about how polio impacted patients' psychology. Wilson also had polio and his work *Living With Polio* used patients' memoirs to convey the experience of contracting the disease, being hospitalized, rehabilitated, and resuming life after treatment.[40] Amy Fairchild has also drawn upon survivor narratives to illustrate psychological aspects living with polio.[41]

Several historians have called attention to polio's impact at an organizational and health systems level. Although her work is not exclusively about polio, Marion Moser Jones' master thesis on the Elks studied how race, gender, and disability affected the organization of child welfare in New Jersey following the 1916 polio epidemic.[42] David Rothman's chapter of *Beginnings Count* titled "The Iron Lung and Democratic Medicine" articulated how the NFIP contributed to the American ethic that life-saving technologies should be available to all.[43] David Oshinsky's *Polio: An American Story* emphasized how Salk and Sabins' competition to develop a vaccine was part of a wider effort within the scientific community. In the process, he added an understanding of the vital role that NFIP officials played in influencing the specific contours in

[39] Paul Longmore and L. Umansky, "Introduction: Disability History: From the Margins to the Mainstream" in Paul Longmore and Lauri Umansky, ed. *The New Disability History* (New York: New York University Press 2001); 1-32.
[40] Daniel Wilson, *Living With Polio: The Epidemic and its Survivors* (Chicago: University of Chicago Press, 2005).
[41] Amy Fairchild, "The Polio Narratives: Dialogues with FDR," *Bulletin of the History of Medicine* 75, no 3 (2001): 488-534.
[42] Marion Moser Jones, "Extending the Antlers of Protection: The Elks and the New Jersey State Crippled Children's Commission" (MA Thesis., Columbia University, 2005).
[43] D.J. Rothman, 41-66.

the American quest to produce a vaccine.[44] Angela Creager's *The Life of a Virus* showed how the NFIP's funding of biomedical research contributed to molecular biology's development in its chapter titled "The War Against Polio." However, Creager noted that in appealing to the public for funding, the foundation encouraged research that led to the "rapid production of a laboratory discovery or of a wonder drug." This consequently impacted the types of research performed in institutions such as Wendell Stanley's laboratory at University of California Berkeley.[45]

European historian Dóra Vargha also studied how national values privileging children and soldiers shaped social provision for polio patients in communist Hungary.[46] Historian of medicine Beth Linker similarly explored this topic in her history of World War I military rehabilitation.[47] However, this topic has yet to be extensively studied with regard to polio rehabilitation in the United States, which is a void that my dissertation fills.

Historian of medicine Joel Braslow has written about a similar topic to my own with respect to American psychiatry. During the postwar era, increased federal funding for research through the National Institute of Mental Health paved the way for breakthroughs in neuroscience. This, alongside antipsychotic medications, led American psychiatrists to focus less on mental illnesses' social context and more on its pathophysiology and clinical management using pharmacology. Social movements, including the antipsychiatry, consumer rights, and psychiatric patients' rights movement, advocated for the dissolution of state mental hospitals and affirmed that with medication, patients could live independently from custodial institutions.

[44] David Oshinsky, *Polio: An American Story* (New York: Oxford University Press, 2006).
[45] Angela Creager, *The Life of a Virus: Tobacco Mosaic Virus as an Experimental Model 1930-1965* (Chicago and London: The University of Chicago Press, 2002).
[46] Dóra Vargha, *Polio Across the Iron Curtain: Hungary's Cold War with an Epidemic* (Cambridge: Cambridge University Press, 2018).
[47] Linker, 2011.

Especially in the context of the neoliberalism of the 1980s, such trends influenced the recovery movement's origins. As Braslow has written:

> In a historical moment where poverty was largely seen as a problem of the individual and the welfare system was believed to perpetuate it, Recovery similarly affirmed a system of care that abhorred dependency, measured therapeutic success against a metric of independence, and acquiesced to the expectation that mental health services justify themselves by delivering cost savings elsewhere, rather than simply showing that they improve patients' lives.

With their focus on "independence over long-term care and social supports," Recovery and rehabilitation stripped chronic disease of "more visible social markers such as abject poverty …" Indeed, California's mental health policy "justified a system of care that systematically fails the sickest patients by abandoning them to the streets and jails."[48]

In focusing on the history of psychiatry in California, Braslow analyzes broader problems in the American welfare state. My dissertation likewise makes inferences about healthcare policy in studying how a specific field of inquiry took shape in Los Angeles. Such a perspective is unique within the literature on polio, which with the exception of Heather Green's work on Texas, focuses predominately on the Northeast.[49] In some ways, a study of the interplay between national and local politics is also more relevant to the United States health policy landscape than studies that focus purely on the federal level. In a nation where a significant component of the welfare system is locally driven, initiatives to expand access to services often begin at the state, county, and city levels, which is a trend that my history also brings out.

As my dissertation utilizes multiple scholarly perspectives, I have therefore used a variety of primary sources. While a graduate student at UCLA and Albert Einstein College of Medicine, I received funding to visit government archives, including the National Archives, the California

[48] Joel T. Braslow et al., "Recovery in Context: Thirty Years of Mental Health Policy in California." *Perspectives in Biology and Medicine* 64, no. 1 (2021): 82-102.
[49] Heather Wooten, *Polio Years in Texas* (College Station: Texas A&M University Press, 2009).

Department of Health, and the Los Angeles County Board of Supervisors. I have also accessed hospital records at the Harvard Countway Library and the University of Southern California Social Welfare Archives. I have additionally used the National Foundation for Infantile Paralysis' records at the March of Dimes Archives. My dissertation furthermore draws from oral interviews conducted with rehabilitation leaders at Rancho Los Amigos and their family members.

In understanding the contemporary relevance of my history, I have made extensive use of newspaper articles, health policy literature, and have been fortunate to discuss my research with health administrators. I believe that this has helped me to better understand the history I have written. But it has also stimulated me to think about how to apply lessons from my history to the policy world I encounter in primary care today.

Chapter 1: Los Angeles Encounters Polio (1912-1939)

The first chapter situates epidemic polio's appearance in Los Angeles within an international context. It describes multiple historical trends that intersected in different ways, depending on the nation, to give rise to distinctive systems of social provision.

Polio was a disease of isolated cases until the nineteenth century. At this time, the disease became different and caused sporadic outbreaks throughout the Western world. By the mid-twentieth century, polio epidemics regularly occurred in cities like London, New York, and Los Angeles. We begin by describing how the Industrial Revolution spurred this metamorphosis.

In dealing with infectious diseases that were connected to urban life, cities organized bureaucracies that implemented preventive measures. Political leaders also developed assistance programs for laborers who were disabled by workplace accidents and diseases. The specific ways in which welfare came to be organized in different cities were a product of differing national and local histories.

Whereas Chancellor Otto van Bismarck initiated Germany's national welfare system for sick laborers, American middle-class progressive reformers mobilized to pass legislation locally that helped American workers. When implemented at the national level in programs such as the Children's Bureau, progressive reform largely preserved a decentralized power structure that was a product of the American Constitution. When President Roosevelt signed Social Security into law in 1935, he furthered this decentralized pattern of social provision. Its healthcare programs merely provided states with financial assistance to help with the costs of administering relief.

We will see in the present chapter how New York and Los Angeles' differing timing of industrialization shaped how they initiated programs that prevented infectious disease and protected workers (or future workers) from the financial ruin associated with workforce

disability. We use the examples of the Crippled Children's Service, California's public rehabilitation program for children, and Los Angeles County's workers compensation programs as examples of institutions that characterized this historic pattern of organizing welfare.

The story of how polio intersected with these programs in Los Angeles not only leads us to appreciate a broader national history but provides the context for the rest of the dissertation. We will learn about how a fragmented system took shape in which residents accessed medical care through an array of different programs, whether they be private or public, federal or local. We will also see a pattern developing in which factors such as race, class, disability, and gender affected how different groups accessed care. Indeed, a reading of this chapter sheds some light on the inequitable nature of chronic disease management in the United States today.

The First Epidemic Period

Los Angeles encountered epidemic polio while it was transforming into a major urban power. Its scattered communities were becoming intricately linked by local transportation networks. Through transcontinental railway terminuses and ports, the region entered the global economy.[50] While industrialization united its districts into a single metropolitan area and connected Los Angeles to other cities, both nationally and internationally, the accompanying demographic shifts contributed to disease outbreaks. And as Los Angeles underwent a transformation from a village into a metropolis, it worked within a national context for a strategy to control infectious disease.

This chapter tells the story of Los Angeles County's public health response to polio prior to Franklin Roosevelt's establishment of the National Foundation for Infantile Paralysis. While

[50] Natalia Molina, "Contested Bodies and Cultures: The Politics of Public Health and Race within Mexican, Japanese, and Chinese Communities in Los Angeles, 1879-1939. (Ph.D. diss, University of Michigan, 2001), 3.

the Foundation assumed a central role in coordinating Los Angeles' polio response during the 1940s and 1950s, in the prior decades, the region had already initiated a strategy for managing polio. During this time in which it adopted much of its contemporary urban identity, Los Angeles both upgraded its health department and created a welfare system that has supported children with chronic conditions into recent times. Following the enactment of Title V of the Social Security Act in 1935, California's public assistance program for children with polio, the Crippled Children Services, evolved into its contemporary medical assistance program for children with special needs. The story of Los Angeles' earliest encounter with polio thus tells us, not only about the relationship between urbanization and disease control, but how epidemic disease has shaped social provision in the United States.

Los Angeles' public health response was the product of a unique era. Referring to the period that shaped New York's early strategy against epidemic polio, historian of medicine Naomi Rogers has written that the city's disease control efforts were "part of the story of Progressive reform."[51] The polio epidemics became part of American life in the era between 1880 and 1920, a time during which, as United States historian Arthur Mann has written, "industrialization, urbanization, and immigration" laid "the foundations of the society we live in today."[52]

During the last decades of the nineteenth century, national industrial development resulted in striking differences in wealth between the 1 to 2% of Americans who constituted the financial elite and the 36 to 40 million workers who made up the laboring class.[53] At the time, 1 in 1,000 workers died in industrial accidents, which is a rate that is only approached today by

[51] Naomi Rogers, "Screen the Baby, Swat the Fly: Polio in the Northeastern United States, 1916" (Ph.D. diss., University of Pennsylvania, 1986), 38.
[52] Arthur Mann, *The Progressive Era: Liberal Renaissance Or Liberal Failure?* (New York: Holt, Rinehart and Winston, 1963), 1.
[53] McGerr, 7, 33.

extremely hazardous forms of labor.[54] Living in slums, they and their families were also exposed to communicable diseases. Industrialization's increasingly visible dark nature provoked what American historian Michael McGerr has described as "a crisis of alienation" among the nation's white middle-class Protestant citizenry who predominately took part in social reform.[55] Progressive reformers' efforts to improve urban conditions both shaped Los Angeles County's preventive strategy against polio and its system of social provision in response to the epidemics.

The first half of the chapter discusses Progressivism's impact on disease control nationally. We begin by introducing the history of poliomyelitis and providing an overview of contemporary developments in microbiology and orthopedic surgery. We then study how during the Progressive Era, urban authorities expanded small public health departments into modern systems that could exert sanitary control over large territories. While Los Angeles' early disease control efforts were marked by a certain degree of chaos, by the 1920s, County Medical Director John Pomeroy had improved the county system so that it could more successfully coordinate disease control across a region that historian Robert Fogelson has aptly termed a "fragmented metropolis."[56]

After discussing how Progressivism affected the national and local disease control efforts of the time, the chapter focuses on how the movement gave rise to rehabilitation medicine. In the context of the era, rehabilitation medicine became at once a clinical approach and a response to the industrial problem of disability. We will discuss some of the major initiatives of the era, including the Children's Bureau, the World War I rehabilitation programs, and worker's

[54] John Fabian Witt, *The accidental republic: Crippled workingmen, destitute widows, and the remaking of American law* (Cambridge: Harvard University Press, 2006), 3.
[55] McGerr, 7.
[56] Fogelson, *The Fragmented Metropolis*.

compensation laws, which left a legacy in protecting American families from the economic insecurity posed by disability.

Reformers were ultimately limited in their attempts to build a family-oriented system of social provision. We will follow how during the 1920s, a time of reaction against government, private physicians successfully lobbied to limit federal intervention into healthcare delivery. In this context, businessmen's social organizations, such as the Rotary Club, spearheaded new programs for children with disabilities. The National Foundation would build upon the work that the Rotary Club and the Easter Seals Society initiated during this time to expand polio patients' access to rehabilitation.

The second half of the chapter focuses on how these national trends were experienced in Los Angeles County as its incidence of polio increased during the 1920s and 1930s. While the county's public health strategy was better coordinated by this time, the region encountered disruptions to socialization and civic unity with the implementation of disease control measures. This section also notes how child health advocates worked alongside state and local officials to implement the Crippled Children's Service. It then discusses how the Crippled Children's Service became incorporated into the Children's Bureau's federal-state assistance program for children with disabilities following the enactment of the Social Security Act.

The Crippled Children's Service helped Californians pay for their children's rehabilitation during the new, more federally expansive era that followed Franklin Roosevelt's election as president in 1932. However, many polio patients, including racial minorities, women, and the severely disabled, faced barriers to accessing services. We end the chapter by focusing on a group of County Hospital workers, who contracted polio and sought workers' compensation from the county. The essential workers' experiences provide a microcosm of the broader

inadequacies that persisted in the national system of social provision during the time. As we will later see, some problems, including the lack of a national disability insurance program, would be remedied during the next major federal expansion of Social Security in the 1950s. Unfortunately, other problems of the era, such as racial segregation, still have lingering effects in the United States.

Polio Epidemics and Science

Poliomyelitis is caused by the poliovirus, which is one of the smallest known viruses. It is a contagious disease that is transmitted when a person who is uninfected encounters a carrier of the virus. The virus is spread not only by individuals who are suffering from disease symptoms, but by healthy carriers who are asymptomatic. Entering the body through the mouth, it becomes implanted in the gastrointestinal tract, where it multiplies and is excreted from the body in feces. Usually, the virus is destroyed shortly after a person is infected, as the body defends itself by producing specific antibodies that destroy it and give the individual a lifelong immunity. However, in less than 3 to 4 percent of infections, the virus jumps into the central nervous system and destroys the motor neurons that trigger movement. Without nerve stimulation, the muscles progress to a state of paralysis within two to four days. This process is accompanied by a fever and terrible muscle pain.

The extent of paralysis that a person experiences depends upon the region of the central nervous system that is affected, as well as the degree of neural damage and inflammation. When the virus damages the motor neurons of the anterior horn cells, it affects the part of the spinal cord that is responsible for moving the arms and legs. As a result, it can paralyze any limb or

combination of limbs. In more serious cases, the poliovirus invades the brainstem, causing difficulty breathing and swallowing.

During the first two to five days of infection, the poliovirus multiplies to a point in which it inflicts its characteristic symptoms. After the initial muscle pain disappears, the person passes into the convalescent stage. During this stage, the patient may fully recover muscle function. However, when motor nerve cells are severely damaged, a person may be permanently disabled.[57]

It is medical historians' consensus that the poliovirus was present in communities throughout written history, but that the disease was relatively uncommon. Most newly born infants were exposed to the virus and developed a lasting immunity. While a few infants developed paralysis, a high infant mortality rate ensured that those who contracted the disease did not survive past their first year. Thus, the disease remained virtually hidden for centuries.[58]

Poliomyelitis' transformation from an endemic to an epidemic disease was in large part due to the Industrial Revolution. The Western world's change from an agricultural to manufacturing economy in the eighteenth and nineteenth centuries brought with it population increases in emerging urban centers. In response to the high rates of infectious disease that accompanied these changes, sanitary reformers implemented measures, such as regulating open sewage, which reduced urban residents' exposure to feces. With the improvements in sanitation, children were no longer exposed to polio at an early age and did not produce antibodies. When infected at an older age, there was a greater chance that the poliovirus would cause paralysis.[59]

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[57] Robert Lovett, *Treatment of Infantile Paralysis* (Philadelphia: P. Blakiston's Son & Co., 1917), 29-30; Paul, 1-9; F.M.R. Walshie, *Diseases of the Nervous System* (Baltimore: Williams and Wilkins Co, 1942), 144-151.
[58] Paul, 10-16.
[59] J.B. Blake, "The origins of public health in the United States." *American Journal of Public Health and the Nations Health* 38, no. 11 (1948): 1539-1550; J.L. Simon, "Demographic causes and consequences of the Industrial Revolution." *Journal of European Economic History* 23, no. 1 (1994): 141; Heather Wooten, "The Polio Years in Harris and Galveston Counties, 1930-1962" (Ph.D. Dissertation, University of Texas Graduate School of Biomedical Sciences, 2006), 12-13.

At the end of the nineteenth century, polio began infecting adolescents and adults in large numbers, a significant amount of whom became paralyzed. An 1887 polio epidemic in Stockholm infected 49 people. Polio outbreaks subsequently became more commonplace. A Vermont epidemic in 1894 caused 132 cases and a death rate of 13.5%. Many of the epidemic's victims were adults. A devastating 1905 outbreak in Sweden infected 1031 people and affected patients of an older age than the Vermont epidemic (45% of the cases were in individuals over ten years old and 21% of the total cases were in children over fifteen).[60]

By the mid-nineteenth century, orthopedic surgeons such as Jacob Heine had already demonstrated using case studies that polio was a disease of the central nervous system that caused specific symptoms. But the large epidemics that began at the end of the century gave scientists the opportunity to study many people simultaneously, and this had dramatic effects on research. Pediatrician Ivar Wickman journeyed the Swedish countryside investigating local cases to document the spread of poliomyelitis following the 1905 outbreak. Noticing that the disease affected isolated villages with the most force, he questioned why population density did not seem to increase the spread of the disease, as it did in tuberculosis. From his research, he concluded that individuals who contracted abortive, or nonparalytic, forms of poliomyelitis played an important part in its transmission.[61]

Unfortunately, as virologist John Paul has written, the "rush of enthusiasm for experimental work" that followed Karl Landsteiner's isolation of the poliovirus in 1908 "diverted" attention away from Wickman's discovery. Suddenly, a hope that polio's isolation would allow it to be destroyed generated a new emphasis on laboratory research at the expense of epidemiological investigation. Pathologist and microbiologist Simon Flexner committed the

[60] Oshinsky, 9-12; Wilson, *Living With Polio,* 2-3; Wooten, "The Polio Years," 12-13, 99-100.
[61] Paul, 30-32, 88-95.

Rockefeller Institute to finding the how the virus entered the body. Unsuccessful in introducing the virus by mouth, he placed it in monkeys' nasal passages and found that the virus moved into the spinal cord. Flexner theorized that the poliovirus spread in his laboratory animals in the same way that it spread in humans. (However, Flexner had used the *Maca Mulatta* in experimentation, which did not catch polio by mouth, as did human beings.) This preference for laboratory research over epidemiological investigation regressed scientific understanding until the 1930s, when scientists found that the virus entered the body by mouth.[62]

Aside from being regarded as a leading expert on polio, Simon Flexner was also the first director of the Rockefeller Institute for Medical Research. Through his philanthropy, Standard Oil founder John D. Rockefeller provided, as sociologist E. Richard Brown has written, "the largest single source of capital for the development of medical science in the United States, the conversion of medical education, and the development of public health programs in the United States and abroad."[63] Through investing considerable resources into Johns Hopkins and other premier institutions, the capitalist foundations became the "major external influence on American medicine in its formative period from 1900 to 1930."[64] After the federal government took over the funding of medical research during World War II, it continued the precedent set earlier by the foundations in advancing scientific medicine.[65] Indeed, the major achievements in rehabilitation that occurred through federal sponsorship following World War II (which is the topic of most of this dissertation) were indebted to the investment strategy initiated earlier by industrialists such as John D. Rockefeller.

[62] Ibid., 97, 107-108; Oshinsky, 17-19; Daniel Wilson, *Polio* (Santa Barbara: ABC-CLIO, LLC, 2009), 18-21, 34-35.
[63] E. Richard Brown, *Rockefeller Medicine Men: Medicine and Capitalism in America* (Berkeley and Los Angeles: University of California Press, 1979), 104.
[64] Brown, 8; Starr, 121.
[65] Brown, 9, 225-226.

Problematically, as E. Richard Brown commented, the industrialist foundations sponsored laboratory research at the expense of investigations of "the impact of the social, economic, and physical environment on disease."[66] Sociologist Paul Starr has written that the foundations also "impose(d) a model of medical education more clearly wedded to research than to medical practice."[67] The focus on the laboratory made it challenging for physicians to care for children who contracted polio. As distinguished virologist John R. Paul has written regarding Simon Flexner's shortcomings:

> In 1911, neither he nor, for that matter, anyone else had the knowledge to answer the questions that clinicians were constantly asking. How long was a child with poliomyelitis to be considered infectious? How could one explain the apparent lack of contagiousness of the disease? What was the best form of treatment?[68]

By this time, physicians had turned to injecting patients with the serum of a person who recovered from polio to prevent paralysis. Naomi Rogers has written that the use of serum was "part of the new armamentarium of scientific medicine… (which) involved the tools and techniques of laboratory science: culture media, a microscope, sometimes a centrifuge."[69] Injecting patients with serum provided them with antibodies that could be used against bloodborne pathogens. While proven to be effective in treating diphtheria and tetanus, serotherapy's value was ambiguous when used against polio, which microbiologist Vivian Wyatt has noted, was "a much more complicated disease."[70] Once the poliovirus infected the central nervous system, it could no longer be reached by antibodies. In addition, the inflammation that accompanied infection caused much of the damage to the spinal cord, rather than the virus itself. As a result of their limited knowledge, physicians focused instead on treating patients' symptoms

[66] Ibid., 129.
[67] Starr, 121.
[68] Paul, 114.
[69] Rogers, *Dirt and Disease*, 96-104.
[70] H. Vivian Wyatt, "Before the Vaccines: Medical Treatments of Acute Paralysis in the 1916 New York Epidemic of Poliomyelitis." *The Open Microbiology Journal* 8 (2014): 145.

and repairing the virus' damage to the body.[71] And the end of the nineteenth century and the beginning of the twentieth century were marked by major developments in polio rehabilitation.

Orthopedic Surgery Responds to the Challenge

Orthopedic surgeons were well prepared to play a leading role in caring for polio patients when the disease transitioned from its endemic to epidemic phase. By this time, they had acquired over a century's worth of experience treating children with disabilities. Orthopedists specialized in rehabilitating children with congenital disabilities or acquired conditions such as rickets and tuberculosis of the spine; in doing so, they crafted a variety of technologies that reduced deformity and improved function. For example, mid-nineteenth century surgeon Jacob Heine, who identified polio as a central nervous disease, also created splints and braces.[72] By the end of the century, the invention of antisepsis and anesthesia, combined with new surgical treatments, placed orthopedists in a position where they could restore even greater function to paralyzed limbs.[73]

In 1880, surgeons began using a procedure known as tendon transplantation. Used to treat polio and cerebral palsy, it was supposed to have the effect of replacing a paralyzed muscle with a healthy one. The surgeon cut all or a portion of a healthy tendon from its normal location in the human body and transferred it to another location to substitute for a paralyzed muscle in the same region. Orthopedic surgeons also modified the skeletal structure to provide stability to deformed body parts. Between roughly 1880 and 1920, they pioneered methods of removing and aligning bones in the most functional positions. For instance, when polio impaired the plantar

[71] Ibid., 144-147.
[72] Linker, 36-43; Paul, 32, 335-336.
[73] A.R. Jones, "The Evolution of Orthopaedic Surgery in Great Britain:(Section of Orthopaedics)." *Proceedings of the Royal Society of Medicine* 31, no. 1 (1937): 20-21.

flexor muscles in the foot, a person's walking was impaired. When a tendon transfer was unsuccessful at correcting this deformity, surgeons performed a bone fusion. Removing bone and fusing the ends of the bones, the procedure allowed the foot to support a walking movement.[74]

By the time of American orthopedic surgeon Robert Lovett, the foundation for the contemporary orthopedic management of polio was in place. In his *Treatment of Infantile Paralysis* published in 1916, Lovett described three stages of polio. The acute stage existed in the weeks after patients contracted polio. During this period, they were to be isolated and given bedrest. The convalescent stage appeared after the acute stage, during which improvements in muscle function could be introduced through modalities such as splinting, bracing, and massage. The patient entered the chronic stage after two years and at this point, the patient considered tendon transplantation and other orthopedic treatments.[75]

Robert Lovett's work on polio was published during a period in which epidemics were increasing in size and severity in the United States. In 1907, New York witnessed more than 1,000 cases of polio. And between the years 1910 and 1914, outbreaks occurred in the Northeast and Midwest. It was at this time that California had its first statewide outbreaks involving 139 people in 1910 and 531 people in 1912. And in the summer of 1916, New York experienced an epidemic that infected 8,900 residents, paralyzed over 9,000 and took 2,400 lives.[76]

Epidemic polio was shifting from a disease that caused isolated outbreaks into a regular phenomenon in the United States. The next section describes how this transformation intersected with broader national trends in industrialization and public health reform.

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[74] A.J. Ingram "Anterior Poliomyelitis," in *Campbell's Operative Orthopaedics.* Vol. 2, ed. A. Edminson and A.H. Crenshaw (St. Louis: C.V. Mosby Company, 1980), 1418-1560.
[75] Lovett, 29-122; Paul, 338.
[76] Edwards, Clark, and Drake, 7; Paul A. Offit *The Cutter Incident: How America's First Polio Vaccine Led to the Growing Vaccine Crisis* (New Haven and London: Yale University Press, 2005), Kindle edition, locations 107-114; Oshinsky, 5, 16, 19, 22; Julie Silver and Daniel Wilson, *Polio Voices.* (Westport: Praeger, 2007), 2, 15; Wilson *Polio*, 11, 14-15.

Building a Modern Public Health Infrastructure

The earliest municipal health departments in the United States were temporary and formed in response to emergencies, such as the yellow fever epidemics that ravaged the East Coast between 1793 and 1806.[77] During the second half of the nineteenth century, New York and other cities began forming permanent boards of health in response to the unsanitary conditions and disease outbreaks that accompanied urbanization.[78] Progressive reformers' acceptance of scientific expertise as an agent of reform shaped how municipal health departments professionalized in response to infectious disease. Historian of medicine John Warner has referred to the Progressive Era as a time in which the American pubic came to accept "scientific knowledge as authoritative in itself."[79] As historian John Duffy has written, especially during the 1890s, with the new bacteriological understanding of illness derived from the work of Pasteur and Koch, "health departments began a major assault upon contagious diseases." Civic leaders had an arsenal of weapons they could use to defend their cities against microbes and "by utilizing diagnostic laboratories and preventive vaccines and by quarantining the sick in homes or hospitals, attacks were pressed home on diphtheria, scarlet fever, typhoid, and other killer diseases."[80] City governments soon had entire "divisions," each of which was dedicated to specific tests such as "handling contagious diseases, food inspection, plumbing, and other matters." As Duffy continues, "Within a short time these divisions became bureaus, and by World War I municipal health departments began to assume their present form."[81]

[77] John Duffy, *The Sanitarians* (Urbana and Chicago: University of Illinois Press, 1990), 38-47, 57-62, 84-85; Molina, *Fit to Be Citizens*, 5.
[78] Duffy, 119-124, 126-154, 175-190.
[79] Warner, 139-140.
[80] Duffy, 193-203, 205.
[81] Ibid., 205.

New York's disease control strategy during its 1916 polio epidemic exemplified city health departments' powerful roles regulating city residents' health during the Progressive Era. Health Commissioner Haven Emerson aggressively quarantined homes where cases were reported, restricted public gatherings, and sought to improve hygienic conditions through measures such as ordering increased garbage collection. As the city's polio incidence increased and New Yorkers began fleeing *en masse*, local authorities issued travel restrictions to halt the spread of polio outside of the city's border. Problematically, a widespread mistrust of immigrants led officials to single out Italians, whom they believed had brought polio to New York, and use coercion to enforce compliance with mandates. Visiting nurses inspected tenements and reported on unhygienic living conditions, while looking to see if families were hiding children with polio. Health authorities sometimes instituted measures that terrified the families who lived in the tenements, such as using policemen to separate parents from the children that they forced into quarantine hospitals.[82]

Aspects of New York City's 1916 polio response would be experienced in Los Angeles during the following decade, when the county assumed a stronger role in enforcing health across the metropolis. Like the other American mega metropolises of New York and Chicago, Los Angeles' timing of industrialization gave rise to its public health institutions. However, when the county experienced its epidemic of 1912, it did not yet have a full-time health officer. And this was ultimately a product of its delayed timing of industrialization.

[82] Offit, Kindle locations 59-107; Rogers, *Dirt and Disease*, 42-50, 54-57.

Los Angeles Industrializes and Faces Infectious Disease

In comparison with New York and Chicago, Los Angeles industrialized relatively late. While all three regions today occupy "hegemonic positions" in the United States, sociologist Janet L. Abu-Lughod noted that in 1875, a year in which New York began its period of greatest expansion, "the tiny Mexican settlement of Los Angeles… was finally connected to the U.S. network via railroads." Los Angeles' delayed timing was tied to international economic changes. From the American Colonial Era to the early nineteenth century, New York City's location enabled the city to become a "link into a world system that focused increasingly on the Atlantic." Unlike New York, Chicago did not achieve prominence until the first quarter of the nineteenth century. It was then, after a period of canal building and railway construction, that Chicago became "the critical hub of a developing continental system."[83]

During this time in which New York and Chicago were industrializing, Los Angeles was still a Spanish pueblo. In 1822, the ranch town of Los Angeles became part of Mexico. And in 1847, it was incorporated into the United States. During the 1870s and 1880s, the city established a railroad connection to San Francisco and two transcontinental railway terminuses. Such developments helped to unleash the half century of industrialization that enabled Los Angeles to join the ranks of other American urban powers. [84]

The railroads, along with a local booster campaign and a speculative real estate bubble, prompted a massive Midwestern migration into Los Angeles. The city's population increased from 11,183 in 1880 to 50,390 one decade later. In the process, as Abu-Lughod has written, Los Angeles became "fragmented almost from the start into a crazy quilt stitched out literally dozens

[83] Abu-Lughod, 8.
[84] Ibid., 11, 54-55.

of small towns and independently formed subdivisions, nestling in clusters that were not necessarily contiguous."[85]

During this time of explosive development, Los Angeles resembled other American cities whose municipal authorities worked to strengthen public health. Prior to the 1880s, the city created temporary boards of health. However, the combination of the 1880s demographic changes and a local smallpox outbreak prompted it to form a permanent board of health. The city appointed Luther Milton Powers, a private physician who studied at the Washington University School of Medicine, as chief health officer in 1897. The then began staffing its newly formed health department with additional officers.[86]

Like officials in New York, Los Angeles' local authorities blamed immigrants for polio and other infectious diseases. But, in contrast with New York, where most immigrants were white, Los Angeles' immigrants were predominately from China, Japan, and Mexico.[87] Los Angeles historian Jennifer Lisa Koslow has written that "official and quasi-official public health providers looked south towards Mexico as the source of smallpox and other contagious diseases, they looked north towards San Francisco's Chinatown as the source of plague."[88] Residents also blamed nonwhite immigrants for the polio epidemics, from the city's earliest encounter with the disease in 1912 to the final years before Salk's mass vaccination campaigns.

During the first decade of the twentieth century, Los Angeles' population continued to increase and rose 211%. However, the region did not have the necessary public health resources to effectively coordinate disease prevention. While the City of Los Angeles had a permanent board of health in place by the end of the nineteenth century, Los Angeles County did not have a

[85] Ibid., 134.
[86] Jennifer Lisa Koslow, "Eden's Underbelly: Female Reformers and Public Health in Los Angeles, 1889-1932" (Ph.D. diss., University of California, Los Angeles, 2001), 1-5.
[87] Natalia Molina, "Contested Bodies and Cultures., 4-5.
[88] Koslow, 224.

full-time health officer. As Natalia Molina has written, "Previously, the health department's part-time and sole employee had concentrated on conducting inspections of rural hog farms and slaughterhouses. He turned his attention to the county's human residents only when epidemics threatened."[89]

In this context, Los Angeles experienced the 1912 polio epidemic. Assigned the mandate to implement the line of attack against a relentless epidemic, Commissioner Luther Powers was underprepared to respond effectively to a plague that would regularly strike for the next four decades. The city's struggle to achieve a unified front illustrated that Los Angeles had not yet overcome its disparate pattern of development. Modernization would come after the epidemic.

The Summer of 1912

On July 29, 1912, the Los Angeles City Council gave Health Commissioner Powers the "authority…to proceed at his discretion to take such measures as he may deem necessary to stamp out the epidemic of infantile paralysis in this city." Since June 10, Los Angeles had 150 polio cases and 28 deaths. And the number of cases was still increasing. In the absence of a permanent county medical authority, Powers took the initiative in coordinating the epidemic response but faced problems in districts such as Watts, Sawtelle, and San Fernando, which had had no health officers.[90] Powers attributed the Vernon district's leading case rate to its lack of officers and inability to enforce quarantines and other precautions.[91]

Powers instituted a "strict quarantine" and urged families to isolate children under 10 years old. The city also closed playgrounds and its police chief worked with the health

[89] Molina, *Fit to Be Citizens*, 52.
[90] "Council Stands Behind Powers," 30 July 1912, *Los Angeles Times*.
[91] "Infants Face This Danger," 23 July 1912, *Los Angeles Times.*

department to prevent children from gathering in movie theatres and other public venues.[92] Believing that "improper and unsanitary living conditions contribute to (polio's) spread," officials urged residents to clean their homes and kill flies.[93] Authorities also "rushed" to construct a quarantine hospital in Chavez Ravine. Urging "public cooperation," they anticipated that the actual number of polio cases was over 800, but many people did not exhibit paralytic symptoms and thus were "difficult to recognize and control."[94]

Residents soon expressed frustration at the new curtailments placed on everyday life. Powers was incredulous that people refused to follow quarantine orders and attributed civic disobedience to "doubters" and "propaganda in certain quarters against taking proper precautions."[95] Locals also scapegoated nonwhite immigrants and suggested that the epidemic originated in Chinese laundries.[96] Residents especially resented the physicians who cared for the polio patients. A citizen's committee found that locals who contracted polio lived in "premises" that were in "filthy condition," but visiting physicians "allowed such conditions to exist without compelling the sanitation inspectors to give the district special attention."[97]

As cases continued to increase into August, the adjacent town of Brawley instituted a quarantine on all areas west of Colton to ensure that travelers from Los Angeles did not spread the disease across the town's border.[98] Although physicians had not yet reported a case in Long Beach, the city nonetheless instituted a strict quarantine as a precautionary measure. Long Beach officials banned gatherings with over five children in places such as parks, schools, and

[92] "Council Stands Behind Powers."
[93] "Infants Face This Danger;" "Leads War on Invidious Foe," 12 August 1912, *Los Angeles Times*.
[94] "Clean-Up Urged as Preventive," 4 August 1912, *Los Angeles Times*; "Public Asked to Co-Operate," 31 July 1912, *Los Angeles Times*.
[95] "Not All Dead Yet," 29 July 1912, *Los Angeles Times*.
[96] "Chink Laundries Given More Time to Vacate Sites," *Labor Press,* September 1912.
[97] "Hands Doctors Few Hot Shot," 13 September 1912, *Los Angeles Times.*
[98] "Lock the City's Gates," 11 August 1912, *Los Angeles Times.*

churches, and punished violators with jail time and/or a fine of up to $100.[99] The new laws adversely affected local business and within a week, the city council was already considering repealing the emergency measure.[100]

By September 1912, Los Angeles' polio epidemic was nearing its end. Residents fortunately had a few years of reprieve before the state's first period of sustained polio incidence began in 1921. However, when during this time, polio went from being a sporadic phenomenon to a regular part of Angelenos' lives, the metamorphosis occurred within a region that was also transformed.

The Modern 1920s

Our story of how Los Angeles' local polio crisis gave rise to rehabilitation medicine begins during the 1920s, a time when Los Angeles came of age. Like New York City, Los Angeles' ascent was facilitated by its access to overseas commerce. After completing the Panama Canal in 1916, the federal government heavily invested in the Los Angeles' port complex in enabling access to Pacific trade. As the 1920s began, Los Angeles was already vital to the national economy; its total tonnage of foreign exports was superseded only by New York and supplied 20% of the world's oil. [101]

Los Angeles' harbors also began stationing the Navy's Pacific fleet in 1916. In the process, the metropolitan region built a relationship with the armed services that would become exceptionally lucrative during the subsequent half century with the outbreak of conflicts in the Pacific.[102] Completed in 1911, Los Angeles' Pacific Electric Railway Corporation further

[99] "Ordinance to Stop Spread," 13 August 1912, *Los Angeles Times.*
[100] "Health Rule Hurts Trade," 19 August 1912, *Los Angeles Times.*
[101] Abu-Lughod, 151.
[102] Ibid., 141.

connected Los Angeles' communities.[103] And with the annexation of territories in the San Fernando Valley, the metropolitan region's geographic area became colossal in size. Highway construction enabled Los Angeles' growing numbers of workers settled outside of the downtown area to commute by car to the oil refineries and Goodyear tire plant. The new settlers and their families finally had access to an adequate supply of water following the completion of Los Angeles aqueduct in 1913. And in 1915, the film industry settled in Hollywood, giving rise to a local industry with global cultural influence.[104]

The accompanying population changes further increased the incidence of infectious disease. And over the course of his career as the head of the county's health department, John Larabee Pomeroy modernized the county health department so that it could respond to the health challenges that accompanied Los Angeles' continued urban growth. Pomeroy became the county's first full-time health officer in 1915 and under him, its health department "grew from a one-man operation to an agency staffed by six hundred employees responsible for overseeing thirty-six cities."[105]

The 1920s were also a decade during which Los Angeles ranked second nationally in terms of its proportion of nonwhite residents, which was largely due to an influx of Southern Blacks and the immigration that followed the Mexican Revolution.[106] Local journalist and historian Carey McWilliams called Los Angeles the nation's "racial frontier" because of the "quadrilateral" race relations between White, Black, Asian, and Mexican Americans.[107]

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[103] Ibid., 47-48.
[104] Jules Tygiel, "Introduction," *Metropolis in the Making: Los Angeles in the 1920s*., ed. Tom Sitton and William Deverell. Kindle ed. (Berkeley: University of California Press, 1999), 1-3; Abu-Lughod, 147-154.
[105] Molina, *Fit to Be Citizens,* 51-54.
[106] Tygiel, 1-2.
[107] C. McWilliams, "Critical Summary," *Journal of Educational Sociology* 19, no 3 (1945): 194.

While officials did not enforce racial segregation through Jim Crow Laws, racial discrimination nonetheless became a prominent part of city life in the 1920s. Unlike previous migrants who were racially and ethnically diverse, many of the newcomers were a homogenous demographic and stemmed from rural, white, Protestant midwestern communities. As historian John Laslett has written, their "values of small town life" were "antithetical both to the lifestyles and to the Catholic faith of the Mexicans, the Irish, and the eastern European immigrants, as well as to the Buddhist values of the Japanese," and in the process of settling, they created "geographical barriers between themselves and all people of color."[108] For instance, employers routinely refused to hire blacks and restrictive covenants effectively segregated housing across the county's landscape.[109] John Pomeroy also segregated local health centers because he believed that Mexicans had unhygienic practices that could compromise white residents' health.[110]

Between the 1920s and the 1940s, local leaders periodically blamed Mexicans for spreading polio. However, polio was also different from other diseases that historically carried stigmas by virtue of infecting the socioeconomically disadvantaged. As David Rothman noted, polio "disproportionately struck children raised in hygienic, uncrowded, and, epidemiologically speaking, protected environments." Residents might have assigned nonwhites responsibility for polio outbreaks, but those who were visibly disabled were predominately middle-class white children.[111] Especially during the Progressive Era, a time when, as Naomi Rogers maintained, "the child seemed a symbol of great hope for a eugenic, efficient and hardy future," polio depleted a treasured national resource.[112] In the context of this era, during which the federal

[108] John Laslett, "Historical Perspectives: Immigration and the Rise of a Distinctive Urban Region, 1900-1970," in Roger Waldinger and Mehdi Bozorgmehr, *Ethnic Los Angeles* (Russell Sage Foundation, 1996), 50.
[109] Molina, 90; Tygiel, 8.
[110] Molina, *Fit to Be Citizens*, 90.
[111] D.J. Rothman, 55. For instance, Rothman notes that the national polio incidence amongst whites was 7.2/100,000, in contrast to the lower rate among blacks, which was 3.3/100,000.
[112] Rogers, "Screen the Baby," 38.

government established the nation's first child welfare programs, cultural values that esteemed child health assigned polio a privileged status among diseases, both nationally and in California. The prioritization of child health during this time also influenced California's establishment of is contemporary social safety net.

Progressive Reform and National Welfare

Many of the first initiatives that expanded the American welfare state originated in the context of the Progressive Movement. Reformers left a legacy of programs for designated populations, such as disabled soldiers, mothers, and children. The local polio crisis of the 1920s and 1930s made clinical rehabilitation, a product of progressive reform, into the substance of welfare policy in California. In the aftermath of the epidemics, the state had to fund care for chronic polio patients. In appropriating rehabilitation as the solution to this problem, officials and medical leaders created new programs that became far reaching in their effects.

In comparison with European powers such as Germany, which developed centralized welfare systems, the American government had a smaller role in administering assistance. Facing the threat of socialism at home, German Chancellor Otto von Bismarck cemented workers' loyalty through creating three programs that addressed disability and sickness in the workforce: an accident insurance program, a national health insurance program, and a pension system for disabled and elderly workers.[113] While Germany implemented national welfare reform at the end of the nineteenth century, the United States remained decentralized; as American historian Michael Katz has written, "Neither relief nor social insurance are among the responsibilities

[113] Hughes, 471; Daniel T. Rodgers, *Atlantic Crossings* (Cambridge: Harvard University Press, 1998), Kindle edition, 223.

assigned to the national government by the Constitution, and of course, all powers not directly granted to the national government are reserved to the states."[114]

American counties and cities provided services through a complex array of institutions, including outdoor relief, almshouses, poor farms, and charities, which differentiated relief applicants into distinct groups depending upon whether administrators deemed them to be "socially worthy." The American hospital originated within this system. Historian of medicine Charles Rosenberg has written that "One of the fundamental motivations in founding America's first hospitals was an unquestioned distinction between the worthy and unworthy poor, between the prudent and illustrious objects of a benign stewardship and those less deserving Americans whose own failings justified their almshouse incarceration."[115]

Unlike Bismarck, progressive reformers used what historian Michael McGerr has described as "association and the state to end class conflict and the other problems of industrial capitalism."[116] In doing so, they sought to preserve Victorian familial structure against unsettling urban changes. Commenting on the significance of progressive welfare institutions, Beth Linker has written, "Child labor laws, maternal health programs, mothers' pensions, and workmen's compensation all worked toward the end of protecting the American family by encouraging a safe and well-paying workplace for the father, allowing mother and child to remain in home."[117]

Referring to the "broad array" of welfare programs that the progressive reformers established, sociologist Theda Skocpol has written that between 1900 to the beginnings of the 1920s, "America came close to forging a maternalist welfare state, with female-dominated public

[114] Katz, 225.
[115] Charles Rosenberg, *The Care Of Strangers* (New York: Basic Books, 1987), 19.
[116] McGerr, 69.
[117] Linker, 31.

agencies implementing regulations and benefits for the good of women and their children."[118] Male orthopedic surgeons contributed to this history through facilitating how the welfare state responded to disability among male workers. Indeed, rehabilitation medicine culminated from a collaboration between female progressives and male orthopedists.

Female Progressives and Male Orthopedists

The female progressives who established the nation's family-oriented assistance programs were motivated by a Late-Victorian ideal that women had a natural maternal gender role, which could be applied in social reform.[119] Social worker Rheta Chide Dorr exemplified this gendered idealism in a passage from her 1910 book *What Eight Million Women Want.* She wrote:

> Women's place is in the home…But home is not contained within the four walls of an individual home. Home is the community. The city full of people is the Family. The public school is the real Nursery. And badly do the Home and the Family and the Nursery need their mother…[120]

Female reformers' activism contributed to the establishment of federal programs that have made contributions to child health until recent times. Lillian Wald and Florence Kelly first came up with the idea of a national agency dedicated to promoting child welfare in 1903. After years of lobbying by anti-child labor organizations and women's groups, Theodore Roosevelt called for the 1909 White House Conference on the Care of Dependent Children, which issued a

[118] Theda Skocpol, *Protecting Soldiers and Mothers: The Political Origins of Social Policy in the United States* (Harvard University Press, 1995), 2.
[119] Ibid., 353. Skocpol has written that settlement workers often thought of themselves as "public mothers" and believed that women "had special proclivities for moral decision-making and civic activity; thus women were the logical ones to lead the nation toward new social policies." For a historical example of Skocpol's point see also Rheta Chide Dorr, *What Eight Million Women Want* (Boston: Small, Maynard, and Company, 1910), 327-330. Dorr asserted that women's work is race preservation, race improvement, and who opposes her, or interferes with her, simply fights nature…" and from the efforts of women working with men, she imagined a city without slums, sweat shops, infant mortality, and poverty.
[120] Dorr, 327-330.

proposal supporting their idea. Roosevelt's opening words revealed a valuation of child health based on their future role as citizens: "There can be no more important subject from the standpoint of the Nation than (child welfare)… because when you take care of the children you are taking care of the Nation of tomorrow; and it is incumbent upon every one of us to do all in his or her power to provide for the interests of those children whom cruel misfortune has handicapped at the very outset of their lives." After it passed Congress, President Taft signed legislation establishing the Children's Bureau into law on April 8, 1912.[121]

Orthopedic surgeons also became involved in child welfare. This is not unexpected, given that they could recognize from firsthand experience that their work had the potential to help disabled males become integrated into the workforce. As Beth Linker has written, during the Progressive Era, orthopedists began using "employment as the gauge for medical efficacy." They instituted vocational education programs and collected data regarding their patients' employability after discharge to attract investment in their facilities.[122] Linker commented that orthopedists "considered themselves to be part of an important social reform movement- a movement intended to conserve both physically deformed bodies and the structures and functions of a wage-labor economy."[123] This made them into the female progressives' allies in designing a welfare system for soldiers upon World War I's outbreak.

On October 6, 1917, Congress passed the War Risk Insurance Act (WRIA). Crafted by Julian W. Mack, a federal judge and child welfare reformer, and Children's Bureau director Julia Lathrop, the WRIA created a federally administered disability and life insurance program, as

[121] Martha Eliot, *Four Decades of Action for Children* (Washington D.C.: U.S. Department of Health, Education, and Welfare, 1956), 1-33, 87; U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau, *The Children's Bureau Legacy: Ensuring the Right to Childhood* (Washington, D.C.: Government Printing Office, 2013), 15- 22.
[122] Linker, 49.
[123] Ibid., 51.

well as an injury compensation program. The legislation also required that the government provide rehabilitation services to all disabled soldiers. Within the WRIA program, rehabilitation medicine served a social objective consistent with that of other progressive family-oriented welfare programs, such as laws outlawing child labor and widows' pensions. Mack advocated for rehabilitation because it preserved a proper family structure, with men supporting the family as the head of the household.[124]

The United States Army also established the Division of Special Hospitals and Physical Reconstruction to provide rehabilitation services on the war front. Staffed by orthopedic leaders like Robert Lovett, who simultaneously treated polio patients, the Army rehabilitation units inspired a unique, team-based, multidisciplinary form of medicine, which resembled the approach that later defined the Physical Medicine and Rehabilitation specialty. Rehabilitation advocates built on congressional support for the soldier's program in proposing a federal rehabilitation program for civilians, which passed in 1920 as the Civilian Vocational Rehabilitation Act (CVRA). The following year, Congress passed the Sheppard-Towner Maternity and Infancy Act. With the enactment of the 1921 Sheppard-Towner Act, the Children's Bureau assumed administrative responsibility for a federal program that helped states to establish infant and maternity health centers. The program was influenced by the public system of infant and maternity clinics in New York that were established by Josephine Baker, an influential reform-minded physician.[125]

While both the civilian Vocational Rehabilitation Act and the Sheppard-Towner Act were steps towards a more comprehensive welfare state, both programs' effects at the population level were ultimately limited. In contrast to the programs for soldiers and veterans, the CVRA

[124] Ibid., 31-32.
[125] Linker, 6-7, 59, 148; Meckel, 134-140; Sheila Rothman, *Woman's Proper Place* (New York: Basic Books, 1978), 139.

specified that money could only be allocated towards vocational rehabilitation. As Linker maintained, "The CVRA passed with ease precisely because it did not include health insurance. As a program controlled and operated by educators and social scientists, vocational rehabilitation under the CVRA appeared to be the antithesis of welfare, purportedly making individuals independent of the state, not dependent on it."[126] Linker continued: "the end result was clear: the United States would become a nation that provided both medical and vocational rehabilitation to its disabled soldiers (a system that continued after the First World War thorough the Veterans Administration) while granting only the latter to its nonmilitary disabled citizens."[127]

While female progressives and male physicians initially coexisted without serious conflict, a battle erupted over whether health services could be delivered by the Children's Bureau or whether they should be confined within the private physician's scope of practice.[128] And this was a was a product of the 1920s, a time that witnessed what Paul Starr described as private physicians' "consolidation of professional power."[129] Historians have regarded private physicians' political opposition to the Sheppard-Towner Act as an important factor that

[126] Linker, 150.
[127] Ibid. 149.
[128] For example, see prominent obstetrician George Kosmak's speech in the Sheppard-Towner Act's Congressional Hearings. Kosmak asserted, "I object to a strictly medical problem being turned over to lay organizations for attempted solution." As he asserted: "The superintendence of prenatal care centers is conducted almost entirely by lay agencies. In many cases the prenatal-care centers are operated independently of any hospital connections. In many cases I find that there is no physician connected with the actual prenatal work. It is done almost entirely by nurses, who in many cases I regret to say, have not been properly trained to appreciate the character of this form of work." *Child Welfare Extension Service*, Hearings before the House Committee on Interstate and Foreign Commerce, 70: 2, Washington D.C., 1929, 126-127. The California Medical Association likewise frequently mobilized private physicians in attacking the Sheppard-Towner Act. See "Lay Domination in Public Health Work-The Sheppard-Towner Act Example," *California and Western Medicine* 1929 Jan; 30(1): 53. <http://www.ncbi.nlm.nih.gov/pmc/issues/137170/> Accessed 05 28, 2010; W.C. Woodward "Further Fallacies of the Sheppard Towner Propaganda" *California and Western Medicine* 1926 July; 25 (1) p. 33. <http://www.ncbi.nlm.nih.gov/pubmed/18740031> Accessed 05 28, 2010.
In 1924, the CMA journal name changed from *California State Journal of Medicine* to *California and Western Medicine.* California Medical Association, *CMA Mission and History*, http://www.cmanet.org/publicdoc.cfm/10/1 (accessed 05 28, 2010
[129] Starr, 260.

explained its failure to be renewed after 1929.[130] And the demise of its maternal health program undermined the Children's Bureau's role in initiating welfare programs for the general population.[131]

As public health historian Marian Moser Jones has written in her history of 1920s service clubs, "The reactionary hostility towards maternalistic child welfare campaigns paved way for groups like the Elks to enter child welfare."[132] In contrast with female reformers, service clubs, such as the Elks, Rotary Club, and Easter Seal Society "succeeded where the maternalists failed because these businessmen-turned-welfare workers were able to reach into their pockets more deeply, and raise money more quickly than maternalist groups …"[133] Despite the changing times, reformers left an impact on chronic disease management in Los Angeles County, particularly in their implementation of rehabilitation and worker's compensation.

The First Epidemic Period Begins

Epidemiologists from the California State Department of Public Health noted that California entered its first of the two "periods of rising (polio) incidence" in 1921.[134] When assessing the local incidence of polio in Los Angeles during the beginning of this cycle, one detects a slight increase in the caseload, when compared with the years before the epidemic period began. For example, in 1919, there were a mere 7 polio cases in the city, none of whom

[130] Meckel, 216-217; S. Rothman, 151; Skocpol, 515-522; John Sutton, "Social Knowledge and the Generation of Child Welfare Policy in the United States and Canada." In Dietrich Rueschemeyer and Theda Skocpol (Eds.), *States, Social Knowledge, and the Origins of Modern Social Policies*, 201-230 (Princeton: Princeton University Press, 1996), 210-211.
[131] Skocpol, 517, 535.
[132] Jones, 28.
[133] Ibid., 31.
[134] Edwards, Clark, and Drake, 7.

died.[135] In 1920, there were 14 polio cases and 2 deaths.[136] In 1921, polio cases had increased to 17, with 4 deaths.[137] By 1922, polio cases increased to 22. And in 1924, authorities documented 75 cases, which in comparison with the previous year, represented an increase of 60 cases.[138] At the end of July 1925, after authorities reported 21 new cases in the county in a single week, Pomeroy issued clear guidance to the public for dealing with a disease which had not yet necessitated drastic measures, but was "still increasing in prevalence." As Pomeroy advised:

> …we urge people to continue their ordinary routine, but submit the following simple suggestions in order to avoid danger:
> 1) Keep your children of all ages out of public places and public gatherings unless they are under careful supervision
> 2) Keep children outdoors outside as much as possible, but do not permit them to run at large.
> 3) Under no circumstance allow visiting with children who are ill… call a physician at once if your child is sick with an acute illness.[139]

At the state level, California State Board of Health Secretary Walter M. Dickie sent a letter to all California physicians urging them to institute measures, such as isolating all family members and any contacts of reported polio cases for two weeks and quarantining the infected for three weeks. Referring to polio patients who died of respiratory failure after the virus infected the brainstem, Dickie noted that "many severe types of paralysis are occurring, and the percentage of fatal cases is very high…" Dickie continued: "Physicians are calling these cases 'bulbar paralysis…'"[140]

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[135] Annual Report Los Angeles City Department of Health 1919, page 22, File Folder: Special Collections, University of California Los Angeles, Los Angeles, California.
[136] Annual Report Los Angeles City Department of Health 1920, page 7, File Folder: Special Collections, University of California Los Angeles, Los Angeles, California.
[137] Annual Report Los Angeles City Department of Health 1921, page 10, File Folder: Special Collections, University of California Los Angeles, Los Angeles, California.
[138] Annual Report Los Angeles City Department of Health 1922, page 22; Annual Report Los Angeles City Department of Health 1924, page 14, File Folder: Special Collections, University of California Los Angeles, Los Angeles, California.
[139] "Report on Paralysis Given Out," 26 July 1925 and "Statement Drafted on Paralysis," 29 July 1925, *Los Angeles Times.*
[140] Twenty-ninth Biennial Report of the State Board of Public Health of California for the Fiscal Years from July 1, 1924, to June 30, 1926. (Sacramento: California State Printing Office), 42-43.
< https://www.google.com/books/edition/Biennial_Report/ATQiAQAAIAAJ?hl=en&gbpv=0> Accessed April 28, 2020.

While in July 1925, officials reported 64 cases, the epidemic began declining thereafter, but Pomeroy warned that:

> … this decrease must not be construed by the public that the outbreak of infantile paralysis has passed. It is almost invariably the rule that when schools open there is for the first couple of weeks a slight increase of every communicable disease… This does not mean that the people who have been so careful during the past two months must become careless of their habits or of the management of their children.[141]

The 1927 Polio Epidemic and the Crippled Children's Program

The 1927 polio epidemic began along the Pacific Coast in January and traversed the nation eastward before returning west. By the time that the epidemic ended in May 1928, it caused 1280 cases and 228 deaths in California.[142] On November 24, 1927, the California legislature passed the Crippled Children's Act, which set in motion a survey to assess aftercare needs in the state. The California Public Health Department's 1926 to 1928 Biennial Report stated that "the supervisor of crippled children visited each county where poliomyelitis had been reported in greatest numbers and made arrangement for the care and treatment of children who were crippled by this disease."[143]

Praised at the time by the State Board of Health Director Walter M. Dickie as "a boon to poor children left paralyzed by the recent infantile paralysis epidemic," the Crippled Children's Act created a county-financed system of healthcare delivery for children under the age of 18 whose parents could not afford their medical treatment.[144] For a family to receive assistance, parents appeared in court, where they were investigated by a judge or a community agent. If parents qualified, they received a certificate of need, which enabled them to have their child's

[141] "Report on Paralysis Given Out," 16 September 1925, *Los Angeles Times*.
[142] Thirtieth Biennial Report of the Department of Public Health of California for the Fiscal Years from July 1, 1926, to June 30, 1928. California Department of Public Health, 9. <https://www.google.com/books/edition/_/ATQiAQAAIAAJ?hl=en&gbpv=0>Accessed April 28, 2020.
[143] Ibid.
[144] "Dickie Declares New Child Law Boon to Needy," 25 November 1927, *Los Angeles Times*.

medical bills covered by the state. Aside from polio, children with other infectious conditions such as meningitis, and physical disabilities, including rickets, were eligible for coverage.[145]

Given the state of medical knowledge at the time, it made sense that California's first assistance program for pediatric patients formed in response to polio and that it also served children with meningitis. As child health expert Ruth Stein has written,

> Earlier in the century, far fewer children with chronic health issues survived for prolonged periods except for those with relatively stable sensory, motor, or neurological conditions. Most organ and systemic impairments had not been very treatable and malignancies were usually fatal in a relatively short period. In addition, many infectious diseases, such as polio, meningitis, and measles, produced long-term impairments. Thus, from a public policy perspective, it is not surprising that the early programs to provide assistance to these children and their families were called the Crippled Children's Programs. They originally served children with fixed impairments, such as orthopedic, motor, cognitive, and sensory problems, rather than children with more labile medical conditions.[146]

1928 was also an important time as during this year, engineer Philip Drinker invented a technology that transformed medical care for respiratory polio, which was the most "labile" form of infantile paralysis. The iron lung was a human sized tank that encased the patient, inducing respiration using flexible bellows that created negative air pressure. Drinker's invention of the iron lung gave rise to a new chronic patient population which had previously died from respiratory failure.[147]

Service clubs had an important role in ensuring that children who needed iron lungs were able to access them. In the years prior to the NFIP emergency respiratory center program, the Elks shipped iron lungs between local lodges throughout the nation to save polio patients.[148] By

[145] Ibid.; Letter to Ms. Burdire, 7 December 1937, File Folder: RG 102 Box 628 Children's Bureau 1933-1938, National Archives, College Park, Maryland.
[146] Stein, 880.
[147] D.J. Rothman, 42-44.
[148] For example, in October 1939, an iron lung was shipped from Los Angeles to Phoenix to assist a 23-year-old with respiratory paralysis on account of polio. "Iron Lung Rushed to Phoenix Youth," 21 October 1939, *Los Angeles Times.*

the late 1940s, the Elks had become "the largest purchaser of polio-fighting iron lungs in the country" and distributed respirators to the National Foundation for Infantile Paralysis.[149]

While much of the local epidemic response during this period was characterized by altruism, polio also brought out problematic aspects of life in Los Angeles. In 1929, federal and local officials deported more than 80,000 Mexicans out of Los Angeles, whom they blamed for the Depression.[150] Leaders also proposed that Mexico was the source of that year's polio outbreak. Historian Natalia Molina investigated the evidence that Mexican residents imported polio and found that the report came from an American who visited Sonora and found that there were numerous funerals for polio patients. Public officials afterwards used his observations as evidence that Mexicans imported polio.[151] Records of the Depression-era deportations suggest that Mexican children with polio encountered a less accommodating system than that which served white children. For instance, among those deported during this time was a seven-year-old girl with polio.[152] African American Hollywood actress Juanita Moore's account of contracting polio sheds insight into nonwhite polio patients' differing experiences of the local healthcare system. Moore's parents migrated from Greenwood, Mississippi to South Central at the end of World War I and she contracted polio in 1929 or 1930. Her account in the following passage taken from an interview not only provides insight into black polio patients' experiences of racism, but suggests that nonwhite families used alternative remedies for polio:

> One day, Juanita felt unwell. The illness worsened, she developed fever, a severe headache came on, her neck and back grew rigid, and then came the failure of her legs. At age fifteen, she was stricken with infantile paralysis… "Doctors didn't care anything about blacks in those days," she declared some seventy-five years later, suggesting that she recovered in spite of their ministrations. Her mother and older sisters cared for her.

[149] "March of Dimes Given Iron Lung by Elks Group," 7 February 1949, *Los Angeles Times*.
[150] Abu-Lughod, 241.
[151] Molina, "Contested Bodies and Cultures," 154-155; Molina, *Fit to Be Citizens,* 36.
[152] Molina, *Fit to Be Citizens,* 139-140.

> Juanita recalls her mother rubbing her legs with olive oil while reassuring her, "You're going to walk, Juanita. You will walk!"[153]

The incidence of polio in Los Angeles County continued to rise in 1930, when it shot above 20/100,000 cases for the first time.[154] In the year following this epidemic, officials visited 1,060 children who had contracted polio between 1927 and 1931. Their report provided a description of the financial problems that families encountered after the epidemic. It also demonstrated that officials and businessmen were actively building a safety net for polio patients. Upon visiting homes, officials found that parents were "grateful" to speak with them, as many of them could no longer pay their children's medical bills during the Great Depression and discontinued their treatment. Officials noted that service clubs, such as Rotary and Lions, provided transportation to orthopedic clinics. The study also recommended: "All cases not eligible for treatment in the County Health Centers and who cannot pay private physician fees, be filed on under the Crippled Children's Act." It then noted that this work was to be accomplished through the county's cooperation with the local National Society for Crippled Children chapter (the organization that would later become the Easter Seals).[155]

The report showed that for county officials and service club members, providing access to rehabilitation ultimately served the state's interests by giving children the potential to become working citizens. The report touched upon this significance by including the following quote by Franklin Roosevelt: "It costs money to rehabilitate crippled children. If we spend $2000 in taking a child who can only crawl around on all fours, and give that child an education, teach him or her to stand erect, to walk, to get around, yes, perhaps with crutches; if we teach that child a useful

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[153] Sam Staggs, *Born to Be Hurt: The Untold Story of Imitation of Life*. (New York: St. Martin's Press, 2009), 25, 27. < https://books.google.com/books?id=dYVOlGOv9jEC> Accessed August 22, 2023.
[154] Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[155] Los Angeles County Department of Health Annual Report 1931-1932, File Folder: Special Collections, University of California Los Angeles, Los Angeles, California.

occupation… that child will bring back to the community, to the state, to the nation, in the course of a normal life not the $2000 that we have spent, but $20,000, $30,000 or $50,000 in good hard earned cash."[156] Echoing the language of the report, Martin Mills, chief of California's chapter of the National Society for Crippled Children, wrote less than a decade later:

> The physical rehabilitation of the crippled child is of the greatest importance to the child, the family, the State and the Nation. To the child it… assures him of an equal opportunity to develop into a self-supporting, valuable citizen. To his family it means the lifting of a heavy burden of care… To the State and Nation it means the salvage of a useful, productive citizen who otherwise might have been a *public charge* for the rest of his life. Casting all sentiment aside, the rehabilitation of crippled children is a business proposition that pays huge dividends.[157]

Such a clinical approach, which understood medicine's value in relation to national economic interests, was previously applied by orthopedic surgeons in their hospitals for crippled children and US Army rehabilitation units. In the next section, we will see how it became appropriated into Los Angeles' polio response when the county faced the devastating 1934 epidemic.

The 1934 Epidemic

On December 7, 1930, actress Mary Pickford dedicated the cornerstone of Los Angeles' new County Hospital building. The county decided to construct the hospital during the 1920s in response to increasing local rates of infectious diseases. Its design exemplified the infectious disease era; as Michael Cousineau and Robert Tranquada have written, "its vertical stacks and wards (were) separated by stairwells and elevated to reduce the flow of patients, visitors, and staff, with the spread of infectious agents." However, within months of the hospital's opening in

[156] Ibid.
[157] Statement before the Crippled Children Services Lay Advisory Committee, November 25, 1940, File Folder: Activity Reports 1939-1941, California State Archives, Sacramento, California.

December 1933, a new epidemic arose in Los Angeles County and struck the nurses and physicians who worked within the hospital walls, undermining at its very heart, the county's effort to control infectious disease.[158]

Officials began anticipating the 1934 epidemic at the beginning of May, when they noticed that "by May 1 there (were) 61 cases as against 20 for the corresponding period in 1933." John Pomeroy arranged a meeting with health officers from each of Los Angeles' 12 districts and called for the formation of a Poliomyelitis Advisory Board, consisting of local medical authorities, to help him plan the county's disease control strategy.[159] At the city level, the Health Commission gave officer Luther Milton Power's successor George Parrish "full authority" to implement "any necessary steps for the curbing of poliomyelitis" and he and Pomeroy immediately reached out to local schools to coordinate preventive measures.[160] While polio cases, for the most part, were widely distributed throughout the county, early in the epidemic, the Ruth Protective Home, which provided shelter to women and children, had "a sharp focus" in new cases.[161] By the end of May, the County banned all elementary school assemblies and mandated that graduate services be conducted outdoors in secondary schools with known cases. The county quarantined patients at County Hospital and appropriated funds towards making serum from patients' blood in the hope that the treatment could forestall any further damage inflicted by the epidemic. The monthly total of cases in May was 155 and by mid-June, the epidemic had already infected 407 people for the month.[162]

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[158] Cousineau and Tranquada, 607-608.
[159] J.L. Pomeroy and G.H. Roth, "Poliomyelitis, 1934." *American Journal of Public Health* (1934): 1201-1203.
[160] Guide to the Los Angeles Department of Health Publications Collections," Special Collections & Archives, Oviatt Library, California State University, Northridge. <https://oac.cdlib.org/findaid/ark:/13030/c82n54bq/entire_text/> Accessed August 22, 2023; "Health War Ordered on Paralysis," 18 May 1934, *Los Angeles Times.*
[161] James P Leake et al., "Epidemiology of Poliomyelitis in California, 1934," (American Public Health Association, 1934). , 1205.
[162] "Disease Fight Funds Sought," 31 May 1934, *Los Angeles Times;* "Health Charge Filed on Pair," 13 June 1934, *Los Angeles Times.*

After surrounding communities reported polio cases, the city of Ontario closed its schools and prematurely ended the academic year just as students were preparing for graduation.[163] Pomeroy put regulations into effect for summer camps and mandated that all children be medically examined and undergo daily monitoring for symptoms. Pomeroy and the County Health Department also initiated a massive public informational campaign and distributed 24,000 leaflets to leaders of churches, clubs, local businesses, and other organizations.[164] Individuals who did not comply with county public health ordinances suffered legal consequences. For example, the county charged parents of a child with polio for violating home quarantine laws after their other children were reported playing in a neighbor's apartment, in which three people subsequently contracted polio.[165]

As the epidemic worsened, administrators found that County Hospital lacked the necessary infrastructure to appropriately respond to its increased patient load. Assistant Superintendent Olson commented:

> The prevailing epidemic of poliomyelitis (infantile paralysis) has made it necessary to not only open four floors of the new hospital building not previously equipped for the care of patients, but several of the old buildings also, increasing the territory covered by utility workers, laundry and linen room helpers, kitchen maids, kitchen porters and dishwashers; also property workers used in the transferring of, and accounting for, movable equipment.[166]

In addressing the increased demand for care, County officials reached out to administrators of New Deal programs for assistance. The State Emergency Relief Administration (S.E.R.A.), a program initiated to increase access to public health nursing services during the Depression, provided 50 nurses, 28 orderlies, and 22 attendants to General Hospital to address their shortage

[163] "New Cases of Disease Reported," 5 June 1934, *Los Angeles Times*.
[164] "Disease Study Assured City," 8 June 1934, *Los Angeles Times*.
[165] "Health Charge Filed on Pair," 13 June, 1934, *Los Angeles Times*.
[166] Emergency Increase of Existing Items, June 22, 1934, File Folder: HOBP12-14, Los Angeles County Board of Supervisors, Los Angeles, California.

in personnel.[167] In writing the program's administrators, officials explained that their need for additional staff came out of a new, pressing situation that had arisen within County Hospital. Executive Superintendent Norman Martin commented:

> We are trying to keep the poliomyelitis epidemic confined to this locality and believe we can succeed if timely assistance can be had. At present we have 30 nurses and 5 doctors down with the disease and this handicap, along with lack of other help due to shortage of funds, makes the situation particularly difficult. In accordance with our usual policy we have endeavored to avoid publicity, hoping to keep the general public from being too alarmed, but the facts are such that the seriousness cannot be discounted.[168]

City Health Officer George Parrish also contacted the Rockefeller Foundation and requested that they send a team to Los Angeles to undertake scientific investigation. Virologist John R. Paul from the Yale Medical Institute, and Leslie T. Webster, assistant to Simon Flexner at the Rockefeller Institute, worked in city laboratories to isolate the poliovirus and find a means of preventing disease transmission.[169]

Researchers noted that the 1934 epidemic had unique features, which left some to consider whether they were dealing with another poliovirus strain or even a different disease. Many patients presented with diarrhea and "in some cases, the degree of abdominal pain, distension, and vomiting was quite alarming." Clinical researchers also noted a high caseload among essential workers at General Hospital. 200 physicians, nurses, and other staff members contracted polio and "these patients were, on average, far the sickest." While it was atypical for polio to have such a high communicability, the county's lack of preparation for the epidemic

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[167] Ibid.; Katz, 226-227; Klein, 117; Barbara Melosh, *Work Culture and Conflict in American Nursing* (Philadelphia: Temple University Press, 1982), 144-145. < https://books.google.com/books?id=BxMyXpWFtYsC> Accessed August 23, 2023; S. Stein-Roggenbuck, "A Contest for Local Control: Emergency Relief in Depression-Era Michigan." *Michigan Historical Review* 26, no. 2 (2000): 90–125. https://doi.org/10.2307/20173860.

[168] Norman R. Martin to Mr. Frank McLaughlin, 19 June 1934, File Folder: HOBP12-14, Los Angeles County Board of Supervisors, Los Angeles, California.

[169] "Disease Study Assured City," 8 June 1934, *Los Angeles Times*; "Scientists Arrive for Research," 15 June 1934, *Los Angeles Times.*

likely made the workers more susceptible to contracting polio. Polio struck suddenly and General Hospital lacked the physical space and the appropriate number of nurses to handle the overwhelming numbers of patients. R.W. Meals, Vernon Hauser, and Albert Bower reported that "Nurses and doctors worked long hours in crowded rooms" and that fatigue caused increased polio transmission among healthcare workers.[170]

Leslie Webster characterized the reaction to the epidemic in the following words:

> People are hysterical, the interns, nurses, and helpers are scared to death and have one or two cases among themselves each day. 50 admissions every day-everyone strained and worried. We, ourselves, are only just now commencing to sleep nights-nervous tension.[171]

One of the nurses who contracted polio while working at General Hospital gave insight into the situation in the communicable disease (CD) unit and the altruism of the healthcare workers who put themselves at risk:

> Every day the number stricken mounted until the Wards were full, the admitting room was overflowing with those who had Polio and those who possibly had it. Blood transfusions were thought to be specifically helpful so we were trying to find donors and transfuse all Polio Patients. Every third day. All Nurses were working 10 to 18 hours every day. They were unable to get enough Nurses who knew C.D. Technique to replace the ones who had been stricken. I had lunch with many of the girls who got up from the table and were admitted as patient immediately afterwards.[172]

The high incidence of polio transmission within the hospital created problems managing the disease at the county level. As the only institution handling all of Los Angeles' infectious cases, County Hospital struggled to find enough workers to care for the city's polio patients. Hospital administrators noted: "to cope with this emergency it was necessary to employ a large

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[170] J.F. Kessel, "Discussion of Poliomyelitis Papers" *American Journal of Public Health* 26 (1936): 145-147;
R. W. Meals, V.F. Hauser, and A.G. Bower. "Poliomyelitis—The Los Angeles Epidemic of 1934: Part I." *California and Western Medicine* 43, no. 2 (1935): 123-125.
[171] Paul, 216.
[172] Attention Mr. and Mrs. America, 25 December 1939, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

amount of extra help... At $3.20 per day." County officials worked to recruit hundreds of additional staff- ranging from assistant nurses to laundry helpers, and increased essential workers' salaries "in order to retain these workers who are absolutely indispensable during the present emergency."[173]

Peaking in June, the polio incidence in Los Angeles County subsequently decreased and by its end, the epidemic infected 2,129 people.[174] By August, the county had to deal with a new problem: the need to provide appropriate medical care to those disabled by polio. In mid-August, officials established orthopedic clinics in Alhambra and the Belvedere District, which had the highest polio incidence, to maximize access to rehabilitation. The clinics served 600 patients; 400 made "complete recovery." However, 156 patients did not "recover" and the county transferred those patients to Orthopedic Hospital, General Hospital, and Children's Hospital.[175] As we will see, in the subsequent years, the county also financed care for many of these patients in convalescent homes scattered throughout the metropolitan area.

Not only did polio test the county's municipal system that spring and summer, but after appearing in Los Angeles, it reached epidemic proportions in the Bay Area followed by Fresno County.[176] Statewide, 1934 was the apex of the first period in which polio became a regular part of Californian's lives. And the county's ordeal did not end in 1934. At the end of the decade, many of the essential workers who contracted polio still struggled to achieve compensation for their losses.

[173] Emergency Increase of Existing Items- Salary Ordinance 2473 N.S.. Section 9, June 22, 1934, File Folder: HOBP 10 3260, Los Angeles County Board of Supervisors, Los Angeles, California.
[174] Meals, Hauser, and Bower, 124.
[175] Los Angeles County Department of Health Annual Report 1934-1935, page 123, File Folder: File Folder: Special Collections, University of California Los Angeles, Los Angeles, California.
[176] Leake et al., 1204.

Child Welfare Without Population Welfare: The Social Security Act and Polio Rehabilitation

While Los Angeles suffered from the 1934 epidemic, another momentous event occurred in Washington DC: President Roosevelt's appointment of the committee that underwrote the provisions of the Social Security Act. During the Great Depression, the federal government took on a powerful role in ensuring civilian welfare out of necessity. In 1933, at least one fourth of the American workforce was unemployed. This prompted a flurry of New Deal programs, such as the Civil Works Administration, Civilian Conservation Corps, and Works Progress Administration, which directly used federal funding to create jobs. Desiring to develop a system of national social insurance to prevent the same sort of calamity from happening again, Roosevelt established the Committee on Economic Security to formulate legislation, as historian David Kennedy has written, "not only for unemployment insurance and old-age pensions but also, reflecting the president's most unrestrained ambitions, for a national system of health care." However, advisors' proposals for national health and disability insurance were lost in the compromises that enabled the Act's successful passage.[177]

The final legislation established seven programs, which were administered differently and served unique purposes. For example, Title II of the act established the nation's contemporary social insurance program for workers over age 65, who over the course of their careers contributed taxes (along with their employers) towards a federal fund that later provided them with retirement benefits. Title I created a federally matching public assistance program to aid older individuals who lacked enough work experience to qualify for social insurance. The act

[177] Katz, 248; Jennifer Klein, *For All These Rights* (Princeton: Princeton University Press, 2003), 118-119. Google electronic book. < https://play.google.com/books/reader?id=EBlqdsG1B1IC&pg=GBS.PA130.w.1.3.0_222> ; David M. Kennedy, *Freedom from Fear: The American People in Depression and War, 1929-1945* (New York: Oxford University Press, 1999), 253-254, 263.

increased funding for vocational rehabilitation and the Public Health Service. Importantly, Roosevelt's New Deal programs established what historian Michael Katz has called "the template for federal-state relations in the decades that followed;" Roosevelt for the most part preserved a decentralized approach and used grants in aid to states to overcome perceived violations of state rights.[178]

Roosevelt's Committee on Economic Security additionally undertook the task of mitigating the Great Depression's effect on the nation's children. During the winter of 1934 through 1935, eight million children under sixteen years of age were a part of families receiving unemployment relief.[179] Grace Abbott, Katherine Lenroot, and Martha Eliot wrote the child welfare provisions for the committee.[180] Each individual exemplified aspects of the progressive reform movement of the previous decades. Between 1921 and 1934, Abbot directed the Children's Bureau and used her position to fight against child labor and to implement the Sheppard-Towner Act.[181] Lenroot worked for the Bureau investigating juvenile law and succeeded Abbot as the Children's Bureau chief.[182] Martha Eliot would also become the Children's Bureau chief in 1951. But she began her advocacy as a pediatrician whose research on community issues, such as rickets in New Haven, investigated "issues at the heart of social medicine."[183]

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[178] Larry DeWitt, "The decision to exclude agricultural and domestic workers from the 1935 Social Security Act," *Soc. Sec. Bull.* 70 (2010), 51; Katz, 225.
[179] Katharine F. Lenroot, "Maternal and Child Welfare Provisions of the Social Security Act," *Law and Contemporary Problems* 3, no. 2 (April 1936): 253-254.
[180] Ibid. 253-254, Katz, 229-230; Kriste Lindenmeyer, *A Right To Childhood: The U.S. Children's Bureau and Child Welfare 1912-1946* (Urbana and Chicago: University of Illinois Press, 1997), 182-183.
[181] "Grace Abbot." *Encyclopaedia Britannica*. (Encyclopaedia Brittanica, Inc., 2019) < https://www.britannica.com/biography/Grace-Abbott> Accessed May 23, 2020.
[182] Katharine F. Lenroot, (March 8, 1891 – February 10, 1982) – Director of the Children's Bureau, child welfare advocate and social welfare leader. *Social Welfare History Project* (2011). Virginia Commonwealth University Libraries. < http://socialwelfare.library.vcu.edu/federal/lenroot-katherine/> Accessed May 23, 2020.
[183] "Martha May Eliot, M.D." *Morbidity and Mortality Weekly Report.* 48, no. 38 (1999), 851 < https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4838a2bx1.htm> Accessed May 23, 2020.

On August 14, 1935, Roosevelt signed legislation establishing Title V of the Social Security Act, under which the Secretary of Labor allocated $2,850,000 each year to enable "each State to extend and improve … as far as practicable under the conditions in such state, services for locating crippled children, and for providing medical, surgical, corrective, and other services and care, and facilities…" In return, states matched federal grants in operating a program for residents and submitted a service plan to the Children's Bureau.[184] As childhood developmental experts Jack P. Shonkoff and Samuel J. Meisels have written, "The law was clear in its intent to develop a comprehensive service system, including case finding, diagnosis, treatment, and followup care" and states were "required to promote cooperative efforts between health and welfare groups in order to achieve such ends." Shonkoff and Meisels noted that the Social Security Act's program for children with disabilities was "the first federal program to provide matching funds for states to deliver medical services to a targeted patient group."[185] In working with the federal government, California's Crippled Children's Services continued the arrangement under the 1927 Crippled Children's Act, which gave counties the responsibility for providing medical assistance to families of children with polio.[186]

While the Social Security Act's program for children with disabilities illustrated an important commitment to child welfare, it would be more limited in its approach than the female reformers' earlier welfare programs, which were directed towards the population at large. As Theda Skocpol has written:

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[184] Katharine F. Lenroot, "Maternal and Child Welfare Provisions of the Social Security Act," *Law and Contemporary Problems* 3, no. 2 (April 1936): 255-256; Katherine B. Oettinger, "Title V of the Social Security Act: What it has meant to children." *Soc. Sec. Bull.* 23 (1960): 39-50.

[185] Jack P. Shonkoff and Samuel J. Meisels, "Early childhood intervention: The evolution of a concept," " In Samuel J. Meisels & Jack P. Shonkoff (Eds.), *Handbook of Early Childhood Intervention* (Cambridge: Cambridge University Press, 1990), 8.

[186] Statement before the Crippled Children Services Lay Advisory Committee, November 25, 1940, File Folder: Activity Reports 1939-1941, California State Archives, Sacramento, California.

> Contrary to the hopes of many women reformers and maternalist groups active in the early 1900s… the female-oriented parts of U.S. social provision after the 1920s were confined to often demeaning and ungenerous 'welfare' for the poor alone, rather than contributing to the creation of honorable and adequate support for the less privileged, in conjunction with public benefits and services universally available to all American mothers, children, and families.[187]

Skocpol's point is seen especially in the policies governing Title V eligibility benefits. In California, the CCS provided funding for medical treatment only after the determination of the family's income.[188] The Crippled Children Service's decentralized and restrictive approach worked to cement organized medicine's support for the program. As historian of rehabilitation Richard Verville has written, "The state administration of the (Crippled Children's) program made it palatable to the AMA and the broad medical community, which feared federal involvement in medical care."[189] The CCS also created its fee schedule for physicians with the assistance of the California Medical Association.[190] And through advising patients to seek treatment from private physicians before entering public clinics, the Bureau assured prominent medical groups that the government was not offering an alternative to private practice.[191]

United States historian David Kennedy noted that "Health-care provisions were to survive in the final act only as a residue, in the form of small grants-in-aid to the states for rural public health programs and services for the physically handicapped."[192] Thus, the contemporary public-private welfare system that emerged through Social Security would, in the long run become, as United States historian Jennifer Klein has written:

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[187] Skocpol, 536.
[188] Annual Report of the Medical Services Committee, File Folder: State Public Health Plan 1952-1953, California State Archives, Sacramento, California; Lindenmeyer, 188.
[189] Verville, *War, Politics, and Philanthropy*, 119.
[190] California SHD Plan 1955-1956, File Folder: Series 93 State Public Health Plan Files 1944-1966 Box 36-8 (1955-1956), California State Archives, Sacramento, California.
[191] Annual Report of the Medical Services Committee. File Folder: State Public Health Plan 1952-1953. California State Archives, Sacramento, California.
[192] Kennedy, 263-264.

> … a mixed welfare system in which social provision is dispensed through public and private institutions. Designated groups within the population- veterans, the elderly, the long-term disabled, the medically indigent, and poor children- receive benefits through the public sector. Most of the able-bodied working population, however, depend on private sources…[193]

Indeed, as we will soon see in the account of the essential workers, county hospital staff who contracted polio sought healthcare through their employment working compensation agency, rather than through a population-based welfare program.

Even within the "public sector," differences existed between the programs for more respectable "designated groups," such as the elderly who had "earned" Social Security through buying into it, and impoverished citizens, whose support was regarded as a matter of public assistance.[194] The Act's social insurance program for the aged also restricted eligibility to workers in commerce and industry, thus denying the roughly 65% of African Americans who worked in domestic and farm labor with access to benefits.[195]

Racial segregation furthermore limited the Title V program's outreach in California. When nonwhite children qualified for assistance, racial restrictions at medical facilities limited their access to services. California's CCS records provide a striking illustration of how local admitting practices affected its ability to place nonwhite children in aftercare facilities. For example, in Northern California, the San Francisco Ladies Protective and Relief Society

[193] Klein, 2.
[194] In his history of welfare in the United States, Michael Katz described a "resilient distinction between social insurance and public assistance" that has survived into recent times. Katz has written that, "it comes then as no surprise that welfare programs for the middle class- Social Security, Medicare, unemployment insurance- have been defined as social insurance; that they carry no stigma, and that their benefits are more generous than those paid by public assistance, which, after all, is strictly for the poor." Katz, 246.
[195] DeWitt, 53.

accepted only white children; as the eligibility criteria stated: "Negroes, Chinese and Japanese are not accepted for care."[196]

As significant as the Title V Program was, it was a far cry from a system of social provision capable of supporting the needs of every county resident affected by polio. While California's First Epidemic Period was marked by strides in advancing rehabilitation for children, its system of social provision was essentially child welfare, at the exclusion of welfare for the entire population. And even then, it was not a system for every child.

Disability in the Aftermath of 1934

As early as June 1934, county officials were processing compensation for the hospital employees who had missed work. And over the subsequent months and years, they would be pressed to help with a variety of additional needs, from housing to funeral expenses. Unlike World War I veterans and children, the employees did not automatically qualify for benefits based on membership in a "designated group." The essential workers additionally fell into a different category than the indigent, who historically depended upon almshouses for relief. Officials therefore used industrial accident law to sort out the complex matters that arose in assisting those workers who fell through the holes in the county's safety net.

Aside from establishing orthopedic clinics and paying for care, the county also undertook immediate action to compensate employees for missed work. The Salary Ordinance No. 2101 specified that "whenever any person is absent because of infectious or contagious disease resulting from, received, or contracted in the course of employment, such person shall be entitled to compensation at the rate such person would have received if on duty." Thus, over the summer,

[196] California SHD Plan 1955-1956, File Folder: Series 93 State Public Health Plan Files 1944-1966 Box 36-8 (1955-1956), California State Archives, Sacramento, California.

officials fully compensated a variety of workers, including nurses, maids, clerks, waitresses, and cooks who contracted polio.[197]

Given that polio had become widespread, not only within the county, but throughout the metropolitan region, officials sometimes had to sort out whether the applicant was actually infected while working. And because the provision of assistance was considered a matter of industrial law, two legal cases guided officials in determining eligibility in such instances. In the case of County of Los Angeles vs. Industrial Accident Commission, a district appeals court ruled on April 2, 1936 that a nurse who contracted polio while in the hospital wards was an "industrial accident case." Having become infected with numerous other workers during a documented epidemic, "there was substantial evidence upon which the Commission could find that the employee contracted the disease out of and in the course of the employment." However, in Children's Hospital Society of Los Angeles vs. Industrial Accident Commission, the appeals court denied an applicant assistance, as "the applicant could have been afflicted by contact outside of the course of her employment." In its ruling, the court declared: "… the record clearly establishes two facts; First, that very little, if anything, is known about poliomyelitis; and, second, that to conclude from the evidence adduced at the hearing that the alleged injury arose out of the employment would be pure speculation."[198]

In a society with a weak national safety net, workers appealed to county officials for help, not only with accessing rehabilitation and worker's compensation, but in dealing with related social problems. For example, in a request that was later denied, one employee wrote to the Board of Supervisors to see if they would allow her to live on hospital grounds while undergoing

[197] See Folder: 40.10/738 to 40.10/828, in Box HOBP 12-14, Los Angeles County Board of Supervisors, Los Angeles, California.
[198] To Honorable Board of Supervisors, January 12, 1938, File Folder: HOBP 10 3260, Los Angeles County Board of Supervisors, Los Angeles, California.

rehabilitation and working in the laboratory. The former employee argued that this was justified given that the lab was where she contracted polio.[199] The supervisors also considered medical staff's request that they cover the expenses of sending a 27-year-old intern physician's body back to Chicago, where his parents lived. As the board noted:

> Under the workmen's compensation act a death benefit is authorized for dependence where injury or death arises out of the employment. The employer is liable for burial experience not to exceed or $150 where an injury sustained in the course of duty causes the death of the employee, irrespective of whether the employee leaves dependents.

However, officials commented on the ambiguity in determining whether this particular case met the criteria for being considered a workplace accident: "It will be noted that the reports show that Dr. Dillenbeck's death was caused by the poliomyelitis. However, as pointed out by Dr. Berman in his letter, it is extremely difficult to determine the exact time and place when Dr. Dillenbeck contacted the disease."[200]

In determining whether survivors with mental health needs were eligible for assistance, officials employed neurologists to make assessments. One official letter requested allocating funding towards neurological examinations for two workers who contracted polio in 1934, and who "have been disabled ever since that time, and are now confined in the Compton Sanitarium as mental cases." As the document noted:

> The cases are set for hearing before the Industrial Accident Commission for the purpose of determining: (a) Whether the mental condition of the patients is attribute able to poliomyelitis; (b) whether there is any disability at the present time; (c) the permanency of such disability.[201]

[199] Her request was denied. See Elizabeth Gear to Los Angeles County Board of Supervisors, 9 October 1937, File Folder: Folder 90.10 1344.42, Box HOBP 0012, Los Angeles County Board of Supervisors, Los Angeles, California.
[200] Everett Mattoon to Honorable Board of Supervisors, Re: Howard Dillenbeck, Deceased, 20 July 1935, File Folder: HOBP 12-14, Los Angeles County Board of Supervisors, Los Angeles, California.
[201] In re: EMMA M. O'NEILL v. COUNTY OF LA., August 17, 1936, File Folder: HOBP 12-14, Los Angeles County Board of Supervisors, Los Angeles, California.

As records show, when neurological assessments concluded that polio encephalitis caused patients' mental health problems, they were then deemed eligible for relief.[202]

Especially for those who served at the frontlines, living through the epidemic was both physically and psychologically disabling. One nurse who worked at General Hospital in 1934 reflected on being ordered to prepare an iron lung for a fellow nurse who suddenly lost the ability to breathe. She recalled, "'A voice on the phone said, "Get the Drinker Respirator ready, a Nurse from Pasadena has contracted Polio,' – How dreadful.. That was getting pretty close to home." However, the nurse's emergent needs demanded the prompt administration of the life-saving technology and "there was not time to think that we could possibl(y) be next." The same nurse who prepared the respirator also contracted polio while working on the wards and wrote about her experiences several years later. As she attempted to put in writing her memories working in the CD unit during that terrible time, she wrote "a chill goes up my spine." Aside from the physical sensation of fright that she lived with for years after 1934, she also described her sorrow when she was physically unable to resume employment in nursing due to her disability. [203]

Compounding the stress of contracting polio was the economic uncertainty that came with the inability to work. A letter requesting coverage of funeral expenses for a nurse who committed suicide conveyed the considerable distress that workers experienced. As the letter read:

> Josephine Butler committed suicide Sunday night. She was a nurse at the General Hospital, a Mayo nurse, who gave her services during the poliomyelitis epidemic, Mr. Shaw says she volunteered her services, and I hear from another source she worked for 40 cents an hour. She contracted polio… and was never advised that on September 1st

[202] Mr. H.A. Payne County Auditor, March 15, 1938, File Folder: Box HOBP 12-14, Los Angeles County Board of Supervisors, Los Angeles, California.
[203] Attention Mr. and Mrs. America, December 25, 1939, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

> she was to be given full compensation for permanent injury, and in despair killed herself. Her body is at Leroy Bagley funeral parlor. They will have to bury her in the Potters Field unless the county appropriates money for her funeral expenses.[204]

In resolving to support the burial, officials revealed that they understood her death as a physiological manifestation of infection with the poliovirus, rather than as the product of her social circumstances. As one official stated: "On this same question regarding Josephine Butler, we have to bring in the fact that she committed suicide as a result of temporary insanity brought on by this poliomyelitis that she got while in the service of the county and I move you that we bring in a resolution to that effect and authorize her burial at the expense of the county (sic)."[205]

After 1934, the number of chronic patients among the public who needed assistance declined. However, the county still processed benefits for hospital workers from the 1934 epidemic and from outbreaks in the subsequent years. And from a perspective grounded in medical ethics, its response was inequitable. For example, African Americans faced uncertainty over whether they would be able to access necessary medical care following being discharged from the communicable disease ward. In February 1935, the County Board of Supervisors noted some of its problems arranging the transfer of a nurse from General Hospital to a long-term facility. As an internal document stated: "Under ordinary circumstances such a patient would be transferred to a rest home, but since this nurse is a colored girl such an arrangement would not be practicable. There are no rest homes which would be properly licensed and qualified to care for this colored person."[206] In December 1936, the Board of Supervisors again noted its challenges finding private hospitals that accepted nonwhites: "The particular case which... must be

[204] August 28, 1936, File Folder: Box HOBP 12, Los Angeles County Board of Supervisors, Los Angeles, California.
[205] Session on August 28, 1936, File Folder: Box HOBP 12, Los Angeles County Board of Supervisors, Los Angeles, California.
[206] Re: Care of Clara Porter, Industrial Accident Case, February 19, 1935, File Folder HOBP12, Los Angeles County Board of Supervisors, Los Angeles, California.

hospitalized at once is a colored nurse. It is getting more difficult apparently to get poliomyelitis cases in any of the private hospitals and particularly colored patients."[207]

County officials also expressed an unwillingness to fully compensate student and graduate nurses. One letter from a nurse described how contracting polio compounded the economic insecurity she had previously faced due to her low salary:

> I am a graduate registered nurse who contracted poliomyelitis while caring for those ill with this disease, last June, being at that time in the county employ. I went to work in May and was asked to do contagious nursing at the rate of $3.20 per day. The hospital was acutely in need of help. I accepted work; But asked to be relieved of duty at the earliest possible date, as I could not work for so small a salary... I was not released and contracted poliomyelitis approximately three weeks later… During my illness I received approximately $40 a month compensation…

The patient mentioned that her compensation was below that recommended by the American Medical Association for frontline nurses who contracted polio. In appealing for an increase in compensation, she stated:

> I cannot be expected to suffer financial loss. If I am so fortunate as to be in condition to resume work this summer, I cannot possibly hope to include other normal activities for an indefinite time it is only just that I receive a fair salary dating from last June, whether it comes from the county or industrial accident funds.[208]

However, in rejecting her request for assistance, the Superintendent of Charities resolved the following:

> Compensation is usually paid on the basis of salary received by the employee at the time of injury or illness… The resolution by the American Medical Association… probably refers to a ruling which affected only student nurses who had been working at the rate of $5 per month and room and board... We believe, therefore, that Miss Bland is receiving the only compensation possible under such circumstances.[209]

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[207] Request of County Auditor, July 19, 1937, File Folder HOBP12, Los Angeles County Board of Supervisors, Los Angeles, California.
[208] Ann Thomas Bland to Board of Supervisors, 20 May 1935, File Folder: Box HOBP13, Los Angeles County Board of Supervisors, Los Angeles, California.
[209] Superintendent of Charities to Miss Mame B. Beatty, 2 July 1935, File Folder: Box HOBP13, Los Angeles County Board of Supervisors, Los Angeles, California.

As seen above, technicalities such as the prior salary, governed how officials' awarded assistance. This approach to allocating resources was also evident in the superintendent's consideration of another case in which the exact timing of when a patient contracted polio was under dispute. In February 1936, a concerned parent wrote the superintendent about his daughter who was "entirely incapacitated… and unable to undertake any business matters." Referencing information he obtained from the hospital, he noted that her lumbar puncture on June 29, 1934 confirmed infection with polio. The father requested that she receive compensation that was consistent with the amount mandated after a June 26th ruling, which required that nurses receive a higher rate of compensation. The father wrote:

> … Aside from the fact that I think all nurses who unfortunately **we** became the victims of this very serious disease should receive compensation equitable to all, I feel that my daughter by reason of the dates as shown in this letter, has a claim to the higher rate of compensation as from that date. I fully believe my daughter because of the smaller compensation allowed has during this long period of time been under some additional mental strain that possibly has tended to retard her recovery and feel that this condition should if at all possible be rectified...[210]

The Superintendent of Charities however decided the following:

> Certain student nurses and internes became afflicted with poliomyelitis prior to the effective date of the amendment on the salary ordinance, and under order of the County Council we were not permitted to transfer these individuals to the higher rate of pay for the purpose of computing industrial accident compensation. Miss Little, according to our records, contracted this disease June 20th, in 1934. Mr. Little contends it was June 26th, but regardless of which of these two dates may be correct we would be unable to make a transfer in Miss Little's case inasmuch as the ordinance referred to did not take effect until July 1st, 1934. Regardless, therefore, of any desire we may have to give better compensation to Miss Little we would not be permitted to do so. *Her claim may be equitable but not legitimate*.[211]

[210] Frank Little to Supervisor H. C. Legg, 14 February 1936, File Folder: Box HOBP15, Los Angeles County Board of Supervisors, Los Angeles, California.
[211] Attn: Mr. W.A. Smith, Field Secretary, File Folder: Box HOBP15, Los Angeles County Board of Supervisors, Los Angeles, California.

In the half decade after the 1934 epidemic, the County Hospital nurses mobilized to demand that the county address their needs. Advocating on behalf of the nurses, the California State Nurses Association in June 1937 issued a series of proposals addressing their grievances. Some of which included laws limiting working hours so "no nurse is allowed to work to the point of fatigue." The association also proposed that the county provide "equitable" compensation to "incapacitated" nurses with low pay grades or who became infected before the July 1934 ordinance went into effect. The Association also demanded that the county make rehabilitation accessible and requested that officials appoint a medical team composed of various specialists to assess nurses' needs for rehabilitation.[212] Advocates met with officials in Washington DC and attracted local media attention.[213] In the process, hospital leaders as well as organizations, such as the Catholic Welfare Bureau and the Los Angeles Chamber of Commerce, wrote officials to stress the nurses' entitlement to support.[214] The nurses made some strides, including the county's agreement to appoint a social worker and medical team to assess their needs. However, their campaign also faced setbacks.

In 1939, one year after Franklin Roosevelt founded the National Foundation for Infantile Paralysis, a nurse who contracted polio in 1934 used its first annual March of Dimes campaign to educate the public about their situation. As she wrote in a letter addressed to the March of Dimes and the American public:

> Please tell your friends that the compensation of the Nurses who contracted Infantile Paralysis was cut off in September 1938 and they have since lived on friends, relatives,

[212] Welfare of Nurses During Future Epidemics and Suggested Adjustments, March 17, 1938, File Folder: Box HOBP15, Los Angeles County Board of Supervisors, Los Angeles, California.
[213] See File Folder: 40.10/1344.63 in Box HOBP15, Los Angeles County Board of Supervisors, Los Angeles, California; also see To Board of Supervisors Hall of Records, May 9, 1938 in same box.
[214] To Honorable Roger W. Jessup, April 21, 1937; Los Angeles Chamber of Commerce, August 4, 1937, File Folder: Box HOBP15, Los Angeles County Board of Supervisors, Los Angeles, California.

> and the little they could save from the small compensation which they had received. In nearly every instance this equaled just one half their former salary… The progress of these girls is being retarded by the uncertainty of their financial condition. Some who were not so badly affected are back to work at the same courageous service. Others are being pressed into service against Doctors wishes, their own best judgment and health. Some still wearing back and leg braces. The only thing these Nurses want is security until they can go back to work without injuring their health further or placing a burden on a department where they might be placed, which will inevitably mean permanent dismissal.[215]

According to the writer, the Los Angeles Personnel Department gave the nurses the option of either working again or resigning. However, resignation had financial repercussions, as it "mean(t) the loss of seniority and retirement benefit for the number of years of service they have."

She argued that nurses' heroism justified their entitlement to full compensation, as World War I soldiers' service made them eligible for benefits. She stated "Don't you believe that these Nurses are as brave as any Soldier who fought on the battlefield of France? I believe we were fighting for a more justifiable cause." The writer concluded the paragraph with a point about first responders who battle life-threatening contagious diseases:

> It is said, "A person does not know how brave he is until tried." It is not from ignorance that a Nurse does not runout on a person with Infantile Paralysis, one with Typhoid Fever, Meningitis, etc. She knows one slip in her technique and she may contract the same disease or infect others… Did you ever see a Nurse run from danger? I hope you never will.[216]

Like many other Americans who believed in and contributed to the March of Dimes' fundraising campaigns because of their personal experiences, the writer expressed hope that her story could prevent children from suffering: "If I could spare your child the suffering, hardships,

[215] Attention Mr. and Mrs. America, December 25, 1939, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[216] Ibid.

and inconvenience that I have experienced since being a patient I would go through the whole four years again. It is too much to ask of a child." The writer concluded by using her story to appeal for funding for that year's campaign. She proclaimed: "I have joined with my life now I would like to join with my dime. Please send your dime where these Kiddies can get the best treatment it can possibly buy."[217]

The National Foundation for Infantile Paralysis would also advocate for another group that was neglected in the years following the 1934 epidemic: iron lung patients. And as we will see in Chapter 3, the NFIP's advocacy created a healthcare system devoted to them. But before discussing the NFIP's Respiratory Center Program, we will first make note of popular and professional attitudes during the 1930s using an article from the *Los Angeles Times*. Although the person that the article followed contracted polio in San Jose, the paper expressed sentiment that was undoubtably felt by many of its local subscribers.

On July 29, 1934, the *Los Angeles Times* ominously began its story describing 23-year-old polio patient Charles Lux's life inside an iron lung by writing, "The metal, coffin-like cabinet that saved his life six weeks ago, has become a prison, almost a torture chamber." In the *Times* writer's view, the iron lung allowed a quality of life that was not worth living to be perpetuated. The story continued, "Only death can free him now, the doctors say. And death, by ironclad rule of medical ethics, must be put off to the last possible minute, no matter at what cost of human suffering." As Peter Cohen, a physician in San Francisco Hospital's isolation ward, stated to the *Times*: "It seems inhuman to keep the respirator going, after it is known to be futile… It grows to be almost a form of torture in time. Yet you cannot take him out and let him strangle." At a time in which many professionals viewed the quality of life inside an iron lung as miserable, it was

[217] Ibid.

indeed understandably humane in their eyes to let an individual in an iron lung die, similar to the way in which one would kill a suffering rabid animal. The article continued with the following quote: "'You would shoot a dog in a spot like that,' mutters an intern passing the room, in a vehement burst of unprofessional feeling, 'but a man has to die the longest way.'"[218]

The article ended with a juxtaposition between Lux's previously hopeful life before he contracted polio with the hopelessness of his existence in an iron lung and noted the despair that he was beginning to share with his caretakers. Before contracting polio, he had worked as an electrician and was engaged to be married. However, as he said at the article's closing, "Now I'm beginning- to think I'm- never going to- get well."[219]

Conclusion

Compared with the first time that Los Angeles encountered epidemic polio in 1912, its county health department had a more powerful role in 1934. Gone were the days in which the city's chief health officer Luther Milton Powers oversaw the region's efforts against epidemic disease in the absence of a permanent county health authority. After John Pomeroy arrived in 1915, he strengthened the county health department so that it was better equipped to respond to the disease outbreaks associated with industrialization. During the 1934 epidemic, he worked with the city's next health officer George Parrish in coordinating a unified response against infectious disease over a metropolitan region that had assumed much of its modern identity.

During the First Epidemic Period, the national and state government also became more powerful in ensuring that children with chronic conditions had access to care. The Social Security Act's Title V Program best exemplified this trend. Cognizant of the economic

[218] "Doomed Man's Death Stayed," 29 July 1934, *Los Angeles Times.*
[219] Ibid.

uncertainty faced while taking care of a child with a disability, it placed medical assistance on the same level as unemployment insurance in securing family stability. Jack Shonkoff and Samuel J. Meisels touched on the historical significance of the movement that ultimately resulted in the Title V provisions: "It reflects a powerful and persistent underlying consensus within the American political system that the care and protection of the health of children is too important to be left to the 'wisdom' of the free market, particularly for those who are poor or those who have a chronic disabling condition."[220] Indeed, in the decades following the Social Security Act's 1935 passage, low-income families in Los Angeles who might have earlier forgone their child's care had assistance through a program that provided Americans with economic security. California's Title V program owed its existence to the progressive female reformers, orthopedic surgeons, and service club members, who worked with local, state, and federal officials to build a social safety net for children with chronic conditions.

Despite the progress that the county made in battling infectious disease, it was unable to repel the enemy when it struck within its gates. The new county hospital's modern design proved ineffective in 1934 when epidemic polio spread among its overworked staff. California's first sustained encounter with epidemic polio furthermore occurred during a critical time in American medicine, in which private physicians successfully lobbied government for increased control over the provision of health services. As a result, during the 1920s, one observed a pattern, in which the safety net came to exist as a myriad of public assistance programs that were the last resort within a predominately privatized healthcare system. Especially against the backdrop of the increasing racial segregation of the decade, public institutions came to offer differing levels of benefits to individuals, depending on their age, sex, race, class and disability status. Indeed,

[220] Shonkoff and Meisels, 9.

the County Hospital nurses' experiences were like those of many other Americans during the New Deal Era, as women, racial minorities, and the severely disabled could not access the same social protections as white, able-bodied males. For instance, prior to World War II, in the 17 states with the largest African American populations, 91% of public rehabilitation clients were young, white men.[221]

Moving Forward

A 1946 Los Angeles NFIP chapter document noted that "During the interim between the epidemics of 1934 and 1946… a change took place that altered the course of (polio)… The change was a national phenomenon—the formation in 1938 of the National Foundation for Infantile Paralysis…"[222] When considering the history of poliomyelitis, Franklin Roosevelt's founding of the National Foundation was indeed revolutionary. Its March of Dimes fundraising campaigns unified the United States in an effort that not only led to the polio vaccine but provided medical assistance to the majority of Americans with polio. During the 1940s and 1950s, the NFIP and the Crippled Children's Service Program became allies in a common mission to increase polio survivors' access to rehabilitation. As records show, by 1949, the CCS and the NFIP were "work(ing) cooperatively" and the "local NFIP chapter use(d) funds to pay for patient care… (while the) state agency made all arrangements for care."[223]

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[221] Hughes, 481.

[222] Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

[223] Report of Field Visit February 3, 1944, File Folder: RG 102 Box 294 Records of the Children's Bureau, National Archives, College Park, Maryland. On July 25, 1949, officials from the National Foundation and the Crippled Children's programs convened to issue an "11 point program" to guide their future collaboration in the United States. The final proposal illustrated that the healthcare infrastructure that the nationwide Crippled Children's programs brought to the 1940s polio response was a vital part of the collective effort during these years. As the NFIP report noted:
There is no question that the average Chapter, made up of volunteer lay people, is not in a position to determine proper hospital facilities, proper charges therefor or to obtain the best follow-up care for polio patients… most C.C.S. departments are staffed to carry on such work… The report therefore issued specific policy recommendations, including

The foundation's investment in rehabilitation infrastructure, in particular, helped healthcare institutions prepare for the expansion in the welfare state under President Eisenhower. As we will see in the following chapters, through the NFIP's administration of grants covering the totality of expenses rehabilitating a single chronic condition, it instituted a mechanism of funding research that was later supplanted by the federal government. And within Los Angeles, the healthcare system that the NFIP established for iron lung patients would, with federal investment, evolve into a component of the social safety net.

The dissertation now shifts to focus on the National Foundation's legacy in Los Angeles. Unlike the County Hospital nurses, Franklin Roosevelt had a degree of influence that enabled his organization to achieve its objectives. However, as we will see, in the process of expanding access to rehabilitation, the Foundation paradoxically perpetuated inequities. In this context, Los Angeles' polio response would ultimately become exceptional and problematic.

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one that: "All polio patients, regardless of age or financial status, whose cost of care is underwritten by the NFIP Chapters, … be hospitalized and receive follow-up care and treatment through the state Crippled Children's Service. State Level Agreements with Crippled Children's Service, July 25, 1949; File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

Chapter 2: The Beginning of a Relationship (1936-1948)

In the present chapter, we study how the National Foundation for Infantile Paralysis assumed a position in an American health policy landscape in which an array of public, nonprofit, and private organizations provided relief for the sick. We will observe how factors, such as race and class, influenced how the NFIP raised funding for research and medical care. The foundation campaigned in white middle and upper-class communities through advertising polio as a disease of the patient who, like its founder Franklin Roosevelt, was entitled to quality medical services. The NFIP's association with Roosevelt also gave it influence with leaders in politics, medicine, and Hollywood.

We begin in this chapter to focus more closely on Los Angeles' local history. As the polio caseload increased during the Second Epidemic Period, financing care for Los Angeles' iron lung patients became a pressing problem for the NFIP. Local officials and foundation authorities ultimately looked to rehabilitation as a means for reducing local expenditures, while not depriving patients of the care to which they were entitled.

The Second Epidemic Period:

"The water was so cold, it seemed paralyzing," Franklin Roosevelt recalled of his experience falling overboard from a sailboat while vacationing in New Brunswick during August 1921.[224] While an escape from a stressful time in his political career, the trip proved to be anything but revitalizing. The sudden chill that Roosevelt felt after falling overboard was likely an early symptom of poliomyelitis, which increases one's sensitivity to light, temperature, and pressure.[225] Over the next days, Roosevelt came down with a fever, lost all function below his

[224] Hugh Gregory Gallagher, *Splendid Deception* (St. Petersburg: Vandamere Press, 1999), 1; Oshinsky, 24-25.
[225] Gallagher, 1.

legs and paralysis spread into his trunk muscles. Roosevelt's family arranged for him to be visited by the esteemed orthopedic surgeon Robert Lovett, who diagnosed his condition as poliomyelitis.[226] Not long afterwards, Roosevelt's rehabilitation began, and his experience with polio helped give rise to a new way of managing chronic illness.

This chapter studies how Franklin Roosevelt's engagement with polio rehabilitation as a privileged individual was key to the advancement of rehabilitation medicine both in the United States and in Los Angeles County. The first half of the chapter provides a general history of Roosevelt's Warm Springs Foundation and the National Foundation for Infantile Paralysis. The second half focuses on how the NFIP worked with local leaders to coordinate Los Angeles' polio response during California's Second Epidemic Period between 1936 and 1948.

Franklin Roosevelt was already a public figure when he contracted polio at the age of 39 years old, having served as President Wilson's Secretary of Navy and as the Vice-Presidential Candidate in James Cox's 1920 presidential campaign. Roosevelt did not let polio compromise his political ambitions and used his rehabilitation to advance a narrative that he had "recovered" from polio in order to avoid being stigmatized for having a disability. [227] Advocating on behalf of polio rehabilitation also became a personal cause for Roosevelt, as he used his wealth and influence to establish a rehabilitation center at Warm Springs, Georgia. Historian of rehabilitation medicine Richard Verville has written that Warm Springs became one of the United States' earliest rehabilitation centers and applied "principles that 'were later incorporated into a coherent theory of rehabilitation.'" Importantly, Warm Springs "was one of the first self help rehabilitation programs for persons with disabilities."[228] It employed a patient-centered

[226] Jean Edward Smith, *FDR* (New York: Random House, 2007), 187-191.
[227] Ibid., 99-116, 165-187; D.J. Wilson, "And They Shall Walk: Ideal Versus Reality in Polio Rehabilitation in the United States." *Asclepio* 61, no. 1 (2009): 178-179.

[228] Verville, *War, Politics, and Philanthropy,* 40-41.

approach to rehabilitation that was similar to the Independent Living Movement of the 1960s and 1970s, which is a topic that will be touched upon in the last chapter of the dissertation.

The chapter then shows how Franklin Roosevelt's continued personal interest in polio rehabilitation influenced the National Foundation for Infantile Paralysis' establishment. As the NFIP's director, Roosevelt's law partner Basil 'O Connor worked closely with leaders in organized medicine to advance access to subspecialty rehabilitation. Richard Verville has written that the National Foundation and the American Physical Therapy Association became "partners" to the Crippled Children's Program in assisting it in "meet(ing) the demands created by the polio epidemics." The National Foundation also advanced rehabilitation through providing financial assistance to rehabilitation centers, such as Warm Springs and Rancho Los Amigos. [229]

The foundation did not regard its coverage of medical expenses as charity for poor "cripples." In essence, it viewed assistance as a form of insurance to which the American public was entitled during a national emergency. This was largely due to the fact that unlike other organizations that provided polio relief, such as the Rotary Club and the Easter Seals Society, the NFIP was not a businessmen's club, but sought Americans' support through advertising campaigns that were directed towards the public at large. As historian David Oshinsky has written, the National Foundation propagated "the concept of philanthropy as consumerism, with donors promised the ultimate personal reward: protection against the disease."[230]

But the rehabilitation that the National Foundation advanced was also limited by the interests of the medical authorities and the upper- and middle-class donors upon whom the foundation depended. As a result, chronic disease became viewed as an overwhelmingly clinical problem, stripped of the social aspects of living with illness that are a part of disenfranchised

[229] Ibid., 124.
[230] Oshinsky, 5.

populations' experiences. This chapter examines the Warm Springs Foundation and the National Foundation's unequal outreach to African Americans and notes how both organizations' institutional practices accommodated racism.

In concluding the first half of the chapter, we study how notions of social worthiness shaped both the NFIP's general assistance program and its advocacy on behalf of the ideal that all respiratory polio patients gain access to iron lungs. While the foundation's emergency program expanded access to iron lungs, the increased use of respirators led to an accumulation of convalescent patients, which became especially problematic in western states, such as California, following World War II.

The second half of the chapter focuses on Los Angeles County's experience of California's Second Epidemic Period. It uses the Los Angeles experience as a case study to assess how an urban setting worked within a national context to influence the making of rehabilitation medicine. Through our account, we will develop an appreciation of how the NFIP worked with municipalities to build clinical rehabilitation programs that have lasted into contemporary times.

Los Angeles additionally provides a vantage point for assessing how urbanization impacted the experience of polio during the 1930s through 1950s. Aspects of civic life such as the motion picture industry and the defense industry were central to Los Angeles' identity as a global cultural, financial, and population center. We will examine Franklin Roosevelt and Basil O' Connors' relationships with Hollywood moguls, such as Metro-Goldwyn-Meyer executive Nicholas Schenck, as well as motion picture celebrities' involvement in the March of Dimes fundraising campaigns. Los Angeles was additionally a region in which religious and alternative forms of medicine were deeply rooted. We tell the story of how local foundation officials'

support for popular healer Milton Berry precipitated conflict with the national headquarters. We also introduce Clarence Dail and John Affeldt, who became rehabilitation leaders at Rancho Los Amigos during the 1950s. Dail and Affeldt were influenced by a religious approach to healing as members of Southern California's sizable Seventh-Day Adventist community.

As we begin, we will see that the story of Los Angeles' experience of the Second Epidemic Period is more than a case study of how polio shaped a medical approach. It is also a story about how unique aspects of Los Angeles' urban identity gave rise to a specialty that changed how chronic disease was managed, both locally and nationwide.

Patient Roosevelt

Once Roosevelt was no longer contagious, his family members and intimate friends used their influence to discretely transfer him from New Brunswick to New York Presbyterian Hospital for physical therapy. A ship took Roosevelt from his summer home on Campobello Island to a wharf, where his attendants placed him into a private car which later became attached to a train heading into Grand Central Station. Arriving in Grand Central Station at a concealed platform, he met George Draper, a polio expert who was trained by Robert Lovett. An ambulance then escorted Roosevelt to Presbyterian Hospital.[231]

Orthopedic surgeon Robert Lovett directed a considerable amount of Roosevelt's rehabilitation over the next years, along with his physical therapists Wilhemine Wright and Kathleen Lake. According to disability historian Daniel Wilson, Roosevelt's rehabilitation served the goal of "Walking, or the semblance of walking." Wilson explained that "With braces, a cane, and strong companions on either side Roosevelt by the mid-1920s managed to give the

[231] Geoffrey C. Ward, *A First Class Temperament: The Emergence of Franklin Roosevelt, 1905-1928*. (New York: Vintage Books, 1989), 600-602.

appearance of walking when it was politically necessary to demonstrate that he had recovered from polio." However, Roosevelt's walking was "not in any sense a practical means of locomotion. It was treacherous, slow, and awkward." Rather than serving Roosevelt's function, walking was "devised for the sake of appearance."[232]

Franklin Roosevelt used his wealth and elite social position to learn about and experiment with various techniques in polio rehabilitation.[233] Conversing with other polio patients and leading rehabilitation professionals, he exchanged views on therapy and became well versed in care.[234] During the spring of 1926, Roosevelt purchased a spa in Warm Springs, Georgia, which he converted into a polio rehabilitation facility. He also established a nonprofit foundation that financed care at the spa for patients who could not afford treatment.[235] Roosevelt used his influence to build support for his facility among leaders in the medical profession. For example, he arranged for distinguished orthopedic surgeons to evaluate Warm Springs and serve on its consulting board. Roosevelt placated orthopedists who opposed him by giving them positions of leadership within his voluntary organization.[236]

Roosevelt strongly advocated for the use of water in polio treatment. Since antiquity, physicians observed that heated water had health benefits. For example, Galen of Pergamon (129-198 C.E.), one of the most influential authorities in Western medicine prior to the Enlightenment, reported that bathing patients in hot tubs was an effective treatment for melancholia.[237] Spas were popular places to seek healing from chronic illness in nineteenth

[232] Wilson, 178-179.
[233] Z.B. Friedenberg. "Franklin D. Roosevelt: His Poliomyelitis and Orthopaedics." Journal of Bone and Joint Surgery 91-A, no 7 (2009): 1808.
[234] Ibid., 1809.
[235] Ibid., 1809.
[236] Ibid., 1810-1811.
[237] K.U. Hanusch et al., "Whole-body Hyperthermia for the Treatment of Major Depression: Associations with Thermoregulatory Cooling." *American Journal of Psychiatry* 170, no. 7 (2013): 573.

century America. By the time Roosevelt founded Warm Springs, hydrotherapy, or the clinical use of water to treat disease, was an established therapeutic regimen.[238] The pool at Warm Springs naturally remained at a constant temperature of 88°F and the water's warmth was soothing to patients' muscles. The water also contained limestone and other minerals that provided buoyancy and allowed polio patients to balance themselves with ease.[239]

Franklin Roosevelt was known among Warm Springs patients as "Doctor Roosevelt." He taught patients rehabilitation techniques and created his own tests for assessing muscle function, which he administered on a regular basis.[240] Hugh Gallagher, a historian and polio survivor, explained that Roosevelt's facility was a unique polio nonprofit in that it focused on promoting both physical and psychological health. As Gallagher has written:

> Patients came to Warm Springs after the acute stage of their illness, sometimes years after. They were often in a state of mind bordering on shell shock. They were hurt and grieving still from the loss of use of their paralyzed limbs… Responsibility for eating, urinating, and bowel movements, for getting up and going to bed, are removed from the patient and exercised by the medical authority…

However, Gallagher noted that "Roosevelt seemed to understand that rehabilitation of the polio patient was a social problem with medical aspects. It was not a medical problem with social aspects, as previous American treatment efforts had assumed."[241] Patients worked together during treatment, shared ideas, and gave each other support. Former polio patients directed classes, demonstrating techniques that they improvised to perform daily activities such as getting out of bed or on and off the toilet. Having been a patient at Warm Springs, Gallagher experienced firsthand the psychological benefit of having polio patients teach classes. Gallagher has written:

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[238] Oshinsky, 35.
[239] Friedenberg, 1809; Oshinsky, 37.
[240] Gallagher, 41.
[241] Ibid, 53.

> This was of benefit to the new patients in practical terms, but also in psychological terms more difficult to describe and define. New polios saw the old polios as persons with a paralysis pattern similar to their own, living a normal life, functioning as productive human beings. The value of such an example was enormous.[242]

Interestingly, historian Naomi Rogers has pointed out, Roosevelt also used his disability as a "political bargaining chip" to obtain funding for Warm Springs. When Democratic Party chairman John J. Raskop requested that Roosevelt run for governor of New York in 1928 to help Alfred Smith's presidential campaign, Roosevelt initially declined. Only after Raskob donated $250,000 to Warm Springs did Roosevelt agree to run for governor.[243] After Roosevelt began campaigning, he had less available time to manage Warm Springs and appointed his law partner Basil O' Connor as its director.[244]

Basil O'Connor was a successful young attorney who worked with the oil industry. He also had a familiarity with Roosevelt's disability that was, to a certain degree, personal. On October 9, 1922, when Roosevelt returned to his law office for the first time after contracting polio, a dramatic encounter occurred in which Roosevelt's left foot slipped while he attempted to walk and he fell to the floor in front of a crowd of bystanders. While most of the people who surrounded him watched awestruck, Basil O'Connor and another man offered their arms in assistance as Roosevelt stood. Roosevelt, in a characteristic way, deflected attention away from the public humiliation of being disabled and left the scene "smiling and nodding," according to his biographer Jean Edward Smith.[245] When Roosevelt became president in 1933, O'Connor again assisted his former law partner, but this time, in using his nonprofit organizations to hide his disability from the American public.

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[242] Ibid., 56.
[243] Rogers, *Dirt and Disease*, 169.
[244] Oshinsky, 34-35, 47.
[245] Smith, *FDR*, 200-201.

The Rooseveltian Revolution

Historian Naomi Rogers has written that after Franklin Roosevelt's 1932 presidential election, polio assumed a "new cultural importance," as perceptions of it as a disease of the immigrant poor gave way to a "respectable" public image. Roosevelt's campaign indeed propagated the view that polio was a positive feature of his identity. His first inaugural program described him as "over six feet tall, with the torso of a heavy-weight wrestler"; while polio "would have rendered the average person a helpless cripple, (Roosevelt) practiced law successfully and weathered two strenuous and victorious campaigns for the Governorship of New York …"[246] During the twelve years of his presidency, Roosevelt continued to advertise himself as someone who had "overcome" polio; he camouflaged his disability through various means, from the "unspoken code" that reporters could not photograph him in a wheelchair to his modification of naval cruisers and railroad cars.[247]

Historian of rehabilitation Richard Verville has written that after becoming an elected official, Roosevelt "urged his law partner Basil O' Connor to continue raising funds and investing in rehabilitation programs at (Warm Springs)."[248] While wealthy philanthropists provided funding for Warm Springs during its early years, the Great Depression lessened the amount of money that O' Connor could raise on behalf of Roosevelt's organization. In 1934, O' Connor started a fundraising campaign using postmasters throughout the United States to organize birthday parties for President Roosevelt. After the "Birthday Balls" raised over one million dollars, O' Connor promised that 70% of the next campaign's funding would pay for

[246] David W. Rose, *Friends and Partners: The Legacy of Franklin D. Roosevelt and Basil O'Connor in the History of Polio.* Kindle Ed. (London: Elsevier Science., 2016), 54-55.
[247] Gallagher, 96.
[248] Verville, *War, Politics, and Philanthropy*, 122.

polio treatment throughout the country; the rest would cover research. In 1938, Roosevelt founded the National Foundation for Infantile Paralysis, which replaced the Birthday Balls. The Committees for the Celebration of the President's Birthday then became March of Dimes fundraising units for the National Foundation. The NFIP established chapters at the county level that used volunteers to award assistance for polio care.[249]

The foundation used Roosevelt's recovery narrative to sell its fundraising campaigns to the American public. In the process, it propagated positive attitudes towards polio patients and generated a hope in rehabilitation medicine's promise. Public health historian Amy Fairchild has written that after Roosevelt founded the National Foundation for Infantile Paralysis, the NFIP "helped to create and promote a core polio narrative featuring FDR's triumph over disease and disability, which became a national myth."[250] As Naomi Rogers explained in a chapter of *Dirt and Disease* entitled "Making Polio Respectable," "polio had struck a wealthy young man and created a cripple who nonetheless rose to the presidency."[251] March of Dimes Campaign posters drew from this story and showed images of Roosevelt with accompanying titles such as "'Fight Infantile Paralysis' It did not conquer him."[252]

The Rooseveltian emphasis on recovery especially stood out in the March of Dimes Poster Child campaigns, which as Fairchild has written, "popularized images of courage and heroism that implicitly drew on Roosevelt's own story of recovery." Fairchild noted that after the NFIP instituted the Poster Child program in 1946, "The Foundation began an annual search for one plucky child, whose smiling face it plastered across the country as he or she threw aside crutches and rose from the wheelchair."[253]

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[249] David Sills, *The Volunteers. (*Glencoe: The Free Press, 1957), 116, 134; Oshinsky, 51-53.
[250] Fairchild, 493.
[251] Rogers, 166-167.
[252] Rose, 93.
[253] Fairchild, 509.

While the association of polio with President Roosevelt improved popular and professional attitudes towards persons with disabilities, the lobbying strategy of emphasizing Roosevelt's able-bodied-ness left unchallenged the problematic stigmatization of persons with disabilities. Rather than addressing polio patients' discrimination in schools and in the workforce, Roosevelt's nonprofit continued a pattern (which he began earlier in his own attempts to walk) in which the impetus for "overcoming" social barriers lay on the person with a disability. The NFIP's Respiratory Center Program would continue to serve the goal of helping polio patients "overcome" their disabilities. As Daniel Wilson has written, the polio rehabilitation centers used medicine with the purpose of "normaliz(ing)" polio patients so that they became "productive members of society..."[254]

The attempt to make polio "respectable" also limited the NFIP's advocacy on behalf the disenfranchised. Naomi Rogers has written that:

> In the NFIP's modernized campaigns, polio philanthropy was no longer welfare, the crippled no longer the deserving poor. The propaganda of the NFIP personified polio as a well-dressed poster child, awkwardly leaning on crutches or getting out of a wheelchair. This child appeared to be defiantly alone- no charity case in an institution surrounded by hovering nurses or physicians…[255]

The NFIP was not an organization that served "welfare" or "charity" cases, but rather one that owed its success to appealing to the self-interest of those with means. This strategy at times precipitated conflicts and exacerbated inequities.

[254] Wilson, *Living With Polio*, 71.
[255] Naomi Rogers, "Polio Can Be Conquered: Science and Health Propaganda in the United States from Polio Polly to Jonas Salk." In *Silent Victories: The History and Practice of Public Health in Twentieth-Century America* (New York: Oxford University Press, 2007), 84-85.

The NFIP and Medical Authority

After the NFIP was founded in 1938, Basil O'Connor became, to a certain extent, a tsar within the organization. As historian David Oshinsky has written:

> Unlike the typical charity, in which local units retained a large measure of autonomy, major decisions at the National Foundation for Infantile Paralysis (NFIP) were left to O'Connor and the cohort of staffers and experts he personally chose. All plans flowed downward to an army of salaried workers and unpaid supporters at the grass-roots level…[256]

O'Connor appointed elite businessmen to the foundation's board of trustees, some of whom like George E. Allen, also administered New Deal programs. The foundation also appointed local business leaders to oversee NFIP chapters.[257]

O' Connor staffed his advisory committees with influential medical leaders, including Surgeon General Thomas Parran, Rockefeller Institute Hospital director Thomas Rivers, American Medical Association President Irvin Abell, and Journal of the American Medical Association editor Morris Fishbein.[258] Naomi Rogers has written that Morris Fishbein was "the powerful secretary of the American Medical Association and an outspoken critic of socialized and alternative medicine." Through O' Connor's relationship with Fishbein, he "developed close connections with the elite of the medical profession."[259] Local NFIP chapters furthered O'Connor's policy of working closely with medical authorities and collaborated with state medical associations in creating physician fee schedules. David Rothman commented that this "(made) certain that when the foundation assumed responsibility for a family's medical bills, the outlays would be predictable without provoking the ire of organized medicine."[260]

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[256] Oshinsky, 64.
[257] Rogers, "Polio Can Be Conquered," 81.
[258] Rose, 89.
[259] Rogers, "Polio Can Be Conquered," 82, 84-85.
[260] D.J. Rothman, 65.

The NFIP's deference to professional organizations such as the AMA likely led to its success in expanding access to services during a time in which there was powerful opposition to any intervention seen as interfering with the private practitioner's monopoly on healthcare delivery. From its beginning until 1955, the NFIP spent $233 million in creating an aftercare infrastructure for polio patients.[261] The foundation used 68% of its total funds on patient care and four out of five of all polio patients in the nation received medical assistance.[262]

March of Dimes historian David Rose noted that the American medical authorities who shaped the NFIP's policies, "guided the NFIP in its first years to impel the scientific research on the causes of and solutions to polio." [263] The foundation's orientation towards laboratory and clinical research accounted for its establishment of a successful grant program that incentivized scientific breakthroughs. However, it also precipitated tensions with alternative medical leaders, both in Los Angeles County and throughout the nation.

Unique aspects of civic life in Los Angeles became key to a popular assault on the prevailing medical approach to managing polio during the late 1930s and 1940s. And this was rooted in the region's pattern of industrialization. The transformation of Los Angeles into a metropolis during the late nineteenth and early twentieth centuries was partly attributable to a booster campaign associating the region with good health. As historian Emily Abel has written, "After the extension of the Southern Pacific Railroad from San Francisco to Los Angeles in 1876, Southern California towns and cities began to vie for the invalid trade by touting the remarkable curative power of the climate and the newly planted citrus orchards."[264] Carey McWilliams wrote in his seminal history that both the region's campaign to attract health seekers

[261] Oshinsky, 64-65.
[262] Sills, 116, 134.
[263] Rose, 91.
[264] Emily Abel, *Tuberculosis and the Politics of Exclusion: A History of Public Health and Migration to Los Angeles* (New Brunswick: Rutgers University Press, 2007), 5.

and its delayed development of regular medical institutions, in comparison with the northern part of the state, led to widespread medical "cultism." McWilliams noted that even during the late nineteenth century, Southern California lacked a chapter of the State Medical Society, and as a result, "The vacuum created in the medical art was filled by Chinese herb doctors, faith-healers, quacks."[265]

The local popularity of Milton H. Berry's polio institute illustrated the "foothold" that "the unorthodox medical sciences" had in the region. Originally from San Francisco, Milton Berry was, as the *Los Angeles Times* described, "a great runner and boxer and then a trainer of athletes and bicycle riders, learning as he went all the secrets of the reasons for muscle behavior." Berry befriended film and television actor Leo Carrillo, who helped him to advance his Milton H. Berry Foundation for Paralysis Correction in Van Nuys. His nonprofit organization came to include prominent residents, such as Norman Chandler, who succeeded his father as publisher of the *Los Angeles Times*, and Hollywood actor Fred Stone.[266]

Naomi Rogers pointed out that "the (Berry) school's use of systematized rehabilitation in a beautiful setting" distinguished it from contemporary rehabilitation hospitals, as it was "completely surrounded by orange, lemon and walnut groves." Rogers characterized Berry's "unique field of Patho-kinesiology" as consisting of "a special way of reading the body that linked muscle action and brain function." Berry "'locate(d) the trouble with his fingers, part(ed) adhesions of the muscles, freeing cords and nerves and veins, then (brought) the power of the patient's mind into play." Berry claimed that his method of rehabilitation was "superior to any of the orthodox methods used by orthopedic hospitals," which was a view that many local residents

[265] McWilliams, *Southern California,* 257- 258.
[266] "Norman Chandler." *Encyclopaedia Britannica*. (Encyclopaedia Brittanica, Inc., 2019). < https://www.britannica.com/biography/Norman-Chandler> Accessed January 8, 2021.

shared.[267] In an article announcing his death in 1939, the *Los Angeles Times* touched on the local reverence for Berry and memorialized him as "the man who had restored to useful lives more crippled children than any other infantile paralysis specialist in America." The article writer noted that Los Angeles' local National Foundation chapter "recognized the superiority of Dr. Berry's work" as well and provided him with its "largest single sum allotted in Southern California- $10,000."[268]

The local chapter's support for the Berry Foundation sparked a disastrous relationship with the national headquarters. A later chapter document provided detail on the conflict which came about through its early partnership with the Berry School. The document noted that in the months following its founding, "the Chapter made a grant of $10,000 to Milton H. Berry to expand his plant, contrary to our instructions and to the Manual for Chapters, entering into an agreement with Berry to treat 40 cases at $250 per case per year." This action was undertaken "with a total disregard for the policies as set forth in the Manual, which is provided by the Foundation for the guidance of its Chapters, and operated contrary to the best interests of polio patients, financing treatment of services rendered by the Berry Schools, chiropractors and osteopaths, which are unrecognized by the American Medical Association." Due to the Los Angeles chapter's "unfavorable reputation," the "certificate of Organization was, therefore, cancelled on November 17, 1943, and resignations of the officers requested." When the chapter was reestablished in January 1944, it was deferent to medical authorities and the "new officers improved relationships with hospitals, organizations, public, private agencies in the community."[269]

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[267] Naomi Rogers, *Polio Wars*, 170.
[268] "Death Calls Milton Berry: Man Who Restored Thousands of Paralysis Victims Succumbs," 5 December 1939, *Los Angeles Times*.
[269] Los Angeles County Chapter Historical Sketch, September 25, 1946, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

Like Milton Berry, Elizabeth Kenny was a popular medical leader who upheld that her polio rehabilitation methods were superior to established orthopedic treatments. Kenny also had a thorny relationship with the National Foundation for Infantile Paralysis. While Kenny was popularly known as a sister, a term designating nursing professionals in Australia, she was not a licensed nurse. Her understanding of the human body was based on direct experience in the Australian outback, rather than through learning within an institution. As historian David Oshinsky has written, Sister Kenny "saw infantile paralysis as a spasm of the muscles, rather than a disease of the nerves."[270] After coming to the United States in 1940, Kenny became a controversial figure for her willingness to publicly question how orthopedic surgeons were treating polio.[271]

During the 1930s, orthopedists advocated for the extensive use of splinting to prevent deformities. J.R. Paul, Simon Flexner's assistant at the Rockefeller Institute, recalled how orthopedic surgeons took Lovett's advice for splinting to an extreme when he visited Los Angeles in 1934. He wrote that the epidemic occurred during "a time when the common practice was to erect an elaborate system of frames and pulleys over the beds, which gave the poliomyelitis ward the appearance of a ward occupied by patients who had suffered extensive trauma in a disaster area, whereas in actuality very few patients turned out to have any paralysis at all."[272] Historian David Oshinsky explained the basis of Kenny's argument against such practices:

> Since the disease was muscular, rather than nerve-related, immobilizing the patient for long periods was the worst possible thing to do. Splints and casts were more likely to cause deformities than to prevent them. But hot packs and gentle exercise could relieve these spasms, freeing patients to reeducate their 'alienated' muscles much as one might

[270] Oshinsky, 73.
[271] Rogers, *Polio Wars*, 3.
[272] Paul, 222.

> reeducate a victim of amnesia, using both the mind and the body to visualize and then practice the movements that once had been a normal part of everyday life.[273]

Some medical experts welcomed Sister Kenny's approach, such as orthopedic surgeon John Florian Pohl, who advocated for incorporating her methods into polio rehabilitation.[274] However, other authorities opposed Kenny, including American Medical Association researchers, who asserted in 1944 that "there is no evidence that the Kenny treatment prevents or decreases the amount of paralysis resulting from poliomyelitis." Basil O'Connor likewise expressed frustration at Sister Kenny's "Jehovah complex." While financing courses on the Kenny method, he rejected requests to fund her institution in Minneapolis.[275]

Sister Kenny's willingness to try new approaches brought her fame among the American public and the support of influential Hollywood figures, including most notably Rosalind Russell and Dudly Nichols. Russell, who had recently starred in the hit film *His Girl Friday*, came to believe in the Kenny Method after Kenny successfully rehabilitated her son. Naomi Rogers has written that this inspired Russell's "altruistic crusade" to make a film supporting Kenny and she introduced Kenny to Dudly Nichols, the acclaimed writer of *Stagecoach*, *Bringing Up Baby*, and *Bells of St. Mary's*. Upon touring Kenny's facility in Minneapolis, Nichols' experience became "another story of conversion" and he agreed to direct a film promoting her cause. Released in 1946, RKO's *Sister Kenny* "became part of her challenge to medical orthodoxy," and propagated a critique of the established orthopedic management of polio in theatres across the United States.[276]

[273] Oshinsky, 75.
[274] Rogers, *Polio Wars*, 20, 94-95, 114-120.
[275] Oshinsky, 77-78.
[276] Rogers, *Polio Wars*, 254.

While providing a bastion of support for Milton Berry and Elizabeth Kenny, Hollywood was by no means partisan in attacking the medical establishment. Hollywood celebrities also provided public support for the March of Dimes campaigns and contributed to the birth of scientific rehabilitation for iron lung patients. Celebrities' dedication to the March of Dimes also came about through the NFIP's strategy of working with elites: in this case, through Roosevelt and O'Connors' partnership with the Hollywood moguls who shaped American cultural expression.

The NFIP and Cultural Authorities

The National Foundation for Infantile Paralysis not only worked with elites in business and medicine, but developed relationships with influential figures in media, religion, and politics. Shortly after founding the NFIP, Basil O'Connor established a film and radio section within his public relations department. David Oshinsky has written that in doing so, "the foundation turned west toward Hollywood, then, as now, a bastion of liberal Democratic support."[277] Radio celebrity Eddie Cantor, a staunch supporter of Franklin Roosevelt, coined the term "March of Dimes" in a meeting with Hollywood executives at the Metro-Goldwyn-Mayer (MGM) studios. In a play upon the *March of Time* newsreel features, which were shown in theatres before films, Cantor used a January 1938 radio broadcast to ask all Americans to send their dimes to President Roosevelt to raise money for his new organization.[278] After Cantor made his appeal, other radio hosts and celebrities followed his lead, including the Lone Ranger, Jack Benny, and Bing Crosby.[279]

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[277] Oshinsky, 53.
[278] March of Dimes. "Origin of Our Name." < https://www.marchofdimes.org/mission/eddie-cantor-and-the-origin-of-the-march-of-dimes.aspx> Accessed August 8, 2020; Olivia B. Waxman, "The Inspiring Depression-Era Story of How the 'March of Dimes' Got Its Name," *Time*. January, 2018. <https://time.com/5062520/march-of-dimes-history/> Accessed August 8, 2020.
[279] Oshinsky, 53-54.

Eddie Cantor also enlisted the support of Metro-Goldwyn-Mayer executive Nicholas M. Schenck, who beginning in 1941, implemented dime collection campaigns in his theatres nationwide. The heads of Columbia Pictures, RKO, Paramount, Twentieth Century-Fox, Universal Pictures, and Warner Brothers subsequently proclaimed their allegiance to the NFIP and instituted drives in their theatres as well. Schenck became chair of a joint Motion Pictures National Committee which coordinated theatre collections to ensure a united fundraising effort across the competing film chains. Studios also created trailers for the NFIP using film stars and arranged for actors and actresses to speak at theatres after trailers were shown. Major celebrities took part in the NFIP's film and television outreach during the 1940s and 1950s, including Judy Garland, Mickey Rooney, Mary Pickford, Marilyn Monroe, James Cagney, Humphrey Bogart, Lucille Ball and Desi Arnaz.[280]

The studio executives' involvement in Franklin Roosevelt's nonprofit organization was an extension of a relationship with Roosevelt that began at the beginning of World War II, during a time of widespread isolationist sentiment. March of Dimes historian David Rose has written that Roosevelt reached out to "Hollywood filmmakers to produce films that might steer popular opinion from isolationist pressures and set the interventionist tone in the developing global confrontation."[281] Studio executives, such as the Warners, viewed a relationship with President Roosevelt as something that could be used to their advantage. Neal Gabler has written in his history of the film industry that:

> The Warners knew an offer, even a veiled offer, when they saw one and wired the president that "personally we would like to do all in our power within the motion picture industry and by use of the talking screen to show the American people the worthiness of the cause for which the free peoples of Europe are making such tremendous sacrifices." A few months later Nick Schenck offered to place his entire studio at the president's

[280] Rose, 113, 115, 121, 126, 127, 161.
[281] Ibid., 119.

> disposal "in connection with the movie of national defense and foreign policy in which you [Roosevelt] were interested."[282]

President Roosevelt's relationship with Hollywood moguls would be advantageous to both his war effort and his nonprofit organization. Gabler noted that following the attack on Pearl Harbor in 1941, the armed service recruited hundreds of workers from the film industry produce films for instructing soldiers and for "propaganda" purposes.[283] During the early 1940s, the NFIP likewise raised most of its funding through the movie theatre collection drives.[284] The film executives' work on behalf of the foundation served their interests, not only through the publicity that it brought their studios, but through activity that went on behind closed doors. For example, Harvard professor of American Studies, Marc Shell documented how after the war ended in 1945, Schenck met with President Truman and Basil O Connor and agreed to extend his involvement in NFIP fundraising efforts "in return for leniency with enforcement of the Sherman and Clayton antitrust regulations."[285]

The National Foundation not only worked with the elites who influenced the public on the screen, but through the pulpit. For instance, the foundation urged rabbis, priests, and ministers to set aside Saturday, January 12 and Sunday, January 13, 1952, as days to commemorate the national effort against infantile paralysis and encouraged them to deliver sermons about the virtue that service had within their respective traditions. The NFIP prepared "suggested sermon material" for religious leaders based on biblical passages, such as Proverbs 21:16: "The righteous giveth and spareth not." Advising clerics to appeal to the "American

[282] Neal Gabler, *An Empire of Their Own: How the Jews Invented Hollywood* Kindle Ed. (New York: Anchor Books, 1988), 406.
[283] Ibid., 411.
[284] Rose, 111.
[285] Marc Shell, *Polio and Its Aftermath: The Paralysis of Culture* (Cambridge: Harvard University Press, 2005), 143.

voluntary way," the NFIP provided them with the following quote to be used in their sermons on both days:

> Let us consider the March of Dimes in light of the American SPIRIT of giving- or rather, sharing,- because, in fact, the National Foundation for Infantile Paralysis is a partnership of the American people- a partnership in which the strong help to carry the burden of the weak.[286]

The NFIP stated that the reason it performed outreach among religious leaders was because "the men, women and children who make up the congregations of all faiths have the greatest interest in the humanitarian work made possible by the March of Dimes."[287] Los Angeles' experience of polio exemplified the NFIP's statement that its cause resonated within religious communities. As we will see in a forthcoming chapter, Seventh-Day Adventist professionals' belief in the ethical responsibility to provide a high standard of care to polio patients arguably inspired their "partnership" to improve inhumane conditions in the Los Angeles County public hospital system.

The National Foundation's success in bringing local cultural elites into its fold was on display early in its history. On December 12, 1938, hundreds of prominent Californians assembled in the Biltmore Hotel to begin planning fundraising for Roosevelt's new organization. In addressing the audience, Joseph Schenck compared polio to warfare and stated, "Infantile paralysis is an enemy of mankind which has made more cripples than man-made war."[288] Not only was Joseph a studio executive like his brother Nicholas, but he was also wedded to the National Foundation as its vice president. A contemporary newspaper noted that "acting under

[286] Suggested March of Dimes Sermon Material, File Folder: Fundraising Campaign Materials Publicity 1952, March of Dimes Archives, White Plains, New York.
[287] Ibid.
[288] "Disease Fight Fund Sought," 13 December 1938, *Los Angeles Times.*

President Roosevelt," Schenck collaborated with Eddie Cantor and "collected 16% of the monies turned into the (polio) fund."[289]

Numerous other leaders attended the Biltmore Hotel gathering, including Norman Chandler of the *Los Angeles Times*, Governor Culbert Olson and Attorney General Earl Warren, who had both recently been elected to office. As the *Los Angeles Times* reported in covering the event, "Governor-elect Olson said that one of his first acts when he takes office Jan. 1 will be to issue a proclamation calling on Californians to support the drive." Also present at the convention were religious leaders, including Catholic Archbishop Cantwell, Jewish Rabbi Magnin, and Episcopalian Bishop Stevens. MGM executive Louis B. Mayer touched on the significance of religious involvement in the effort against polio; Mayer stated, "We should be thankful that we live in a land where men of different faiths combine to aid humanity," and declared "This battle is not for greed or power, but for human good without distinction of race or creed."[290]

Mayer's emphasis on the universal nature of the polio movement was consistent with President Roosevelt's effort to "depoliticize" the National Foundation after he founded it in 1938. As Richard Verville has written, "controversial policies," such as Roosevelt's attempts to increase federal power, offended many of the wealthy who might have given to the Foundation.[291] Roosevelt's declining popularity after his 1937 "court-packing plan" also led the NFIP to emphasize that it was not political.[292] However, in reality the foundation was far from apolitical. While claiming to serve polio patients "without distinction of race," racial politics shaped the foundation's organizational practices. In addition, Basil O'Connor used the power of

[289] Jewish Post, Indianapolis, Marion County, 18 November 1938. Contributed by IUPUI University Library, by permission of The Jewish Post & Opinion. < https://newspapers.library.in.gov/?a=d&d=JPOST19381118-01.1.7&e=-------en-20--1--txt-txIN-------> Accessed August 8, 2020.
[290] "Disease Fight Fund Sought."
[291] Verville, *War, Politics, and Philanthropy*, 123.
[292] Oshinsky, 52-53.

the Foundation's purse to influence local politicians. Indeed, the polio rehabilitation program for iron lung patients at Rancho Los Amigos resulted from the NFIP's success at stepping into, and actively using, local politics to its advantage.

The Racial Politics of Roosevelt's Rehabilitation Advocacy

Both the Warm Springs Foundation and National Foundation for Infantile Paralysis' policies incorporated racism. After Roosevelt founded Warm Springs, it admitted only white patients. As Naomi Rogers has written:

> Typical of the political calculations by Roosevelt's New Deal administration, which fought the Depression with unprecedented federal funding while accepting racist policies that accommodated the Southern status quo, Roosevelt was careful not to challenge what he saw as Georgia's "local customs" and kept the Warm Springs patients, administrators, and medical staff White.[293]

Historian Stephen Mawsley explained that the March of Dimes fundraising campaigns were "conceived as a volunteer movement for white Americans" and that the foundation exclusively recruited whites during its early years. While African American communities formed unofficial March of Dimes fundraising units, many blacks "grew increasingly disillusioned by the persistence of segregation and the lack of recognition of their efforts."[294] The Foundation justified its lack of outreach among African Americans by stating a stereotype holding that blacks lacked susceptibility to polio (which contradicted contemporary statistical and scientific findings).[295]

Civil rights activists had a certain degree of success in challenging institutional racism within Roosevelt's nonprofits. In responding to activists' outcry over Warm Spring's racial

[293] N. Rogers, "Race and the Politics of Polio." *American Journal of Public Health* 97, no. 5 (2007): 787.
[294] Mawdsley, "Dancing on Eggs," 229, 230.
[295] Rogers, "Race and the Politics of Polio*,"* 784, 786.

restrictions, the National Foundation funded the construction of a rehabilitation institute for black polio patients in Tuskegee, Alabama in 1941.[296] The Foundation also created a program for "Negro Activities" and appointed Charles H. Bynum as its director in 1944. Bynum, an African American administrator of Texas College, had over a decade of experience advocating for racial equality and worked to make the NFIP's policies more inclusive. As a result of Bynum's leadership, the foundation began accepting African Americans as fundraising volunteers and pushed to improve the quality of care that black polio patients experienced in hospitals.[297] However, the NFIP's advocacy for blacks and whites remained unequal, which is perhaps most clearly seen in the foundation's poster child campaigns. While Bynum successfully pushed to include blacks as poster children, officials required that posters of white children be noticeably larger in size and in better print quality than those of black children. Foundation officials also seldom selected African American poster children who had dark skin.[298]

The March of Dimes campaigns' focus on white children was consistent with its identity as an advocacy organization for "socially acceptable" patient populations. As the foundation stated in a brochure: "Infantile paralysis is not primarily a disease of the slums, the malnourished or the underprivileged."[299] David Rothman has written that "From the very start, allocating scarce resources was an issue that was framed in terms of the needs of the middle class… polio was a disease probably found more often among the haves than the have-nots- even apart from the extraordinary symbol of an aristocratic president as one of its victims."[300] While the foundation used the "respectable" image of polio to appeal for funding, its entitlement-driven

[296] Ibid., 784-795; Mawdsley, "Dancing on Eggs," 220; Stephen E. Mawdsley, "Polio and Prejudice: Charles Hudson Bynum and the Racial Politics of the National Foundation for Infantile Paralysis, 1938-1954" (Master's thesis, University of Alberta, 2008), 17-21.
[297] Mawdsley, "Dancing on Eggs," 232-247.
[298] Ibid., 240.
[299] D.J. Rothman, 55.
[300] Ibid., 55.

model also contributed to its mounting costs in financing medical treatment as epidemics increased nationally during the 1940s and 1950s.

A "Worthy" Patient Population and a Problematic Financial Model

The polio patient's worthiness mandated that assistance be provided "without the slightest tinge of the stigma of 'charity'."[301] When a hospital admitted a polio patient, it submitted a form to the foundation listing the costs of care and the patient's financial standing as well as any insurance that the patient had. After reviewing the form, the foundation arranged an interview with the family, which served as "a friendly discussion of the family's ability to pay for all or a part of care and the services the chapter gives to polio patients." The foundation opposed volunteers' use of a means test in evaluating whether assistance should be approved, as "a means test is generally repugnant to the way most Americans live…"[302]

Historian David Rothman has written that "The (middle) class bias (of the NFIP) meant, among other things, that donations to the NFIP were not charitable gifts to help 'them,' but a self-interested effort to protect 'us.'"[303] Foundation policy restricted money from being transferred from wealthy chapters to debt-ridden chapters. Basil O'Connor explained why NFIP policies prohibited such a transfer of funds: "It is inconceivable that Buffalo would ever send its money to New York City or vice versa."[304] While donors' knowledge that their money could potentially finance their medical services functioned as an incentive to give, the same donors

[301] Annual Meeting of The National Foundation for Infantile Paralysis, June 28, 1945, File Folder: Los Angeles March of Dimes Chapter Documents; Policies and Services of Chapter Program, October 2, 1950, Box 3 Conference and Meeting Records Folder: Medical Committee, March of Dimes Archives, White Plains, New York.
[302] Memorandum, June 29, 1951, File Folder: Box: Medical Program Folder: Respiratory Care Centers 1949-1954, March of Dimes Archives, White Plains, New York.
[303] D.J. Rothman, 55.
[304] Proceedings; *A Suggested Program for the Study of the Epidemiology of Poliomyelitis* by Dr. Herman N. Bundesen; Report on Special Plan Committee, March 14-15, 1941, March of Dimes Archives, White Plains, New York.

would likely be opposed to transferring money from their communities to others with a greater need of assistance.[305]

The National Foundation's approach to fundraising created other problems for the organization. The NFIP intended to reserve its assistance for families experiencing financial hardship on account of hospitalization, but volunteers often approved bills of almost anyone who approached them, including wealthy families who could afford treatment on their own. At a foundation meeting addressing hospitalization costs, a foundation official made the following observation about how the volunteer structure increased this type of cost. He explained:

> The average chairman throughout the country might be a farmer... Why does he pay a bill when he knows probably the family can afford to pay the bill? It is much easier (paying the bill) than his having to get with the family, go through a routine of questions, things, incidentally, for which he is not a social worker. He is a farmer. He does not like to embarrass Joe Blow by asking how much money does he have in the bank, that sort of thing…[306]

Volunteers' willingness to cover most patient expenses led them to approve paying hospital bills that charged for phone calls and even televisions.[307] Foundation officials attempted to establish stricter standards but were limited in what they could do to cut costs. For one thing, if the March of Dimes imposed restrictions on what it covered, this could bring bad publicity and reduce community members' incentive to give. As a committee member explained, "We won't have near the success in this area the next time we go back on the drive that we had previously that we asked these parties to pay because this parent will tell these other people, 'My child had

[305] National Foundation for Infantile Paralysis Hospital Care Advisory and Committee Meeting, 1953, File Folder: Box 2, Folder: Epidemics and Public Health, 1941, March of Dimes Archives, White Plains, New York.
[306] National Foundation for Infantile Paralysis Hospital Care Advisory and Committee Meeting 1953, November 5-6, 1953, File Folder: Box 2 Folder: Hospital Care Advisory Committee, March of Dimes Archives, White Plains, New York.
[307] Committee Member Basil Maclean, shocked about the foundation's coverage of hospitals' television purchases, remarked: "This information should never get out into the public. I think the public would consider it scandalous to be throwing away money at these distortionate practices of hospitals after collecting dimes from newsboys and little kids." Ibid.

polio and I had to pay the bill' so the effort is not being made to get the parents to pay the bill for that reason."[308]

Additionally, foundation officials did not have much room in their negotiations with hospitals over billing because Basil O'Connor opposed any cost-saving mechanism that could potentially jeopardize the high quality of care to which polio patients were entitled. Director of Chapters George Voss shut down discussion of establishing fixed rates for paying hospitals at a 1953 meeting. As Voss explained in closing the conversation, "You will have a little difficulty with O'Connor on a thing like that. He is a firm believer that certainly we are obligated as far as he can see to pay at least the hospital cost."[309] Thus, the foundation had little leverage to demand lower rates in grossly inefficient hospitals, like Rancho Los Amigos in Los Angeles. [310]

Large epidemics and continual debt characterized Los Angeles County's experience with polio during the late 1940s and 1950s. As rehabilitation leader Jacquelin Perry explained, Los Angeles' temperate climate and wartime population increase worked together and "replaced a manageable disease with massive and prolonged epidemics."[311] While eastern and central states had heavy epidemics in the summer months, with a low incidence of polio between January and June, California epidemics extended into the winter and spring.[312] And among the counties in California, Los Angeles had the most chronic polio cases and the greatest proportion of iron lung patients. [313]

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[308] Ibid.
[309] Ibid.
[310] Letter from Arthur Will to Los Angeles County Board of Supervisors, 9 November 1951, File Folder: Box: HOBP 2, Folder: NFIP Re-Post Acute Polio Patients- Rancho Los Amigos, Los Angeles County Board of Supervisors, Los Angeles, California.
[311] Jacquelin Perry, "Foreword," in Richard Daggett, *Not Just Polio: My Life Story* (New York: iUniverse, Inc., 2010), ix.
[312] Edwards, Clark, and Drake, 10; Respirator Patient Survey, March 15, 1951, File Folder: Box 7 Folder: Respiratory Patients 1951, March of Dimes Archives, White Plains, New York.
[313] Edwards, Clark, and Drake, 14.

The Beginnings of the Foundation's Advocacy for Iron Lung Patients

The NFIP especially stood out for its advocacy on behalf of iron lung patients, who were the most stigmatized subset of polio patients. During the first half of the twentieth century, physicians often questioned whether it was worth saving the lives of patients who became dependent upon the iron lung. For example, James Wilson, a distinguished pediatrician who studied respiratory polio, wrote in a letter to Basil O'Connor:

> I could wish, as I believe you do, that as far as poliomyelitis goes the respirator had not been invented. Throughout the country there are several dozens of horribly paralyzed patients, who seem quite useless and are a tremendous burden and expense to someone. Without the respirator these patients would have died and adjustments long since made…[314]

While Wilson had a negative view of life with a disability, he also believed that it would be unacceptable to withhold the iron lung from patients who needed it to live. He therefore advised Basil O' Connor in 1942 to develop an emergency respirator program that purchased iron lungs in bulk and held them in regional storage facilities to be loaned out to communities that needed them.[315] David Rothman has written that Wilson and other foundation advisors "brought to its mission a medical mind-set, older than some contemporary analysts may appreciate, that emphasizes the successes, however limited, and disregards the failures, however more commonplace. In this mind-set, an ability to save even one life trumps all other considerations." Thus, while stigmatizing life in a respirator, Wilson also insisted that iron lungs be accessible to all people who needed them.[316]

Rothman also explained that the foundation's insistence that all were entitled to iron lungs stemmed from its association with Franklin Roosevelt. Rothman has written:

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[314] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 201, March of Dimes Archives, White Plains, New York.
[315] D.J. Rothman, 50, 171.
[316] Ibid., 51-52.

> As befit a body whose origins and continued functioning were so intimately connected to an American president, and one whose rhetoric and programs were clearly tied to the well-being of all citizens, regardless of social class, the NFIP almost instinctively brought a democratic ethos to questions of access to medical technology. Not surprisingly, it defined the death of any patient because an iron lung was unavailable as its own institutional failure.[317]

Furthermore, such a perspective was consistent with the NFIP's emphasis on the polio patient's elite status, as it "built on and called attention to the respectability and blamelessness of polio patients." The National Foundation also used to its advantage the widespread cultural value assigned to children's health and sold its emergency program to the public through emphasizing that iron lungs helped this particularly innocent population to survive. [318]

Thus, as early as two years after its founding, the National Foundation was already challenging medical professionals' stigmatization of iron lung patients. Commenting on many physicians' devaluation of life in a respirator, a 1940 March of Dimes' program stated "There is an unfortunate tendency…for the physician to feel that he would rather have his patient die than his life saved in a respirator only to become a hopeless cripple. The possibility of survival without the aid of artificial respiration and the acquisition of an even more crippling paralysis because of this neglect is not entertained." Arguing that physicians should view the respiratory polio patient as capable of recovering in an equal manner to patients with orthopedic ailments, the plan advocated that "We should teach the pediatricians and internists, who for the most part care for the acute stage of poliomyelitis, that the respiratory muscles should be treated with the

[317] Ibid., 53-54.
[318] Ibid., 54-56.

same respect for the necessity of protection and rest as orthopedists have long established as necessary with a paralyzed quadriceps."[319]

As the iron lung became more widely available, respiratory patients' survival rates increased and the foundation encountered a new problem: the considerable expense of financing their convalescent care.[320] Iron lung patients required extensive supervision by therapists, nurses, and physicians for anywhere from a few weeks to the rest of their lives. The national increase in epidemics during this time also left the NFIP headquarters advancing millions of dollars in emergency relief to local chapters whose funds ran out. The situation became so dire that in September 1950, Basil O'Connor predicted that the national headquarters would have no more money to give chapters within the first ten days of November.[321] By far, California represented the biggest liability in the nation during the late 1940s and early 1950s. Foundation headquarters forwarded $1,500,000 to its California chapters and this aid amounted to over 14% of all of its advances in the country.[322]

As the numbers of iron lung patients increased, reports surfaced of patients being institutionalized in facilities that had negligible medical care. A 1955 NFIP grant request from Rancho Los Amigos to the NFIP summarized the situation that developed in polio epicenters like Los Angeles:

> Successive heavy epidemics, with increasing numbers of survivors in tank respirators due to improved management of acute critical cases, resulted in the accumulation of a very large number of "hopeless" respiratory and bulbar paralytics for whom little or nothing beyond custodial care was given. Many patients were still in tanks with open

[319] The Suggested Program for the National Foundation for Infantile Paralysis in Handling the Respiratory Problem in Poliomyelitis, August 26, 1940, File Folder: Box 6 Surveys and Study Records. File Folder: Respiratory Survey, March of Dimes Archives, White Plains, New York.
[320] Respiratory Patient Survey, November 1, 1951, File Folder: Box 7. Folder: Respiratory Patients 1951, March of Dimes Archives, White Plains, New York.
[321] Letter from president to chapter chairman, 2 September 1950, File Folder: Box 3 Folder: Medical Care Problems, March of Dimes Archives, White Plains, New York.
[322] Advances to Chapters 1950, File Folder: Box 3 Folder: Medical Care Problems, March of Dimes Archives, White Plains, New York.

> tracheotomies three or more years after onset. Hundreds of thousands of dollars spent on minimal care was accomplishing nothing but prolonging a miserable survival for these patients.[323]

While the emergency respirator program expanded access to iron lungs, it also inadvertently caused the warehousing of convalescent patients. During the second half of the 1940s, foundation officials studied this problem and formulated the rehabilitation center as the solution. And the National Foundation used disastrous situations in Houston and Los Angeles County to test its rehabilitation program's ability to respond to what had become a national health problem.

Polio Epidemics Move West

During the early decades of twentieth century, the largest polio epidemics occurred in the Northeast. With the United States' entry into World War II, the rest of the nation began catching up. Between 1941 and 1944, cases increased nationwide from 9,000 to over 19,000. Around this time, the Texas Gulf Coast region and Southern California began encountering major epidemics almost every year, which was a trend that continued into the mid-1950s. As Heather Wooten has written in her history of polio in Harris County, Texas, "with the exception of Los Angeles County, no other county in the nation suffered polio with such frightening regularity."[324] While the exact reason why polio increased in the western states during this time is the subject of speculation, experts have proposed that it was likely tied to population shifts resulting from the wartime economy. Wooten has written that one proposed reason was "the immense relocation of

[323] Los Angeles Grant Request 1955, File Folder: Box 5 Folder: Respiratory Centers Agenda, March of Dimes Archives, White Plains, New York.
[324] Oshinsky, 69; Wooten, "The Polio Years in Harris and Galveston Counties," 2-3.

individuals from fundamentally endemic rural communities and small towns to military bases and wartime industrial centers undoubtably exposed migrants to new germs."[325]

In her history of New York, Chicago, and Los Angeles, Janet L. Abu-Lughod discussed how Los Angeles' wartime industrial expansion "dwarf(ed)" that of the 1930s. She has written:

> Whereas the Midwest benefited somewhat from orders for tanks, trucks, and ordinance, and the East Coast ports received orders for ships and some aircraft, most of the contracts for planes, ships, and, later, even military bases were awarded to West Coast sites, a preference that continued even after Japan's defeat, given that subsequent "hot" wars (the Korean and then the Vietnam conflicts) were fought exclusively in the Pacific arena. As a result, whereas the centers of New York, Chicago, Charleston, and Boston all lost population between 1940 and 1960, Los Angeles' population nearly doubled.[326]

Jacquelin Perry touched on her experience of the demographic changes Los Angeles experienced during this time. Perry left Los Angeles in 1940 to serve as a physical therapist during World War II. When she departed from the region, she recalled that there were "orange groves all over" and "no city except LA." When Perry returned to Los Angeles four years later, the city was unrecognizable and there were "no farms" due to the region's extensive wartime settlement.[327]

The years that polio migrated west were the years that the NFIP emergency operations went into effect. And David Oshinsky has written that a 1944 epidemic in the rural town of Hickory, North Carolina "provide(d) the first real test for Basil O'Connor and the National Foundation."[328] Hickory lacked a hospital when its epidemic began and depended upon the NFIP to construct a temporary facility and recruit professionals. The foundation transferred to Hickory medical equipment, including iron lungs, from its regional storage centers. The infrastructure that the NFIP created in Hickory helped 454 patients. The foundation's successful epidemic

[325] Wooten, *Polio Years in Texas,* 57.
[326] Abu-Lughod, 245.
[327] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010.
[328] Oshinsky, 69.

response would be retold in campaign publications, such as "The Miracle of Hickory," which portrayed the coordinated effort as similar to wartime mobilization to inspire popular support for the NFIP.[329]

Like Hickory, the foundation would help to coordinate Los Angeles' local response and acquire necessary healthcare personnel, iron lungs, and other equipment. However, Los Angeles' experience of polio was not marked by an isolated battle but rather a prolonged war. The considerable expenses that accompanied financing care for Los Angeles' disproportionate caseload led the National Foundation to devise a long-term strategy on its western front: to initiate its rehabilitation center program. This strategy would, in the long term, transform chronic disease management in Los Angeles' safety net healthcare system.

The County Farm and the Arrival of California's Second Epidemic Period

Between 1936 and 1948, California had its second period of increasing polio incidence, which set the stage for Rancho Los Amigos' designation as an NFIP Respiratory Center. Since its early years as the County Farm, Rancho Los Amigos provided housing for the elderly as well as beds for overflow chronic patients from General Hospital. The polio epidemics ushered in a critique of the institution's convalescent approach to caregiving. Through the NFIP's Respiratory Center Program, Rancho Los Amigos became an emblem of scientific rehabilitation. But becoming a Respiratory Center was a point of departure from an earlier approach, which while having serious imperfections, also responded to the social conditions that exacerbate chronic disease.

[329] Ibid., 70-72; D.J. Rothman, 56.

Not long after the County Farm was founded in 1888, it became settled by people who were older than 60 years of age, a trend which was largely due to shifting state welfare policies. Prior to 1894, unemployed women and men over the age of sixty received state assistance. However, with cutbacks in assistance, older individuals who lacked financial support sought the shelter that the facility provided. The County Farm additionally began accepting overflow patients from state psychiatric hospitals, many of whom were reported to have substance abuse problems, such as alcoholism.[330] In 1907, the Farm acquired the funding to construct wards for the psychiatric patients.[331] *Los Angeles Times* writer Cecilia Rasmussen has aptly described the County Farm during these years as "a place where officials tried to steer derelicts back onto the right track… 'bums,' motley men whose problem was the bottle and whose cure was a few sober weeks on the farm." Rasmussen noted that County Farm residents (or "inmates" as they were labeled by hospital staff) had regimented lives and "marked their days by the steam whistle that signaled meals, quitting time and lights out." As a reflection of the low social status and lack of support that inmates had in greater Los Angeles, the county buried residents who passed away in a graveyard reserved for the indigent near the Union Pacific railway in southwest Downey.[332]

In the decades after its founding, Superintendent William Harriman increased the farm's livestock and placed it in a position where it could make a profit in the commercial market. Harriman administered the County Farm from its early years until its expansion a half of a century later into a polio rehabilitation center. The County Farm employed able-bodied residents as farmhands, as the farm also served as a solution to ills such as economic insecurity.[333]

[330] Colleen Adair Fliedner, *Centennial Rancho Los Amigos Medical Center 1888-1988.* (Downey: Rancho Los Amigos Medical Center, 1990), 55.
[331] Ibid, 64.
[332] "Farm for Ill and Destitute Grew Into a Place of Hope, 7 December 2003, *Los Angeles Times*.
[333] Fliedner, 27, 88-89

Beginning in 1918, local hospitals began transferring seriously ill patients to the County Farm. To provide more advanced care, Harriman ordered the construction of a 2,500-bed building containing laboratories as well as facilities for surgery. Harriman was likely aware of breakthroughs in rehabilitation medicine during World War I; in 1926, he hired a physical therapist and purchased equipment that enabled rehabilitation treatment with heat, electricity, ultraviolet light, and massage.[334]

The increase in patients with chronic medical conditions resulted from broader societal changes. The County Farm's inmate population came to include residents who were disabled following the 1918 influenza pandemic and World War I veterans. During this decade, Los Angeles population was increasing at a rate of 100,000 people per year, and the poverty, illness, and disability that accompanied the population expansion stressed its hospital system. By 1925, County Farm had waiting list of over 200 patients and the arrival of "Dust Bowl" migrants from the drought-stricken states of Midwest further stretched the County Farm's resources.[335]

While poor farms provided an essential safety net during this time, their scandalous conditions were often the subject of popular derision. For example, Harry C. Evan's 1925 Department of Labor study summarized findings from visits to poor farms throughout the United States that were conducted by the Department of Labor and fraternal organizations. It provided a list of 13 "offenses," a number of which were applicable to the County Farm, and which included:

> The inhumane practice of setting up a special place or building and labeling it, to which the unfortunate, intelligent poor must go or starve… The practice of sending hospital cases, the feeble-minded the insane, the deaf and dumb, the blind to poor farms… The practice of sending children to poor farms…The maintenance of poor farms that are unsanitary and filthy… The gross neglect of inmates… The expensive practice of

[334] Ibid., 99, 128, 159-160.
[335] Ibid., 98-99, 189.

> maintaining scores of poor farms in a state when one would render more efficient, more economical, more scientific service.[336]

During this time, William Harriman became concerned about the Poor Farm's reputation, as patients' families refused to send or receive mail from the facility. In rebranding the institution, Harriman renamed the County Farm in 1931, and it subsequently became known as Rancho Los Amigos, which Harriman felt evoked Los Angeles' Spanish past.[337]

While the Poor Farm served as a refuge for older individuals, Rancho Los Amigos became a hospital for an increasingly younger patient base after the Social Security Act's enactment in 1935. As legal historian Allison Hoffman has written in her history of long-term care, the Social Security Act included "Old-Age Assistance program (for the poor elderly), Aid to the Blind, and Aid to Dependent Children, which were all programs of cash assistance." Hoffman mentioned that such programs, in effect, caused "the dismantling of the state public institutions for care… and the rise of the private nursing home care industry in their place."[338] Harriman indeed reported that following the Social Security Act, the "inmate age dropped significantly." [339] The change in the average resident's age also resulted from California's Second Epidemic Period, which after beginning in 1939, furthered the institution's shift away from its poor farm origins.

Not long after the Second Epidemic Period began, Rancho Los Amigos was already receiving overflow polio patients from General Hospital. Between 1939 and 1940, it treated 21 polio patients. Unlike other long-term care facilities in Los Angeles County, Rancho Los Amigos

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[336] Katz, 30; Harry C. Evans, "The American Poorfarm and Its Inmates, 1925." Minnesota Public Radio, 29 July 2002, < http://news.minnesota.publicradio.org/features/200207/29_gundersond_poorfarm-m/evansreport.shtml> Accessed July 16, 2017.
[337] Fliedner, 175-176.
[338] A.K. Hoffman, Reimagining the Risk of Long-Term Care, 16 *Yale Journal of Health Policy Law & Ethics* (2016), 12.
[339] Report of Field Visit. March 3, 1948, File Folder: Folder 1 Box 105 Rehabilitation Centers 1944-1968, Records of the Office of Vocational Rehabilitation, National Archives, College Park, Maryland.

accepted nonwhite patients. While most of Rancho's residents during this time were white, records show that the hospital served African American, Mexican, Japanese, Chinese, and Filipino patients.[340]

Rancho Los Amigos again played a role in Los Angeles' polio response in 1943, when the county had its worst epidemic since 1934. During this year, 797 residents contracted polio. Like Hickory, Los Angeles faced a shortage of healthcare personnel, as wartime needs limited the number of available physical therapists. [341] To overcome this shortage, the National Foundation provided grants for physical therapy students. In 1944, the Los Angeles chapter also arranged for two physical therapists to study with Elizabeth Kenny in Minneapolis. After returning to Los Angeles, the therapists organized a training course at Rancho Los Amigos, General Hospital, and the College of Medical Evangelists. Responding to the need for improved care, the Los Angeles chapter assembled a medical advisory board of six physicians in 1944 who monitored progress in treatment to "provid(e) assurance that each case was receiving the best treatment possible."[342]

During the summer of 1944, Los Angeles had a relatively light polio caseload in comparison with the previous year. Its National Foundation chapter nonetheless spent $89,233.33 on aftercare for over 700 patients, most of whom contracted polio in 1943. A 1944 letter to the Children's Bureau from Dr. Beckett, a consult from the American Heart Association, gave insight into the poor conditions that existed at Rancho Los Amigos during this time. The writer, who was reporting to the Children's Bureau regarding establishing a facility for rheumatic

[340] 40.05/41, 40.05/23, Rancho Los Amigos Annual Reports, File Folder: HOBP 008, Los Angeles County Board of Supervisors, Los Angeles, California.
[341] Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[342] Annual Meeting of the National Foundation For Infantile Paralysis, June 28, 1945; Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

fever, noted that "spastic boys," "blind children," and patients with numerous other conditions were "all housed together." The author reported on Rancho Los Amigos' scarcity of medical equipment, as "They do not have their own EKGs or other technologies but would send patients to LA General 50 miles away for evaluation." Noting that "Polio patients from LA General Hospital (were currently) being sent to Rancho," Beckett wrote that the hospital made room for the patients through a process that people referred to as "tray(ing) out;" the staff converted an area where they delivered food on trays to able-bodied patients into a ward for polio patients. Beckett mentioned that children were receiving "domiciliary care" and that people at the hospital appeared "dull, institutionalized." Beckett stated he was "thoroughly disgusted" by what he saw during his visit, both as a taxpayer and as a physician, and urged the following: "In view of findings, may be able to get county support for convalescent rheumatic children outside of Rancho Los Amigos."[343]

In 1945, the county again had a low incidence of polio in comparison with the rate in 1943. During this year, the county chapter continued to finance care for patients from the previous years' epidemics and increased its spending to $158,130 to provide care to 590 patients and process 300 other cases.[344] The county chapter additionally used this time to begin preparing for the possibility of a future epidemic and contacted various hospitals in Los Angeles to inquire into their bed capacities and whether they needed supplies.[345]

Around this time, the county hired Clarence Dail, a College of Medical Evangelists alumnus from the class of 1935, who would make important contributions to polio rehabilitation

[343] Report of Field Visit, February 3, 1944, File Folder: RG 102 Box 294, Records of the Children's Bureau, National Archives, College Park, Maryland.
[344] Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[345] Annual Meeting of the National Foundation for Infantile Paralysis, June 28, 1945. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

at Rancho Los Amigos during the following decade. Dail moved from Loma Linda to Los Angeles in 1945 to work at the College of Medical Evangelists' Los Angeles campus. After being hired, Dail replaced Wayne McFarland, a physician who Dail described as "really start(ing) the Kenny Treatment" at both County Hospital and Rancho Los Amigos.[346] Like Dail, McFarland was a Seventh-Day Adventist and a graduate of the College of Medical Evangelists.[347] During the early 1940s, McFarland had worked to advance the Kenny method and performed research at County Hospital demonstrating its efficacy, which he published in California's journal of the American Medical Association.[348] While McFarland laid the foundations for Dail's program, the polio service that Dail inherited had inadequacies. As a 1945 Office of Vocational Rehabilitation report noted, Rancho Los Amigos had "primitive physio-therapy facilities" for "old" polio cases.[349] Local rehabilitation leader John Affeldt mentioned that Dail attempted "to carry the program with the respiratory patients, in that early period when (they were) accumulating and (there was) very little staff or opportunity."[350]

The 1946 Epidemic

Roy Naftzger, Chairman of the Los Angeles Chapter of the NFIP, offered the following description of how the 1946 epidemic began: "The storm clouds gathered quickly. As we went into July an avalanche of new cases swept down upon us, and within a month the facilities of the

[346] Dail, Clarence notes from interview, File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[347] Ansel Oliver, "Remembrance: McFarland Helped Millions Quit Smoking With Five-Day Plan," *ANN*, March 18, 2011. <https://adventist.news/en/news/remembrance-mcfarland-helped-millions-quit-smoking-with-five-day-plan> Accessed August 26, 2020.
[348] J. Wayne McFarland, "The Kenny Treatment in Poliomyelitis: An Evaluation. *California and Western Medicine* 61, no. 2 (1944): 76-77.
[349] Report of Field Visit, March 3, 1948, File Folder: Folder 1 Box 105 Rehabilitation Centers 1944-1968, Records of the Office of Vocational Rehabilitation, National Archives, College Park, Maryland.
[350] Colleen Adair Fliedner, interview with John Affeldt, March 14, 1986, Box 16, Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-, California Social Welfare Archives, University of Southern California, Los Angeles, California.

General Hospital were overtaxed, the private hospitals were filled with post-acute cases, and still the victims came."[351] The County Polio Emergency Committee designated the Foundation as "the coordinating point "for all requests from hospitals, public health departments, and the families of patients."[352] The Los Angeles chapter partnered with the American Red Cross, the state and local health departments, and the region's hospitals to ensure that the county had the resources it needed. In July, the NFIP and the Red Cross flew personnel into Los Angeles from neighboring states and brought 212 nurses and 30 physical therapists to General Hospital. During the epidemic's peak at the end of August, the isolation ward had 297 polio patients, some of whom were no longer contagious, but all of the hospital beds outside of General Hospital were filled.[353] The local NFIP chapter negotiated with ten hospitals in the region, six of which had never accepted polio patients, and through "an intensive educational campaign and broadened professional relationships" helped open additional beds.[354]

The Los Angeles chapter's internal records give insight into volunteers' personal characteristics. Family members of children who died used their suffering to advance an organization whose advocacy resonated personally. One campaign document noted that " a young mother whose child had died of infantile paralysis, presented the Chapter with the little boy's piggy bank."[355] Another report recorded that "Four families whose children died requested

[351] Report of the Activities of the Los Angeles Chapter of the National Foundation for Infantile Paralysis, September 8, 1947, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[352] Ibid.; Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York; "Polio Patients Treated in Respirators: General Hospital's Fight Against Polio Described," 6 September 1946, *Los Angeles Times.*
[353] Report of the Activities of the Los Angeles Chapter of the National Foundation for Infantile Paralysis, September 8, 1947, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[354] "Polio Patients Treated in Respirators."
[355] Polio in Los Angeles, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

contributions to National Foundation instead of floral offerings as memorial," which raised roughly $1,800 for the foundation.[356]

Overall, the 1946 Los Angeles epidemic infected 1,309 people, which was 63% of all polio cases in California. The combined caseload from the 1946 epidemic and the previous epidemics brought the number of patients in Los Angeles receiving foundation assistance to 1,859. Seeking to finance care for its residents, the county foundation chapter encountered a problem that became commonplace in later years: it used all of its funds and sought funding that the foundation had set aside for emergencies. A 1946 local chapter document raised awareness of this new problem:

> We are… confronted with the necessity of providing further assistance to a great many of those stricken in 1946 and previous years, giving us one of the largest caseloads of any Chapter in the United States. Because our bond reserve has been completely exhausted and our funds in bank are sufficient to carry for us for not to exceed another forty-five days, we have made our first request for an advance of funds from the National Foundation in New York, and additional advances will be required in the next few months.[357]

As the epidemic continued into the Fall, Los Angeles experienced a prolonging that became characteristic of the subsequent years' epidemics.[358] Significantly, county authorities noted an "abnormal rise in bulbar polio victims."[359] As late as December, General Hospital was regularly admitting iron lung patients. For example, on December 9th, General Hospital's wards housed 9 respiratory patients and, on the 12th, the number had gone up to 10 patients. On December 15th, General Hospital provided iron lungs to 11 patients, a number which jumped to

[356] Chapter Epidemic Report, September 20, 1946, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[357] Report of the Activities of the Los Angeles Chapter of the National Foundation for Infantile Paralysis, September 8, 1947, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[358] Ibid.
[359] Los Angeles County Chapter, Historical Sketch, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

31 one day later. Compiled upon the increasing number of respiratory patients was a nursing staff shortage, which led the local chapter to raise the following complaint: "We are concerned as to whether the patients are getting adequate care."[360]

This concern about the poor quality of care would become more pronounced following the devastating epidemic that occurred two years later. With a polio incidence equal to that of 1934, the 1948 epidemic exceeded the incidence of the previous years' epidemics and brought California's Second Epidemic Period to a close.[361]

The 1948 Epidemic

Commenting on "the worst epidemic of poliomyelitis" in Los Angeles County's history, a March of Dimes campaign document characterized the major problem facing the foundation during and after the 1948 epidemic: "Many of the unfortunate victims of this cruel disease have required long hospitalization and their continuing care has imposed a heavy burden on the funds of the Los Angeles County Chapter..."[362] At the beginning of August, newspapers spoke of the year's epidemic as "mild," but problems were already surfacing, particularly in relation to respiratory patients. On August 1st, General Hospital had 21 iron lung patients and requested more respirators, some of which arrived by air. By September 4, 33 patients were in iron lungs and by the 17th of the month, the number of respiratory cases had reached 42.[363]

The armed services helped to provide both respirators and space for Los Angeles' increasing numbers of chronic patients. Upon request, the Navy flew iron lungs from throughout

[360] Letter to Basil O' Connor, 18 December 1946, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[361] Edwards, Clark, and Drake, 7.
[362] Campaign Plan Outline, January 3, 1950, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[363] "County Hospital's Technique on Polio Wins High Praise," 9 November 1948, *Los Angeles Times*.

the United States to Los Angeles through the NFIP's emergency response program.[364] In early August, General Hospital also established a relationship with the United States Naval Hospital in Corona, in which it transferred chronic polios to units which were previously used for disabled soldiers. General Hospital transferred 18 patients to Corona Hospital on August 6.[365] When the number of polio patients at General Hospital surged to 406 on September 16, the United States Army opened Birmingham General Hospital in Van Nuys to provide space for 16 more polio patients.[366] The increase in chronic patients stressed the local NFIP chapter's funds and in September, it again requested $100,000 from the National Foundation's emergency relief fund. This trend continued into the fall; in October and November, the county requested $150,000 and $175,000 respectively.[367]

One of the problems that contributed to the increased caseload at General Hospital was the poliovirus' prevalence among county residents. Scientific experts noted that "for every patient under a doctor's care for polio, perhaps nine others (were) running around and harboring the virus." Authorities declared traditional disease control measures, such as closing schools, ineffective as the virus was too widespread among the population to control. In addition, unlike private hospitals in the East Coast, which had isolation units, only General Hospital had a unit for contagious patients, which accentuated its disproportionate caseload.[368] Furthermore, Los Angeles' temperate climate prolonged its epidemics. As the Communicable Disease Unit's chief physician Albert Bower pointed out, "In the East the first killing frost ends polio instantly… Here the disease is always present."[369]

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[364] Ibid.
[365] "Just Three Left: Polio Victims Tax Hospital's Iron Lungs," 6 August 1948, *Los Angeles Times.*
[366] "Call Made for Polio Respirators From East," 17 September 1948, *Los Angeles Times.*
[367] Campaign Plan Outline, January 3, 1950, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[368] "County Hospital's Technique on Polio Wins High Praise."
[369] "What Happens in a Polio Ward? Here's Firsthand Glimpse," 6 October 1948, *Los Angeles Times.*

The accumulation of iron lung patients at General Hospital was also in large part due to a technology that Albert Bower introduced in the Communicable Disease (CD) Unit. Referred to as "a synchronizing machine, or cyclic positive pressure device," Bower's technology saved many patients who in previous years would have died from respiratory failure. According to Bower, when using the iron lung alone, "some portions of the human lung didn't get air and these parts developed troublesome mucus which had to be pumped out every 15 minutes." However, Bower's device enabled the "sidestepping (of) paralyzed portions of the windpipe."[370] His Communicable Disease Unit additionally employed "a system of warning lights, signals" for intensively monitoring breathing status and equipment failure.[371] Rehabilitation leader Jacquelin Perry touched on the CD Unit's aggressive culture:

> When a patient was admitted to the Los Angeles County communicable disease ward, the admitting doctors promptly followed their motto for judging the level of acute care needed. This motto was, "If the thought of a tracheotomy enters your mind, do it now." This procedure gave the physician direct access to the lungs and assured a clear airway.[372]

Such an approach contributed to a significant reduction in mortality. During the first three decades of the twentieth century, as many as 25% to 30% of Los Angeles residents who contracted polio died. However, by the 1950s, the local survival rate for respiratory patients had risen to 95%.[373]

While the 1948 epidemic affected the public at large, newspaper coverage revealed the persistence of earlier beliefs that polio originated among nonwhite immigrants. When interviewed by the *Los Angeles Times*, Albert Bower claimed that polio came to Los Angeles

[370] "County Hospital's Technique on Polio Wins High Praise," "New Iron Lung Device Aids Polio Treatment," 4 September, 1948, *Los Angeles Times.*
[371] "County Hospital's Technique on Polio Wins High Praise."
[372] Perry, "Foreword," x.
[373] Edwards, Geraldine, William Clark, and Robert Drake, 9.

through migrants and that (as the staff writers noted) "on at least two occasions (it) came to Los Angeles up the Imperial Valley from Sonora, Mex."[374]

The 1948 polio epidemic occurred during a time of heightened racial tensions in Southern California. And the epidemics intersected with this broader regional trend. During the previous years, Southern California's African American population significantly increased. Attracted to work in the region's military-industrial complex, the black population grew from 65,000 in 1940 to 171,200 in 1950.[375] Meanwhile, Southern California underwent a trend (experienced across the United States) in which whites left urban neighborhoods for the surrounding suburbs. Commenting on this demographic shift, Los Angeles historian Eric Avila has written that "Postwar suburbanization sanctioned the formation of a new racial geography that specialized a stubborn contrast between white and black."[376]

As downtown businesses took "flight" with whites into the suburbs, the city's former commercial center suffered economically. Through extensive freeway construction, nonwhite communities also became cut off from white communities, and from one another. Urban renewal and slum clearance projects furthermore used infectious disease incidence in nonwhite communities as a justification for demolishing their neighborhoods. Los Angeles historian Natalia Molina has written that officials often associated nonwhite neighborhoods that they hoped to raze with "high crime and juvenile delinquency."[377] Polio intersected with this trend in Southern California, as seen in 1948, when a housing commission initiated a slum clearance project in the African American Cottonwood Road district in Bakersfield. Responding to both an

[374] "What Happens in Polio Ward? Here's Firsthand Glimpse," 6 October 1948, *Los Angeles Times*.
[375] Abu-Lughod, 247, 180.
[376] Eric Avila, *Popular Culture in the Age of White Flight: Fear and Fantasy in Suburban Los Angeles* (University of California Press, 2006), 4.
[377] Molina, "Contested Bodies and Cultures," 154-155.

"infant diarrhea epidemic" and an elevated caseload of poliomyelitis, the Mayor's Housing Commission stated that the clearance would "strap out the leading sources of crime and disease in and around Bakersfield."[378] Against this backdrop of racial segregation, Los Angeles' March of Dimes leaders refused to work with black polio campaign leaders, causing black community leaders to establish independent campaigns or abandon their efforts altogether.[379]

While the epidemic brought out problematic aspects of contemporary race relations, it did bring to light an improved outlook regarding iron lung patients. In contrast to the negative publicity surrounding the iron lung after the 1934 epidemic, the *Los Angeles Times* celebrated the arrival of iron lungs from Boston and presented a positive view of life inside a respirator in an August 1949 article. The article scanned County Hospital's wards portraying iron lung patients who were full of life and who were served by professionals who deeply believed in the foundation's mission to keep them alive. (It is important to note that while severely disabled, all the patients depicted in the article were young, physically attractive white patients.) Some of the patients included nursing professional Janie Wright, who was "stricken by polio while on duty at Children's Hospital" and whose fellow nurses on the ward were "giving extra attention to a sister in white." The article's writers painted a picture of "greeting cards to 'mommy' (that) decorate(d) one streamlined respirator" and "Pin-up girls photos … on the wall next to another." It ended with a quote from Raymond V. Darby, chairman of the Board of Supervisors: "What does $2000 for an iron lung mean when it can save lives like this?" Darby was "visibly moved by the spirit of patients, nurses and doctors alike," a sentiment which was shared by the *Times'* writers and presumably by its subscribers.[380]

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[378] "Bakersfield Moves to Clear Slums," 10 December 1948, Los Angeles Times.
[379] Stephen E. Mawdsley, "Polio and Prejudice," 17-21.
[380] "New Iron Lungs Arrive Here; Used at Once in Polio Fight: Planes Rush Respirators From Boston," 26 August 1948, *Los Angeles Times.*

Conclusion

The 1948 article's celebration of the iron lung was a testament to the foundation's success at building public and professional support for the NFIP's emergency respirator program. It represented a remarkable shift in public perception from the other *Los Angeles Times* article analyzed at the end of the previous chapter. The 1934 article on Charles Lux blatantly disparaged life inside of an iron lung; indeed, its title included the following caption: "Case hopeless… Cabinet torture chamber to dying victim."[381] The 1948 article presented an entirely different perspective; the "cabinet" was now a source of life.

This was rooted in a broader transformation in how the public perceived polio that the NFIP facilitated. Los Angeles' experience of California's Second Epidemic Period was connected to a process by which many Americans came to see polio as a disease of a patient who possessed a social worthiness. The National Foundation for Infantile Paralysis further emphasized polio's association with elites and expressed the view that all polio patients were entitled to services in campaigns that targeted middle class white communities. This approach, while successful in raising money, also reinforced problematic social hierarchies. Nonwhite polio patients in particular struggled to achieve the recognition and prioritization that whites achieved through the March of Dimes.

As the previous chapter documented, even before Roosevelt became disabled, polio inspired the growth of voluntary organizations and a model of public-private partnership that resulted in safety net programs, such as California's Title V Social Security Program. But as a popular leader with connections to leaders in business, medicine, politics, and the media, Franklin Roosevelt had resources on an unprecedented level. Historian David Oshinsky noted

[381] "Doomed Man's Death Stayed."

that the National Foundation for Infantile Paralysis "would revolutionize the way charities raised money, recruited volunteers, organized local chapters to care for local people, and penetrated the mysterious world of medical research."[382] This achievement would have been impossible without Franklin Roosevelt's wealth and his relationships with the nation's most influential people.

Los Angeles' urban environment provided one context through which the National Foundation for Infantile Paralysis left its contemporary legacy for rehabilitation medicine. The region's increase in cases after 1946 was most likely tied to the population boom that came with the defense industry's settlement in the region during World War II. In this context, when Los Angeles hospitals became overwhelmed, foundation leaders and local authorities proposed scientific rehabilitation as the solution to the unacceptable standard of care for iron lung patients.

As a result of their new social worthiness, when individuals in iron lungs became depressed, it was no longer an inevitable result of living with a severe disability, but a product of their social circumstances; in an official letter, an NFIP official conveyed how the organization blamed the lack of a "suitable" means of rehabilitation, rather than the patients themselves, for the psychological problems that could accompany being in an iron lung. Commenting on his observation of iron lung patients' mental health problems during a visit to Los Angeles in November 1948, a foundation official stated:

> We did discuss, however, the many psychological problems that arise as a result of the prolonged stay of the patients in respirators. This is a serious medical care problem and one which undoubtedly costs us a great deal of money that would not have to be spent if we could find a suitable way of preparing the patient to leave the respirator as soon as physically able to do so.[383]

[382] Oshinsky, 5.
[383] Report on visit to Los Angeles, December 16, 1948, File Folder: Los Angeles Chapter 1947-1948, Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

The official noted that such problems were especially prevalent among iron lung patients at Rancho Los Amigos. Referring to a discussion he had with David Klein, professor of clinical psychology at the University of California, the official reported, "Dr. Klein had been approached earlier in the week by Dr. Dail, who is the Los Angeles County physiatrist, with regard to similar problems which he had observed and which were disturbing him at Rancho Los Amigos…" The solution that the foundation official suggested was therefore:

> It might be possible… to work out on an economically reasonable basis a potentially satisfactory team situation that would not only serve the patient, reduce the cost of respirator care by assisting in more prompt removal from respirators, but at the same time provide us with information about the reaction of the patient both to the respirator and to his removal from the machine.[384]

In 1949, the National Foundation for Infantile Paralysis conducted a national survey of all iron lung patients in the United States. The survey found that California had the largest number of respiratory patients in the nation, most of whom acquired polio in 1948. California's number of iron lung patients was 28.92% of the nation's total, compared with Texas, Illinois, Maryland, and Minnesota, which were all in second place with 5.39% each.[385] At the national headquarters, foundation officials concluded that: "As a result of this survey it was decided that respirator centers were necessary in two areas, Los Angeles and Baltimore."[386]

Establishing a regional respiratory center in Los Angeles, which provided comprehensive rehabilitation, became the NFIP's strategy to fighting polio in a region that was particularly volatile. The next chapter tells the story of how the NFIP implemented this tactic.

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[384] Ibid.
[385] To Dr. Van Riper and Dr. Landauer, Re Data on Respirator Patients, August 23, 1949. File Folder: Medical Program Poliomyelitis Respiratory Care Centers, Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[386] To All State Representatives, November 15, 1949, File Folder: Respirator Patients 1949. Box 7 Surveys and Study Records, Series 6 Medical Program. March of Dimes Archives, White Plains, New York.

Chapter 3: Postwar Polio Rehabilitation

The present chapter analyzes how rehabilitation medicine assumed aspects of its later identity through the NFIP Respiratory Center Program. In advocating for a socially privileged patient group, the NFIP defined ensuring access to subspecialty rehabilitation as a pressing issue. The postwar belief in scientific progress and a health policy landscape dominated by provider interest groups affected the NFIP rehabilitation agenda. In the subsequent decades, hospital administrators like John Affeldt appropriated the academic, technologically advanced, laboratory-based form of medicine that the NFIP promoted in response to the costs associated with managing chronic polio. This chapter recounts that story's beginnings.

World War II's Influence

While prior to World War II, Los Angeles already housed the Navy's Pacific fleet, the international conflict and the Cold War Era marked "the real birth of the military-industrial complex."[387] Drawn to work in the arms industry, migrants from throughout the United States settled in Los Angeles and helped to unleash decades of regional prosperity. This chapter tells the story of how the National Foundation used the increase in polio incidence that accompanied the demographic shift to introduce its rehabilitation center program for iron lung patients. Initiated by the foundation's medical leaders and advanced through acclaimed film and theatre actress Helen Hayes, the NFIP Respiratory Center Program provided fertile ground for the Physical Medicine and Rehabilitation Specialty's development at Rancho Los Amigos, which is the topic that the rest of the dissertation will discuss.

[387] Abu-Lughod, 252.

Beginning in this chapter, we will observe a similar, yet distinct, pattern to that which took place in Chapter 1. In the first chapter, we saw how rehabilitation emerged within the context of Los Angeles' encounter with polio during its early years of modernization. At the time, the county not only developed a strategy for preventing polio but responded to its chronic patients' needs for care. Orthopedic rehabilitation, which had been developed for disabled children and soldiers during the Progressive Era, became part of Los Angeles' public health response to chronic polio.

In this chapter, we will observe how during the 1950s, rehabilitation medicine again became incorporated into the county system to manage polio's considerable social and economic costs. However, while earlier reformers embraced rehabilitation in the context of the progressive valuation of expertise, the NFIP proposed scientific rehabilitation in the context of the postwar era.

Following World War II, the Western world took upon itself the task of addressing problems in national social provision. While European nations had systems of social insurance for workers in place before the war, their populations' experience of decimation led them to provide universal protections against future calamities.[388] The United States also evaluated its organization of social provision, as World War II gave rise to an awareness of inefficiencies in responding to disability and chronic disease. Economic historian Jonathan Hughes has written that the 1920s vocational rehabilitation program was "a farce," as its limited size made it incapable of addressing the significant amount of disability in the nation.[389] Although the United States had its Social Security Program in place by the war, workers lacked important protections, such as disability insurance. In the event of an unforeseen injury or illness, citizens could easily

[388] "Covid-19 has transformed the welfare state. Which changes will endure?"
[389] Hughes, 481.

become lifelong public assistance recipients. In the European context, universal protections against poverty and disease became a key component of the postwar solution. But in the United States, congressional support for such protections proved lacking. Therefore, as historian of medicine George Weisz has written, "Americans pragmatically focused on those health issues that could command general consensus… (and) policy centered on problems around which broad coalitions of institutions and associations could crystallize."[390] Focusing on the problem of chronic illness, and arguing on behalf of rehabilitation, became a means of uniting the nation around a feasible welfare solution.

In this political climate, the NFIP embraced scientific rehabilitation as indispensable to the management of respiratory polio. Los Angeles' rehabilitation program for iron lung patients benefitted, not only from foundation grants, but from the significant federal expenditures on research and hospital construction during this period. The postwar era also became rehabilitation advocate John Affeldt's point of entry into a position of leadership within this political system. As chief physician and later as Rancho Los Amigos' medical director, Affeldt took advantage of the ample public resources available to clinician administrators during the era to make Los Angeles into a laboratory for polio rehabilitation.

By the 1960s, when Los Angeles was in the process of becoming a global city, Rancho Los Amigos had assumed an important position within a worldwide exchange of scientific knowledge. Local researchers had access to National Institute of Health (NIH) grants, as well as other sources of funding for teaching and research, which they used to transform Rancho Los Amigos into a categorial rehabilitation center.

[390] Weisz, 102.

We will now begin this chapter by noting how the growing numbers of iron lung patients following the 1948 epidemic posed a severe financial problem for the foundation and a public health catastrophe for Los Angeles County. The foundation used this problematic situation to gain influence over Rancho Los Amigos, a move that would change its historical trajectory.

Postwar Clinical Science

Following World War II, federal investment in research dramatically increased. From a budget of three million dollars in 1941, government spending on medical research approached seventy-six million dollars one decade later.[391] Breakthroughs during the war, most notably the atomic bomb and penicillin, made scientific research an imperative for national defense. The postwar era was also a time in which the United States dominated the global economy and funding for research served, as Paul Starr has written, "a symbolic as well as a practical function in maintaining America's position as 'leader of the free world.'"[392]

Federal spending on research predated the war, but the increase in wartime funding shaped how the United States government allocated economic resources during the subsequent decades. For example, the National Institute of Health originated during the late nineteenth century, when as the Old Marine Hospital Service, it sponsored research on epidemic control.[393] President Roosevelt's 1941 creation of the Office of Scientific Research and Development (OSRD) set the stage for the postwar increase in the amount of federal funding allocated to the NIH and to other research institutions. Headed by Vannevar Bush, an engineer and a former dean of MIT, who also served as the Carnegie Institution's president, the OSRD worked with other

[391] Starr, 343.
[392] Ibid., 335-337.
[393]Ibid., 340-341.

committees to address wartime health and defense needs. One such committee, which would definitively affect the history of the NIH, was the Committee of Medical Research (CMR); its responsibilities included: "Mobilizing the medical and scientific personnel of the nation… recommending the medical and scientific personnel of the nation…recommending to the Director (of OSRD) the need for and the character of the contracts to be entered into with universities, hospitals, and other agencies conducting medical research activities, and submitting recommendations with respect to the adequacy, progress and results of research on medical problems related to the national defense."[394]

The Committee of Medical Research's wartime collaborations bought forth an array of medical advances, such as the mass production of penicillin. Such achievements were subsequently applied in treating disease at home and made policymakers appreciate the value that federal investments in research could have for promoting public health. Wartime innovations also gave scientists influence in the policymaking process. Historian Arthur Kleinman has written:

> Knowledge became power, and the dependence of the nation on scientists put a vanguard group of scientists, led by Vannevar Bush, in the position to gain a powerful institutional space in the American state- the Office of Scientific Research and Development- and to use that location to enhance their social capital, their social connections, with civilian state managers and the military. This social capital combined with enhanced credibility or symbolic capital, which was a product of scientist's role in the war effort, placed this scientific vanguard perfectly to shape the configuration of postwar research policy in the United States.[395]

Roosevelt already began planning before World War II ended and publicly asked Vannevar Bush for advice regarding how the federal government could facilitate scientific

[394] Daniel Lee Kleinman, *Politics on the Endless Frontier: Postwar Research Policy in the United States* (Durham and London: Duke University Press, 1995), 56-57; Stephen P. Strickland, *Politics, Science, and Dread Disease: A Short History of United States Medical Research Policy* (Cambridge: Harvard University Press, 1972), 15-16.
[395] Kleinman, 53.

research after the war. In his 1945 report *Science, the Endless Frontier*, Bush recommended the creation of what became the National Science Foundation (NSF), which consisted of scientists nominated by the National Academy of Sciences and appointed by the president. While Bush's proposal intended to respect scientists' autonomy, it led to an increase of government involvement in their sphere of professional activity, which was a development that many scientists found concerning. Thus, the NSF's founding was delayed until May 1950.[396]

In establishing the National Science Foundation, policymakers also had to appease AMA Secretary Morris Fishbein and other officials from the American Medical Association, who stringently opposed any government activity that could lead to socialized medicine.[397] While the war made the proposal for a national research council acceptable by showing "that federal funds could be used satisfactorily to promote research and speed medical discoveries," Fishbein stated that "the foundation must avoid bureaucratic domination of research." AMA officials agreed to support the 1945 bill creating the NSF, but in doing so, they made it clear that they might rescind their support if future changes were incorporated into the bill.[398]

Federal involvement in research during World War II not only led to the genesis of the National Science Foundation, but the National Institute of Health inherited the Committee of Medical Research's considerable wartime assets. During the last year of World War II, the federal government allocated $180,000 towards NIH research. Following World War II, the NIH absorbed the CMR's projects and as a result, its budget increased to $4 million in 1947.[399]

Scientific research was not alone in its experience of growth during this era. Postwar federal spending in multiple sectors, including transportation, education, and housing, eclipsed

[396] Starr, 341-342.
[397] Rogers, "Polio Can Be Conquered," 84-85.
[398] Strickland, 20-21.
[399] Starr, 342.

prewar levels. Expenditures at the state and county levels also increased and stimulated public works projects such as road construction. And a scarcity of hospitals, especially in rural areas of the United States, prompted Congress to pass legislation investing public funding in hospital construction.[400]

It is important to note that the postwar investment of resources in scientific research went hand in hand with an unwillingness to confront structural problems, such as poverty, that also contributed to ill health. As Paul Star has written, "At home the advance of science and medicine, like economic growth, offered the prospect of improved well-being without requiring any profound reorganization of society… All could agree about the value of medical progress, and all could benefit from it…"[401] Especially after Truman's unsuccessful campaign to pass national health insurance in 1949, federal spending on research and hospital construction would, as Angela Creager has written, assume a "new political function," as it "served as the federal government's visible commitment to improving health."[402] Indeed, federal investment in healthcare infrastructure became one area in which policymakers could promote health without suffering the political consequences that accompanied addressing pathogenic social determinants.

The Postwar "Policy Community"

Truman's proposal for national health insurance originated in 1943 as the Wagner-Murray-Dingell Bill. A product of the New Deal Era, it provided health insurance to all workers and their dependent family members through the Social Security System. While the proposal had

[400] Patterson, *Grand Expectations: The United States, 1945-1974* (Oxford: Oxford University Press, 1996), 67.
[401] Starr, 336-337.
[402] Creager, 183.

much in common with earlier New Deal welfare policies, it was also more expansive. Previous programs were limited in that they only provided medical services to qualified individuals, such as children with specific disabilities. By contrast, all employees, retirees, and their dependent family members were eligible for healthcare coverage under the Wagner-Murray-Dingell proposal. While Roosevelt shied away from advocating for national health insurance due to the AMA's opposition, Truman wholeheartedly promoted the Wagner-Murray-Dingell bill. The AMA fought back aggressively and channeled millions of dollars into a public relations campaign against the proposal. The Wagner-Murray-Dingell bill died in 1948 and following its defeat, national health insurance was removed from the legislative agenda.[403]

The Wagner-Murry-Dingell bill's defeat was made possible by the coalition of organized interests and policymakers who made up the pre-1960s "policy community."[404] Political scientist Mark Peterson has written that the political environment prior to the 1960s was one in which "stakeholder" groups representing organized medicine worked with an "oligarchically controlled congress" to dictate health policy. Such a dynamic exemplified Peterson's definition of a "'block-style' representational community," in which "stakeholders are allied and stake challengers are not effectively present." The American Medical Association collaborated with other organizations with similar interests, including the American College of Surgeons, the American Hospital Association, and the health insurance industry. Working with a congress in which committee chairmen were selected based on seniority, the pre-1960s coalition of interests and policymakers formed what Peterson has labeled an "iron triangle." As he has written:

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[403] Starr, 270-278, 280-286; Thomas S. Bodenheimer and Kevin Grumbach *Understanding Health Policy: A Clinical Approach*. 5th Ed. (New York: McGraw Hill, 2009), 182-183.

[404] Political Scientist Beufford Longest defines a policy community as "a set of participating individuals, organizations, and groups" driving policy within a given area." Beaufort B. Longest, Jr. *Health Policymaking in the United States.* 5th Ed. (Chicago: Health Administration Press, 2010), 51-52.

> The American Medical Association and its allies, in such a constricted policy community, could maintain control of the policy process and stymie efforts at state intervention, even if a single political party-typically the Democrats-maintained control of both the executive and legislative branches of government. Congress in the 1940s and 1950s (especially during periods of Republican control, 1947-48 and 1953-54) was not an institution whose committees took easily to major social programs in health. As powerful "veto points" accessible to the dominant interests of organized medicine and its allies, the committee system afforded the opponents of comprehensive reform a distinct structural advantage.[405]

This coalition of special interests influenced not only federal investment in scientific research, but the enactment of the 1946 Hospital Survey and Construction Act, which provided federal funding for hospital construction. American Hospital Association executive director George Bugbee was, as sociologist Harry Perlstadt maintains, "a key player in promoting the legislation." Bugbee initiated the policymaking process through his relationship with Republican Senator Harold Burton. Bugbee knew Burton when he was mayor of Cleveland in 1938 and Burton appointed Bugbee as superintendent of Cleveland Municipal Hospital. Bugbee asked Burton to sponsor the bill with Democratic Senator Lister Hill of Alabama. Hill was aware of hospital shortages in rural communities within his state and believed that the legislation addressed a serious problem. While Burton and Hill introduced their bill in January 1945, it was not until November 1945, after World War II ended, that Truman advanced the legislative proposal. After passing the Senate and House, Truman signed Burton and Hills' bill into law on August 13, 1946.[406]

Also known as the Hill-Burton Act, the legislation, as health policy expert Beaufort B. Longest, Jr. has written, "amend(ed) the Public Health Service Act," which was enacted in 1944

[405] Peterson, 400, 408-410, 417-421.
[406] Dan Feshbach, "What's inside the black box: A case study of allocative politics in the Hill-Burton Program." *International Journal of Health Services* 9, no. 2 (1979): 313-339; Harry Peristadt, "The development of the Hill-Burton legislation: interests, issues and compromises." *Journal of health & social policy* 6, no. 3 (1995): 77-96.

and "provided for the organization, staffing, and functions and activities of the Public Health Service."[407] In doing so, it authorized the Public Health Service's administration of a federal program awarding federal grants to states "for surveying their hospital and public health centers and for planning construction of additional facilities, and… to assist in such construction."[408]

Longest Jr. has written that prior to the 1960s "the private-sector interest group members" of "the iron triangle that dominated health policy, notably the AMA and the American Hospital Association… generally held a consistent view … that government should protect the interests of health services providers."[409] Indeed, according to American historian James Patterson, the Hill Burton Act "mainly benefitted doctors, hospital administrators, and the rising network of medical insurers such as Blue Cross-Blue Shield."[410] As a federally matching program, the Hill-Burton Act led to a considerable federal and state investment in hospital construction during the subsequent decades; through the Hill-Burton program, the federal government spent $3.7 billion between 1947 and 1971. Local and state governments spent an additional $9.1 billion in matching funds.[411]

While the AMA was supportive of government investment in research and hospital construction, its opposition to the federal regulation of healthcare left an institutional legacy that limited the types of interventions that could be implemented to promote health. In his history of the NIH, Stephen Strickland has written, "Indeed, the power of the American Medical Association was commonly recognized and uncommonly real." Strickland has documented how the AMA's political opposition doomed not only Truman's campaign for national health insurance, but congressional proposals to increase funding for medical schools. Referring to his

[407] Longest, 8.
[408] Ibid., 248-249.
[409] Ibid., 52.
[410] Patterson, *Grand Expectations*, 143.
[411] Starr, 350.

history of the NIH, Strickland wrote, "The implications of (the AMA's) war against national health insurance are important for the present story simply because they suggest how fortunate it was for the cause of medical research that that particular governmental enterprise was not singled out for attack."[412] It might be asked why the AMA did not oppose federal funding of clinical research with the same fervor that it opposed other investments in public health. As Paul Starr has written, "public support for medical research, hospital construction, and other forms of resource development… typically increased the capital resources of the system (scientific knowledge, physical infrastructure) without limiting physicians' income from it."[413]

The Political System and Polio

The National Foundation's campaigns against polio occurred within this postwar environment in which it was politically popular to allocate resources toward research. As Paul Starr has written, "The huge success of (NFIP's) March of Dimes and other voluntary fund-raising efforts for medical research in the late 1940s testified to the new status of research as a popular cause. Public opinion polls confirmed the breath of this sentiment, and politicians were not insensible to the possibilities."[414] Foundation officials and politicians similarly both encouraged and tapped into a contemporary public esteem for research. Naomi Rogers has examined how the NFIP worked with a "national staff of professionals from public relations, health education, and science journalism," who created "a potent publicity tool" through "popularizing a fervent public faith in scientific research as the best weapon in the fight against disease."[415]

[412] Strickland, 55-56.
[413] Starr, 337-338.
[414] Ibid., 343.
[415] Rogers, "Polio Can Be Conquered," 82, 84-85.

The postwar era's influence on the NFIP's campaigns is illustrated in the 1949 pamphlet *Polio Can Be Conquered*, written by the NFIP and a collaborating journalist, Alton Blakeslee. Blakeslee wrote that the March of Dimes campaign's funds were not "charity" for the underserved but were rather "a trust fund to restore health, strength, and usefulness to polio victims." As Blakeslee noted, the campaign funds would be used to "finance the search for the bullets of drugs or vaccines to end the insidious career of an unseen enemy." The NFIP's promotion of research worked alongside its investment in rehabilitation medicine. Rogers has written in her analysis of March of Dimes campaign material that "The popular fascination with the scientist in white, the drama of the laboratory, and the magical products possible from research were reinforced by new NFIP posters in the late 1940s that featured not only a child discarding braces or a wheelchair but also a scientist holding a test tube."[416]

The Beginnings of the Respiratory Center Program

The Respiratory Center Program resulted from a shift of course in the NFIP's battle against poliomyelitis. The foundation's official history noted that it started as an "essentially emergency operation dealing with epidemics as they arose."[417] By the late 1940s, officials became concerned about growing numbers of chronic iron lung patients. Foundation official Kenneth Landauer stated that the NFIP's 1949 national survey showed "that most chronic respirator cases are of relatively recent origin, seldom going back more than three years." Data showed that 80% of the nation's iron lung patients were from the 1948 epidemic and 15% were

[416] Ibid., 91-92.
[417] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 54, March of Dimes Archives, White Plains, New York.

from the 1946 epidemic.[418] Problematically, this resulted in a situation in which iron lung patients were "scattered;" in 1953, "511 cases (were) hospitalized in 135 different hospitals" where "little more than custodial care could be given."

Landauer attributed the increase in respiratory patients to numerous factors, including the increased national incidence of polio as well as better training, technological improvements, and antibiotics. [419] Medical advancements therefore led to a situation in which "Many patients were being kept alive in respirators who formerly would have died."[420] This created a new social problem; as pediatrician James Wilson, one of the main proponents of the Respiratory Center Program, explained, "having saved a lot of lives, we soon found ourselves in a tragic situation… because we saved lives that of necessity were very unhappy lives, it seemed almost a sin to have invented the respirator unless these lives could be made useful."[421]

Financing convalescent care for respiratory patients also cost the National Foundation anywhere from $3,000,000 to $5,000,000 per year.[422] As the foundation looked for a solution, its attention shifted to a recent trend that came about spontaneously within a number of hospitals in the United States: the grouping of iron lung patients. An NFIP official history described how this approach to care evolved: "hospitals in several sections of the country began grouping chronic

[418] To Dr. Van Riper and Dr. Landauer, Re Data on Respirator Patients. August 23, 1949 (mistyped April 1948 but data mentioned for 1949.) File Folder: Medical Program Poliomyelitis Respiratory Care Centers. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[419] Kenneth S. Landauer. Respiratory Centers. March 8, 1951. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[420] To State Representatives Re Respiratory Centers. May 8, 1952. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[421] Landauer, Kenneth and James Wilson, "Welcome- Introduction" Roundtable Conference on the Total Care of the Poliomyelitis Patient with Respiratory Paralysis. March 7-9, 1956. File Folder: Box 7 Folder: Conferences on the Total Care of the Respiratory Patient. March of Dimes Archives, White Plains, New York.
[422] To State Representatives Re Respiratory Centers. May 8, 1952. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

respirator patients together… In some hospitals the numbers of respirator patients just grew; others became a repository for respirator patients from other hospitals in the area."[423]

To determine whether grouping improved outcomes, researchers from the Children's Hospital Baltimore undertook a pilot study in 1947 at their institution.[424] Not only did the study show that grouping had "psychological advantages" but resulted in "greatly reduced costs largely because 24-hour nursing service, necessary to all respirator patients, can be shared."[425] Basil O'Connor touched on some of grouping's demonstrated psychological benefits and stated that "(Patients) are encouraged by the progress of others. They try harder. And there is a great deal that these patients can do for themselves, if they have the will power and the encouragement of those who attend them."[426]

The Children's Hospital Baltimore study was an inspiration. Foundation officials began trying to decide where they could set up centers which grouped iron lung patients. Historian David Rothman has written that "The centers were charged to promote research into how best to manage respirator therapy, acute and chronic; to administer training programs in respirator management for medical personnel; and to treat the most difficult chronic cases."[427] According to Respiratory Center proponent James Wilson, the centers employed rehabilitation to achieve the solution to the problem of convalescence; in his view, the NFIP Respiratory Center served 2 objectives: "To get (iron lung patients) home and to get them to be useful." Wilson further explained, "I would like to use the words 'to be useful' instead of simply 'to be income-

[423] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 25, March of Dimes Archives, White Plains, New York.
[424] Ibid., p. 56.
[425] To State Representatives Re Respiratory Centers. May 8, 1952. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[426] BO'C Address Opening of Mary MacArthur Fund Respiratory Center. Sunday, November 19, 1950. File Folder: Mary MacArthur Respirator Unit, Opening 1950, L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives. Boston, Massachusetts.
[427] D.J. Rothman, 63.

producing' because there are so many people, like women… who weren't income producing people, and who don't need to be, but must be extremely useful in their homes to be happy."[428]

The academic-affiliation model became an essential component of the Respiratory Center Program. The NFIP official history noted that "Finding a good hospital with the space and interest requisite to establishing a unit was not enough. There must also be a medical school associated with such a center so that the personnel and other essentials for research and teaching are an integral part of it."[429] The National Foundation approached researchers at Harvard in 1946 to see if they would be interested in administering a center. However, the expenses of constructing the facility temporarily put opening the center on hold.[430]

The NFIP history noted that this changed when Helen Hayes, a world-renown Broadway and Hollywood actress, "entered into the picture."[431] Like Elizabeth Taylor would later do for AIDS, Hayes used her celebrity status and connections to advocate for iron lung patients nationally. Like Taylor, who became wedded to activism after the death of her friend Rock Hudson, Hayes' dedication to helping polio survivors began after a loved one died. Helen's daughter Mary MacArthur was an aspiring actress who was following her mother's footsteps into a theatre career when she died from bulbar polio at the age of 19. Shortly after Mary died, the MacArthur family's friends and colleagues organized a fund for iron lung patients as a memorial.[432] The Mary MacArthur memorial committee included household names in theatre, such as Richard Rogers and Oscar Hammerstein II, and focalized a groundswell of theatre

[428] Landauer, Kenneth and James Wilson, "Welcome- Introduction" Roundtable Conference on the Total Care of the Poliomyelitis Patient with Respiratory Paralysis. March 7-9, 1956. Box 7 Folder: Conferences on the Total Care of the Respiratory Patient. March of Dimes Archives, White Plains, New York.
[429] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 59, March of Dimes Archives, White Plains, New York.
[430] Ibid., 59, 64-65.
[431] Ibid., 65.
[432] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995. March of Dimes Archives, White Plains, New York.

support into funding the Harvard Respiratory Center's construction. The center was a unit within the Hospital and Convalescent Home for Children in Wellesley Hills, a facility affiliated with Boston Children's Hospital.[433]

The Mary MacArthur Respiratory Unit opened on Sunday, November 19, 1950. From Helen Hayes' opening address, there was no illusion that it defined the most pressing problem facing iron lung patients as their neglect by scientific medicine. As Hayes declared:

> To me, the establishment of this first respirator research center is concrete and tangible evidence that no one who has polio is forgotten – no one, not even the most afflicted, the most hopeless. Here, a part of a great hospital center, will be an army of scientists devoting every waking moment to respirator patients, struggling to bring them, too, the promise of better things.[434]

In his opening speech, Basil O'Connor touched on how the Respiratory Center Program presented a specialized clinical solution to the problems facing iron lung patients. O'Connor stated that the center would serve as "a proving ground – a hospital where respirator patients will receive the best treatment available, a place from which by actual, practical trials, new treatment may emerge that will benefit respirator patients everywhere."[435]

Basil O' Connor also highlighted the centrality of mental health and mentioned that one of the program's objectives would be "a better understanding of the importance of psychological care." O' Connor compared bulbar polio to wartime trauma to emphasize iron lung patients' unique mental health challenges:

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[433] Ibid., 65-66; The Mary MacArthur Memorial Respiratory Unit at the Hospital and Convalescent Home for Children. Wellesley Hills, Massachusetts, a unit of the Children's Medical Center; News for Release, Monday, November 20, 1950. File Folder: Mary MacArthur Respirator Unit, Opening 1950, L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives. Boston, Massachusetts.

[434] News for Release, Monday, November 20, 1950. File Folder: Mary MacArthur Respirator Unit, Opening 1950, L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives. Boston, Massachusetts.

[435] BO'C Address Opening of Mary MacArthur Fund Respiratory Center. Sunday, November 19, 1950. File Folder: Mary MacArthur Respirator Unit, Opening 1950, L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives. Boston, Massachusetts.

> When an aviator cracks up, the first thing he does is get back in a plane and fly again. That's good psychology to overcome fear. But when an iron lung patient feels he cannot breathe without his machine, it takes a mighty effort for him even to attempt it. He must be led gently and carefully, by those who know his condition intimately, to make the effort.[436]

What was noteworthy about O'Connor's opening speech was that it called attention to social issues that were often neglected by voluntary organizations that were traditionally centered on pediatric patients. For example, O'Connor spoke about how the centers would serve adult patients whose "loss of livelihood can become a burden to his family, his community and himself." O Connor acknowledged that such stresses were connected to patients' clinical outcomes and stated that "fears for his family add to his ordeal, sometimes interfering with recovery."[437] Importantly, such an understanding of how social problems, such as unemployment, affected patients informed the array of vocational and recreational programs established at Rancho Los Amigos.

The Crisis of 1949

While the NFIP was planning the Mary MacArthur center's opening, the nation underwent another crisis in the battle against poliomyelitis. A 1949 March of Dimes Trailer commented on the dire situation that year in comparison with 1948:

> In 1948, the week of September 18 recorded its highest polio incidence with 1,839 cases. But the incidence of 1949 already represents an increase over 1948 of 83%. To what figure this, the worse polio epidemic in history will take us, we do not know… (Polio) has swept our beaches, stilled our boats and emptied our parks.[438]

[436] Ibid.
[437] Ibid.
[438] PeriscopeFilm. "Epidemic's Children - 1940s Polio Epidemic Fundraising Film with Iron Lungs 84610 HD." YouTube, YouTube, 15 Sept. 2014,<www.youtube.com/watch?v=bws4KI2u6tk> Accessed January 8, 2021.

Across the United States, "Hospitals from coast to coast prepared themselves for expansion and space, personnel and equipment, in anticipation of possible epidemic floods of patients." The trailer stated that "New York, California, Texas, Michigan, and Illinois were counting (patients)… in the thousands…" The National Foundation would again play a central role in the costly national mobilization that occurred as a part of the 1949 epidemic response. The trailer announced:

> Unprecedented numbers of epidemic aid teams were organized and an unprecedented need for equipment was beginning to be felt... In terms of life saving respirators, shipments already represent an increase of 340% over the total needs of 1948. In the race against so many possible deaths, 131 new respirators, at a cost of almost $2000 a piece, were pressed into action. Through the equipment pools and the state representative services of the National Foundation, 470 emergency requests for iron lungs have been met. In two hospitals in Los Angeles County alone, these machines are now furnishing the breath of life to 72 polio victims.[439]

A 1949 Los Angeles chapter document stated, "this year it was not just the California and Texas Chapters that were crying for help. By October of 1949, there were chapters in 44 of the 48 states that had emptied their treasuries through meeting local demands and were calling on National Headquarters for assistance."[440] As the trailer and chapter document indicated, California and Texas had a reputation for being disproportionally affected by polio in comparison with the rest of the nation. Problems managing polio in both states led the NFIP to initiate its Respiratory Center Program to fulfill both regions' needs during this time of increased national incidence.

[439]Ibid.
[440] Report of the Activities of the Los Angeles County Chapter National Foundation for Infantile Paralysis, Inc. Annual Meeting. February 20, 1950. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

The Houston Center's Opening

In contrast with the Mary MacArthur Center, which was planned over four years and opened during a period of low polio incidence in Boston, the Houston and Los Angeles centers opened suddenly in response to acute needs.[441] Orthopedic surgeon Paul Harrington's unit at Jefferson Davis Hospital was Harris County's main polio facility during the 1940s. The hospital recruited medical students, residents, and nurses but faced serious shortages in staff.[442] As the NFIP noted, the limited number of nurses "continued to be the outstanding care problem at the unit until well into 1953."[443]

Baylor Chair of Pediatrics Russell Blattner contacted the National Foundation and initiated the process of establishing a center, which opened on June 23, 1950. Blattner worked to create a program at Jefferson Davis that had an academic affiliation with Baylor for research and education. The center at Jefferson Davis would apply a team-based approach to polio management and staffed physicians from various fields, including Pediatrics, Medicine, Orthopedics, Psychiatry, Ear, Nose, and Throat, as well as nurses and physical therapists.[444]

Heather Green Wooten has written that "The hallmark of the new facility was the highly specialized medical team in residence, led by the dynamic William A. Spencer, an instructor of pediatrics at the Baylor College of Medicine." Spencer was just 29 years old when his Respiratory Center opened. A graduate of John Hopkins Medical School, Spencer continued at Hopkins for his pediatrics residency. He then served in the armed services during World War II and assisted in organizing a US Army residency program in pediatrics.[445] Spencer's appointment

[441] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 68, March of Dimes Archives, White Plains, New York.
[442] Wooten, *Polio Years in Texas*, 111.
[443] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 88, March of Dimes Archives, White Plains, New York.
[444] Wooten, "The Polio Years in Harris and Galveston Counties," 141.
[445] Ibid., 140-141.

as chief physician, like that of John Affeldt's at Rancho Los Amigos, illustrated how the foundation attracted and built careers for exceptionally talented young individuals. Like Affeldt, who as a Seventh-Day Adventist believed that patients had an ethical entitlement to a high standard of care, Spencer was motivated by moral convictions. At a time in which racial segregation was rampant in Texas, Spencer integrated his center.[446] In addition, Spencer continued advocating for persons with disabilities after the polio era ended. In 1959, he opened the Texas Institute for Rehabilitation and Research (TIRR), which is today one of the highest ranked rehabilitation centers in the nation.[447] By the 1990s, Spencer had become a leader within the disability rights movement and served on a presidential task force for the Americans with Disabilities Act.[448]

While Spencer and Affeldt advocated on behalf of persons with disabilities at local and national levels, the institutions that they created were distinct. Unlike Spencer's TIRR, which was a not-for-profit hospital, the categorical rehabilitation program that Affeldt created at Rancho has remained public into the present time. Affeldt would also have a career directing Los Angeles' public hospital system following the polio epidemics. A study of Affeldt's life is therefore also a study of the challenges of introducing scientific rehabilitation within the healthcare safety net.

Disability in the Aftermath of California's Second Epidemic Period

In 1949, the Los Angeles County Chapter provided assistance to 1200 new polio patients, while assisting 2,500 chronic patients who contracted polio during the 1948 epidemic. As a local

[446] Ibid., 142.
[447] William A. Spencer- Obituary. *Houston Chronicle*, March 14- March 15, 2009. < https://www.legacy.com/obituaries/houstonchronicle/obituary.aspx?n=william-a-spencer&pid=125076804> Accessed September 9, 2020.
[448] Verville, *War, Politics, and Philanthropy*, 247.

chapter document noted, with the accumulation of patients, "the National Organization itself could not meet all the demands made upon it… (and it was) necessary for us to carry over into the year 1950 almost $100,000 of bills for which we had no funds."[449] As 1950 began, the local chapter warned against "be(ing) over-optimistic concerning the year ahead." Foundation official Hart Van Riper stated in 1950,

> While the polio epidemic of 1950 would appear not to be as severe as in 1949, we know it to be fact that some 1400 patients of epidemics of poliomyelitis prior to 1950 are still hospitalized… This patient load in itself constitutes a serious drain on the National Foundation's resources, and every effort must be made to curtail expenses and, at the same time, the National Foundation has a moral responsibility to carry out its pledge that no patient lack the best available care.[450]

Foundation officials did not view the practical objective to "curtail expenses" and the "moral responsibility" to provide a high standard of care as mutually exclusive. Indeed, their desire to achieve both aims led them to propose Los Angeles' Respiratory Center program.

When Van Riper visited Los Angeles in 1950, he documented that there were roughly 150 iron lung patients in the county and that many of them received an unacceptable standard of care at Rancho Los Amigos. He reported:

> I was greatly disturbed during my visit to the Rancho over the condition of the respirator patients. This is not a criticism of the hospital, for I realize that tax supported institutions are generally under-staffed. However, something over 40 patients are in that institution and I believe that sufficient help should be available for their care so that everything could be done to wean them away from the respirators and so result in their discharge from that institution.[451]

[449] Report of the Activities of the Los Angeles County Chapter National Foundation for Infantile Paralysis, Inc. Annual Meeting. February 20, 1950. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[450] Letter to B. O. Raulston, 26 August 1950, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[451] Ibid.

Van Riper noted the iron lung patients' psychological needs were particularly pressing and wrote, "Several of us have recommended the need for psychological support of these patients and I am wondering what motion, if any, has been taken to procure the services of a full time or part time psychologist."[452]

Roughly one year later, foundation reports indicated that the problems that Van Riper identified stood uncorrected. Herbert Wagner, Director of Hospital Services, undertook a field trip to Los Angeles in April 1951 and afterwards wrote Hart Van Riper and NFIP Medical Director Kenneth Landauer the following:

> The general evidence at the time of my visit (to Rancho Los Amigos) was that there was very little being done for these patients. I conferred with the Medical Director of the hospital; with the orthopedic and pediatric consultants, but they offered little in the way of actual evidence of a medical care program. As you know, it is most depressing to go down through these many wards and see row on row of chronic long-term respirator cases for whom, apparently, precious little is being done and the hospital is being paid a very healthy sum- I believe it is about $18.00 a day for such care.[453]

As described in the introduction, Los Angeles County founded Rancho Los Amigos as the County Poor Farm during the late nineteenth century. Its almshouse model of care still fulfilled its founding purpose to serve county residents who had no other options for care in the community. As the polio incidence increased between 1948 and 1952, and Rancho Los Amigos was forced to admit iron lung patients, its hospice approach to caregiving was unable to accommodate their complex medical needs. During this four-year span, 1,278 people contracted the bulbar form of poliomyelitis in Los Angeles County. But, as Affeldt stated:

> Because there was little or no therapeutic or rehabilitation program (at Rancho), they were sent there to relieve the pressure of the new ones coming in. And so they were

[452] Ibid.
[453] Letter to Hart E. Van Riper and Kenneth S. Landauer, 22 May 1951, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

> housed in the respirators at Rancho, and the numbers grew. They got up to about one hundred or so respirators and Rancho was not equipped to do this.[454]

To assess whether they could establish a rehabilitation center at Rancho Los Amigos, the National Foundation sent Barbara Williams and John Affeldt from its Mary McArthur Respirator Center to survey the hospital in June 1951. Williams was a nursing supervisor at Boston Children's Hospital and oversaw nursing care at the center. She had experience working as an NFIP consultant, having evaluated whether other hospitals could become future Respiratory Centers. The foundation's selection of John Affeldt was more fortuitous. As the chief resident in internal medicine several years earlier at Los Angeles County Hospital, Affeldt helped chief physician Albert Bower conduct research on his "cyclic positive pressure device" in the Communicable Disease Unit. Affeldt also assisted a group of visiting Harvard physiologists in studying how Bower's device affected respiratory physiology. The Harvard Group then invited him to take part in a two-year fellowship in pulmonary physiology at the Mary McArthur Center. When the foundation decided to survey Los Angeles, it turned to the Harvard physiologists to suggest a physician to perform the evaluation. The Harvard Group in turn recommended Affeldt.

As we will see in Chapter 6, Williams and Affeldts' 1951 survey called attention to physician shortages, limited physical therapy, and a lack of recreational services, which resulted in an environment in which patients were institutionalized. While the indigent had lived within similar conditions since the County Farm's origins, iron lung patients had a degree of power by virtue of being represented by the National Foundation for Infantile Paralysis.

On August 27, 1951, two months after Williams and Affeldts' visit, Basil O Connor, Hart Van Riper, Kenneth Landauer and Los Angeles Supervisor Arthur Will convened in New York

[454] Nina Seavey, Jane Smith, and Paul Wagner, *A Paralyzing Fear* (New York: TV Books, 1998), 140.

to "'confer personally' on the problems of the care of respirator patients in Los Angeles."[455] After reviewing Williams and Affeldts' report, they decided to "plan the establishment of such a center at Rancho Los Amigos, the primary purpose to be to institute a complete well-rounded program of care and to develop a program of clinical evaluation and investigation of patients, and research into physiological and other problems involved." Importantly, the center would provide "Educational and psychological stimulation as well as a more desirable physical and social environment." After outlining the funding arrangement between the NFIP and Los Angeles County, Basil O'Connor stated: "Since he will be available in November, I would very heartily like to suggest that we might consider Dr. John E. Affeldt either in the capacity as Medical Director of such a proposed respirator center or as Assistant Medical Director in charge of patient evaluation, clinical investigation and research."[456]

The National Foundation endorsed Affeldt as chief physician because aspects of his professional identity served the Respiratory Center Program it was establishing. Firstly, as Albert Bowers' chief resident, he showed a "great interest and very promising ability in exploration of problems of respiratory and cardiovascular physiology." While having worked under local medical authorities like Bower, Affeldt also had advanced training in the foundation's program of scientific rehabilitation at Harvard. As the document continued:

> At Dr. Bower's suggestion and of his own desire, he will have spent by November… more than a year and a half working as Associate in the physiological laboratories of Dr. James Whittenberger, Professor of Physiology in the Harvard School of Public Health- during this time completely occupied with studies in respirator and cardiovascular physiology as they relate to our problem, and with the development and evaluation of new methods of care. During this interval, he will have spent a year in our Wellesley Respirator Center, a unit of the Boston Children's Hospital, and the Harvard Medical School, working on the problems of care and management of chronic respirator patients.

[455] Letter to Howard F. West, 27 August 1951, File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[456] Ibid.

> In this association, he has also had continuing experience with the management of acute bulbar patients.[457]

At Boston Children's Hospital, John Affeldt not only acquired advanced clinical and research skills, but was exposed to a comprehensive, team-based approach to care at Boston Children's Hospital, which is something that the document also acknowledged:

> He… has had the benefit of an experience not elsewhere to be gained during this time in the many facets of providing a program of complete care for this type of patient… He has had considerable experience in the problems of providing good nursing, physical therapy and specialized medical assistance, such as physical medicine, orthopedic, psychiatry, urology, etc.[458]

The NFIP leaders and county officials came to an agreement and founded the Rancho Los Amigos Respiratory Center on January 19, 1952 "under the joint auspices of the Los Angeles County Board of Supervisors and the National Foundation for Infantile Paralysis."[459] Various aspects of Affeldt's training at County Hospital and Harvard shaped how he made Los Angeles into a laboratory for scientific rehabilitation.

While it went unmentioned in the officials' discussion, Affeldt's personal life as a Seventh-Day Adventist and his medical education at the College of Medical Evangelists also shaped what he created. As a member of Southern California's Adventist community, Affeldt was taught to conceptualize health as encompassing physical, emotional, and spiritual dimensions, which enabled him to create services that responded to the psychological problems that had become concerning to foundation officials.

[457] Ibid.
[458] Ibid.
[459] Comprehensive Home Care Program Rancho Los Amigos Respiratory Center For Poliomyelitis. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

But before describing the program that John Affeldt created, we need to first discuss his formative years. For the next three chapters, the dissertation shifts focus to describe how John Affeldt's medical education at the College of Medical Evangelists, his work as chief resident, and his Harvard fellowship influenced who he became as a rehabilitation leader. We will see how the rehabilitation concept that developed in Los Angeles came to encapsulate who Affeldt was as an individual. Through Affeldt, national and local political, economic, and social trends converged at Rancho Los Amigos in response to polio and generated Los Angeles County's approach to managing chronic disease. As Rancho Los Amigos' chief physician when it became an NFIP Respiratory Center, its medical director during its transition into categorical rehabilitation, and director of the county hospital system, John Affeldt's experiences also give insight into polio's role in the development of the county's contemporary safety net healthcare system. As medical director of Los Angeles County's Department of Health Services during the 1970s, Affeldt also witnessed the first of the funding cuts that jeopardized everything that he built during the polio epidemics.

Conclusion

Going forward, we will shift focus and study John Affeldt's impact on Los Angeles' safety-net healthcare system. The postwar political changes described in this chapter made possible his administrative career and his local legacy. As a clinician researcher who possessed administrative abilities (which especially came out during his chief residency at County Hospital), Affeldt was well situated to take advantage of the ample funding that existed during an era in which the federal government prioritized research and hospital construction. Through his position with the NFIP, Affeldt entered a system in which scientists, such as his Harvard

mentors, had political power. After returning to Los Angeles, Affeldt began transplanting the academic approach to rehabilitation that informed his training into the Los Angeles public hospital system. This was a process that culminated after the mass vaccination campaigns for polio, when Rancho Los Amigos developed an affiliation with the University of Southern California (USC) in 1968.

Before discussing John Affeldt's contribution within the safety net healthcare system, we will describe his early life and medical training in the Seventh-Day Adventist community. For Affeldt, rehabilitation was first and foremost, a unique approach to caring for chronic patients' physical, mental, and spiritual needs. Affeldt engaged with this approach even before he became a physician, when he lived within an Adventist household that placed a sacred significance on the doctor's role as "a medical missionary."

Chapter 4: An Adventist Upbringing and Education (1918-1944)

Rehabilitation medicine caught on in Los Angeles' polio response, not only because it resonated with the NFIP, but because it was compatible with practitioners' belief systems. A sizable number of Rancho Los Amigos' healthcare providers during the polio era were Seventh-Day Adventists. This chapter examines how the history of Adventism in Southern California intersected with Los Angeles' polio experience.

Clinical instructors at the College of Medical Evangelists taught professionals to view health as a holistic phenomenon involving multiple organ systems that were intricately linked. The Adventist health philosophy ultimately came out of a religious worldview, in which God called people to purify their mind, bodies, and souls in preparation for Christ's Second Coming. According to this worldview, convalescence was an unnatural state. As medical missionaries, Adventists were given the responsibility to help chronic patients work towards the goal of attaining the active lifestyle that God intended. Polio rehabilitation in the NFIP Respiratory Center thus became a tool for actualizing an ideal that ultimately had religious roots.

Seventh Day Adventism and Polio Rehabilitation

In his book *War, Politics, and Philanthropy: The History of Rehabilitation Medicine,* Richard

Verville comments on rehabilitation medicine's unique origins. He writes:

> Unlike other early forms of medical care, rehabilitation medicine did not evolve from within the medical enterprise. It also did not develop as the result of new breakthroughs in medical science or theory. It has a history in which factors outside of medicine, such as war, politics, and philanthropy played the major role.[460]

[460] Verville, *War, Politics, and Philanthropy,* 4.

Richard Verville explains that rehabilitation physicians' clinical approach differed from that of physicians from other specialties, as they were concerned with overall function rather than disease state. Rehabilitation proponents therefore looked to forces outside of medicine to obtain recognition. Verville's history provides an account of how rehabilitation leaders achieved legitimacy through working with the military and collaborating with policymakers and philanthropists (most notably from the National Foundation for Infantile Paralysis.)

For John Affeldt, the history that Richard Verville describes was lived history. Educated at the College of Medical Evangelists (CME), a Seventh-Day Adventist medical school in Southern California, Affeldt learned a holistic clinical approach that shared rehabilitation medicine's emphasis on the patient's overall state of health. Over the course of his clinical career, Affeldt also performed research under army contract and collaborated with leaders in government and from the National Foundation for Infantile Paralysis. John Affeldt is thus significant because both his perspective and his practice illustrate how rehabilitation medicine was made during the 1940s and 1950s.

This and the following two chapters tell the story of John Affeldt's professional identity formation as a rehabilitation leader. In this chapter, I focus primarily on Affeldt's education at the College of Medical Evangelists. In the following chapters, I will examine his experience of the polio epidemics in County Hospital's Communicable Disease Division and as a fellow at the Harvard School of Public Health. All three chapters highlight the aspects of Affeldt's background, along with his personal qualities and experiences, that shaped his professional identity. In doing so, we will come to see how his contribution to rehabilitation medicine and the healthcare safety net were rooted in who he was personally.

In this chapter, I argue that John Affeldt's background as a Seventh-Day Adventist made him well equipped to become a rehabilitation leader. During his childhood, medical education, and work in the Los Angeles County municipal health system, Affeldt was a member of a religious community in which medicine had a purpose that related to what it meant to be a missionary. This would affect how he learned to apply clinical knowledge within a social context. Seventh-Day Adventists understood illness as affecting the whole person and made provisions for psychology in caring for convalescent patients. The Adventist clinical approach would closely align with aspects of Affeldt's later work in polio rehabilitation at Rancho Los Amigos. In addition, as a member of the Seventh-Day Adventist church, Affeldt was socialized in a religious worldview in which medicine served a moral purpose. Many of the values that Affeldt learned were consistent with ideals in the rehabilitation movement and he would later uphold Adventist ethical standards in his work as a professional. Furthermore, through the CME community, Affeldt formed relationships with individuals who became crucial to his implementation of rehabilitation in Los Angeles' municipal system. While Affeldt's collaborations at Harvard with researchers (as well as people from industry, the military, and the NFIP) provided him with expertise in a clinical specialty, Affeldt arguably learned to practice rehabilitation medicine through living within the Seventh-Day Adventist community.

John Affeldt: Family Background and Life Up to His Entry into Medical School

John Ellsworth Affeldt was born in Lansing, Michigan in 1918. Growing up, he had a close relationship with his father, John Affeldt Jr., who owned a successful grocery and meat

store.[461] His wife Nancy characterized her father-in-law as a man who "was always organizing something." John's son J.C. remembered that whenever his grandfather visited, he planned projects that improved the home, and recalled how he sanded and varnished their entire backyard fence during one visit.[462]

Affeldt's resemblance to his father with respect to his ability to organize projects seemed to have been present early in life. As a high school student, Affeldt formed a band that performed at dances.[463] In medical school, he led a successful strike to acquire steam tables in the college cafeteria to keep food warm.[464] John's father recognized his son's abilities and sought to influence him in making a career decision. Affeldt recollected that his father "would like to have had me enter into the business with him... (and) wanted me to go to the University of Michigan to business school, but was perfectly willing, if I wished to go to medical school, which I chose."[465]

While Affeldt resembled his father with respect to his leadership and organizational abilities, it was his mother, an observant Seventh-Day Adventist, who encouraged him to attend medical school.[466] As Affeldt recalled:

> There were some physicians in her family, related family. She felt that she would like me to go to medical school. Because we were in the Seventh-Day Adventist denomination as a church, there was quite a focus within that church on medical missionary work. So she influenced me to go into medicine and to go to Andrews, which was part of the

[461] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; *Lansing City Directory 1908*. Lansing: Chilson, McKinley & Co, 1908, 533; Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987), 1.
[462] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.
[463] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[464] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.
[465] Weeks, 1.
[466] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

> denomination, and then to Loma Linda University in California, whose medical school is part of the denomination.[467]

The career path of the physician had a special significance for devout Seventh-Day Adventists, who viewed medicine as a form of ministry. Believing themselves to be a people called out by God to proclaim Christ's return and to observe the Sabbath, Adventists had under the leadership of Ellen White adopted certain practices, including abstaining from alcoholic beverages, which they viewed as harmonious with God's natural design for healthy living.[468] Within his family, Affeldt was not alone in his regard for the health profession; his brother became a dentist and his sister became a dental hygienist.[469]

While John Affeldt's mother's religious background affected his decision to enter the medical profession, he also resembled his father, who was a non-Adventist, in his practice of religion. John's son J.C. recalled that he "went with the flow" like his father, who "went along with things."[470] For instance, John did not observe his denomination's dietary regulations. Nonetheless, when he and his family entertained strictly observant family members as guests, they temporarily adhered to the laws and made efforts to hide all alcoholic beverages from their visitors.[471]

Although John Affeldt might not have been stringent in his practice of religion, Seventh Day Adventism certainly influenced his outlook. During the years that he worked at Rancho Los Amigos, he and his family regularly commuted to hear Arthur Bietz give sermons at White Memorial Hospital, a facility that was associated with the College of Medical Evangelists. A

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[467] Weeks, 1.
[468] Daniel Walker Howe, *What Hath God Wrought: The Transformation of America, 1815-1848* (New York: Oxford University Press, 2007), 289-292; Douglas Morgan, *Adventism and the American Republic: The Public Involvement of a Major Apocalyptic Movement* (Knoxville: Univ. of Tennessee Press, 2001), 1-29.
[469] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[470] Ibid.
[471] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, August 7, 2016.

clinical psychologist with a doctoral degree from the University of Southern California, Arthur Bietz chaired the department of religion at the College of Medical Evangelists.[472] Bietz was both a pastor and a friend to John's family, and he would later officiate John's daughter's marriage.[473] He wrote about his relationship with his students and congregants as a professor and a pastor in the following passage:

> It is the acknowledged task of the teacher in the Department of Religion and in the churches of CME to draw attention to the extreme relevance of religious values to science and to do so in an intellectually honest, acceptable manner. It is also his task to develop the ultimate frame of reference which alone can provide meaning and direction to the medical scientist's life and work. It is, finally, his task to contribute to the store of "tools" with which the medical minister may more efficiently communicate his witness to the persons who come within the sphere of his influence…[474]

Arthur Bietz might have first met Affeldt, and even instructed him, when he was a student at the College of Medical Evangelists.[475]

Affeldt began medical school in 1940 and was immersed in a curriculum that emphasized missionary work. The purpose statement of the College of Medical Evangelists when Affeldt was a student reflected on the importance of providing a scientific education, but also "trust(ed) that many of the graduates will spend their lives in sacrificial service for mankind either in foreign

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[472] Biographical Sketch Arthur Leo Bietz, File Folder: Bietz, Arthur L. – Sermons (undated), Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California; News Copy Release Church Information Service, November 11, 2006, File Folder: Bietz, Arthur L. – Sermons (undated), Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California; White Memorial Church of Seventh-Day Adventists Newsletter, November, 2001, File Folder: Bietz, Arthur L. – Sermons (undated), Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California.

[473] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

[474] Bietz, Arthur. Report of the Division of Religion to the College of Medical Evangelists Constituency Meeting. January, 1959, 2, File Folder: Bietz, Arthur L. – Sermons (undated). Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California

[475] Biographical Sketch Arthur Leo Bietz, File Folder: Bietz, Arthur L. – Sermons (undated), Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California.; News Copy Release Church Information Service, November 11, 2006, File Folder: Bietz, Arthur L. – Sermons (undated), Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California; White Memorial Church of Seventh-Day Adventists Newsletter, November, 2001, File Folder: Bietz, Arthur L. – Sermons (undated), Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California. Bulletin of the College of Medical Evangelists Announcement of the School of Medicine 1944-1945. July, 1944, 79, File Folder: . Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California

fields or in medical missionary enterprises that are sponsored in this or other countries by the Seventh-Day Adventist denomination."[476] Importantly, the blending of scientific and religious learning present in John's instruction was part of an educational philosophy which assigned value to medicine based on its ability to restore health to the whole person, as a unit of body, mind, and spirit. In this way, the curriculum at College of Medical Evangelists taught John to already begin thinking about disability in a similar manner to rehabilitation specialists. In understanding the significance of John's instruction at the College of Medical Evangelists, the historical context in which Seventh-Day Adventist clinical thinking developed will be briefly introduced.

A Unique Form of Medicine

The Seventh-Day Adventist denomination sprung out of a nineteenth century American religious movement under the leadership of William Miller, who preached that Christ would return in the immediate future. From its earliest times, Christianity has affirmed that the Second Coming will be accompanied by a one-thousand-year messianic age prophesied of within the Old Testament, in which peace will reign on earth. Prior to the Protestant Reformation, most Christians accepted the post-Nicene Church Fathers' teachings and interpreted passages about the Second Coming and the millennium allegorically. However, largely because of the Protestant tradition of individual interpretation, the belief that the millennium would occur soon became especially common during the Second Great Awakening of the early nineteenth century.[477]

[476] Bulletin of the College of Medical Evangelists Announcement of the School of Medicine 1940-1941. July, 1940, p. File Folder: Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California.
[477] Everett N. Dick, "The Millerite Movement 1830-1845," in *Adventism in America*. Revised Ed., ed. Gary Land. (Berrien Springs: Andrews University Press, 1998), 29-52; Howe, 286-289.

Believing themselves to be called to reinstate "long-obscure truths, such as the seventh-day Sabbath, in preparation for the Second Coming of Christ," Adventists had by 1864 organized from a sectarian offshoot of a popular movement into a recognized Christian denomination.[478] After having a vision in 1863, Seventh-Day Adventist leader Ellen White began preaching that adherents adopt certain practices from the health reform movement, including maintaining a vegetarian diet, which they viewed as harmonious with God's natural design for healthy living.[479] Ellen White in *The Ministry of Healing*, one of the most important Adventist works, explained that the "laws of nature" were "divine" and "only in obedience to them can health be recovered or preserved." The physician was to "teach his patients that they are to cooperate with God in the work of restoration." Admonishing patients to conduct life in accordance with God's laws was indeed missionary work. [480] Speaking of her vision, Ellen White wrote:

> I saw that it was a sacred duty to attend to our health, and arouse others to their duty, and yet not take the burden of their case upon us. Yet we have a duty to speak, to come out against intemperance of every kind—intemperance in working, in eating, in drinking, and in drugging.[481]

This era in American history witnessed not only the popularity of millennial movements but of sectarian health movements. Sectarian healers urged ordinary men and women to study medicine using their own reasoning and argued against regular physicians' systems of clinical thinking. When Andrew Jackson attacked the national banking system during the 1830s, sectarian practitioners worked with the Jacksonians to abolish state medical licensing laws. John

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[478] Morgan, 11; Godfrey Anderson, "Sectarianism and Organization 1846-1864," in *Adventism in America*. Revised Ed., ed. Gary Land. (Berrien Springs: Andrews University Press, 1998), 29-52.
[479] Emmett Vandevere, "Years of Expansion 1865-1885," in *Adventism in America*. Revised Ed., ed. Gary Land. (Berrien Springs: Andrews University Press, 1998), 55-56; Howe, 289-292; Morgan, 37; Ronald Numbers *Prophetess of Health: A Study of Ellen G. White* (New York: Harper & Row Publishers, 1976), 77-101.
[480] Ellen White, *The Ministry of Healing* (Mountain View: Pacific Press Publishing Association, 1942), 113 < http://www.whiteestate.org/books/mh/mh7.html> Accessed October 21, 2010.
[481] Ellen White, "Writings on Health." Manuscript Releases, vol. 5 [Nos. 260-346] Silver Spring, MD: Ellen G. White Estate <https://m.egwwritings.org/en/book/56.465#468> Accessed August 30, 2023

Warner has noted that this attack on the regular physician's authority was related to the sectarian practitioners' different epistemology. [482] Unlike regular physicians, who derived medical knowledge from learning in elite institutions, sectarian healers believed that the practice of medicine should be guided by the "direct experience of nature" which was "an epistemology of both common sense and common experience…" With such grounding, medicine would be "characterized by truth and simplicity."[483]

This epistemological orientation influenced practitioners of hydropathy, whose ideas became applied in Seventh-Day Adventist sanitariums in caring for convalescent patients. The hydropathic movement was founded by Vincenz Priessnitz, an Austrian peasant who used water as a medicinal agent at his spa at Graefenberg in Austrian Silesia during the 1830s. Priessnitz's therapeutic practices spread to the United States in the following decade and influenced Adventist leaders' opening of their first sanatorium in Battle Creek, Michigan in 1866.[484]

Hydropathic practitioners were advocates of water treatment because they saw it as the morally correct form of medicine. Historian of medicine Charles Rosenberg has written that water was superior to the regular physician's drugs in the same way "as it was to whiskey, or as freedom was to slavery." Even when the millennial religious spirit waned, many Americans still could not "compromise with sin, immorality, or imperfection in any form." Hydropathy therefore often had the greatest appeal to people who were deeply religious and believed in moral reform.[485]

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[482] Warner, 110-141.
[483] Ibid., 115-118.
[484] Marshall Scott Legan, "Hydropathy in America: A Nineteenth-Century Panacea." *Bulletin of the History of Medicine* 45, no. 3 (1971): 269; Numbers, 64-128; Porter, 392-393.
[485] Charles E. Rosenberg, *The Cholera Years: The United States in 1832, 1849, and 1866* (Chicago and London: University of Chicago Press, 1987), 162.

While advocating for hydropathy, Seventh-Day Adventists held key differences from many American Protestants in their understanding of the religious significance of reform, which were rooted in the Adventist denomination's early history.[486] In antebellum America, most Protestants subscribed to a form of millenarianism that was known as postmillenarianism. Upholding an Enlightenment belief in human progress, postmillenarian theologians viewed human efforts to perfect society as initiating the millennium, which would be followed by Christ's Second Coming.[487] The Seventh-Day Adventist denomination, by contrast, grew out of William Miller's premillennialist movement. Premillennialist theologians stressed that Christ's Second Coming must occur prior to the millennium, as human effort was considered insufficient for carrying out God's divine plan.[488] Rather than intending to perfect society, Adventists regarded conducting life in accordance with God's laws as preparation for the Second Coming. Reform was significant for restoring health to the individual man rather than society at large. Writing about health reform's role within the Adventist denomination, Douglas Morgan explains, "(Adventists) came to view the avoidance of harmful substances such as alcohol and tobacco and a regimen of preventive measures and remedies including the simplicity of diet, exercise, and hydrotherapy as a necessary part of the restoration of the divine image in sinful human beings." [489]

After founding the Battle Creek Sanatorium, Seventh-Day Adventists established more sanitoriums in the United States and abroad. The early twentieth century witnessed the founding of the first three Adventist sanitariums in Southern California, located in Paradise Valley, Glendale, and Loma Linda.[490] Southern California provided fertile ground for the Adventist

[486] Morgan, 4-29.
[487] Howe, 285, 289.
[488] Ibid., 285, 289-292; Morgan, 2-10, 26-27.
[489] Ibid., 37.
[490] Numbers, 187; Richard Schaefer, *Legacy: Daring to Care* (Loma Linda: Legacy Publishing Association, 2005), 135.

health network's growth. Competition between the Santa Fe and the Southern Pacific railways reduced ticket prices and brought migration and urbanization to undeveloped areas. In addition, the collapse of an 1880s real estate boom considerably reduced property values.[491] Such factors precipitated extensive settlement in the region during the 1890s and laid the foundations for the town of Loma Linda's eventual development into the hub of the international Adventist health network.[492] At a time in which advertisements about Southern California's sunshine and orchard trees were widespread, Seventh-Day Adventist leaders would likely have been aware of the region's reputation for encountering nature's healing powers.[493] Finding its land lined with orchards, gardens, grain and alfalfa, Adventist leaders became convinced that God had designated Loma Linda for their health program's expansion and they purchased the property in 1905.[494]

The religious significance of the physician's role necessitated that Adventists who aspired to become physicians receive instruction in the proper approach to medicine. In 1905, the Seventh-Day Adventist Church founded the College of Medical Evangelists, which has since become the Loma Linda University School of Medicine.[495] In the years following its founding, faculty and administrators improved the College of Medical Evangelists' standing with the American Medical Association, built a relationship with Los Angeles County Hospital, and established the Ellen G. White Memorial Hospital in Los Angeles for clinical training.[496] With

[491] McWilliams, *Southern California,* 113-135.
[492]Ken McFarland, "Beautiful Hill: The Beginnings of a Dream- and Vision- Come True." *Adventist Review,* 31 March 2005, 436-440.
[493] Abel, 5-7.
[494] Schaefer, 138-139.
[495] Numbers, 190, 198-201; History. Loma Linda University. <https://llu.edu/about-llu/history> Accessed August 31, 2023.
[496] Ibid., 199, 263; Schaefer, 154-157; W.E. Macpherson "The County," in *Diamond Memories: Celebrating the Seventy-Fifth Anniversary of the School of Medicine of the College of Medical Evangelists/ Loma Linda University,* ed. Carrol Small, Albert Brown, Walter Macpherson, Harold Shryock, Raymond West, and Gery Friesen. (Loma Linda: Alumni Association School of Medicine of Loma Linda University, 1984), 75-79.

time, Loma Linda and other Adventist health institutions incorporated scientific advancements into healthcare delivery and shifted their focus from providing convalescent to acute care.[497] In its appropriation of knowledge from the bench to the bedside, the College of Medical Evangelists developed a unique way of instructing students in the purpose of medicine which has been fittingly expressed in the following quote by Richard Schaefer, the official historian of Loma Linda University. He has written:

> In every situation, whether in a sanitarium, a better living center, or an acute-care hospital, all health comes from God. And every method should be a means whereby the healing power of God can work through his laws.[498]

This understanding of health and the utility of medicine was the foundation for the curriculum at the College of Medical Evangelists when Affeldt began his instruction during the 1940s.

The Implications of the Adventist Educational Philosophy

A sizable portion of the curriculum during each of John Affeldt's four years was devoted to the study of religion. During Affeldt's first year, he devoted 99 hours of his class time were devoted to religious study; in his second year, he spent 72 hours in religious instruction; during years three and four of medical school, Affeldt spent 99 hours of each year in religion classes. Cumulatively over Affeldt's four years of medical education, he devoted 7% of all instruction time, which included time spent in his biomedical science classes and clinical training, to studying religion.[499]

Affeldt's courses in religion were divided into the two categories of Medical Evangelistic Field Training and Biblical Exegesis. The Medical Evangelistic Field Training component

[497] Schaefer, 239-240.
[498] Ibid., 245.
[499] Bulletin of the College of Medical Evangelists Announcement of the School of Medicine 1940-1941. July, 1940, 77-78, File Folder: Archives and Special Collections, University Libraries, Loma Linda University, Loma Linda, California.

exposed students to social influences on healthcare delivery and instructed students in "a doctor's ethical relations and duties to his community and church." Through this component of the curriculum, students had the opportunity to become involved in city welfare work or to give temperance lectures in schools and churches. For example, in the course Bible Hygiene I, students gained a "comprehensive view of the leading truths of health reform." In this course, Affeldt studied "the harmony that exists between revealed truths regarding healthful living and modern scientific facts in the field of medicine." The Bible was assigned as required reading along with Ellen White's writings, including *The Ministry of Healing*. Courses in both components of the curriculum provided students with a grounding in Adventist teachings that were relevant for clinical practice. In one of Affeldt's Bible studies courses, for instance, he studied the topic of "the Science of Salvation," which had the objective of "seeking to prepare the student to minister to the spiritual needs of the soul at the same time (as) the healing art that is being applied to the body."[500]

Importantly, the Seventh-Day Adventist philosophy taught that disease affected the individual as a unified entity of body, mind, and spirit, rather than as targeting isolated systems or anatomical parts. In a book intended to counsel physicians, Arthur Bietz wrote:

> We do not hold that the soul stands apart from the body and the mind. This unitary view of life justifies our emphasis on the threefold development of man – body, mind, and spirit. Man does not have a living soul: he is a living soul.[501]

The "unitary view of life" that Arthur Bietz articulated was notably similar to rehabilitation specialists' understanding of function as an entity that expressed the myriad aspects of disability.

[500] Ibid.
[501] Arthur Bietz, *Putting Life Together: A Source Book for Physicians, Ministers, Teachers, and Laymen* (Mountain View: Pacific Press Publishing Association, 1952), xvi.

In commenting on one of the defining features of rehabilitation medicine, Richard Verville has written:

> (Rehabilitation medicine) is not narrowly medical. It focuses on the function of a person with a disability, rather than just the diagnosis of a disease state… It takes into account the social, psychological, economic, and environmental factors that can affect function and impact the likelihood of obtaining a positive health outcome.[502]

Because Seventh-Day Adventist physicians and rehabilitation specialists thought in the context of the whole person, they saw illness or disability as having effects that spanned multiple organ systems. According to Arthur Bietz:

> The person who has the symptom is of much greater importance than the symptom itself. Wise physicians and ministers do not treat mere symptoms; they treat the whole person… it is dangerous to declare peace when there is no peace. As long as the emotional cause is not removed, the pain may express itself through the stomach if the headache is dulled with a drug; if nausea and vomiting are allayed with medicine or other methods, the symptoms may appear in the bladder. These floating symptoms are often observed when the symptom, instead of the person, is treated.[503]

Verville likewise discusses the array of problems associated with managing a single disabling condition:

> A person with a spinal cord injury in the thoracic or lumbar region typically would have difficulty managing the bowel and bladder (which are usually not functioning normally); would be unable to walk due to paralysis of the lower extremities; would have numbness of the abdomen and pelvis and lower limbs, would have difficulty dressing and bathing…[504]

Because of their shared perspective, Seventh-Day Adventist clinicians and rehabilitation specialists each emphasized the importance of mental health. Ellen White noted that "the condition of the mind affects the health to a far greater degree than many realize."[505] In commenting on the "trend of recent years" of "dividing man into many parts for the purpose of analysis and

[502] Verville, *War, Politics, and Philanthropy*, 2.
[503] Bietz, 5.
[504] Verville, *War, Politics, and Philanthropy*, 1.
[505] White, *Ministry of Healing*, 241.

diagnosis," Arthur Bietz pointed out that such an approach problematically did not address patients' mental health needs:

> Multitudes are suffering from physical, emotional, and mental ill-health, and we are a long way from giving them the best help available. Many could be helped immeasurably if all the resources of knowledge in the various fields were turned in the right direction; but the facts concerning the parts have been erratically focused. It is time for these beams of light concerning the parts to be brought together…[506]

Rehabilitation specialists, like Adventist physicians, viewed psychological services as an integral part of healthcare provision. William Fowler, the former President of the Academy of Physical Medicine and Rehabilitation, has written that by 1949, the focus of PM&R had become the "comprehensive restoration" of persons with disabilities "to an optimum level of physical, mental, emotional, vocational and social function."[507] Since disability affected the whole person, the field of rehabilitation included teams of professionals from a variety of disciplines, including orthopedists, neurologists, physical therapists, social workers and psychologists.[508]

In its emphasis on patient action, the Adventist approach also aligned with how rehabilitation specialists managed disability. Ellen White criticized physical inactivity as a violation of God's natural laws and called for the patient to take initiative in progressing towards personal improvement. As she wrote in the *Ministry of Healing* when it was first published in 1905:

> Action is the law of our being. Every organ of the body has its appointed work, upon the performance of which its development and strength depend. The normal action of all the organs gives strength and vigor, while the tendency of disuse is toward decay and death. Bind up an arm, even for a few weeks, then free it from its bands, and you will see that it is weaker than the one you have been using moderately during the same time.[509]

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[506] Bietz, ix.
[507] Fowler, W M. "A History of Physical Medicine and Rehabilitation in California." *California Society of Physical Medicine and Rehabilitation, Las Vegas, NV*, 1998, 9, as quoted in Verville, *War, Politics, and Philanthropy*, 90.
[508] Verville, *War, Politics, and Philanthropy*, 3-4.
[509] White, *Ministry of Healing*, 237-238.

Patient initiative was often essential to the rehabilitation process. Most physical therapists who treated polio during the 1950s used the Kenny Method popularized by Sister Kenny in her 1941 book *The Treatment of Infantile Paralysis in the Acute Stage*. Physical therapists used warmed moist packs, stretching, and massage to relax the muscles and lessen contraction. Once the muscles relaxed, the therapist guided the patient's extremity through its normal range of motion over the joint. Through a process that Sister Kenny called "re-education" or "re-awakening of impulse," patients gradually learned to build enough function so that they could move their body parts on their own.[510] According to Daniel Wilson, the Kenny method actively involved the patient in his or her rehabilitation, as the patient cooperated with doctors and therapists in meeting goals defined by physicians.[511] It is worth noting that when Sister Kenny passed away, a Seventh-Day Adventist periodical dedicated a memorial to her. Praising her conception of therapy, it affirmed:

> We share Sister Kenny's faith in the efficacy of hydrotherapy as a treatment in certain forms of disease. Our health institutions were using water treatment with success for nearly a half-century before Sister Kenny began using hot packs for polio. No one knows exactly how much influence, if any, our Adventist institutions had upon this Australian Nurse.[512]

Significantly, Seventh-Day Adventist physicians and rehabilitation practitioners used natural healing agents for convalescent patients from their medical programs' earliest times.

Adventist Professional Standards and Rehabilitation Morality

John Affeldt's medical education not only provided him with a person-centered approach to patient care, but it also instilled in him the qualities that would later define who he was as a

[510] Elizabeth Kenny, "Preface" in John F. Pohl and Elizabeth Kenny, *The Kenny Concept of Infantile Paralysis and Its Treatment* (Minneapolis: Bruce Publishing Company, 1943), 11-25.
[511] Wilson, *Living With Polio*, 53-56, 72-73, 76-78, 131-132, 140.
[512] "Polio Fighter Dies in Australia," *Review and Herald*, 1 January 1953.

physician. Through the writings of Ellen White, medical students learned to abide by the moral standards that were appropriate for their sacred vocation. While emphasizing patient initiative, White also required the physician to provide a high standard of care:

> The physician who desires to be an acceptable coworker with Christ will strive to become efficient in every feature of his work. He will study diligently, that he may be qualified for the responsibilities of his profession, and will constantly endeavor to reach a higher standard… The physician who is satisfied with a low standard of skill and knowledge not only belittles the medical profession, but does dishonor to Christ, the Chief Physician.[513]

In addition, Ellen White necessitated that physicians do not charge patients excessive amounts for services. She wrote in 1899:

> The physician who loves his brother as he loves himself will not charge exorbitant prices… There is grave overreaching in the charges made by lawyers and doctors. The Lord views all these things. No tradition, custom, or practice condemned by God must be followed by the believing physician. He is God's servant, working in Christ's stead, as His representative, and his work, his weights and measures, pass in review before God…[514]

As it will be seen, John Affeldt's diligence, along with his intolerance of a low standard of care, carried with it almost a religious zeal. According to his son J.C., John abided by a "nonmonetary reward system" and quality was "a passion and a driver and ultimately a rewarder…" In reflecting on how his father influenced his own career in medicine, J.C. commented on his father's "personal commitment and requirement for quality." J.C. noted that this drive for quality especially came out at the end of his father's career, when he worked as the president of the Joint Commission on Accreditation of Hospitals enforcing quality standards among all American hospitals.[515] John Affeldt furthermore did not have a practice in which he enriched himself through charging patients with high fees, but spent most of his career working within a public hospital system providing services to patients who were dependent upon public assistance.

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[513] White, *The Ministry of Healing*, 116.
[514] Ellen White, *Medical Ministry.* Mountain View: Pacific Press Publishing Association, 1932. < https://m.egwwritings.org/en/book/75.934#957> Accessed August 30, 2023.
[515] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

The Seventh-Day Adventist belief in a morality inherent in medicine was also consistent with the convictions of the 1950s rehabilitation leaders. This would have naturally made Affeldt a part of their movement. As Rancho Los Amigos' medical director, Affeldt collaborated with Mary Switzer, the Director of the Office of Vocational Rehabilitation, in securing federal grants. Switzer was one of rehabilitation medicine's most important non-medical leaders, as she used her government position to influence disability legislation. [516] An exceptionally skilled administrator, Switzer had concern for individuals who lacked access to resources, whether because of poverty or a disability.[517] Affeldt's acquaintance with Switzer dated to the 1950s, when she headed the NFIP Committee on Respiratory Centers and they worked together to improve iron lung patients' access to rehabilitation services. In her work on behalf of iron lung patients, Switzer expressed a belief in the responsibility to improve healthcare access that was based on a person's innate worthiness; commenting on the ethical problem of placing polio patients in respirators without providing them with access to rehabilitation, Mary Switzer revealed her moral views in her remarks "Nobody knows how precious life is or how valuable (the) human spirit is inside a person."[518]

The Seventh-Day Adventist religious organization and the National Foundation for Infantile Paralysis also had similar objectives. While both groups' motivations differed, they viewed their promotion of a similar conception of patient care in evangelistic terms. The foundation referred to its advocacy on behalf of rehabilitation medicine as "missionary work" and the Respiratory Centers served to help professionals gain clinical knowledge of rehabilitation. The foundation had various means of winning professionals to its approach, including providing scholarships to physical therapists and medical students, offering fellowships to study at Respiratory Centers, and granting

[516] Verville, *War, Politics, and Philanthropy*, 133-148.
[517] Hughes, 462-503.
[518] Meeting 1955, Respiratory Centers Committee, November 2, 1955, File Folder: Switzer, Mary; correspondence file, 1948-1960, PRI, NFIP Archives, White Plains, New York.

institutions funding to offer courses on rehabilitation.[519] John Affeldt effectively utilized these resources in bringing professionals from the College of Medical Evangelists community to Rancho Los Amigos, where they helped build the standing of its rehabilitation program.

The polio rehabilitation center would provide a place where Seventh-Day Adventist ideals regarding patient care could become actualized. And these same religious ideals served the NFIP's rehabilitation program for iron lung patients. The social changes that occurred at Rancho Los Amigos resulted from a partnership whereby the foundation relied upon professionals like John Affeldt, who drew inspiration from their personal convictions to actualize the foundation's rehabilitation agenda.

The Medical Evangelist Community and the Making of Rehabilitation

Many of the physicians who worked at Rancho Los Amigos during the 1950s were from the College of Medical Evangelists community. Orthopedic surgeon Jacquelin Perry mentioned that over half of her fellow physicians at Rancho Los Amigos were Seventh-Day Adventists.[520] In 1954, ten of Rancho Los Amigos' nineteen physicians had trained at the College of Medical Evangelists.[521] John's son recalled, "I remember (my father) talking about the concept of tapping into an unrecognized talent pool to help build Rancho Los Amigos." J.C. explained, "I think a lot of it was these were people that he knew but there was talent there that was perhaps a little unrecognized."[522]

[519] D. St. John and T. Whitman, "X. Program of Department of Public Relations in Relation to Rehabilitation Objective for Patients" Present and Proposed Program for the Rehabilitation of Poliomyelitis Patients, November 22, 1955, File Folder: Committee Rehabilitation Agenda. NFIP Archives, White Plains, New York; Worthingham and Spears, "VII. Program for Division of Professional Education in Relation to Rehabilitation," Present and Proposed Program for the Rehabilitation of Poliomyelitis Patients, November 22, 1955, File Folder: Committee Rehabilitation Agenda NFIP Archives, White Plains, New York.
[520] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, September 21, 2010.
[521] Los Angeles Grant Request 1955, File Folder: Respiratory Centers Agenda, NFIP Archives, White Plains, New York.
[522] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

Through the College of Medical Evangelists, Affeldt formed relationships with classmates, some of whom, most notably Vernon Nickel, made distinguished contributions to PM&R. Nickel was in Affeldt's same year and became Affeldt's "lifetime friend." Nickel was also a family friend and Affeldt's family rented a cottage on the beach from Nickel's mother-in-law during certain months of each year.[523] Through their relationship, Affeldt became aware of Nickel's capabilities and acquired resources that made Rancho Los Amigos attractive for beginning his research career. Affeldt's early recognition of Nickel's potential illustrated both Affeldt's foresight and the Adventist social networks' significance in the history of rehabilitation in Los Angeles.

During John Affeldt's time as a student at the College of Medical Evangelists, he also met his wife Nancy Spomer, who held a key position in the social networks that linked Affeldt to policymakers and stakeholders over the course of his career. Nancy grew up in a small farm town in Oklahoma and was the youngest child in a large Seventh-Day Adventist family. Like John, Nancy's family included health professionals; Nancy, along with two of her sisters, went to nursing school at White Memorial Hospital and one of her brothers attended medical school at the College of Medical Evangelists.

Nancy was also like John in her display of self-confidence at a young age. In high school, she had the leading role in her junior and senior plays and was approached to be a contestant for Miss Oklahoma, but her father refused to allow her to be considered.[524] As the medical director of both Rancho Los Amigos and the Los Angeles Department of Health Services, and as the Joint Commission's president, Affeldt represented interests within political systems. Nancy had somewhat of a diplomatic role as John's wife, which was like the "important but mostly

[523] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, August 7, 2016.
[524] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.

unacknowledged roles in the work of diplomacy" which historian Molly Wood attributed to United States diplomats' wives during the early twentieth century. Wood argued that diplomats' wives "possessed a quasi-official status, as informal representatives of the U.S. government." According to Wood, "by hosting dinners at her home, accompanying her husband to other social functions, and visiting other wives in the diplomatic corps in their homes, Foreign Service wives facilitated the exchange of information, both official and unofficial, that contributed to the maintenance of relationships within the diplomatic corps and between diplomats and other officials." [525] Nancy likewise helped John to cultivate personal connections that were instrumental to his advocacy for the interests that he represented. Through organizing and attending gatherings with John, Nancy at times directly mobilized support on his behalf. In Nancy's position, her confidence would have served as a chief asset. Nancy's responsibility was considered high priority when John was being considered as the president of the Joint Commission and she was interviewed as a part of the process.[526]

In 1942, John and Nancy had a surprise wedding with classmates from the College of Medical Evangelists and the White Memorial Hospital. Like others from CME's Seventh-Day Adventist community, their relationship was a part of their student life. When Nancy was in nursing school, her classmates were mostly women who were in relationships with medical students. Nancy had first heard about John when she was dating his cousin, who was also a medical student. Eating

[525]Molly M. Wood, "Wives, Clerks, and 'Lady Diplomats': The Gendered Politics of Diplomacy and Representation in the U.S. Foreign Service, 1900-1940." *European Journal of American Studies* 10, no. 1 (2015): 2. Although Molly Wood writes about United States diplomat's wives during the twentieth century's first decades, they continued to have a vital position until recent times. See Deborah Churchman, "Foreign Service Wives Seek Recognition for Their Diplomatic work," *Christian Science Monitor*, 3 June 1981 [newspaper online]; available from https://m.csmonitor.com/1981/0603/060312.html; Internet. Accessed 20 August 2017; Lynn Rosellini, "The Plight of the Embassy Wife," *New York Times*, 30 April 1981, national ed. [newspaper online]; available from http://www.nytimes.com/1981/04/30/garden/the-plight-of-the-embassy-wife.htmlpagewanted=all&mcubz=3; Internet. Accessed 20 August 2017.

[526] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.

dinner one evening at the medical school cafeteria with a group of student nurses, Nancy saw John enter the cafeteria and declared at that moment that she would marry him. After dating for two years, they invited their unsuspecting classmates to one of their professors' homes in La Canada under the pretext of a student meeting and were married in his backyard.[527]

After John graduated in 1944, he and Nancy moved to Detroit, Michigan, where he completed his internship at Detroit General Hospital, and she practiced nursing at the Henry Ford Hospital. One year later, John left the United States to serve with the army and while he was abroad, Nancy worked at his father's grocery store. Following John's return to the United States, he and Nancy moved back to Southern California, where he began a combined internal medicine residency at the White Memorial Hospital and Los Angeles County Hospital in 1946.[528]

When John began his residency training in 1946, the incidence of epidemic polio was on the rise in Los Angeles. As the county responded to ensuing problems managing care for increasing numbers of polio patients, Affeldt and others from the College of Medical Evangelists community helped bring rehabilitation to iron lung patients. But Affeldt also used the resources that he acquired through the epidemics to contribute to medical education and research at the College of Medical Evangelists. While he was chief resident in the Communicable Disease Unit at Los Angeles General Hospital in 1949, Affeldt became an instructor in Internal Medicine at CME.[529] An article from the 1952 CME alumni journal described how Affeldt hoped to use his faculty position to improve the standing of research after becoming Rancho's chief physician:

> To Dr. Affeldt, the appointment brings personal fulfillment- to contribute something to CME's research program. This seems to be a practical approach. As head of the Respirator Center he will be in a position to do effective study, and as a member of the CME medical

[527] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[528] Ibid.; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015; Weeks, iii.
[529] Curriculum Vitale John Ellsworth Affeldt. File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, Correspondence, 1939-1963, Whittenberger, James Laverre, 1914-. Papers, 1933-1988, Center for the History of Medicine, Francis A. Countway Library of Medicine, Boston, Massachusetts.

> faculty he will, as research is turned out, be able to have it published under the school's name.[530]

The National Foundation for Infantile Paralysis provided an opportunity for faculty from the College of Medical Evangelists, along with researchers from other institutions, to become part of an international research community. The alumni journal writer wrote that Affeldt explained to her the importance of research in the NFIP Respiratory Center, as its three central purposes were to advance clinical research on treatment, the mechanism of respirators, and weaning the patient from the iron lung.[531] Through Affeldt's Harvard fellowship in pulmonary medicine, he fulfilled these purposes. While Affeldt's fellowship gave him necessary clinical knowledge and skills, as a Seventh-Day Adventist, he would also personally bring a comprehensive approach to patient care at Rancho Los Amigos. The alumni journal writer made an astute observation about the lack of psychological services available to iron lung patients, which was a problem that Affeldt was already aware of and attempting to correct:

> There is also an emotional problem. The respirator patient lies and thinks, and thinks. He has little to occupy his mind. Dr. Affeldt hopes that a recreation director will be made available soon to stimulate the minds and to provide recreation and education.[532]

John Affeldt incorporated psychological services and research into Rancho Los Amigos as he built the hospital into a laboratory for studying respiratory polio. This would differentiate him from researchers of other specialties, who used their laboratories to study disease state. It also exemplified the Seventh-Day Adventist clinical approach. During the 1950s, Affeldt established a pattern at Rancho Los Amigos of appropriating science learned at elite institutional levels in the context of improving function for the person with a disability. After the mass production of the polio vaccine,

[530]Beatrice Crandall, "CME to Share in Polio Research: Dr. Affeldt and Dr. Dail Join Respirator Center," *The Alumni Journal*, February 1952, 9.
[531] Ibid., 9.
[532] Ibid., 9.

the number of iron lung patients in Los Angeles County decreased. But the pattern that Affeldt established enabled other disabled patients from socio-economically disadvantaged communities to access the specialized clinical resources and the medical technologies that they needed to live independently.

Before the 1950s polio epidemics, John Affeldt's approach to rehabilitation medicine was already present in his family members and friends' lived experiences. It ultimately came out of a worldview tied to the religious understanding that man was a unit of body, mind, and spirit. It was an approach that was unorthodox, which would become expressed within a city and a specialty that were also unorthodox.

Chapter 5: Affeldt's Chief Residency at County Hospital (1946-1948)

The clinical practice of rehabilitation was embedded within a larger political context shaped by the polio epidemics and World War II. As we will see in this chapter, technologies used to provide high altitude pilots with oxygen also found application in treating iron lung patients. Given the relevance of their work for national defense and public health, clinician scientists such as John Affeldt's mentor James Whittenberger used rehabilitation as a source of political influence.

Beginning during World War II, federal expenditures on scientific research vastly increased given the popular recognition that investment in biomedicine served national interests. Scientists assumed leadership roles administering government programs that were funded by the significant budget allocated towards biomedicine. In later chapters, we will study the process by which Mary Switzer set Eisenhower's political agenda and influenced the Social Security's midcentury course of expansion. However, an important component within advocacy is not just agenda setting, but implementation. And within the United States' decentralized model of organizing social provision, physician administrators worked with civil servants in implementing the rehabilitation agenda locally.

During the 1950s, John Affeldt became one of several rehabilitation specialists who rose to the challenge of actualizing Mary Switzer's agenda. In the process, he became skilled in navigating a political system that was administered locally but received federal funding. Through his residency and fellowship training, Affeldt acquired specialized knowledge that he later applied in managing a regional rehabilitation center. A study of his training therefore sheds light on how advocates gained the expertise necessary to advance the rehabilitation agenda within the

"operating stage" of health policy implementation. As we will later see, medical knowledge itself became a key part of the policymaking process.

A Training in Administration

In a 1976 interview, John Affeldt was asked about his contribution as "the pivotal figure" in "the most significant portion" of Rancho Los Amigos' history. Acting as the medical director of Los Angeles County's health department at the time, Affeldt mentioned that his experience of the polio epidemics during his medicine residency at County Hospital was what ultimately led him to Rancho Los Amigos. Affeldt recalled:

> As part of (the residency), I was assigned into the communicable disease unit of the County Hospital, where the polios were coming in, and I became rather fascinated with the problems, the respiratory problems that were occurring at that time. It then followed that when I finished my residency training, I was offered the position of Chief Resident in communicable diseases which was 1949.[533]

Historian Richard Verville has attributed rehabilitation medicine's development to its ability to meet national health needs during World War II and the polio epidemics.[534] Prior to beginning his residency, John Affeldt served as a surgeon with the US Army combat engineers; however, unlike other rehabilitation leaders at Rancho Los Amigos, Affeldt did not attach significance to his wartime experiences in interviews, as polio served as the major influence on who he became as a rehabilitation leader. For Vernon Nickel and Jacquelin Perry, the war provided exposure to disabling conditions and innovations in the clinical management of disability.[535] Affeldt by contrast, virtually omits discussion of his military service between 1944

[533] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[534] Verville, *War, politics, and philanthropy*.
[535] For instance, Nickel has spoken of how his experience as Chief of Orthopedics at a military hospital enabled him to observe novel techniques and connect to leaders in orthopedic surgery. Perry likewise has spoken of her service as a physical therapist at Walter Reed Army Medical Center as influencing her application of rehabilitation principles to

and 1947 when recalling how he contributed to Rancho Los Amigos' development as a rehabilitation center. It is also notable that unlike Nickel and Perry, Affeldt did not convey a strong interest in having a research career based in the clinical setting.[536] Affeldt went on to say:

> At the time, a controversy was occurring over the use of tracheotomies in poliomyelitis, so that here in Los Angeles they picked it up as a technique, began using it widely, and began getting some unusually good results. Better results than other parts of the country. This became controversial. So then you had the scientific controversy occurring across the country as to what would be the best way to treat this type of bulbar polio, as they called it, because it had such a high mortality. Because the controversy became so great, the National Polio Foundation sent a team from Harvard out to investigate the validity of the claims and the results.[537]

John Affeldt's experience of the politics that surrounded the incorporation of research findings into clinical practice during the epidemics shaped who he became as a rehabilitation leader. What defined Affeldt's contribution was not his performance of clinical research but rather how he used science politically to acquire economic resources- from foundations, the military, industry, and governmental leaders- to build rehabilitation infrastructure in Los Angeles County.

Affeldt began his residency in 1946, a time during which the wartime collaborations between scientists gave rise to medical advancements and a popular esteem for research. Over the course of Affeldt's chief residency at County Hospital and his Harvard pulmonary medicine fellowship, he encountered a world in which supporting scientific research was political

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addressing gait problems. Colleen Adair Fliedner, interview with Vernon Nickel, January 26, 1986, Box 16, Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-, California Social Welfare Archives, University of Southern California, Los Angeles, California; Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010; Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, July 27, 2010; Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, September 21, 2010.

[536] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976); Colleen Adair Fliedner, interview with John Affeldt, March 14, 1986, Box 16, Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-, California Social Welfare Archives, University of Southern California, Los Angeles, California; Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987).

[537] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

currency. Affeldt returned to Los Angeles after his Harvard fellowship ended in 1951. Using ample public funding for biomedical research and hospital construction, he then transformed Rancho Los Amigos into a laboratory that applied the modern science of rehabilitation to the management of polio. In the context of the times, Affeldt's construction of research infrastructure was both an effort to advance clinical knowledge and a business endeavor. Like other clinicians who possessed scientific interests and leadership skills, and who served as managers of public programs, Affeldt was well suited to become a health administrator in the decades following World War II.

A Political Clinician Scientist

Over the course of his professional career, John Affeldt worked predominately in administration. But his scientific interests were no less significant than those of other clinicians who had distinguished research careers at Rancho Los Amigos. Indeed, Affeldt's interests likely shaped his selection of internal medicine as his specialty. John Affeldt's wife Nancy and son J.C. recalled that while he was in medical school, Affeldt's internal medicine professor Donald Griggs encouraged his interest in medicine. Griggs was affiliated with both the College of Medical Evangelists and Los Angeles County Hospital and probably met John during his internal medicine rotation in his third or fourth year of medical school. In addition to practicing, Griggs also published articles in academic journals on topics such as pulmonary heart disease.[538] Griggs

[538] Charles B. Coggin, Donald E. Griggs, and Walter L. Stilson, "The Heart in Pneumoconiosis." *American Heart Journal* 16, no. 4 (1938): 411-421; Donald E. Griggs, Charles B. Coggin, and Newton Evans, "Right Ventricular Hypertrophy and Congestive Failure in Chronic Pulmonary Disease." *American Heart Journal* 17, no. 6 (1939): 681-690; Donald E. Griggs and Clarence W. Olsen, "Changes in the Spinal Cord in Diabetes Mellitus: Report of a Case with Autopsy." *Archives of Neurology & Psychiatry* 38, no. 3 (1937): 564-571; Donald E. Griggs and Marshall Q. Baker, "Hereditary Hemorrhagic Telangiectasia with Gastro-Intestinal bleeding." *The American Journal of Digestive Diseases* 8, no. 9 (1941): 344-346; Jack Hackney et al., "Syndrome of Extreme Obesity and Hypoventilation: Studies of Etiology." *Annals of Internal Medicine* 51, no. 3 (1959): 541-552; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; Ronald H. Selvester, L. Julian Haywood, and Donald E. Griggs "The Timed Vectorcardiogram: A Useful Clinical Tool*:(As Applied to the Study of 1,500 Subjects)." *Chest* 47, no. 2 (1965): 170-178

kept in touch with Affeldt and eventually coauthored an article with him that evaluated the effectiveness of Affeldt's infrared CO_2 analyzer in managing conditions such as emphysema at Los Angeles County Hospital.[539]

The CO_2 analyzer was one of John Affeldt's most important research contributions and its development at Rancho Los Amigos will be the subject of a later chapter. It was initially designed to assist in diagnosing respiratory failure in iron lung patients, a problem that Affeldt regularly encountered during his chief residency. Affeldt's collaboration with Griggs on a project that assessed one of his greatest personal achievements suggests that conducting research defined their relationship. This perhaps dated back to his medical school years.

As medical director, Affeldt found an application for his research interests in administration. And it appears that Affeldt's leadership qualities were also recognized early in his clinical training. Following medical school, John worked as an intern at Detroit Receiving Hospital and Nancy practiced nursing at Henry Ford Hospital. During her time at Henry Ford between 1942 and 1944, Nancy became acquainted with John Ormond, a urologist whose research brought attention to retroperitoneal fibrosis or "Ormond's disease" as a cause of acute renal failure. Ormond noticed Affeldt when he spoke on behalf of interns and residents at a function addressing their grievances over working hours. Knowing that John was Nancy's husband, Ormond invited Nancy and John to his home for dinner and talked with Nancy about recruiting John into his residency program.[540] It thus appears that even before Affeldt went into hospital administration, his leadership qualities already made him an attractive residency candidate to a distinguished scientist. Perhaps Ormond had an intuition that Affeldt would

[539] Donald E. Griggs et al., "The Rapid Diagnosis of Ventilatory Failure with the Carbon Dioxide Analyzer." *The American Journal of Medicine* 25, no. 1 (1958): 31-36.
[540] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015; William S Haubrich, "Ormond of Ormond's Disease." *Gastroenterology* 132, no. 3 (2007): 838.

become an asset for clinical medicine during the postwar era, a time in which scientists' political abilities could contribute as much to the research enterprise as ability applied in the laboratory and the clinic.

In Chapter 4, I examined how the holistic approach to disability in John Affeldt's Seventh-Day Adventist upbringing and medical education shaped how he practiced rehabilitation medicine as a physician. We will now study how Affeldt's involvement in the controversy regarding the management of care for iron lung patients led to his political involvement promoting rehabilitation medicine. It will now tell the story of the controversy that began in 1948, when Albert Bower, chief physician of County Hospital's CD Unit, introduced the tracheotomy and the "cyclic respirator" in managing respiratory acidosis among iron lung patients. It subsequently transitions into defining the Harvard Department of Physiology's role in the campaign against polio and its contribution to projects related to national defense during and after World War II. The chapter ends with the conflict that developed when the researchers from Boston visited Los Angeles to evaluate the tracheotomy and discloses how Affeldt's Harvard fellowship offer made him into both an expert in the scientific management of respiratory polio and a mediator between local and national interests.

Polio at Los Angeles County Hospital During the Late 1940s and the Bennett Device

John Affeldt began his residency at Los Angeles County Hospital in 1947, during a gruesome time in the history of polio in the United States. The 1946 National Foundation for Infantile Paralysis Bulletin commented on the major epidemic period that started just before Affeldt arrived: "In the spring of 1946, the first since the shooting had stopped after the most dreadful war in history, the threat of infantile paralysis appeared like a tiny shadow on the

horizon." Large numbers of cases were first reported in southern Florida, then epidemics swept west into Alabama and Colorado. By August, "The shadow grew… (and) became a cloud over twenty-three states…" Overall, 25,191 cases were reported nationally during 1946, an incidence which, at the time, was only surpassed by the 1916 Northeastern epidemic.[541]

Even in Southern California, where "Infantile Paralysis does not come often as a sudden visitation…" as it "frequency has the disease on a year-round basis," the bulletin noted that there was something "unexpected and unusual" about the 1946 epidemic. Los Angeles was especially affected and had an incidence of 1,309 cases, which was roughly 60% of California's total incidence that year. Los Angeles County Hospital's communicable disease (CD) unit admitted the acute polio patients, who were cared for in an isolation unit within the hospital for fourteen days, until they were no longer contagious. However, this arrangement did not adequately accommodate July and Augusts' growing patient load and the county hospital dedicated its entire seventeenth and eighteenth floors to acute cases. By the end of August, Los Angeles County Hospital was caring for 297 acute polio cases.[542]

The respiratory poliomyelitis patients who were admitted to the Communicable Disease Unit experienced an especially high mortality rate. In 1946, the 48 respiratory cases admitted of the total 1284 acute cases had a mortality rate of 78%. In 1947, 402 acute patients and 21 respiratory polio patients were admitted, and 14 of the respiratory patients died. [543]

[541] The National Foundation for Infantile Paralysis 1947 Annual Report. 1947, p. 1. File Folder: NFIP Publications 1947-1948, Boston Children's Hospital Archives, Boston, Massachusetts.
[542] Ibid., 18-19.
[543] Albert G. Bower, et al., "Investigation on the Care and Treatment of Poliomyelitis Patients." *Annals of Western Medicine and Surgery* 4, no. 10 (1950): 687; Ronald V. Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV Albert Bower and V Ray Bennett: Los Angeles, 1948–1949." *Critical Care and Resuscitation* 9, no. 1 (2007): 92.

In 1948, Los Angeles County Hospital admitted 3,094 acute patients and 294 respiratory polio cases. [544] Given the high mortality of the previous years, chief physician Albert Bower expressed concerns about the iron lung's ability to help the most severe cases. Bower decided "to devise additional equipment hitherto unavailable to meet the exigencies arising during the epidemic," and in retrospect this decision proved fateful. [545]

The same year that Bower began experimenting with new respiratory technologies, John Affeldt completed his residency. "Offered the position of Chief Resident in communicable diseases" in 1949, he accepted and would become, in his own words, "really sort of the staff assistant to the Chief of the Service, Dr. Albert Bower." Affeldt was "in the CD unit during the peak of the polio season," and in a position where he not only observed but became part of the changes that Bower initiated.[546]

Affeldt recalled: "At this time... developments were occurring in the CD unit… some major developments were occurring in terms of the treatment of the respiratory polio. Namely, a local engineer had become interested in respirators, and had developed one for the Air Force, and then he came in there to try and apply it to the polio patients, and his name was Bennett…"[547] V. Ray Bennett was an engineer and the owner of V Ray Bennett and Associates, a Los Angeles business. According to Ronald Trubuhovich, a historian of intensive care medicine, Bennett was "Already famous from World War II days for his BR-X2 resuscitator, which provided intermittent breaths of high-pressure oxygen for pilots in unpressurised aircraft in high altitude

[544] Bower, et al., "Investigation on the Care and Treatment of Poliomyelitis Patients," 687.
[545] Albert G. Bower, "A Concept of Poliomyelitis Based on Observations and Treatment of 6,000 cases in a Four-year Period." *Northwest Medicine* 49, no. 3 (1950): 264; Trubuhovich, 93.
[546] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[547] Ibid.

research." Following the war, Bennett began collaborating with Bower in investigating alternative technologies to the iron lung. [548]

In studying his patients, Albert Bower noticed something critical: "Acutely ill patients placed in INPV respirators (Drinker-Collins Iron Lungs) could later be found in a state of profound respiratory acidosis; for 30 patients among 294 respirator cases in 1948, standard ventilatory measures for eliminating excess CO2 had failed." Bower perceived that his patients were in respiratory failure, a condition that "exists when the respiratory system cannot maintain gas exchange, causing dysfunction in other organs or threatening life." Their disability "affect(ed) ventilation, manifested by hypercapnia and respiratory acidosis."[549] As Trubuhovich has written, it was ultimately Bower and his team's recognition that iron lung patients were suffering from respiratory acidosis, "together with their awareness of a previous high mortality rate due to the standard treatment of polio ventilatory failure with Drinker-Collins respirators, (that) led to multiple advances in equipment technology for LACH." Trubuhovich continues: "(The) Most important (piece of equipment) was biomedical engineer V Ray Bennett's positive pressure respirator attachment, in use after September 1948, which converted an INPV machine, the Drinker, into one capable of supplying "intratracheal" intermittent positive pressure ventilation (IPPV), supplementary to its NPV." Bower and Bennetts' device could provide oxygen to polio patients through use of a mask or a tracheotomy tube and this use of tracheotomy became particularly controversial within the pulmonology community.[550]

As Harvard researchers James Whittenberger and James Maloney wrote in their evaluation of the cyclic respirator attachment, prior to the late 1940s, "The effectiveness of body

[548] Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV," 100.
[549] Bower, et al., "Investigation on the Care and Treatment of Poliomyelitis Patients," 691; Nicholas Hill, "Acute Ventilatory Failure" in John Murray, et al., *Murray and Nadel's Textbook of Respiratory Medicine*. (Philadelphia: Elsevier Saunders, 2016), 1723; Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV,"93.
[550] Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV," 91.

respirators as a means of artificial respiration in most cases was unquestioned." However, "during the Minnesota epidemic of 1946," physicians made "extensive use of the tracheotomy procedure…" This situation became problematic in that tracheotomy tubes inherently increased airway resistance, and in iron lung patients, "the airway remaining outside the tube is further compromised by accumulation of secretions and by whatever pharyngeal paralysis was present." "This increase in airway resistance (that) interferes with air flow" obstructed breathing for iron lung patients and upper airway obstruction itself sometimes resulted in respiratory failure by "increasing airway resistance to the point where respiratory muscles can no longer sustain minute volume at a level adequate to maintain CO2 homeostasis." However, Bower and Bennett, in the design of their "apparatus," conceived of a way of "increasing air flow past (the) obstruction." [551] Their device was attached to a Drinker-Collin's iron lung and provided "controlled intermittent positive pressure breathing, (positive pressure on inspiration, and zero or passive expiration)… (that was) automatically synchronized with the negative pressure inspiratory phase of the respirator." [552]

After attaching their device, Bower found that among patients previously thought to have had damage to the brain's breathing control centers, "it is remarkable how rapidly measures which provide a clear airway and, adequate breathing can clearly show the error of this diagnosis."[553] Their observation would provide a new way of managing polio patients who

[551] James L. Whittenberger and James V. Maloney, Jr.. Pressure Characteristics of Respirators in Relation to Effectiveness of Pulmonary Ventilation. File Folder: Series III. D: Folder 4. Report to the National Foundation for Infantile Paralysis from the Harvard School of Public Health on the California Experiments, August 1949, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[552] Albert G. Bower, et al., Progress Report Poliomyelitis Research Project. File Folder: Series III. D: Folder 3: National Foundation for Infantile Paralysis California Report, Bennett Report, 27 April 1949-5 January 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[553] Albert G. Bower, *Diagnosis and Treatment of the Acute Phase of Poliomyelitis and its Complications*. (Baltimore: Williams and Wilkins, 1954), 3; Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV,"93.

presented to the Communicable Disease Unit with altered mental status. Importantly, Bower recognized that mental impairment in respiratory patients was not necessarily due to the tissue inflammation that accompanied the poliovirus' infection of the brain. It could instead be caused by an airway obstruction, which resulted in CO2 retention and decreased blood pH, which also brought about an altered mental status.[554] Thus, when acute polio patients were admitted to the Communicable Disease Unit with seizures or coma, Bower and his team first addressed "anoxia or pulmonary acidosis from too much retained CO2…" in order "to rule out encephalitis." [555] In doing so, one of Bower's colleagues, William Frank reported that "most so-called encephalitic signs disappear when respiratory inadequacy is corrected."[556]

As the polio incidence grew, Bower and Bennett mounted their device on iron lungs *en masse*. In October 1948, they attached 42 Bennett Positive Pressure Respiratory Attachments (BPPRAs) to iron lungs. The following year, the BPPRAs were "in almost constant use" among the 79 patients who needed an iron lung and the 89 patients for whom they performed a tracheotomy.[557] Bower and his colleagues argued that their attachment of the BPPRA after September 1948 "virtually eliminated pulmonary acidosis… and diminished or dried up secretions."[558] Carrying out experimentation to "demonstrate the superiority of (supplemental)

[554] G.L. Wackers "Modern Anaesthesiological Principles for Bulbar Polio: Manual IPPR in the 1952 Polio–Epidemic in Copenhagen." Acta Anaesthesiologica Scandinavica 38, no. 5 (1994): 420-431; John B. West "The Physiological Challenges of the 1952 Copenhagen Poliomyelitis Epidemic and a Renaissance in Clinical Respiratory Physiology." Journal of Applied Physiology 99, no. 2 (2005): 424-432; Keith E. Westlake. "Respiratory Failure and Carbon Dioxide Narcosis." *Postgraduate Medical Journal* 34, no. 387 (1958): 3; Richard T. Johnson. "The Pathogenesis of Acute Viral Encephalitis and Postinfectious Encephalomyelitis," *The Journal of Infectious Diseases* 155, no. 3 (1987): 359-364.
[555] Bower, "A Concept of Poliomyelitis," 189; Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV," 93.
[556] Bower et al, *Diagnosis and Treatment of the Acute Phase of Poliomyelitis and its Complications*, 17; Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV,"93-94.
[557] Bower, et al., "Investigation on the Care and Treatment of Poliomyelitis Patients," 563; Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV,"95.
[558] Albert G. Bower, "A Concept of Poliomyelitis," 264; Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV," 96.

IPPV over INPV (the Drinker-Collins iron lung) alone," Bower and his team showed that their use of the Bennett device had increased the survival rate to 83.7% in 1949.[559]

Presenting their preliminary findings to the National Foundation for Infantile Paralysis, Bower and his colleagues concluded:

> On a large group of patients during the past year, the use of positive pressure applied during inspiration via tracheotomy tube or face mask and simultaneously with the negative respirator tank pressure, has been clinically demonstrated to be very valuable. This has been true especially when a patient was congested with mucus or was partially atelectatic. Positive pressure aids in better distribution of ventilation and assists in re-expansion of congested or atelectatic areas, and presumably increases oxygen saturation by eliminating or reducing the amount of un-oxygenated blood being shunted through these areas.[560]

Bower and his team also publicized their findings in a two-part study that described their equipment and provided statistics displaying the associated improvement in mortality. In their published report, Bower and Bennett acknowledged John Affeldt's work in helping them carry out the study.[561]

In retrospect, what happened in the County Hospital's communicable disease unit was a remarkable event, and as Trubuhovich argues, one that deserves greater recognition among historians of critical care medicine. Historians and critical care specialists view intensive care as originating with Bjørn Ibsen's mass introduction of positive pressure breathing during Copenhagen's 1952-1953 polio epidemic. Ibsen's advancements in respiratory polio management were historically significant in Europe, as following his innovation, positive pressure respirators quickly replaced the iron lung throughout the continent. Historians, intensive

[559] Ibid., 91, 98.
[560] Albert Bower et al., Progress Report. Poliomyelitis Research Project. File Folder: Series III. D: Folder 3: National Foundation for Infantile Paralysis California Report, Bennett Report, 27 April 1949-5 January 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[561] Bower et. al, "Investigation on the Care and Treatment of Poliomyelitis Patients;" Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV,"98.

care specialists, and anesthesiologists have also convincingly argued that Ibsen's attentive provision of care to respiratory patients influenced the development of the modern field of Anesthesiology.[562] But as Trubuhovich argues:

> A complete system of respiratory care was developed for polio victims at LACH, setting levels of treatment and expertise distinctly higher, by 1950, than was current at other known polio respiration units, and preceding the well known developments in Copenhagen in the early 1950s. Extensive experience was obtained by a consistent medical staff, working as a team, in one hospital.[563]

In his analysis of Bower's records, Trubuhovich praised the unit that Affeldt learned to practice medicine within for its culture, which had much in common with the later intensive care unit:

> I felt the greatest admiration for how comprehensively the problem areas were identified in a complete working system, down to the smallest levels (eg, for locking-type electric cord plugs, safety guards over the power switch); then for total respiratory care, tackled to produce the best apparatus (also the safest: it was alarmed). Measures for the comfort of patients, such as eliminating vibration and noise, were also emphasised. In this total rethink, attention to redesign extended to all equipment either already in use (eg, tracheostomy tubes, collars, all suction apparatus and mattresses) or hitherto not available; as well as to nursing practices (eg, early regular suctioning of the respiratory tree). Such meticulous attention to detail in an acute respiratory unit during the last years of the 1940s certainly pre-dated the care we prided ourselves on for intensive care medicine when ICUs were becoming more widely established a decade later.[564]

John Affeldt's immersion in this environment as chief resident perhaps bore some influence on his later development of comprehensive care at Rancho Los Amigos. The experience at Los Angeles County Hospital also appeared to have had some effect on Ibsen and

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[562] Erik Wainø Anderson and Bjørn Ibsen. "The Anaesthetic Management of Patients with Poliomyelitis and Respiratory Paralysis." *British Medical Journal* 1, no. 4865 (1954): 786; Wackers, 420-431; West, 424-432; John W. Severinghaus, Poul Astrup, and John F. Murray. "Blood Gas Analysis and Critical Care Medicine." *American Journal of Respiratory and Critical Care Medicine* 157, no. 4 (1998): S114-S122; P. G. Berthelsen and M. Cronqvist. "The First Intensive Care Unit in the World: Copenhagen 1953." *Acta Anaesthesiologica Scandinavica* 47, no. 10 (2003): 1190-1195; Ronald V. Trubuhovich "August 26th 1952 at Copenhagen:'Bjørn Ibsen's Day'; A significant event for Anaesthesia." *Acta Anaesthesiologica Scandinavica* 48, no. 3 (2004): 272-277; Ronald V. Trubuhovich "Further Commentary on Denmark's 1952–53 Poliomyelitis Epidemic, Especially Regarding Mortality; With a Correction." *Acta Anaesthesiologica Scandinavica* 48, no. 10 (2004): 1310-1315.

[563] Trubuhovich, "On the Very First, Successful, Long-term, Large-Scale use of IPPV," 91.

[564] Ibid., 97.

the major changes that he initiated in Copenhagen. As Trubuhovich found in his investigation, "Ibsen studied the LACH articles before 25-26 August 1952, so was aware of the American's conclusions" and would be "generous in acknowledging his debt to Bower." Regarding the Communicable Disease Unit's management of respiratory polio, Ibsen eventually wrote "This I consider pioneer work in intensive therapy but only related to one disease."[565] And in time, the pulmonology community in the United States came to accept the use of positive pressure. John Affeldt noted that "The issue of tracheotomy was resolved in favor of doing tracheotomy. In fact, Boston turned around and decided they should be doing it. It became accepted nationwide."[566] However, at the time, Bower's circulation of his findings precipitated a conflict between the specialists at Harvard and the Communicable Disease Unit's staff.

The Harvard Group

The National Foundation for Infantile Paralysis had a special relationship with Harvard. Basil O'Connor stated at the ground-breaking ceremonies for Boston Children's Medical Center on March 20, 1949, "The mother institute of the Center, Harvard Medical School, as well as this hospital itself hold high ranks within our organization." Much of the Basil O' Connor's esteem for Harvard came out of its distinguished efforts in the fight against polio dating back to the 1916 epidemic. In his speech, O'Connor praised Harvard physicians' attempts to build public health infrastructure as the 1916 epidemic raged through the Northeast (an effort that was like the

[565] Ibid., 97, 98. When Ibsen first proposed positive pressure, he faced resistance from other physicians at Blegdamshospital. Wackers found that Ibsen approached colleagues with one of Bower's publications demonstrating the success of positive pressure in Los Angeles County in the management of respiratory polio in order to build support for his idea. As Wackers has written, Ibsen recalled, and had also taken with him to the meeting on August 25, a copy of a paper published in 1950 by Bower in the United States in the Annals of Western Medicine and Surgery." Wackers, 426.
[566] Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987), 5.

NFIP's work decades later). O'Connor expressed appreciation for the 1916 epidemic's "true pioneers" who "followed in the footsteps of earlier scientists at Harvard Medical School and of this institution." O'Connor lavished most of his praise on orthopedic surgeon Robert Lovett. Lovett's creation of the Harvard Infantile Paralysis Commission at Boston Children's in 1916, and eleven satellite clinics throughout the Northeast, helped parents "get information about infantile paralysis…" and reduced "the alarm, the fear and the hysteria which attended those polio outbreaks." Perhaps reflecting on his experience helping families during the terrifying epidemics of the late 1940s, O'Connor expressed appreciation to the Harvard Commission for having "organized the younger physicians into diagnostic teams for work in the field." O'Connor touched on the social value that this had, as it "meant that the little family outside the great cities of New England,-- the farmer, or the little man in the village and town had experts to consult if he feared that polio had gone on its grim visit to his family." Furthermore, through organizing satellite clinics outside of Boston, "physicians helped alleviate the fear which is the lot of all parents who are separated by physical distances from their loved ones."[567]

Basil O'Connor especially praised Harvard Medical School's use of clinical research in the war against polio. O'Connor stated: "One factor stands out in the history of what we now know as The Children's Medical Center—and that is progress… the modern treatment of poliomyelitis has had more of its constructive development in this hospital, and in the clinics in outlying areas under direct supervision of and with personnel from The Center,-- than anywhere else." Harvard Medical School's work in promoting "the modern treatment of poliomyelitis" was consistent with NFIP's investment of resources into the infrastructure that enabled scientific

[567] Address given by Basil O'Connor, President, National Foundation for Infantile Paralysis, Inc., at Ground-Breaking Ceremonies of the Children's Medical Center—March 20, 1949. File Folder: Poliomyelitis, Boston Children's Hospital Archives, Boston, Massachusetts.

principles' application within polio care. This made them natural partners. The NFIP depended upon Harvard to teach health professionals the "modern" clinical approach to managing disability; as O'Connor mentioned, "The National Foundation already caries on a teaching unit for the instruction of physicians, of physical therapists and nurses right here (at Children's Hospital)." Harvard's collaboration with the NFIP also served its researchers' interests; Basil O'Connor emphasized that "Boston's learned institutions are active in investigations in the fields of virus research and in the prevention and treatment of after-effects of infantile paralysis, on National Foundation grants." The new Children's Center came into effect through this alliance and was accomplished by a fund-raising campaign of the NFIP's New England chapters that resulted in "two floors in the new center devoted to the treatment and care of infantile paralysis patients." [568]

This relationship would become important for the National Foundation's advancement of scientific rehabilitation at Harvard's MacArthur Memorial Respiratory Unit.[569] John Affeldt would learn the pulmonary medicine specialty at this center and encounter the institutionalization of the NFIP's new science.

The Mary MacArthur Respiratory Unit was also built on collaborations between the NFIP and the Harvard Department of Physiology (within the Harvard School of Public Health) that preceded its opening. In 1947, the NFIP Annual Report reported that it awarded a "three-year grant" to the Harvard School of Public Health, that "provides for a comprehensive study of the respiratory patterns in children, normal and diseased, with particular reference to poliomyelitis; and also an investigation of the possible correction of certain respiratory abnormalities by means

[568] Ibid., Quotations underlined in original document.
[569] Trustees of the Children's Medical Center and the National Foundation for Infantile Paralysis. Invitation to Opening of Respiratory Unit at Wellesley; The National Foundation for Infantile Paralysis. News for Release. November, 20 1950. File Folder: Mary MacArthur Respirator Unit: Opening, 1950. Boston Children's Hospital Archives, Boston, Massachusetts.

of oxygen therapy." Offered a $30,000 grant, the Department of Physiology's first-year budget was $10,000.[570] In planning for the Mary MacArthur Unit's opening, the department's head James Whittenberger described the projects (some of which John Affeldt became involved in) that directly came out of this grant. Whittenberger wrote: "As you probably know, we have had a grant from the National Foundation for three years now to study respiratory physiology in children particularly as it applies to defects occurring as a result of poliomyelitis. This program includes also the development and testing of new methods of artificial respiration, methods of oxygen therapy, etc." Referring to the electrophrenic respirator, a new technology that Whittenberger was developing that electrically stimulated the phrenic nerve to induce breathing, Whittenberger continued, "The electrophrenic respirator development has been a part of this program although other less publicized facets include development of simple apparatus for measuring the patient's ventilation, continuously analyzing the alveolar carbon dioxide, a simple device for preventing chest immobilization, evaluation of new methods of manual artificial respiration, circulatory and respiratory effects of the rocking bed, etc."[571]

James Whittenberger became John Affeldt's mentor during his fellowship and Affeldt's professional identity formation as a rehabilitation leader was shaped by his involvement in Whittenberger's projects. Like Affeldt, Whittenberger's clinical research had applications in multiple disciplines. After becoming an Associate of Physiology at Harvard in 1946, Whittenberger joined a group of applied scientists which included Cecil Drinker and his brother Philip Drinker, who invented the iron lung. According to his Harvard biography, Whittenberger employed "a public health approach to environmental health issues." James Whittenberger's use

[570] For Research for the Prevention and Treatment of After-Effects. Grants and Appropriations Authorized During Fiscal Year Ended May 31, 1947. File Folder: NFIP Publications, 1947-1948, Boston Children's Hospital Archives, Boston, Massachusetts.
[571] Letter to Lendon Snedeker, 16 August 1950, File Folder: Mary Mac Arthur Respirator Unit: Research, 1950, Children's Hospital Archives, Boston, Massachusetts.

of research in responding to public health problems was consistent with the approach at the Harvard School of Public Health since its beginnings. When it was founded in 1922, the School of Public Health's first scientists investigated industrial health problems, such as the physiological problems associated with the inhalation of fumes. The Harvard School of Public Health was home to an interdisciplinary environment in which a technology like Drinker's iron lung, which was initially designed to resuscitate workers suffering from gas poisoning, could become applied to the management of respiratory polio.[572]

Physiologists Cecil Drinker and Louis Shaw, both faculty at the Harvard School of Public Health, designed the iron lung during the 1920s, a time in which businesses funded clinical research that addressed industrial health problems. (Cecil's brother Phillip was both a chemical engineer at the Harvard School of Public Health and a member of a Rockefeller Committee on resuscitation research that was sponsored by the New York Consolidated Gas Company.) While the New York Consolidated Gas Company funded the first models of the iron lung, two locally based companies, Warren E. Collins Inc. and J.H. Emerson Company, soon recognized that they could obtain profit by mass producing and selling their iron lungs to hospitals during polio epidemics. Subsequently, as a result of private sector investment, the iron lung became an integral element within the American polio response.[573]

James Whittenberger began his career at Harvard studying respiratory physiology in poliomyelitis patients and later (in projects that he continued with Affeldt) studied air pollution. Whittenberger, like his student Affeldt, would have a career that involved administering programs and using research in an advisory capacity. Whittenberger is credited with founding

[572] Melvin First and Jean Curran. "Fifty Years of Industrial Hygiene at Harvard University." *Harvard Public Health Alumni Bulletin.* (1968), 4-8. File Folder: Drinker Respirator, Children's Hospital Archives, Boston, Massachusetts.
[573] Philip A Drinker and Charles F McKhann, "The iron lung: first practical means of respiratory support," *Jama* 255, no. 11 (1986): 1476-1478.

Harvard's Kresge Center for Environmental Health in 1962, which was the first academic center dedicated to environmental science research. Aside from founding the center, Whittenberger was a member of several federal committees, some of which were for the National Institutes of Health, the Environmental Protection Agency, and the President's Task Force on Air Pollution. J.C. Affeldt remembered his father mentioning that he was exposed to "new thinking," "new ideas," and to "top people" when he studied at Harvard.[574] John Affeldt himself would recall that studying at Harvard "was a great experience for me, very enlightening."[575]

Affeldt began his fellowship during a time in which Whittenberger was actively involved in projects related to postwar defense needs. The School of Public Health faculty's participation in defense projects dated back as early as 1939, when the submarine Squalis sunk outside of Portsmouth. Asked by the Navy for assistance in rescuing the sailors, Harvard researchers contributed knowledge gained through use of the school's hyperbaric chamber, which had been present at the university since 1927. When World War II began, Harvard School of Public Health faculty assumed responsibility over the research conducted in the Committee of Medical Research's division of Aviation Medicine.[576] Described in the third chapter, the Committee of Medical Research assumed a role with respect to funding research institutions that would become assumed by the National Institute of Health in the postwar years. It presided over a vast enterprise which encompassed the administration of 593 contracts to academic institutions, hospitals, businesses, and other organizations, along with the employment of thousands of physicians, scientists, and engineers. Channeling funding through its six divisions of Physiology, Chemistry, Medicine, Surgery, Malaria, and Aviation Medicine, the CMR worked with the

[574] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[575] Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987).
[576] Ibid., 10.

National Academy of Sciences- National Research Council to establish 51 committees and expert panels that assessed project requirements.[577]

Cecil Drinker served on the National Research Council Committee on Aviation Medicine and became involved in efforts to design oxygen equipment for servicemen in the American, Canadian, and British air units. Using Harvard's hypobaric chamber (which also had the capability of being used as a hyperbaric chamber), Drinker collaborated with his colleague Leslie Silverman and several other researchers in studying high altitude flight. Their efforts led to the L-12 mask, which was the standard design used by bombers early in the war. Leslie Silverman, Philip Drinker, and Constantin Yaglous would also work for the Army Chemical Warfare Service. Their collaborations brought forth both a gas mask and a pneumotachograph for assessing respiratory function.[578]

James Whittenberger's research likewise served national defense interests regarding chemical warfare. A member of the U.S. Army Medical Corps, Whittenberger worked in the United States chemical warfare laboratories during World War II. In the postwar period, many of Whittenberger and Affeldts' projects dealt with the topic of resuscitation, which had become of interest to the military with the threat of chemical warfare with the Soviet Union. Affeldt's exposure to innovative defense technologies during his fellowship eventually affected how he reconstructed Rancho Los Amigos as a hub within the NFIP's national knowledge-making network. He not only transferred to Rancho Los Amigos the technologies that circulated through Harvard but brought with them Harvard's interdisciplinary collaborative model. Affeldt continued to work with researchers, engineers, and businessmen who were a part of the Boston

[577] Strickland, 16.
[578] Melvin First and Jean Curran. "Fifty Years of Industrial Hygiene at Harvard University." *Harvard Public Health Alumni Bulletin.* (1968), 10. File Folder: Drinker Respirator, Children's Hospital Archives, Boston, Massachusetts.

network during his years as Rancho Los Amigos' chief physician. One culmination of these collaborations was Affeldt's development of the infrared CO2 analyzer. But before moving ahead, it is necessary to first return to Los Angeles County Hospital, where the conflict over Bennett's device set into motion the subsequent chain of events.

The Mentorship Begins

Reflecting on his experiences during his chief residency, John Affeldt recalled: "There were many cases of respiratory and bulbar polio. There were many patients in tank respirators, and many tracheotomies being done. Tracheotomy was being done in Los Angeles more than other parts of the country." Affeldt then described the key events that led to his meeting Whittenberger and the other scientists who visited Los Angeles County Hospital:

> The medical group in Boston was quite opposed to tracheotomy – did not think it should be done. So a controversy arose. The polio foundation, the National Foundation for Infantile Paralysis, was brought into the question. Is tracheotomy good or bad? What was this experience in Los Angeles which was being published and a lot of discussion. The polio foundation asked Dr. James Whittenberger, who was then Chairman of the Department of Physiology at the School of Public Health at Harvard, to put a team together to study the situation in Los Angeles. Being chief resident, I was assigned the task to take care of them – to see that their needs were met.[579]

James Whittenberger provided a more detailed account of the circumstances surrounding his visit to Los Angeles:

> … in 1948 and 1949 there were developed under Dr. Bower's direction several improvements and changes in methods of treating polio patients in respirators. In June of 1949 a conference was held here at which these methods of treatment were examined- not from the point of view of clinical results which were very impressive, but from the point of view of analysis of mechanism.

Whittenberger continued:

[579] Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987).

> We felt that some of the new techniques and apparatus were very desirable and that others were not and that a considerable factor in the excellent record of treatment of these patients under Dr. Bower's direction was the alert intelligent medical and nursing care rather than the use of any particular apparatus. We disagreed with Dr. Bower and Mr. Bennett principally in regard to certain physiologic concepts on which, I might add, probably 99 per cent of other doctors agree with Dr. Bower and Dr. Bennett.

For Whittenberger and his colleagues, the purpose of their visit was to use the conceptual knowledge derived from their physiology research to evaluate Bower and Bennetts' "new techniques and apparatus."[580]

In a letter to Whittenberger prior to his visit, H.M. Weaver, the NFIP's director of research, conveyed that Whittenberger's visit served a similar purpose for the foundation. Weaver wrote:

> With regard to your pending trip to Los Angeles, I am concerned mainly in developing experimental methods and procedures and the carrying out of these methods and procedures, if possible, to prove or disprove the value of the various pieces of apparatus developed at the Los Angeles County General Hospital.

Having foresight that Whittenberger's study would have political implications, Weaver commented, "I believe that after you have had an opportunity to employ your diplomatic approach to these problems the Los Angeles group will be more than anxious to meet you half-way." Weaver also offered Whittenberger "free access to the wards," which would allow him to test his electrophrenic respirator. Weaver mentioned that the trip would provide "an admirable opportunity" to "(work on) on the possibility of employing the electrophrenic stimulator both as a supporting devise in conjunction with the oscillating bed and as an instrument to determine whether or not the diaphragm of the patient is viable."[581] As we will later see, Whittenberger

[580] Letter to George T. Harding, 3 January 1951, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[581] Letter to James Whittenberger, July 21, 1949, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

indeed tested his device during the trip and later published an article using data that he collected on patients at Los Angeles County Hospital.

In accommodating the Harvard group, Affeldt helped Whittenberger and his colleagues assess Bennett's device using technologies which had been disseminated through the pulmonology research community. For example, Affeldt performed the "The Positive Pressure Attachment-Oximeter Experiment" in which he assessed a patient's recovery using a device modeled on a World War II oximeter. Whittenberger's report summarized this experiment as follows:

> The use of positive pressure attachment was begun on an extremely ill patient who was felt to have 'severe pulmonary congestion.' The patient was in the respirator (running -14 to 0 cm. H2O) and receiving oxygen by nasal catheter. Nevertheless, his color remained cyanotic. The patient showed dramatic clinical improvement when 5 cm. of positive pressure were added by face mask during the inspiratory phase of the respirator.

Affeldt then "attempt(ed)… to obtain objective evidence on the value of the treatment" experimentally. Using the Coleman anoxia photometer, Affeldt varied "the amounts of pressure obtained by the respirator or pressure attachment" to evaluate the device.[582]

John Affeldt mentioned that during the process of supporting the Harvard researchers, "we got acquainted." Affeldt continued: "They began teaching me a lot of things. I expressed interest in it, and they offered me a year of fellowship at Harvard School of Public Health in the Respiratory... or the Pulmonary Physiology Unit, which I jumped at the chance, went back, and then ended up extending it for another year."[583]

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[582] James L. Whittenberger and James V. Maloney, Jr.. Pressure Characteristics of Respirators in Relation to Effectiveness of Pulmonary Ventilation. File Folder: Series III. D: Folder 4. Report to the National Foundation for Infantile Paralysis from the Harvard School of Public Health on the California Experiments, August 1949, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

[583] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

Shortly after Whittenberger visited, Affeldt wrote him a letter in which he stated, "I am very desirous of joining your group of workers as a research fellow for a year and wish to make application for such." In the letter, Affeldt listed his "training." Aside from his medical degree, internship, and residency, the only other clinical research experience that he had was three summers of volunteer work with the Michigan Department of Health Laboratory. Affeldt also published two articles over the course of his residency, including one that evaluated the treatment of polio patients with blood plasma and another that assessed treating infectious mononucleosis with gamma globulin. A third article that John referenced in his curriculum vitae, which was being prepared for publication, was on "Arteriosclerotic Aneurysms of the Abdominal Aorta." None of Affeldt's articles related to the specialized field of pulmonary medicine. However, Affeldt did mention in the letter that he was "particularly interested in the Physiology of Respiration."[584]

John Affeldt gained expertise in pulmonary medicine through his fellowship and Whittenberger helped Affeldt build a resume with authorship of multiple publications in leading journals. As Nancy mentioned, John went to Harvard in order "to upgrade his education." It also seemed that Affeldt understood what a fellowship at Harvard would do for him in terms of his career advancement. J.C. mentioned, "dad was ambitious, self-confident" and the "Harvard fellowship" was "a godsend." J.C. recalled visiting John years later, when he was living in Chicago and president of the Joint Commission on Hospital Accreditation. At the time, J.C. was an ophthalmology resident and considering doing a fellowship of his own. J.C. recalled his father speaking with him about how the "fellowship gave him very strong credentials" and stating, "I

[584] A.G. Bower et al., "Patterns of plasma protein changes in acute poliomyelitis patients: treatment with blood plasma," *American Journal of Medical Sciences* 220, no. 1 (1950); Letter to James Whittenberger, 22 September 1949, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

wouldn't have gotten a shot at the Joint Commission job if I didn't have the Harvard fellowship on my resume." J.C. asserted, "The fellowship got dropped in his lap- and he ran with it, but utilized it in a bigger sense, a policy making sense… (he was) administrative to start with…"[585]

Beyond the Residency: The Report's Conclusion and the Offer

The Harvard group asked John Affeldt to become a fellow, but it appears that he was not their first choice. J.C. recalled, "They were looking to recruit someone. (The) Harvard people actually approached someone else for the training who turned them down." Nancy remembered that "whoever it was, they didn't go, so they asked (John) and he accepted..." Based on Nancy's recollection, it seems that the Harvard group's visit to Los Angeles had the additional purpose of identifying someone who they could take to Boston and train according to their approach. Nancy continued, "(the) Harvard people checked out the scene, scoping out someone to take back, turned out to be dad."[586]

If Affeldt's selection was indeed calculated beforehand by Whittenberger and his associates, it would make sense given the events that followed the study's conclusion. Based on his earlier exchange with Weaver, Whittenberger had reason before his trip to anticipate the necessity of "employ(ing) a diplomatic approach" in his dealings with the County Hospital staff. Whittenberger and his associates would ultimately submit to the NFIP a provocative study that critiqued Bower and Bennetts' technology and it appears that Affeldt subsequently had a role in easing the tensions that developed between the researchers in Boston and Los Angeles.

In their study, James Whittenberger and his colleague James Maloney defined the objective of their trip to Los Angeles:

[585] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[586] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

> The data in this report are not intended to imply any criticism of the excellent results obtained by the personnel of the Contagious Disease Unit… They represent, rather, the application of newly developed precise techniques for the evaluation of factors in the design and performance of respiratory appliances. An attempt has been made to evaluate by these techniques the extent to which the impressive clinical results have been due to developments in respiratory equipment…

While Whittenberger and Maloney praised aspects of Bowers and Bennetts' work, their study also downplayed the Bennett device's exceptionality:

> A positive pressure device for ventilating the patient through the upper airway is a very useful addition to the respirator, since it makes possible temporary removal of the patient from the respirator, and is physiologically no different from ventilation produced by the respirator (except for differences due to the shape of the pressure curve, and a slight difference in density.) The superiority of one type of pressure curve over another, if any, is insignificant compared to the ability to increase the pressure gradient sufficiently to achieve an adequate minute volume. Therefore, the only merit in combining pressures simultaneously would be to increase the gradient if one apparatus alone did not have sufficient capacity.[587]

A few months later, Whittenberger wrote to Kenneth Landauer, the NFIP's Director of Medical Care, elaborating on his critique of Bower and Bennetts' technology:

> Several problems relate to the indications for tracheotomy, equipment for proper care of such patients in respirators, and assay of adequate ventilation. In spite of the experience in Minnesota and Los Angeles, there is much confusion about the use of tracheotomy. Tracheotomy tubes are badly in need of redesign to reduce resistance to breathing; if resistance cannot be reduced, new practices in the use of the respirator must be developed. The Bennett apparatus is only a partial answer to this problem. In any respirator patient, there is urgent need to use physiologic measurements instead of tank gage readings to determine respiratory settings.[588]

The Harvard group's report particularly affected Ray Bennett. Bennett wrote to Whittenberger shortly after the study, "We were greatly surprised at some of the statements and

[587] James L. Whittenberger and James V. Maloney, Jr.. Pressure Characteristics of Respirators in Relation to Effectiveness of Pulmonary Ventilation. File Folder: Series III. D: Folder 4. Report to the National Foundation for Infantile Paralysis from the Harvard School of Public Health on the California Experiments, August 1949,James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

[588] Letter to Kenneth Landauer, 9 January 1950, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

data presented." Insisting that he be given access to Whittenberger's records and data, Bennett added:

> Since your report contains some gross inaccuracies which produce deleterious implications which are definitely contrary to fact; Dr. Bower has requested that I mention the basis upon which permission was granted for your group to work at the Los Angeles General Hospital. This understanding was set forth in Dr. Bower's letter of July 11, 1949, to Dr. Weaver, in which a copy of the letter of Arthur J. Will, Superintendent of Charities, was included. I quote from this letter of Mr. Will, -- "Any paper covering work done here (Los Angeles General Hospital and Rancho Los Amigos Hospital) should pass our Committee of Publications prior to publication."

In closing the letter, Bennett stated:

> We fully recognize that any new treatment or equipment is subject to question; however, any unjust or erroneous devaluation of such treatment or equipment may only delay or deprive its use on those patients who could have otherwise benefited by it earlier. I believe you will agree, it is often easy to be misled, -- both favorably and unfavorably.[589]

As the conflict escalated, Bower and Bennett submitted a study of their own that asserted the positive pressure device's clinical value. In arbitrating the dispute as the foundation's director of research, Weaver wrote to Whittenberger, "At the moment I have decided to do nothing further regarding differences expressed in your report and in the report of the California group in answer to yours. I have, however, encouraged them to report their findings at the earliest possible moment and would hope that when such publications appear, your group would answer them in accordance with your own thinking and findings." Weaver then offered the following private comments: "I regret that personalities have entered into this discussion, but one just has to become philosophical about things of that sort. Maybe when you have attained the state

[589] Letter to James Whittenberger, 29 October 1949, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950, James Whittenberger Papers, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

approximating my own senility you too will be able to take it without discharging too much adrenalin."[590]

In this context, it appears that John's fellowship served to improve relations between the groups in Boston and Los Angeles. Roughly one year after he completed his study, Whittenberger wrote to the head of the College of Medical Evangelists and requested that Affeldt be excused from his obligations as a clinical instructor to complete an additional year of fellowship. In his letter, Whittenberger touched on the fellowship's political value:

> The California group has taken a personal attitude toward the disagreement, so much so that there has seemed to be no point in continuing the discussions. I hope that with time these disagreements will be settled and good relations re-established. I believe that Dr. Affeldt can accomplish this in large measure since he is very familiar now with both points of view.[591]

Whittenberger's statement anticipated the role that John Affeldt would have working with local and national leaders in building the NFIP's Respiratory Center Program in Los Angeles. On one hand, Affeldt was trained at the county's central institution for managing polio with local medical leaders. He was also a clinical instructor at the College of Medical Evangelists and would use infrastructure that already existed in Loma Linda to build the program. On the other hand, Affeldt believed in the NFIP and the Harvard groups' scientific approach to managing disability. As Rancho Los Amigos' chief physician, Affeldt engaged with "both points of view" and used his expert knowledge and his political acumen to contribute to the development of the Physical Medicine and Rehabilitation specialty in Los Angeles County.

[590] Letter to James Whittenberger, 8 December 1949, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[591] Letter to George T. Harding, 3 January 1951, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

But John Affeldt had to first be trained in the foundation's approach to managing respiratory polio. The next chapter focuses on Affeldt's training at Harvard and discusses its social significance. As we will see, in transferring knowledge, skills, and technologies from Boston Children's Hospital to Rancho Los Amigos, Affeldt would ultimately transfer the macro political world, with its triumphs and failures, into the Los Angeles County municipal health department.

Chapter 6: Learning a Specialty (1949-1950)

Through its focus on John Affeldt's Harvard fellowship training, the present chapter provides a deeper appreciation of the rehabilitation agenda. Affeldt's fellowship provided the opportunity to be mentored by physicians who were scientists, businessmen, administrators, and federal policy advisors at once. During the Cold War era, their projects on respiratory polio also had military applications and led to the design of commercial products that they sold to hospitals and the Department of Defense. We see here how rehabilitation became an academic, corporate solution to national problems, whether they related to the polio epidemics at home or defense concerns abroad. In the process, we see how Affeldt's transplantation of this highly specialized, technological approach in the safety net ultimately became financially unsustainable when the county system faced enormous budget cuts. We can also understand how rehabilitation's narrow clinical approach would become woefully inadequate in addressing the social determinants that shape chronic illness among society's most underserved.

Bulbar Polio, Chemical Warfare, and the Harvard Fellowship

This chapter, which is the last of the three chapters that chronicle John Affeldt's professional identity formation, seeks to depict what the rehabilitation specialty was that Affeldt learned at Harvard. James Whittenberger mentored Affeldt in an approach to rehabilitation that derived financial support from its ability to effectively respond to medical problems associated with bulbar polio and chemical warfare. Having access to patients on the wards, while sharing knowledge with researchers at other institutions, Whittenberger was a vital part of an academic model of healthcare delivery. Through their relationship, Affeldt became admitted into Whittenberger's professional community and then brought the academic-affiliation model to

Rancho Los Amigos, where it provided fertile ground for the Physical Medicine and Rehabilitation specialty's development.

The first half of the chapter explores the various components of rehabilitation at Harvard that paralleled what PM&R became at Rancho Los Amigos, from Whittenberger's basic and applied experimental research to the integrated "Whole Child" model of care practiced on the Boston Children's Hospital wards. The second half of the chapter returns to where we left off in Chapter 3, with the crisis that came with the increased polio incidence in the western United States during the late 1940s and early 1950s. It follows John Affeldt and his associate, Boston Children's nursing supervisor Barbara Williams, as they travelled to Los Angeles to conduct a survey of the conditions at Rancho Los Amigos. Following Affeldt's submission of the report, the NFIP offered him the position of chief physician at Rancho Los Amigos. He then immediately left Boston for Los Angeles, where he worked to bring Harvard's scientific approach to the hospital.

Through telling the story of Affeldt's training at Harvard and his performance of the survey afterwards, this chapter highlights the broader social and political environment that shaped PM&R's origins at Rancho Los Amigos. Much of the research infrastructure in Boston that Affeldt brought to Los Angeles came into existence in response to the polio epidemics and the Cold War. This chapter not only reveals how the major mid-twentieth century problems shaped scientific rehabilitation's early development but provides an appreciation of the social history of the times through recounting how Affeldt and his contemporaries personally experienced the era's troubles.

This chapter also adds to our understanding of how Rancho Los Amigos became exceptional. Unlike the Rusk Institute, the Rehabilitation Institute of Chicago, Texas Institute for

Rehabilitation and Research, and other leading rehabilitation centers, Rancho Los Amigos was a public hospital with a mission to serve the indigent. While retaining its founding purpose, the hospital nonetheless became a part of academic networks involving elite institutions like Cal Tech and MIT and obtained federal grant funding to create technologies serving rehabilitation on a national level. In this respect, PM&R at Rancho Los Amigos paralleled what rehabilitation was in Whittenberger's program, in which clinical research and technological development worked within an industrial context to create medical solutions to national problems. Through Affeldt's transplantation of Harvard's academic model, rehabilitation at Rancho Los Amigos became highly specialized and technical. Yet by virtue of the hospital's historical mission, its state-of-the-art technologies and clinical advancements enabled Los Angeles County's low-income residents to live independently. In recent times, Rancho has fully embraced an identity as a world-class rehabilitation center that is nonetheless responsive to community needs. In telling the story of the events in Boston and Los Angeles that enabled scientific rehabilitation to come into existence at Rancho Los Amigos, this chapter helps us to more fully appreciate the historical circumstances that shaped its exceptional identity as both a rehabilitation leader and a critical part of the Los Angeles County safety net, which is a story that will be further elaborated in the subsequent chapters.

As we will see, the scientific approach to rehabilitation that Affeldt brought was highly effective in stimulating creative solutions to clinical problems associated with bulbar polio and chemical warfare. Within a few years of becoming one of fourteen National Foundation for Infantile Paralysis Respiratory Centers, Rancho Los Amigos was discharging the largest numbers of polio patients of any Respiratory Center in the nation. Rehabilitation medicine's success at helping polio patients to live independently in their communities led Affeldt to argue that it

reduced the county's costs that were associated with providing inpatient care to chronic disease patients.

However, Affeldt's transplantation of scientific rehabilitation also precipitated Los Angeles County's later financial problems. The polio epidemics created commercial incentives to expand rehabilitation during the 1950s. But, in the decades following the mass vaccination campaigns, the Los Angeles County municipal system experienced large funding cuts in response to inflation. During this time, Rancho Los Amigos admitted thousands of patients from Los Angeles' growing low-income African American and Latino neighborhoods. In contrast to the hospital's former polio patients, who had powerful advocates like the NFIP, many of the hospital's new patients were welfare recipients who were often turned away from the other private hospitals in Los Angeles because of poor reimbursement. Rancho Los Amigos is still a nationally ranked rehabilitation center. But as a public hospital, it has fought to survive since the 1960s. And just as it was during Rancho's Poor Farm era, managing chronic disease remains a problem in Los Angeles County.

The Mentorship Relationship

With John Affeldt's fellowship offer came an opportunity to advance his professional career. According to Nancy, John wanted to go to Harvard "because it had such a great reputation." However, John's son J.C. noted that his father was not immune to feeling threatened by Harvard's academic excellence. J.C. remembered having a conversation with his father in which he said that he felt "intimated by the intellectual level he encountered at Harvard."[592]

[592] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

John Affeldt's adjustment was made possible through James Whittenberger's mentorship. Whittenberger was not only Affeldt's research advisor but a friend, and over the course of the fellowship, he and his wife invited John and Nancy to their home.[593] Affeldt's time at Harvard was the beginning of a personal relationship with Whittenberger. Years later, Affeldt and his wife kept a guestbook of visitors, which showed that they often extended the favor and invited Whittenberger to visit them.[594]

After being offered the fellowship, John Affeldt wrote to James Whittenberger, "I was very happy to receive your offer and wish to accept it." But soon after accepting, he conveyed the financial difficulties associated with the fellowship. As he wrote, "It will be tough going on $400 c̄ a family but I realize + appreciate that you are offering the best possible and we will make the best of it. Incidentally, if you have any advice on how to achieve a place for the wife & children to live- please let me know."[595] Whittenberger helped Affeldt financially and this favor was also returned when Affeldt later supported a researcher who Whittenberger had recommended to study at Rancho Los Amigos.[596]

In his letter, Affeldt then brought up the electrophrenic respirator (EPR), which was one of Whittenberger's projects that was receiving publicity. Affeldt wrote, "Let me congratulate you gentlemen on the very nice write ups on EPR in both *Life* + *Time*. Incidentally, we had 2 cases last week in which we would liked to have tried it. Both appeared to have respiratory center

[593] Ibid.
[594] John Affeldt and Nancy Affeldt. Visitors. December 1, 1946- December 26, 2010. Personal records of the Affeldt Family. Used with permission by J.C. Affeldt. Solana Beach, California.
[595] Letter to James Whittenberger, 19 October 1949, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[596] Letter from Whittenberger, 16 January 1950, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts; John Affeldt to James Whittenberger, 20 May 1955, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

involvement." Affeldt acknowledged that it was unfortunate that one of the two patients passed away, but "we feel good that we have lost only 18 out of 700+."[597]

At the Mary MacArthur Respiratory Center, Whittenberger had ample resources dedicated to studying respiratory failure in iron lung patients. Through his and his colleagues' research, they accumulated physiological knowledge about respiratory failure, but they also experimentally critiqued ventilatory technologies and utilized their engineering backgrounds to propose devices such as the electrophrenic respirator. Their research was financially supported by the National Foundation for Infantile Paralysis and the Department of Defense as it simultaneously served the nation's mobilization against polio and chemical warfare.

In the section that follows, we will examine how the polio epidemics and the Cold War influenced Whittenberger's scientific approach to rehabilitation. We will study how various aspects of Whittenberger's research program, from his experimental devices to his collaborations with other pulmonary physiologists, were products of the postwar era. The section will end with a discussion of how, in the context of the Cold War, Whittenberger's professional networks not only impacted Affeldt's contribution to rehabilitation medicine but shaped Mary Avery's discovery of surfactant. As we will see, professional networks involving researchers from the Harvard School of Public Health and the Army Chemical Warfare Center were central to advancing specialized clinical knowledge, and this was a point that was exemplified both by Affeldt's impact on PM&R's development and Avery's contribution to Neonatology.

[597] Letter to James Whittenberger. 19 October 1949, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

The Mentorship

The August 1951 National Foundation for Infantile Paralysis newsletter included a letter from James Whittenberger to Basil O'Connor, which articulated how the research that he conducted in response to polio served national defense needs. Whittenberger's letter, which was published under the title "A Plus Benefit for Polio Research," notified O'Connor of "an unexpected dividend" that was a byproduct of the foundation's support. As Whittenberger explained:

> The armed services and civil defense authorities have become very much concerned over methods of artificial respiration for use in emergencies… Without the experience gained through your support of our work in poliomyelitis I could not have been of nearly so much help to the national defense authorities. This is only one example of many collateral benefits stemming from the National Foundation's program.[598]

The NFIP's financial support of Whittenberger's research came out of its efforts to advance rehabilitation in managing the increasing numbers of respiratory patients during the late 1940s and 1950s epidemics, which, as mentioned in Chapter 3, was both a public health issue and a financial problem. Aided by a grant from the foundation, Whittenberger authored a three-part series in the *New England Journal of Medicine* in 1952 on the physiological evaluation of pulmonary function in chronic polio patients.[599] Whittenberger, Affeldt and their colleagues began the second article by noting the social problems to which their research responded. They wrote that a heightened incidence of polio, combined with advancements in clinical knowledge and treatment, caused "an increasing accumulation of severely crippled patients whose

[598] The National Foundation for Infantile Paralysis. "A Plus Benefit For Polio Research." *National Foundation News*. File Folder: Newsclippings 1947-1948. Boston Children's Hospital Archives, Boston, Massachusetts.
[599] John E. Affeldt et al., "II. The Pressure-Volume Relations of the Thorax and Lungs of Chronic Respiratory Patients." *New England Journal of Medicine* 247, no. 2 (1952): 43-47; Benjamin G. Ferris Jr, James L. Whittenberger, and John E. Affeldt, "I. Pulmonary Subdivisions and Maximum Breathing Capacity." *New England Journal of Medicine* 246, no. 24 (1952): 919-923; Benjamin G. Ferris Jr et al., "III. Compliance of the Lungs and Thorax." *New England Journal of Medicine* 247, no. 11 (1952): 390-393.

continuation of life depends on respiratory assistance." They then described the scope of the problem:

> In April 1951 there were approximately 500 patients in the United States who required a body respirator or other breathing aid for at least a fraction of each day. The majority of such patients have been treated singly in small hospitals, with the result that few physicians have had the opportunity of prolonged and extensive experience.

The research conducted in the NFIP Respiratory Center served as the solution to the problem, as it "Made possible the collection of data in a moderate number of cases."[600] Whittenberger's first article in the series touched on the purpose served by this data: "Such information would be of value in estimating a patient's progress, in formulating prognosis, and assessing the effects of therapeutic procedures and the need for respiratory appliances."[601]

James Whittenberger's various projects at the Mary McArthur center fulfilled these purposes. He not only investigated issues such as gas exchange but researched other topics with prognostic value, such as the "correlation… between specific respiratory muscle groups and the degree of impairment or recovery." He furthermore used an applied approach to critique existing therapies and technologies. A document proposing his center's objectives noted that his laboratory studied "the effects of the various chest respirators, of the rocking beds, and of other accessory apparatus and the treatment of respiratory insufficiency." Whittenberger made it clear that reducing the costs of financing expensive technologies was a central motivation behind his critique of equipment. Referring to the Bennett device, Whittenberger mentioned that "These apparatuses are quite expensive and it would be desirable to try other apparatuses which have previously been used in other areas of medicine."[602]

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[600] John E. Affeldt et al., "II. The Pressure-Volume Relations of the Thorax and Lungs of Chronic Respiratory Patients, 43.
[601] Benjamin G. Ferris Jr, James L. Whittenberger, and John E. Affeldt "I. Pulmonary Subdivisions and Maximum Breathing Capacity," 919.
[602] Research Program in Respiratory Physiology at the Respiratory Unit, Wellesley. November 29, 1950. Folder: Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

While using a variety of experimental methods to evaluate treatment, Whittenberger and Affeldt most notably plotted pressure-volume relationships, which formed "the theoretic background against which the effects of therapeutic apparatus can be predicted."[603] For example, in the second article of the *New England Journal of Medicine* series, Affeldt and his coauthors "present(ed) a technic for the determination of the pressure-volume relations of the thoracopulmonic unit in a paralyzed subject and to consider the usefulness of such data in relation to therapy."[604] The article began with a textbook description of the physiological principles of negative pressure respirators and explained how pressure-volume relationships were related to breathing in an iron lung. As the article explained, the "mechanics of breathing" involve a "changing point of balance" between the "elastic force of the lungs," which "tend(s) toward collapse," versus the "elastic and muscular forces of the thorax," which "tend toward expansion." Inspiratory muscle contraction shift(s) the "balance point … toward expansion, or inspiration" and the "release of the inspiratory force… allows the point of balance to move back… (and is) essentially passive expiration." Affeldt used this concept to explain how iron lungs functioned: "By mechanically reducing pressure around the body, while keeping airway pressure constant at atmospheric... (the balance point) becomes shifted to a higher level of lung inflation." But once the atmospheric pressure was restored inside the iron lung, the "balance point returns its original position as expiration occurs."[605] Based on this concept, Affeldt and his colleagues devised an experiment that investigated "the pressure-volume relations of the thorax and lung as a unit… in 9 chronic respirator patients with difficulties due to poliomyelitis." In their experiment, "The lung-volume changes were produced by cycling the tank respirator at

[603] Ibid.
[604] John E. Affeldt et al., "II. The Pressure-Volume Relations of the Thorax and Lungs of Chronic Respiratory Patients," 44.
[605] Ibid., 43-44.

different pressures." Plotting the data and obtaining a curve representing "the degree of pulmonary distensibility," they compared the shape of the curve to curves derived from healthy patients and proposed using it "to follow the progress of a patient and to evaluate procedures designed to mobilize and keep supple the thorax of chronic respirator patients."[606]

In outlining his program's objectives, Whittenberger explained that his research not only served to fill a void in understanding of how respiratory technology affected polio patients' lung volumes but sought to understand "the effects of different positions of the patient."[607] This specific research interest closely aligned with experiments that he and Affeldt also performed for the Department of Defense in making manual resuscitation techniques available in the event of chemical warfare.

Resuscitation and Chemical Warfare

The first studies of manual resuscitation predated Whittenberger's projects by almost two centuries. During the 18th century, societies formed in London, Paris, and other European cities that investigated techniques for resuscitating victims. By the time of Affeldt's fellowship, various methods of manual resuscitation existed, which were used in different geographical locations. In England, Sir Edward Sharpey-Shafer advocated for a method that involved applying "intermittent pressure on the back of a prone victim," which he believed kept the airway open and enabled ventilation. Sharpey-Shafer's method was widely used in the United States, England, France, and Belgium and remained in the American Red Cross' First Aid Textbook until 1959. Another English physician, Henry Silvester suggested "raising the victim's arms

[606] Ibid., 47.
[607] Research Program in Respiratory Physiology at the Respiratory Unit, Wellesley. November 29, 1950. Folder: Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1969-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

above the head to expand the upper rib cage and then placing them on the chest and applying pressure to cause exhalation." His method, by contrast, spread throughout Germany, Holland, and Russia. In 1932, Colonel Holger Nielsen from Denmark devised yet another approach, which Red Cross Societies endorsed, that combined elements of Shafer and Silvesters' approaches. The widespread circulation of distinct resuscitation techniques set the stage for Archer S. Gordon's experiments on their comparative effectiveness using human corpses from Cook County Hospital in Chicago. Gordon's experiments caught the attention of the United States Department of Defense, which was concerned about the possibility that the Soviet Union would employ nerve gas in a future conflict.[608]

During World War II, the Germans discovered powerful nerve agents, such as Tabun, Sarin, and Soman, which while never employed in battle, were available to the Soviet Union after the war. German scientist Gerhard Schrader first recognized the toxicity of organic fluorophosphate compounds (which are the chemicals used as nerve gases) while investigating their application as pesticides. Soon after Schrader's discovery, scientists became aware that nerve agents impair acetyl cholinesterase, an enzyme that is necessary for the nervous system's functioning in humans and animals. Cholinesterase regulates the spread of impulses between nerve cells by breaking down the neurotransmitter acetylcholine after it has transmitted a signal. The unregulated accumulation of acetylcholine can cause disordered signal transmission and widespread muscular paralysis. When nerve gases are used in high doses, the buildup of acetylcholine disables respiratory and cardiac function, causing death in a manner of minutes. After Schrader's discovery, the German military collaborated with industrial conglomerate IG

[608] Mickey S. Eisenberg, Peter Baskett, and Douglas Chamberlain. "A History of Cardiopulmonary Resuscitation." In *Cardiac Arrest: The Science and Practice of Resuscitation Medicine*. Ed. Norman A. Paradis et al. (Cambridge: Cambridge University Press. 2007), 3-9.

Farbenindustrie in developing a production program for nerve gases.[609] Following the war, the United States military became concerned that enemies would use nerve gases alongside the atomic bomb on American soldiers. This prompted it to search for medical solutions to nerve gas exposure.[610]

The United States military asked Gordon to further investigate which method of manual resuscitation was the most effective for saving chemical warfare victims. Working with anesthetized medical student volunteers, Gordon's data by 1951 proved that a modified Nielsen technique best resuscitated a person with paralyzed breathing muscles.[611] As Whittenberger and Affeldt wrote in a paper, Gordon and his associates' "extensive observations," along with other studies, "(suggested that) alternative procedures might be superior to the Schafer 'prone-pressure' method, which has been most widely taught in the United States." Working with funding from the United States Army, Navy, and Air Force, Whittenberger and Affeldt studied various methods of manual resuscitation on patients with intracerebral bleeding to learn about how they affected the patients' lung volumes and rates of instantaneous airflow.[612]

John Affeldt subsequently collaborated with Archer Gordon on another article in which they performed manual resuscitation on anesthetized adult subjects. They noted that the Schafer method was "only one half as efficient, as regards ventilation, as any of the manual push-pull methods… (which include) the hip-lift back-pressure, hip-roll back-pressure and arm-lift back-pressure methods." Seeking to understand what rate of administering resuscitation was the most

[609] Florina Schmaltz. "Neurosciences and Research on Chemical Weapons of Mass Destruction in Nazi Germany." *Journal of the History of the Neurosciences* 15, no. 3 186-209.
[610] "Sarnoff Perfects New Injector of Antidote for 'Nerve Gas.'" *The Harvard Crimson.* December 2, 1953. <https://www.thecrimson.com/article/1953/12/2/sarnoff-perfects-new-injector-of-antidote/?page=single> Accessed June 6, 2019.
[611] Eisenberg, Baskett, and Chamberlain, 8-9.
[612] James L. Whittenberger et al. "Mechanics of Breathing in Relation to Manual Methods of Artificial Respiration." *Journal of Applied Physiology* 4, no. 6 (1951): 476-485.

effective, they determined that "active inspiration and active expiration should ideally occupy approximately 1 ½ seconds each." They thus recommended that "the best performance rhythm appears to be a 5- to 6- second cycle with 10 to 12 complete cycles/minute…"[613]

Whittenberger's Professional Network

Through Whittenberger, Affeldt collaborated with elite researchers in pulmonary medicine and became part of a professional network involved in the fight against polio and the Cold War. During the 1940s and 1950s, the pulmonary professional community consisted of clinical researchers located within academic departments that were affiliated with hospitals. The members of this community not only collaborated on projects, but met at conferences sponsored by the NFIP and the Army Chemical Corps. John West, in his history of pulmonary medicine, has written that at the time, there was a "rapid acceleration of research" that occurred within "departments of physiology in the United States" and mentioned that James Whittenberger, Jere Mead, and their colleagues in the Harvard School of Public Health were one noteworthy group of researchers. West also named other outstanding researchers, whom Whittenberger either associated with or whose publications contributed to shared topics of interest. Some of these included Julius Comroe at the University of Pennsylvania, Wallace Fenn, Hermann Rahn, and Arthur Otis at the University of Rochester, Richard Riley from John Hopkins and Andre Cournand from Columbia University. [614] After being admitted into this exclusive community,

[613] Archer S. Gordon et al., "Air-flow Patterns and Pulmonary Ventilation During Manual Artificial Respiration on Apneic Normal Adults. II." *Journal of Applied Physiology* 4, no. 6 (1951): 408-420.
[614] James V. Maloney Jr. et al., "Importance of Negative Pressure Phase in Mechanical Respirators." *Journal of the American Medical Association* 152, no. 3 (1953): 212-216; West, 424-432; James L. Whittenberger, "Artificial Respiration." *Physiological Reviews* 35, no. 3 (1955): 611-628; James Whittenberger et al., "Mechanics of Breathing in Relation to Manual Methods of Artificial Respiration," 476; James Whittenberger to Ray Bennett, 9 May 1949, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

Affeldt connected Rancho Los Amigos to institutions in other metropolitan areas. As we will see, Affeldt and other pulmonary physiologists shared both knowledge and personnel. For example, in 1954, when Affeldt hired Clarence Collier (who was one of his classmates from the College of Medical Evangelists), he corresponded with Whittenberger over Collier's need for further training in pulmonary medicine. Whittenberger said that he was "glad to have him" but recommended that he work with other physiologists, including Fenn, Rahn, Comroe, and Riley.[615]

Whittenberger also shared technologies with Affeldt, such as the CO2 analyzer, that contributed to rehabilitation during Affeldt's early years at Rancho Los Amigos. The prototype for the CO2 analyzer also originated in Nazi Germany at the IG Farbenindustrie chemical manufacturing laboratories and Whittenberger accessed it through his connections to fellow researchers at the Army Chemical Warfare Center. Whittenberger began modifying its use to measure polio patients' respiratory status with Affeldt in Boston during his fellowship. Affeldt then brought the CO2 analyzer to Los Angeles, where he and Collier perfected its use in pulmonary assessment.

Six years after Affeldt studied at Harvard, Whittenberger's professional network also shaped Mary Avery's identification of surfactant deficiency as the cause of Neonatal Respiratory Distress Syndrome (RDS). And national efforts against chemical warfare contributed to this milestone in neonatal medicine in a similar way to how they contributed to Affeldt's work on the CO2 analyzer. As a pediatric resident at John Hopkins, Avery frequently observed premature infants die from respiratory failure shortly after birth. Noticing that premature babies had

[615] Letter to John Affeldt, 22 March 1954, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

difficulty inflating their lungs, she consulted Richard Riley at John Hopkins about pursuing advanced research training in lung mechanics to further investigate respiratory distress syndrome. Riley advised Avery that the person who was the "most knowledgeable" regarding lung mechanics was Jere Mead in Whittenberger's Department of Physiology.[616]

After Avery became a fellow in Mead's laboratory in 1957, she approached Whittenberger about her interest in measuring alveolar surface tension in the lungs of infants who died from RDS. Whittenberger connected Avery to Clemens, an Army Chemical Warfare Center researcher whom Whittenberger had advised while working at the Army laboratory, to learn more about a surface film balance that Clemens had invented. Avery and Mead used a modified version of this device in their landmark 1959 article which compared the lungs of healthy patients and infants who died from RDS.[617] The article's conclusion that Respiratory Distress Syndrome was "associated with the absence or delayed appearance" of surfactant (which was a substance that lowered lung surface tension) precipitated further investigative efforts over the next decades that ultimately led to the reduction in deaths of thousands of premature infants annually in the United States.[618]

Julius Comroe, in his account of how the national effort against chemical warfare shaped Avery's research pointed out that the Harvard and Army researchers' "close ties" accelerated "the exchange of information and ideas."[619] Avery's story is thus a testament to how the research

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[616] Mary Ellen Avery, "Surfactant Deficiency in Hyaline Membrane Disease: The Story of Discovery." *American Journal of Respiratory and Critical Care Medicine* 161, no. 4 (2000): 1074; Julius H. Comroe Jr., "Premature Science and Immature Lungs: Part II. Chemical Warfare and the Newly Born." *American Review of Respiratory Disease* 116, no. 2 (1977): 320.
[617] Mary Ellen Avery, "Surfactant Deficiency," 1074-1075; Comroe Jr., "320-321.
[618] Mary Ellen Avery and Jere Mead, "Surface Properties in Relation to Atelectasis and Hyaline Membrane Disease." *AMA Journal of Diseases of Children* 97, no. 5 (1959): 521; John Steven Torday. "Mary Ellen Avery's Research Career–Remembrance of Things Past." *Frontiers in Pediatrics* 2 (2014): 1-3; "Dr. Mary Ellen Avery" Changing the Face of Medicine: Celebrating America's Women Physicians. Exhibition and Web site (http:/ /www.nlm.nih.gov/changingthefaceofmedicine/). National Library of Medicine, Bethesda, Maryland. <https://cfmedicine.nlm.nih.gov/physicians/biography_17.html> Accessed October 1, 2019.
[619] Comroe Jr., 320.

networks that formed as a result of the national mobilization against chemical warfare were crucial to facilitating the generation of scientific knowledge. The next chapter will further elaborate on this point and will demonstrate how the circulation of "information and ideas" through Whittenberger's professional network also facilitated Affeldt's contribution to his respective specialty's development.

We will finish our account of how Whittenberger's program influenced Affeldt with a focused history of the electrophrenic respirator. Through Whittenberger and Affeldts' experiments on the EPR, we can see how medical problems that were specific to the polio epidemics led to the acquisition of knowledge about hypoventilation that advanced rehabilitation medicine after the vaccine. In addition, as fellow at Harvard and later as Rancho Los Amigos' chief physician, Affeldt worked in a creative environment characterized by multidisciplinary interactions, not only among academics but with businessmen. A focus on the individuals who created the technology allows us to learn more about the postwar system, which was the world that Affeldt continued to live within in product development at Rancho Los Amigos.

The Electrophrenic Respiratory: A Case Study

The *Harvard Crimson* noted in 1951 that the Harvard School of Public Health, "where the first iron lung was developed more than 20 years ago, is the birthplace of a new discovery to aid polio victims- the electric lung."[620] It was fitting that the *Harvard Crimson* referenced the iron lung in relation to the electrophrenic respirator. Phillip Drinker and Louis Shaw invented the iron lung as a means of resuscitating industrial accident victims. But after finding that it had

[620] Laurence D. Savadove, "University Contributes to Fight Against Polio; Doctors Develop New Electric Breathing Aid." *Harvard Crimson*. March 2, 1951. Folder: Poliomyelitis 1949-1951. Folder: Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1969-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

application in treating polio patients, their product became distributed for a purpose quite different than for that which it was intended. The idea of electrically stimulating the diaphragm likewise was initially developed to assist bulbar polio patients who were suffering from "hypoventilation syndrome." But after the polio's demise in the United States, it became a commercial product used to treat other chronic conditions.

The bulbar form of polio, which the electrophrenic respirator treated, was not well understood in Whittenberger's time. As Henry Cai Alexander Lassen, chief physician at Blegdamshospital during Denmark's major 1952 epidemic, has written, physicians believed that "patients with bulbar and respiratory poliomyelitis died because of overwhelming, intractable 'bulbar' virus infection, i.e., infection of the medulla oblongata, pons, and midbrain. This caused an understandable therapeutic defeatism."[621]

The 1946 Minnesota epidemic provided an opportunity for physicians to better understand bulbar poliomyelitis' pathophysiology. During what was the largest epidemic that year in the United States, University of Minnesota hospitals admitted 183 bulbar patients. In order to devise a system for treating the large number of patients they admitted, researchers from the Department of Pediatrics and Neurology categorized patients into groups and developed a criteria for administering tracheotomy and oxygen therapy based on their classification system.[622] In 1952, Max Fox, Joseph Kuzma, and Charles Junkerman furthered the Minnesota researchers' attempt to group bulbar poliomyelitis' various subtypes. Using data from 1,863

[621] Henry Cai Alexander Lassen. The Management of Respiratory and Bulbar Paralysis in Poliomyelitis. In: WHO. Poliomyelitis. Geneva: World Health Organization, 1955. Cited in G.L. Wackers "Modern Anaesthesiological Principles," 420.

[622] Joe R. Brown and A. B. Baker, "Bulbar Form of Poliomyelitis: Therapeutic Measures Based on Pathologic and Physiologic Findings." *Journal of the American Medical Association* 135, no. 7 (1947): 425; Joe R. Brown and A. B. Baker, "The Bulbar Form of Poliomyelitis; Diagnosis and the Correlation of Clinical with Physiologic and Pathologic Manifestations." *Journal of the American Medical Association* 134, no. 9 (1947): 757-762; A. B. Baker, Howard A. Matzke, and Joe R. Brown, "Poliomyelitis: III. Bulbar Poliomyelitis: A Study of Medullary Function." *Archives of Neurology & Psychiatry* 63, no. 2 (1950): 257-281.

cases, which was collected over 15 years, they created a more comprehensive classification system. In the process, they elucidated bulbar polio's complex pathophysiology and revealed how disease symptoms varied dramatically based on the area of the brain that the virus affected. For instance, if the poliovirus damaged the cranial nerves, patients could have facial paralysis or vertigo. Depending on whether patients had a focal or diffuse brain infection, they could lose the ability to speak, experience seizures, or become comatose. The virus could also affect the circulatory system and patients with this form of polio classically presented with a "rapid, weak, and irregular pulse."

The bulbar-respiratory center subtype, which was the form of poliomyelitis that Whittenberger's EPR addressed, was characterized as having *"*shallow and irregular" breathing and oxygen depletion, even when patients had "an adequate airway."[623] Whittenberger and his colleagues explained that previous attempts using the iron lung to treat this form of polio proved ineffective due to "the inability to substitute the respirator's rhythm for the patient's grossly irregular 'respiratory fibrillation.'"[624] In a 1948 article, they discussed the premise by which the EPR operated, which allowed it to breathe more effectively for these patients than the iron lung:

> It has long been known that the response of a muscle to the stimulation of its nerve is in direct proportion to the intensity of the applied stimulus. Theoretically, therefore, a continuously varying, undulating stimulus applied to a nerve should result in a continuously varying, undulating contraction of the innervated muscle.[625]

[623] Max J. Fox, Joseph F. Kuzma, and Charles L. Junkerman, "Bulbar Poliomyelitis." *New England Journal of Medicine* 247, no. 8 (1952): 276-279.
[624] Stanley Sarnoff et al., "Electrophrenic Respiration in Acute Bulbar Poliomyelitis: Its Use in Management of Respiratory Irregularities." *Journal of the American Medical Association* 143, no. 16 (1950): 1383-1390.
[625] Stanley J. Sarnoff, Esther Hardenbergh, and James L. Whittenberger, "Electrophrenic Respiration." *American Journal of Physiology-Legacy Content* 155, no. 1 (1948): 1.

The electrophrenic respirator "(took) over for the disturbed nerve center and substitute(d) its own steady breathing impulses for the weak, irregular ones from the brain" and "by electric impulses, (it) cause(d) the diaphragm to contract, thus filling the lungs."[626]

This idea actually originated with Whittenberger's colleague Stanley Sarnoff. A distinguished cardiologist, Sarnoff was an associate professor of physiology at the Harvard School of Public Health. Like Whittenberger and Affeldt, Sarnoff found application for his scientific interests in both laboratory research and administration. A few years after working with Whittenberger and Affeldt, Sarnoff founded the National Heart Institute's laboratory of physiology and then served as its director for eleven years. Sarnoff also commercially profited from product development and had over 40 medical device patents.[627] His successful business ventures illustrate how the knowledge that was generated in response to the national problems of the time, not only advanced medicine, but was also lucrative from a financial standpoint. For example, after Army researchers discovered that atropine was the antidote to nerve gas exposure, Sarnoff invented an autoinjector that enabled it to be quickly administered by soldiers. Sarnoff marketed his product using his company Survival Inc., which by the time of his death in 1990 had produced over 55 million autoinjectors for the United States Armed Services. Sarnoff's quest to find an antidote to nerve gas exposure also led to another successful business venture when his autoinjector was modified to store epinephrine and it became marketed as the Epi Pen.[628]

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[626] Laurence D. Savadove. "University Contributes to Fight Against Polio; Doctors Develop New Electric Breathing Aid." *Harvard Crimson*. March 2, 1951. File Folder: Poliomyelitis 1949-1951, Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1969-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

[627] Glenn Fowler, "Stanley J. Sarnoff, 72, Cardiologist and Inventor." 25 May 1990. *New York Times.* < https://www.nytimes.com/1990/05/25/obituaries/stanley-j-sarnoff-72-cardiologist-and-inventor.html> Accessed June 6, 2019.

[628] Sheldon Kaplan et al., "Hypodermic Injection Device Having Means for Varying the Medicament Capacity Thereof." U.S. Patent 4,031,893, issued June 28, 1977; Napoleon Monroe, "Connected Combination Products: Past, Present & Future." *ONdrugDelivery Magazine* 68 (2016): 4-10; Matt Reimann, "The story of the EpiPen: from Military Technology to Drug-Industry Cash Cow." *Timeline*. 2016.< https://timeline.com/epipen-technology-drug-industry-b28d19036dee> Accessed March 1, 2020; Kevin Smetana. "EpiPen Inventor Helped Millions and Died in Obscurity." *Tampa Bay Times.*

Sarnoff came up with the electrophrenic respirator while he was assisting a surgeon who unintentionally touched a patient's phrenic nerve (which stimulates the diaphragm) causing the patient's chest to noticeably expand. Sarnoff approached Whittenberger with the idea to create a device that could electrically stimulate the phrenic nerve and they applied an electrode to different locations on Sarnoff's wife's neck until they found the ideal location. Both researchers received NFIP funding to carry out their experiments and initially worked with animal models. But in 1948, they had an opportunity to apply the technology on a 5-year-old boy with a ruptured cerebral aneurysm. After reporting their success in *Science*, they began performing more experiments on human subjects and effectively treated a patient with severe diaphragmic flutter.[629] When Whittenberger met Affeldt in Los Angeles, he was not only conducting a study of Bennett's device but using the County Hospital wards to test the electrophrenic respirator on polio patients. Using the data that he collected while visiting, along with information acquired from his respiratory unit, Whittenberger published an article in 1950 which demonstrated that "In 9 patients with central respiratory irregularities due to bulbar poliomyelitis, the irregularities could be suppressed in each case by electrophrenic respiration and regular effective ventilation provided instead."[630]

September 24, 2009. < http://www.tampabay.com/news/humaninterest/epipen-inventor-helped-millions-and-died-in-obscurity/1038756> Accessed June 6, 2019.

[629] Stanley J. Sarnoff, Esther Hardenbergh, and James L. Whittenberger, "Electrophrenic Respiration." *Science* 108 (1948): 482; Laurence D. Savadove. "University Contributes to Fight Against Polio; Doctors Develop New Electric Breathing Aid." *Harvard Crimson*. March 2, 1951. File Folder: Poliomyelitis 1949-1951, Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1969-1979. Boston Children's Hospital Archives, Boston, Massachusetts.; James L. Whittenberger, Stanley J. Sarnoff, and Esther Hardenbergh, "Electrophrenic Respiration. II. Its Use in Man." *The Journal of Clinical Investigation* 28, no. 1 (1949): 124-128.

[630] Stanley Sarnoff et al., "Electrophrenic Respiration in Acute Bulbar Poliomyelitis: Its Use in Management of Respiratory Irregularities," 1389.

The Positive Pressure Debate

James Whittenberger promoted the electrophrenic respirator and critiqued Bennett's technology in the context of a debate within the pulmonary physiology community about positive pressure's risks. As Whittenberger and his colleague James Maloney Jr. wrote, "During World War II the contributions of physiologists interested in aviation medicine added greatly to our knowledge of the effects of positive airway pressure on the systemic circulation." However, increasing numbers of tracheotomies performed by surgeons and anesthetists raised concerns about the potential harms of positive pressure.[631] For example, researchers from the Department of Pharmacology and the Anesthesia Laboratory at the Harvard Medical School found in a 1943 study that animal subjects in good health tolerated positive pressure well but "in animals with poor circulation, increased pressure in the airway was deleterious and could cause death."[632]

To evaluate whether positive airway pressure detrimentally affected health, Whittenberger conducted research on humans and animals that compared positive pressure and electrophrenic respirators. Working with Affeldt in studying electrophrenic respiration in treating hemorrhagic shock and barbiturate poisoning (as well as with Sarnoff and Maloney in breathing for spinal anesthesia patients) he and his colleagues concluded that "when the organism is in shock due to either blood loss or sympathetic blockade (high spinal anesthesia), positive pressure breathing significantly decreases venous return, cardiac output and blood pressure."[633] Noting

[631] James V. Maloney Jr. and James L. Whittenberger, "The Direct Effects of Pressure Breathing on the Pulmonary Circulation." *Annals of the New York Academy of Sciences* 66, no. 4 (1957): 931-938.
[632] Henry K Beecher, H. Stanley Bennett, and David L. Bassett, "Circulatory Effects of Increased Pressure in the Airway." Anesthesiology: *The Journal of the American Society of Anesthesiologists* 4, no. 6 (1943): 612-618.
[633] James V. Maloney Jr. et al. "Electrophrenic Respiration. IX. Comparison of Effects of Positive Pressure Breathing and Electrophrenic Respiration on the Circulation During Hemorrhagic Shock and Barbiturate Poisoning." *Surgery, Gynecology & Obstetrics* 92, no. 6 (1951): 672; Stanley Sarnoff et al. "Electrophrenic Respiration in Acute Bulbar Poliomyelitis: its Use in Management of Respiratory Irregularities," 1389; Sarnoff, Stanley J., James V. Maloney Jr. and James L. Whittenberger. "Electrophrenic Respiration: V. Effect on the Circulation of Electrophrenic Respiration and Positive Pressure Breathing During the Respiratory Paralysis of High Spinal Anesthesia." *Annals of Surgery* 132, no. 5 (1950): 921-929.

that electrophrenic respiration allowed for a higher cardiac output and blood pressure during acute bleeding than tracheotomy, Sarnoff, Maloney, and Whittenberger postulated, "it would seem reasonable to assume… that positive pressure breathing retards flow in the great veins, while electrophrenic respiration has the opposite effect."[634]

Sarnoff and Whittenberger also proposed the electrophrenic respirator as an alternative to oxygen therapy, which as previously mentioned, was used alongside positive pressure during the Minnesota epidemic. Sarnoff, Whittenberger and Affeldt identified a subtype of bulbar polio patients, whom they labelled as having hypoventilation syndrome, for whom oxygen administration could be potentially harmful. Their concerns about the risks of administering oxygen therapy to this patient group were rooted in the understanding of how the brain involuntarily regulates breathing. For example, the central nervous system uses chemical receptors located in the medulla that sense a person's arterial carbon dioxide levels, and this provides the stimulus to breathe. Patients whose medullary breathing control centers do not properly function regulate involuntary breathing using other chemical receptors located outside of the medulla that measure arterial oxygen pressure. For such patients, low levels of oxygen, instead of elevated levels of carbon dioxide, drive involuntary breathing. Sarnoff, Whittenberger, and Affeldt were concerned that giving oxygen to bulbar patients with impaired medullary centers would take away the "hypoxic stimulus" that induced their breathing and as a result, "the already subnormal respiratory minute volume (would fall) even further."[635]

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[634] Stanley J. Sarnoff, James V. Maloney Jr, and James L. Whittenberger, "Electrophrenic Respiration: V. Effect on the Circulation of Electrophrenic Respiration and Positive Pressure Breathing During the Respiratory Paralysis of High Spinal Anesthesia," 926.

[635] Joshua O. Benditt, and F. Dennis McCool, "The Respiratory System and Neuromuscular Diseases." in John Murray, et al., *Murray and Nadel's Textbook of Respiratory Medicine*. (Philadelphia: Elsevier Saunders, 2016), 1691, 1693-1694; Stanley J. Sarnoff, James L. Whittenberger, and John E. Affeldt, "Hypoventilation Syndrome in Bulbar Poliomyelitis." *Journal of the American Medical Association* 147, no. 1 (1951): 30-34.

Sarnoff, Whittenberger, and Affeldt had an opportunity to test whether the electrophrenic respirator could help this type of bulbar polio patient when two children were admitted to the Mary MacArthur Respiratory Unit who appeared to suffer from hypoventilation syndrome. While one of the children compensated for his deficit by voluntarily forcing himself to breathe, the other child consistently hypoventilated. However, using the electrophrenic respirator, the child who hypoventilated was able to breathe on his own. This led Sarnoff, Whittenberger and Affeldt to conclude that "Electrophrenic respiration may be of help under circumstances wherein spontaneous respiration is inadequate or becomes so following the administration of oxygen."[636]

Within five years of Sarnoff, Whittenberger and Affeldts' study, Jonas Salk's inactivated polio vaccine significantly reduced the incidence of polio in the United States. Whittenberger's research on the mechanisms of respiratory failure in bulbar patients would subsequently lose its contemporary relevance.[637] While Whittenberger abandoned his research on the EPR, Sarnoff, Whittenberger, and Affeldts' aforementioned study of the hypoventilation syndrome is credited with having "first reported that electrical stimulation of the phrenic nerve would sustain patients who had inadequate ventilation."[638]

The use of electricity to stimulate neuromuscular tissue received renewed attention during the 1960s, after researchers demonstrated that pacemaker technologies effectively treated cardiac disease.[639] During this time, William Glenn and his colleagues at Yale University

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[636] Stanley J. Sarnoff, James L. Whittenberger, and John E. Affeldt. "Hypoventilation Syndrome in Bulbar Poliomyelitis," 30-34.

[637] William Glenn and Mildred Phelps have written in their account of the history of phrenic nerve electrical stimulation that "The work of Sarnoff and his associates was particularly significant. They demonstrated in acute experiments the physiological effects of electrical stimulation of the phrenic nerve- 'electrophrenic respiration.'" Glenn and Phelps suggested however, that the development of the polio vaccine was one of the factors that "may have discouraged the investigation of long-term phrenic nerve stimulation." William WL Glenn and Mildred L. Phelps, "Diaphragm Pacing by Electrical Stimulation of the Phrenic Nerve." *Neurosurgery* 17, no. 6 (1985): 975.

[638] Robert T. Brouillette, Michel N. Ilbawi, and Carl E. Hunt, "Phrenic Nerve Pacing in Infants and Children: A Review of Experience and Report on the Usefulness of Phrenic Nerve Stimulation Studies." *The Journal of Pediatrics* 102, no. 1 (1983): 32.

[639] Glenn and Phelps, 975.

partnered with Avery Laboratories Company to develop a diaphragmic pacer for respiratory failure. In recent times, their device has become a first line treatment to help cervical spinal cord injury patients breathe.[640] It is worth noting that diaphragmic pacing is also used to breathe for patients with congenital hypoventilation syndrome, a genetic condition that affects children in a similar manner to the way that bulbar polio affected the children that Sarnoff, Whittenberger and Affeldts' paper studied. Infants and children with this rare condition have defects within their medulla and are unable to involuntarily regulate their breathing. As a result, they hypoventilate while sleeping. Hence, the condition has been referred to as Ondine's Curse (in reference to the German mythological figure Ondine, who cursed a mortal so that he could only breathe while he was awake.)[641]

The story of Sarnoff and Whittenbergers' development of the electrophrenic respirator, and Glenn's subsequent modification of the technology, is an example of how the clinical knowledge that was generated through the polio epidemics became modified to serve the rehabilitation of other disabling conditions after the vaccine. In this way, the story of the EPR foreshadows the next chapter's account of Affeldt's CO2 analyzer, which after being developed for the assessment of respiratory polio, became part of the management of conditions like stroke. The story of the EPR additionally provides an example of how the knowledge that came out of

[640] Avery Biomedical Devices, Inc., "Evolution of Pacing" < https://www.averybiomedical.com/company-information/history-of-pacing/> Accessed June 6, 2019; Donald W. Marion and John F. Dashe, "Pacing the Diaphragm: Patient Selection, Evaluation, Implantation, and Complications." *UpToDate*. Waltham, MA. 12, no. 06 (2018). <https://www.uptodate.com/contents/pacing-the-diaphragm-patient-selection-evaluation-implantation-and-complications/print?source=history_widget> Accessed June 7, 2019.

[641] Joshua O. Benditt and F. Dennis McCool, "The Respiratory System and Neuromuscular Diseases," 1694; Robert T. Brouillette, Michel N. Ilbawi, and Carl E. Hunt, 32-29; L.S. Fishman, J. H. Samson, and D. R. Sperling. "Primary Alveolar Hypoventilation Syndrome (Ondine's Curse): Association with Manifestations of Hypothalmic Disease." *American Journal of Diseases of Children* 110, no. 2 (1965): 155-161; Donald W. Marion and John F. Dashe, "Pacing the Diaphragm;" Robert B. Mellins et al., "Failure of Automatic Control of Ventilation (Ondine's Curse): Report of an Infant Born with this Syndrome and Review of the Literature." *Medicine* 49, no. 6 (1970): 487-504; RA Severinghaus and JW Mitchell, "Ondine's Curse—Failure of Respiratory Center Automaticity While Awake." *Clinical Research* 10 (1962): 122; Oscar Sugar, "In Search of Ondine's Curse." *Journal of the American Medical Association* 240, no. 3 (1978): 236-237.

the polio experience was embedded within an economic context. Like Sarnoff, who founded his own business, and Glenn, who worked with Avery Laboratories, Affeldt collaborated with Liston Becker Instruments in adapting his CO2 analyzer to respond to other chronic diseases following the mass vaccination campaigns.

Before we return to telling the story of the events that brought scientific rehabilitation from Harvard to Rancho Los Amigos, we will lastly make mention of Affeldt's clinical responsibilities at Boston Children's Hospital. Only a quarter of Affeldt's time as a fellow was spent as a researcher assisting James Whittenberger with his projects; the rest of his time involved caring for the polio patients who were admitted to the Mary MacArthur Respirator Center.[642] Practicing medicine on the wards was a central part of Affeldt's experience as a fellow and his clinical training also influenced who he became as a rehabilitation leader. On the wards, Affeldt was exposed to various components of rehabilitation medicine, from assistive technologies to the holistic team-based approach to care that characterized pediatrics at Boston Children's Hospital. John Affeldt also worked with Barbara Williams, a Boston Children's nursing supervisor who came to Rancho Los Amigos in 1951 as a consultant and became Rancho's nursing supervisor three years later. Our section ends by introducing Williams and noting how her responsibilities at Boston Children's anticipated the role that she later assumed as a leader at Rancho Los Amigos.

[642] Research Program in Respiratory Physiology at the Respiratory Unit, Wellesley. November 29, 1950. Folder: Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

Boston Children's Hospital and the Rehabilitation Philosophy

A 1949 Department of Medicine report noted that the pulmonary medicine fellow served as a liaison between Harvard's University's Department of Physiology and Boston Children's Medical Center.[643] In assuming this position, Affeldt acted as a gatekeeper in deciding which patients to admit into Children's Hospital's affiliated respiratory unit. The minutes from a morning staff meeting on March 2, 1951 noted:

> The necessity of impressing referring physicians and hospitals that the unit is not for chronic care but for the evaluation and rehabilitation depending upon the requirements and capabilities of the patient was in order, and also the fact that the former should be ready to accept the patient under their care again when as much as possible had been done. Dr. Grice felt that the goals to be achieved should be clarified when the patients first arrived at the Unit and that they should be told that we are to make a survey of their potentialities from an orthopedic and respiratory standpoint. Also that the patients are to be kept only long enough to complete the various studies and to have a program of rehabilitation for the future outlined.[644]

By limiting the patients that it accepted to only those who could benefit from rehabilitation, the Mary MacArthur center would not be burdened by an accumulation of convalescent patients. The center's narrow focus on rehabilitation also enabled it to pool its resources, within the unit and outside, towards the goal of helping patients live independently at home. The minutes continued:

> Many of these patients could be maintained successfully at home in respirators or in rocking beds. Dr. Affeldt pointed out that this was the plan under which the Unit is now working and that if the patient could be weaned from a respirator, extensive planning would have to be done in order to find out where the patient could go and who would carry out the follow-up care from the medical and orthopedic standpoint.[645]

As a fellow, Affeldt also communicated with J. J. Monaghan Company about procuring respirators and gained experience working with the various respirators that the unit employed.[646]

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[643] Children's Medical Center Report of the Department of Medicine for 1949. File Folder: Annual Reports of the Departments 1946-2002. Boston Children's Hospital Archives, Boston, Massachusetts.
[644] Staff Meeting. Mary MacArthur Memorial Unit. March 2, 1951. Folder Mary MacArthur Respirator Unit 1950-1961. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.
[645] Ibid.
[646] Glady's M. Conner to Dr. Guy Brogler, 3 August 1951, Folder: Mary Mac Arthur Respiratory Unit: Equipment 1950-1952. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

He additionally encountered innovative technologies such as the rocking bed, which would become an important component of Rancho Los Amigos' rehabilitation program.[647] Introduced into polio rehabilitation in 1947, the rocking bed "provid(ed) a bridge between the total ventilatory support of the respirator and the independent unsupported breathing state that is the goal of convalescent treatment for every respirator patient." The rocking bed was a platform that patients laid upon and its movements "force(d) the diaphragm up and down in a piston-like fashion," which enabled breathing and obviated the need for an iron lung.[648] Louis Sternburg, a polio patient treated at Massachusetts General in 1955, recalled the feeling of freedom that he felt when he was on a rocking bed in comparison with the iron lung. When he was first admitted, he spent several weeks in the iron lung and recalled:

> My shoulders rubbed against the steel sides, and the seventy pounds I had lost made the mattress seem thinner. I developed a severe bedsore. My airtight collar chafed back and forth with each breath just below my tracheotomy tube.[649]

Sternburg's first impression of the rocking bed was when he "had seen a patient across the room moving up and down in what looked like an iron rocking horse contraption." As his physician explained to him, the rocking bed used a "seesaw motion" to breathe for patients. Sternburg's physician continued:

> It rocks one cycle every three and a half seconds, and makes your diaphragm and other organs move up and down, to compress and release your lungs. As your feet hit the bottom of the tilt you inhale. As you go backwards, you exhale.

Once in the bed, Sternburg had an experience of life that was unrivaled:

> What a triumph. Another way to breathe, another choice. This was progress. My surroundings had changed their focus, giving me a new view from this seesaw. First the

[647] "Comfort for the Polio-Crippled" *Newsweek.* August 17, 1953. 56-57; Research Program in Respiratory Physiology at the Respiratory Unit, Wellesley. November 29, 1950. Folder: Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.
[648] Fred Plum and G. Donald Whedon, "The Rapid-Rocking Bed: Its Effect on the Ventilation of Poliomyelitis Patients with Respiratory Paralysis." *New England Journal of Medicine* 245, no. 7 (1951): 235-241.
[649] Louis Sternburg and Dorothy Sternburg with Monica Dickens, *View from the See-Saw* (New York: Dodd, Mead & Company, 1986), 21.

> world came up toward me, and then it moved away. I was facing the ward now. I could see out of all the windows, until my feet came up and cut off my view. I could see who came and went in the ward…

Sternburg chose to live his next three decades of life in a rocking bed.[650]

When Affeldt became Rancho's chief physician, he not only introduced the rocking bed, but began working with staff to create a system by which a patient who was discharged could have access to technologies that enabled independent home life. The home care program, one of Rancho Los Amigos' greatest achievements of the polio era, provided around the clock technological service to maintain former patients' respiratory equipment at home. Importantly, the maintenance of patients' respirators at home after they were discharged, whether from Mary MacArthur or Rancho Los Amigos, depended upon planning by multiple professionals in the inpatient and outpatient settings. And as a fellow, Affeldt was immersed in a professional culture defined by teamwork, which had much in common with the culture that he later introduced at Rancho Los Amigos.

Pediatrics and the Team Approach

Boston Children's Hospital's team-based medical approach was a central part of its mission to provide "Total Care of the Whole Child." A 1952 hospital booklet stated that at Boston Children's, "Diseases of children were no longer taught from the point of view of three separate clinical divisions, medicine, surgery, and orthopedic surgery, but rather from the viewpoint of the child as a whole." The "total care" concept at Boston Children's fulfilled the various needs of an individual child with a chronic disease through a multidisciplinary model of care. For example, in the pediatric chest clinic:

[650] Ibid., 38-41; *Kirkus*. Review. March 15, 1986. <https://www.kirkusreviews.com/book-reviews/a/louis-dorothy-sternburg-with-monica-dickens-ste/view-from-the-seesaw/> Accessed September 15, 2019.

> A staff member of the Department of Medicine works with the resident in Otolaryngology, the Surgical Resident, and the Anesthesiologist to give patients with chronic diseases of the lung the best possible care. These four staff members lean heavily on the Department of Radiology for X-rays which will guide their work, the Division of Laboratories for careful studies of the microorganisms which are isolated from the sputum, and on a liaison with the Department of Physiology in the Harvard School of Public Health for measurements to determine whether or not the breathing function is improved by new methods of treatment.[651]

Indeed, Boston Children's advocacy on behalf of holistic care shaped how it recounted the story of its own founding in 1869. The booklet's authors wrote that its founder Francis Brown's idea that "Children's diseases provided a separate area of study and thought" was "revolutionary" and in disagreement with predominant medical thinking. As they stated, Brown's plan for "a hospital devoted entirely to treatment of children's diseases seemed to the medically-minded Bostonian an illogical encroachment on the field of the general hospital."[652]

Brown's idea was consistent with the arguments used by the other nineteenth century physicians who advanced the pediatrics specialty. Pediatricians claimed a unique source of expertise that was not based strictly upon organ systems or disease processes, but upon child development. Since medical problems often manifest in children at distinct stages of development, pediatricians argued that physicians needed specialized training in how illness affected the individual child at specific ages. As Abraham Jacobi, "the father of American Pediatrics," stated, pediatricians should be concerned "not with an organ, but an entire organism." Commenting on pediatrics' unique clinical approach, historian Howard Meckel stated, "Pediatrics was something of a contradiction in terms: a wholistic specialty."[653]

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[651] Children's Hospital (Boston, Mass.) The Children's Hospital 1869-1951, Eighty-two Years of Service to the Community and to the Nation. The Children's Medical Center, 1946-1951. (1951). *Internet Archive*. < https://archive.org/details/childrenshospita1951chil/mode/2up> Accessed Jun 15, 2016.

[652] Ibid.

[653] B Lee Ligon-Borden, "Abraham Jacobi, MD: father of American pediatrics and advocate for children's health" (paper presented at the Seminars in Pediatric Infectious Diseases, 2003); R.A. Meckel, *Save the Babies: American Public Health Reform and the Prevention of Infant Mortality, 1850-1929* (Ann Arbor: John Hopkin's University Press, 1990), 47.

Since it was founded in 1869, Boston Children's Hospital took care of children with disabilities. It is also not surprising that the hospital developed a holistic approach given that a disability affects a child's physical, psychological, and social development in profound ways. Six of Boston Children's first ten children had bone and joint infections or fractures. Tuberculosis and diphtheria were the predominant conditions on the wards during the 1890s. And prior to the 1916 polio epidemic, the orthopedic department primarily treated patients with tuberculosis infections of the skeletal system. Much of the clinical research at Boston Children's Hospital also related to the management of disabling conditions; for example, in the late nineteenth century, Boston Children's researchers began studying cerebral palsy. During this time, orthopedic surgeons also contributed to surgeries, such as tendon transplantation, that continue to be used in recent decades by pediatric orthopedists in rehabilitating children with cerebral palsy.[654]

Holistic Advocacy

Like John Affeldt's professional colleagues from the Loma Linda Adventist community, Boston Children's healthcare providers viewed their holistic clinical approach in moral terms. As the booklet continued:

> Men and women trained in its laboratories and wards had spread throughout the United States and abroad carrying with them a fundamental truth… a sick child is entitled to

[654] Ibid; Clement A. Smith. "The Children's Hospital of Boston. 'Built Better than They Knew." L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts. Convalescent Home Closes in Wellesley Hills after 85 Years Of Service." February 19, 1959. File Folder: Convalescent Home for Children (Wellesley). L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.; "Wellesley Convalescent Home: Patients took to the Country for a Cure." *The News*. July/ August 1993. File Folder: Convalescent Home for Children (Wellesley). L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts; Barbara Williams. Observations of Respiratory Units. October 1950. Folder: Mary MacArthur Respirator Unit, 1950-1961. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts. The Wellesley Convalescent Home, which housed the Mary MacArthur respiratory unit, was also founded in response to Boston Children's Hospital's pressing needs in managing chronic disease. The home first opened in 1874 to provide care to Boston Children's patients who were not yet ready to live at home. During its eighty-five years of service, it provided care to children with skeletal tuberculosis, typhoid fever, infantile paralysis, cerebral palsy, rheumatic heart disease and other cardiac ailments.

> total care and should be studied in relation to his entire physical and emotional make-up. As the medical world began to realize the dangers of too narrow specialization, the principle of diagnostic and therapeutic integration had already begun to emerge at THE CHILDREN'S HOSPITAL. THE MEDICAL CENTER would be the practical application of this principle.[655]

The Children's Epidemic Aid Unit especially embodied this mission. It assisted communities throughout the United States with limited clinical resources by providing services such as establishing training programs in polio management for health professionals.[656] As the booklet noted:

> The team principle of the MEDICAL CENTER operates in the epidemic aid units formed at the request of the National Foundation for Infantile Paralysis several years ago to meet outbreaks of poliomyelitis wherever they might strike. These units have been composed of a member of the orthopedic staff, a nurse, and a physical therapist, and have been active in North Carolina, Florida, Texas, Southern Missouri, and as far away as Berlin, Germany. Again and again the team is seen at work at THE CHILDREN'S MEDICAL CENTER, and always the goal is total care of the whole child.[657]

Barbara Williams was the Epidemic Aid Unit's nursing supervisor and through her work on the unit, and an NFIP consultant, she worked to bring infrastructure to areas that were stricken by polio. Before Williams came to Rancho Los Amigos, she helped other hospitals establish their own respiratory centers and performed hospital surveys for the NFIP.[658] For example, when University of Buffalo faculty expressed interest in creating a respiratory center, they arranged a meeting with Williams and visited the Mary MacArthur Respiratory Center. As they wrote afterwards, in the process of visiting they "learned a good deal about what might be involved in

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[655] Children's Hospital (Boston, Mass.) The Children's Hospital 1869-1951, Eighty-two Years of Service to the Community and to the Nation. The Children's Medical Center, 1946-1951. (1951). Internet Archive. < https://archive.org/details/childrenshospita1951chil/mode/2up> Accessed Jun 15, 2016.
[656] "Polio Rise in State 'Not an Epidemic.' *Sunday Advertiser*. Boston, Massachusetts. New England Newsclip Agency. Folder: Newsclippings. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.
[657] Children's Hospital (Boston, Mass.) The Children's Hospital 1869-1951, Eighty-two Years of Service to the Community and to the Nation. The Children's Medical Center, 1946-1951. (1951). Internet Archive. < https://archive.org/details/childrenshospita1951chil/mode/2up> Accessed Jun 15, 2016.
[658] "Hub Trio Leave to Fight Polio in West. *Sunday Post.* Boston, Massachusetts. August 7, 1949. New England Newsclip Agency. Folder: Newsclippings. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.; Barbara Williams. Observations of Respiratory Units. October 1950. Folder: Mary MacArthur Respirator Unit, 1950-1961. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

setting up a respirator center" and came out of the meeting "(feeling) that we can now discuss more intelligently the problems relating to the possible establishment of such a center in Buffalo."[659]

Williams also travelled to Baltimore, Harrisburg, Pittsburgh and other cities and produced surveys which evaluated numerous aspects of caregiving for respiratory patients. Williams' surveys made note of technical matters, such as the number of physicians, nursing personnel, and social workers who worked in respiratory units, how much time they spent with patients, and which equipment they used. Williams additionally assessed social aspects of caregiving, including recreation, education, and the availability of religious services. Her survey of Southwest Respiratory Center in Houston strongly resembled the critique that she and Affeldt later offered at Rancho Los Amigos in their survey. Williams expressed the following view: "An entirely different kind of acute care, overcrowding, understaffing, lack of orthopedic consideration and planning were the outstanding things to me." But she noted that "Dr. Spencer, the director, plans to visit our Medical Center in October."[660] Introduced in Chapter 3, William Spencer was a pediatrician who over the subsequent decades built the Texas Institute for Rehabilitation and Research into a national leader in rehabilitation. And the next chapter will tell the story of how the polio epidemics shaped Affeldt and Spencers' development of Physical Medicine & Rehabilitation at their respective institutions in greater detail. But before moving ahead, we must first make mention of the crisis in Los Angeles that brought Affeldt and William to Rancho Los Amigos to conduct their survey. As we will see, the increase in polio incidence during the late 1940s and early 1950s created a disaster in Los Angeles County. However, it also

[659] Ivan Bunnell to Lendon Snedecker, 26 October 1950, Folder: Mary MacArthur Respirator Unit, 1950-1961. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.
[660] Barbara Williams. Observations of Respiratory Units. October 1950. Folder: Mary MacArthur Respirator Unit, 1950-1961. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

opened the door for Affeldt to bring the resources that the foundation cultivated in Boston to Los Angeles.

The Making of a Disaster and an Opportunity

At the end of his career, John Affeldt reflected on the changes that occurred in Los Angeles County while he was a second-year fellow at Harvard. "Improved techniques," such as the aggressive use of the tracheotomy with the Bennett device, while increasing the survival rate, also led to the accumulation of chronic patients. Affeldt mentioned that as a result:

> The communicable disease unit (at County Hospital) could hold only so many patients, so when the acute polios kept coming, seven, ten a day into respirators, they had to relieve that pressure and move them out. So that's when they started transporting them to Rancho… (Rancho) became sort of a storage area. That sounds awful, but basically that's what it was.[661]

The increasing number of patients during these years strained the already limited resources that Rancho Los Amigos had as a public institution, and the hospital became grossly inadequate by professional standards. By 1951, the physical therapist to patient ratio had become one therapist to eight patients, a level which warranted the closure of a hospital according to the American Physical Therapy Association. Hospital administrator William Harriman tried to recruit therapists but of the twenty authorized positions, ten remained vacant. Harriman then ordered the hospital to accept no more patients until he could procure additional physical therapists. Harriman's decision overall worsened care in Los Angeles by creating a backlog of patients in County Hospital, which had an even lower ratio of therapists to patients. Harriman wrote County Supervisor Arthur Will and explained that "We are receiving calls constantly from the General Hospital urging us to take more patients and your office has received similar calls

[661] Seavey, Smith, and Wagner, 140.

from Dr. Naftzger of the National Foundation, also complains that the patients are not receiving adequate physical therapy treatment." Harriman asked Will, "Can you obtain assistance from the National Foundation for recruitment? This is the only possible relief we can see." And Will, who had received complaints from patients' relatives and friends for the past few months, contacted the foundation.[662]

John Affeldt recalled that after the county asked the NFIP for assistance," (The foundation) in turn asked Harvard if they could provide a consultation who knew something about polio." Affeldt continued: "they said, 'Yes.' Then they suggested I go." Sent by the National League of Nursing, Barbara Williams accompanied Affeldt and they performed a two-week survey in Los Angeles of the hospitals that provided care to iron lung patients.[663]

During their visit to Los Angeles, Affeldt and Williams were thrust into what was becoming a crisis for the County Board of Supervisors. The Supervisors were not only concerned about the overcrowding and therapist shortage, but the impending public relations disaster that accompanied their placement of patients with a certain degree of influence in grossly inadequate conditions. During their visit, Affeldt and Williams wrote to the Foundation, "There exists an acute situation which is felt by some to be explosive in nature with the potential of producing a public scandal."[664]

Affeldt later explained that "The families of the patients were quite perturbed, naturally, at the devastation and the lack of a treatment program." They thus "organized a family group,

[662] William Harriman to Arthur Will, 1 June 1951, File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Arthur Will to Los Angeles County Board of Supervisors, 9 November 1951, File Folder: Box: HOBP 2, Folder: NFIP Re-Post-Acute Polio Patients- Rancho Los Amigos. Records of the Los Angeles County Board of Supervisors, Los Angeles, California.
[663] Lewis E. Weeks, interview with John Affeldt, John E. Affeldt: In First Person: An Oral History (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987).
[664] Survey of Rancho Los Amigos 1951. File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

and began holding meetings." Affeldt continued, "It turned out that the families reached a nationally known television commentator/ reporter who was about to make a national scandal out of this. Los Angeles County turned to the polio foundation and asked if they could help."[665] Affeldt mentioned in multiple interviews that the patients' families contacted Drew Pearson, a popular Baltimore Sun journalist and radiobroadcaster, whose nationally syndicated radio and television shows exposed the controversial political matters of the day.[666] Affeldt continued, "Basil O'Connor and Art Will were friends. So, when they learned about the potential scandal at Rancho, the County turned to the National Foundation and said, "Please send a team out to look over Rancho and make recommendations as to what should be done."[667]

The First Impressions

When John Affeldt and Barbara Williams arrived at Rancho Los Amigos, they were both struck by the hospital's scenic landscape. Williams also had a positive impression of the ethic that Supervisor William Harriman introduced into patient care. She mentioned,

> The entire place radiated a human warmth that was quite catching. Mr. Harriman instilled in the staff that patients were the reason for Rancho's being and without them no jobs would exist; therefore, the patients were to get the best attention. He demonstrated this by making rounds on every holiday and by having contact with each individual patient and staff.

[665] Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987).
[666] Drew Pearson Biography. American University Archives. American University, Washington, DC. < https://www.american.edu/library/archives/pearson/drewpearson_bio.cfm>; Thomas Mallon. "Washington Scribe. The diaries of the ultimate D.C. insider." The New Yorker. < https://www.newyorker.com/magazine/2015/09/28/washington-scribe> Accessed June 15, 2019; William V. Shannon. The Sol Hurok of the Washington press corps. April 29, 1973. The New York Times Archives < https://www.nytimes.com/1973/04/29/archives/drew-pearson-an-unauthorized-biography-by-oliver-pilat-illustrated.html 1/> Accessed June 15, 2019.
[667] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

For Williams, the lack of a "hierarchy of who would talk to whom" was an additional noteworthy feature at the hospital. Williams said that "In the cafeteria, whoever was there at the time ate with whoever had preceded them. There was not a class system."[668]

While the scenery and the personal element of care were aspects that stood out, the medicine practiced at the hospital was not consistent with Affeldt and Williams' professional standards. Affeldt noted that "Rancho at that time was just emerging from its history of the County Poor Farm…there was a total of twenty-five hundred patients at Rancho at that time, at least a thousand of which were these ambulatory homeless males who had minor illnesses but no place to go, and so they lived here."[669] Affeldt stated that: "There were cows, horses, growing fields, vegetables. So, when the respirator patients were sent in, they took over some old buildings. And they were pretty drab."[670]

Rancho Los Amigos' mission as a public hospital to accept the patients that other Los Angeles hospitals did not admit led it to place young polio patients with older convalescent patients who were admitted because they had no income, family, or social support. For example, Justin Laird, a polio patient who stayed at Rancho in 1948, remembered sharing a building with elderly patients. Laird recalled that his doctor "wasn't that capable, he went around every day and asked if everyone ate their breakfast- the old perception of a county doctor."[671]

Affeldt also reflected on seeing Rancho Los Amigos' 500 bed locked psychiatric ward, which was "one of the prime housing developments" in the county's mental health system at the

[668] Madden, Barbara notes from interview. File Folder: BOX: 17 FILE: 55 Individuals. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California. Barbara Williams married during her stay at Rancho Los Amigos and her file is organized by this surname.
[669] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[670] Seavey, Smith, Wagner, 140.
[671] Laird, Justin Patient notes from interview. File Folder: BOX:17 File:49 Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

time. His impression of the hospital's accommodations for psychiatric patients was in striking contrast to William's impression of the "human warmth" during their visit. Affeldt remembered that the psychiatric facility had "locks on the doors with one lever on them to unlock the whole ward;" he recalled, "It was like a prison."[672]

Barbara Williams provided a more detailed account of the hospital's inadequacy in meeting the respiratory patients' needs:

> The polio wards had been buil(t), as dormitories. There were four rooms in each building… each of the four rooms had patients predominantly in tank respirators and a minimum of chest respirators, and at that time, no rocking beds. The patients had extensive respiratory involvement and a very limited time outside their tank respirator… There was an exceedingly small Physical Therapy Department, a part-time Occupational Therapist, and two Social Workers… Physical care was given by a maximum of nursing attendants, a rare licensed vocational nurse and registered nurses.

Williams identified "one RN Supervisor, an older very heavy-set woman, who found it hard to walk at all" and was thus unable to supervise the nurses at the patients' bedsides.[673]

Administrator William Harriman's successor Robert Thomas shared Williams' view of the hospital's inadequacies when he rotated through Rancho Los Amigos in his training during the 1940s. He recalled:

> I remember the first time I went out to Rancho…and saw all the doctors there. They were nice fellows. They all were either close to retirement or probably past retirement and you couldn't tell them from the patients except for that they had white jackets on. And they weren't up to this kind of a challenge with all of these respirator patients being brought in who were dependent upon artificial breathing and the kind of nursing care that had to be provided.[674]

[672] Interview with John Affeldt. Interview by Bruce Jansson. USC School of Social Work. October 19, 2005. Personal records of the Affeldt Family. Used with permission of J.C. Affeldt. Solana Beach, California.
[673] Madden, Barbara notes from interview. File Folder: BOX: 17 FILE: 55 Individuals. Fliedner, Colleen Adair. *Centennial Rancho Los Amigos Medical Center 1888-1988.* Downey: Rancho Los Amigos Medical Center, 1990.
[674] Interview with Robert J. Thomas on 10 Dec 1985. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

As Affeldt had earlier mentioned, Rancho Los Amigos during this time was in the process of evolving from the County Farm into a hospital. Unfortunately, as a result of the polio unit's historical association with the Poor Farm, the stigmas of the almshouse soon became attached to Rancho's polio services. While William Harriman had intended to eliminate negative perceptions of care at Rancho Los Amigos, stigmas were still pervasive at the time that Affeldt visited and would indeed complicate his recruitment of Vernon Nickel. When Affeldt asked Nickel to come to Rancho Los Amigos, Nickel initially considered refusing because the hospital was "not reputable," and "a warehouse of human beings."[675] Scientific rehabilitation became Affeldt's means of eliminating the stigmas that deterred professionals from coming to Rancho Los Amigos and providing needed medical care. As chief physician and medical director, Affeldt worked to acquire support from the NFIP, as well as the NIH and other sources of funding, and brought researchers to Rancho Los Amigos whose work gave the hospital academic prestige. Indeed, the resources that Affeldt brought not only served to restore function to the victims of an epidemic, but to rehabilitate the public image of the county's home for the disabled poor.

In responding to the crisis, Affeldt and Williams produced a study that had a key historical significance. Reflecting upon the survey's importance as he retired it to the archives, Affeldt wrote in an attached note, "here is a copy of the historical document that changed Rancho from a poor farm to a Hospital."[676]

[675] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[676] Survey of Rancho Los Amigos 1951. File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

The Survey

On June 9, 1951, John Affeldt and Barbara Williams began their fateful survey of Rancho Los Amigos.[677] Affeldt and Williams first noted the variety of patients who shared the dormitories with the polio patients, writing that they included children with a variety of sicknesses such as rheumatic fever, bone, and joint tuberculosis, as well as elderly patients, who had their own Alcoholics Anonymous Group. Painting a picture of the psychological impact of the hospital interior, they described a "drab dormitory atmosphere," with walls painted in a "buff color" and no pictures or plants. They also noted that the hospital contained open wards, in which nurses administered bed panning and enemas without portable screens or any other provisions for patient privacy. They provided background on the length of the respiratory patients' hospitalization and wrote that 41 of the 50 respiratory patients had been there at least seventeen months.[678]

Affeldt and Williams described a serious staff shortage. Resident physicians provided most of the medical care and the limited number of physical therapists created a situation where patients had fifteen-minute physical therapy sessions for only once or twice a week. Since the hospital waited up to six weeks to acquire splinting and casting equipment, physicians and therapists made very little use of such devices. In addition, patients remained in a supine position most of the time (except for their upper extremities, which were positioned according to the individual patient's desire).[679]

[677] Ibid.; Madden, Barbara notes from interview. File Folder: BOX: 17 FILE: 55 Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[678] Survey of Rancho Los Amigos 1951. File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[679] Ibid.

These practices had negative consequences. As mentioned throughout the dissertation, the poliovirus attacked the neurons responsible for motor function. As a result, muscles could not receive stimulation from the brain and lost the ability to function, creating an imbalance between the agonist and antagonist muscles that worked across a joint; when one muscle lost function, it lost the ability to resist the opposing muscle, which dominated the motion of the extremity and caused a deformity. Splinting and casting were necessary means for preventing deformities by holding patients' extremities in fixed positions. But patients also needed to move joints through their normal range of motion or the joints would become stiff. Because patients rarely used splinting and casting equipment, and were immobilized for long periods of time, Affeldt and Williams observed that they consequently developed deformities and had a limited range of motion. They also pointed out the staff's neglect of rocking beds and chest respirators, which would have allowed for a greater degree of autonomy than the iron lung.[680]

Unlike Boston Children's Hospital, where the various departments utilized a team concept in their provision of care, Rancho Los Amigos' orthopedic, respiratory, physical therapy and nursing departments each had separate rounds and did not coordinate their services. Affeldt and Williams observed a lack of "group spirit and effort" between the physical therapy and nursing departments, which caused "friction and frustration" between the two groups and a rapid turnover of therapists.[681]

Affeldt and Williams' survey was noteworthy for its attentiveness to the psychological dimensions of patient care. The nursing station's remoteness from many of the wards made it difficult for the nurses to hear patients. One patient who feared being left alone at night even attempted to hire a private nurse. The nurses also grouped patients according to the amount of

[680] Ibid.
[681] Ibid.

care that they required and placed the patients who demanded the most attention in one area and labeled them the "troublemakers." Seeing patients who had been at the hospital for years without making any improvement was especially discouraging to the newly admitted patients. As Affeldt and Williams explained, "We asked how new patients responded when they noticed that some of their cohorts had been there for several years and were still requiring breathing help, and the answer was that it had been hard for some to take."[682]

The survey called attention to the lack of available recreational activities, which resulted in patients' inactivity for long periods of time. Additionally, restrictive visiting policies created limited contact between patients and their families. The hospital only allowed parents to visit their children between two and three in the afternoon on Saturdays, Sundays, and Wednesdays. Furthermore, Affeldt and Williams noted that the nurses gave discharged patients' families little instruction in caring for their released family members.[683]

Some of Affeldt and William's most moving observations described the negative social environment that the staff's actions created. In describing patient feeding, the survey noted, "a mechanical production line seemed to prevail" and an attitude of "oh, dear, its mealtime again, open your mouth." The survey gave the following account of the staff's lack of encouragement to one patient: "She was observed during only one feeding, but in her unit at the far end of the ward from the staff, back to the group, pondering over a bowl of farina which was taken away without comment, assistance, or encouragement."[684]

After the survey's completion, John Affeldt returned to Boston, and then travelled to New York to hand in his report at the National Foundation headquarters. Affeldt said, "There

[682] Ibid.
[683] Ibid.
[684] Ibid.

was a series of recommendations as to how they should develop a significant respiratory program, rehabilitation program, things they could and should do. The county negotiated with the polio foundation for some funds to assist in this." [685] After they had settled logistical matters, the Foundation approached John Affeldt and asked him if he wanted to be Rancho Los Amigos' chief physician. Affeldt mentioned, "My home was here in Los Angeles and I thought that's a nice way to get back home. I'm about through with my research training here. And, on that basis, I said, 'Okay.'"[686]

John Affeldt recalled that County's Chief Administrative Officer Arthur Will was angered by the survey's negative content and fought against accepting him as the chief physician. This led NFIP President Basil O'Connor to arrange a private meeting with Will.[687] The content of the discussion is subject to speculation, but the backroom negotiations likely involved a threat. Affeldt stated:

> Art Will was mad because I had written a fairly damaging negative report about the conditions about the Rancho and the program and said, "No way will we accept Affeldt here in the County." But Basil O'Connor negotiated and said, "We won't give you any money for the program if you don't take Affeldt." And they capitulated and agreed. So, they said, "Well, we won't put him on County payroll, but we'll put him on grant that the Polio Foundation will give to assist the program at Rancho." So, for one year I was on the grant before they allowed me to become county employed.[688]

According to John's wife Nancy, Affeldt's offer to become chief physician was something that neither of them had anticipated. She stated that, "(the offer) fell in John's lap… (he) never talked about career after fellowship." She said: "We went from day to day, 'okay

[685] Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987).
[686] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[687] Interview with John Affeldt on March 14, 1986, Interview with Vernon Nickel on January 25, 1986, and Robert J. Thomas on December 10, 1985. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[688] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

what's coming today?' Never talked about plans after fellowship."[689] However, based on a letter written by James Whittenberger, it appears that Affeldt had aspired to become chief physician prior to being offered the position. Notifying the dean of the Harvard School of Public Health that Affeldt was ending his fellowship to become chief physician, Whittenberger wrote, "The new position is exactly what Dr. Affeldt has been hoping for and I did not feel that I could ask him to stay until the termination of his appointment… We are sorry to have Dr. Affeldt leave but feel that his training here has fitted him very well for the new position."[690]

Whittenberger's quote raises the question brought up in the previous chapter of whether Affeldt's appointment was ordained as early as when he was chief resident at County Hospital and assisted the Harvard Team in their evaluation of the Bennett device. While Affeldt's appointment might have been inevitable given the NFIP and the Harvard researchers' influence, circumstances were ripe for him to make a new beginning. And Affeldt abruptly ended the second year of his fellowship and travelled to Los Angeles to become chief physician at Rancho Los Amigos.

The National Foundation was fortunate to have acquired a leader with the perspective that John Affeldt demonstrated in the survey. As a Seventh-Day Adventist, Affeldt believed in a moral conception of patient care that was oriented towards healing the patient's body, mind, and spirit. His innate leadership abilities, along with the expertise that he acquired through his medical education, residency, and fellowship, made him capable of practically fulfilling what he personally believed. Affeldt's acumen and shrewd implementations would actualize his and the foundations' agenda to provide holistic, scientific, team-based care, at the highest professional

[689] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[690] Letter to Dean Simmons, 15 January 1952, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

standards. Their efforts culminated in the birth of a specialty with a unique vision of what health is and what it means to practice medicine.

Scientific Rehabilitation and Chronic Disease in the Safety Net

John Affeldt's effort to bring scientific rehabilitation to Los Angeles County culminated in the merger of Rancho Los Amigos and the University of Southern California in 1968. By this time, Rancho Los Amigos had become an emblem of the Physical Medicine and Rehabilitation specialty's success and attained its current position as the "rehabilitation arm" of the Los Angeles County's municipal healthcare system. Rancho Los Amigos' new identity as a national rehabilitation leader ultimately came out of the changes that Affeldt initiated after arriving at the hospital in 1951. Through the National Foundation for Infantile Paralysis, the federal government and other sources of funding, the hospital constructed laboratories and supported the work of scientists, who later adapted its polio infrastructure to respond to other chronic conditions such as stroke. As a result, Rancho Los Amigos became the cornerstone of the County's battle against chronic disease during a new era, in which infectious diseases like polio were no longer objects of national concern.

John Affeldt came of age at a time during which politicians and the public esteemed scientific research and he and other municipal leaders throughout the United States assigned a political role to academic medicine in managing urban health problems. Mayor Robert Wagner's Heyman Commission in New York City was a case in point of how the academic-affiliation model became the solution to the problems that public hospitals faced, such as a poor quality of patient care and inadequate staffing. In her history of New York City's municipal hospital system, Sandra Opdycke commented on the Commission's decision to affiliate the city's public

hospitals with private institutions such as Columbia, New York University, and Cornell. As Opdycke has written, the Heyman Commission believed that "Having private affiliates in charge would attract top-level physicians; at the same time, the private institutions would bring to the public sector the same disinterested commitment to excellence… thought to pursue in their own facilities."[691]

However, as Opdycke has written, the New York academic affiliation model was inadequate in responding to urban social problems, such as a lack of access to primary care. Opdycke continued:

> As academic medicine entered its glory days in the 1950s, the gap widened between the kind of medicine that the medical schools were emphasizing and the kind that municipal hospitals like Bellevue needed to provide. Public hospitals offered a rich variety of cases for the specialist and the researcher, but they also admitted hundreds of thousands of patients each year whose disorders were unremarkable and whose most compelling health need was for consistent primary care.[692]

Like the patients who were admitted to Bellevue, whose clinical needs were tied to urban social conditions, many of Rancho's patients after the polio era had conditions such as recurrent strokes, which resulted from decades of living with high blood pressure and diabetes, compounded by poverty and a lack of access to preventive care. Los Angeles County's continued inability to create an effective response to such social determinants of health is a testament to rehabilitation's limitation in responding to chronic disease. On one hand, the Physical Medicine and Rehabilitation specialty at Rancho Los Amigos proved exceptional in its appreciation of the clinical, psychological, and social dimensions of living with a disability. However, clinical science, with its postwar glory, was ultimately unable to respond to the structural causes of chronic disease that still limit many county residents' abilities to live independently.

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[691]Sandra Opdycke, *No One Was Turned Away: The Role of Public Hospitals in New York City since 1900.* (New York: Oxford University Press, 2000), 110-111.
[692] Ibid., 111.

Chapter 7: The Birth of Subspecialty Rehabilitation at Rancho Los Amigos

Rather than stemming from a single factor, Social Security's midcentury expansion was driven by polycentric influences. In the final three chapters, we will study how the polio epidemics, World War II, and the increased incidence of chronic disease gave rise to President Eisenhower's rehabilitation program in a symbiotic manner. During the 1960s, Presidents Kennedy and Johnson saw that Eisenhower's rehabilitation concept was compatible with aspects of their New Frontier and Great Society agendas. In the process, rehabilitation came to work alongside other influences, including the War on Poverty and disability rights, to fuel an even greater expansion in the United States welfare system.

From this chapter on, we will study the NFIP's polio rehabilitation program as one of several interdependent influences on the American welfare state. Key to the foundation's impact was its provision of grant support. As a national organization that channeled money towards the regional polio Respiratory Centers, the NFIP initiated a system of aid to localities that was later supplanted by the federal government. Under the Eisenhower, Kennedy, and Johnson administrations, Affeldt and Spencers' programs transitioned from being NFIP Respiratory Centers into regional rehabilitation centers. In the process, the grant in aid model initiated by a nonprofit organization became part of the American welfare state.

Other developments during the polio era also paved way for Rancho's implementation of the political agenda of the 1950s and 1960s. Health policy experts acknowledge that organizational leadership is key to the operations phase of policy implementation.[693] As Rancho's administrative leaders, John Affeldt and Barbara Williams effectively transformed Rancho Los Amigos' interprofessional culture and instilled a common mission at the hospital.

[693] Longest, Jr., 135-145.

And interpersonal relationships proved to be decisive within this process. Factors such as Seventh-Day Adventist professional networks, Affeldt's relationships with Harvard scientists, and the staff's involvement in professional organizations laid the groundwork for Rancho Los Amigos to become a hub within the Eisenhower administration's expanded system of social provision.

From the CO2 Analyzer to the Spinal Fusion

When John Affeldt became chief physician in January 1952, he faced resistance from staff members who had worked at Rancho Los Amigos before he arrived. Some of the more conservative staff believed that it was better to provide custodial care for an iron lung patient than to promote independence from the respirator at the risk of harming the patient. Affeldt later traced the staff's acceptance of rehabilitation to a pivotal moment, in which they experienced almost a conversion experience. Affeldt wanted to encourage patients to breathe independently from the iron lung and brought in a rocking bed. Against the staff's opposition, he removed a patient from the iron lung and placed him on the bed. Affeldt described this experience:

> … the staff gathered around with a look on their faces. "You're going to fail, this patient's gonna die (if you take him out)." Real tension and anxiety. We took the patient out of the respirator, put him on the rocking bed, and he started rocking. The patient was breathing with the bed. And the patient became so animated. "I can scratch my face! I can touch my nose!" The staff just turned on. I mean it was a turning point. From then on, the staff couldn't move fast enough to start working on how to get the patients out of the respirators.[694]

[694] Seavey, Smith, and Wagner, 140-141.

John Affeldt told this story multiple times among family members and in interviews. It appears to have been one of his most important memories at Rancho Los Amigos.[695] And it is understandable why such a memory was personally significant. The triumph on the rocking bed reflected the fulfillment of Affeldt's effort to overcome the crippling custodial culture that was present at the hospital when he arrived. Through this story, one can see how the medicine that Affeldt brought had the power to instill hope that patients who were previously relegated to convalescence could now live independently. And within just a few years, the contagious optimism that began with the rocking bed would motivate professionals to expand the system that they created to serve other chronic disease patients.

During the 1950s, John Affeldt and other local leaders established a central role for subspecialty rehabilitation in the county hospital system's organization of healthcare delivery. This chapter shows how this history was rooted in the stories of the previous chapters. In doing so, it tells us how the rehabilitation specialty was made and what rehabilitation was at Rancho Los Amigos.

It argues first and foremost that the National Foundation for Infantile Paralysis Respiratory Center Program provided the framework through which rehabilitation became enacted. Chapters 2 and 3 studied how the NFIP raised millions of dollars for polio research and patient care. The foundation's influence and connections to medical authorities enabled it to bring a scientific, yet holistic, clinical approach through its Respiratory Center Program to regions that experienced large polio outbreaks. This chapter begins by showing how John Affeldt

[695] Ibid.; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976); Affeldt, John, notes from interview. File Folder: BOX: 17 FILE: Individuals. Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.

used the NFIP to recruit and financially support the healthcare providers who changed Rancho Los Amigos' medical culture. Together, John Affeldt, Barbara Williams, and their professional team gave rise to the rehabilitation concept, which became applied first to polio then to other diseases.

This chapter additionally continues the stories that began in the previous three chapters. For example, it studies how Adventist professional networks contributed to Rancho Los Amigos' major scientific contributions during the polio era. It furthermore examines how John Affeldt's mentorship relationship with James Whittenberger continued to be an important influence on his career after he became chief physician- especially in addressing respiratory acidosis, a problem that he first encountered during his residency.

After discussing how Affeldt' connections within the Adventist community and relationship with Whittenberger contributed to his pulmonology research program, we focus on the development of Rancho Los Amigos' multidisciplinary team-based clinical approach. In describing the polio rehabilitation center's organization of care, Daniel Wilson noted that an individuals' rehabilitation was directed by an allied team of health professionals, including "a psychiatrist, a physician, social workers, occupational and physical therapists (and) vocation rehabilitation experts."[696] In studying how this approach began, we will focus specifically on two interrelated contributions: John Affeldt and Clarence Colliers' development of the infrared CO2 analyzer and Nickel and Perrys' application of the spinal fusion on iron lung patients. Both stories provide case studies of how the NFIP, the Adventist community, and the Harvard respiratory polio research program impacted rehabilitation's generation at Rancho Los Amigos. Through looking at how rehabilitation developed interpersonally as a product of relationships,

[696] Wilson, *Living with Polio*, 71.

we can see how individuals brought the macro "social worlds" that they lived within into the team-based clinical approach that they created at Rancho Los Amigos.

The infrared CO2 analyzer was a device that became part of iron lung patients' routine pulmonary assessment and enabled weaning from the respirator. Affeldt began working on the analyzer as Whittenberger's fellow at Harvard. Once at Rancho Los Amigos, he included Clarence Collier, a colleague from the Adventist community, in his continued collaborations with Whittenberger. This section studies the analyzer as a type of technology that sociologist Susan Leigh Star and philosopher of science James R. Griesemeyer have referred to as a "boundary object." In tracing its origins from within the 1930s German military-industrial complex through Whittenberger's Defense and polio research networks to Rancho Los Amigos, we see how the technology brought together the diverse "social worlds" that characterized rehabilitation medicine. Its history also reveals what subspecialty rehabilitation became at Rancho Los Amigos: a scientific, technological, team-based clinical approach involving collaborations between researchers, engineers, and industry on projects that served national interests.

The infrared CO2 analyzer also facilitated collaborations between Rancho Los Amigos' pulmonologists and orthopedic surgeons. Through the analyzer and other respiratory technologies, orthopedists assessed patients' operative respiratory status and performed reconstructive surgeries, such as the spinal fusion, on patients who were previously considered poor surgical candidates. The application of the spinal fusion not only signified the maturation of Rancho's team-based clinical approach but led to dramatic social changes. Scoliosis posed a serious health risk for the respiratory polio patient, as it not only impaired posture, but restricted the patient's ability to breathe. Prior to the fusion's successful application, surgeons were

reluctant to operate on respiratory polio patients and such patients became subjected to a crippling deformity that caused death. However, once the fusion was successfully applied, hope became possible for their rehabilitation.

This chapter concludes by following respiratory patient Miriam Rudulph as she experienced rehabilitation at Rancho Los Amigos. Through including excerpts from Rudulph's memoirs, the chapter demonstrates both the positive and negative aspects of subspecialty rehabilitation in the Respiratory Center. As we will see, rehabilitation involved a great effort by the patient and extensive cooperation with therapists. While subspecialists directed rehabilitation, Rudulph's memoirs reveal the patient's central role in the process by which the hospital became a national leader in rehabilitation. Through Rudulph's account we also learn about the traumatic aspects of living with polio and about negative aspects of the medical model that defined polio rehabilitation during the 1950s. Directed by a professional team rather than the person with a disability, rehabilitation was to a certain degree patronizing and, as Wilson has written, "directed toward diminishing what made (persons with disabilities) different from the rest of society."[697] However, as we will also see, Rudulph's engagement with rehabilitation on her own terms, rather than her orthopedic surgeon's terms, revealed how she asserted her autonomy within the rehabilitation process. It also anticipated how the disability rights movement appropriated the rehabilitation concept in the subsequent decades.

The Shift Towards Rehabilitation

After John Affeldt became Rancho Los Amigos' chief physician, he addressed many of the problems that he and Barbara Williams identified in their survey. And this was an effort that

[697] Wilson, 71.

depended upon help both inside and outside of Los Angeles. Between 1952 and 1960, the National Foundation for Infantile Paralysis gave Rancho Los Amigos $741,377. Using foundation grants, Affeldt acquired splinting and casting materials, as well as rocking beds, chest respirators, and other technologies. The NFIP's financial investment was especially valuable at first when Affeldt needed quick access to funding. Rancho Los Amigos' 1953 Annual Report noted that the NFIP invested more than $80,000 in 1952 and $100,000 the subsequent year, which contributed to a year of "expansion and development of improved facilities, professional staff, and treatment techniques."[698]

With time, the county "did rapidly take over the responsibility for purchase and maintenance of most of the equipment needed there for polio." According to the NFIP, this "free(d) up over $200,000 of National Foundation equipment for use elsewhere." Los Angeles County officials also removed restrictions on assistance, such as the lien against property, the "pauper's oath," and the pay-back requirements, which had until then governed residents' eligibility for its coverage of long-term care.[699]

The NFIP funding enabled Affeldt to recruit professionals trained in rehabilitation medicine who brought a different approach to Rancho Los Amigos than the nursing division's custodial model of caregiving. In their 1951 survey, John Affeldt and Barbara Williams had placed the blame for most of Rancho's problems on the nursing staff. Noting that their influence was the primary barrier to implementing rehabilitation, the survey stated:

> The chief source of resistance to increasing the social life of the patients, morale boosting activities and closer contact between the patients and their relatives centered in the nursing department. This fact coupled with the power of this service has produced an

[698] Annual Report Rancho Los Amigos Hospital Respiratory Center for Poliomyelitis. Fiscal Year July 1, 1952 to June 30, 1953. File Folder: Respiratory Care Services 1988. Box 22 File 22.53. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[699] Los Angeles Grant Request 1955. File Folder: Box 5 Folder: Respiratory Centers Agenda, March of Dimes Archives, White Plains, New York.

> effective block towards progressive care of the patients and accounts for much of the poor morale of both hospital personnel and the patients.[700]

When polio patient Justine Laird stayed at Rancho in 1948, he recalled that the nurses had "quite a bit of control." Describing the head nurse, he said, "She was a former army nurse and you could tell! Whatever she said was the final word."[701] A confidential document attached to Affeldt and Williams' 1951 survey (which does not include the author's name or date but could have very well been presented by Affeldt to the New York headquarters) sized up the head nurse's influence on the polio division. Yates was "an older nurse…with very set ideas," who had "considerable influence" over administrator William Harriman. The document continued:

> (Her) attitude is not ideal; she seems to feel that families and visiting hours interfere with nursing care, that equipment such as rocking beds add to the unpleasant work of the nurses…she has an immense job yet has assumed, in addition to it, duties such as running the public address system when it is needed to page someone.

The attached document then mentioned Clara Miller, who the writer appeared to have been courting to become the new nursing director. Enthusiastic about the prospect of instituting change, Miller believed that the chief problem at Rancho involved "teaching personnel and changing the general attitudes of the staff towards rehabilitation."[702] Following John Affeldt's appointment as chief physician, Clara Miller became the director of nursing at Rancho Los Amigos and supervised the nursing staff until 1958, when the hospital was transitioning from a polio Respiratory Center into a chronic disease rehabilitation center.[703]

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[700] Affeldt, John and Barbara Williams. Survey 1951. File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[701] Laird, Justin Patient notes from interview. File Folder: BOX:17 File:49 Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Fliedner, 215.
[702] Confidential. Attached to Survey of Rancho Los Amigos 1951. File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[703] Interview with Robert J. Thomas on 10 Dec 1985. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of

Miller's recruitment reveals a strategy of placing professionals who sympathized rehabilitation into leadership positions. Through bringing in new people, Affeldt and Williams created the new interpersonal culture that gave birth to rehabilitation.[704] Importantly, even before Los Angeles County entered into agreement with the National Foundation to make Rancho Los Amigos into an official Respiratory Center, its part of the agreement involved creating a number of hospital positions that were to be filled by the foundation, including the chief physician (who, as mentioned, was John Affeldt), an assistant medical director, a recreational director, a nursing instructor, and an assistant director of nurses.[705] After Rancho Los Amigos became a Respiratory Center, the county and the NFIP continued the process of restructuring the department. Affeldt reported that:

> They operationally separated the polio unit out from the rest of the hospital so that I did not report to anybody at the hospital, but reported to downtown. They then gave us a large increase in budget, which was unheard of at Rancho in those days, so that we could carry out the program. And with that, we established the treatment program, the research program, and the teaching program under the Polio Respiratory Center.[706]

Around this time, William Harriman retired from his position as hospital superintendent and then died from a heart attack. Harriman's retirement provided another opportunity to reshape the hospital culture as it led to Robert Thomas' appointment as his successor. Thomas, who had a

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Southern California, Los Angeles, California; Thomas, Robert. File Folder: BOX: 17 File:106, Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Colleen Adair Fliedner, *Centennial Rancho Los Amigos Medical Center 1888-1988.* (Downey: Rancho Los Amigos Medical Center, 1990); Centennial Department Head Questionnaire. Barbara Madden. August 5, 1987. File Folder: BOX: 17 FILE: 55 Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

[704] Affeldt, John and Barbara Williams. Survey 1951. File Folder: Box 25-54, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

[705] Kenneth Landauer to Arthur Will, 6 November 1951, File Folder: Box: HOBP 2, Folder: NFIP Re-Post-Acute Polio Patients- Rancho Los Amigos, Records of the Los Angeles County Board of Supervisors, Los Angeles, California.

[706] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

master's degree in hospital administration, had experience administering County Hospital's Contagious Disease unit; he explained, "My background was in hospital administration involving acutely ill patients."[707]

Barbara Williams remembered that during this time, "There was a great amount of fear by the staff and the patients that the NFIP would come with busloads of people and simply take over everything and the County employees would be out." Williams took this concern into consideration in her initial planning and created "a questionnaire that was coded so that she would know the category to place a person and what shift they would work on." Through the questionnaire, Williams learned that many of the problems in patient care reflected inadequate nursing education. The nursing staff indeed desired to learn more about how to properly care for iron lung patients but had not been instructed. For example, Williams discovered that "Feeding patients who were flat on their backs in tank respirators posed a big problem." This prompted Williams to organize an "in-service program," which she offered during every nursing shift "so that each person could be free to attend."[708] As a 1955 NFIP grant request noted, the "essential work of the first year" included the initiation of the in-service teaching program "to improve the quality of care."[709]

John Affeldt and Barbara Williams also began incorporating the team approach into staff instruction at Rancho Los Amigos. Affeldt arranged weekly team conferences in which physicians learned to delegate authority for appropriate care to physical therapists, occupational

[707] Fliedner, 248; Interview with Robert J. Thomas on 10 Dec 1985. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[708] Madden, Barbara notes from interview. File Folder: BOX: 17 FILE: 55 Individuals. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[709] Los Angeles Grant Request 1955. File Folder: Box 5 Folder: Respiratory Centers Agenda, March of Dimes Archives, White Plains, New York.

therapists, nurses, social workers, and other professionals. The professional team worked together to determine proper therapy, sequence of timing of different procedures, surgery, post-operative procedures, application of assistive devices, and to show the patients' family members how to provide nursing care.[710] The team conferences were also educational tools for the nurses. In a later interview, Williams distinctly recalled that one of their first team conferences was about "the autopsy of a patient whose ureter had been completely blocked by having been in one position for months." She used this story to give "great impetus to teaching positioning and helping change patients' positions in the tank respirators."[711]

Bringing in new staff members also enabled Barbara Williams and John Affeldt to have more time to focus on program development. It was challenging for Williams to organize nursing services, while actively teaching the staff. She and Affeldt recruited Murial Jennings, a National League of Nursing consultant from New York, to become an in-service director. Williams was then free to devote time towards developing "the plan of patient units."[712]

In filling hospital positions, Barbara Williams and John Affeldt appointed people they had known personally. For example, Williams brought in Evelyn Hamil, an "outstanding nurse" that she met while visiting Oklahoma during an epidemic. A Yale University School of Nursing graduate who had previously been an assistant director of nursing at the University Hospitals in Oklahoma City, Hamil "wanted to make a change" and was appointed a nursing supervisor.[713] As we will now examine in greater detail, Affeldt also made use of his professional connections

[710] Fliedner, 215.
[711] Madden, Barbara notes from interview. File Folder: BOX: 17 FILE: 55 Individuals. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[712] Ibid.
[713] Madden, Barbara notes from interview. File Folder: BOX: 17 FILE: 55 Individuals. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Los Angeles Grant Request 1955. File Folder: Box 5 Folder: Respiratory Centers Agenda, March of Dimes Archives, White Plains, New York.

within the Seventh-Day Adventist Community to recruit his medical school classmates Clarence Collier and Vernon Nickel.

Seventh Day Adventism and the Cultural Shift

Some of the individuals who played a significant role in Rancho's history, including John Affeldt, Clarence Dail, Clarence Collier, and Vernon Nickel, were Seventh-Day Adventists. Before we discuss their contribution, it must be asked, how did their religious background influence the making of rehabilitation at Rancho Los Amigos? As noted previously, many Adventist religious beliefs regarding patient care lined up so exactly with rehabilitation medicine that their influence cannot be overlooked.

For example, Prophetess Ellen White's insights into psychology's central role in the healing process surfaced in the Respiratory Centers, where research showed that treating patients in groups encouraged patients and facilitated healing. In the 1951 survey that Affeldt conducted for the NFIP, he displayed a sensitivity to aspects of the hospital that conveyed a sense of hopelessness, such as the "drab dormitory atmosphere" and the grouping of the "troublemakers." In the survey, Affeldt was also attentive to convalescence's detrimental effect on psychology, which was similar to Ellen White's critique of inactivity.

Clarence Dail's advocacy on behalf of popular rehabilitation leader Sister Kenny's techniques, which was touched upon in Chapter 2, is also not surprising given Ellen White's emphasis on activity and the use of natural agents in Adventist sanitariums. It makes sense that an Adventist physician like Dail could become an advocate on behalf of Sister Kenny's popular treatment regimen within organized medicine, given that similar work was undertaken by the

College of Medical Evangelists' founders in securing the American Medical Association's recognition of their educational institution.

Adventist physicians also viewed their calling in similar ways to how rehabilitation professionals viewed their roles in the healing process. As a "co-worker with Christ," the Adventist physician was responsible for encouraging patients to conform to God's will and to cooperate with him in their restoration to health. Rehabilitation was a process that occurred over time and required the patient's active participation. An Adventist rehabilitation professional's practice thus could become a form of ministry, as through offering guidance through the rehabilitation process, the physician could help the patient carry out God's divine plan.

The NFIP Respiratory Center provided a place where Seventh-Day Adventist ideals could be actualized in patient care. It also strengthened the College of Medical Evangelists' medical ministry program. In 1956, John Affeldt became President of the College of Medical Evangelist's Alumni Association. In commenting on Affeldt's inauguration, an April 1, 1956 Alumni Journal article noted that:

> CME can and should have good recognition and acceptance wherever its graduates go. This encompasses more than vigorous medical evangelism. It requires evidence of medical skill and integrity, community responsibility both medical and non-medical, and Christian living on the part of each alumnus.[714]

John Affeldt's letters show that he sought to give the College of Medical Evangelists "recognition" in academic medicine through his leadership position at Rancho Los Amigos. This is best seen through his correspondence with James Whittenberger, who appeared to be assisting him in this endeavor. For example, as Whittenberger explained in recommending Clarence Collier for advanced training in respiratory physiology in 1954:

[714] Letter to alumni. April 1, 1956. *CME Alumni Journal.* April, 1956. 27 No. 4. Personal files of the Affeldt family.

> In addition to Dr. Collier's scientific promise there are other reasons for endorsing his attempt to obtain further education and training. The medical school from which he comes has not previously realized the importance of research in the life of a good medical school. Dr. Collier represents for this school, a pioneer and one who can have a great influence on the future development of the medical school.[715]

Whittenberger also helped Affeldt to use his professional advancement to improve the College of Medical Evangelists' standing in academia. Affeldt wrote to Whittenberger on July 21, 1953 "seeking… advice concerning the possibility of membership in the American Physiological Society." Affeldt explained that his request served to benefit his educational institution:

> The College of Medical Evangelists unfortunately does not have a member of its faculty in the American Physiological Society. This is unfortunate and should be corrected. Therefore, from the standpoint of the school I would like to seek admission to the Society, and the school encourages me to do this.[716]

Affeldt additionally arranged for esteemed physiologist Julius Comroe, who was a part of Whittenberger's professional research network, to give guest lectures at the College of Medical Evangelists. For example, while visiting Rancho Los Amigos in 1957, Comroe spent several days lecturing students at both the Loma Linda and Los Angeles campuses.[717]

Affeldt's alma mater furthermore assisted him in furthering Rancho Los Amigos' standing in academic medicine. Hospital records show that before Rancho Los Amigos became formally affiliated with USC in 1968, it had a relationship with Loma Linda University. For

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[715] Whittenberger letter, 4 October 1954, File Folder: Series 1: Box 1: Folder 17. Collier, Clarence R., 15 September 1952-15 October 1959, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

[716] Letter to Whittenberger, 29 November 1957: "I am seeking your advice on the American College of Chest Physicians… they invited him to apply for an associate fellowship so he can be appointed to their committee on Pulmonary diseases in children… I am interested in this type of committee work because I believe that it gives me wider knowledge and acquaintances in the field of pulmonary work, which in turn is helpful to our program at Rancho and the medical schools in the area. Whittenberger's replied on 6 December 1957 and said "Glad to give any advice" Whittenberger did not think it "an organization of very high caliber" so he instead suggested: "I would advise you not to join unless the reputation is very much better on the west coast than it is in the East." In File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

[717] John Affeldt to Dr. Whittenberger, 29 November 1957, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

example, by 1965, Rancho Los Amigos and Loma Linda formed an agreement whereby third- and fourth-year medical students rotated through Rancho Los Amigos.[718] According to the biennial reports, Rancho's outpatient clinics were by 1967 "function(ing) as a vital part in the postgraduate residency training in conjunction with Loma Linda University and the University of California School of Medicine."[719]

The Mentorship Continues

John Affeldt's continued relationship with James Whittenberger was instrumental to his creation of a culture at Rancho Los Amigos that was an extension of the multidisciplinary environment that he worked within at Harvard. Through an analysis of Affeldt and Whittenbergers' correspondences, we see that Whittenberger remained a friend and guide as Affeldt brought Harvard's highly technical clinical approach to Rancho Los Amigos. We also see that Affeldt used his relationships within the Seventh-Day Adventist community to provide the necessary manpower for this endeavor.

John Affeldt's early letters to James Whittenberger provide insight into the overwhelming situation that he faced at Rancho Los Amigos as the polio incidence continued to rise in 1952. Between late-May and mid-October, the United States faced its most severe epidemic in its history, with fifty-eight thousand cases reported nationwide.[720] Affeldt wrote a month after the epidemic subsided:

> They are certainly keeping us busy at the present time out here. The incidence of respirator cases seems to be higher than usual. The total number of poliomyelitis cases in Los Angeles is normal, but with the higher incidence we are having a large number of

[718] Biennial Report 1963-64 & 1964-65. File Folder: Biennial Reports 1959-1976, Box 22-16, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[719] Biennial Report 1965-66 & 1966-67. File Folder: Biennial Reports 1959-1976, Box 22-16, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[720] Heather G. Wooten, "The Polio Years in Harris and Galveston Counties," 105.

> respirator cases. At the present time, I have 115 patients in the hospital, of which 90 are using respiratory equipment. In addition to this load, there are 63 acute respirator patients up at the General Hospital who are waiting to come here. They put 10 patients into respirators just over this past weekend. Every day we go through the wards again to the general hospital for new cases coming in. It's a squeeze from day to day to have respirators available for the new cases. I'm afraid we are going to be working with this load into January and possibly later than that.[721]

Through Affeldt's letters to Whittenberger, one gleans insight into what it was like for him to organize his program from day to day. Affeldt complained shortly after arriving that his administrative duties took him away from caring for patients, which was something that he regretted. He explained:

> The prediction that you made is certainly true, that it is very heavy on the administrative side; in fact I have hardly gotten in to meet the patients thus far. I do believe, however, that when things get rolling and I get a good secretary working for me that the administrative aspect will be cut down somewhat. I believe that I can see on the horizon a chance to get out and work with the patients.[722]

Unfortunately, Affeldt's disconnection from patient care would continue as he ascended into higher administrative positions, including becoming Rancho's medical director and then directing the county hospital system.

Writing letters also provided Affeldt and Whittenberger with an opportunity to socialize. In their correspondence, they let each other know about their plans to attend conferences and expressed their desire to see each other.[723] Through Affeldt's writing, one additionally observes the diplomatic abilities that were key to his success in administration. Even in 1952, the Harvard

[721] Letter to James Whittenberger, 5 November 1952. File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[722] Letter to James Whittenberger, 4 February 1952, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[723] Letter to James Whittenberger, 4 February 1952; Letter to James Whittenberger, 7 April 1952; Letter to James Whittenberger, 8 May 1952, Letter to John and Ben, 23 April 1953, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

and County Hospital researchers were still in conflict over positive and negative pressure. At a meeting, Affeldt suspected that people might have been forcing him to take a side between supporting Bower and Bennetts' work on positive pressure and the Harvard group's research on alternatives. In a typed letter updating Whittenberger on his progress, Affeldt added in handwriting at the end:

> P.S. Whose idea was it for me to discuss positive pressure attachments at the meeting- what was is the purpose of it
>
> a. Honest consideration of it as a respirator appliance
> b. Reopening of the controversy c̄ the intent of putting me on the record regarding my stand?
>
> You know my views on the device, they are as when I was in your department. If (a) above is the purpose I believe I can briefly present its usefulness without touching the controversy + will be happy to do so. If (b) is the purpose I believe I can handle that as well, however I will phrase and arrange a bit differently + will not be quite so anxious or happy to do so.[724]

Some of John Affeldt and James Whittenbergers' early correspondences show that Whittenberger was guiding him in acquiring a Pneumotachograph and a Chavitz transducer, as well as in working with companies. [725] Whittenberger also transferred personnel from Boston to Los Angeles to help Affeldt establish his program. He sent Benjamin Ferris (a member of his research team who collaborated with Affeldt at Harvard) to assist him during the early stages of building his research program.[726]

[724] Ibid.
[725] Letter to Whittenberger. April 7, 1952. File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[726] James Whittenberger to John and Ben, 23 April 1953; Robert Thomas to James Whittenberger, 7 May 1953, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

The Beginnings of Rancho's Pulmonology Research Program

John Affeldt's early letters with James Whittenberger indicate that they worked with Clarence Dail, a College of Medical Evangelists alumnus and professor of Physical Medicine. As previously mentioned, Dail was affiliated with County Hospital and Rancho Los Amigos, where he supervised the respiratory unit before Affeldt arrived. In describing the work environment at Rancho before it became a Respiratory Center, a 1949 NFIP Field Report to Los Angeles noted "Dr. Dail has been alone here with many serious problems, and trying, despite these, to carry on research."[727]

After Affeldt arrived, he and Dail used the resources that were available to them through the NFIP and the College of Medical Evangelists to advance the glossopharyngeal breathing technique, which would become Dail's major contribution to rehabilitation. According to an instruction manual written by Dail, glossopharyngeal breathing, or "frog breathing," was a method of breathing that ensured adequate respiration when the respiratory muscles were paralyzed. Using the mouth and throat to act as a pump, a patient using this technique appeared to be "gulping" down air.[728]

Like Rancho Los Amigos' attendant care program (which will be the topic of the next chapter), glossopharyngeal breathing was initiated by patients rather than by professionals. After observing a patient using his tongue and throat muscles to push air into his lungs, Dail and a few physical therapists imitated the technique and found it to be an effective means of temporary

[727] Affeldt, John notes from interview. Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Dail, Clarence notes from interview. Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Clarence W. Dail, Evelyn Britt, and Isobel Hansen, "Heavy Resistance Exercises." *Medical Arts and Sciences: A Scientific Journal of the College of Medical Evangelists* 2, no. 3 (1948): 112-114; Fliedner, 230; Letter to James Whittenberger, 4 February 1952; Letter to James Whittenberger, 7 April 1952, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts; Dr. Hart E. Van Riper. Los Angeles Field Report. June 16, 1949. File Folder: California Los Angeles Chapter.
[728] Ibid.

oxygenating the body without using the diaphragm. Dail taught the technique to iron lung patients and found that it enabled them to spend increasing amounts of times outside of the respirator. Affeldt and Dail worked with the College of Medical Evangelists to produce a video teaching glossopharyngeal breathing and the National Foundation published Dail's instruction manual for distribution nationwide.[729] In 1953, Dail appeared in a *Time* Magazine article, in which he described the glossopharyngeal breathing technique.[730] Knowledge of "frog breathing" spread internationally during the 1950s and records show that professionals had knowledge of the technique in British respiratory units.[731] Following polio's demise in the United States, the glossopharyngeal breathing technique that began with one iron lung patient became incorporated into spinal cord injury rehabilitation.[732]

Bringing in Medical Personnel

After months of unsuccessfully searching for a fellow that he could train in pulmonology, John Affeldt recruited Clarence Collier.[733] Affeldt met Collier when they were undergraduate students at Emanuel Missionary College, an Adventist institution in Michigan. They kept in touch while Affeldt was a resident and Collier interned at White Memorial Hospital. When Affeldt became chief resident in the County Hospital's Communicable Disease Unit, Collier

[729] Clarence Dail, Miriam Zumwait, and Hazel Adkins, "A Manual of Instruction for Glossopharyngeal Breathing. The National Foundation for Infantile Paralysis. 1955. Box 17 File 11 Individuals, PRLA; Fliedner Centennial Rancho Los Amigos Medical Center 1888-1988. pp. 215-216, 230
[730] "Medicine: Frog Breathing." 17 Aug. 1953. *Time Magazine*.
[731] W. H. Kelleher and R. K. Parida, "Glossopharyngeal breathing; its value in respiratory muscle paralysis of poliomyelitis," *Br Med J* 2, no. 5047 (Sep 28 1957).
[732] J. R. Bach, "Noninvasive respiratory management of high level spinal cord injury," *J Spinal Cord Med* 35, no. 2 (Mar 2012).
[733] John Affeldt to James Whittenberger 9 January 1952; John Affeldt to James Whittenberger, 4 February 1952; John Affeldt to James Whittenberger, 8 May 1952. File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

started residency at Los Angeles County Hospital. Three years later, Collier accepted Affeldt's invitation to become a pulmonology researcher at Rancho Los Amigos.[734]

After Collier agreed to come to Rancho Los Amigos, Affeldt initiated correspondence with Whittenberger regarding coordinating his training in Boston. One of Affeldt's early letters to Whittenberger indicated why he believed that training at Harvard was important:

> 1st. – it might help (our trainee) make a decision to enter research and thus be available in our unit and -2nd- if he did decide to join us it would allow him to learn some of the techniques while were are in the throes of organization and thus by the time our equipment arrives and we begin to straighten ourselves out a bit he could be returning and be more valuable.[735]

Clarence Collier spent his first two months training with James Whittenberger's group and assisted Jere Mead in developing a method of measuring lung compliance. Returning to Los Angeles, he conducted physiological research on chest respirators with Affeldt that resembled the research Whittenberger had performed with Affeldt at Harvard. For example, Collier and Affeldts' first paper, "Ventilatory Efficiency of the Curass Respirator in Totally Paralyzed Chronic Poliomyelitis Patients" compared the Huxley-Curass Respirator (which encased the chest and abdomen) with the shorter Mohahan-Curass (which surrounded only the chest) and found that the Huxley-Curass Respirator was more effective at ventilating patients.[736]

Clarence Collier also began working with John Affeldt on calibrating the infrared CO2 analyzer. As Collier mentioned, when he came to Rancho Los Amigos, the Infrared CO2 Analyzer "had been on the market for several years… but everybody seemed to have trouble

[734] Collier, Clarence notes from interview. File Folder: BOX:17 File:7. Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[735] Letter to James Whittenberger, 9 January 1952, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[736] Collier, Clarence notes from interview. File Folder: BOX:17 File:7. Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

with it."[737] Initially developed in Germany for industrial purposes, it became introduced into clinical medicine through James Whittenberger and other physiologists' collaborations with engineer Max Liston. However, the analyzer's measurements of carbon dioxide in patients' exhaled breaths often did not correlate with the measurements taken using arterial blood gas analysis, which was the gold standard for assessing acid-base status.[738] As Clarence Collier mentioned in an interview, "(the Becker infrared CO2 analyzer) did not stay in calibration but wandered all around." Affeldt and Colliers' experiments to calibrate the analyzer ultimately resulted in their publication of the article "Continuous Rapid Infrared CO2 Analysis; Fractional Sampling and Accuracy in Determining Alveolar CO2," which as Collier mentioned, was "probably the most important paper that they published."[739]

Both John Affeldt and Clarence Collier were indebted to James Whittenberger for helping them to make their distinctive contribution; Whittenberger not only advised Affeldt and Collier as they conducted their study but introduced Affeldt to the technology during his Harvard fellowship.[740] Indeed, the story of the analyzer's origins in Nazi Germany and it translocation to Boston, where Affeldt began working on it and then brought it to Los Angeles, is a case illustration of how Whittenberger's continued mentoring, combined with Affeldt's connections within the Adventist community, shaped polio rehabilitation at Rancho Los Amigos. It also reveals the significance of the postwar economy and Department of Defense research networks in shaping the making of rehabilitation medicine at Rancho Los Amigos.

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[737] Ibid.
[738] Clarence R. Collier, John E. Affeldt, and Andrew F. Farr, "Determination of Alveolar CO2 with a Portable Rapid Infra-red Analyser." *The American Journal of Medicine* 17, no. 1 (1954): 109-110.
[739] Collier, Clarence notes from interview. File Folder: BOX:17 File:7. Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[740] James Whittenberger to Max D. Liston, 14 December 1950, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950; John Affeldt to James Whittenberger, 8 July 1953, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

From the German Military Industrial Complex to the U.S. Healthcare Industry

Friedrich Luft invented the infrared CO2 analyzer in the late 1930s, a time during which the mass-production of fuel and synthetic rubber contributed to Nazi Germany's mobilization for war. Luft, an assistant at the Physics Institute of the University of Frankfurt, withdrew from academia to accept a position in operations at Badische Anilin-und Soda-Fabrik (Baden Aniline and Sofa Factory), one of the chemical manufacturing firms that belonged to the German corporation IG Farben. IG Farben was one of the Nazi government's main partners in Hitler's Four-Year plan to prepare for war; it provided materials such as oil and rubber to the military. Many of its factories utilized not only scientists, but slave labor that the government provided from its concentration camps.[741]

When Luft began working at IG Farben's Buna (synthetic rubber) plant in Oppau, he sought to prevent violent explosions at factories through inventing a means of measuring butane during synthetic plastic production.[742] As biomedical engineer Michael B. Jaffe has written in his account of gas analysis, "it was observed that butane has strong absorption in the IR band, but that known photometric methods of the time failed since they were too strongly affected by interfering gases in the mixture such as CO2 and water vapor." Luft worked to develop a CO2 analyzer using gas filled detectors, which "would have the necessary selectivity required to differentiate the gases in the mixture." While several hundred of Luft's analyzers were used in

[741] International Military Tribunal. Trials of War Criminals Before the Nuremberg Military Tribunals Under Control Council Law No. 10, Nuernberg, October 1946-April 1949. Case 6: U.S. v. Krauch (IG Farben case). Vol. 7. US Government Printing Office, 1953 <https://play.google.com/store/books/details?id=rkMnjGQn-BcC&rdid=book-rkMnjGQn-BcC&rdot=1> Accessed March 26, 2020; Peter Hayes, *Industry and Ideology: IG Farben in the Nazi Era*. (Cambridge: Cambridge University Press, 1987). For discussion of IG Farben's use of slave labor, see especially 346-347; Michael B. Jaffe, "Infrared Measurement of Carbon Dioxide in the Human Breath: 'Breathe-Through' Devices from Tyndall to the Present Day." *Anesthesia & Analgesia,* 107, no. 3 (2008): 892; K. F. Luft., W. Schaefer, and G. Wiegleb, "50 Jahre NDIR-Gasanalyse/50 Years NDIR Gas Analysis." *Tm-Technisches Messen* 60, no. 10 (1993): 363-371.
[742] Jaffe, 892.

IG Farben's manufacturing plants, a wartime shortage of parts ultimately limited their production.[743]

The Allied bombing of Germany further reduced the supply of Luft's devices. The Royal Air Force and the United States Air Force targeted oil and synthetic rubber factories as part of their strategic bombing campaign.[744] In the process, many of Luft's analyzers were destroyed. Despite their limited supply, the Allies seized several of his devices as spoils of war and they became available to American scientists following Germany's defeat.[745]

After the war ended, many of IG Farben's directors were tried and convicted at Nuremberg for committing atrocities, such as "slavery and mass murder." The Allies also interrogated German scientists who worked in IG Farben's factories to investigate the extent of their participation in war crimes and to learn about German scientific advancements. Luft himself would be called to Wimbledon, England for questioning about his technology.[746]

While initially designed to serve the German military-industrial complex, the CO2 analyzer became the United States Defense Department's property after the war. Engineer Max Liston, who had worked with August Herman Pfund at John Hopkins to develop a thermal method of measuring CO2, came across Luft's analyzer when working on a project for the army. Liston described his first encounter with the analyzer:

> I was at the army chemical research center in Bethesda- we were working on some IR applications for target detection- they took me around and showed me- these instruments-

[743] Jaffe, 892- 893.
[744] Alan J. Levine, *The Strategic Bombing of Germany, 1940-1945*. (Westport: Praeger, 1992). See Chapters 1, 5-9, 11; especially pages 143-146, 193-195.
[745] Jaffe, 893.
[746] Luft, K. F., W. Schaefer, and G. Wiegleb, "50 Jahre NDIR-Gasanalyse/50 years NDIR gas analysis," 363-371; "The Manufacture of Synthetic Crystals in the Plant of IG Farbenindustrie Oppau- Ludwigshafen. B.I.O.S." British Intelligence Objectives Sub-Committee Final Report No 468, undated. Foundation for German Communication and Related Technologies (History of Technology) < https://www.cdvandt.org/BIOS-468.pdf> accessed March 26, 2020;
Paul Weindling, *Nazi Medicine and the Nuremberg Trials: from Medical Warcrimes to Informed Consent*. (Basingstoke and New York: Palgrave Macmillian, 2004), 46-47.

> they did not know what they were- I immediately recognized them as positive type infrared analyzers- that is how I became aware of Luft devices.[747]

James Whittenberger and several other physicians subsequently provided Max Liston with the incentive to modify the infrared CO2 analyzer so that it could be used for medical purposes. After having a heated discussion at a convention in Atlantic City, Whittenberger and his colleagues approached Liston at his home. Liston explained:

> All of them had experienced (shock and) some cardiac arrests on the operating table… They thought it was due to CO2 (carbon dioxide) accumulation. So they (drove up to Connecticut to my home) and got me out of bed at two o'clock in the morning and in my weakened condition at that time, talked me into building a CO2 analyzer for them so they could resolve this concern… The first CO2 analyzer was sent to Dr. Drinker's lab under Dr. Whittenberger at Harvard University.[748]

After the infrared CO2 analyzer arrived at Harvard, it became part of Whittenberger's research program at the Mary MacArthur Respiratory Center. As Whittenberger's fellow in 1951, Affeldt assisted his mentor in determining the appropriate sensitivity of the device. In his correspondence with Max Liston, James Whittenberger provided insight into the highly technical nature of John Affeldt's research (which would characterize the approach that Affeldt brought to Rancho Los Amigos.) As Whittenberger wrote:

> I believe that we perhaps misled you in the previous letter because the .08 was not mm. but millimeters per cent CO2 and this was at the level from 5 to 8 per cent CO2. This was with a certain fast gain and it was possible of course to increase this sensitivity by increasing the gain. The difficulty with doing so was that this produced a marked base line wobble at high gain. John Affeldt has been doing this phase of the work and he has been able to reproduce any one of different curves; that is, by changing the sensitivity he could exactly reproduce any one of a number of different curves.[749]

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[747] Cited in Jaffe, 893.
[748] Ibid., 894.
[749] Letter to Max D. Liston, 14 December 1950, File Folder: Series III A: Box 2: Folder 47. NFIP Correspondence, 27 April 1945- 27 November 1950, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts; Research Program in Respiratory Physiology at the Respiratory Unit, Wellesley. November 29, 1950. Folder: Mary MacArthur Respiratory Unit Research. 1950. L. Snedeker Papers 1869-1979. Boston Children's Hospital Archives, Boston, Massachusetts.

After becoming chief physician, Affeldt continued to work with Whittenberger and Liston in calibrating their product and included Clarence Collier in their collaborations.[750] In 1955, Collier, Affeldt, and their colleague Andrew Farr (who was a chemist at Rancho Los Amigos), published their definitive paper, "Continuous Rapid Infrared CO2 Analysis," which markedly improved rehabilitation for iron lung patients in the NFIP Respiratory Centers.[751] The paper evaluated a method of "fractional sampling" which Liston had developed for them, in which they placed a catheter into a patient's nose or mouth and collected a sample of expired breath for analysis by a detector. Collier and his colleagues explained what happened once the air entered the detectors' chambers:

> The CO2 in each chamber of the detector absorbs specific portions of the infrared spectrum, heating each chamber equally if no CO2 is present in the sample. When CO2 is present in the sample, the chambers are heated unequally, causing displacement of the diaphragm. The degree of displacement is detected electrically and recorded.[752]

Based on their comparison of forty-one PCO2 readings derived from arterial blood gas analysis and the infrared analyzer, Collier, Affeldt, and Farr concluded that "both the catheter technic and other sampling methods show good correlation."[753]

Their conclusion that the IR CO2 analyzer's measurements of carbon dioxide correlated with readings derived from arterial blood was significant because it demonstrated that the CO2

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[750] An article published in the *British Journal of Anesthesiology* noted some of problems that Affeldt, Collier, and other physiologists of the time were encountering in their research on the infrared CO2 analyzer:
"It is generally known that nitrous oxide and other gases possessing absorption bands adjacent or overlapping those of carbon dioxide, may cause false high readings… A second error (is) caused by the addition of water vapour to the expired air by the lungs… A third error not widely known is that due to the broadening of the absorption bands of carbon dioxide by the diluent gas…" P. W. Ramwell, "The Infrared Analysis of Carbon Dioxide During Anaesthesia." *British Journal of Anaesthesia* 29, no. 4 (1957): 156-159.
[751] Clarence R. Collier, John E. Affeldt, and Andrew F. Farr, "Continuous Rapid Infrared CO2 Analysis: Fractional Sampling and Accuracy in Determining Alveolar CO2." *The Journal of Laboratory and Clinical Medicine* 45, no. 4 (1955): 526-539; Los Angeles Grant Request 1955. File Folder: Box 5 Folder: Respiratory Centers Agenda, March of Dimes Archives, White Plains, New York.
[752] Quoted in Jaffe, 895.
[753] Clarence R. Collier, John E. Affeldt, and Andrew F. Farr, "Determination of Alveolar CO2 with a Portable Rapid Infra-Red Analyser." *The American Journal of Medicine* 17, no. 1 (1954): 110.

analyzer effectively alleviated problems that pulmonologists had previously experienced using arterial blood gas analysis. As Collier and his colleagues stated in an article, “Measurement of arterial PCO2… is both difficult and time-consuming;”[754] in contrast, the infrared CO2 analyzer allowed for “continuous direct analysis sufficiently rapid to follow each breath accurately.”[755] The CO2 analyzer could thus become “extensively used clinically as a guide to ideal respirator settings… (and) can readily detect even slight hypo- or hyperventilation.”[756] Collier and his colleagues’ study showed that their use of the CO2 analyzer also improved clinical outcomes, as it reduced patients’ time on iron lungs by 50% and the mortality rate by 30%.[757]

John Affeldt not only used his connections within Harvard and the Adventist communities to advance the CO2 analyzer; his relationship with his former residency mentor Albert Bower also became an important resource for his research on the analyzer. This additionally testified to his diplomatic abilities in being able to work with conflicting scientific communities. Affeldt and Bower published an article in 1955 testing the CO2 analyzer on patients at County Hospital, in which they evaluated “the ventilatory control of paralyzed patients, the ventilatory efficiency of respiratory equipment and its effect on the ventilatory demands of the patient.”[758]

Clarence Collier, John Affeldt, and Andrew Farrs’ article brought Max Liston’s product commercial success. While Liston’s company, the Liston-Becker company, initially sold his prototype device to universities for research purposes, the CO2 analyzer’s use in polio

[754] Ibid., 110.
[755] John E. Affeldt, "Recent Advances in the Treatment of Poliomyelitis." *Journal of the American Medical Association* 156, no. 1 (1954): 12-15.
[756] Clarence R. Collier, John E. Affeldt, and Andrew F. Farr, "Determination of Alveolar CO2 with a Portable Rapid Infra-Red Analyser," 110.
[757] Jaffe, 895.
[758] Luft, K. F., W. Schaefer, and G. Wiegleb, "50 Jahre NDIR-Gasanalyse/50 years NDIR gas analysis," 363-371.

management created a market for Liston's product in the healthcare industry. As Liston explained:

> The next big break we got was that the polio foundation decided to equip all their polio centers with our analyzer, and that was quite successful. In fact, their cure rate doubled after they started. What they had been doing with these Drinker-type, what the press called, "Iron Lungs" is adjusting them for normal tidal volumes for their weight. When they're paralyzed, their metabolism is way down, so they were blowing all of these patients into alkalosis. When they got the analyzer, they could control the carbon dioxide and keep it to normal levels. Their success rate with patients and time in the Iron Lungs dropped in half and the death rate dropped in half. So that was a very successful program.[759]

The Liston-Becker company additionally sold models of Liston's infrared CO2 analyzer to the United States Navy for detecting internal atmospheric conditions in submarines.[760]

Aside from advancing pulmonology and naval warfare, the CO2 analyzer contributed to the generation of physical medicine and rehabilitation's scientific, interdisciplinary, team-based approach. During his speech at the 1957 International Polio Conference, Affeldt touched on the significance that improved respiratory management had on orthopedic surgery. He stated:

> The value of combined action by the various professional services has demonstrated itself dramatically. The joint action of the medical, respiratory and orthopedic staff, along with the anesthesiologists, has made it possible to do extensive cervical and thoracic spinal fusions in completely dependent respirator patients, as well as other extensive corrective and functional surgical procedures.[761]

Significantly, respiratory technologies like the infrared CO2 analyzer enabled iron lung patients to undergo surgeries to correct scoliosis and other debilitating conditions. John Affeldt, Clarence Dail, Vernon Nickel, and Jacquelin Perry together noted in a paper that the infrared

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[759] Ibid., 895.
[760] Ibid., 895-896; "Liston Scientific Corp." Company Profile. *Bioprocess Online*, 2000. <https://www.bioprocessonline.com/doc/liston-scientific-corp-0001> Accessed March 13, 2020.
[761] John E. Affeldt, "Concept of Patient Care in a Respiratory and Rehabilitation Center," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 638.

CO2 analyzer allowed for a "prompt adjustment" of positive pressure flow rates to correct hypoventilation and hyperventilation, which both "may cause serious sequalae." Thus, the CO2 analyzer was "used without incident on numerous patients undergoing major surgery."[762]

We now focus on orthopedic surgeons Jacquelin Perry and Vernon Nickels' application of the spinal fusion on iron lung patients. While John Affeldt laid the foundations for the genesis of scientific rehabilitation, the PM&R specialty's multidisciplinary approach ultimately came to fruition through many individuals, each with their own unique backgrounds and personal interests, who worked collectively as a team.

The Partnerships that Led to the Fusion

When John Affeldt decided that he wanted Vernon Nickel to come to Rancho, he nearly offered him a bribe. As discussed in Chapter four, Affeldt knew Nickel from medical school, having both been in the same class at the College of Medical Evangelists. Nickel initially considered refusing Affeldt's offer because Rancho Los Amigos had "not the very best status as far as professional activity is concerned." Nickel also hesitated to associate himself with rehabilitation medicine because "Rehab did not have the real high respect of the better professionals."[763] Affeldt created an arrangement that enabled Nickel to perform orthopedic research at Rancho Los Amigos while maintaining a private practice. According to Nickel,

[762] Vernon Nickel et al., "Elective Surgery on Patients with Respiratory Paralysis." *Journal of Bone and Joint Surgery* Volume 39-A (5): 995.
[763] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

Affeldt's flexibility in accommodating "a combination of private practice and service at Rancho" would attract not only himself, but many "quality" physicians.[764]

Like other physicians who came to Rancho, Vernon Nickel had a strong interest in innovation. Reflecting on his early career in an interview, he attached a personal significance to moments in which he was exposed to novel orthopedic techniques. As an army surgeon during World War II, Nickel witnessed the beginnings of the hand surgery specialty through working with Raymond Curtis, a ward officer, who became a pioneer in the field.[765] Stationed in Heidelberg, Germany, Nickel also saw German surgeons use intramedullary nails to fix fractured femurs. German orthopedic surgeon Gerhard Küntscher developed this groundbreaking procedure to stabilize the femur during healing. Nickel was fortunate to be abroad when the technique was first developed, as surgeons who lived in the United States did not became aware of it until American servicemen treated by German orthopedists returned home.[766]

After his wartime service ended, Nickel completed his orthopedic surgery residency at the Campbell Clinic in Memphis, Tennessee. He then agreed to join a prominent orthopedic group in Los Angeles. Nickel was interested in developing orthopedic devices but was uncertain whether he could pursue his engineering interests while maintaining a busy private practice.[767]

Nickel recalled that Affeldt first urged him "to start casting his lot" at Rancho in 1952 or 1953. Affeldt conveyed to Nickel an "implied promise" that if he agreed to work at Rancho Los

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[764] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[765] Fred Rasmussen, "Dr. Raymond Curtis, 80, Hand Surgery Pioneer," 13 Oct 1994, *The Baltimore Sun.* < https://www.baltimoresun.com/news/bs-xpm-1994-10-13-1994286049-story.html> Accessed March 29, 2020.
[766] Matthew R. Bong, Kenneth J. Koval, and Kenneth A. Egol, "The History of Intramedullary Nailing." *Bulletin of the NYU Hospital for Joint Diseases* 64, no. 3 & 4 (2006): 95-96.
[767] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

Amigos, he could pursue research related to his interest in hand and spine surgery. [768] Affeldt then fulfilled his promise by arranging for him to receive thousands of dollars in grant funding during the successive years. Nickel stated that "One of the extremely wise things that Affeldt did" was that he "demanded and received permission to start research activity at Rancho."[769] Affeldt had a source of financial assistance in the National Foundation, as a sizable amount of its Respiratory Center Program grants financed rehabilitation research. For instance, the 1953 Regional Respiratory Centers activity reports noted that 5 to 40% of Respiratory Center budgets went into clinical research.[770] NFIP Grant Requests show that the foundation provided Nickel with $5,508 in 1955. In 1956, the foundation awarded him with $3,420.[771]

The other crucial factor that led Nickel to accept a position was the support of his private practice partners. Nickel's partners agreed that "the money he made would go into general pot… and it worked superbly..." In Nickel's words, his work at Rancho provided an "outlet" for "a different type of personal practice that (he) treasured very much." [772]

After agreeing to work at Rancho Los Amigos, Nickel told Affeldt that "one of the first things we've got to do is get a new head of physical therapy." Affeldt reflected on the physical therapy staff's opposition to Nickel's work:

> Another difficult and traumatic moment was that there was a physical therapy staff of some
> size there, who was headed by a very domineering physical therapist who would not permit

[768] Ibid.
[769] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[770] "Introduction." Respiratory Center Activity Reports. 1953. Box: Medical Program Folder: Respiratory Care Centers 1949-1954, March of Dimes Archives, White Plains, New York.
[771] Los Angeles Grant Request 1955 and 1956. In Box 5 Folder: Respiratory Centers Agenda, March of Dimes Archives, White Plains, New York.
[772] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

> us to carry on any of the treatments that we felt were important. You know, they'd been there many years and had their way of doing things, and we were upstarts, busting tradition,
> and, you know, didn't know what we should be doing, and so resisted. It was obvious a challenge to the authority and the organization's structure.

According to Affeldt, "all of the physical therapists… took a vote and said that (the physical therapy head) 'has to go.'" When Affeldt and Nickel approached him about the vote, he asked them "if they could please let him stay but work under them." According to Affeldt, "(he) stayed on and became a convert and (did a) good job."[773]

Nickel approached performing major surgeries on polio patients cautiously during his first years working at Rancho Los Amigos. He only did two spinal fusions over the course of 1953. The following year, he performed none. However, Nickel's collaboration with Affeldt soon enabled him to operate more often. Together they developed pre-operative evaluations of respiratory capacity that determined the amount of respiratory assistance needed during and after surgery. Nickel explained: "With our experience with the respiratory people and our over cautious approach we had an incredibly good morbidity record, minimal complications and gradually started doing more and more surgery." And within the first five months of 1955, he performed five spinal fusions.[774]

In 1955, Nickel engineered the halo, a technology that brought Rancho Los Amigos global fame and helped him to better perform the fusion. Designed to immobilize cervical and upper thoracic spine injuries, it was based on a device that was originally used in World War II

[773] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[774] Ibid; Vernon Nickel et al., "Elective Surgery on Patients with Respiratory Paralysis;" Record of Surgery 1953-1958. Ledger Book. File Folder: Box 20 Item 13, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

to treat maxillofacial injuries.[775] Nickel's halo became a means for handling neck fractures as well as spine and neck deformities, and enabled surgeons to perform complex surgical procedures on ventilator dependent patients.[776]

Vernon Nickel's responsibilities soon began interfering with his private practice, but he was fortunate to know Jacquelin Perry, a fellow orthopedic surgeon who was attracted to Rancho's work environment. Nickel knew Perry through his brother, who was in her medical school class at the University of California San Francisco (UCSF). They became friends and stayed in touch during their residency years at UCSF, when Jacquelin Perry pursued orthopedic surgery and his brother trained in Radiology.[777]

Nickel reflected, "To put it mildly, Dr. Perry was somewhat controversial, to some people in her residency, they felt she might be difficult to get along with."[778] One of seven women in her medical school class at UCSF and one of two women in her orthopedic surgery residency, Perry said that when she went into medicine, it was "ridiculous for a woman" to aspire to practice orthopedics.[779] Perry's willingness to challenge conventions might have alienated her male cohorts. Perry also charted an independent career path during a time in which many physicians were attracted to the private practice business model. She described her own motivation for coming to Rancho Los Amigos in the following words: "I was not a

[775] Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[776] Ibid.; Affeldt, "Concept of Patient Care," 638; Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, September 21, 2010.
[777] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Interview with Jacquelin Perry March 7, 2010.
[778] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[779] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, July 27, 2010.

businesswoman… (Nickel) needed help and I didn't want to be in private practice."[780] Perhaps, Nickel had an inkling that the same individualism that enabled Perry to become admitted into the male-dominated orthopedic profession would be advantageous to his program at Rancho Los Amigos.

Jacquelin Perry traced her interest in polio rehabilitation to her undergraduate years at the University of California Los Angeles (UCLA). She initially studied mathematics at UCLA, but after finding the subject matter difficult, her interest in science and enjoyment of sports led her to study physical education instead; Perry stated, "I'm not an abstract thinker, I'm a factual thinker." [781] Assigned a project on a health program during her senior year, Perry visited Children's Hospital Los Angeles, where a friend's daughter was being treated for polio. In the process, she became interested in physical therapy. During this time, the army offered free tuition in its physical therapy schools to anyone who was willing to serve during World War II. Perry decided to become a physical therapist and worked for five and a half years in the army.[782]

As a physical therapist, Jacquelin Perry gained firsthand exposure to the orthopedic management of disability. This experience motivated her to become an orthopedic surgeon. Perry explained, "(orthopedic surgery) was creative, you had to move things around to regain muscle function. That's why I liked orthopedic surgery. You can build function by transferring

[780] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010.
[781] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010;
Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[782] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010; Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

muscles."[783] Perry took advantage of the funding offered for her army service through the G.I. Bill and began studying medicine at UCSF in 1946.[784]

Perry approached patient care as an orthopedic surgeon from her physical therapy perspective, in which the "primary purpose" of treatment was "to give muscle function back." She said, "I had better understanding of function (than other orthopedic surgeons.) I think that was an advantage."[785] Her work in the army might have also helped her to relate well with physical therapists, who were integral members of the rehabilitation team. Perry mentioned that "Doctors treated (physical therapists) as technicians. You're supposed to do as told…" However, she and Vernon Nickel related to physical therapists in a different manner; she stated, "We taught our therapists to be associates. We told them to evaluate the patient. Test them. Tell them your findings. Make a plan. And then we'll talk about it." Perry also delegated to physical therapists because she and Nickel had limited time to be involved in planning when they were performing surgeries.[786]

Vernon Nickel and Jacquelin Perrys' major innovation during the polio era would be in "developing a system to operate on respiratory dependent patients." Perry explained that "It was felt (at the time) that they couldn't tolerate surgery." Yet, she noted that surgery was often performed when an iron lung patient went into labor or had a medical emergency, such as appendicitis. Nickel and Perry figured, "if you can do (surgery) on an emergency basis, you certainly can do it on an elective basis, you just need to plan ahead." Nickel and Perrys' surgeries

[783] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, September 21, 2010.
[784] Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[785] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, July 27, 2010.
[786] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010.

were enabled by technological advancements, such as Affeldt and Colliers' CO2 analyzer.[787] Nickel and Perry articulated the impact that improvements in respiratory management had in advancing their work in an article that they coauthored with John Affeldt and Clarence Dail:

> In the past, these patients were considered poor surgical risks, being too severely involved to justify attempts at functional rehabilitation which, of course, includes surgical procedures… (Pulmonologists) have been so successful in the development of mechanical respiratory aids and medical skills that 86 per cent of the patients with respiratory involvement now survive their illness. With the application of specialized respiratory techniques, these patients need no longer be considered poor surgical risks… At Rancho Los Amigos Hospital the concept of doing elective reconstructive surgery was developed by close cooperation between the medical and orthopedic staff.[788]

Jacquelin Perry's willingness to innovate was also likely tied to the professional culture in Los Angeles. As Perry mentioned:

> The East was more academic, didn't have much opportunity for private practice as the West. The practicing physicians in Boston were in charge of the hospital and the residents were students under them. In the West Coast, everything was growing, business was growing, population was growing. (The attending physicians) would volunteer in the hospital but they weren't going to spend a lot of time because they wanted to make money…

As a result of the increasing time spent by attendings in private practice, "the county hospitals were owned by residents." In Perry's view, this led to a more creative clinical mindset.[789] She mentioned that the seniority system in Boston stifled younger physicians' attempts to try new things; as she stated, "Chiefs (in Boston) knew it wouldn't work. They thought about it- it wouldn't work." In contrast, "The West Coast was an open book."[790]

Jacquelin Perry soon became the driving force behind the significant increase in spinal fusions at Rancho Los Amigos. This is seen when comparing the number of fusions that she and

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[787] Nickel et al., "Elective Surgery on Patients with Respiratory Paralysis," 996; Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[788] Nickel et al., "Elective Surgery on Patients with Respiratory Paralysis," 989.
[789] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, March 7, 2010.
[790] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, July 27, 2010.

Nickel performed during her first two years at the hospital. In 1955, Nickel performed 8 fusions alone; Perry and Nickel together performed 9 fusions; and Perry performed 6 fusions alone. The following year, Nickel performed 6 fusions alone; Perry and Nickel together performed 4 fusions; and Perry performed 27 fusions alone.[791]

Vernon Nickel and Jacquelin Perry performed the spinal fusion after the patient had achieved a "stable functional period" through physical therapy. The amount of time necessary to achieve a "stable functional" level varied based on the patient, as some patients improved after six months of physical therapy while others took two years. Once the patient improved, it was "time for family to make a decision." At this point, families had two options: the patient could either undergo physical therapy without surgery or have surgery performed, with several months of post-operative therapy.[792]

During Vernon Nickel and Jacquelin Perrys' early years performing the spinal fusion, they used the Hibb's method, which was first applied on tuberculosis patients in 1911. In cases where tuberculosis infected the spine, patients developed severe scoliosis, and the fusion often fixed the spine in a straightened position. On the day of surgery, the patient laid supine on the operating table wearing a full body cast. The surgeon cut a window in the posterior side of the cast, opening the patient's skin to excise strips of bone from the back of the vertebrae. The surgeon then padded the excised bone strips in between the vertebrae. Since sitting and standing in the upright position created the greatest deformity in a scoliosis patient, having the patient lie in a supine position reduced this problem, but the fusion merely stabilized the spine according to whatever improvement occurred lying down. From Hibb's time into the 1950s, spinal fusions

[791] Record of Surgery 1953-1958. Ledger Book. File Folder: Box 20 Item 13, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[792] Jacquelin Perry, interview by Alexander Kertzner, oral interview, Downey, September 21, 2010.

carried mixed results. Significant numbers of fusions failed, became infected, or lost correction. When Nickel and Perry performed the Hibb type of fusion between 1954 and 1956, eight patients experienced successful surgeries. However, six of the patients' conditions worsened.[793]

After 1956, Jacquelin Perry and Vernon Nickel modified the fusion to make it more effective. Instead of padding bone over the intervertebral joints, they removed cartilage from the joints, filling in the spaces with bone graft from the pelvis. Perry and Nickel also developed new methods of holding bone in place to be used before, during, and after the surgery that reduced deformity and promoted healing. The culmination of these advancements involved placing a large stainless-steel rod next to the spine that connected to the vertebrae.[794] The story of how Paul Harrington, an orthopedic surgeon affiliated with Spencer's Southwest Respiratory Center, developed this technique is a testimony to how professional collaborations within the NFIP research networks gave rise to procedures that left a legacy in rehabilitation medicine.

The Harrington Rod Procedure

As Heather Green Wooten mentioned when describing the significance of the *Harrington Rod Procedure*, "Before Harrington developed this technique, surgeons were forced to perform keyhole surgery on patients encased for months in head-to-toe body casts."[795] Perry stated that the correctional casts were "terrible," because prolonged immobilization in them resulted in complications such as pressure sores.[796]

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[793] Charles Bonnett et. al, "Evolution of Treatment of Paralytic Scoliosis at Rancho Los Amigos Hospital." *The Journal of Bone and Joint Surgery* 57, no. 2 (1975): 207, 211-213; Kathleen Moen and Alf Nachemson, "Treatment of Scoliosis: An Historical Perspective." *Spine* 24 no. 24 (1999): 2570; Stanley L. Robbins, *Pathologic Basis of Disease* (Philadelphia: W.B. Saunders Co, 1974), 1439.
[794] Bonnett et al., 210-211.
[795] Wooten, "The Polio Years in Harris and Galveston Counties,"150.
[796] Interview with Jacquelin Perry. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

Jacquelin Perry thought that Paul Harrington had a "great idea" in trying to find a way to "hold (iron lung patients' bodies) up without casts." However, his early work had mixed results. Perry mentioned, "His original thesis was wrong- because he wanted to put the rod in and jack it up every so often." However, "bone is not a piece of wood… bone is living tissue and if it gets too much pressure it erodes along that pressure and so the rod would come loose." The pressure applied to the rod also caused what is known in orthopedic surgery as a fatigue fracture, in which an implanted device breaks due to the body's exertion of stress on the metal. According to Perry, Harrington's procedure generated "so much antagonism (in the orthopedic community) … that the National Foundation was questioning whether they should continue giving him support." The NFIP leaders consulted with Perry and other physicians at Rancho Los Amigos in deciding whether to continue to fund his work. Perry and her group "essentially reviewed his work as to whether it was good or bad" and decided to support it with "corrections" that aimed to "stabilize" the spine until the bone had healed.[797] In the long run, Harrington's method reduced the amount of time needed for recovery at Rancho Los Amigos. By 1967, Perry and Nickels' spinal fusion patients only needed to lay recumbent for two to three weeks following surgery.[798]

The evolution of the spinal fusion after the demise of polio in Los Angeles demonstrated how polio rehabilitation techniques were used interchangeably to treat other conditions as the caseload decreased. Between 1954 and 1956, Rancho's orthopedic service performed the spinal fusion only on polio patients with scoliosis. Between 1957 and 1961, they applied the fusion on mostly polio patients, but began also using it to treat other conditions, such as spinal cord injury, myelomeningocele, and transverse myelopathy. Between 1967 and 1970, less than half of spinal fusions were performed on polio patients. The rest of the conditions included those listed above,

[797] Ibid.
[798] Bonnett et. al, 207.

along with spinal muscular atrophy, muscular dystrophy, cerebral palsy, and Friedreich's ataxia.[799]

Jacquelin Perry and Vernon Nickels' work on the spinal fusion expanded on Russell Hibb's contribution to the management of tuberculosis several generations earlier. Their success also built upon Affeldt and Colliers' advancements in pulmonary medicine that stemmed from the Defense Department research networks. Perry and Nickel furthermore cooperated with surgeons such as Paul Harrington through the Respiratory Center networks in improving his device. In the process, Nickel and Perry drew from their individual interests and backgrounds to bring the spinal fusion to the most severely impaired polio patients. And in the long run, their procedure carried a good success rate. A 1973 follow-up study of 300 of Rancho's spinal fusion patients between 1954 and 1970 showed that 260 patients (or 87%) improved their respiratory statuses after receiving a spinal fusion.[800]

This chapter's study of how a team of people, each with their own unique backgrounds, partnered within a broader social context to create rehabilitation medicine concludes by conveying Miriam Rudulph's recollection of her experience at Rancho Los Amigos. Using Rudulph's memoirs, the chapter ends by revealing the patient's central role within the rehabilitation team. Importantly, Rudulph's story also reveals the conflict (which would become accentuated in the subsequent decades) that resulted when subspecialists and patients' worldviews collided over the rehabilitation concept's social purpose.

[799] Ibid., 207.
[800] Ibid., 210-212.

Rudulph's Story

Miriam Rudulph recalled that she first developed polio symptoms on October 29, 1950, during her twentieth-seventh birthday. She had driven to the ocean to celebrate with her husband and on the ride back, "a sudden exhaustion (came over her) body." Her head was "too heavy to hold no matter how hard (she tried) falling over and over again onto (her) chest" and "streaks of pain (shot) down the back of (her) neck." Four days later, Rudulph developed a severe headache. Upon examining her, Rudolph's physician became concerned that she had meningitis and urged her to go to County Hospital. A lumbar puncture in the Contagious Disease Unit confirmed that Rudulph had polio.[801]

The following day, while lying on a gurney in considerable pain, Rudulph noticed that she could not move her shoulders or her fingers. Suddenly, she felt short of breath and wanted to communicate with her nurses but had difficulty vocalizing words. She wrote, "I pull(ed) as hard as possible to push air into my mouth so I can scream but no words come out… suddenly I am helpless, my eyes screaming for rescue…" Fortunately, one of her nurses noticed her distress and immediately placed her in an iron lung.[802]

Prior to contracting polio, Rudulph had learned that she was pregnant. Polio would further disrupt her life, as her physicians decided not to initiate rehabilitation at Rancho Los Amigos until after her baby was born in June. Rudulph thus spent from November 1950 to June 1951 waiting to be transferred to Rancho Los Amigos. Rudulph recalled that she had the longest stay of any iron lung patient at County Hospital.

Unlike other iron lung patients who had healthy birth outcomes, Rudulph's pregnancy ended sorrowfully. On May 5, 1951, Rudulph prematurely gave birth to a 2.5-pound infant. Two

[801] Miriam Rudulph, *Inside the Iron Lung* (Kensal Press, 1984), 50-56.
[802] Ibid., 56.

days later, her obstetrician notified her that her baby had died. Rudulph poetically reflected on how this affected her:

> There is no relief, only waves and waves descending upon me, churning the air I am trying to breathe, capsizing the non-existent equilibrium I have so long been trying to hold onto and build upon, trying to trust, trying to believe, trying to hope, knowing these are really fabrications of the mind for desperation when there is no reason for trusting, believing, hoping… I am scorched by life now...

While moving to Rancho Los Amigos was something that Rudulph initially anticipated with hope, it was a transition marked by sadness following her loss. [803]

Rudulph arrived at Rancho on June 5, 1951. She worked at first with Clarence Dail, who she had met earlier when she was at County Hospital. Over time, Rudulph spent increasing amounts of time outside of the iron lung. In her history of polio in Texas, Heather Green Wooten described the respiratory weaning that Rudulph experienced:

> Respirator patients were encouraged to progressively free themselves from the iron lung. The weaning system began with decreasing pressure in the tank to give the respiratory muscles a chance to work on their own and gain strength. Next, the respirator would be turned off for a short duration, usually for ten minutes every hour, gradually increasing the period outside of the respirator.[804]

Rudulph described the utter exhaustion that she felt during her weaning sessions:

> For each one, the nurse unclamps the tank and opens it a little so there is no pressure, even though I have the security of feeling the motor running underneath my head. She stands beside my head holding her watch in hand. The first time today was easy, and the second went well but within an hour tiredness crept over my torso… (During the third session) I felt my neck muscles trying to pull in some air, which Dr. Dail warns me not to let happen… and the fourth time I lasted only seven minutes… How can breathing such short periods of time exhaust a body to such a degree? Each time I am to take several deep breaths with diaphragm alone, using no neck muscles, for although I am having great difficulty establishing a breathing pattern, Dr Dail is quite sure there is some diaphragm which he says we must wake out of its lethargy. I must totally eliminate the neck, even though it was the first breathing area he had me to use.[805]

[803] Ibid., 96-100.
[804] Rudulph 96, 112; Wooten, *Polio Years in Texas*, 117.
[805] Ibid., 112.

Fortunately, Rudulph trusted Dail. Perhaps this explained why she did not describe feeling afraid during their sessions together. Historian Daniel Wilson reflected on how the physical reality of being outside of the iron lung contributed to fear for many patients. He has written:

> … it was the patients who, when they were slid out of the iron lung, experienced the heavy weight on their chest, the suffocating feeling of insufficient air, the hard work of trying to breathe, even for just a minute or two. And if the staff was not compassionate or careful, it was the patients who wore themselves out attempting to breathe, or in some cases, blacked out from lack of oxygen.

From his observations, John Affeldt came to understand the centrality of the provider-patient relationship in facilitating effective weaning from the iron lung. He advised that during this phase of rehabilitation, it was necessary to build trust that the "staff was there to help."[806]

Rudulph sensed that there was a relationship between her providers' Adventist beliefs and their work in rehabilitation. Introducing her physical therapist Jan, she remarked:

> My new therapist is Jan, a Seventh-Day Adventist as Dr. Dail is. She works me very hard and he comes to teach me breathing. Their dedication convinces me Adventism is a devoted calling with its belief in the natural ways of rehabilitating the body, including as much physical therapy as each of us can tolerate… Her intense determination concentrates on every inch of each muscle she exercises in an effort to regain as much as possible in each of my ten fingers, two wrists, two elbows, two shoulder, two arms, along with the rest of me, leg, knee five toes, ankle, hip, stump; their paralysis, laziness, and slow recovery is a huge challenge for her to strengthen, direct, and restore…

It is possible that Clarence Dail and Jans' faith in their patients' physical restoration motivated them during the long process of rehabilitation, which on the surface could be discouraging to both the provider and the patient. Rudulph reflected on this aspect of the rehabilitation process: "There are so many phases of recovery. All slow, so slow with boring, endless, repetitive

[806] Wilson, *Living with Polio*, 51.

excruciating, consuming pain the brain cannot understand its continuation without surcease among these minutes, weeks, and months."[807]

Having arrived at Rancho Los Amigos in June 1951, Rudulph became a patient almost half of a year before Affeldt became chief physician in January 1952. Rudulph remained a patient until the following summer, and thus gave insight into the cultural shift that accompanied Affeldt's arrival. She described the harsh visiting hour policies during her first months at Rancho in the following words: "The administration feels very strongly about the length of the visiting hour… '*And an hour means sixty minutes*, period,' our head nurse, Miss Hawkins reminds her lower echelons who relish kicking out lingering husbands." Rudulph was perceptive to how such policies negatively affected patients' families; she wrote, "How short a time it is when most of them travel quite a distance."[808]

Rudolph recalled that on February 6, 1952, less than a month after he arrived, Affeldt "initiated a 'Talk Show' over the loudspeaker system in kind of administrative attempt to communicate directly with us in the open…" She recollected that "Affeldt says his number one aim is to get us home as soon as possible, therefore our families are now invited to learn nursing care so they won't fear taking us home!" Rudulph remembered that Affeldt's message over the intercom that day had a personal meaning to her and the other iron lung patients at the hospital. She wrote:

> We are stunned by this innovation. Suddenly we are now people and not paralyzed bodies in iron lungs forced to live at the county poor farm. Until now, family members have been allowed to come in for a total of four hours a week, an hour at a time, with the distinct feeling constantly instilled in them that they are interlopers getting in the way of the chore of taking care of us.

[807] Rudulph, 110-112, 117.
[808] Italicized in original document. Ibid., 115.

Rudulph then alluded to the Home Care program that Affeldt was initiating. Her comments on the program reveal that she seemed to be aware that Affeldt's changes generated antagonism: "(Family members) will be allowed to suction now! Why that is impossible, because only Senior attendants and nurses have enough brains to do that! I wonder how they will feel about such an invasion of their hierarchy."[809]

Through Rancho Los Amigos' respiratory weaning and physical therapy programs, Rudulph eventually graduated from the iron lung to the chest respirator. Historian of polio Heather Green Wooten provided a succinct description of the chest respirator's significance, which as "a fiberglass shell... that fit over the patient's chest and abdomen," was less restrictive than the iron lung. Wooten explained that it provided an "important psychological boost" to patients who were ready to be weaned. She has written:

> The rocking bed and the chest respirator were great steps forward… Each apparatus enabled iron lung patients to leave the purgatory of the iron lung for a portion of each day. In doing so, patients could scratch their noses, touch their loved ones, and engage in a number of movements that were impossible to accomplish in the steel confinement of the respirator.[810]

Rudulph described how the thought of transitioning from the iron lung to the chest respirator naturally made her feel hopeful:

> This morning Dr Dail asked if I would like to try the Monaghan chest respirator. What a wonderful idea! I will never complain about polio if only I could learn to sleep in a portable respirator, for then I would be so much closer to going home… Imagine… being completely rid of the tank where I have lived fifteen months![811]

Rudulph's continued respiratory weaning and physical therapy led to more time on the chest respirator and trips home over the weekend. Once she had achieved a stable level of

[809] Ibid., 171.
[810] Wooten, *The Polio Years in Texas*, 118-119.
[811] Rudulph, 179.

improvement, Vernon Nickel recommended a fusion to correct her neck muscles' inability to hold her head straight. But after thinking it over, Rudulph decided against the surgery. She explained:

> Each of the surgeries takes weeks and months to recover from… some with casts, while the neck fusion takes a year for recovery. Truthfully, I have had a more concentrated dose of hospital living than they can ever realize… living as a respirator polio for almost twenty months, and then to add more months because some of the surgeries 'might help' is not in my present reasoning. Home is.[812]

Rudulph also mistrusted the aggressive subspecialty culture at Rancho Los Amigos and this seemed to have influenced her decision to decline the fusion. She believed that Rancho's orthopedic surgeons were advocates for surgery, recalling that "Each orthopedist who sees my body looks at it as heaven-sent to work and improve on."[813] Rudulph may have observed failed fusions because she remarked, "I have seen patients after having the surgery (neck fusion) who look more ill and paralyzed than I do right now. Their neck is rigidly inflexible. They have to turn their shoulders and torso in one movement whenever they want to move the head to one side or the other…"[814]

When Affeldt approached Rudulph to see whether she wanted "a release" from Rancho Los Amigos she opted for discharge without hesitation. Rudulph recalled, "yes," was all I could answer as my eyes danced as fast as my fluttering heart could react. *Imagine… home permanently!*"[815] She continued: "I have wanted to accomplish this for so long, working to the end of my physical and mental endurance, struggling, struggling, ever with hope…" While Rudulph was "far from being the wholly recovered person (she) fully expected to be," a neck fusion was not worth the personal cost of continued hospitalization. She stated, "I cannot live

[812] Ibid., 205
[813] Ibid., 205.
[814] Ibid., 206.
[815] Italicized in original document. Ibid., 221.

any longer in a hospital… certainly not another year which is the length of time for a neck fusion. I must leave now. It has all been too concentrated, too long a span of time in my life to extend any further."[816]

Before leaving, Rudulph met with Nickel to discuss her plans with him. When she told him that she decided against the neck fusion, she recalled that he yelled, "You have a closed mind" and "slam(ed) the door as he stomped out." Nickel's anger at Rudulph's unwillingness would not have been out of place given the culture in polio rehabilitation during the 1950s. Daniel Wilson has written that "the burden (in polio rehabilitation centers) was on the polio survivor to work hard to recovery physically and mentally, to conform to societal expectations, and to make whatever accommodations were necessary to fit in."[817]

At a meeting a few days later, Rudulph held her ground against the physician members of her rehabilitation team and declared:

> … I believe I am ready to go home and do not care to be detained any longer from that goal, one I have held these twenty-two months since I was lifted into an iron lung, and the aeons since I first realized I might be able to get out of it by working as a slave to regain my freedom. I do not want to have to handle any more recovery per se. It has been uphill for so long. I want to wash these past years out of my system forever. The doctors finally realize my determination cannot be diverted, and are agreed to let me go.[818]

On September 2, 1952, Dail gave Rudulph permission to go home with the chest respirator and live with her husband and daughter. After discharge, she continued her outpatient rehabilitation at Kabat Kaiser in Los Angeles. In 1959, Rudulph moved to Palm Springs and would be recognized during the 1960s and 1970s for contributing to the city's cultural life.

[816] Ibid., 222.
[817] Wilson, *Living with Polio*, 72.
[818] Rudulph, 223-224.

Rudulph is remembered today for founding institutions, such as the Sunday Afternoon Concerts, the Palm Springs Friends of the Philharmonic, and the Palm Springs Opera Guild.[819]

Despite Nickel's argument that the fusion was advantageous, Rudulph expressed no regrets over her decision not to have a neck fusion when reflecting on her hospitalization in her memoirs. Her assertion of her priorities over her medical team's preferences anticipated the work that other persons with disabilities would do during the subsequent decades in confronting the medical model of rehabilitation. Disability rights activists, such as Ed Roberts, advanced the view "that the person with the disability knew better what she needed and wanted for daily life than some doctor health professional." As journalist Joseph Shapiro has written regarding the "newly christened 'independent living movement,'" it "redefined independence as the control a disabled person had over his life. Independence was measured … by the quality of one's life with help."[820] In her account, Rudulph displayed the self-determination that increasingly characterized how persons with disabilities approached rehabilitation with the marriage of PM&R and disability rights at the end of the twentieth century. Miriam Rudulph, as the most integral member of the medical team, chose to be compliant during most of the rehabilitation process. But she also decided to stop rehabilitation when it better suited what she valued.

[819] Bruce Fessier, "Anniversary Prompts Memories of a Different Palm Springs." May 26, 2014. *Desert Sun.* <https://www.desertsun.com/story/life/entertainment/people/brucefessierentertainment/2014/05/27/bruce-jane-fessier-anniversary-palm-springs/9617343/>; "Palm Springs Opera Guild." Palm Springs Opera Guild. <https://palmspringsoperaguild.org/about/mission-board-of-directors/history-2>; "Camp Fire is Inspiration to Mimi Rudulph." 9 April 1962. *Desert Sun.* <https://cdnc.ucr.edu/?a=d&d=DS19620409.2.48&e=-------en--20--1--txt-txIN--------1>; "A Visit with Mimi Rudulph, a cultural mover and shaker." November 1982. *Palm Springs Life.* <https://www.palmspringslife.com/product/palm-springs-life-november-1982/>; "Civic Organizations Honor Mimi Rudulph." 21 April 1966. *Desert Sun.*< https://cdnc.ucr.edu/cgi-bin/cdnc?a=d&d=DS19660421.2.47&e=-------en--20--1--txt-txIN--------1>; "Hot Picks: Terry Reid, Roni Lee to headline show." 29 Jan 2015. *The Desert Sun.* <https://www.desertsun.com/story/life/entertainment/2015/01/29/terry-reid-roni-lee/22550199/>

[820] Joseph P. Shapiro, *No Pity: People with Disabilities Forging a New Civil Rights Movement* (Times Books, 2011), Kindle edition, 51.

Conclusion: The Rehabilitation Concept After the Vaccine

From the time that the rocking bed raised a patient out of the iron lung, rehabilitation medicine inspired a hope in something new at Rancho Los Amigos. Belief in its promise motivated Affeldt and his team to create an exceptional healthcare system that brought the artistry and skill of a successful practice to a hospital founded for the indigent. Over a relatively short time span, the rehabilitation specialty assumed a powerful role in municipal healthcare delivery in Los Angeles. During Affeldt's first year in 1952, Rancho discharged 197 polio patients.[821] In 1954, the year that Rancho's new Respiratory Center building was constructed, the number of patients discharged had already risen to 296 patients.[822]

A number of factors explain the rapidity with which this transformation occurred. As a sophisticated fundraising organization, the National Foundation for Infantile Paralysis raised millions of dollars that it dedicated to advancing access to polio rehabilitation. Since the early 1940s, the foundation had built a relationship with county officials and medical authorities in coordinating Los Angeles' municipal response to polio. Following the 1948 epidemic, foundation leaders had already expressed concern about local problems caring for iron lung patients. The 1951 scandal at Rancho Los Amigos created an opportunity for the foundation to step into Los Angeles and implement its Respiratory Center program. John Affeldt's involvement in the local effort against polio as a County Hospital chief resident, combined with his fellowship training at Harvard, made him into an insider who was well qualified to institute

[821] Annual Statistical Report of Respiratory Centers 1952. Box: Medical Program Folder: Respiratory Care Centers 1949-1953. March of Dimes Archives, White Plains, New York.

[822] This is especially remarkable when considering that Rancho Los Amigos saw the most polio patients of any facility in the nation. Los Angeles Grant Request 1955. Box 5 Folder: Respiratory Centers Agenda; Annual Statistical Report of Respiratory Centers 1952. And Annual Statistical Report of Respiratory Centers 1953 both in Box: Medical Program Folder: Respiratory Care Centers 1949-1953; Annual Statistical Report Respiratory Centers 1953. Box 7 Folder: Annual Statistical Report Respiratory Centers 1954. All boxes and folders in March of Dimes Archives, White Plains, New York.

change. The foundation used its influence and resources to ensure that Affeldt could implement the rehabilitation concept as it had been worked out at the Harvard unit. Affeldt used his administrative position with the NFIP to acquire the grant support that was integral to the expansion of rehabilitation in the Los Angeles County healthcare safety net.

John Affeldt also had personal resources at his disposal that empowered him in changing Rancho Los Amigos. The foundation had its own vision, but it relied upon physicians like Affeldt, whose religious ideals served its effort to advance rehabilitation. Affeldt's leadership qualities, clinical expertise, and relationships, not only with Adventists, but with opposing researchers in Boston and Los Angeles, made him into a diplomat who could conciliate a range of viewpoints in implementing the NFIP's solution to chronic polio. Using the various resources available to him, Affeldt became the focal point around which the rehabilitation concept crystalized.

As Affeldt's program grew, a landmark event occurred in the United States: the mass production of a polio vaccine. National Foundation grant support also made a significant contribution to the laboratory research that led to this milestone. Shortly after President Roosevelt founded the NFIP in 1938, foundation official Thomas Rivers initiated a research program that provided large grants to investigators and academic programs that studied topics such as polio's epidemiology and pathology. Historian David Oshinsky has written that much of their early research "lay the groundwork for the polio vaccine." [823] However, by 1946, Basil O' Connor had become dissatisfied with what was then the current state of knowledge about the poliovirus and hired administrator Harry Weaver as director of research. Weaver believed that the NFIP needed to stimulate research that was "applied science" and devised a new grant

[823] Oshinsky, 60.

structure that incentivized projects with the goal of vaccine development. Under Weaver, the National Foundation funded an extensive typing program in 1948 that determined the three different polio strains, which informed the production of a vaccine that provided immunity to all three strains. The new grant structure also supported virologist John Ender's work to grow the poliovirus in tissue culture. This development not only awarded Enders and his team with the 1954 Nobel Prize for Medicine but provided a method of cultivating the large quantity of poliovirus necessary for Jonas Salk's 1954 mass vaccination campaign.[824] After proving that his vaccine prevented polio in laboratory conditions, Salk gained support from the NFIP to carry out field trials on 1.3 million children in 1954. Salk's killed-virus polio vaccine was licensed for general use in the United States and the incidence of polio was dramatically reduced from 38,476 cases in 1954 to 1,312 cases in 1961.[825]

The conquest of polio gave rise to a belief that other diseases could be conquered in a similar manner. As sociologist Paul Starr has written: "The magic of science and money had worked. And if polio could be prevented, Americans had reason to think that cancer and heart disease and mental illness could be stopped too."[826] Scientific rehabilitation, which inspired such great hope during the polio years, became Los Angeles County's approach to managing chronic disease.

Another factor also explained the rehabilitation specialty's assumption of a central role in healthcare planning: the success of Rancho's vocational rehabilitation program. The ability to discharge many patients necessitated a system of social support that enabled former iron lung

[824] Ibid, 113-115, 153, 275.
[825] Wilson, *Polio,* 111, 120.
[826] Starr, 347.

patients to live independently at home. Rancho Los Amigos' staff worked with the state and county to implement a vocational rehabilitation program that addressed this need.

The vocational rehabilitation staff was fortunate to work at a time in which the American welfare state expanded considerably. In 1954, the year that Salk conducted his vaccine trails, President Dwight D. Eisenhower signed into law the amendments to the Vocational Rehabilitation Act. Offered as an alternative to the welfare programs of his predecessors, Eisenhower's legislation created a federally matching program that funded rehabilitation research, training, and facility construction. During this time in which policymakers hailed investment in rehabilitation as a means of reducing dependence on public assistance, John Affeldt sold his rehabilitation program to officials on the grounds that it was cost effective. Affeldt could point to the success of Rancho's vocational rehabilitation and Home Care programs to demonstrate that rehabilitation promoted the health of the economy by reducing the costs of inpatient hospitalization and unemployment assistance. Lyndon Johnson's Great Society programs and the disability rights movement furthered rehabilitation medicine's assumption of a unique position in the local healthcare system. Rancho's transformation from a Respiratory Center into a chronic rehabilitation hospital must be understood as occurring within this broader political context that incentivized what John Affeldt would describe as the "natural evolution" after mass vaccination.

The following section is the final chapter that focuses on polio rehabilitation in Los Angeles County. It describes the beginnings of vocational rehabilitation, which marked the culmination of the iron lung patient's journey towards independence from the hospital.

While the promise of scientific rehabilitation found fulfillment in managing chronic polio, scientific medicine's power would be limited in responding to the socioeconomic

problems that are often associated with having a chronic disease. Historian Richard Verville has written that federal officials' efforts to use rehabilitation medicine "as a response to the complicated problem of poverty and lack of education that faced many Americans in the 1960s created problems for the professionals in the field. Expectations were high but the capacity to deliver was more limited than optimistic policy planners had assumed."[827] As Affeldt would eventually learn, when taken out of the controlled conditions in his laboratory and applied politically to solve social problems, the rehabilitation concept no longer precisely fit. The next chapter is also about the beginnings of this "complicated" history.

[827] Verville, 152.

Chapter 8: Polio and the Rehabilitation Movement

In the present chapter, we further our study of how Rancho Los Amigos' involvement in the NFIP regional Respiratory Center Program paved the way for its later participation in the federal grant-in-aid rehabilitation program. Here, we focus on how through the vocational rehabilitation program, Rancho's professionals used medicine to promote the autonomy of persons with disabilities and integrate them into the workforce. While Rancho still applied rehabilitation primarily on polio patients, it had a common mission with the military rehabilitation hospitals and civilian centers that were being developed by other leaders throughout the United States. Rancho thus used medicine for a purpose that was compatible with Switzer's rehabilitation agenda. As a Respiratory Center, it already began transitioning to take part in the Eisenhower program.

The Vocational Rehabilitation Program

Our study of rehabilitation medicine began in the Progressive Era. We saw then how orthopedic surgeons rehabilitated children with disabilities and soldiers so that they could become self-supporting citizens. In this chapter, we will investigate how the NFIP Respiratory Center Program took part in this same trend, which was also occurring in the military during World War II and in the postwar industrial workforce. The United States Air Force, the United Mine Workers Union, and the National Foundation for Infantile Paralysis independently developed rehabilitation in response to unique public health problems during the 1940 and 1950s. But their approaches ultimately became part of something larger- a national movement that enabled previously neglected populations to achieve important protections within the American welfare state.

In Los Angeles, this happened when Rancho Los Amigos patients who were ready for discharge suddenly encountered a new problem: the lack of social supports in their communities. The Respiratory Center's vocational rehabilitation team tackled this problem in the same manner that Orthopedists Jacquelin Perry and Vernon Nickel approached scoliosis after improvements in pulmonology enabled them to operate. John Affeldt stated:

> These were all step-wise pieces, you know. You'd solve one problem and then you've got the next one. "Okay, so they're out of the respirator, so now what do we do? Okay, now we've got devices on, can we get them back to a job? Can we get them back into school? It's it just... it's a very logical step-wise process and each step is an advance, and then each of these steps became applicable to other disabilities.[828]

Affeldt's polio program's ability to rehabilitate chronic polio patients, so that they could leave the hospital and reenter the workforce was attractive to officials because it provided a means of reducing expenditures on public assistance. The rehabilitation approach's efficacy in decreasing such costs contributed to the political argument that government investment in rehabilitation would lead to a more cost-effective welfare system.

We begin this chapter by studying the political environment during the 1940s and 1950s that enabled rehabilitation to catch on. This began during World War II, when physicians successfully treated seriously injured soldiers and facilitated their redeployment into the military. We profile military physician Howard Rusk, who was perhaps the most influential postwar rehabilitation leader. Rusk developed a United States Air Force rehabilitation program and argued for the rehabilitation center's incorporation into civilian healthcare after the war. His clinical approach ultimately gave birth to physical medicine and rehabilitation, which became further connected to the American welfare state through Mary Switzer. An exceptionally skilled

[828] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

civil servant, Switzer directed the Office of Vocational Rehabilitation (OVR) under President Eisenhower and tied rehabilitation medicine to the president's welfare reform program.

While often denigrated as insubstantial, President Eisenhower's welfare reform program significantly expanded the limited system of social provision that was in place at the eve of the Second World War. As political historians Edward Berkowitz and Kim McQuaid have written, the Eisenhower reform program in fact presented "an image of concerted activity with links to both the New Deal and the New Frontier."[829] Indeed, the substantial investment in rehabilitation under Eisenhower was perhaps the most decisive factor that drove Rancho Los Amigos forward as it transitioned from an NFIP Respiratory Center into a chronic disease rehabilitation hospital.

However, Rancho Los Amigos had already transitioned in this direction before it received federal funding. The government merely supported the hospital as it continued along the path that the vocational rehabilitation program had initiated earlier. After discussing the national trend towards rehabilitation, we focus locally on how Rancho's vocational rehabilitation team strove to integrate discharged iron lung patients into a system that was not built for them. Out of this effort, rehabilitation assumed a unique relationship to the industrial economy and the local political system.

When President Eisenhower signed into law the Vocational Rehabilitation amendments in 1954, Rancho Los Amigos was already transforming social provision in Los Angeles and throughout the nation. At the county level, Rancho's Home Care program reduced the costs of financing inpatient care and led to the creation of a publicly operated attendant care program. It soon became replicated at other national Respiratory Centers and enabled most of their patients to live at home by the mid-1950s. Around this time, Mary Switzer also became aware of Rancho

[829] Edward Berkowitz and Kim McQuaid, "Welfare Reform in the 1950s." *Social Service Review* 54, no. 1 (1980): 46.

Los Amigos and supported Affeldt's polio rehabilitation program using the funding that Eisenhower's 1954 Vocational Rehabilitation amendments made available to facilities. Thus, while it was still a polio Respiratory Center, Rancho had become a part of the 1950s rehabilitation movement. Using federal funding, Affeldt indeed advanced the same approach that Rusk and other national leaders promoted, but in response to specific local needs during the polio epidemics.

Rancho Los Amigos' staff implemented an array of programs that attempted to address the social problems that discharged patients faced, whether these related to employment, their families, or living at home. The concept of independence, while understood in relation to economic self-sufficiency (in continuity with how it was historically defined by officials), also derived a meaning at the hospital with respect to quality of life. In the process, the rehabilitation effort brought together not only patients and professionals, but Hollywood celebrities, and involved the adaptation of knowledge circulating nationally.

We end by discussing John Affeldt's social life as an administrator within the NFIP professional networks and describe how relationships were key to the process by which rehabilitation was made. Polio gave rise to an international community comprised of both professionals and their families, who collectively shaped the making of rehabilitation. We conclude with the 1957 International Poliomyelitis Conference. Appointed as the medical program director, John Affeldt gave a speech in which he upheld his Respiratory Center as a model for demonstrating the rehabilitation concept. His speech revealed that rehabilitation at Rancho had matured from being a local solution to polio into a form of social provision. In the discussion that followed, the National Foundation used Affeldt's presentation to support the national postwar chronic disease agenda; NFIP Medical Director Kenneth Landauer pointed to

the Respiratory Center Program's success in arguing that public officials should enact policies replicating its investment in research, teaching, and training in response to other chronic diseases. As the Respiratory Center program phased out, the NFIP passed the torch to Mary Switzer, who continued funding scientific rehabilitation in her effort to promote population health. By the decade's end, Rancho Los Amigos' mission had changed, but this was not a new story.

World War II, Howard Rusk, and Postwar Civilian Rehabilitation

In commenting on the evolution of social provision in the United States, historian Jonathan Hughes has written that "the American welfare state had been put together piece by piece, with no overall plan." Thus, the "final changes, or necessary amendments, were merely higher platforms for the next expansion."[830] World War II brought the mobilization of persons with disabilities into the civilian workforce and stimulated advancements in rehabilitating injured soldiers. Such trends contributed to President Eisenhower's incorporation of a new "piece" into the American welfare state.

We begin this chapter with an overview of World War II's impact on rehabilitation medicine. As we will see, advocates, most notably Howard Rusk, introduced rehabilitation medicine within the military system as a means of maximizing injured soldiers' involvement in the war effort. Importantly, Rusk's career as both a military and civilian leader provides insight into how military physicians laid the groundwork for the rehabilitation specialty's incorporation into President Eisenhower's welfare program.

[830] Hughes, 492.

Disability historian Nora Groce has written that "The war itself served as a catalyst for the subsequent commitment to the war wounded, the need to involve disabled adults in the workplace and the need to accurately access the number of disabled individuals and their capacity for planning purposes."[831] The development of new approaches to evacuating soldiers with life-threatening injuries, combined with advancements such as antibiotics, resulted in many servicemen surviving what would have been fatal injuries during the previous World War.[832] In addition, at home, disabled workers filled the jobs left behind by soldiers. Recognizing the value of persons with disabilities in stimulating domestic productivity, measures such as the 1943 Barden-LaFollette Act provided funding for rehabilitation services to maximize their employment. The federal government also established the Office of Vocational Rehabilitation, which was dedicated to coordinating civilian rehabilitation, and placed it within the Federal Service Administration (FSA). In this context, public and private organizations began conducting surveys of disability among the citizenry and policymakers became acutely aware of how investing in rehabilitation medicine served national economic interests.[833]

Howard Rusk was one of two military physicians credited during this time with founding the Physical Medicine and Rehabilitation specialty. An internal medicine physician from Saint Louis, Missouri, Rusk enlisted in the United States Air Force after Pearl Harbor and became Director of Medical Services at Jefferson Barracks Hospital in Missouri. It was here that he became exposed to the problem of disability in the armed services.[834] Henry Kessler, the other acknowledged father of the specialty, was a Navy Surgeon who trained under orthopedic surgeon

[831] Nora Groce, *The U.S. Role in International Disability Activities: A History and Look Towards the Future*, National Institute for Disability and Rehabilitation Research (1992), 26.
[832] Ibid., 27, 29.
[833] Ibid., 26-27, 30-31.
[834] Ibid., 27-29.

Fred Albee, a World War I rehabilitation leader.[835] As historian of rehabilitation Richard Verville has written:

> It is now generally accepted in the field of rehabilitation medicine that the establishment of (Rusk and Kesslers') military inpatient rehabilitation programs was the cornerstone for the development of rehabilitation medicine in general and the specialty of physical medicine & rehabilitation in particular. Without these programs, the development of the specialty of physical medicine and rehabilitation, the inpatient rehabilitation hospital, and the professions of physical and occupational therapy would have progressed much more slowly and likely would have had much less impact on national healthcare.[836]

Howard Rusk's contribution ultimately stemmed from his attempt to deal with overcrowding in the wards of his 1000 bed military hospital. In speaking with his superior officer, Rusk found that the military leadership was concerned that chronic hospitalization had detrimental effects on the war effort, as it resulted in "50,000 men out of action every day."[837] Rusk worked to develop a program whereby he triaged patients based on their preparedness for hospital discharge and coordinated a regimen of exercises and continued military training for soldiers who were ready to reenter active duty. The military training courses alleviated convalescent patients' boredom and provided injured soldiers with the opportunity to learn what fellow soldiers studied in ground school, so that they could resume their service upon discharge.[838]

Rusk found that his program was not keeping pace with wartime demands and felt that it "was a schoolboy project in the context of what needed to be done for the severely wounded- the amputees (the double, triple, and quadruple amputees), the paraplegics and quadriplegics, the blind, the deaf, the disfigured, the emotionally disturbed."[839] Assigned responsibility to

[835] Verville, *War, Politics, and Philanthropy*, 11-12.
[836] Ibid., 67.
[837] Howard A. Rusk, *A World to Care For: The Autobiography of Howard A. Rusk, M.D.* (New York: Random House, 1977), 5-6.
[838] Ibid., 7-14.
[839] Ibid., 21.

implement a rehabilitation program for the entire United States Air Force, Rusk worked towards the primary objective of "send(ing) them back to duty in the best possible condition and in the shortest time." Rusk's second aim was "To bring severely injured men back to mental as well as physical health." However, he commented that this was unrealistic in the Air Force hospitals, as "we didn't have the room, the facilities or the personnel."[840]

Rusk thus began "thinking about the possibility of opening special Air Force rehabilitation centers" and worked with his superiors to establish a center in Pawling, New York.[841] In "scrounging for qualified people" to help him to devise a training program, Rusk reached out to George Deaver, medical director of the Institute for the Crippled and Disabled in New York City.[842] Deaver was a surgeon who had achieved fame for instituting one of the first successful rehabilitation programs for spinal cord injury patients. Following the Pawling Center's opening in 1944, the Air Force increased its investment in rehabilitation medicine and opened 11 other rehabilitation centers.[843]

Rusk stated that "(while the war was ongoing) I had already begun thinking about establishing a rehabilitation institute for civilians. I knew that for every veteran who needed such help, there was more than a dozen more civilians who needed it."[844] Unfortunately, after World War II ended, congressional leaders' support for rehabilitation ceased. Facing challenges in attracting policymakers' attention, Howard Rusk worked with financer Bernard Baruch to keep the wartime momentum going. [845]

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[840] Ibid., 44.
[841] Ibid., 45-46; Groce, 29.
[842] Rusk, 48-49.
[843] Groce, 29; Verville, *War, Politics, and Philanthropy*, 57.
[844] Rusk, 77.
[845] Edward Berkowitz, "Rehabilitation: The Federal Government's Response to Disability, 1935-1954" (Ph.D. diss., Northwestern University, 1976), ix., 147; Hughes, 482; Verville, *War, Politics, and Philanthropy*, 84-94, 100-112.

Bernard Baruch was a progressive Democrat who invested his considerable personal wealth into advancing rehabilitation medicine in the United States. He founded a National Committee for Physical Medicine in 1943 to honor his father Simon, who as mentioned in the introduction was chief physician at Montefiore Hospital in New York. The National Committee's 1945 report became one of the most important studies on disability in the United States. It estimated that 23 million Americans had a disability, a number that was far higher than anticipated.[846]

To address the needs of persons with disabilities, Rusk, Baruch, and other advocates called for what Rusk referred to as "the third phase of medical care." As Historian Edward Berkowitz explained, this "phase" moved "beyond diagnosis and treatment of a particular disease to a concern for the disability created by the disease." With this focus, the rehabilitation physician consulted with the general physician and coordinated a "wide range of specialists to treat the psychological, emotional, and societal problems of a disabled individual."[847] Prior to Howard Rusk, rehabilitation medicine was essentially orthopedic surgery. Rusk articulated his disagreement with orthopedic surgeons and why he believed that it was necessary for rehabilitation to be a distinct specialty:

> The orthopedists… said, "We're doing all that anyway," and it was true that they had adopted some good methods of therapy. But they failed to see my point: The whole person needed rehabilitation, not just the part of him that had been damaged. They had no concept of the emotional problems which follow disability, or the problems of job placement, or the other fundamentals behind our philosophy… the kind of rehabilitation I wanted to do had never been done. And they didn't see any need to start it.[848]

Disability historian Nora Groce explained that Rusk's proposal was novel because as an internal medicine physician, he argued for rehabilitation as its own distinct medicine specialty,

[846] Groce, 31; Verville, *War, Politics, and Philanthropy*, 8-11.
[847] Berkowitz, "Rehabilitation," 112.
[848] Rusk, 77-78.

rather than "as a handmaiden to surgery."[849] Rusk and Baruch additionally sought to unite disparate groups of "physical medicine" physicians. Such physicians (like Bernard's father Simon, who had practiced hydrotherapy) were called "physical medicine" practitioners for their use of physical agents, such as heat and water.[850] Largely due to Rusk's lobbying, the American Medical Association recognized the American Board of Physical Medicine and Rehabilitation as an official specialty in 1947.[851]

Advocating that veteran and civilian rehabilitation centers become elements in postwar planning, Baruch formed a subcommittee on civilian rehabilitation centers in 1945. Most of Rusk's work in directing the committee derived from his military service.[852] Using grant funding from the Baruch Committee, Rusk opened his own civilian rehabilitation center, the Institute of Physical Medicine and Rehabilitation at New York University in 1949.[853] Rusk organized a program of specialized medical training at his center, which was an unprecedented development, as rehabilitation institutions had previously not offered advanced training programs. As Groce has written, "Rusk became the leading spokesman for the newly formed field of rehabilitation."[854] Contributing to a weekly *New York Times* column, Rusk used the publicity as "A bully pulpit from which to sell the idea of rehabilitation."[855] After President Truman appointed him to lead the National Health Resources Planning Board, he continued to push for rehabilitation medicine's integration into the postwar healthcare system.[856]

[849] Groce, 29.
[850] Berkowitz, "Rehabilitation," 113-115.
[851] Groce, 36.
[852] Berkowitz, "Rehabilitation," 115.
[853] Groce, 34.
[854] Ibid., 35.
[855] Ibid., 127.
[856] Ibid., 35.

While Rusk, Baruch, and other rehabilitation advocates brought rehabilitation recognition, political support came when, as Berkowitz has written, "a powerful group, from outside of the government" mobilized on behalf of "the passage of federal health and disability program and adoption of rehabilitation medicine."[857] In 1949, the United Mine Workers Union fulfilled this objective and enabled rehabilitation to acquire the political support that it needed.

The United Mine Workers Demand Rehabilitation

In comparison with other industrial laborers, miners faced exceptionally dangerous working conditions. Close to 2,000 miners died in accidents each year between 1906 and 1945. Significant numbers of survivors had severe problems, such as spinal cord injuries, but lacked access to rehabilitation services or disability benefits. [858] Miners also faced a rigged worker's compensation system, as coal companies employed their own physicians to perform assessments and limited their payments to workers and their families.[859]

On April 1, 1946, United Mine Workers (UMW) Union leader John L. Lewis led his men on a strike that sent ripples through the economy. Occurring during a time of widespread social unrest, the coal strike was followed by a railroad strike in late May that shut down interstate transportation.[860] In response, President Truman ordered the government to seize the mines and brought John Lewis to the White House to negotiate over the miners' demands. The company operators ultimately acceded to all of Lewis' requests, including a work week of 5 days, a pay raise of 18.5 cents an hour, vacation pay, and a welfare fund, which was to be made up from coal royalties.[861]

[857] Berkowitz, "Rehabilitation," 147.
[858] Ibid., 158, 162; Hughes, 482.
[859] Berkowitz, "Rehabilitation," 159-160; Hughes, 482.
[860] David McCullough, *Truman* (New York: Simon & Schuster Paperbacks, 1992), 492, 493; Hughes, 482.
[861] Berkowitz, "Rehabilitation," 151-152; McCullough, 495, 497, 506; Hughes, 482-483.

Through the UMW Welfare Fund, the Office of Vocational Rehabilitation carved out a powerful role in securing civilians' access to rehabilitation. It pressured states to accept miners who local officials had previously deemed "infeasible."[862] The UMW also contracted with rehabilitation leaders to provide miners with medical care. Between 1947 and 1954, the Fund coordinated 1284 patients' travel from the coal mining states to seven rehabilitation institutions, including Howard Rusk's center in New York.[863]

Rehabilitation physicians obtained support not only from mine workers but from unions in other industries. During World War II, companies remained competitive while facing wage controls by offering benefits such as health insurance.[864] While 12 million Americans enrolled in hospital insurance plans in 1940, by the end of the decade, the number had increased to roughly 26 million.[865] However, most insurance companies refused to cover medical and vocational rehabilitation. Collective bargaining achieved rehabilitation coverage for many American civilians and in the process, helped rehabilitation physicians' practices remain viable.[866]

The United Mine Workers' fund provided a model for a more responsive welfare system. Howard Rusk's accounts illustrate how the UMW medical team's excursions into the countryside to locate disabled miners was a process marked by discovery. Rusk wrote:

> One of the first miners sent to us was a man with a broken back who had been in bed for nineteen years. They found him when the union sent a team into the mountain coal communities looking for people who needed care- he was one of many men they found that nobody knew existed… His wife looked after him, using old bed sheets for bandages; she boiled those bandages day after day for all those years to keep him clean…[867]

[862] Berkowitz, "Rehabilitation," 172-173.
[863] Ibid., 168; Hughes, 484-485.
[864] Bodenheimer and Grumbach, 8.
[865] Ibid., 8; Verville, *War, Politics, and Philanthropy*, 100.
[866] Ibid., 100.
[867] Rusk, 113-114.

For neglected workers like the miner, Howard Rusk's "third phase" offered a solution to their combined medical and social problems. As the miner's experience undergoing rehabilitation conveyed, the totality of medical care and vocational education at Rusk's center was indeed a form of social provision. For example, once at NYU, he underwent four operations on his legs, 26 plastic surgeries to address his bed sores, and urologist consultation to remove a stone in each of his kidneys. After nine months of comprehensive team-based inpatient rehabilitation, Rusk wrote that the patient could "start training." Through strengthening exercises, he learned to ambulate with crutches. Rusk's patient then returned home and became the town sheriff.[868] According to Rusk, of the over 500 paralyzed miners he treated, 80% went back to work in mining or found another means of employment.[869] As Rusk's account reveals, rehabilitation medicine stimulated employment. It is easy to see how OVR director Mary Switzer came to believe that investment in the medicine itself was an effective way of ensuring the American citizenry's physical and economic wellbeing.

After the UMW program proved successful, vocational rehabilitation programs expanded in coal-mining states such as Kentucky and West Virginia.[870] On a national level, its success also secured policymakers support for rehabilitation. As historian Edward Berkowitz has written, the UMW "increased the vocational rehabilitation program's appropriations and prestige. As a result of its efforts, not only did the program's money increase, but also vocational rehabilitation, formerly a small, education-oriented activity, became a more important part of America's social welfare system. The Social Security Administration and the Public Health Service began to pay it more respect."[871]

[868] Ibid., 114; Berkowitz, "Rehabilitation," 162-165.
[869] Rusk, 115.
[870] Berkowitz, "Rehabilitation," 180.
[871] Ibid., 184-185.

The United Mine Workers additionally laid the foundation for the incorporation of disability insurance into the Social Security Program. Berkowitz has written:

> The people who advocated larger public programs could use the fund as an example of public demand for their program. For example, the seven and one half million dollars spent on disability benefits showed the need of coal miners and by extension all Americans for such a program as part of the social security program… The prevalence of disability among coal miners called attention to disability among other Americans. It added to the appeal of including disability insurance in the old age insurance program.[872]

Disability insurance's introduction into Social Security finally came during Mary Switzer's tenure as the director of the Office of Vocational Rehabilitation. Switzer was a former member of the circle of progressive, university-educated women who surrounded Eleanor Roosevelt during Franklin Roosevelt's presidential terms. She remained socially conscious during her decades-long civil service career and deeply cared about the disabled worker's plight. Over the course of her bureaucratic career, Switzer also came to believe in limited government and prioritized reducing federal expenditures on public assistance. She helped to create a more comprehensive welfare system, which was in line with Eisenhower's "Progressive Conservativism" and administered locally under medical control, while federally supported. As is especially relevant for our story, Switzer's unique system of social provision shaped Rancho Los Amigos' evolution into a chronic disease rehabilitation center.

Mary Switzer and the 1950s Rehabilitation Movement

Economic historian Jonathan Hughes has written that in Mary Switzer's career, one observes "the growth of the modern welfare state and the supposedly discretionary management of the federal government of the nation's economy…" While Switzer was not a lawmaker, she nevertheless became a transformative figure. Indeed, Hughes uses the term "bureaucratic

[872] Ibid., 183.

entrepreneur" to describe Switzer, as her contribution was to "change the flow over time of… (economic resources), for good or ill, within the framework of a popular democracy and its elected representative institutions."[873] Switzer influenced the substantial investment of federal funding into medical and vocational rehabilitation. Describing the broad significance of this contribution, Hughes has written that she "achieved a pervasive influence on the rehabilitation movement and its philosophy as it moved out of narrowly based medical, educational and therapeutic applications into wider areas of general social policy."[874]

Mary Switzer's success made her not only a "bureaucratic entrepreneur" but an individual who political scientist John Kingdon has termed "a policy entrepreneur." In his study of the process by which health policy legislation emerges, Kingdom assigned a critical role to leaders who, whether as politicians, academics, or civil servants, "lie in wait in and around government with their solutions at hand… waiting for a development in the political stream they can use to their advantage."[875] As a civil servant, Switzer fulfilled Kingdon's description through acting as a "broker" who "negotiate(ed) among people and (made) the critical couplings;" in Switzer's case, "coupling" involved connecting problems with the Social Security System to her proposed rehabilitation solution.[876]

Jonathan Hughes convincingly argues that Mary Switzer's concern for disability issues and belief in a decentralized system of government were the products of her life experiences. Born into a working-class Boston Irish family on February 16, 1900, Switzer chose a career in public service after graduating from Radcliffe College. Rather than working in the settlements like many other socially conscious women, Switzer entered the United States Treasury as a civil

[873] Hughes, ix.
[874] Ibid., viii.
[875] John W. Kingdon, *Agendas, Alternatives, and Public Policies*. Updated 2nd Ed. (Boston: Longman, 2011), 165.
[876] Ibid., 183.

servant. While Franklin Roosevelt was in office, Switzer became part of an informal network of women who graduated from universities including Vassar, Barnard, Wellesley, Smith, and Radcliffe, of which Eleanor Roosevelt and Elinor Morgenthau (both Vassar women) were a part. In 1935, Switzer became assistant to Josephine Roche, a Vassar alumnus who was appointed the Assistant Secretary of the Treasury.[877] Roche was one of several of Roosevelt's appointees who had a reform agenda that included old age, health, and disability insurance; they emphasized chronic disease's national prevalence to highlight the need for their proposed reforms. Roche worked with Switzer in organizing a survey of chronic disease's prevalence in the United States.[878] In helping to conduct the survey, Switzer learned that approximately 18% of people between 15 and 64 years of age had a chronic disease or disability. Jonathan Hughes posits that Switzer's experiences carrying out the study must have informed her appreciation of disability as a key issue during World War II, when she came to believe in rehabilitation.[879]

Following World War II, President Truman's administration emphasized the prevalence of chronic disease to build support for his national health insurance proposal. In response, a myriad of public and private organizations mobilized around alternative plans for addressing chronic disease, which had become by this time popularly recognized as a national problem.[880] As we will later discuss, groups such as the AMA and the NFIP would use the issue of chronic disease in advocating for a privatized healthcare system, which coexisted with strong federal biomedical research programs. As members of the powerful "alliances" that mobilized on behalf of what became the American welfare solution, both groups advocated on behalf of a "consensus," which as historian George Weisz noted, "frequently involved large governmental

[877] Hughes, 463-468.
[878] Ibid., 473; Berkowitz, "Rehabilitation," 41-43; Weisz, 82, 86, 101.
[879] Hughes, 473, 479. As historian George Weiss has written, Roche's survey also "catapulted the problem of chronic disease onto the national American political stage." Weisz, 101.
[880] Weisz, 101, 108.

investments, accompanied by general guidelines or regulations regarding their use, combined with maximum freedom for local authorities and/or experts and professionals in utilizing these funds."[881]

After Josephine Roche retired, Mary Switzer became assistant to Paul McNutt, who was the director of the Federal Service Administration (FSA). Established in 1934, the FSA united various federal agencies, including the Social Security Board, the Public Health Service, and Vocational Rehabilitation. [882] Switzer's experience working within the FSA led her to critique what Hughes has termed as the "excessively 'bureaucratic'" nature of the Social Security conglomerate. Switzer became especially wary of centralization during World War II while working with McNutt on the War Manpower Commission. In this position, she learned about national biological warfare research, an experience which, as Hughes has written, exposed her to "the frightening possibilities of secret power at the center."[883]

Mary Switzer's civil service work during the war also influenced her support for rehabilitation medicine. After meeting Howard Rusk and learning about his efforts treating soldiers, she and Rusk developed a professional relationship. Rusk's rehabilitation approach was compatible with both the liberal and conservative strains in her thinking.[884] Having worked with Roche and other progressive women, Switzer cared for the socioeconomically disadvantaged, including individuals in poverty and persons with disabilities. In arguing for vocational rehabilitation in an article for the *International Labour Review*, she stressed rehabilitation's humanitarian benefits as its most significant asset. Switzer wrote: "First, rehabilitation restores hope and confidence in the disabled men and women themselves, giving life a new meaning for

[881] Ibid., 102.
[882] Ibid., 475-476.
[883] Ibid., 477.
[884] Hughes, 479-480, 488, 493-494.

them. Secondly, it demonstrates to all the people in a practical way, that every citizen, however difficult his circumstances, has a chance to make his life useful and satisfying."[885] For Switzer, ensuring persons with disabilities' welfare through rehabilitation was an ethical priority and it reflected a view that government could have a moral purpose that involved helping the disadvantaged.

Switzer also desired to reduce public expenditures and worked for rehabilitation to "make economic sense."[886] She argued that rehabilitation harnessed the nation's prosperity " (brought) into the productive strength of a country thousands of workers, many of them with high skills, who might otherwise be a drain upon the national economy."[887] Furthermore, Switzer's conservative views of human nature led her to embrace locally controlled rehabilitation as a check against big government and "free riders;" in her view, local leaders had a better understanding of their communities' legitimate needs than federal officials.[888]

With the war's end in sight, Switzer became involved in planning the future civilian healthcare system. Believing that scientists and physicians should govern healthcare policy, not public officials, Switzer selected medical and hospital leaders to serve on the Hill Burton council that approved hospital construction grants. Switzer developed strong relationships with physicians through working with the American Medical Association and achieved a reputation as having "influence between the AMA and government."[889]

During this time, Switzer advocated on behalf of a federal grant in aid model to states, which she believed achieved harmony between a variety of interests. Historian Jonathan Hughes

[885] Ibid., 489; Mary E Switzer, "Vocational Rehabilitation in the United States," International Labour Review 77, no. 3 (March 1958): 190.
[886] Hughes, 487.
[887] Ibid., 489; Switzer, 190.
[888] Hughes, 493.
[889] Ibid., 477, 479.

has written that "The grant in aid was like a happy business deal. People 'out in the field,' the United States beyond the Potomac, felt involved with their government. No congressman in his right mind would resent it if his district was to receive the Treasury check."[890] Such an approach to achieving welfare reform evidently incapsulated practices of accommodating interests that accounted for her own professional success in civil service. Appointed director of the Office of Vocational Rehabilitation in 1950, Switzer sought to increase access to rehabilitation among individuals on public assistance. As a result, the OVR took 60% more public assistance beneficiaries during her first year.[891]

Political scientist Jonathan Kingdon has written that "policy entrepreneurs do more than push… they also lie in wait- for a window to open."[892] In Mary Switzer's case, the window that opened was Dwight D. Eisenhower's 1952 election as President of the United States. After Eisenhower's election, Switzer retained her position as the OVR director largely due to Howard Rusk's lobbying. As Hughes has written, Switzer "pressed her argument that more money for rehabilitation was really less, since she was causing total expenditures on the disabled to fall." Her approach's dependence on localities and its substitution of rehabilitation for public assistance resonated with Eisenhower's "progressive conservativism."[893]

President Eisenhower's prioritization of chronic disease as a central national issue was indeed a product of the era. The 1952 Presidential Commission on the Health of the Nation stated that with the reduction in the incidence of infectious disease, "medicine and public health must shift emphasis, both in practice and in research from diseases of the young to diseases of the aging." Such a perspective especially resonated during a time in which new treatments

[890] Ibid., 479.
[891] Ibid., 485, 487, 490.
[892] Kingdon, 181.
[893] Hughes, 488, 490.

emerged curing fatal conditions of the past and increased the numbers of chronic patients. Politically emphasizing rehabilitation furthermore channeled the widespread postwar enthusiasm about national economic prosperity and scientific progress.[894]

The Eisenhower administration's welfare program sought to achieve four aims. Its first and second objectives were to increase federal funding for rehabilitation research, training, and facility construction. In 1954, Congress passed amendments to the Vocational Rehabilitation Act, which achieved these first two aims.[895] Switzer also successfully lobbied to amend the Hill Burton Act to allow for the allocation of funding towards rehabilitation center construction. As rehabilitation historian Richard Verville has written, "The (rehabilitation) field therefore had two sources of funding for medical rehabilitation facility expansion, the facility construction authority in the Vocational Rehabilitation Act and the authority in the Hill Burton Hospital Construction Act."[896]

President Eisenhower's third objective was to enable persons with disabilities to be eligible for retirement benefits through amending the Social Security Act. Although unemployed persons with disabilities might not have contributed to Social Security since falling out of the workforce years before turning 65, Eisenhower supported allowing such individuals to receive the retirement benefits that they would have contributed as if they had been employed until then.[897] While Eisenhower successfully achieved his first three aims, his fourth proposal for a voluntary health insurance program did not pass due to both the AMA and liberal congressional leaders' opposition (as liberals viewed Eisenhower's proposal as too limited in scope.)[898]

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[894] Weisz, 101-102.
[895] Berkowitz and McQuaid, 48.
[896] Verville, *War, Politics, and Philanthropy*, 141.
[897] Berkowitz and McQuaid, 48, 53-54.
[898] Ibid., 48.

Congress also debated expanding the Social Security Act to include disability insurance. While the AMA opposed disability insurance over a concern that it would affect physicians' autonomy, it supported public assistance to certain disadvantaged groups, including persons with disabilities.[899] As a result, the Social Security Act was amended in 1950 to create the public assistance category of "Aid to the Permanently and Totally Disabled (APTD)." It provided a means of assistance, rather than social insurance, for individuals who were part of certain groups, including the elderly and blind.[900] (After Switzer became OVR Director, she sought to rehabilitate APTD beneficiaries, who in 1952, would make up 20% of her clients).[901] During the 1950s, Rusk and other advocates secured the AMA's support for their disability insurance proposal, which would be administered by state vocational rehabilitation agencies under the OVR director. As a result of their lobbying, the disability insurance program was mandated to provide rehabilitation services, in addition to cash assistance. As Verville has written, the 1956 amendment to the Social Security Act that established disability insurance "was another milestone in the development of a disability and rehabilitation policy for the nation." [902] In a society without Britain's universal protections, the United States finally had a welfare state that addressed disability and chronic disease; however, as Hughes has written, "emphasis changed to 'ending dependency.'"[903]

Rehabilitation soon became a popular idea in Washington D.C. and politicians even viewed it as relevant to social issues such as juvenile delinquency.[904] Indeed, Eisenhower's successors Kennedy and Johnson used the rehabilitation concept to justify a massive increase in

[899] Berkowitz, "Rehabilitation," 227-229, 231; Verville, *War, Politics, and Philanthropy*, 143-144.
[900] Berkowitz, "Rehabilitation," 231-232; Hughes, 487.
[901] Berkowitz, "Rehabilitation," 251.
[902] Verville, *War, Politics, and Philanthropy*, 144.
[903] Hughes, 487.
[904] Ibid., 489-490.

expenditures on programs that supposedly rehabilitated communities out of poverty. Los Angeles County's experience managing chronic disease in the half century following the Eisenhower administration would reveal both the successes and the failures that accompanied this medical concept's politicization.

Vocational Rehabilitation at Rancho Los Amigos

The upcoming sections follow how Rancho's staff and patients worked together to create a form of social medicine that both reduced public expenditures and promoted patients' quality of life. Their rehabilitation program ultimately caught the attention of Mary Switzer, who invested in it as a way of furthering her rehabilitation agenda.

John Affeldt commented on the creativity that characterized both the medical and vocational rehabilitation teams' efforts:

> The combination of the various disciplines focusing on a disability problem would find solutions that just had never been thought of before. It was a very stimulating and heady experience to watch these people come up with ideas and solutions and apply then and the patients would come up with ideas and solutions...[905]

After recruiting clinical psychologist Leonard Wendland, Affeldt worked to "find solutions" to the social problems that surfaced when patients became free from respirators. Like Vernon Nickel, Jacquelin Perry, and Howard Rusk, Wendland's career signified rehabilitation's intersections within the military and civilian worlds. Prior to working at Rancho Los Amigos, Wendland had served in the United States Army. During World War II, he worked at the 5th General Hospital, a 1500 bed unit that primarily cared for servicemen who had orthopedic injuries. Wendland's experience working with soldiers made him interested in studying what he

[905] Interview with John Affeldt. Interviewer: Colleen Adair Fliedner. File Folder: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

described as the "psychological trauma of people who had been severely disabled in military action." In particular, he articulated an interest in helping patients with "catastrophic disabilities caused by multiple limb amputations." After the war ended, Wendland used G.I. Bill support to complete his Ph.D. in psychology at the University of Southern California in 1950. Wendland's dissertation studied polio at Los Angeles Orthopedic Hospital and he worked under the mentorship of Charles Lowman, who was a local orthopedic leader. Morton Sidenfeld, a psychologist who worked for the NFIP in New York, also advised Wendland on his research. After Affeldt became chief physician, Sidenfeld referred Wendland to him. Using NFIP funding, Affeldt then hired Wendland, who became Rancho's first psychologist.[906]

Wendland worked with Affeldt to develop a vocational program for respiratory patients with an objective that was in contradistinction to the "cost-benefit analysis" that traditionally guided state officials.[907] Wendland commented: "Successful vocational rehabilitation does not necessarily imply that the patient is returned to his pre-illness employment or necessarily to remunerative employment. Successful vocational rehabilitation implies that the patient has been assisted to make the most adequate use of whatever functional ability remains."[908]

Leonard Wendland and the other members of the vocational rehabilitation program espoused a humanitarian perspective. Like Switzer, they prioritized rehabilitation's value in fulfilling personal needs. And this prioritization seemed to have been shaped by observing rehabilitation's effect on patients firsthand. Elsbeth Kahn, Director of Rancho's Social Work Department, conveyed this when reflecting on her experiences with polio patients. She stated:

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[906] Interview with Leonard Wendland. Interviewer: Colleen Adair Fliedner. File Folder: File Folder: Box 17: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[907] Hughes, 481.
[908] Leonard Wendland. Current Status of Vocational Rehabilitation at Rancho. March 1955. Box 17: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

"You could feel the excitement that everyone felt when someone who was totally paralyzed could move one little muscle in a finger. That meant that surgery could be performed or maybe the patient could use a mechanical device, so that he could do a few things for himself." Kahn continued: "When there's nothing else, that's a tremendous thing." Such powerful experiences led her to adopt a different value system than what predominated at the time; Kahn commented: "You learn to appreciate values other than the physical and the wellness that we are so crazy about in our culture."[909] Nita Weil, a former patient at William Spencer's Respiratory Center in Houston, provided insight into the joy that Elsbeth Kahn shared with her patients. Weil reflected, "I learned how to sign my name, brush my teeth, put on my make-up, feed myself… These things sound so unimportant. But when you have nothing, really, really nothing, it means so much."[910]

Leonard Wendland explained how his vocational program was connected to Rancho's medical and orthopedic programs, as well as to the California Office of Vocational Rehabilitation. He wrote in a paper, "Most patients during the early months of their stay at Rancho are given a basic battery of vocational tests. In a sense this implies that it is possible for the need of some vocational planning to be done." The "vocational planning" involved "tak(ing) into account what the individual is interested in, is capable of doing, and employment which has a demand." At team conferences, Rancho's medical and vocational team discussed the patients' progress and whether they could return to their prior careers after being discharged. When patients were ready to leave, the hospital sent a vocational plan to the state's OVR program.

[909] Kahn, Elsbeth notes from interview. File Folder: Box:17 Folder:44. Individuals. Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.
[910] Wooten, "The Polio Years," 152.

Patients then worked with an assigned counselor in planning for resuming work with the hospital being updated on the patients' post-discharge status.[911]

The vocational program's special culture, which emphasized rehabilitation's personal value, fostered a use of respirators for purposes that were quite different from the physiological outcomes that Whittenberger and Affeldt investigated in their studies. This was especially seen in the relationship between respiratory technologies and sexuality. Leonard Wendland commented on one patient who found that his respirator "wouldn't allow for the freedom needed (for) sexual activity." He thus acquired from the hospital a second respirator for his trips home that was more compatible with his relations.[912] In a similar manner, John Affeldt's introduction to this use of rehabilitation came when a respirator company representative visited the hospital. Seeking to understand what had become a trend, the Huxley representative asked why patients preferred not to take the respirator home but preferred the smaller Emersons instead. The psychologists on the team notified him that: "The Huxley went way down under the body, including the abdomen. The Emerson was just the chest. The patients could have sexual relations with an Emerson. They couldn't in a Huxley."[913]

Leonard Wendland adapted his research and clinical programs to help patients and their partners with their relationship problems. For instance, he learned from his patients that sex was one of their primary concerns. His experiences led him to write a paper about polio and sexuality in 1954, but unfortunately it was rejected for publication because it was deemed controversial. In addition, Wendland established group psychotherapy for polio patients' husbands and wives, as

[911] Leonard Wendland. Current Status of Vocational Rehabilitation at Rancho. March 1955. Box 17: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[912] Wendland, Leonard notes from interview. File Folder: BOX: 17 File:113: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[913] Wilson, *Living with Polio,* 129.

many of the patients' spouses became their caregivers after they were discharged. The meetings sought to help partners who were struggling to accept the negative emotions that accompanied caregiving. [914] Social workers such as Elsbeth Kahn also provided support to patients who experienced emotional trauma when they became paralyzed or who dealt with depression after their partners' left them.[915]

The rehabilitation approach that was born through the vocational program was a form of social medicine- it strove to adapt patients to the new conditions that they experienced, whether in the workplace or in family life. And as we will see in our study of Rancho's recreational therapy program, rehabilitation also promoted health through film and entertainment.

Recreational Therapy and Hollywood

The motion picture industry shaped Rancho Los Amigos' therapeutic approach. And it did this through the recreational therapy program that Affeldt instituted after he arrived. Using NFIP funding, Rancho hired a professional recreational therapist, Lucille Borowick to organize social activities for polio patients.[916] Another recreational therapist, Constance Chalmers, came to Rancho Los Amigos in 1954 and initiated a recreation, arts, and crafts volunteer program. The volunteers visited patients and helped them to write letters, shop, read, and perform other everyday activities.[917]

[914] Wendland, Leonard notes from interview. File Folder: BOX: 17 File:113: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[915] Kahn, Elsbeth notes from interview. File Folder: Box:17 Folder:44. Individuals. Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.
[916] Fliedner, 259-260.
[917] From 1952 Volunteer Recognition. Chalmbers, Constance. File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Fliedner, 260.

Chalmers' craft program was individualized to allow patients to pursue their interests. Such a therapeutic framework also appeared to have clinical benefits. She stated:

> The program is really patient centered. If a patient wants to learn photo tinting, for example, an instructor is found; if someone offers to teach silk screening, patients are found who are interested. Physicians believe that for many patients the amount of medication decreases as the volunteer and craft program increases.

The volunteer program's most unique element was rooted in Los Angeles' cultural life. For example, Rancho Los Amigos had relationships with seven Hollywood studios, which each took turns loaning films to the hospital for viewing in the auditorium. Chalmers noted that, "to ensure maximum viewership, each feature film shown twice nightly, five times a week, so films available to 1000 patients a month."[918]

Rancho Los Amigos also helped the film industry. Beginning in 1953, studios began filming trailers at Rancho Los Amigos that advertised the March of Dimes campaigns. Shown in movie theatres or on television during commercial breaks, Rancho helped the film industry to maintain its important cultural role in the polio fundraising campaigns. Organized at the beginning of each year's campaign, Rancho's "Miss Breathless" and "Mr. Breathless" competitions also contributed to the Motion Picture Industry's polio outreach. John Affeldt stated: "Who was the prettiest lady in a respirator? And so the volunteers would come in and fix them up. They would prepare for this for a long time. And they would have ballots and finally we'd gather the respirators out in the patio in the circle there and announce the winner." Such contests generated publicity for the NFIP because contemporary film stars such as Helen Hayes, Jeff Chandler, Barbara Stanwyck, Maureen O'Hara, and Ronald Reagan crowned the winners.[919]

[918] Constance Chalmers, "Recreation in a Chronic Disease Hospital." File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[919] Fliedner, 259-260.

One could express cynicism over the "Breathless" competitions' value, especially when looking over glamourous pictures of patients awarded for conforming to Hollywood standards of beauty by representatives of an industry that disparaged persons with disabilities. Likewise, given that involvement brought good publicity, one can also question celebrities' sincerity in volunteering. However, patients, staff, and their families remember their visits as among their most memorable experiences at the hospital.[920] In addition, one cannot entirely dismiss the sincerity with which celebrities approached volunteering, given that they, like so many other Americans, were personally affected by the 1950s epidemics.

Liberace's involvement illustrates how, aside from the publicity value, celebrities had personal motivations for volunteering. Leonard Wendland recalled that Liberace became upset when a worker that he employed contracted polio. He then decided that he wanted to help the polio patients at Rancho Los Amigos. After learning from Affeldt that the hospital needed an electroencephalogram machine, he provided the funding for the device.[921] Liberace was not only a donor, but a frequent visitor. Administrator Robert Thomas recalled being contacted by Liberace's agent, who inquired whether he could perform for the patients. While Liberace initially came with his agent, Thomas said that he subsequently "Came alone with no publicity… and would go to where the piano was set up, and would play and sing for an hour to an hour and a half."[922] During a time of widespread suffering, recreational therapy evidently served therapeutic purposes for both the patients and the volunteers.

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[920] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; Lansing City Directory 1908. Lansing: Chilson, McKinley & Co, 1908, 533; Jordan, Vicki. Rancho Centennial Questionnaire. File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[921] Wendland, Leonard notes from interview. File Folder: BOX: 17 File:113: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[922] Thomas, Robert. File Folder: BOX: 17 File:106, Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

Home Care

The Home Care Program solved a problem that John Affeldt encountered months after arriving. The National Foundation reported in April 1952 that he confronted it over harmful practices that its local chapter was encouraging. An official document stated:

> Dr. Affeldt… indicated that considerable pressure was being put on him to return patients to their home environment before they were medically ready. This pressure apparently was coming from the Los Angeles County Chapter. Prior to the time of Affeldt's affiliation with the project, patients had been sent home in order to reduce the hospital load and, in Dr. Affeldt's opinion, without proper regard for the patient's best interests. Since speaking with Dr. Affeldt he has had a meeting with the Chapter Medical Advisory Committee and officers and has apparently succeeded in convincing them of the necessity for recognizing the physician's judgment as when to when the patient is ready to go home and for establishing a proper home environment essential to maintain the patient's health after his return.[923]

Another NFIP document touched on some of the local challenges that patients faced after leaving the hospital, which Affeldt sought to address through his Home Care Program.

> The Visiting Nurse Association is understaffed, and there is no provision for physical therapy in the home other than private physical therapists going in to give treatment. In addition, there is not adequate medical supervision of patients at homes. Dr. Affeldt is thinking about a plan which would set up a home care division of the Rancho Los Amigos Hospital staffed by physicians, physical therapists, etc… From what I could see about the Los Angeles situation, such a plan is the only practical method of assuring good care in the home.[924]

Importantly, Rancho Los Amigos' Home Care Program addressed another related problem that social workers encountered, which was the scarcity of nursing facilities equipped to take iron lung patients. As Elsbeth Kahn mentioned, "Very few nursing homes actually would take a respirator," which, in her view, was "really what gave impetus to the Home Care Program."[925]

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[923] Excerpt from field trip report- Los Angeles, Cal. – Mar 25-April 6, '52. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[924] To Dr. Laundauer; Frank W. Van Dyke: Care of respirator patients at home in Los Angeles. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.
[925] Kahn, Elsbeth notes from interview. File Folder: Box:17 Folder:44. Individuals. Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.

Los Angeles County and the NFIP established Rancho's Home Care Program in 1953 after a study on 158 patients demonstrated that it would reduce the associated costs of supporting patients by 75%.[926] The agreement between the county and the NFIP specified the following responsibilities to the county:

1. A panel of physicians will be established and their services provided through this plan to care for patients in their homes on a regular basis. In addition, supervision will be given under the direction of Dr. Affeldt, Chief Physician of the Respiratory Center.
2. Construction of a storage building to house the NFIP Equipment Pool at a cost of approximately $10,500.
3. Equipment in home will be serviced and maintained on a 24-hour basis by a team of mechanics and electricians. When not working on home care duties, the mechanics will be assigned to servicing equipment either for the Rancho Los Amigos Hospital or for the National Foundation Equipment Pool.
4. Physical therapy and nursing services will be purchased from private physical therapists and the Visiting Nurses' Association; their work coordinated and supervised by Respiratory Center personnel…
5. Medical social and coordinating physical therapy and nurse supervisors will be furnished by the County to check the quality of treatment and give helpful suggestions.
6. Instruction will be given to practical nurses, aides, etc. who might go home with the patients.
7. Establishment of a pool of housekeepers to be available for home care services.

The foundation in turn had the following responsibilities:

1. Establish the National Foundation Equipment Pool at Rancho, paid rental on the building; paid for equipment service and maintenance.
2. The cost to the chapters of NFIP for the patients they assist will be a flat $4.00 per day… In the beginning, NFIP chapters will support approximately one-half of the patients. [927]

[926] Gini Laurie, "Ventilator Users, Home Care, and Independent Living: A Historical Perspective." In *Breath of Life: The Role of the Ventilator in Managing Life-Threatening Illnesses* (Lanham and London: Scare Press, Inc., 2002), 163.
[927] Summarization of Home Care Program for Chronic Poliomyelitis Patients with Respiratory Involvement in the Los Angeles Community. To. Dr. Van Riper, Mr. Voss, Kenneth S. Landauer. October 6, 1952. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York.

Affeldt's creation of a Home Care Program was not unique. As George Weisz has written, that home care originated in nineteenth century United States as a "charitable enterprise." By 1920, "nearly six hundred organizations were sponsoring the work of visiting nurses." Life insurance companies also offered home care as a benefit, but by the 1940s, discontinued their programs because their main clients were costly chronic patients. After World War II, social reformers advocated for home care after a 1940s pilot study in Syracuse showed that it reduced the length of hospitalization and effectively decreased total expenditures on chronic patients.[928]

In seeking a model upon which to base his program, John Affeldt looked to Montefiore physician E.M. Bluestone's program in New York City. Weisz has written that the Montefiore program sought to:

> Establish a continuum between hospital care and the home through "the continuation of comprehensive health services in the home." The level of medical care was expected to be of hospital quality. Although technically distinct from medical services, homemaker services were ideally considered part of the program.

Developed in the late 1940s, Bluestone's program attracted widespread recognition. By the beginning of the next decade, thirty-five New York City hospitals had home care programs. [929]

Disability rights Activist and journalist Gini Laurie was intimately familiar with Rancho Los Amigos' Home Care Program. While based on the Montefiore program, it uniquely provided

[928] Weisz, 139.
[929] To Dr. Laundauer; Frank W. Van Dyke: Care of respirator patients at home in Los Angeles. File Folder: Respiratory Involvement in the Los Angeles Community. To. Dr. Van Riper, Mr. Voss, Kenneth S. Landauer. October 6, 1952. File Folder: Los Angeles March of Dimes Chapter Documents, March of Dimes Archives, White Plains, New York; Weisz 139-140.

specialized care to a medically complex group.[930] Laurie described the logistics involved in supplying what was needed for families. She has written:

> Before a patient could go home, homes were made accessible and autostart generators were installed. Preparation for going home was extended and careful. Day long, then overnight, then weekend trial visits were made. Maintenance and service of all respiratory equipment was provided once a month and a repair truck, large enough for a lung or rocking bed, made the rounds.[931]

In contrast to other programs for adult patients, a belief in the essentiality of the family for child development was central to the program's ethic. As Elsbeth Kahn mentioned, "The Home Care Department was supportive in trying to keep the children with their parents regardless of the disabilities involved."[932] Affeldt commented, "The parent, although in a respirator, can provide stability and guidance to the family. The child can be returned to the loving care of the parents."[933] Home Care ideally was an extension of family life, rather than a medical enterprise. Gini Laurie has written:

> In all the careful planning and adaptations there was never any attempt to move the hospital to the home and the family was involved in all planning. The family member returned home to the family- with some bulky equipment. Everyone in the family was responsible for and at ease with the equipment. They all learned to help transfer it to battery operation in a car or station wagon for trips to work or school or travel. They learned to repair and adapt it.

In the context of close relationships, medicine derived a personal meaning. Laurie commented:

> Children were also very much a part of the home care team. A three-year old was the best aspirator I've known. She stopped the rocking bed with the foot lowered, climbed up, then hanging upside down like a monkey, turned the bed back on. She operated the suction tubing like an orchestra conductor until she located the plug of mucus. I asked her how she did it. She said, "I watch my mommy's eyes."[934]

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[930] Interview with John Affeldt. Interviewer: Colleen Adair Fliedner. Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Laurie, 163.
[931] Laurie, 163.
[932] Kahn, Elsbeth notes from interview. File Folder: Box:17 Folder:44. Individuals. Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.
[933] John E Affeldt, "Recent Advances," 15; Fliedner, 255.
[934] Ibid., 164.

The belief that social relationships were important to development inspired Rancho's attendant care program. Staff initially devised it in response to a group of adolescents who requested to live together after discharge. Believing that such a program would be important for their growth, the Home Care Program employed attendants, paid partially by the NFIP, who helped former patients to live independently in the community.[935] While Rancho Los Amigos initially trained the attendants, a high turnover rate led the program to develop a method that gave patients more autonomy: the hospital taught patients how to train and supervise their attendants.[936]

A Patient's Experience of Vocational Rehabilitation

Irene Ridgeway's account of her stay at Rancho Los Amigos especially illustrates how vocational rehabilitation, recreational therapy, and home care worked together with the goal of both enabling personal fulfillment and economic self-sufficiency. Ridgeway contracted polio in 1948, when she was 37 years old and a secretary at Cooper Lumbar Company in Los Angeles. After a prolonged course of inpatient rehabilitation, Rancho Los Amigos' vocational rehabilitation team approached her. The vocational therapists observed her to be dispirited and sought to find a meaningful activity that she could perform.[937] Ridgeway remembered that her "therapist put a pencil in (her) mouth- said 'try writing your name.' However, Ridgeway recalled:

[935] Kahn, Elsbeth notes from interview. File Folder: Box:17 Folder:44. Individuals. Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.
[936] Laurie, 164.
[937] Irene Ridgeway. File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

> It didn't work, the pencil stuck in the paper, so she squeezed some oil paints onto the board and put a brush in my mouth and told me to play around with it for a while. She said the next day she would show me how to mix colors, how to get perspective… She told me to get some books from the Rancho library on "How to Paint." I was interested from the beginning and enthusiastic about going every day and working harder and harder. It was hard work…

The Vocational Rehabilitation team encouraged her to turn her interests into a career. Ridgeway described her experience of the volunteer program and how it contributed to her goals:

> I met so many wonderful volunteers, some would curl our hair, others would write letters or go to the snack bar for us. I loved the cheerful friendliness they brought to our ward. There was one special volunteer who was very interested in my painting and she helped me get started in printing some of them on cards for Christmas.

Ridgeway recalled: "While at Rancho my card business was started, although I didn't know it was going to be a business. Many volunteers, attendants, nurses, doctors and others asked to buy the cards so we kept track of all sales and that way I had the beginning of a mailing list…"[938] There came to be a great demand for Ridgeway's cards; for example, in 1958, she sold 70,000 cards. At this time, after approximately a decade of rehabilitation, Ridgeway was ready to be discharged. She left the hospital with the intention of using home care to expand her business.[939]

Three decades later, attendant care continued to provide Ridgeway with support while she lived at home. Asked in a questionnaire about her general wellbeing, Ridgeway revealed the importance of having attendants, while also emphasizing her autonomy. She wrote: "I am 75 years old now and I do less than I was able to years ago. I manage the apartment with the help of my attendant, plan meals and go grocery shopping attend church as often as possible. An attendant helps me with banking, etc., and I TAKE CARE OF correspondence."[940]

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[938] Irene Ridgeway describes how she began painting. File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[939] Irene Ridgeway. File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[940] Capitalized in original document. Irene Ridgeway describes how she began painting. File Folder: Individuals, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

By this time, attendant care had become a state welfare program. And this was largely due to the economic savings that it first demonstrated at Rancho Los Amigos in supporting polio patients. Rancho's Home Care program decreased the average length of hospitalization from 1 year to 7 months and cost 10 to 25% that of hospitalization. The program spread from Los Angeles throughout the nation and resulted in the discharge of 92% of iron lung patients from hospitals by 1956. As Gini Laurie maintained, "The centers and home care resulted in tremendous financial savings and a greater degree of independence and self-sufficiency than was ever dreamed possible for people so severely disabled." [941]

John Affeldt's polio rehabilitation program also caught Mary Switzer's attention. During the time in which she directed the Office of Vocational Rehabilitation, Switzer sat on the NFIP's Respiratory Program Committee formulating its policies. Switzer's comments at the 1956 Respiratory Center Conference on Clinical and Psychological Research reveal that Rancho received OVR support while it was still an NFIP Respiratory Center. Switzer said:

> We have only one project now in a respirator center: Dr. Affeldt's program in California, where a demonstration grant from the Office of Vocational Rehabilitation provides the vocational counseling and psychological services to round out the program of getting center patients totally rehabilitated gives vocational adjustment looking toward some measure of support. [942]

Rancho Los Amigos Annual report between 1955 through 1956 described this federally funded project:

> A research project was started and is in process for the purpose of delineating the areas of work wherein persons with post-poliomyelitis respiratory involvement might be employed. Physical capacities profiles in terms of important jobs variables are being developed for each patient. These profiles will be analyzed for disability patterns and compared with published data on physical demands of jobs in order to determine which jobs are feasible for each type of disability pattern found. In addition a pre-vocational

[941]Laurie, 164.
[942] Respiratory Center Conference on Clinical and Physiological Research, November 27-29, 1956, File Folder: Conferences, Committees, Respirator Centers, Agenda, March 31, 1955, NFIP Archives, White Plains, New York.

> testing clinic is being developed to test systematically various types of jobs which are within the physical capacities of patients with particular disabilities patterns. Towards this end an electronics assembly test situation has been set up and a routine clerical situation is being set up. Other situations will be set up as the research proceeds. The ability to do this research is being provided by a grant from the Federal Department of Health, Welfare and Education, Office of Vocational Rehabilitation.[943]

While Affeldt's program was distinct from Rusk's Air Force and United Mine Workers' programs, Switzer nevertheless saw his polio work as advancing the same principle. She continued: "As we strive to develop comprehensive rehabilitation services in many communities, one logical point of departure is the respirator center. This may be the only place for miles around where people can see their severely disabled neighbors restored to any measure of self-care and self-support."[944]

Life as an Administrator

In 1956, John Affeldt became Rancho Los Amigos' medical director. He described the changes in his own day to day work life that came with assuming higher levels of leadership. He reflected:

> It was during this period that I looked back and found that I was no longer a practicing physician doing clinical medicine. My time was being entirely taken up by administrative functions under the title medical director, developing the program, bringing the people in, obtaining funds from various resources, being involved with the polio foundation in its national effort, the other respiratory centers, going to meetings, presenting papers, going to Washington to try to obtain grants, contracts.[945]

Affeldt explained:

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[943] Annual Report Rancho Los Amigos Hospital Respiratory Center for Poliomyelitis July 1, 1955 through June 30, 1956. File Folder: Respiratory Care Services 1988. Box 22 File 22.53. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[944] Respiratory Center Conference on Clinical and Physiological Research, November 27-29, 1956, File Folder: Conferences, Committees, Respirator Centers, Agenda, March 31, 1955, NFIP Archives, White Plains, New York.
[945] Interview with John Affeldt. Interviewer: Colleen Adair Fliedner. File Folder: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

> I found that I was administering a program. No longer treating individual patients. I found I was doing medical administration. I found that that did not distress me. I enjoyed it.[946]

Affeldt continued working as medical director until 1964, by which time, Rancho Los Amigos had become a chronic disease rehabilitation center. Ironically, it was through this administrative position, in which he was cut off from his patients and his pulmonology laboratory, that Affeldt made his greatest contribution to advancing rehabilitation medicine. During his formative years, Affeldt had observed the politics that surrounded scientific investigation in rehabilitation through mediating between opposing researchers in Los Angeles and Boston. Now as a professional, Affeldt understood that social relationships were key, not only to advancing clinical knowledge, but in achieving officials' recognition of rehabilitation medicine's political value.

Even before he was medical director, Affeldt strengthened his relationships with other professional members of Rancho's rehabilitation team by entertaining them at his home. His success at implementing the team approach at Rancho Los Amigos was a testament as his ability to create a local community from a diverse group of individuals. Through get-togethers, John Affeldt's family members became part of the administrative process that led to rehabilitation's implementation. Nancy facilitated the gatherings by making dinner, which was a responsibility that she enjoyed. When colleagues desired to spend more time with the Affeldt family, Nancy and John welcomed them into the "Den," which was the room that they set aside in their Downey home for visiting guests.[947] Hospital staff frequently attended the Affeldt home gatherings. John

[946] Lewis E. Weeks, interview with John Affeldt, *John E. Affeldt: In First Person: An Oral History* (Chicago: American Hospital Association and Hospital Research and Education Trust, 1987), 7.
[947] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.

and Nancy Affeldts' guestbook shows that individuals who became key members of Rancho's professional team visited, including Barbara Williams, "Dr. and Mrs. Clarence Dail," Leonard Wendland, and Vernon Nickel. Affeldt also hosted individuals from Boston, including James Whittenberger and Benjamin Ferris. The individuals who visited frequently left comments and praised Nancy for the cuisine.[948]

Socializing with celebrities appeared to have been a unique and interesting aspect of John Affeldt's administrative work in Los Angeles. Affeldt hosted individuals who played a part in recreational therapy, including Liberace. Nancy Affeldt recalled feeling somewhat intimidated when celebrities visited for dinner, such as Kim Novak, the acclaimed actress from *Vertigo*. She and John were also invited to the Academy Awards by one of his polio patients, whose father was in the film industry.

After Affeldt became administrator of the entire hospital in 1956, his wife helped him to cement his relationships with local officials. Nancy recalled that when Supervisor of Charities Bill Barr visited, he spent the evening teaching her how to dance the Charleston, which was something she had never learned having grown up in a strict Adventist family. Nancy articulated how socializing could become a rigorous extension of John's already strenuous work: "Dad worked hard, and we played hard." Roger Egeberg, who served under Barr as the Department of Charities' medical director, also became their friend. Egeberg and his wife visited the Affeldt family often, and the Affeldts, in turn, visited the Egeberg family home in Carmel. Nancy and Johns' son J.C. recalled planting trees with Roger Egeberg in Big Sur after a fire during the weekend that Marylin Monroe died in 1962.[949]

[948] John Affeldt and Nancy Affeldt. Visitors. December 1, 1946- December 26, 2010. Personal records of the Affeldt Family. Used with permission by J.C. Affeldt. Solana Beach, California.
[949] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

John Affeldt's involvement in the effort against polio also enabled him to form important relationships outside of Los Angeles. Through the NFIP, Affeldt became part of an international professional network with its own distinctive social life. Affeldt gave insight into the role that the increased polio incidence worldwide had in generating relationships:

> Polio epidemics were then occurring in European countries... Denmark had a big one, and Sweden, Germany, England, they began sending their representatives over to visit. They visited other places in the country, as well as Rancho. But out of it, there came a community of interest of all these countries. We became acquainted with each other.[950]

In her anthropologic study *Beamtimes and Lifetimes,* Sharon Traweek observed that high energy physicists were united by networks, a term which she defined as a "set of relationships" that extended beyond individual laboratories to "bind the particle physics community." Describing the individuals who make up the community, Traweek has written:

> These people know a great deal about one another's work and lives; gossip about both is widely exchanged. They meet frequently at large and small conferences and committees; they have free and easy access to each other by telephone; and their work is disseminated to one another very quickly.[951]

Like the particle physics community, the polio research community achieved unity through social relationships. Nancy Affeldt recalled that people gathered during and following meetings, as well as holidays such as Christmas. While Affeldt's colleagues were predominately male, their spouses and children had key roles in the social networks that unified the community. For example, when NFIP Medical Director Kenneth Landauer met with John Affeldt to discuss business, visiting his family was prioritized alongside the matters at hand. Nancy Affeldt recalled that Kenneth Landauer's visits were "a family interaction;" she remembered, "We'd be invited to Dr. Landauer's in New York, they'd have parties for us… when Landauer and his wife came out,

[950] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[951] Sharon Traweek, *Beamtimes and Lifetimes* (Cambridge: Harvard University Press, 2009), 123.

we'd have parties." Nancy and Johns' son J.C. mentioned that he was friends with Kenneth Landauer's daughter, who was his age. When J.C. visited colleges in the East Coast, he stayed at the Landauer family's home.[952]

Nancy Affeldt described her husband as "very close" to some of the European physicians, particularly with Bjørn Ibsen and Karl Hartviksen. First introduced in Chapter 5, Ibsen was arguably the most consequential figure in the history of intensive care medicine. Chapter 5 detailed his introduction of positive pressure during Copenhagen's 1952 polio epidemic (which he acknowledged was indebted to practices at Los Angeles County Hospital.) Karl Hartviksen was a physician at Ulleval Hospital's respiratory polio unit in Oslo, Norway.[953] His friendship with Affeldt also extended from international conferences to home gatherings. J.C. Affeldt recalled that when Hartviksen visited Los Angeles, his father drove him around the city in his 1955 Thunderbird convertible with the roof off.[954]

With time, Mary Switzer also became a regular part of John Affeldt's administrative life. Affeldt did not visit her often at first, but, as he assumed higher levels of leadership, Washington D.C. became a routine business setting. Nancy recalled that John "mentioned (Mary Switzer) quite a bit." She also conveyed that she had reservations about his work, stating, "(he) went to Washington often, too often."[955] Like soldiers and diplomats' families, John Affeldt's family made sacrifices on behalf of the rehabilitation cause. Whether through travelling with him to international meetings or accepting his periods of absence, they played a role in unifying the

[952] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.
[953] "Group and Home Care of Patients with Respiratory or Extensive Paralysis," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 631, 641; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.
[954] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.
[955] Ibid.

international polio community. As we will now see in the story of the 1957 conference, this contribution was significant, not only for impacting polio rehabilitation, but because it created a forum through which the NFIP could influence social policy.

The 1957 International Polio Conference

In 1957, the National Foundation for Infantile Paralysis sponsored an international polio conference in Geneva. It was an event that brought together distinct professional communities and united the influential figures of the era, from Jonas Salk to Howard Rusk. Appointed as the medical committee chairman, John Affeldt had a view from the top of administrative decision making within the program. Later in life, Affeldt told a "personal story," which was "both emotional and exciting," about the circumstances surrounding his appointment. He received a telegram from Basil O'Connor telling him to travel to New York for a meeting and to bring his tuxedo. Affeldt reflected, "I didn't even own a tuxedo. So I went out and bought one…" He described what happened next:

> We arrived in this big room full of people. It turned out all the famous people in the "polio world." The Nobel Prize winners. Tom Enders… Salk was there… Sabin was there. All the famous virologists of that day. And I was sitting next to Jim Wilson, who was the Chairman of the Department of Pediatrics in the University of Michigan and one of the key persons in the treatment of polio, the clinical side…

Affeldt then touched on the informality by which the committee approached decision making:

> Pretty soon Jim Wilson turned to me and he said, "Well, Affeldt, I'm going to have you handle this for me. And your job is to define the clinical program for the Geneva conference." And I could see the way they were going that by the time they reached me, I was supposed to lay out the whole clinical program. And politically, I realized that I was there speaking for all eighteen respiratory centers across the country, and that I would need to structure a program… And so I knew I had just about as much time as it will take to get around the table to define a program…

When it was John Affeldt's turn to speak, he found that the improvisational nature of planning was not as much of an obstacle as the social hierarchies that he encountered as he laid out his plan. He commented:

> (The) virologists, were a rather elite group and they really didn't have much respect for clinicians… So, as I started to speak up, they became quite hostile to a clinician, because, historically, they had dominated these polio conferences, and they kind of resented a clinician coming in and becoming a part of the program. And they showed it. They really started throwing some pretty far-out questions at me. But, anyhow, we survived that all right, and we laid out the program, and that's what the program became, and that's the clinical part of that conference...[956]

Sharon Traweek described the physicist community as characterized by "several sets of distinctions." For example, she noted divisions between theoretical and experimental physicists. Nancy Affeldt likewise conveyed that there were smaller circles within the larger polio community. For instance, while she and John Affeldt had professional relationships with Basil O'Connor and Howard Rusk, they were part of different social circles at meetings. Some of their closest friends worked instead in respiratory polio units. Nancy Affeldt stated that William Spencer and his wife "were very good friends" who socialized with the Affeldt family both within the conference and at home. The Affeldt family likewise visited the Hartivksen's family home in Norway after the Geneva conference ended.[957]

In describing communication within the high energy physicists' networks, Traweek has written: "Diverse kinds of information are exchanged in the networks, some of it significant, some of it apparently trivial; it is the use of the channel that keeps it open."[958] The 1957 International Conference similarly acted as a forum for "diverse" modes of communication. On

[956] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[957] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015; John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, December 30, 2015.
[958] Traweek, 106.

one hand, the meeting served as a vehicle for scientific debate and Nancy Affeldt recalled seeing Salk and Sabin arguing at the meeting. On the other hand, attendees had conversations about topics that were more "trivial." For instance, Nancy Affeldt mentioned that Basil O' Connor's wife refused to divorce him, while he engaged in an extramarital relationship. He thus openly brought his partner to meetings, which led the conference attendees to call them by the nickname "Basil and Hazel."[959]

Polio's impact on community formation enabled the NFIP to have a unique source of influence within postwar healthcare planning. As we will now see, the NFIP used the conference to propagate its Respiratory Center approach as a model for tackling chronic disease during a time of international welfare reorganization.

The NFIP Respiratory Program: A Model for National Social Provision

Well before the 1957 conference, the NFIP had been involved in postwar planning regarding chronic disease management. For instance, it was a major contributor to the Commission on Chronic Illness (CCI) between 1949 and 1955 and provided $80,000. The CCI was a coalition of powerful interests, including the American Cancer Society, the National Tuberculosis Association, the American Medical Association, and the United States Public Health Service. As historian George Weisz has pointed out, it "provided the closest thing to a national healthcare policy that could be elaborated in the fragmented American context."[960] The Committee's policy recommendations were in many respects a reflection of their interests. For example, the CCI proposed a system of screening and "secondary prevention" that respected the private physician's autonomy, while encouraging increased investment in hospitals and

[959] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.
[960] Weisz, 108, 110, 113, 126.

biomedical research. As Weisz has written, "The elephant in the room, of course, was national health insurance, a subject that the CCI deliberately ignored."[961] Such policy recommendations arguably represented the American alternative to the postwar European welfare solution.

Affeldt's respiratory center program derived a significance for the NFIP in influencing national healthcare planning. Affeldt's speech at the 1957 International Polio Conference revealed that his approach had matured from being a solution to a local public health crisis to a medical specialty that derived a specific value in relation to the welfare state. As such, his program could serve as a blueprint for national social provision.

John Affeldt began his presentation by stating that Rancho Los Amigos was a model for demonstrating the "concept of patient care in a respiratory and rehabilitation center." He defined rehabilitation medicine as a team-based clinical approach that met five objectives extending from hospital admission to after discharge, which included "the prevention and treatment of medical complications," "the decrease or elimination of respiratory equipment," "the restoration of physical activity and function," "to return patients to their homes" and "the establishment of vocational opportunities when possible."[962]

In describing how Rancho Los Amigos fulfilled each of these objectives, Affeldt described characteristic aspects of the contemporary rehabilitation specialty. Historian Richard Verville has defined rehabilitation medicine as both a "comprehensive clinical service" and "a system for delivering health care."[963] Affeldt brought up the "interdisciplinary team" that Verville has written about, which included specialists like orthopedic surgeons as well as other providers, such as physical therapists, nurses, and occupational therapists. His presentation also

[961] Ibid., 126-127.
[962] Group and Home Care of Patients with Respiratory or Extensive Paralysis," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 637.
[963] Verville, *War, Politics, and Philanthropy*, 2-3.

referenced "natural agents" typically employed in the rehabilitation process, including water and exercise.[964] Affeldt's description of his home care and vocational rehabilitation programs was additionally consistent with Verville's definition of PM&R as a "system;" as Verville has written, rehabilitation "utilizes the services of multiple professionals whose efforts require the integration of multiple facilities and agencies (such as hospitals, outpatient facilities, and home care agencies.)"[965] As Affeldt stated:

> While the physicians are carrying out or guiding those procedures already mentioned, related professional services are also working with the patient and his family… The psychologists and vocational counselors are exploring the patient's background, reaction and adjustment to his situation and his potential vocational opportunities in relation to his present and expected disability. Psychiatric consultation is available for the support and guidance of this work. The medical social workers explore the family home situation with the anticipation of marshalling needed community resources as the time for discharge nears.[966]

The similarity between John Affeldt's "concept of patient care" and the approach that developed within Howard Rusk's military and civilian programs was appreciated by none other than Rusk himself. Indeed, when Rusk commented on the conference proceedings in his *New York Times* column, it is possible that he was referring to Affeldt's presentation. Rusk described the NFIP Respiratory Center program's relevance for rehabilitation medicine in the following passage taken from his column:

> Thousands of severely paralyzed survivors of polio who might once have been abandoned as hopeless have now been restored to their homes. Of the 857 patients using respiratory equipment in these centers last year, 531 were discharged, of whom 92 per cent went to their own homes.

Praising the organization of medical care in the Respiratory Center, Rusk commented:

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[964] Group and Home Care of Patients with Respiratory or Extensive Paralysis," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 638-639 (see Fig. 420); Verville, *War, Politics, and Philanthropy*, 2-4.
[965] Verville, *War, Politics, and Philanthropy*, 3.
[966] "Group and Home Care of Patients with Respiratory or Extensive Paralysis," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 638-639.

> The key to the success of these centers has been a team approach using all of the medical and non-medical specialties. As with the vaccine, the center approach to the care of severely disabled polio victims had its inception in the United States, but it is now being utilized in many other nations.[967]

Aside from Howard Rusk, NFIP Program Director Kenneth Landauer also commented on the significance of the Respiratory Center's team approach. After Affeldt's presentation, he stated:

> In this report of the work of physicians with their teams, to learn more about what might be done for patients catastrophically disabled from any chronic disease, it is important to recognize that the opportunities to do research are at the bedside, day by day. Unless society understands and supports the efforts of these teams in a flexible manner, so that they take advantage of the opportunities as they arise, we will lose much.

In his comments, Landauer acknowledged that NFIP funding stimulated the process by which the team-based approach to come to fruition. He then stimulated his international audience to advocate that public officials model government programs on the NFIP Respiratory Center Program:

> Fundamental in our philosophy of grant support to these centers, we have built the flexibility to provide for investigation on a permissive, opportunistic basis. The budgets are such that they permit investigation of various problems when and as they may arise. In most countries, and certainly our own, our schools and hospitals are not adequately supplied with unrestricted research funds to be used for what some call scientific fishing expeditions. Our research program in this group of fifteen centers has blossomed, I believe through this freedom of operation.

The Rancho Respiratory Center's success ultimately presented a lesson for officials contemplating new directions for optimizing population health. Landauer commented:

> Administrators of public funds are recognizing now the value of investing money in this *trinity of research, teaching and care*. They are beginning to recognize that *venture*

[967] "Progress Against Polio: A View of medial Congress in Geneva and Research Gains on Virus Disease," 14 July 1957, *New York Times.*

> *capital* is necessary when we are dealing with such severe problems and trying to expand the dimensions of good medical care. [968]

Conclusion

The foundation's financial investment in polio rehabilitation at Rancho Los Amigos supported a team-based engagement with the iron lung patients' comprehensive respiratory, orthopedic, and vocational problems that effectively reduced hospitalization costs. By the time of the 1957 International Poliomyelitis Conference, the Rancho Los Amigos Respiratory Center was the most exemplary demonstration of the NFIP's rehabilitation approach's soundness; that year, it had the highest number of discharges of any Respiratory Center in the nation. In this context, the NFIP's Respiratory Center Program came to support its particular vision of the welfare state, which was dependent upon federal investment in biomedical research. But as Weisz has written, it also "subordinated" welfare to the private physician.[969]

In the context of the polio epidemics, the National Foundation and Rancho Los Amigos had a fruitful relationship. However, the proposal to substitute government funding for that of the NFIP became troublesome in unforeseen ways. Investing in rehabilitation strained government finances during the subsequent decades when politicians limited public spending to curb inflation. And the consequent spending cuts precipitated a loss of faith in government. By the 1980s, the idealistic hope in the marriage between rehabilitation medicine and welfare reform had given way to a realistic understanding that it was a struggling relationship. In hindsight, the partnership had limited promise beyond the circumstances of an earlier era.

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[968] Italicized for emphasis. "Group and Home Care of Patients with Respiratory or Extensive Paralysis," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 641.
[969] Weisz, 102, 118.

Chapter 9: The 1950s Rehabilitation Movement's Legacy in Los Angeles

The dissertation ends by describing how an exceptional model of political advocacy took shape through Rancho's participation in the Eisenhower rehabilitation program. While the rehabilitation agenda was set federally, Affeldt's staff used their center (which was still both a convalescent hospital and polio rehabilitation center) as a lens into identifying the hidden needs of the patients who were viewed by professionals as the most severely disabled. As Rancho's medical director, Affeldt both implemented Switzer's agenda and provided invaluable feedback on how her program could better help the underserved. Switzer was ultimately the broker who bridged the policymaking process to provide her Los Angeles center with support.

The 1950s rehabilitation movement ultimately generated a comprehensive system for addressing many medically complex patients' needs for care. However, it was also an incomplete response to chronic disease. This chapter sets the stage for the epilogue's critique of the United States' local politics-driven dichotomy, in which some programs, while expanding underserved groups' healthcare access, also fail to address underlying social determinants, and thus are simultaneously becoming, even with federal assistance, less equitable.

The Rehabilitation Center Concept

In 1971, a year in which President Nixon presided over an "uncontrollable" increase in federal grants for social services, John Affeldt spoke publicly about the rehabilitation center's origins.[970] At an ad hoc Committee for Specialized Centers Concept of the American Academy of Orthopaedic Surgeons (AAOS), Affeldt reflected on how the polio epidemics gave rise to what had become an important element in national healthcare planning: the categorical

[970] Martha Derthick, *Uncontrollable Spending for Social Service Grants*, (Washington, D.C.: The Brookings Institution, 1975), 2-3.

rehabilitation center. Affeldt mentioned that with the "accumulation" of iron lung patients, the NFIP "surveyed the growing national problem and then began to develop a concept of how to solve it; out of this effort emerged the center concept as it related to polio at that time." Affeldt contemplated, "It can't be proven, but it seems evident that the center concept as we view it today is a spinoff from the Polio Foundation work of several decades ago."[971]

The final chapter investigates the "spinoff" that occurred in Los Angeles County, as the "rehabilitation concept" at the NFIP Respiratory Center gave rise to the "center concept" that is a hallmark of the 1950s rehabilitation movement. As we will see, this transition was in many respects a continuation of the story that began during the polio epidemics. In an interview, John Affeldt touched upon the "natural evolution" that occurred beginning with Salk's mass vaccination campaigns in 1955:

> It was clear that the need for continued respiratory care for polio would diminish and eventually become almost nonexistent. The techniques that were used in polio to restore muscle strength, extremity function, assistive devices, emotional care, in effect the team concept… it was clear that these techniques and concepts were just as applicable to other types of disabilities: muscular disabilities, accidents, trauma, all kinds of disabling conditions.

In this respect, Rancho Los Amigos' transition from polio rehabilitation to categorical rehabilitation for conditions such as stroke was spontaneous; staff recognized from experience that polio rehabilitation techniques could be used to manage similar disabling conditions. In his speech at the 1957 International Polio Conference, Affeldt spoke about how this was the case at the NFIP Respiratory Centers nationwide. He stated:

> A subsidiary concept of the care program, both in our respiratory center and others, is that procedures developed for severe poliomyelitis cases are useful for patients with other diseases. The respirator may be lifesaving in other diseases. The improved upper

[971] Report Specialized Centers Concept Meeting, January 13-15, 1971, File Folder: Box 25, Folder: 25-40 County Board of Supervisors 1971-1979, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

> extremity orthotic devices for paralyzed poliomyelitic patients are equally useful for arms paralyzed by other diseases.[972]

Broader political, economic, and social trends also affected how rehabilitation became appropriated after the epidemics. At the national level, the NFIP initiated a system for financing rehabilitation that became buttressed by the federal government after the 1950s. In his 1971 presentation before the AAOS, Affeldt explained how the staff's early efforts to apply rehabilitation to non-poliomyelitis patients depended upon the system of financial support that began under the NFIP:

> Under the block type of grant which was used to get the centers operating, there was flexibility to get what was needed to measure respiration- to get patients out of respirators… The block grant was a logical means of solving the problems of the respiratory cripple. When something was needed to solve a problem, the flexibility and equipment were available to do it.[973]

Affeldt touched upon how this set the stage for Rancho's dependence upon federal support in the years that followed. He mentioned:

> Well, aside from the Polio Foundation, which was the start of it, then it would get into federal help... health educational research, National Institutes of Health, the Vocational Rehabilitation Agency. So, we then began to move into the competing area with other research organizations around the country.[974]

Such new sources of support were perhaps the most crucial elements that drove the center concept forward:

> This is where we got into cardiac rehabilitation and competed for those funds. Into pulmonary rehabilitation and competed there. Into vocational training aspects and to the prosthetic, which now became the Biomedical Engineering Center... then the

[972] Group and Home Care of Patients with Respiratory or Extensive Paralysis," in *Poliomyelitis: Papers and Discussions Presented at the Fourth International Poliomyelitis Conference*, (J. B. Lippincott Company, Philadelphia 1958), 640.
[973] Report Specialized Centers Concept Meeting, January 13-15, 1971, File Folder: Box 25, Folder: 25-40 County Board of Supervisors 1971-1979, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[974] Marsha Erikson, interview with John Affeldt, *Early History of the San Fernando Valley Oral History Project* (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

> establishment of the Spinal Cord Injury Center. Each one of these really came from federal research funds...[975]

Importantly, the Los Angeles region informed the process by which Rancho's staff reinvented rehabilitation. By the 1950s, local officials and scientists called attention to industrialization's harmful effects within the region. Rancho's pulmonology program became part of a push for greater controls to protect residents from air pollution's health risks. Likewise, the region's aerospace industry propelled Nickels' orthopedic engineering program in new directions that also had implications for the Space Race.

Furthermore, John Affeldt's relationships within the local Adventist community, as well as with researchers at County Hospital and Harvard, continued to shape how he clinically innovated after polio's demise. Finally, the Home Care Program's patient-centered approach shaped, and would in turn be affected by, the disability rights movement, which transformed its system of social provision into a means of achieving political equality.

This chapter begins by focusing on the clinical practice of rehabilitation at Rancho Los Amigos and studies how practitioners reinvented rehabilitation as the polio incidence decreased. It notes through firsthand accounts how factors such as the hospital's physical layout shaped how Rancho's professionals applied rehabilitation to non-poliomyelitis patients. It then analyzes the "spinoff" that occurred at the macro level and tells the story of how hospital transitioned from depending upon the NFIP to federal sources for funding research, training, and patient care.

OVR Director Mary Switzer had an outsize influence in enabling Rancho Los Amigos to tap into new federal sources of financial support. We will see in this chapter how aspects of her agenda, including the Vocational Rehabilitation amendments, the hospital construction program,

[975] Ibid.

and her direction of Social Security funds towards rehabilitation, were key to how Los Angeles became a transformative agent within the Eisenhower administration's rehabilitation program.

We then transition into the 1960s, a time during which John F. Kennedy and Lyndon Johnsons' presidential administrations greatly expanded upon Eisenhower's rehabilitation program. Under both presidential terms, Rancho began a period of hospital construction that outpaced the previous decade's efforts, and which led to the dedication of new buildings that served as centers for spinal cord injury and stroke. In addition, the increased funding for rehabilitation services and research through Medicare, Medicaid, and the 1965 Heart, Cancer and Stroke Act brought prosperity to Rancho Los Amigos and assigned it a central position within national and regional healthcare systems.

This chapter concludes by returning to our case studies of Rancho Los Amigos' pulmonary, orthopedic, and vocational rehabilitation programs from the previous two chapters. We will see how national and local trends influenced rehabilitation medicine's reinvention within these programs to address public health problems. We will also study how rehabilitation became used to advance political agendas, whether they related to pollution, the Cold War, or the disability rights movement.

By 1972, when Los Angeles County established its Department of Health Services to organize healthcare delivery within its hospital, public health, and mental health departments, it could already boast of a truly unique safety net. Through Rancho Los Amigos, the county provided state-of-the-art rehabilitation to some of the county's most disadvantaged residents. And this was rooted in the region's experience of the polio epidemics. We end the chapter by noting how, in the long run, the explosive increase in public expenditures would make the rehabilitation concept unsustainable in Los Angeles County, especially as the nation experienced

inflation at the decade's end. While before this time, advocates could market rehabilitation as an investment, its costs reduced its appeal to officials during a new era of fiscal restraint. If the 1950s polio epidemics represented a turning point at Rancho Los Amigos from convalescence to rehabilitation, then the last quarter of the twentieth century marked another key transition, in which local leaders recognized that fixing chronic disease was not as easy as the rehabilitation advocates had thought.

The Beginnings of Change

In 1952, Los Angeles County established the Rancho Los Amigos NFIP Respiratory Center. John Affeldt commented that its success influenced "the staff to extend the intensive methods to some of the other disabled patients (at Rancho Los Amigos) with a myriad of other diseases."[976] Affeldt described how this process was characterized by a sense of discovery that resembled the United Mine Workers team's experience trekking into the countryside to locate hidden miners:

> …as the polio load began to drop, the very keen interested and active staff that had been brought together at Rancho began to walk out into the other wards… and they began to find all kinds of physical disabilities, severe crippling chronic rheumatoid arthritis, chronic emphysema… cardiac patients who were disabled from their damaged hearts and their fear of exertion.[977]

1955 proved to be a critical year in Rancho Los Amigos' history, as it dedicated 35 hospital beds and staff to the rehabilitation of other chronic patient groups. [978] The annual report

[976] Interview with John Affeldt. Interviewer: Colleen Adair Fliedner. File Folder: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[977] Ibid.
[978] Physical Rehabilitation Program July 1, 1955 through June 30, 1960. September 1, 1960. File Folder: Physical Rehabilitation 1955-1960. 22-46. Box 22. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

that year stated: “Use of respirator equipment and techniques of patient care have been used on an ever increasing number of non-poliomyelitis patients. During the last year we have treated respirator cases of Botulism, Porphyria, Emphysema, Asthma, Infectious Neuronitis, Muscular Dystrophy, and Multiple Sclerosis.”[979] That same year, the hospital also rehabilitated non-poliomyelitis orthopedic patients, including patients with spinal cord injuries and arthritis.[980]

Rancho Los Amigos’ earlier history as a convalescent hospital facilitated this process. This was especially evident in the arthritis program’s evolution. As Affeldt recalled,

> Well, first Rancho... had become a collecting point for the disabled who couldn't go home and didn't need to stay in an acute hospital. So, for example, we would accumulate some patients with arthritis who were so totally disabled that they were bedfast. They couldn't walk, they couldn't do anything for themselves. They're really the most severe rheumatoid arthritics.[981]

Hospital staff noted that such patients did not necessarily want to be rehabilitated. In a published paper, Affeldt and other members of his professional team commented that many patients “had long since had become accustomed and adjusted to a quiet and protected hospital environment.”[982] The impetus for their rehabilitation initially came from the staff. And the Respiratory Center’s physical connection to Rancho’s convalescent units stimulated the application of techniques on such patients who were previously outside of the rehabilitation professionals’ reach. Affeldt continued:

> Well, they would be there, and here we had surgeons like Dr. Nickel and his staff operating on the joints of polios. And nurses would, as they'd rotate from ward to ward, and see here surgery and the results. Pretty soon they'd say, "Hey, you know, I've got a

[979] Annual Report Rancho Los Amigos Hospital Respiratory Center for Poliomyelitis. July 1, 1955 through June 30, 1956. File Folder: Respiratory Care Services 1988. Box 22 File 22.53. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[980] Historical timeline in Rancho Centennial event brochure. File Folder: Historical Committee 1985-1986, Box 25. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[981] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library’s Urban Archives Center, 1976).
[982] John E Affeldt et al., "INTENSIVE REHABILITATION—Recent Experience in a Chronic Disease Hospital," *California Medicine* 91, no. 4 (1959), 194.

> patient over here on one of our other wards that, you know, can you do something for them?" And so, they'd go look at them, and they'd say, "Well, yeah, you know, I think if I would go in and operate on this elbow joint, that we could free that up so that they could get their hand to their mouth." And they'd go do it. And they'd be successful.[983]

Specialists from various disciplines shared space with multiple types of chronic patients, and this sparked an improvisation that was in a certain respect similar to the process that historian of science Soraya DeChadarevian described in her study of the Cambridge Molecular Biology Laboratory. DeChadarevian has written about how "working under one roof" led scientists who were "acculturated in different traditions" to interact, whereby a researcher "walking just two floors down" and looking at a model could gain a unique insight that facilitated the laboratory's exceptional collaborations.[984]

In addition, the fact that Rancho Los Amigos' polio rehabilitation and convalescent programs shared staff, who were simultaneously members of larger professional communities, allowed for the implementation of medical knowledge that circulated globally. It also contributed to the recognition that the current system failed to meet many chronic patients' needs. Affeldt continued:

> … Simultaneously surgical techniques were developing for arthritis around the world in various places. And our orthopedists would go to these meetings and learn this, and they'd come back and say, "Hey, you know, we can do this on that joint, and do this on this joint." So, pretty soon, they would...they had cases of rheumatoid arthritis, completely bedfast, completely disabled and helpless, up walking, taking care of themselves, and going home. And, you know...you'd say, "Well, there's a lot of arthritis out there that needs this kind of care."[985]

[983] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[984] Soraya de Chadarevian, *Designs for Life: Molecular Biology After World War II* (Cambridge: Cambridge University Press, 2002), 279.
[985] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

Rancho Los Amigos' staff developed other categorical programs for chronic patients in a similar manner. Affeldt reflected:

> …So pretty soon the arthritis program grew. Then, I had to go out and recruit an expert on arthritis and set up a laboratory for arthritis and do more studies on it. It would just grow that way. Spinal cord injuries, same way. You know, they're paralyzed same as a polio. Different
> cause, but then start accumulating those. So pretty soon they're sending in all the spinal cord injuries. And, so now, it's a Spinal Cord Injury Center.[986]

As Affeldt's comments reveal, this team-based process ultimately led to the birth of categorical rehabilitation:

> The categorical approach is really the spin off from all of this. You certainly can accomplish more for the severe rheumatoid arthritic if you pull together a group of people who devote their years to solving the problems. They can become far more ingenious, find solutions, develop techniques, and apply them in an efficient and effective manner. If you can bring together such a group and so you've created a program for arthritis, you do the same for stroke, the same for spinal cord injury, emphysema, head injury, you name it. If you have a facility that can concentrate a sufficient number of patients with a common problem and bring together the staff to tackle those problems, that is the categorical approach and… it is quite different than the classical approach used in teaching hospitals and acute care hospitals, where there is the department of medicine, surgery…[987]

While informed by circumstances at the micro level, Rancho's categorical solution achieved viability from its ability to resonate with the rehabilitation movement's aim to reduce public assistance beneficiaries' economic dependency.

[986] Ibid.
[987] Ibid.

Mary Switzer Enters the Picture

During this time in which Rancho's staff addressed the local neglect of the severely disabled, John Affeldt visited Mary Switzer. And almost instantaneously, he benefitted from her ability as a "bureaucratic entrepreneur" to astutely channel government money. Affeldt recalled:

> I went to Washington with Mary Switzer (sic.)… she had me for lunch, the two of us, and said what do you need? And before I went I asked my staff what we need and they said spinal cord injury because they are not being treated. They are being housed throughout all the acute hospitals in the back ward. So I said we need money for spinal cord injury. She called her staff and said give them the money… And so we came back and the first thing we did is identify the number of spinal cord injuries patients who were being housed in hospitals not treated. Then we started the program… So we were taking all the head injuries and the strokes and the arthritis (from the rest of the county hospitals).[988]

As Affeldt made more regular contact with Switzer, she molded Rancho Los Amigos into an agent of her reform program. Switzer's ability to influence the "flow" of government revenue provided the "venture capital" that Landauer had deemed necessary for continuing the NFIP's investment in the "trinity of research, training, and patient care." Historian Richard Verville has written that Switzer's "favorite" part of Eisenhower's rehabilitation program was its investment in research.[989] Consequently, her grants for research and professional training brought prosperity to Rancho Los Amigos and other national rehabilitation centers.

When it came to decide which projects to fund, Switzer deferred to organized medicine. A council of twelve physicians approved the federal government's provision of support to institutions. Each member belonged to a specialty that was involved in rehabilitation. The council awarded grants to clinical studies that were "focused on orthopedic, neurological, cardiovascular, visual, psychological and speech disorders."[990] Switzer also funded rehabilitation

[988] Ibid.
[989] Verville, *War, Politics, and Philanthropy,* 145-146.
[990] Ibid, 147.

training, and in the year following the 1954 legislation's passage, she supported 1,177 professionals and 124 programs. Hospital records show that Rancho Los Amigos depended upon this new source of support when it began accepting non-poliomyelitis patients in 1955. For instance, between 1955 and 1956, the Health, Education, and Welfare Department provided $26,719, which next to the NFIP grant, was the largest sum that Rancho Los Amigos received for the year.[991]

The Rehabilitation Center Construction Boom

Mary Switzer's hospital construction agenda furthered categorical rehabilitation's role in national healthcare planning. Richard Verville has written that under her leadership, "medical rehabilitation facilities developed or expanded to become comprehensive service facilities for severely disabled individuals." Verville listed five rehabilitation centers that benefitted from her construction program, each of which is an integral part of healthcare delivery within a region of the United States today. Such programs included (listed in order from Eastern to Western United States), Howard Rusk's Institute in New York, the Kessler Institute for Rehabilitation in New Jersey, the Rehabilitation Institute of Chicago, William Spencer's Houston center, and Rancho Los Amigos.[992]

As described in the previous chapter, Mary Switzer successfully lobbied for rehabilitation facilities to be eligible for federally matched hospital construction funds. In 1954, Congress passed amendments to the original Hill Burton legislation which, according to health policy expert Beaufort Longest, "greatly expand(ed) the Hill-Burton program's scope." P.L. 83-

[991] Annual Report Rancho Los Amigos Hospital Respiratory Center for Poliomyelitis. July 1, 1955 through June 30, 1956. File Folder: Respiratory Care Services 1988. Box 22 File 22.53. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[992] Verville, 146.

48.2, the Medical Facilities Survey and Construction Act, enabled facilities such as rehabilitation centers and nursing homes to receive federal grants for facility construction.[993] Historian of medicine Rosemary Stevens noted that the federal investment in hospitals and biomedical research was "designed for rapid expansion of scientific investigation in the medical schools" and served "to stimulate individual and institutional initiative."[994] Enacted in 1956, the Health Research Facilities Act was an additional source of matching funds that authorized the Public Health Service to administer grants "to non-Federal public and nonprofit institutions for the constructing and equipping of facilities for research in the sciences related to health."[995] As Harry A. Jacob, a staff member at the Department of Health, Education, and Welfare, noted in *Public Health Reports*, by 1957, "most of (its) grant funds (about 80 percent) (were) … allocated to colleges and universities for the construction and renovation of research facilities. The rest (were) granted to hospitals and related research institutes, both affiliated and nonaffiliated with universities."[996]

Rancho Los Amigos took advantage of this expansion in federal support when it was still a polio center. Hospital administrator Robert Thomas extensively negotiated with federal and state officials in 1954 to arrange the construction of Rancho Los Amigos' new Respiratory Center Building. Because the county budget was insufficient, Hill Burton funding was crucial to the procurement of the two million dollars necessary to construct of what historian Colleen Fliedner dubbed as the "most modern" polio Respiratory Center.[997]

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[993] B.B. Longest, *Health Policymaking in the United States* (Health Administration Press, 2009), 249.
[994] Stevens, 222.
[995] 1950 Legislative Chronology. History.NIH.GOV. Office of History National Institutes of Health. <https://history.nih.gov/research/sources_legislative_chronology.html#1950> Accessed March 19, 2020.
[996] Harry A. Jacobs, "Public Health Service Grants to Construct Health Facilities," 697-698.
[997] Fliedner, 268-269; Interview with Robert J. Thomas on 10 Dec 1985. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Thomas, Robert. File Folder: BOX: 17 File:106, Individuals. Or Fliedner, Colleen Adair. Centennial Rancho Los Amigos Medical Center 1888-1988. Downey: Rancho Los Amigos Medical Center, 1990.

The federal government's grant-in-aid programs also accelerated Affeldt's construction of Vernon Nickel's orthopedic laboratory. Undertaken at a time in which stigmas against the Poor Farm still drove researchers away from Rancho Los Amigos, Affeldt used Hill Burton funding to create a building that Nickel stated, had "a great deal to do with (his) own decision to latch onto this system…"[998]

The 500 Building and the Growth of the Scientific Rehabilitation Center

The idea for the 500 Building originated with Jacquelin Perry. In 1955, Perry approached Affeldt about her desire to have a laboratory for performing anatomical dissections. Affeldt looked into remodeling one of the hospital buildings' basements, but in the process "the county became sufficiently interested that they were convinced that they ought to build a building for us rather than try to remodel space down there." "Affeldt then travelled to Washington DC with the backing and agreement of the county authorities" to see if he could obtain matching funds.[999] He described what happened after he arrived:

> I … convinced the Public Health Service that they should help us build a research building at the polio center. They were willing to provide matching funds. So what we did was to double the size of our plan and the money the county would put up for half the building we were able to use, and the federal government matched the other half, which gave us the total funding for the anatomy building.[1000]

During an interview in the late 1980s, Affeldt reflected on how the era was a ripe time to be working as an administrator:

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[998] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[999] Interview with John Affeldt on March 14, 1986 both by Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1000] Interview with John Affeldt on March 14, 1986 both by Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

> One of the good things of that particular era was that those were the days when funding for healthcare was in an expansionist mood. There were resources available if you went after them to develop programs, devices, techniques. Not at all like today where we're in a retrenchment cost containment mood… Your capabilities were measured by your ability to attract funds rather than today as to how to reduce costs.[1001]

In acquiring funding for Nickel and Perrys' orthopedic laboratory, Affeldt created a program that fulfilled the Hill Burton proponents' vision. Rosemary Stevens has written that the 1946 Act "accepted the definition of the hospital as an autonomous, scientifically based treatment center."[1002] Indeed, this view of the hospital shaped the type of welfare institution that Rancho Los Amigos transitioned into through the 1950s rehabilitation movement. However, in becoming a part of the Eisenhower administration's welfare reform program, Rancho discarded important forms of assistance present at the hospital since its origins.

The End of Dependency

To a certain extent, Mary Switzer built a national healthcare system. Her use of Social Security and public assistance funds enabled state vocational rehabilitation agencies to provide services to 140,000 workers in the four years that followed the 1954 Vocational Rehabilitation Amendment's passage. The specification that disability insurance could be used to purchase clinical services enabled many civilians to pay their healthcare costs and provided revenue to rehabilitation providers. It also furthered categorical rehabilitation's importance within regional healthcare delivery systems, as Switzer worked to ensure that disability insurance beneficiaries went to Howard Rusk, John Affeldt, and other rehabilitation leaders' centers.[1003]

[1001] Ibid.
[1002] Stevens, 226.
[1003] Verville, *War, Politics, and Philanthropy*, 147-148.

Rancho Los Amigos' 35 bed program grew in response to the new sources of revenue that Switzer provided. Between 1955 and 1957, 85 patients completed rehabilitation in Rancho's new program for non-polio patients. Such patients included adults and children with disabling conditions including quadriplegia, rheumatoid arthritis, and muscular dystrophy. In 1959, Affeldt and his colleagues presented a study of their program at the California Medical Association's 88th Annual Session. They also subsequently published their results in an article in the local AMA journal *California Medicine*.[1004] In the presentation and the article, they used their clinical data to make an argument that framed rehabilitation medicine's value in economic terms.

The presentation and article began by describing a fundamental problem facing the American healthcare system: "The acute hospitals are so crowded with patients in critical condition that they can hardly handle the acute problems in their facilities, let alone give adequate attention to reconstructive problems in patients sent back to them from chronic disease hospitals, or even in patients on their own wards who need such care."[1005] As they argued, "the only way to meet the increasing demand without continually building more beds, is to increase the salvage or discharge rate," which was something that rehabilitation medicine could do. Affeldt and his team maintained: "Administrators will not seek the necessary funds for purely social benefits to the patients, but will do so if economy can be demonstrated." Thus, with the intent of answering administrators' questions about cost effectiveness, they "present(ed) the results of an intensive rehabilitation program at the Rancho Los Amigos Hospital…" which they proposed "answer(ed) the above question in the affirmative."[1006]

[1004] Affeldt et al., "INTENSIVE REHABILITATION—Recent Experience in a Chronic Disease Hospital," 193.
[1005] Ibid., 193.
[1006] Ibid., 194.

John Affeldt's study demonstrated rehabilitation medicine to be advantageous from both a clinical and economic perspective. For example, 68% of the adults who completed the program gained enough function to live at home. He touched on his program's psychological and social benefits, some of which included the "reestablishment or protection of a person's dignity and self-esteem," "interest and participation in an active life," and the "reestablishment or preservation of his home and family."[1007]

Most of the presentation and article however, described the savings that came with investment in rehabilitation. For example, after receiving vocational training, over 50% of discharged patients found employment, which was of special interest to "persons responsible for governmental budgets and taxes." Rehabilitation also decreased "financial dependence on others from 63% to 26%," which was "important with regard to taxes, for the bulk of financial help to these people and their families is from public welfare funds." While rehabilitation required a higher daily cost than convalescent care, "The length of stay was so much shorter that the total cost was much less." Affeldt and his colleagues thus concluded that the average saving per patient was $7,640.[1008]

While Affeldt used his data to support Switzers' political argument about cost effectiveness, she simultaneously channeled her money into supporting his medical approach. Using the Old Age Security and Aid to the Totally Disabled (California's state-administered Social Security assistance programs), Rancho Los Amigos opened 75 beds for rehabilitation on January 1, 1961. As a 1961 hospital document reported, "A significant aspect of the Medical Care Program at Rancho Los Amigos Hospital in these years was the influence of the Federal

[1007] Ibid., 195.
[1008] Ibid., 196.

and State Assistance Programs… This meant complete reimbursement to Rancho for the rehabilitation program of seventy five patients…"[1009]

Such support not only stimulated the opening of more hospital beds but advanced categorical rehabilitation's team-based approach. The document noted that "This new program has affected all the services of the hospital and has added personnel to many departments, including Physical Therapy, Occupational Therapy programs, General Services and Maintenance Departments." The support additionally led to a "strengthening and broadening the coverage provided by staff physicians, and intensifying the medical care of certain specialty areas such as medical service, pediatric service, neurological service, and others."[1010]

Other contemporary political developments influenced Rancho's transition into a categorical rehabilitation center, not so much by funding rehabilitation, but by disincentivizing the hospital's provision of convalescent care. In 1957, California passed legislation creating the Short-Doyle Program, which provided matching funds to counties and cities to ensure that "mentally ill persons should be treated near their homes, close to family and friends, whenever possible." In promoting "community mental health services," the Act prohibited coverage of long-term inpatient care.[1011] Affeldt articulated how this affected the locked psychiatric wards that were present when he arrived:

> … there was a time when there was probably five hundred mental patients at Rancho, and there was a… change in the law in terms of who could be in a locked facility, as well as reimbursement for those kinds of patients. And by that process, there was the reevaluation... psychiatric reevaluation. Psychiatric teams came from the medical center out there and re-evaluated each of those patients and found that many of them could go to nursing homes and... did not require a locked facility, as it was at that time. So that,

[1009] Biennial Report 1961- 62 &1962- 63. File Folder: Biennial Reports 1959-1976, Box 22-16. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1010] Biennial Report 1959-1960 & 1960-1961. File Folder: Biennial Reports 1959-1976, Box 22-16. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1011] Ibid.

> eventually we were able to eliminate a total of five hundred patients who were then in the so-called psychiatric facility.[1012]

For Affeldt, this experience was a rude awakening to how heartless commercial profit motivated public officials, which was a reality that he continued to encounter as he rose through higher levels of administration:

> And then when the state came in and said they would pay for the mental health care if they were not in a locked facility. And then those 500 patients were all declared mentally competent and didn't have to be locked. That way the county started receiving reimbursement for their care. That was a great lesson to me… to realize that money dictated health care.[1013]

Affeldt also touched on several additional developments that reduced the volume of convalescent patients, including an expansion in assistance to formerly homeless residents through the Social Security Act and the funding of care at nursing homes through Medicare and Medicaid during the following decade.[1014]

Around this time, the NFIP stopped funding attendant care at its two California Respiratory Centers. Disability activist and historian Gini Laurie has noted that in response, "the ex-patients and medical directors for the two centers effected state legislation in 1960 that created an attendant care program." During the 1960s, California's Aid to the Totally Disabled (ATD), which was the state's Social Security Assistance Program, paid for Rancho Los Amigos patients' home care costs and provided them with support that could be used for attendant care. Indeed, Laurie maintained that this "legislation and the successful experiences with independent living by respiratory polio survivors were the foundation for the independent living movement

[1012] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).
[1013] John Affeldt Interview. December 13, 2004. Personal files Affeldt family.
[1014] Ibid.

that was started in the 1970s in Berkeley, California, and has evolved into the disability rights movement," which is a topic we will return to later in the chapter.[1015]

By 1960, Rancho Los Amigos could confidently assert its new role as the county's categorical rehabilitation center for chronic disease patients. The annual report that year noted: "Rancho Los Amigos is the chronic disease hospital of the Los Angeles County Charities Department hospital system… Its function is to care for the chronically ill and to provide a program of intensive therapy and rehabilitation for those orthopedic, post-poliomyelitis and neuromuscular disease type patients where rehabilitation is deemed medically, economically, and socially possible." Rancho was now addressing a similar problem among chronic patients to that which the NFIP had earlier addressed in creating respiratory centers for iron lung patients; Rancho responded to the accumulation of chronic patients that occurred with "advancements in medical science," who demanded "long-term hospital care." However, its purpose was now to help the county deal with the economic problem of supporting the dependent; the report commented that "one of the medical care programs under way… through intensive therapeutic treatment aims at returning them to the community as useful citizens and taxpayers, no longer a burden on the County." [1016]

Mary Switzer's objective to use public assistance to get patients off of assistance was actualized in a program, which by 1960, helped over 1/3 of its patients become employed, so that "instead of remaining County charges," they gained "independent taxpayer status."[1017] Rancho

[1015] Laurie, 165.
[1016] Biennial Report 1959-1960 & 1960-1961. File Folder: Biennial Reports 1959-1976, Box 22-16. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1017] Physical Rehabilitation Program July 1, 1955 through June 30, 1960. September 1, 1960. File Folder: Physical Rehabilitation 1955-1960. 22-46. Box 22. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

Los Amigos was no longer the County Farm, a safety net institution established to address the enduring conjoined realities of medical and economic dependency. It was now actively rehabilitating those in the safety net out of the safety net.

The Expansive 1960s

In January 1961, a new presidential administration came into power. Through emphasizing rehabilitation's humane and economic values, President John F. Kennedy and his successor Lyndon Johnson achieved the enactment of legislation that further expanded the system in place when Eisenhower left office. Health, Education and Welfare (HEW) Secretary Abraham Ribicoff advised Kennedy to "emphas(ize)… rehabilitation of those on relief and prevention ahead of time" to unite people across the political spectrum "to the cause of welfare revision."[1018] Stating that he wanted "rehabilitation not relief," President Kennedy signed into law the 1963 Public Welfare Amendments to the Social Security Act, which appropriated his predecessor's rehabilitation approach in tackling social problems, such as poverty. The Kennedy administration established an additional category of grants at an increased federal matching rate of 75% as opposed to Eisenhower's 50% matching rate. It supported rehabilitation services, put more funding into child welfare and community programs, and made unemployed parents eligible for Aid to Dependent Children.[1019] The legislation used language that was consistent with 1950s rehabilitation advocates' terminology and proposed that services meet the objectives of "self support, self care, strengthening family life and reducing dependency."[1020] Ribicoff suggested that "the services approach was appealing because it united conservatives and liberals,

[1018] Derthick, 7.
[1019] Berkowitz, "Rehabilitation." 150-151; Derthick 7-8.
[1020] Ibid., 8.

the former believing that services would reduce dependency, the later believing that they would succor the person; the former believing that money would be saved, the later believing that it would be spent to good purpose."[1021]

President Kennedy also initiated an expansion in federal support for community-based services for individuals with intellectual and developmental disabilities (IDD) that enabled them not to be institutionalized. Kennedy's interest in care for persons with disabilities was personal, as one of his sisters had an intellectual disability. Kennedy, like Switzer, sought to use academic medical institutions as "agents of change." His Panel on Mental Retardation's proposals shaped the Mental Retardation Facilities and Community Mental Centers Construction Act, which led to the organization of ten IDD research and treatment centers using the rate of 75% federally matching funds.[1022]

Before President Kennedy's assassination in November 1963, his administration had begun working on an antipoverty plan, which Lyndon Johnson transformed into a "martyrs cause" upon assuming office.[1023] Rehabilitation became connected to Johnson's "unconditional war on poverty," both in cementing political support for the Great Society and as a benefit that his programs offered. Like Kennedy, Johnson sold his agenda through appropriating language from the 1950s rehabilitation movement. For example, in 1967, he further amended the Social Security Act and broadened Kennedy's definition of services to include "(those) to a family or any member thereof for the purpose of preserving, rehabilitating, reuniting, or strengthening the family, and such other services as will assist members of a family to attain or retain capability for the maximum self-support and personal independence." He thereby connected rehabilitation to

[1021] Derthick, 13.
[1022] Edward D. Berkowitz, *Mr. Social Security: The Life of Wilbur J. Cohen* (University Press of Kansas, 1995), 1.
[1023] Hughes, 495.

his efforts to reduce births by unwed mothers and fund childcare. [1024] At this time, Mary Switzer had considerable popularity in Congress and was appointed as the director of the new Social and Rehabilitation Service (SRS), which united various social programs, including the Children's Bureau, the Rehabilitation Services Administration, and the Administration on Aging. Economist Martha Derthick commented that HEW authorities believed, "if anyone could help the welfare poor get to work and show Congress that HEW was trying, Mary Switzer could."[1025]

President Johnson additionally secured the necessary votes to enact a national health insurance program for the elderly, which was an earlier item on Kennedy's agenda. In 1965, Congress passed Medicare Part A and Medicare Part B, which created a federally run program that covered hospital care and outpatient physician fees respectively for individuals who qualified for Social Security. Congress also passed Medicaid, which assisted states in providing medical services to patients below a specified income level.[1026] Medicare's coverage of hospital costs and medical services incentivized an expansion in the types of rehabilitation services that hospitals offered over the course of the decade. For example, in 1959, California hospitals offered 10 rehabilitation services, a number which increased to 26 one decade later.[1027]

President Johnson also assigned rehabilitation a more powerful role within national healthcare planning. In 1964, Johnson formed a Commission on Heart, Cancer, and Stroke and selected Howard Rusk to be one of its 25 members. The Commission's proposals led to the 1965 Heart, Cancer and Stroke Act, which historian Richard Verville has written, worked out "the elements of an effective health system." The legislation incentivized the establishment of

[1024] Derthick, 12.
[1025] Ibid., 15.
[1026] Porter, 657-658; Starr, 369-370.
[1027] Verville, *War, politics, and philanthropy*, 169.

regional academic centers, which coordinated the "trinity" of research, teaching, and care in response to the three diseases.[1028]

The Expansion at Home

During the years in which Kennedy was president, the optimism and creativity that began locally with polio rehabilitation worked in synergy with national trends to fuel an extreme expansion in program development. Affeldt stated, "The momentum of the polio program brought forth the creation, funding, construction of the 700 building, 800 building, 900 building, 1100 building … all of which created a driving force to begin applying these techniques to other disabilities."[1029] Federally matched assistance to Rancho Los Amigos for hospital construction increased from $124,205 in 1962 to $843,970 in 1963.[1030] Such funding enabled Affeldt to complete the 700 and 800 buildings during his last four years, which was one of the hospital's most celebrated accomplishments. Following the 800 Building's opening on June 22, 1964, wards 803 and 804 were assigned to Hemiplegia Service, which admitted 487 patients over the subsequent 13.5 months.[1031]

President Johnson's social programs prompted an even greater level of growth after Affeldt left Rancho in 1964 to become the county hospital system's director. Rancho's 1967 to 1969 biennial report noted that Medicare and Medicaid reimbursement enabled 600 patients to access rehabilitation from a number of programs, including pulmonary, ortho-neuro, spinal cord

[1028] Ibid., 169.
[1029] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1030] Biennial Report 1961-1962 & 1962-1963. File Folder: Biennial Reports 1959-1976, Box 22-16, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1031] Biennial Report 1963-64 & 1964-65. File Folder: Biennial Reports 1959-1976, Box 22-16, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

injury, rheumatology, diabetic, cardiology, and pediatric services. Commenting on the prosperity of the times, the report stated "Revenue from all sources, especially Medi-Cal, continues to rise: in 1967-1968, 18.5 million dollars; in 1968-1969, 20 million dollars. Each revenue figure exceeded the hospital's annual operating budget for that year."[1032]

Rancho Los Amigos also completed the construction of the Children's Building in 1968 and announced a formal affiliation with the University of Southern California at its dedication. Rancho's expansion of pediatric services enabled it to acquire significant Title V funding from the Crippled Children's Services. The dean of USC Medical School commented on how the opening of the Children's Building and the USC affiliation marked a new era in pediatric and adult medicine. At its dedication, he stated that "Many of the once major problems of acute infectious illnesses are no longer such serious concerns." Commenting on the need to rehabilitate chronic conditions, he concluded, "The change of attitude is a major feature of modern medicine."[1033] As the county hospital system's new director, Affeldt was well situated to formalize Rancho Los Amigos' affiliation with USC. Affeldt said that becoming director of the hospital system "put me into a position where certainly I could see to it that Rancho retained its place in the spectrum of health care that the County would deliver. So that, I was able to support Rancho, and encourage them, and encourage the affiliation with the medical school. And so, I didn't leave Rancho in that sense."[1034]

Following the 1965 Heart, Cancer and Stroke Act's enactment, California received a federal grant of $1,099,968 to develop regional academic systems that advanced care for state

[1032] Biennial Report Rancho Los Amigos Hospital 1967-68 & 1968-69. File Folder: Biennial Reports 1959-1976, Box 22-16. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California
[1033]George Getze, "Rancho Hospital, USC School of Medicine Affiliate," 15 October 1968, *Los Angeles Times.*
[1034] Marsha Erikson, interview with John Affeldt, Early History of the San Fernando Valley Oral History Project (Northridge: CSUN, Department of History and University Library's Urban Archives Center, 1976).

residents with the three conditions. In 1967, the USC academic system (which included Rancho Los Amigos) received roughly one third of the grant money allocated to the state.[1035] In 1969, Rancho Los Amigos began another massive construction project that used $26.5 million to build two six-floor towers, which were dedicated to the rehabilitation of stroke as well as "catastrophic" conditions.[1036] In the process, the county created a safety net for burn patients, a previously neglected patient group, which according to the 1969-1971 Biennial Report, "still needed… plastic and reconstructive surgery and intensive physical, psychological, and vocational rehabilitation."[1037] As the 1970s began, Rancho Los Amigos continued to take advantage of the seemingly unlimited federal funding for rehabilitation. In 1972, the Health, Education, and Welfare Department awarded Rancho Los Amigos with a $350,000 grant, which propelled it to become one of two national engineering centers that developed novel devices, including technologies that could replace muscles and provide assistance to the hearing and visually impaired.[1038]

The two decades that followed the 1955 opening of Rancho's 35-bed unit for chronic patients witnessed important changes within metropolitan Los Angeles, which related to national trends. Indeed, elements of Los Angeles' civic life and culture informed the process by which professionals undertook research that addressed not only chronic conditions, but the problems which accompanied the region's urbanization. Aspects of the local economy, such as the aerospace industry, also contributed to innovations, like the engineering devices that the 1972 HEW grant supported. The final chapter ends by studying how aspects of local urban life

[1035] Harry Nelson, "Program Unveiled to Improve Heart, Cancer and Stroke Care," 20 April 1967, *Los Angeles Times.*
[1036] Lou Desser "Rancho Los Amigos Hospital Plans Major Expansion," 21 December 1969, *Los Angeles Times.*
[1037] Rancho Los Amigos Hospital Biennial Report July, 1969 to June, 1971. File Folder: Biennial Reports 1959-1976, Box 22-16. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1038] "Hospital to Get HEW Grant," 14 March 1972, *Los Angeles Times.*

influenced the reinvention of rehabilitation in Los Angeles. Through again focusing on how Rancho's pulmonology, orthopedic, and vocational rehabilitation programs evolved, we will see that this story was in many respects a continuation of that which began during the polio epidemics.

From Polio to Pollution: Rehabilitation in Global Los Angeles

During the late 1950s, Rancho Los Amigos' pulmonology program shifted from responding to health problems associated with polio to those associated with air pollution. By this time, California state officials had become increasingly concerned about urbanization's deleterious effects on health and the environment. The rampant industrial growth of the previous half century resulted in an abundance of smog that came to visibly occupy the Los Angeles skyline. In 1952, Governor Goodwin J Knight organized a committee to study air pollution under the leadership of Cal Tech chemist Arnold Beckman. (Beckman's company, Beckman Instruments marketed early versions of Max Liston's infrared CO2 analyzer.) The Beckman Committee proposed several items that subsequently informed the state's response to pollution, including regulating exhaustion, encouraging the use of alternative fuels to diesel, and investing in public transit. In 1960, California became the first state to pass a law that mandated smog standards for motor vehicles.[1039]

In his contribution to the statewide quest to reduce air pollution, John Affeldt's Harvard mentorship relationship continued to be important. In 1957, Affeldt wrote Whittenberger, who by this time had become a National Consultant on Smog, about applying for an NIH grant to

[1039] J.J. Rawls and W. Bean, *California: An Interpretive History* (McGraw-Hill, 2003), 489; "The Southland's War on Smog: Fifty Years of Progress Toward Clean Air (through May 1997)." South Coast AQMD. < https://www.aqmd.gov/home/research/publications/50-years-of-progress#The Arrival of Air Pollution> Accessed March 10, 2020.

develop a research project on air pollution. The California State Department of Public Health had asked Affeldt whether he would be interested in using his pulmonology laboratory to study pollution's effects on chronic disease patients' health. Affeldt wrote to Whittenberger that the State Health Department "want(ed) to use information about smog concentration and correlate any changes in pulmonary function in a group of respiratory patients." The health department suggested that respiratory polio patients be used as research subjects but noted that the study had application for other patient groups, including geriatric emphysema patients. In asking Whittenberger for advice, Affeldt mentioned that he was interested in becoming a part of the project, not just because it would enable him to apply rehabilitation to conditions other than polio, but because it investigated a local problem and served Rancho's financial interests. Affeldt wrote:

> We are tempted to make such an application for several reasons: 1. We are interested in extending our pulmonary function studies to such patients. 2. We are interested in the smog problem because we are living in it. 3. We are interested in broadening our support base to other organizations than the N.F.I.P.[1040]

Whittenberger advised Affeldt go through with it because of "the possibility of your showing significant changes in pulmonary function in smog areas."[1041]

Not only did Affeldt adapt Rancho's respiratory program to study smog, but Max Liston modified his CO2 analyzer so that it could find a market in measuring air pollution. Liston formed the Liston-Edwards Corporation "with the purpose of providing an IR analyzer to the

[1040] Letter to Dr. Whittenberger, 29 November 1957, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.
[1041] Letter to Dr. John E. Affeldt, 6 December 1957, File Folder: Series I: Box 1: Folder 2. Affeldt, John E., 19 October 1949-08 November 1961, James Whittenberger Papers, Center for the History of Medicine. Francis A. Countway Library of Medicine, Harvard Medical School, Boston, Massachusetts.

pollution monitoring field."[1042] Liston's analyzers were utilized by the Coordinated Research Council and the State of California, as well as automobile manufacturing companies.[1043]

John Affeldt's connections within the Loma Linda professional community also influenced the new directions that Rancho's pulmonology program and the CO2 analyzer took. In July 1958, John Affeldt worked with Clarence Collier, as well as his old medical school mentor Donald Griggs, in adapting the infrared CO2 analyzer for emphysema, congestive heart failure, and other chronic conditions. Their research team also included Jack D. Hackney, another College of Medical Evangelist pulmonologist, who became part of Affeldt's air pollution program.[1044]

In 1975, Hackney's team reported that Los Angeles residents' lungs responded differently to air pollution than residents of other areas. Their findings suggested a potentially concerning phenomenon: Los Angeles residents' lungs underwent physiologic changes in adapting to the region's high levels of pollution. Collaborating with Canadian researchers, Hackney compared how subjects from Los Angeles and Canada responded to high ozone levels. They found that Canadians developed symptoms such as "coughing, airway irritation and chest pains" to a much greater degree than Los Angeles residents when exposed to the same smog concentration. Based on his findings, Hackney warned: "It may be that cities now setting their smog standards ought to be more conservative."[1045]

Jack Hackney and his colleagues' research identified the clinical manifestations of a problem, which over the next half century, increasingly affected the underserved communities that bore the costs of Los Angeles' urbanization. As trade with Pacific nations like Japan became

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[1042] Jaffe, 895.
[1043] "Liston Scientific Corp." Company Profile. *Bioprocess Online*, 2000. <https://www.bioprocessonline.com/doc/liston-scientific-corp-0001> Accessed March 13, 2020.
[1044] Clarence R. Collier, John E. Affeldt, and Andrew F. Farr, "Continuous Rapid Infrared CO2 Analysis," 526-539.
[1045] More Tolerance to Smog Found in L.A. Residents, 20 May 1975, *Los Angeles Times.*

more important to the national economy, Los Angeles implemented technological changes in the 1950s that enabled its ports to transport products more effectively. Within three decades, Los Angeles reached the goal of becoming the "gateway city for the Pacific Rim" and had become a global city.[1046] A term used by academics and policymakers, the "global city" concept refers to vast metropolises such as London and New York, which are economic hubs of the world. As sociologist Janet L. Abu-Lughod has written, global cities are characterized by "the internationalization of commerce, a revolution in the technologies of transport and communications, the extensive transnational movement of capital and labor, a paradoxical decentralization of production accompanied by a centralization of control over economic activities," combined with a transformation from depending on manufacturing to finance.[1047] In large part because of the 1965 Immigration and Nationality Act, which made the region into a mecca for Latin American and Asian immigration, Los Angeles underwent the "enormous changes in population" that environmental historian Robert Gottlieb has also described as a characteristic of the global city. Gottlieb has written that by the 1970s, Los Angeles was "a city of multiple languages, cultures, and attitudes about daily life, including nature and community in the city."[1048]

In commenting on the Global City phenomenon, Janet L. Abu-Lughod has written that "accompanying these changes, and often thought to result from them, is a presumed new bifurcation of the class structure within the global city and increased segregation of the poor from the rich."[1049] In Los Angeles, as in the other American global cities of New York and Chicago, this "segregation" between different classes was also racial. For example, in utilizing

[1046] Gottlieb, 279.
[1047] Ibid., 7; Abu-Lughod, 2.
[1048] Gottlieb, 7.
[1049] Abu-Lughod, 2

freeway construction funds from the Federal-Aid Highway Act of 1956, Los Angeles constructed freeways that, as Abu-Lughod notes "gave special definition, in massive concrete form, to the barriers of class and race," dislocating impoverished residents from their homes, isolating Watts and South Central from the downtown commercial center, and separating black communities from each other through "walls of separation."[1050]

By the beginning of the next millennia, the Los Angeles region had a thriving network of ship, rail, and truck transport. However, it traversed predominately low-income racial and ethnic minority communities, whose residents were exposed to the pollutants emitted from its shipyards, railroads, and diesel trucks. Such communities are exposed to the health risks that come with living alongside Los Angeles' industrial corridor, including asthma, developmental problems, and increased mortality.[1051] Jack Hackney's study pointed to an urban social problem, which unfortunately continues to create chronic disease within Los Angeles' underserved communities as a result of its industrial growth.

Conquering Welfare and Outer Space

As Affeldt's pulmonology program shifted into studying air pollution, Nickel's orthopedic program also evolved. But it did so in relation to another local phenomenon: the emergence of Los Angeles' powerful aerospace industry. Nickel's interest in orthopedic innovation inspired his creation of a program that that tackled the problems of both the chronic disease era and the Space Age.

Historical studies date robotics rehabilitation's origins to the early 1960s and point out that Rancho Los Amigos initiated some of the earliest robotic devices. As Nickel mentioned in

[1050] Abu-Lughod, 254.
[1051] Gottlieb, 277, 279-280.

an interview, he believed that at Rancho, they were first to develop the concept of a robotic device.[1052] The NFIP funded Nickel's earliest robotics research, but as the polio caseload decreased, he acquired financial support from the local aviation and aerospace industries.[1053]

Historians James J. Rawls and Walton Bean have written in their history of California that "One of the most significant factors in the California economy after World War II was the growth of the state's defense industry…" During World War II, Los Angeles County could boast of being home to three of the nation's five dominant airplane manufacturers. Wartime advances in military technology, along with the beginning of the Cold War, led to a vast increase in Pentagon budgets, which California's already powerful industries soon monopolized. For instance, in 1948, 50% of Defense grants went to California' aviation industry and this propelled a sustained period of local economic growth.[1054]

During the mid-1950s, when Rancho Los Amigos still predominately cared for polio patients, it already had ties to the aviation industry. In 1954, North American Aviation supported efforts to engineer a hydraulic-powered manipulator and donated $3000 for functional bracing and another $10,000 for patient welfare.[1055] The early relationship between local industry and rehabilitation is partially explained by the fact that polio affected everyone. Industrialist's children contracted polio and they, in turn, donated their money to efforts against the disease. For instance, aside from the funding acquired through the Hill Burton Act, Nickel and Perry had additional support from an aviation industry executive in developing their orthopedic laboratory. As Nickel explained in an interview, "One of the respiratory polio patients was from the San

[1052] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1053] Ibid.
[1054] Rawls and Bean, 515-518.
[1055] William Hildred, *A case study of technology transfer: Rehabilitative engineering at Rancho Los Amigos Hospital* (1973). 6.

Diego area. His father was an owner of with Rohr [Aircraft]. His father came to talk to Affeldt about his desire to donate to Rancho and asked what would be appropriate." Nickel continued: "He donated a large block of stock from his company to Rancho, which gave Rancho the ability to create the Orthotics Department."[1056]

Another patient's father, Joe McKibben, was a physicist at Los Alamos who had worked on the Manhattan Project. In 1957, McKibben invented an artificial muscle, which Nickel tested on Rancho Los Amigos patients. McKibben's device was a tube that was connected to a hand splint. When the patient pressed a lever, the tube filled with gas, displacing the splint so that the patient's fingers could perform a grasping motion.[1057] Two years later, Nickel also designed a robotic arm. While Nickel began his project using air pressure, his final product used electricity and facilitated multidirectional movement over seven joints in a similar fashion to the human arm.[1058]

Nickel's research on the robotic arm progressed during the mid-1960s to a point where his technology could be studied on patients and its value demonstrated to officials. In 1966, Nickel wrote Mary Switzer a letter celebrating his electric arm's ability to help a polio patient, "who (was) essentially frail in all four extremities." Updating Switzer on the project, which her agency was financially supporting, Nickel's invention enabled his patient not only to perform essential tasks such as eating, but activities that improved her quality of life. As Nickel wrote:

[1056] Interview with Vernon Nickel on January 26, 1986. Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

[1057] Bertrand Tondu, "Modelling of the McKibben artificial muscle: A review," *Journal of Intelligent Material Systems and Structures* 23, no. 3 (2012). "Joe McKibben: Scientist, Trinity Site." Atomic Heritage Foundation. https://www.atomicheritage.org/profile/joe-mckibben. Accessed March 26, 2022.

[1058] Michael Hillman, "2 rehabilitation robotics from past to present–a historical perspective," in *Advances in Rehabilitation Robotics* (Springer, 2004).

"She is a heavy smoker and probably of greatest satisfaction to her, strange as this may be, is the fact that she is now able to smoke much more independently." [1059]

Officials from the National Aeronautics and Space Administration (NASA) as well as the Atomic Energy Commission (which was seeking a remote means of working with radioactive materials) soon became aware that Rancho's success with robotics could serve their combined interests. A 1973 report prepared for NASA by William Hildred of the Denver Research Institute touched on why funding Nickel's robotics program was important for its program of research and development. As Hildred noted: "A man in space is relatively helpless in many respects; to perform useful work, he has to have special tools and some kind of assisting control mechanisms."[1060]

Seeking to develop robotically operated manipulators, NASA partnered with Cal Tech and Rancho Los Amigos to develop devices that not only allowed astronauts move objects remotely but disabled Americans to operate machinery in the workforce. While espousing robotics' significance for space exploration, Hildred touched on its benefits in promoting economic self-sufficiency. Referring to Nickel's polio patient, he maintained: "This patient, who became a quadriplegic polio victim in 1954, is now able to perform many ordinary tasks of daily living, including writing, typing at 25 words per minute and operating a modest telephone answering business."[1061]

Rancho also had a fruitful relationship with the Jet Propulsion Laboratory (JPL), which led to the invention of a voice operated wheelchair with a robotic arm. Researchers acquired $60,000 from NASA and the Veterans Administration to create a technology, which JPL

[1059] Letter to Miss Switzer, 3 May 1966, File Folder: RG 363 Box 93-94. Records of the Social and Rehabilitation Service, National Archives, College Park, Maryland.
[1060] Hildred, 8.
[1061] Ibid., 10.

engineer Ewald Heer maintained, had the potential to make persons with disabilities independent; as Heer stated, "Once voice recognition systems now being perfected are available on a large scale, severely handicapped people can become productive members of society… Imagine typing, operating a cash register or a phone… by voice." [1062]

The 1973 Rehabilitation Act

In 1973, Congress passed a monumental piece of legislation. Based on the Civil Rights Act of 1965, the 1973 Rehabilitation Act banned discrimination against persons with disabilities by federally supported programs, mandated accessibility to federal buildings, and created an Affirmative Action program. As Section 504 of the Act stated, "no otherwise qualified handicapped individual in the United States should solely by reason of his handicap be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity requiring federal financial assistance."[1063] The Act also increased the autonomy of persons with disabilities within the rehabilitation process and required that officials consult with them in developing rehabilitation plans. While officials had historically prioritized rehabilitating persons with disabilities who could enter the workforce, the Act required that they give preference to patients with spinal cord injuries and other disabling conditions, whom they had previously deemed "infeasible."[1064]

Maternal and Child Health Bureau director Vince Hutchin, who oversaw the Social Security Act's Title V programs between 1977 and 1992, commented on the significance of Section 504 for children with chronic conditions. He and his colleague Merle McPherson have

[1062] Don Snyder, "JPL Develops Computerized Robot Wheelchair to Help Quadriplegic," August 3, 1975, *Los Angeles Times*.
[1063] Vince L. Hutchins and Merle McPherson, "Roots of Current Perspectives." In R.E.K. Stein et al., *Caring for Children with Chronic Illness: Issues and Strategies* (Springer Publishing Company, 1989), 4.
[1064] Verville, *War, politics, and philanthropy*, 204-206.

written that the 1973 Act and the 1969 Developmental Disabilities Act "for the first time provided services to disabled children at the same time that they prohibited denial of services based on handicapping condition. The language changes in these two pieces of legislation reflected a change in approach from providing medical care for children with *designated disabling conditions* to including *all children* in a comprehensive, systematic program of health care irrespective of handicapping conditions."[1065]

The 1973 legislation's emphasis on spinal cord injury rehabilitation also made Rancho Los Amigos more integral to the county healthcare system. The Act established a Spinal Cord Injury (SCI) Model System, which as Verville has written, "became a vehicle for great progress in the medical care and rehabilitation of persons with spinal cord injury as the program integrated medical rehabilitation care with acute medicine."[1066] In 1979, Los Angeles County Emergency Medical Services, LA County- USC Medical Center, and Rancho Los Amigos become part of a regional system for managing spinal cord injuries from the acute to the chronic phase of care. Linked to 13 other SCI model systems throughout the United States, Los Angeles County's system received federal funding to share information with other centers with the goal of improving the clinical management of spinal cord injury nationally. Consistent with other federally funded rehabilitation programs, the SCI Model System responded to a problem that was both medical and economic. As a Rancho report on the system stated:

> Spinal cord injury is one of the most emotionally, physically, and economically devastating traumas an individual can sustain. It impacts the injured person, the family, and the community. Approximately 10,000 new cases of spinal cord injuries each year result in paraplegia or quadriplegia. Medical care for injured individuals is estimated at an annual cost of between $2.4 and $3 billion. Since standard medical insurance does not cover rehabilitation, the prohibitive cost for the majority of people in rehabilitation programs is funded through Medicaid (Medi-Cal in California). By comparison, the total

[1065] Hutchkins and McPherson, 5.
[1066] Verville, *War, politics, and philanthropy*, 206.

> cost of funding all 17 regional systems throughout the country is only $5.5 million, making them among the most cost-effective federal programs.[1067]

Rancho Los Amigos' researchers used scientific rehabilitation to serve the SCI Centers' "ultimate aim," which was to develop the "most efficient methods possible for delivering high quality care that is also cost-effective."[1068]

From Attendant Care to Independent Living

Political activism during this time also gave rise to another milestone in the history of disability: The 1978 Amendments to the 1973 Rehabilitation Act. This legislation made Independent Living, which activist Ed Roberts initiated a decade earlier as a Berkeley student, the substance of federal disability policy.

In recounting the strides made by persons with disabilities during the 1970s, writers have assigned credit to Ed Roberts and Judy Heumann. Roberts contracted polio as a teenager and studied at UC Berkeley using attendant care. There, he instituted Berkeley's Center for Independent Living, which, as Richard Verville has written, offered services as a form of "self-help" under the direction of persons with disabilities.[1069] Like Roberts, Judy Heumann contracted polio in her youth, but she was primarily involved in political protest rather than developing systems of social provision for persons with disabilities. A New York City native, Heumann, as journalist Joseph Shapiro has written, "blend(ed) her East Coast political activism with the

[1067] For Immediate Release. October 28, 1982. File Folder: Box 22-5 Press Releases 1980-1993. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1068] Ibid.
[1069] Verville, *War, Politics, and Philanthropy*, 92-96.

Berkeley disability community's focus on providing independent living services… (to) rewrite the history of the disabled." [1070]

Rancho Los Amigos' Home Care Program appears to have had some effect on Robert's transformation of attendant care into an instrument for achieving autonomy. Having contracted polio in San Francisco at the age of 14 years old, Roberts needed an iron lung to survive but his mother could not afford attendant care and lacked the medical training necessary to assist him in using his respirator. The NFIP's Home Care Program helped him to live at home and enabled his family to function as a unit. She recalled, the NFIP "set up a plan, and they did indeed pay for four hours a day of household help, and somebody that I could hire five days a week…" She continued, "That's what kept our family together and made all the difference between this being a collapse of our family, or not."[1071]

Attendant care also became essential to Robert's undergraduate and graduate studies. Accepted at UC Berkeley in 1962, Berkeley's dorms could not accommodate his iron lung, so he moved into Cowell, the campus hospital. While initially deemed ineligible to receive services, Roberts pushed to enable himself and other students who were considered "infeasible" to qualify for state assistance. Influenced by the civil rights and the women's rights movements, Roberts and Hessler developed the Physically Disabled Students Advocacy Program (PDSP), which provided not only attendant services, but advocated politically for persons with disabilities. The program soon expanded to provide services to non-students in the Berkeley community and became the Center for Independent Living. Verville has written that it "became a model of independent living services and received federal demonstration grant support from the OVR."[1072]

[1070] Shapiro, 58.
[1071] Interview with Zona Roberts on 20 Oct 1994. Interviewer Susan O' Hara. Disability Rights and Independent Living Movement Oral History Series, Independent Living Archives, Berkeley, California.
[1072] Verville, *War, politics, and philanthropy*, 196.

And, in the decade after the 1978 Amendments to the Rehabilitation Act, independent living centers increased nationally from 52 to 300.[1073]

Attendant care was integral to Independent Living and became viewed by persons with disabilities as an instrument for achieving equality. In her oral history on Ed Roberts and Independent Living, historian Simi Linton has written:

> The early activists discovered that the surest route to gaining independence was to have access to attendant care. These young people, many just out of institutions, or living away from home for the first time in their lives, were creating a new type of community, one in which it was clearly understood that support and services are necessary for individual autonomous functioning. They recognized the irony that what is typically thought of as "total dependence" was instead the ticket to the greatest freedom and autonomy they'd ever known. Rather than wait for the nurse or orderly in their institution to "decide" if it was time to get out of bed, have a shower, eat dinner or watch television, with personal attendants available and under their direction they could make these decisions on their own.[1074]

As discussed in the dissertation, elements of Independent Living existed at Roosevelt's Warm Springs during the 1930s and at Rancho Los Amigos during the 1950s. Warm Springs defined its approach in contradistinction to the medical model and stated in its first brochure that it "was not a sanatorium or hospital;" it was rather "a place to live normal lives." It was a resident-centered community, in which individuals taught other residents rehabilitation techniques and how to perform activities of daily living. Residents also practiced "self-governance," and through their National Patients Committee, "advis(ed) the trustees and staff on the design and operation of the facility."[1075] While Rancho by contrast operated as a medical institution, patients such as Miriam Rudulph asserted their autonomy within the rehabilitation

[1073] Margaret A Nosek, Philip L Roth, and Yilin Zhu, "Independent living programs: impact of program age, consumer control, and budget on program operation," *The Journal of Rehabilitation* 56, no. 4 (1990).
[1074] Simi Linton, "Introduction." Disability Rights and Independent Living Movement Oral History Series, Independent Living Archives, Berkeley, California.
[1075] Richard Emery Verville and John F Ditunno Jr, "Franklin Delano Roosevelt, polio, and the Warm Springs experiment: Its impact on physical medicine and rehabilitation," *PM&R* 5, no. 1 (2013), 6.

process and demanded that it meet their personal objectives. Rancho's Home Care Program moreover installed accommodations such as ramps in homes and sought to remove architectural barriers. In addition, the adolescent patients' initiation of attendant care as a means of living together outside of the hospital, and the staff's accommodation of their request, predated the consumer-directed provision of services that the Independent Living Movement later incorporated into California's state welfare program.

Furthermore, the members of Warm Springs and Rancho Los Amigos' communities, like those of the Berkeley Independent Living Center, were politically active. Verville and Ditunno have written that disability rights leader Fred Fay "drew valuable lessons" while staying at Warm Springs during the 1960s about "the importance of involving persons with disabilities in their rehabilitation and in the governance of rehabilitation facilities." Working with other disability activists, Fay in the 1970s established an influential Independent Living Center at Tufts University Medical Center.[1076] Los Angeles' polio program likewise attracted individuals who became disability rights leaders. For example, through his involvement in the local polio effort, Affeldt's family developed a friendship with industrialist Justin Dart, Sr.'s family. His son, Justin Dart Jr. contracted polio in Los Angeles in 1948 and would, along with Ed Roberts and Judy Heumann, become one of the "three of the best known disability advocates." As Verville maintains, Dart was "the clear leader of the movement" behind the Americans with Disabilities Act of 1990.[1077]

California's attendant care program's evolution, from its origins at Rancho as a hospital service into a statewide program that advanced equality, provides one case illustration of how polio rehabilitation influenced the Disability rights movement. Through the 1950s rehabilitation

[1076] Ibid., 8; Verville, *War, Politics, and Philanthropy*, 196-197.
[1077] Ibid., 128.

movement, Rancho Los Amigos' approach became part of President Eisenhower's national-local system of welfare reform. Appropriated by disability rights activists during the 1970s, rehabilitation then became the substance of a new consumer-oriented "do-it-yourself" approach to service delivery. Political scientist Jennifer L. Erkulwater has commented upon activists' unique system of social provision. She has written, "they strove to create a tapestry of community-based organizations controlled by people with disabilities, providing services that the disabled demanded, and awakening individuals to political action on behalf of disability rights." Similar to Switzer, who invested in rehabilitation as a means of taking people off public assistance, disability rights activists critiqued the welfare state and "embrac(ed) a discourse of risk taking, consumerism, and perverse incentives."[1078] However, such an individualized approach, while correcting injustices associated with institutionalization, was incomplete in responding to the social problems persons with disabilities faced in low-income and minority communities.

Rehabilitating The Individual vs. The Community

As a social movement whose leaders were predominately well-educated, middle-class whites, disability rights unfortunately was poorly equipped to challenge the additional barriers faced by persons of color. Activist Fred Fay, who organized the Tufts Center for Independent Living, reflected on how persons with disabilities in Boston lived in different worlds based on their skin colors. As Erkulwater noted in her study of the disability rights movement, Fay commented that African Americans' "accessibility barriers" were "compounded" by "a lack of

[1078] Jennifer L Erkulwater, "How the nation's largest minority became White: Race politics and the Disability rights movement, 1970–1980," *Journal of Policy History* 30, no. 3 (2018), 8.

public transportation in low-income areas, racially segregated and dilapidated housing, and the material want of poverty."[1079]

The differing experiences of the disability rights movement's white leaders and the civil rights movement's nonwhite leaders led to their conflicting perspectives on the welfare state's proper role in combatting inequality. The disability rights activists, many of whom suffered through the injustice of institutionalization, regarded government as an evil that forced them into a state of dependency. Erkulwater has written, seeing government "as contributing to their subordination, (they) instead lobbied for programs that would promote collective action and the right of self-determination. Advocates demand(ed) the 'opportunity to be productive' so they could break the 'bondage of unjust, unwanted dependency.'"[1080]

In contrast to white disability rights leaders such as Heumann and Roberts, black civil rights activists represented communities that were historically deprived of New Deal protections. For example, while the Social Security Act provided protections against poverty for white industrial workers, it did not regard domestic or agricultural labor (which were prevalent occupations in nonwhite communities) as "work." It thus deprived substantial numbers of racial minorities with access to Social Security. Most African Americans finally gained access to Social Security in 1950, when Old Age Insurance expanded eligibility to domestic and agricultural laborers. However, alarmed at how the Great Society welfare state still left out large numbers of disadvantaged Americans, civil rights activist George A. Wiley urged that assistance become "a permanent right of citizenship;" Wiley urged that "Activists of all kinds should join in

[1079] Ibid., 21.
[1080] Ibid., 5.

a massive drive to mobilize the unaided poor to disrupt the relief system all the more by demanding relief."[1081]

During Los Angeles' years of globalization in the 1960s, Rancho's individualized rehabilitation approach to social provision became transplanted upon a region in which poverty and income inequality became visible aspects of civic life. In a metropolis where racial segregation abounded in the region's urban core, Rancho's patient base increasingly came to include low-income nonwhite patients. Through rehabilitation technologies such a robotics, Rancho provided its new patient base with a means of navigating a world constrained by barriers experienced by both white and nonwhite persons with disabilities. However, Rancho's new nonwhite patients faced "compounding" social problems, such as poverty and uncertain legal status. The rehabilitation concept, introduced during the polio epidemics and transformed into the substance of a political movement, was far from a comprehensive solution to dependency in the metropolis. Arguably, the Los Angeles municipal system's recent successes and failures in meeting its disadvantaged county residents' needs in part came out of this effort to appropriate the rehabilitation approach in managing the more complicated social problems of chronic disease. And this was an outcome that was long in the making.

A New Era

By the early 1970s, policymakers, academics, and journalists had voiced concern about "runaway" spending in the American welfare state. The federal grant-in-aid model of provision to states for vaguely defined rehabilitation services problematically created an environment that was ripe for abuses. Especially in California, New York, and Illinois, loose regulations, minimal

[1081] Berkowitz, *Mr. Social Security*, 252.

federal oversight, and a generous matching rate led state officials to astronomically increase their budgets for services that did not directly help the underserved. In a Brookings Institute study, Economist Martha Derthick noted that an entire industry of private consultants emerged to help state officials maximize federal grants for the purpose of "rehabilitation."[1082] Officials recruited administrators skilled at latching onto the new sources of federal funding and took advantage of loopholes in the legislation to apply revenue for purposes such as fiscal relief. Washington Post journalist Jodie Allen in 1972 noted that with no cap on spending, the rehabilitation services grant would soon become "a bottomless pit."[1083]

However, it was the oil crisis between October 1973 and March 1974 that called into question the previous three decades of federal expansion. Arab leaders' oil embargo increased barrel prices 387% and added to what American historian James Patterson has described as a "sense of national vulnerability."[1084] During these difficult months, inflation disproportionately affected healthcare spending. The healthcare industry's 12.1% inflation rate was close to three percentages above that of all other sectors. Federal spending on Medicare and Medicaid simultaneously continued to escalate and increased twice between 1974 and 1977.[1085]

These economic challenges undercut advocates' earlier hopes that unrestricted investment in rehabilitation could have widespread benefits for population health. As political scientist Jacob Hacker has written, "the focus on government in investment in medical care (shifted) from access to cost… (which) pushed the terms of discourse into the realm of economic analysis- away from the rhetoric of equity and justice and toward the language of cost,

[1082] Derthick, 26.
[1083] Jodie Allen, "Back Door Revenue Sharing – and on a Big Scale," 7 Aug 1972, *The Washington Post, Times Herald*.
[1084] James Patterson, *Grand Expectations*, 784-785.
[1085] Starr, 406.

efficiency, and incentives."[1086] The Kennedy administration's naïve assertion that investment in rehabilitation solved social problems proved especially illusionary. As Edward Berkowitz has commented, rehabilitation services "had little or no effect ultimately on the demographic and social forces that contributed to the increases in the welfare rolls."[1087] During the mid-1980s, a high point in the trend towards cost containment, Economic historian Jonathan Hughes looked back on these years and commented on how Switzer's approach to welfare reform was ultimately irrelevant. As Hughes' comments reveal, the era was a time of skepticism, not just about rehabilitation's value, but about whether it was even possible to create a welfare state that served the entire American population. He has written:

> Welfare expenditures now dwarf the levels of Switzer's time. There are thousands of homeless poor in the great cities in winter; there is starving while government warehouses are filled to overflowing with surplus food. Perhaps someday Americans will discover a successful formula for their welfare state.[1088]

By the 1980s, Rancho Los Amigos' public image had also changed. During the previous decade, its low-income and nonwhite patients attained a visibility that they did not have during the polio years. And their marginalized positions in society affected rehabilitation. The Stroke Service included patients like Aida Flores, who spent four hours commuting to Rancho each day using a transit system that had been disrupted by decades of automobile expansion.[1089] In contrast to its previous identity serving the "worthy" white causalities of the American fight against polio, Rancho's new image was personified by families with uncertain legal status, such as that of Francesco Arellano's. A ceramics worker, Arellano underwent deportation proceedings while her three-year-old daughter was comatose and being treated for traumatic brain injury.

[1086] J.S. Hacker, *The Road to Nowhere: The Genesis of President Clinton's Plan for Health Security* (Princeton: Princeton University Press, 1997), 43.
[1087] Berkowitz, *Mr. Social Security,* 151.
[1088] Hughes, *The Vital Few,* 503.
[1089] Eileen Adams, "Center Gives Boos to Paralysis Victims," 2 Feb 1978, *Los Angeles Times.*

Problematically, Arellano's daughter required the specialized medical assistance that Rancho offered, but she also needed to live with her mother. Rancho's staff took upon themselves the new challenge of keeping them together and investigated whether she could access rehabilitation services in Guadalajara, Mexico.[1090]

While Rancho's hospital staff dealt with these systemic problems, John Affeldt's administrative role also put him face to face with the social problems that underserved communities face. When Los Angeles County created the Department of Health Services to consolidate its various health programs, it appointed Affeldt as the director, which was a position that he held between 1972 and 1977. But in overseeing the county's health department and hospitals, Affeldt was in some ways more powerless than Rancho's staff, who on a case-by-case basis, could at least observe progress in their work. Affeldt conveyed feeling trapped when dealing with politicians who used the county's massive public hospital system as a source of influence. In describing the types of people that he encountered in politics, he stated:

> The typical role of the elected politician is to have certain people with vested interest coming to them and saying please do this for me. And they would come to us and they would say do this and we'd have to do it. It didn't make sense… And that would be whether to enlarge a hospital, build a hospital, operate a hospital… yet they have the purse strings. They control the budget. So they really control health services through the budget. You have to live with it. You have to work with it. That's true of the federal government. That's true of the state government. That's true of the county government, any government. Its part of our system…[1091]

Affeldt now lived in a political world that had changed since he was Rancho Los Amigos' medical director. He commented on the broader shift:

> I was medical director during the golden years. And then later the cutbacks started occurring. Now when I was at Rancho, this is just an example of the time, you were rated more in terms of your capability, in terms of if you could get federal grants. Could you

[1090] Mike Castro, "4-Year-Old Daughter in Coma. Mother of 7 Faces Deportation," 25 May 1971, *Los Angeles Times*.
[1091] John Affeldt Interview. December 13, 2004. Personal files Affeldt family.

> get money? And the more you could get the higher your prestige. And then came the time when they started cutting back.[1092]

During this new era of constraint, the political process no longer provided opportunities to create programs. John Affeldt now dealt with substantial cuts that threatened the healthcare safety net's very existence. He remembered, "I can recall that the first time we realized a 10% reduction it was painful. And every year after that another 10%." Reflecting on the ultimate significance of such experiences, Affeldt stated: "What I feel about that era is that that is the era when government stopped funding adequate care for the indigent."[1093]

According to Nancy Affeldt, John "didn't talk about work when he got home." J.C. Affeldt also stated that his father "never showed" stress. However, after becoming an ophthalmology resident, J.C. came to see that his father's external demeanor was misleading. He recalled:

> He asked me a question, he said "you know, sometimes I go to these meetings and all of the sudden, I can't see…" I knew from my training what it was. I said, "Dad, you're having a migraine, you're having an eye migraine..." I thought "My God, he's being triggered into ocular migraines in times of high stress… His body's reacting to high stress..." That was the first time I appreciated the kind of stress that he was encountering in his career.[1094]

Such experiences seemed to have transformed Affeldt's perspective in a manner that was consistent with how other administrators' outlooks shifted during the time. Describing how administrative leaders' perspectives changed, local health policy experts Michael R. Cousineau and Robert E. Tranquada, have written: "The county's policy efforts turned increasingly to institutional survival, as its health budget was strained by dwindling revenue and an unprecedented expansion in the demand for care in its hospitals." Affeldt appeared to have

[1092] John Affeldt Interview. December 13, 2004. Personal files Affeldt family.
[1093] John Affeldt Interview. December 13, 2004. Personal files Affeldt family.
[1094] John C. Affeldt and Nancy Affeldt, interview by Alexander Kertzner, oral interview, Solana Beach, July 26, 2015.

become more of a realist through working in county leadership. For example, when asked in an interview about whether the county could have done anything differently during this time to improve public health, he succinctly replied, "It's all money."[1095]

The fiscal stringency that Affeldt contended with in a large part resulted from the enactment of Medicare and Medicaid. Through enabling beneficiaries to access private hospitals, both programs took patients away from public facilities. In commenting on Medicaid's adverse effects on public hospital systems, sociologist Paul Starr has written:

> Medicaid drained state and local government budgets for health care, allowed the eligible poor to go to voluntary hospitals, and left municipal and other public institutions with limited resources to care for the millions of people who remained uninsured.… hospitals have to recover the costs of charity from some other source, such as those patients who pay charges (usually people covered by commercial insurance…) Hospitals with few charity patients and many privately insured ones have little difficulty raising charges on the latter to make up their losses. But hospitals with many charity patients, few privately insured, and the remainder paid at cost can easily find themselves in deep trouble. These are typically hospitals that serve the poor.[1096]

Proposition 13's passage in 1978 further placed the Los Angeles County health system at a disadvantage. Its restrictions on property taxes reduced a significant source of the county healthcare budget and endangered Rancho Los Amigos and other public hospitals. In an opinion piece for the *Los Angeles Times*, health policy analyst Geraldine Dalleck aptly articulated how the county's budget cuts targeted those county residents who were the most vulnerable:

> California's poor (a disproportionate number of whom are elderly and minority group members) are less healthy than the rest of society, yet they receive significantly less health care… Cuts in county health care will be hardest on those without health insurance who also depend on these services.[1097]

[1095] John Affeldt Interview. December 13, 2004. Personal files Affeldt family.
[1096] Starr, 387-388.
[1097] Geraldine Dalleck, "Prop. 13's Impact on Public Health: A Costly Proposition," 9 Jul 1978, *Los Angeles Times.*

The time following Proposition 13's enactment was especially stressful for Rancho Los Amigos' patients. Reminded of their precarious situation in pamphlets scattered throughout the hospital, they were notified that Rancho's staff would help them to find new hospitals and physicians in the event that it closed. Widespread "rumors" of impending closure also provoked concern among Rancho's physicians, some of whom proposed having a nonprofit organization purchase the hospital to enable its survival.[1098] Fortunately, the County Supervisors approved a $43 million hospital budget for the year, but the reduction in public expenditures led to a situation in which by midway through the next decade, half of all California counties lacked public hospitals.[1099]

To this day, Rancho Los Amigos has struggled to acquire the same sustained investment for its predominately low-income, nonwhite patients as it did for its middle-class, white patients during the polio era. Faced with a 10% budget cut in 1982, Ranchos' administrators hired a consulting firm to provide guidance. While the consultants suggested accepting corporate management to stay solvent, the hospital nonetheless remained under county control due to the concern that a company would turn away its low-income patients.[1100] During the 1990s, administrators again considered selling the hospital to Catholic Health Care West. At various times, administrators have also sought to attract more private insurance patients to offset the costs of indigent care.[1101]

[1098] Roxane Arnold, "Rancho Los Amigos to Get Full Funding." 3 Sept 1978. *Los Angeles Times.*
[1099] Cousineau and Tranquada, 610; "Rancho Los Amigos to Get Full Funding."
[1100] Austin Scott, "Battle Looms Over Plan for Control of Downey Hospital." 15 Nov 1982; and Austin Scott, "Fight Renewed on Rancho Los Amigos Status," 15 Nov 1952, *Los Angeles Times.*
[1101] "Rancho creates huge turnaround using marketing strategies." File Folder: Box 22, Folder: Marketing Dept- News Media Coverage 1994-2000, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

Rancho Los Amigos has also fallen short of the 1950s advocates' expectations that its rehabilitation program would solve the county's welfare problems. As we have seen throughout the dissertation, advocates have successfully sold the rehabilitation approach to officials on the premise that it reduces economic dependency. Whether it was the Progressive Era orthopedic surgeons, OVR Director Mary Switzer, or medical leaders within the NFIP Respiratory Center Program, rehabilitation proponents could make the case that their philosophy theoretically saved money.

But chronic disease in the healthcare safety net is a complex phenomenon, which is unlikely to be remedied by investment in rehabilitation alone. Rancho Los Amigos today is the medical home of the most underserved chronic patients in Los Angeles County. Its patients very often have conditions that are largely preventable, such as hypertension and diabetes, but are nonetheless admitted for problems like recurrent strokes, which result from poor management of their underlying conditions. Only 3% of Rancho's patients have private insurance; the rest are uninsured or depend upon public programs for their coverage of medical care. Many lack access to a primary care provider.[1102] Effectively responding to the problem of chronic disease in the safety net requires addressing social problems, such as poverty and the lack of nutritional food in socioeconomically disadvantaged communities. It requires a sustained investment in low-income, nonwhite communities, and effort to ameliorate pollution and the lack of accessible transportation that many residents experience. However, such a comprehensive approach to chronic disease management would be expensive and realistically might not generate the savings necessary to offset its substantial costs.

[1102] Amytis Towfighi et al., "Randomized controlled trial of a coordinated care intervention to improve risk factor control after stroke or transient ischemic attack in the safety net: Secondary stroke prevention by Uniting Community and Chronic care model teams Early to End Disparities (SUCCEED)," *BMC neurology* 17, no. 1 (2017).4; Towfighi et al., "Tale of 2 Health-care Systems."

In spite of the dire circumstances that it has faced, Rancho Los Amigos has grown more exceptional. It has today become a microcosm of Global Los Angeles, which it mirrors in both its diversity and creativity. For example, Rancho's spinal cord injury program is a fitting representation of the demographics of a global city. It serves a patient population that is 58% Latino, 20% Asian, 13% Black, and 7% White.[1103] Its clinician scientists continue their partnerships with Cal Tech and the Department of Defense that began shortly after the polio era and still produce engineering marvels that achieve national, if not global, fame.

Reflecting on Rancho Los Amigos' history after the 1970s, Affeldt succinctly summarized the major political trends that accelerated is expansion during the postwar era and its curtailment since the 1970s. But in articulating its later troubles, Affeldt also reflected on how despite new financial problems, Rancho continued to maintain the creative drive and exceptionality that characterized its polio years:

> Rancho being a county facility, it has had to suffer more than private facilities. In the origin of Rancho and the origin of the polio rehabilitation days, there was more money coming into public facilities like Rancho than into private facilities. But over that period, we've seen a shift of resources from public facilities to private facilities and Rancho is now one of the victims of that social change. Nevertheless, it has done a tremendous job. It still has a great influence in the healthcare field, and I think all those who have been associated with it, particularly myself, have a great debt of gratitude for the opportunity and the experience that was there.[1104]

[1103] Towfighi et al., "Randomized controlled trial of a coordinated care intervention to improve risk factor control after stroke or transient ischemic attack in the safety net," 4.
[1104] Colleen Adair Fliedner, interview with John Affeldt, March 14, 1986, Box 16, Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-, California Social Welfare Archives, University of Southern California, Los Angeles, California.

Conclusion

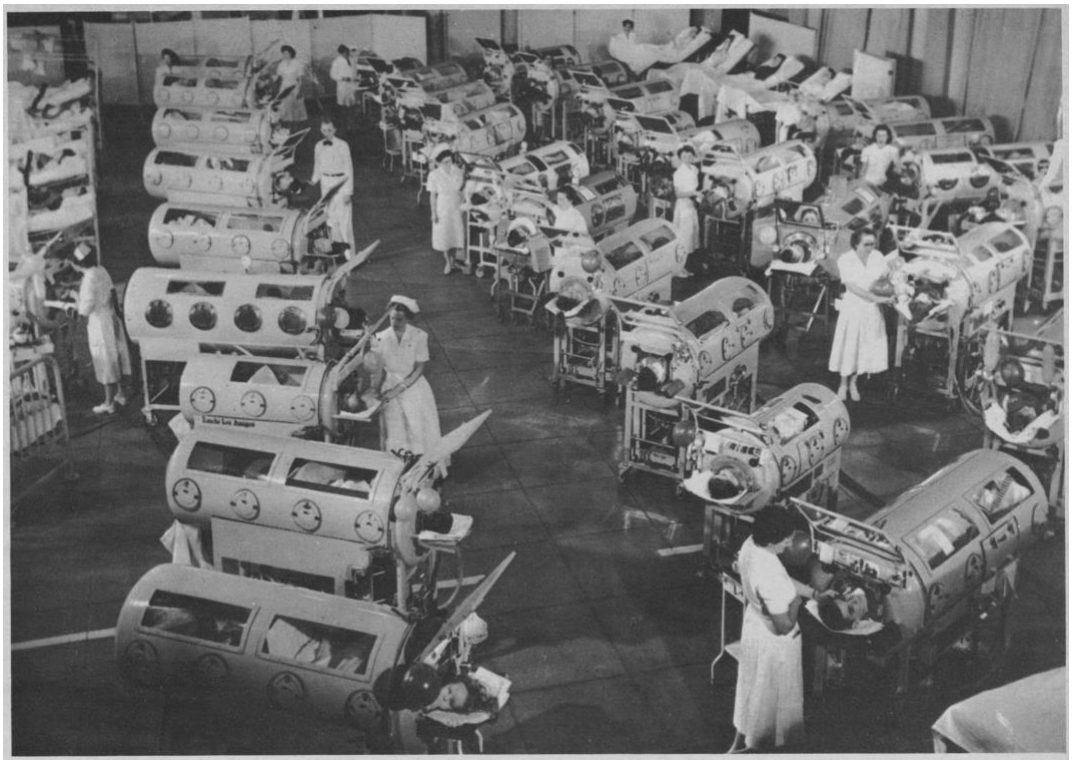

Fig 3.—Iron lungs in Los Angeles County Hospital during polio epidemic in 1950s. Courtesy of Warren E. Collins, Inc.

Figure 1 A frame from the March of Dimes trailer *Through the Years* as reprinted in Drinker and McKhann's article for the *Journal of the American Medical Association*.

The most far-reaching aspect of Los Angeles County's polio rehabilitation program is perhaps its contribution to how historians, health professionals, and the public view the American response to the polio epidemics. And this occurred inadvertently through a March of Dimes trailer. Filmed within Rancho Los Amigos' auditorium, *Through the Years* conveyed polio rehabilitation's power to John Affeldt's contemporaries and subsequent generations of Americans; it revealed a power that was both real and the product of a marketing strategy.

John Affeldt mentioned that the NFIP collaborated with Metro-Golden Mayer Studios and staff in bringing "100 of the tank respirator patients into the auditorium to amass them there as part of the scenery."[1105] Shot in 1953, not long after a horrific 1952 epidemic left 3,000 people dead nationally, the trailer began with the image shown on the previous page.[1106] Through organizing the patients into an enormous group, the film created an impression of the epidemic's devastation. As the movie progressed, it showed nursing staff attentively monitoring patients and displayed the intensive clinical management that Affeldt introduced at his center. Through its use of space, the film also effectively demonstrated rehabilitation medicine's team-based approach. While in reality, professionals worked in individual wards with two to three patients each, the filmmakers grouped the therapists with the patients; the viewer observes each therapist working within a small area, and caring for a limited number of patients, while connected to the other professionals within the larger auditorium.[1107]

The film then focuses on actor Howard Keel, who enters the auditorium singing as he walks from respirator to respirator and interacts with the patients. Adults, often forgotten in the campaign against polio, were shown in liberating rocking beds alongside smiling children in iron lungs who could have been poster children. While staged, the film also captured real moments. According to hospital staff, during the filming, one patient's Raggedy Ann Doll fell to the ground. The film depicts Howard Keel retrieving the doll and returning it into the child's arms. The camera focuses on the child's smiling face as the doll is returned to her, providing a

[1105] Annual Report Rancho Los Amigos Hospital Respiratory Center for Poliomyelitis. Fiscal Year July 1, 1952 to June 30, 1953. File Folder: Respiratory Care Services 1988. Box 22 File 22.53. Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Interview with John Affeldt on March 14, 1986 both by Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1106] Oshinsky, 160; *Through the Years.* File Folder: Box 13, Volume 94: Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1107] *Through the Years*. File Folder: Box 13, Volume 94: Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.

touching conclusion that must have provoked emotion in the context of the difficult times. It ends by cross fading into a shot of the March of Dimes' collection box. In the process, it used the emotional trauma of the epidemics and the promise of rehabilitation to encourage public generosity to its cause.[1108]

At the end of his career, Affeldt depreciated the film's depiction of polio. He commented on a 1986 article in the *Journal of the American Medical Association* that made a point about polio medicine using the image from the film (*Figure 1*).[1109] Affeldt stated, "The picture is really trying to show a treatment area, which this is not. This scene was put together for the purposes of a movie…"[1110] Into recent times, journalists, as well as popular and professional historians, have used the same scene to illustrate the popular experience of the polio epidemics and medicines' awe-inspiring power.[1111] It continues to define what polio was and what rehabilitation is, while in actually being a product of a marketing campaign.

While used to represent the collective memory of the polio epidemics, the image only reflected most Americans' experience in limited ways. In 1954, one year following the trailer's production, most of the nation's hospitals had not yet been impacted by the vision of scientific rehabilitation that the image depicted. A 1954 survey of respiratory patients reported over 1,000 hospitalized iron lung patients in the nation, of whom 80% received care in hospitals treating

[1108] Ibid.
[1109] Philip A Drinker and Charles F McKhann, "The iron lung: first practical means of respiratory support," *Jama* 255, no. 11 (1986).
[1110] Interview with John Affeldt on March 14, 1986 both by Interviewer: Colleen Adair Fliedner. File Folder: Box 16: Oral History Interviews, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1111] Linda Rodriguez McRobbie, "The man in the iron lung," *The Guardian*, Tuesday May 26, 2020, https://www.theguardian.com/society/2020/may/26/last-iron-lung-paul-alexander-polio-coronavirus.; Rothman, *Beginnings Count* (see cover); *Sunday Morning*, "How the fight against polio was won," aired May 3, 2020. https://www.cbsnews.com/news/how-the-fight-against-polio-was-won/.; Linton Weeks, "Defeating polio, the disease that paralyzed America," *NPR*, April 10, 2015, NPR History Dept., https://www.npr.org/sections/npr-history-dept/2015/04/10/398515228/defeating-the-disease-that-paralyzed-america.

three or less patients.[1112] Thus, most respiratory polio patients still lacked access to the comprehensive care and the psychological encouragement afforded by grouped therapy in the Respiratory Center. The March of Dimes' advocacy for access to quality medical services also waned for African Americans. In addition, the NFIP Respiratory Centers were in urban areas and most heavily concentrated in the Eastern region of the United States. Thus, the program remained inaccessible to vast numbers of Americans outside of the Northeast or who resided in rural communities.[1113]

Even within the Respiratory Centers, rehabilitation techniques often had limited efficacy. Significant numbers of patients remained dependent upon respirators after completing the NFIP rehabilitation program. For example, between 1950 and 1956, 85% of patients admitted to Respiratory Centers were discharged. However, only 48% of discharged patients were completely weaned; the majority still required a respirator despite being rehabilitated. [1114]

Yet the trailer and the extracted image do provide insight into how the NFIP manufactured hope in rehabilitation in the city of dreams. It did this through a production that depended upon a large budget obtained from the public through means of a sophisticated form of advertising. The foundation sold rehabilitation through partnerships between professional staff, patients, and film crews using technologies that were both treatments and props, in a location that doubled as both a hospital and a movie set.

[1112] Introduction to Respiratory Center Annual Activity Reports 1953. File Folder: Medical Program Poliomyelitis Respiratory Care Centers, March of Dimes Archives, White Plains, New York.
[1113] Eugene Sweeney, "Development of Regional Respiratory Centers," Unpublished manuscript in *History of The National Foundation for Infantile Paralysis* Records, 1935-1995, p. 132-133, March of Dimes Archives, White Plains, New York.
[1114] 1956 Survey. File Folder: Medical Program Poliomyelitis Respiratory Care Centers., March of Dimes Archives, White Plains, New York.

Rethinking Marketing

After the NFIP transitioned into funding birth defects research in 1958, the federal, state, and county government substituted the budget for Rancho's rehabilitation production. However, the public sector ultimately proved to be a less reliable source of income than the March of Dimes campaigns. By the 1990s, Rancho Los Amigos administrators decided that it was time for a new marketing campaign that would "communicate Rancho's reputation for quality health care with persevering their mission to provide comprehensive services for all." And an important part of the strategy was to "bring a focus to Rancho Los Amigos Medical Center's role in community health…"[1115]

Hospital leaders emphasized among professionals Rancho's unique contribution to rehabilitation given the demographic it served. For example, within the Spinal Cord Injury Model Systems (SCIMS), it advertised its "long tradition of serving individuals who are often from underserved populations including individuals from racial and ethnic minorities (80% of our SCI population) and those from economically disadvantaged backgrounds (over 50% of our SCI population)." Rancho's tradition of service to the community was important for advancing rehabilitation nationally as "Information from his group of patients makes a unique contribution to the SCIMS regarding the specific rehabilitation trends and needs of these under-served groups."[1116]

The hospital also sold itself to the Los Angeles public through events that profiled individual patients. Similar to the "Miss Breathless" campaigns, the TBI Fashion Show brought media attention to patients such as 39-year-old Leonardo Chavez, who suffered from a brain

[1115] The Safety Net in Transition: Marketing and Outreach Practices for Safety Net Providers, September 1998. File Folder: Box 22, Folder: Marketing Dept- News Media Coverage 1994-2000, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1116] "Southern California Spinal Cord Injury Model System," Model Systems Knowledge Translation Center. < http://www.msktc.org/researchcenter/detail/SCaliforniaSCI> Accessed June 20, 2017.

aneurysm and "whose memory loss has kept him from contacting his family in Mexico."[1117] Chavez's story was broadcast in *La Opinión*, the second most popular local newspaper in Los Angeles and the most widely circulated Spanish-language newspaper in the United States.[1118] Local reporters described how Rancho enabled other underserved TBI patients like Jose Mark to access rehabilitation's promise. Mark, who was found unconscious by his brother after a gang beating, was comatose for 40 days and his physicians "said he would never come out of the coma." However, rehabilitation not only brought him out of his coma, but gave him the power (as it once did for President Roosevelt) to "(rise) from his wheelchair to walk…"[1119] Mindy Aisen, Rancho's current director, along with her colleagues, wrote in an article with that Rancho's publicity campaigns enabled the hospital recently "to not only survive, but thrive." [1120] Despite helping Rancho to avoid the closure that has befallen other noted public hospitals, Rancho's budget has been far from secure operating within a county system increasingly abandoned by both private and publicly insured chronic patients.

Crisis Point

While enabling Los Angelinos from underserved communities to access care at private hospitals, Medicaid continued to take public dollars away from the county system during the

[1117] "Walking Tall," 28 July 1999, *Los Angeles Times*. Located in File Folder: Box 22, Folder: Marketing Dept- News Media Coverage 1994-2000, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1118] Jesse J. Linares, "Un paso gigantesco," 28 July 1999, *La Opinión*. Located in File Folder: Box 22, Folder: Marketing Dept- News Media Coverage 1994-2000, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California; Wikipedia contributors, "La Opinión," *Wikipedia, The Free Encyclopedia,* https://en.wikipedia.org/w/index.php?title=La_Opini%C3%B3n&oldid=1159043718 (accessed August 10, 2023)
[1119] Sue McAllister, "Helping Patients Fashion New Lives," 8 May 1998, *Los Angeles Times*. Located in File Folder: Box 22, Folder: Marketing Dept- News Media Coverage 1994-2000, Papers of the Rancho Los Amigos Hospital 1887-. California Social Welfare Archives, University of Southern California, Los Angeles, California.
[1120] Jorge Orozco et al., "Image rehab. A world-famous rehabilitation center strengthens its brand by redifining its future," *Marketing Health Services* 31, no. 1 (2011).

1990s. As a result of decreased Medicaid revenue, LADHS' 2.5 billion health budget became unsustainable. In 1995, the Clinton administration provided the county with a Medicaid waiver that allocated $1 billion for strengthening outpatient care within its healthcare system. While regarded as a federal "bailout," it did little to avert the unavoidable crisis that was on the horizon with Medicaid patients' flight out of county hospitals. As George W Bush transitioned into the presidency in 2001, the county negotiated the Medicaid Waiver renewal with his administration. LADHS' new medical director Thomas Garthwaite, who had previously reformed the Veterans Administration under Clinton, worked to obtain the renewal. However, to reign in on its spiraling deficit, the Board of Supervisors ordered Rancho Los Amigos' closure.[1121] Garthwaite acknowledged Rancho's significant contribution as a rehabilitation center but given the high costs it incurred in caring for uninsured patients, he believed that it could no longer be supported within the public system.[1122]

The Board of Supervisors' decision provoked public backlash. Disability rights advocates launched a legal challenge arguing that closing Rancho violated the Americans with Disabilities Act of 1990. As Western Law Center for Disability Rights stated: "Whatever the cost-benefit analysis of a life, the answer cannot be to deny health care completely to a community based on disability, race, gender, poverty or other characteristic." In protest, health professionals and patients camped out in the hospital lawn. And an emotional news conference featured "testimonies" from patients such as 8-year-old Antonio Gaxiola. A muscular dystrophy patient who needed a ventilator to live, Gaxiola provided the following statement (which his father read before reporters): "Who would take care of me and the other kids."[1123] While intended to be

[1121] Cousineau and Tranquada, 610-614.
[1122] Lisa Richardson, "Disability rights advocates sue to save Rancho Los Amigos," 7 March 2003, *Los Angeles Times.*
[1123] Ibid.

provocative, Gaxiola's statement articulated a concerning reality: if Rancho no longer remained a public hospital, medically complex uninsured patients (and many of those on Medicaid) would have no medical home, as for-profit and nonprofit rehabilitation hospitals would turn them away.[1124]

Even those rehabilitation facilities that accepted Rancho's former Medicaid patients would not be able to provide the same accommodations as Rancho Los Amigos. Historically, a system of care developed at Rancho that comprehensively addressed complex patients' clinical needs. As expert witness Alan Sager, professor of health services and director of the health reform program at the Boston University School of Public Health, stated: "The high volume of specialized care provided to pediatric, adult inpatients and outpatients at Rancho led to the development of expert treatment teams able to achieve excellent outcomes with medically complex patients."[1125] Maureen Dyer Stevens from the California Rehabilitation Association explained that "existing rehabilitation hospitals and rehabilitation units in Southern California do not have in-depth expertise or specialized services for ventilator dependent quadriplegics, (175 inpatients), pediatric (60 inpatients), and severe brain injury (85 inpatient) cases which currently (are) treated by Rancho Los Amigos National Rehabilitation Center."[1126]

Brian D. Johnston, chair of Emergency Medicine at White Memorial Hospital, expanded on Sager and Dyer Stevens' points. As he stated:

> The Rancho Los Amigos patients are among the most complicated and difficult patients to treat in Los Angeles County. . . It would be extremely difficult for any provider to step in and determine the appropriate medical treatment for a former Rancho patient… Another provider would need to know their antibiotics, any previous infection history, which specific organisms they carry, and their previous level of function. Some of these patients' charts weigh 15 to 20 pounds. If another provider did not have immediate access

[1124] Alan Sager, *T*he *Proposed Closing of Rancho Los Amigos National Rehabilitation Center Endangers the Health of Disabled Medi-Cal Patients Who Reside in Los Angeles County. Statement Elements.* Statement of expert witness prepared in the case of Rodde, et al, v. Bonta et al, 3 April 2003, 4.
[1125] Ibid., 5.
[1126] Ibid., 4.

> to the medical chart, treatment would become more difficult and impose needless risk on patients and practitioners.

Such patients' medical complexity created financial disincentives for accepting providers. As Johnson pointed out: "The Medi-Cal reimbursements levels do not approach the cost of providing services, and those impose a liability on providers who meet the needs of this population." [1127]

At a systems level, closing Rancho Los Amigos, which historically had served to accept overflow patients, would create backlogs. LAC + USC Emergency Department Chair Ed Newson touched on this point:

> We need Rancho as an outlet to transfer uninsured patients to. I know of no other facility that will take uninsured patients requiring rehabilitation care… We have neither the bed space nor the medical expertise and technology to provide that care. If Rancho closes, we will have to keep those patients in our acute care hospital. For example, we now provide initial medical care for patients with spinal cord injuries and transfer those patients to Rancho for extended hospitalization. Without Rancho Los Amigos, that patient would have to remain in our hospital, taking up a much-needed bed.[1128]

John Affeldt was one of the instrumental architects behind this system by which Rancho used rehabilitation to free up inpatient hospital beds. However, based on his experiences in healthcare administration during the 1970s and 1980s, he lost faith that his rehabilitation experiment could succeed. In a letter to a former colleague, he expressed sympathy for all parties involved, both Garthwaite and LADHS. He explained, "Rancho's growth was when rehab was in mostly public supported facilities. That has been gradually thrifting away from public funding to the private sector. Rancho is a victim of this shift." However, given the changing times, Affeldt was convinced that "Their only hope of survival is if they can go private."[1129]

[1127] Ibid., 5.
[1128] Ibid., 5.
[1129] John Affeldt to List, 9 April 2003, Personal files Affeldt family.

A brief prepared by the California Community Foundation suggested the course of action that Affeldt perhaps believed was Rancho's only viable option. As a Los Angeles Times editorial writer commented in an opinion piece, becoming a private nonprofit hospital would not only enable Rancho to compete for privately insured patients but give administrators the freedom to correct inefficiencies associated with its "outdated technology… byzantine bureaucracy and union rules." The writer continued, "(this) would mean fewer beds for the poor, not as few however as if the hospital closed."[1130]

In the end, U.S. District Judge Florence-Marie Cooper halted Rancho's closure because "the harm to the plaintiffs if Rancho closes far outweighs the harm to the county if it remains open."[1131] Fortunately, the County's Medicaid Waver was also renewed and the County obtained $250 million in federal support.[1132]

Through judicial intervention, Rancho avoided a fate faced by many other underfunded safety net hospitals throughout the United States, including in New York City. LADHS (the nation's second largest hospital system) and New York City Health + Hospitals (HHC), the nation's largest system, both operate in left-leaning cities with a commitment to public health. However, Goldwater Hospital, which represented the New York public system's "Crowning Jewel" under LaGuardia, closed in 2013 after a long history of service to the chronically ill. In 2010, Mayor Bloomberg ordered its closure and, in its place, the construction of Cornell's Graduate School of Technology.[1133] At the time, Goldwater provided rehabilitation to 476

[1130] Sue Fox, "Rancho Hospital's Future Still Uncertain," 29 Apr 2003, *Los Angeles Times*; "A cure for Rancho's ills," 4 May 2003, *Los Angeles Times*.
[1131] Sue Fox and Lisa Richardson, "Clinic Gets Tentative Reprieve," 26 April 2003.
[1132] Cousineau and Tranquada, 613.
[1133] Imminent Closure of New York Hospital Leaves Spinal-Injury Patients Guessing On Future, 1 May 2013, *Prison Photography* < https://prisonphotography.org/2013/05/01/imminent-closure-of-new-york-hospital-leaves-spinal-injury-patients-guessing-on-future/>, accessed August 5, 2016.

patients with spinal cord injuries and strokes, as well as long-term care to 323 medically fragile patients, 100 of whom were on ventilators.[1134]

Health + Hospitals constructed a new public hospital named after Henry J. Carter, founder of Wheelchair Charities, to absorb some of the patients.[1135] However, many faced uncertainty over whether they would be able to access the individualized care they had at Goldwater.[1136] And at the city level, nurses and political leaders protested what they perceived was a broader attack on New York City's public hospital system. In August 2016, then mayoral candidate Bill de Blasio joined other local politicians and over 1,000 nurses to raise support for New York City's struggling public hospitals. As Council Member Letitia James stated:

> The systematic destabilization and privatization of our public hospitals is unacceptable. Long established HHC institutions like North Central Bronx Hospital, a model community hospital that delivered babies for almost 40 years, saw its Labor and Delivery Services shutdown; and Coler Goldwater Memorial Hospital, which serves a vulnerable population, is slated to shutdown with no plans to transfer those patients— it is clear these actions do not serve the public interest.

Emphasizing the significance of New York City's public hospitals, Anne Bové from the New York State Nurses Association stated, "… we have the best public hospital system in the country… no patient is ever turned away. But the crisis of hospital closures, privatization, and subcontracting are hurting care for our patients." Bové emphasized her commitment as a nurse to "defend(ing) healthcare for those who need it the most- low-income communities of color and the uninsured." Making a point applicable equally in Los Angeles and throughout the United

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[1134] Amy Zimmer, "Hospital Patients Forced Out as Roosevelt Island Tech Campus Moves In," *DNAinfo*, 3 May 2012, < https://www.dnainfo.com/new-york/20120503/roosevelt-island/tech-campus-leaves-hospital-patients-worried-about-future/> accessed August 5, 2016.
[1135] NYC.Gov, "Health and Hospitals Corporation President Aviles Opens New Henry J. Carter Specialty Hospital and Nursing Facility in East Harlem." New York City Press Release, August 21, 2013, < https://www.nyc.gov/html/hhc/html/news/press-release-20130821-carter.shtml> accessed August 5, 2016.
[1136] "Hospital patients forced out."

States, she continued, “We need renewed investment in our public hospital system and safe nurse patient staffing levels, not cuts or closures.”[1137]

The Improvision Continues

In 2013, Rancho Los Amigos, together with USC Keck Medicine and Cal Tech, achieved another milestone in robotics research: the first successful implantation of a “neuroprosthetic” in the brain region that coordinates motor movements. Eric Sorto, a 34-year-old victim of gun violence had not moved his arms or legs since he was 21 years old. Following a five-hour surgery in which the chip was implanted in his brain, he made national headline news when he controlled a robotic arm with his mind and drank a beer. The city is home to Hollywood again channeled its creativity into redefining robotics rehabilitation. Rancho’s director Mindy Aisen commented, “He comes in and he’s plugged in like ‘The Matrix” … he’s painted pictures… It’s a very good thing for our patients who are paralyzed to see such tech wizardry.”[1138]

Historian Leslie Heumann, in commenting on Los Angeles’ architecture, offered words that also pertained to the region’s contribution to rehabilitation. Heumann called Southern California “a place of experimentation, an invitation and a challenge of fertile imaginations to create the ultimate…”[1139] Like the iron lung patients in the earlier March of Dimes trailers, Sorto became a poster child for this experimentation, but now within a different marketing campaign in service to the community.

[1137]“More than 1000 nurses, NYC candidates rally for public hospitals,” *Brooklyn Daily Eagle*, 18 October 2013, < https://brooklyneagle.com/articles/2013/10/18/more-than-1000-nurses-nyc-candidates-rally-for-public-hospitals/>, Accessed August 5, 2016.

[1138] Sydney Lupkin, “Man Paralyzed From Neck Down Drinks Beer With Robotic Arm,” abc NEWS, 21 May 2015, < https://abcnews.go.com/Health/paralyzed-man-drinks-beer-moving-robotic-arm-mind/story?id=31214663>, accessed May 2, 2023.

[1139] Thomas S. Hines, “Machines in the Garden: Notes Toward a History of Modern Los Angeles Architecture, 1900-1990,” in D. Reid, *Sex, Death and God in L.A* (Knopf Doubleday Publishing Group, 2013, 259-260.

Then in March 2020, the COVID-19 pandemic overwhelmed the national social safety net, causing disproportionate morbidity, mortality, and economic instability in urban and rural underserved communities. As it did in response to polio, Rancho Los Amigos began using rehabilitation to free up inpatient beds at other county hospitals; but rather than rehabilitating iron lung patients, it sought to help ventilator-dependent COVID-19 patients. Lily Thompson, director of Rancho's Physical Therapy Department, described how rehabilitation again began applied to relieve bottlenecks in the LA system:

> Those are the patients that came in for rehab. Most of them had prolonged stays in the ICU on a ventilator. Because of the microvascular impact of COVID on all of the organs, they may have a lot of organ damage; kidney, dialysis, things like that that really just wiped the body out…We did our specialty there, which is rehab.[1140]

Rancho' staff came to rehabilitate patients like Vicente Perez Castro, a cook who after a 3-month ICU stay underwent a regimen that led him not only to ambulate with a walker but relearn skills he previously used, such as chopping vegetables and dancing.[1141]

Despite the adversity that Los Angeles has faced, both the polio epidemics and the COVID-19 pandemic have fueled experimentation. We will see what innovations will continue to arise in the "land of magical improvisation."[1142]

[1140] Alex Dominguez, "Rancho celebrates lives rehabilitated from Covid-19," 20 May 2021, *The Downey Patriot,* <https://www.thedowneypatriot.com/articles/rancho-celebrates-lives-rehabilitated-from-covid-19>, accessed May 2, 2023.
[1141] Bernard J. Wolfson, "Learning to Live Again: A Lazarus Tale From the Covid Front Lines," *California Healthline,* < https://californiahealthline.org/news/article/learning-to-live-again-a-lazarus-tale-from-the-covid-front-lines/> Accessed May 2, 2023.
[1142] McWilliams, *Southern California,* 21.

Epilogue

AIDS Activism Comes Up Against Constraints

As early as May 1981, journalists were speculating that a mysterious new illness had surfaced. That month, the gay publication *New York Native* reported that *Pneumocystis carinii*, an organism which predominately affected "severely debilitated patients whose ability to fight infections has been severely compromised," infected eleven people who were "not obviously compromised." The newspaper played down the "inference that a slew of recent victims have been gay men" and noted that "only five or six (of the cases) have been gay."[1143]

Less than three weeks later, researchers from UCLA and Cedar-Sinai Hospital reported in *Morbidity and Mortality Weekly Reports* that "5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia" in Los Angeles between October 1980 and May 1981.[1144] Shortly afterward, doctors from New York City and San Francisco noted diagnosing Kaposi Sarcoma, a cancer that predominately affected immunocompromised patients, in 26 gay men in the thirty months prior to July 1981.[1145] In writing about this strange disease that depleted previously healthy individuals' immune systems, the earliest clinical researchers used terms such as "Gay Related Immune Deficiency." The researchers' choice of words would have problematic consequences; as historian Victoria Harden has written, "even though in retrospect physicians recall seeing women and heterosexual men with the symptoms of AIDS,

[1143] Jack Berg, "Word for Word/ Nameless Dread; 20 Years Ago, the First Clues to the Birth of a Plague," 3 June 2001, *New York Times*.
[1144] MS Gottlieb et al., "*Pneumocystis* Pneumonia--- Los Angeles" *MMRW* 30 (21); 1-3. <https://www.cdc.gov/mmwr/preview/mmwrhtml/june_5.htm> Accessed June 21, 2020.
[1145] Gerald Oppenheimer and Ronald Bayer. "An Epidemic of Unknown Proportions: The First Decade of HIV/AIDS." *HIV/AIDS in the Post-HAART Era: Manifestations, Treatment, and Epidemiology*, editors John C. Hall, Brian J. Hall, and Clay J. Cockerell. (Shelton: People's Medical Publishing House 2011), 1.

the first reported cases all described gay males and indelibly linked AIDS in the minds of many as a disease of homosexual men."[1146]

At a July 1982 CDC meeting, participants named the condition "Acquired Immune Deficiency Syndrome."[1147] Every six months, officials noted a doubling of reported AIDS cases, of which the overwhelming majority of patients died, which led a *20/20* reporter to call the outbreak "the most frightening epidemic since polio." The reporter continued: "First identified in the homosexual community, now it's in 35 states, and the nation's blood supply may be threatened." [1148] The National Hemophilia Foundation urged that blood banks ban gays from donating blood. And in 1983, the Public Health Service advised "high risk groups" such as "sexually active homosexual or bisexual men with multiple partners," not to donate blood.[1149] While the Public Health Service's recommendations were issued in a climate of widespread panic, as historians Robert Padgug and Gerald Oppenheimer have written, "The identification of homosexuality with AIDS was underscored once scientists publicized the epidemiological concept of high-risk groups." Bayer continued, "The designation of gay men as a high-risk group reinforced the notion that all gay men were diseased or at risk of being so."[1150]

By 1984, scientists had identified the HIV virus as the entity that, after being transmitted by blood, severely compromised immunity and ultimately caused healthy individuals to die of AIDS.[1151] And evidence of the disease would be documented among heterosexual women,

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[1146] Victoria Harden. *AIDS at 30: A History.* (Washington, D.C.: Potomac Books, 2012) Kindle Edition. Location 530.
[1147] Ibid., Kindle location 741.
[1148] Federal Response to AIDS, Hearings Before a Subcommittee of the Committee on Government Operations, House of Representatives, Ninety-eighth Congress, First Session, August 1 and 2, 1983 – United States. Congress. House. Committee on Government Operations. Intergovernmental Relations and Human Resources Subcommittee, 79.
[1149] Centers for Disease Control and Prevention (U.S.) "MMWR. Morbidity and Mortality Weekly Report, Vol. 32, no. 8, March 4, 1983" 32, no. 8 (1983), 102; Harden, Kindle location 1628-1666.
[1150] Padgug and Oppenheimer, 254.
[1151] "Discovery of HIV," In Their Own words… NIH Researchers Recall the Early Years of AIDS, accessed August 7, 2023, https://history.nih.gov/display/history/Discovery+of+HIV.

infants, injection drug users, hemophiliacs and Haitian immigrants.[1152] However, AIDS' association with the gay community accounted for the widespread indifference towards those who were suffering from the disease. As Anthony Fauci, chief of the NIAID Laboratory of Immunoregulation, remarked in 1983: "There's no question and no denying that there is a feeling among members of any of a number of professions, or just the general population, that patients with AIDS, many of whom are homosexual, are a little bit different. I think that that has probably, at least early on, led to a little bit of complacency about the approach towards this disease."[1153]

But even children with hemophilia did not escape the social exclusion and blame that gays experienced. After being banned from their public school in Florida for contracting AIDS through a blood transfusion, siblings Ricky, Robert, and Randy Ray successfully appealed the school's decision in court. Shortly after the court's ruling, their home was burned down. Ryan White, a teenager who contracted AIDS during a blood transfusion, was likewise barred from attending school in 1985.[1154]

Political leaders exhibited the same indifference that many in the public showed. Elected president in 1980, Ronald Reagan chose not to publicly speak about AIDS until five years later, after his friend Rock Hudson died.[1155] Reagan also cut the CDC's budget in response to inflation but in doing so, he precipitated a situation in which CDC task force members were "drowning" on account of their limited funds and could not respond effectively to AIDS.[1156]

[1152] Oppenheimer and Bayer "An Epidemic of Unknown Proportions," 1; Robert A. Padgug and Gerald M. Oppenheimer "Riding the Tiger: AIDS and the Gay Community." In *AIDS: The Making of a Chronic Disease* (Berkeley and Los Angeles: University of California Press 1992) 253. Editors Elizabeth Fee and Daniel M. Fox.
[1153] Federal Response to AIDS, Hearings Before a Subcommittee of the Committee on Government Operations, House of Representatives, Ninety-eighth Congress, First Session, August 1 and 2, 1983 – United States. Congress. House. Committee on Government Operations, 82.
[1154] Harden, Kindle locations 1534, 1930-1942.
[1155] Jennifer Brier, "Reagan and AIDS," in *A Companion to Ronald Reagan* (2015), 229-230.
[1156] Harden, Kindle location 1818-1830.

Reagan's presidency occurred during a time that some American historians refer to as "another 'Great Awakening,'" when there was an increase in "popular religiosity." United States historian James Patterson has written that the many Americans who embraced religion or spirituality between the 1960s and the 1980s were by no means a "homogeneous group." But at this time of increased fervor, fundamentalist Christian leaders, such as Reverend Jerry Falwell used the issue of AIDS to advance their political agenda and "moved boldly into the partisan wars." [1157]

Commenting on the approach taken by "right-wing ideologists," Padgug and Oppenheimer noted that "in this type of discourse, punitive messages were central, as was the tendency to identify as the problem not a particular virus but those infected with it—in particular, homosexual men, who had supposedly introduced the virus into the country and served as a reservoir of contamination."[1158] Falwell found an influential ally in North Carolina Senator Jesse Helms, who equated support of HIV prevention with promoting homosexuality. Helms annually issued amendments to health appropriations bills that prohibited funding "to the Centers for Disease Control from being used to provide AIDS education, information, or prevention materials and activities that promote, encourage, or condone homosexual sexual activities."[1159]

As Reagan administration historian Jennifer Brier has written, "there is no doubt that the Reagan administration and the president himself did not launch a substantial or comprehensive policy to address the scope of the AIDS epidemic that emerged during his term."[1160] In the

[1157] James Patterson, *Restless Giant: The United States from Watergate to Bush V. Gore* (Oxford University Press, 2005), 139-142.
[1158] Padgug and Oppenheimer, 254-255.
[1159] "Legislation Sponsored or Cosponsored by Jesse Helms. Refined by AIDS." *Congress.gov.* <https://www.congress.gov/member/jesse-helms/H000463?searchResultViewType=expanded&q={%22search%22:[%22AIDS%22],%22within%22:[%22AIDS%22]}> Accessed June 18, 2020.
[1160] Brier, 235.

absence of federal support, gay groups worked with health professionals in cities such as San Francisco, Los Angeles, and New York to build local infrastructure that could support those who were affected by the epidemic. Activists upheld the "San Francisco Model" as an exemplar of well-coordinated AIDS services delivery. As Journalist John-Manuel Andriote has written:

> (The San Francisco Model) comprised a number of services typically provided by various community-based agencies that served to keep someone who had AIDS out of the hospital, living at home, and functioning as well and long as possible. These services included case management, hotlines, resource materials, workshops, attendant care, a "buddy" program to assist with practical needs, centralized or home-delivered meal services, ambulette services to get to medical appointments, a skilled nursing facility, a health-related facility that combines residential and care needs, hospice care, support groups and peer counseling, recreation or activity programs, legal services, financial advocacy, and group or scattered-site housing.[1161]

Gay groups also took the initiative in fighting for increased public investment in health services. Victoria Harden commented that Larry Kramer took a "radical approach" and in 1987 founded the AIDS Coalition to Unleash Power (ACT UP), which used "strong public demonstrations" targeting politicians "to demand more drugs to treat the dying, more services to care for the ill, and more research to find therapies and preventatives for AIDS."[1162] Other advocacy groups, such as the AIDS Action Council, chose to work within the system. Founded in 1984, the Council aimed to represent the voices of AIDS service organizations before Congress.[1163] Some of its lobbyists, such as director Jean McGuire or her policy advisor Thomas Sheridan, identified as bisexual or gay but did not publicly disclose their sexual orientation. In working with congressional leaders, they also de-emphasized the fact that AIDS predominately affected gays. Realizing that the groups they represented had little influence, they chose a

[1161] John-Manuel Andriote, *Victory Deferred: How AIDS Changed Gay Life in America* (Chicago and London: University of Chicago Press, 1999). Kindle edition, location 8950.
[1162] Harden, Kindle location 2076.
[1163] T.F. Sheridan, *Helping the Good Do Better: How a White Hat Lobbyist Advocates for Social Change* (New York and Boston: Twelve, 2019). Kindle edition, 16.

strategy which John-Manuel Androite refers to as "'de-gaying' the epidemic." Commenting on this strategy, John-Manuel Andriote has written:

> Mainstreaming, or de-gaying, AIDS was a shrewd strategy and worked to bring about major legislation with tremendous benefits for people with AIDS. In the process, though, what happened is that politicians ate up the idea that they could "do something for AIDS" by helping women and kids—as small a segment of the AIDS population as they may have been.[1164]

The AIDS Action Council found "the perfect poster child for the campaign against HIV stigma" in Ryan White.[1165] Ryan White was indeed a heroic individual who used the experience of being barred from attending public school to call attention to the horrible consequences of stigmatization against persons with AIDS. His story also ultimately advanced legislation that brought billions of dollars to HIV and AIDS Service Organizations. However, the Ryan White CARE Act was also the culmination of a lobbying strategy that unfortunately failed to deal with systemic issues that compromised the American response to AIDS from its beginnings.

A Strategy for Navigating Constraints

While working as the deputy director for the Child Welfare League of America, Thomas Sheridan was asked by the AIDS Action Council to serve as its executive director. Sheridan recommended his colleague Jean McGuire for the job instead. McGuire was a fellow disability rights activist and she agreed to accept the position only if Sheridan served as her policy director. Sheridan spoke of the challenge that was ahead: "If we could carefully shape our messaging so that it wasn't seen as a vote for or against the gay community, we would be able to create a

[1164] Andriote, Kindle location 7730, 7769, 7853.
[1165] Trevor Hoppe, *Punishing Disease: HIV and the Criminalization of Sickness* (Oakland: University of California Press 2018), 69.

larger framework of support. Thus, my first and most difficult task was to shift the entire political paradigm of the AIDS debate."[1166]

Upon becoming policy director, Sheridan cultivated relationships with congressional leaders. He remained in touch with Ted Kennedy, who chaired the Health, Education, Labor, and Pensions Committee in the Senate, and who he knew from the days in which he worked with the Child Welfare League of America. Sheridan also formed alliances with legislators whose districts were most affected by the AIDS epidemic, including Representatives Nancy Pelosi, Henry Waxman, Barbara Boxer, and Senator Alan Cranston from California and Representative Ted Weiss from New York. Sheridan furthermore formed the National Organizations Responding to AIDS (NORA), which included medical groups, such as the American Hospital Association and the American Medical Association. NORA also included the US Conference of Catholic Bishops, whose nuns and priests worked in hospices and saw AIDS patients suffering firsthand. As Sheridan has written, "We knew winning was about numbers, names, and credibility—we needed to build a big tent, get as many people inside it as possible, and then get meaningful contributions from all of them."[1167]

NORA's first test was passing Kennedy's S1220 Bill, which had numerous objectives, including increasing the staff at the Center of Disease Control, providing training to healthcare professionals, and creating a national AIDS research program. In advancing Kennedy's bill, Sheridan appealed to coalition members' interests and added provisions that benefitted hospitals and health professionals. On November 4, 1988, Ronald Reagan signed Kennedy's S1220 bill as well as the more comprehensive S2889 Health Omnibus Programs Extension (HOPE). Following this first victory, NORA's coalition members had a realization. As Sheridan has written, "We

[1166] Sheridan, 18.
[1167] Ibid., 23.

soon started to realize that we couldn't just keep funding research. We had to get out of the 'white coats and stethoscope' mode—which was the only safe place to be politically—and start helping the organizations trying to care for people with AIDS."[1168] While there were "pockets" of "great work" being done for patients in places like San Francisco, the nation did not have "a national funnel through which real change and solutions could be optimized."[1169]

While Sheridan and his team brainstormed, Hurricane Hugo struck the Southeastern United States. After seeing the federal government rebuild infrastructure, they decided to write a bill that framed AIDS as a national emergency like the hurricane and channeled funding to the states with the most AIDS cases and deaths. To gain Republican votes, Sheridan provided localities with control over how they used the federal funding.[1170]

A key component of Sheridan's strategy was forming alliances with legislators, such as ranking Republican Senator Orrin Hatch, who were socially conservative yet sympathized with AIDS patients. As Sheridan maintained, "I started to realize that we could win over these pragmatic and more compassionate conservatives… (as well as the fiscal conservatives…) if we could create a cost-effective model that relied on early intervention and outpatient/community/home-based care, one that could act as a bridge from work to disability."[1171]

In February 1990, Kennedy and Hatch, along with 26 other sponsors, introduced into the Senate the Comprehensive AIDS Research Emergency (CARE) Act of 1990. The bill moved through subcommittee to the Committee on Labor, Health, and Welfare. But by the time of committee markup, the bill did not seem likely to pass. Orrin Hatch then offered a suggestion

[1168] Ibid., 29.
[1169] Ibid., 18.
[1170] Ibid., 31.
[1171] Ibid., 30.

that in retrospect was perhaps most crucial to the legislation's passage: he recommended naming it in Ryan White's honor.[1172]

At the time, Ryan White was on a ventilator and nearing the end of his life. Sheridan was concerned "that we might offend (his mother) Jeanne by using the public's sympathy for her son to gain political traction." Nonetheless, Ted Kennedy called her on the phone and she replied, "We would be honored." After passing the committee, the newly named Ryan White CARE Act was ready for a full Senate vote. However, Jesse Helms and a few other senators announced that they would filibuster to prevent the bill from reaching the unanimous consensus necessary for the Senate vote. Sheridan thus needed a supermajority of 60 votes to prevent a filibuster; however, the Ryan White CARE Act had just 40 cosponsors and the majority of whom were Democrats. Collaborating with sympathetic Republicans again proved essential to pushing the bill forward. Sheridan worked with Bob Dole's Chief of Staff Sheila Burke, who "helped us figure out how to isolate Helms and his colleagues so we could get the majority of Republicans to go along with Ryan White."[1173]

Ryan White died on April 8, 1990. Just one week after her son's death, Jeanne White flew to Washington DC. Aware that Kennedy did not have the votes to prevent the filibuster, she met with legislators to urge their support. One of her most important encounters was with Joe Biden, who had lost his son in a car accident, and who broke into tears as they spoke about her loss. Following this encounter, momentum built towards the bill's passage. The Senate had 61 cosponsors. After the House passed the bill by a vote of 408 to 14, President H.W. Bush signed

[1172] Ibid., 33-34.
[1173] Ibid., 36.

the Ryan White CARE Act into law on August 18, 1990.[1174] Thomas Sheridan reflected afterwards on the political process behind this milestone:

> We gained more than just Ryan's bravery, or his sudden celebrity, when he lent his name and spirit to the CARE Act. It helped us circumvent the misinformation, hysteria, and rampant homophobia associated by many with the disease, since most Americans viewed Ryan as an innocent who contracted this deadly illness despite doing nothing wrong. These are not and were not my thoughts, but those prejudices mattered in the politics of the moment.[1175]

Lessons from Polio and AIDS: Advocates' Successes

Polio and AIDS impacted the United States welfare state in similar ways. Both were feared infectious diseases that were uncontrollable. Through becoming regarded by the public as national emergencies, they linked marginalized groups' interests to those of the entire American population. Part of this was due to advocacy. Advocates strategically framed helping those affected by the diseases as a matter of national interest, in the same way as conducting a war or responding to a natural disaster.[1176] In addition, while activists ultimately aimed to help underserved patients, including respirator-dependent adults and gay men, they strove to improve public attitudes towards the diseases by publicizing them as affecting "innocent" children. In the process, they changed the national mood so that it provided "fertile ground" for their programs' implementation. [1177]

Advocates also successfully worked within a broader trend in American policymaking that political scientist Patricia Siplon has described as "the movement of power and policymaking to the state and local levels."[1178] In the case of polio, the NFIP not only advocated for the decentralized chronic disease model that became integral to health policy, but its system

[1174] Ibid., 12-13, 36-38, 40-41.
[1175] Ibid., 37.
[1176] See also Patricia D Siplon, "Washington's response to the AIDS epidemic: The Ryan White CARE Act," *Policy Studies Journal* 27, no. 4 (1999), 797.
[1177] Kingdon, 147.
[1178] Siplon, 797.

of assistance to regional Respiratory Centers was later succeeded by Eisenhower's federal grant-in-aid rehabilitation program. In addition, Siplon notes that Ryan White's mechanism of providing aid to localities was "rooted in" President Johnson and Nixons' categorical grant form of awarding assistance. For instance, Title I's federal grants for "disaster relief" to cities required mayors to create a HIV Health Services Planning Council that formulated priorities for how grants were to be spent among the array of local AIDS community organizations. Title II also provided grant funding that was administered at the state level for a "comprehensive continuum of care to individuals with HIV disease and their families."[1179] Advocates furthermore built coalitions that included powerful interest groups and found ways of uniting leaders with different worldviews.

Finally, capable leaders arose during both epidemics who foresaw how to work with the limitations they were given to advance their objectives. Leaders such as John Affeldt, Mary Switzer, Thomas Sheridan, and Jeanne White astutely navigated political constraints and successfully built support for their agendas.

Advocates' Failures

While both epidemics contributed to the American welfare state's expansion, advocates' legacy was ultimately mixed. On one hand, their programs advanced equity for specific groups, most notably persons with disabilities and HIV patients. On the other hand, by ignoring systemic problems such as racism or prejudice against gays, they also paradoxically became less equitable. In the case of polio, the comprehensive system that emerged through the epidemics to this day provides specialized services that addresses many medically complex patients' needs.

[1179] Ibid. 797-802.

But, as disability advocates such as Fred Fay explained, their movement failed to address the disabling barriers in nonwhite communities, including racial segregation and poverty.

AIDS likewise brought together activists who, while discriminated against for their sexual orientation, had a certain degree of influence due to their race. As a result, in the years following the Ryan White Act's enactment, community organizations founded by white gays more easily accessed federal grants than those representing nonwhite AIDS patients. A 1993 letter from Latino Heath Institute raised awareness of this problem: "The Council prioritizes funding of 'existing organizations over new organizations and agencies that can demonstrate existing linkages to other services in the continuum…(this has) the direct effect of excluding non-dominant communities from fair competition based on present need, rather than history." As the Council stated, "when we propose to offer those services, we are told that it would constitute 'duplication.' When European American institutions are funded to address the needs of our communities it is termed an 'expansion of services' or 'community outreach.'"[1180]

Such inequality persisted into the subsequent two decades, as antiretroviral medications transformed HIV into a chronic disease by halting its progression to AIDS. Into recent times, significant disparities persist in access to HIV treatment, which are especially pronounced in the South and among gay men of color.[1181] This trend has only become amplified with the development of PrEP, which received FDA approval in 2012 for preventing HIV transmission. In the years following PrEP's authorization, whites from Western and Northeastern states obtained close to 75% of all prescriptions. As experts Robert Goldstein, Carl Streed, and Sean Cahill have noted, such a statistic was not only rooted in patients and providers' lack of

[1180] Ibid., 804.
[1181] NIH, "To end HIV epidemic, we must address health disparities," news release, February 19, 2021, https://www.nih.gov/news-events/news-releases/end-hiv-epidemic-we-must-address-health-disparities.

awareness but resulted from stigma and financial barriers in states that rejected the 2010 Affordable Care Act's Medicaid expansion.[1182]

Like polio, AIDS was an exceptional disease that prompted the creation of a federally funded safety net for stigmatized populations. But the HIV social safety net is marked by inequality, not only in healthcare access, but in the protections afforded under the law. Persistent stigmas against gays and other groups who acquire HIV sexually spurred punitive legislation in 28 states that affected the most underserved HIV patients. As Trevor Hoppe has written, continued fears that "HIV could bleed over from 'high-risk groups' to the 'general population'" led to laws criminalizing sex workers and other people who engage in sexual activity without disclosing their HIV status.[1183] During the American AIDS epidemic, Activist Ginny Apuzzo spoke words that are relevant to chronic HIV today; she stated, "I believe that AIDS is every single crisis this society has looked at and ignored historically… I believe it's sexist. I believe it's racist. I believe it's homophobic..."[1184]

In her study of the Ryan White program, Patricia Siplon commented that "the positive side of (it) is that it works at all." But, as she stated, a "red flag" existed in "terms of equity and access."[1185] Analyzing how polio, AIDS, and other epidemic diseases, intersected with broader trends in the United States' expansion of welfare helps us to consider how to create sustainable programs for underserved chronic patients. Siplon concludes that "an examination of (the Ryan White Program's) model of treatment and service delivery… may yield important lessons for future attempts to address the needs and claims of other groups."[1186] Especially at the present

[1182] Robert H Goldstein, Carl G Streed Jr, and Sean R Cahill, "Being PrEPared—preexposure prophylaxis and HIV disparities," *New England Journal of Medicine* 379, no. 14 (2018).: 1293-1294.
[1183] Hoppe, 188.
[1184] Androite, Kindle location 12870.
[1185] Siplon, 806.
[1186] Ibid., 799.

time, as the COVID-19 pandemic, like polio and HIV, transitions into a chronic affliction, studying the history of infectious diseases can identify the advances and pitfalls of various strategies for advocating for the underserved.

January 2020: The Next Public Health Emergency Appears

Not long after COVID-19 became a public health emergency in the United States, it brought out "every single crisis" that went unchecked during the polio and AIDS epidemics. While its high transmission rate resulted in widespread morbidity and mortality, its deleterious effects were most pronounced amongst the underserved. Some of the pandemics earliest causalities were New York's historically disenfranchised developmental disability population. As early as March 2020, they were noted to have higher death rates in group homes largely as a result of the state government's inept response.[1187] Low-income communities throughout the United States also had high mortality rates and significant disparities existed in death rates between white and nonwhite Americans.[1188] By August, the pandemic's death toll among racial and ethnic minorities was fully apparent, as black, Latino, Native American, and Pacific Islander populations had mortality rates were at least three times that of white Americans. Data indicated that black communities especially experienced higher rates of unemployment, food, and housing insecurity than whites. [1189]

[1187] "'It's Hit Our Front Door': Homes for the Disabled See a Surge of Covid-19," 8 April 2020, *New York Times*; "More than 1,000 Coronaviruses Cases Among New York Nursing Homes," 30 March 2020, *Wall Street Journal*.
[1188] "Checkpoints, Curfews, Airlifts: Virus Rips Through Navajo Nation," 9 April 2020, *New York Times*; Jarvis T. Chen and Nancy Krieger, "Revealing the Unequal Burden of COVID-19 by Income, Race/Ethnicity, and Household Crowding: US County vs ZIP Code Analyses," Harvard Center for Population and Development Studies Working Paper Series, Volume 19, Number 1. April 21, 2020.
[1189] APM Research Lab Staff. The Color of Coronavirus: COVID-19 Deaths by Race and Ethnicity in the U.S. July 8, 2020. < https://www.apmresearchlab.org/covid/deaths-byrace> Accessed: August 27, 2020.

Elected officials across the political spectrum responded quickly and authorized a massive spending increase to remedy the safety net's inadequacies. The federal government infused five trillion dollars into a variety of measures, including stimulus checks, child tax credits, food stamps, and funding for healthcare coverage. Such bipartisan cooperation brought striking progress in advancing national welfare and led to numerous achievements, including a 33% decrease in childhood poverty and the attainment of an uninsured rate of 8%, the lowest in American history. As social epidemiologist Rita Hamid stated, the flurry of activity "patched long-existing holes in the safety net… there were still lots of holes. But there was a lot of action to fill in gaps in the safety net that have been known for some time."[1190]

The magnitude of the COVID crisis, along with George Floyd's widely publicized murder by police, led many to believe that the time was ripe for systemic change. In an August editorial in *American Journal of Public Health,* Social epidemiologist Nancy Krieger articulated the sentiment that had been building over the previous months:

> This past June, propelled by the massive protests over police brutality, the COVID-19 pandemic, and the intensification of economic inequities disproportionately harming US communities of color and their health, 20 US cities and counties and three states have declared or are in the process of declaring that racism is a public health crisis... Whether this new awareness translates into meaningful change will depend on the sustained mobilization of social movements that recognize both painful histories of past injustice and powerful histories of resistance, thereby inspiring hope for repair and a better equitable and sustainable future.

Krieger continued: "If the past is any guide, unjust systems that people have made can be unmade and transformed."[1191]

[1190] Claire Cain Miller and Alicia Parlapiano. "The U.S. Built a European-Style Welfare State. It's Largely Over," 11 May 2023, *New York Times*.
[1191] Nancy Krieger, "Enough: Covid-19, Structural Racism, Police Brutality, Plutocracy, Climate Change—and Time for Health Justice, Democratic Governance, and an Equitable, Sustainable Future." *American Journal of Public Health,* 2020: E2.

After being elected President of the United States in 2020, Joseph Biden sought out to make permanent the measures that helped the underserved during the pandemic. His $2 trillion social policy bill extended many temporary pandemic policies that reduced family poverty and increased health insurance coverage. Biden's bill passed the House of Representatives, but the Senate stripped it of most of its measures that dealt with inequity. Not only was Biden unable to surmount partisan opposition, but public support for increasing federal spending decreased as the nation faced the highest levels of inflation since the 1980s.[1192]

The successful roll out of the COVID vaccines and the previously high infection rate, have led to herd immunity and since sparked a decrease in mortality and further eroded support for reform. In March 2023, Biden declared that the COVID emergency had ended and states subsequently initiated the process of terminating millions of Americans' emergency Medicaid coverage, as redeterminations had been on hold due to the public health emergency (PHE). The federal government also began phasing out funding for food, housing, and childcare. As journalists Clare Cain Miller and Alicia Parlapiano wrote in May 2023, " For the most part, the pandemic-era welfare state is over."[1193]

Political scientist Sheri Berman reflected that in retrospect, "there (was) little political will to make policies permanent because they did not emerge from a deeper shift in how Americans view the role of government or the rights of citizens." During the pandemic emergency, the United States employed measures that "are totally accepted in Western Europe" that "protect(ed) people from the downsides of unemployment, help(ed) families with children

[1192] Aatish Bhatia, Francesca Paris and Margot Sanger-Katz, "See Everything the White House Wanted, and Everything It got," 20 October 2022, *New York Times*; Claire Cain Miller and Alicia Parlapiano. "The U.S. Built a European-Style Welfare State. It's Largely Over;" Thomas Kaplan, "What's in the Stimulus Bill? A Guide to Where the $1.9 Trillion Is Going," 7 March 2021, *New York Times.*
[1193] Claire Cain Miller and Alicia Parlapiano. "The U.S. Built a European-Style Welfare State. It's Largely Over."

and ensur(ed) access to health care… in (its) own patchwork way." But this was only a temporary response to acute needs, as "without these things, the entire system could go under."[1194]

Navigating Today's Constraints

Now that COVID-19 is no longer an emergency in the United States, I am concerned that the underserved will lose most of the protections that they gained during the pandemic. Their problems were not merely transient disruptions caused by a communicable disease. Rather, the crisis of COVID-19, like polio and AIDS, highlighted the gross inequities that we live with daily and their impact on the marginalized groups of society. I worry particularly about my own patients, most of whom have comorbidities and come from undeserved communities in the L.A. metropolitan region. For them, contracting COVID-19 could become both medically and financially disastrous, as it was on a widespread level in the early months of the pandemic.

In reviewing my dissertation as I prepare to file, I have considered how we can build on my subjects' achievements without replicating their failures. Both the 1950s rehabilitation proponents and the 1980s AIDS advocates overcame obstacles to make permanent the infrastructure they had built during their national emergencies. How we likewise strategize navigating our own political constraints will be vital to improving the healthcare safety in the future.

Successfully advocating will be daunting, especially given foreseeable budget cuts. As the rate of economic growth in the United States becomes superseded by skyrocketing debt, I am skeptical that officials will prioritize Medicaid alongside Defense programs or the more popular Medicare program. Historical study can provide guidance for how advocates can surmount

[1194] Ibid.

constraints that have persisted into the present. But applying lessons from the past will ultimately require capable leadership, creativity, and flexibility.

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