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Independent Study Projects

Title

A Partnership with Project 25: learning from the chronically homeless and the people who seek to improve their care

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Title of ISP: A Partnership with Project 25: learning from the chronically homeless and the people who seek to improve their care

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Background
According to the National Alliance to End Homelessness, on a single night in January, 610,042 people in the US were estimated to be homeless—defined as living in an emergency shelter, transitional housing program, safe haven or place not meant for human habitation such as the street or abandoned building (1). This equates to roughly 19 of every 10,000 people. Stratifying the data further, of those that are homeless, 92,593 people were considered to be chronically homeless—defined as people who have a disabling condition and have been continuously homeless for at least 1 year or have experienced at least 4 episodes of homelessness in the last 3 years. Nearly 40% of those who are chronically homeless reside in California and nearly 9,000 live in San Diego (1,2). Add to this statistic the well-known increased burden of chronic disease and mental illness in the homeless population, and it is not surprising that we disproportionately encounter these individuals in emergency departments and inpatient wards (3-4). Although all physicians will likely take care of homeless individuals at some point in their careers, there is little formal training on taking care of the homeless in medical education.

Many medical students are inspired to go into medicine for reasons related to social justice and the rewards of connecting with patients. Despite this initial motivation, it has been shown that student attitudes towards the underserved declines in medical school (5). A component of this attitude shift may be the realization that treating the underserved, specifically the chronically homeless, who disproportionately suffer from substance abuse, psychiatric and/or personality disorders, is challenging (6). For example, it is not uncommon to see homeless patients act in self destructive ways, such as leaving the hospital against medical advice to use illicit drugs. However, this shift may be more influenced by students observing negative attitudes towards the homeless by physician role models in their clinical years. Investigators have demonstrated that student attitudes toward the homeless were more negative at the end of medical school than in the beginning and that the determining influences were negative clinical experiences and role models (7-9). Some of these negative attitudes may be due to physicians feeling overwhelmed with homeless patients' multiple social and behavioral problems and the inability of our fragmented medical system to adequately address them.

However, in order to provide equitable care to *all* people, we need to not only fix our frayed health system but also actively cultivate medical student attitudes towards the homeless and other marginalized populations throughout medical training. Learning how to understand and address these attitudes may begin during pre-clinical years, but ultimately, it is learned through professional socialization with residents and physicians during the 3rd and 4th year—also known as the "hidden curriculum" (10). Unfortunately, many students only encounter the chronically homeless in the emergency department or inpatient settings throughout their medical training and there is no guarantee that students will work with physicians who have positive attitudes towards the homeless. In addition, physicians are often not able to address social determinants of health in these settings given time and resource constraints. These issues are routinely delegated to the social workers or case managers, whose work with the patient is usually without the health care team present, and medical

students lose out on valuable learning. Clinical experiences during rotations can be variable and unpredictable so many medical schools have addressed this problem through hands-on clinical experiences during the first two years of medical school.

The UCSD Free Clinic and other free clinics around the country have had success with improving attitudes of students towards the undocumented, homeless and poor individuals (11). At UCSD, we have the opportunity to learn directly from patients about social determinants of health. These direct experiences with not only the homeless but with providers who model exemplary compassion for the underserved strengthen positive attitudes towards these populations. Looking forward, with the affordable care act and expanding insurance coverage, many of the homeless individuals that used to frequent the free clinic have transferred to other community clinics after acquiring medical insurance. Students now have less exposure to the homeless during the pre-clinical years. I hoped to address this by partnering with local programs for the homeless to give medical students the opportunity to interact with the chronically homeless as well as healthcare providers who care deeply about them.

Since 2011, St. Vincent de Paul Village has managed Project 25, a program that seeks to improve the care of chronically homeless people who are high utilizers of healthcare. The components of Project 25 include: a housing first approach that provides unconditional housing, intensive case management, and a patient centered medical home. The multidisciplinary Project 25 team includes life-skills coaches, substance abuse and harm reduction counselors, case managers, and medical providers. The idea combines the fast growing housing first model (unconditional permanent housing) with the hotspotting model (lowering medical costs by providing more care to the sickest patients) that was popularized by Atul Gawande's article, *The Hot Spotters (12),* in the New Yorker that detailed Dr. Brenner's fascinating work in Camden. In the first year of Project 25, individuals in the program have seen a remarkable 56 percent decline in number of hospitalizations, 58 percent decrease in days spent in the hospital, 62 percent drop in ambulance rides, 66 percent reduction in emergency room visits, and 63 percent cut in costs (13-14).

By partnering with Project 25, I had the chance to interact with previously chronically homeless individuals in a different setting than the usual patient-doctor hospital dynamic. Meeting these individuals in their homes humanizes them, allowing for more meaningful interaction and understanding of the circumstances that lead to their homelessness. I also had the opportunity to work with the multidisciplinary Project 25 team members. I joined Project 25 case managers, life coaches and medical providers on their home and clinical visits. In doing so, I hoped to personally gain a better understanding of the social determinants of health and to continually challenge my own biases and attitudes towards the chronically homeless. Following my own personal experience, I attempted to work on developing an ongoing partnership with St. Vincent's for future medical students to have firsthand experiences with the homeless.   Lastly, I worked with the Project 25 leadership and data manager to analyze the project's retrospective outcomes data to learn about the effects of addressing social determinants of health from a quantitative perspective.

Objectives and Methods
The overarching goal of this project was to gain a better understanding of the social determinants of health for the chronically homeless and to self-reflect on my own biases of the homeless. To achieve these goals, I proposed the following two components for the ISP:

Personal Immersion Experience
1. Attend a Project 25 team meeting and identify 5 individuals in the program.
2. Work with case managers, life coaches and medical providers to schedule appropriate times in the dedicated ISP months to go on at least 3 clinical/home visits for those 5 individuals.

3. Write a 2 page reflection paper about my experience with the goal of possibly publishing in UCSD's *Human Condition* or Gold Humanism blog.
4. Establish on-going partnership with St. Vincent's for future medical students to have clinical experiences with homeless populations.

Project 25 Outcomes Paper
1. Write IRB proposal to investigate Project 25 retrospective data.
2. Work with Dr. Folsom and Project 25 data manager to write a manuscript describing and analyzing Project 25's outcomes data with the goal of submitting to academic journal.

Results/Discussion
Personal Immersion Experience

Every week, there is a case management team meeting with the project manager, life coach, nurse, and case managers to discuss all of the clients in Project 25 and prioritize key interventions during the week. The project manager led the case management team, helped organize payee services, served as liaison between clients and landlords in the community. The life coach helped clients learn independent skills of daily living, such as cleaning their apartments, washing their laundry, buying groceries, etc. The nurse was responsible for filling prescriptions and medication management, including brining medications to clients. Case managers performed needs assessments, helped transport clients to doctors appointments, and helped clients find and maintain housing in the community. All roles were fluid and success of the program depended heavily on team members creatively trouble shooting and addressing client needs.

During my dedicated ISP months, I was able to sit in on at least four case management meetings. I originally intended on scheduling specific dates to ride along with case managers to see 5 individual clients longitudinally. However, I quickly learned that schedules were determined day-to-day and changed frequently to provide flexibility and the ability to triage tasks. For example, if a client was in danger of losing housing due to an acute behavioral issue, working with that client was prioritized for the day. Therefore, instead of scheduling specific visits with clients, I shadowed case managers for 3 weeks, accompanying them to meet clients from 9-4PM. During that time span, I was able to meet 7-10 different individuals, and met patients in the inpatient medicine wards, locked psychiatric units, their apartments throughout the San Diego community, and outpatient clinics. Visits were also often not medically focused. Case managers often helped clients perform personal errands. I accompanied patients to the grocery store, to storage units, and even pawn shops. This helped build trust and therapeutic rapport between case managers and clients.

I also had the opportunity to attend a Project 25 stakeholders meeting where different community partners as well as MediCal subcontractor representatives from Molina, CHG, Care1st, etc. attended. This was a unique representation of how influential Project 25's work has been in homeless, housing first and hotspotting initiatives in the broader San Diego community.

Through this experience I learned so much about the dedication and fieldwork required to have a successful hotspotting and housing-first program. I also learned so much from listening to patient stories and spending time with them in a non-medical setting. Please see below to read a personal reflection on my experience.

From the beginning of this project, I hoped to establish a connection between UCSD and Project 25 leaders so that future medical students could have similar experiences. Although nothing formal has been created, I feel confident that Project 25 would warmly welcome future students to learn about their program and ride along with case managers. St Vincent de Paul has a homeless medical clinic, but given recent restructuring of their

healthcare delivery model, it is difficult for students to work there before their fourth year, so this may be a critical opportunity for students to work with homeless patients.

Towards the beginning of my ISP, Emily Rand, a fellow MS4, found and applied for a student hotspotting grant sponsored by the AAMC, Camden Coalition and Primary Care Progress. Her ISP was also about hotspotting and she worked with the Resource Access Program, a community paramedic team that worked on reducing emergency medical service utilization. Given our similar interests in hotspotting, she asked me to be part of a first ever UCSD student hotspotting group. We created an interdisciplinary team and were awarded the competitive grant among 20 other medical schools in the country. In addition to learning from Project 25, working with the interdisciplinary team gave me the opportunity to get firsthand experience with hotspotting. I had the privilege of recruiting and working with 4 patients. We have reached out and identified several rising MS2s, MS3s and MS4s to continue the work of hotspotting at UCSD. Please see appendix or Emily Rand's ISP for more details about that experience.

Project 25 Outcomes Paper

Obtaining permission to work directly with the raw data from Project 25's first cohort of patients was difficult. Project 25 made agreements with health plans that only aggregate data could be released. In addition, a comprehensive outcomes report had already been published by the Point Loma University's Fermanian Business & Economic Institute. Given the success of Project 25, we wanted to share the results of the pilot program with the broader medical community by writing a paper suitable for a peer-reviewed journal. I discussed the idea with Project 25 leaders at a stakeholders meeting and got support. I then successfully went through the IRB process and received an exemption to write the paper. I contacted authors of the original outcomes report and they are now partners in editing the paper. Please find a draft of the manuscript below. At the completion of this ISP, the paper is in the process of being reviewed and submitted to an academic journal.

Challenges

Since this was a project conducted mostly outside of the UCSD health system, it required more planning and flexibility from the student. Although Project 25 leaders are very welcoming of medical students, they are extremely busy and difficult to reach via email. Rather than waiting to schedule a time for shadowing case managers, once I knew where their office was located, I met the team in person and immediately was allowed to shadow a case manager for the day. Although I had a proposal for what I thought would be the most meaningful experience for me, I had to compromise slightly in order to not be an additional burden on the team.

Obtaining permission to write an outcomes paper took longer than anticipated. I met several times early on with Marc Stevenson, the leader of Project 25 as well as Dr. Folsom, the previous medical director for Project 25 and ISP committee member. I received immediate support in writing the paper but had difficulties obtaining the raw data to do my own analysis. Since the analysis was already completed by the Point Loma group, it made the most sense to use their results to write the paper. I met with Marc Stevenson and Kris Kuntz, data manger of Project 25, at a Project 25 stakeholders meeting and obtained their support to move forward with the paper. Face-to-face meetings and phone calls were critical in moving the project forward.

For challenges of starting our own UCSD hotspotting group, please see Emily Rand's ISP.

Conclusions

By listening to the stories of chronically homeless patients and the community leaders who care deeply about them, I learned a tremendous amount about how our current health system is ill-equipped to address many patient needs, especially the social determinants of health. I learned how powerful it is to talk to patients outside of the hospital in humanizing them and influencing our own attitudes and biases. Given medical students' limited exposure to homeless patients outside of the hospital, partnering with community hotspotting and housing-first initiatives is a valuable experience for changing future physician attitudes towards the homeless and learning a tremendous amount about our health and social support systems.

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Personal Reflection: Listen, community is our teacher

I am riding in our 1988 Nissan Maxima with my father and mother sitting up front and my younger brother next to me. It's a blisteringly hot day in Phoenix. As we get off the freeway, we see a homeless beggar with sun-damaged skin and tattered clothes, standing at the corner of the exit and holding a sign wishing for any spare change. We stop at the red light and as we turn onto the local road, my father looks at us and says, "If you are lazy and don't study hard, you could end up like him, on the streets."

Impromptu life lessons were not uncommon during our family car rides; in fact, every time we saw a homeless person on the streets, a similar message would be shared. Reflecting back on these moments, I can understand why my father would say this. He immigrated to the US from China in the 1980's, after surviving the Cultural Revolution and being sent to the countryside during high school to perform hard labor. He worked hard to make a life for himself and our family in the United States and wanted me and my brother to take full advantage of the opportunities we had in America. However, despite my father's story, his comments were inappropriate. His personal success in overcoming adversity blinded him from empathizing with a fellow human's suffering. In those moments, he was the one being "lazy" by dehumanizing the homeless without knowing their story.

My father has since changed his views, but his prior comments instilled in me a negative bias towards the homeless starting at a young age. Fortunately, having had the privilege in medical school to work directly with homeless patients and providers who care deeply about them, I have started the process of addressing my unconscious thoughts.

As a future physician, I believe in healthcare as a right, and thus, it is my duty to advocate for equitable healthcare for all people. It is well known that the US spends more on healthcare than any other country in the world. As far as Western medicine is concerned, we have some of the most sophisticated technology and advanced treatments in the world. So why is the US only ranked 34th in overall life expectancy? Perhaps a better representation of healthcare in this country is to stratify life expectancy by income. The income gap is widening, and so is the longevity gap. The wealthiest Americans can expect to live well into their 80s, which would rank at the top of life expectancy in the world, while the poorest Americans can expect to live much shorter lives, as low as the 60s in some low income cities. When we stratify the data even further and investigate the average life expectancy in the homeless, it is estimated to be between 42 and 52 years, which would rank 178th in the world, at best. The disparity is appalling. What can physicians do to help shorten the gap?

As third year medical students, our exposure to homeless patients is predominantly in the hospital, from the busy emergency rooms with gurneys crammed into hallways to the packed inpatient wards. We quickly learn that the health system is ill-equipped to take care of homeless patients, largely because it cannot provide them with the most effective treatment: a home. Often, their physical and mental illnesses are just manifestations of social barriers and traumas. In addition, homeless patients can have prolonged hospital stays as they wait for "placement." In many instances they are not so lucky and are discharged back to the streets, a morally acceptable disposition in our current culture. The feeling of not being able to help homeless patients can foster physician resentment towards the system and the patients, who are commonly viewed as a burden to round on if their acute medical problems have resolved. Physician burn-out is getting worse and the inability to truly help this population, who access acute care at disproportionately higher rates, is not helping.

During my fourth year of medical school, I had the opportunity to learn more about Project 25, a housing-first and hotspotting program run by Father Joe's Village, San Diego's largest homeless services non-profit. They provided unconditional housing and intensive case management to 34 chronically homeless and highest

utilizers of public services in San Diego County. In doing so, they not only helped 34 individuals acquire permanent housing but also saved the County of San Diego 3.5 million dollars. The "super-utilizers" were costing the system millions of dollars but none of the care they received was addressing their humanity.

Shadowing the case managers on home visits to patients, I had the unique opportunity of talking to chronically homeless patients who were no longer homeless! Interacting with the homeless, outside of the usual hospital or clinic power dynamic, humanized the homeless for me. It was a lot different talking to someone wearing normal, clean street clothes in the comforts of their own home. I was not under the usual time pressure to acquire clinical information, allowing me time to listen. I listened to them talk about their hobbies of fishing, playing guitar and painting. I listened to how devastating it is to lose your life partner and fall into a deep depression. I listened to how important it was for one man to continue working despite his uncontrolled heart failure causing horrible lower extremity edema and pain.

Listening to the case managers and patients tell their stories taught me the importance of building meaningful relationships for healing, especially in the most medically and socially complex patients. The therapeutic rapport case managers built with their patients inspired trust, a characteristic missing between the patients and the current health system. Giving them a home gave them back some human dignity and working with a case manager provided them with committed support to succeed and a path towards healing.

In the current medical culture, speed and efficiency is rewarded. In medical school we learn how to quickly take a history, perform a physical exam and formulate a differential diagnosis and treatment plan. These skills are crucial to being a competent physician, but in practicing these skills, my ability to listen and empathize in the moment suffered. Working with Project 25 afforded me the opportunity to refresh those skills and reflect back on why I was originally drawn to medicine as a career—the privilege of learning about people and our shared humanity.

The concepts of hotspotting and housing-first are gaining national attention as economically sustainable and innovative solutions to address some of the inefficiencies and fragmentation of our current health system. I am so grateful to have had the opportunity to learn firsthand from the providers and interdisciplinary teams doing this amazing work and the patients who shared their stories. While Project 25's community-based approach and willingness to bend traditional job roles are innovative, its success lies in something fundamentally humanistic –building a relationship with another human.

By listening to the homeless, I have started the process of challenging my own biases, a process that I will continue indefinitely. This experience will give me strength to draw from when I am a busy resident on-call, working on a capped service with little sleep. I will resist the temptation to be biased in my care—to be lazy or feel burdened with my patients. The trait of life-long learner is often mentioned when describing characteristics of a successful physician. I would like to expand on that with "community is our best teacher," as in listen to our patients and their stories because they have much to teach us about medicine and ourselves.

Title: Public service utilization and cost analysis of Project 25—a housing first and intensive case management pilot project for the chronically homeless

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Introduction:

On any given night in the United States, there are over 600,000 homeless individuals and of those that are homeless, over 90,000 people were considered to be chronically homeless—defined as people who have a disabling condition and have been continuously homeless for at least 1 year or have experienced at least 4 episodes of homelessness in the last 3 years (1,2). We know from population data that the chronically homeless have high prevalence of physical disease, mental illness, and substance use, as well as higher rates of mortality, emergency department utilization and inpatient hospitalization days (1).

Traditionally, the approach to helping a person who was homeless was a continuum of care, or treatment-first, program, developed to address homelessness in step-wise manner. These programs required individuals to achieve sobriety, establish mental health and medical treatment and learn life skills before being housed (3). However, the stepwise approach is now falling out of favor to the housing first approach, which prioritizes housing the homeless "first" while concurrently providing intensive case management services to connect patients to mental health, substance use and medical treatment. Although not generalizable to all homeless individuals, for certain sub-populations of the homeless (e.g. those with mental illness and/or substance abuse) the current evidence is compelling and suggests that housing first programs compared to usual care have reduced time to housing and increased retention in housing (4, 5, 6) as well as decreased hospitalization days (7, 8), emergency department visits (6, 7) and cost (6, 9, 10).

Randomized controlled trials have demonstrated that housing first programs for the chronically homeless result in a reduction in acute care utilization and an increase in housing stability, however, given heterogeneity of existing study samples and limited cost-effectiveness data in the literature, there are no clear best practices that are generalizable enough for large scale implementation to address homelessness (4, 5, 7, 11). Despite this, many local communities have conducted their own high utilizer cost studies in conjunction with their respective community 10 year plans to end homelessness. While not scientifically robust enough to generalize on a national level, cost studies in these communities have had influence on local policies and programs to address high public service utilization and ending homelessness (11). The purpose of this paper is to share the cost data of a pilot scattered-site housing-first program in San Diego, CA for the chronically homeless and highest utilizers of healthcare services as well as the impact the results have had on subsequent local community interventions.

Methods:

Participants

Participants have utilized at least two of the three public services in 2010: 1) jails 2) emergency rooms, ambulances, hospitalization 3) county behavioral health services. Data were collected and matched from 32

separate data providers including 22 hospitals, shelters, ambulance service providers, Sheriff's Department, Public Defender and San Diego County's Health and Human Services Agency (HHSA). Actual costs incurred by hospitals and other services were used instead of posted charges.

Potential participants were rank-ordered by total cost of public services and the top 36 highest costing individuals were recruited and enrolled into the study between 2011-2012. With the assistance of local 911 services and the various data providers, participants were located in the community and recruited into the pilot program. 28 of the 36 potential participants were enrolled before the start of 2012 and remained in the program through 2013, and this was the sample analyzed given the focus on studying the impact of housing security.

Interventions

Participants were offered option of using temporary transitional housing through homeless non-profit St Vincent de Paul Village (SVdPV) or hotel rooms while permanent housing was secured. Permanent housing was provided through Mental Health Services ACT (MHSA) and the San Diego Housing Commission (SDHC), as housing vouchers or subsidies. Individuals who earned income were required to pay 30% of their earnings towards rent. A scattered-site approach was used: SVdPV managed the housing subsidies and acted as landlord mediators for all participants to help them find permanent housing in the San Diego community.

Participants were managed in a 3-4:1 participant to case manager ratio, with case managers from Telecare Corporation managing 10 participants and SVdPV managing the remaining 18. Case management visits varied in frequency and intensity depending on patient needs and usually started with more visits in the beginning of enrollment and tapered off toward the end of the program but never less than one visit a week. A life skills coach provided help with independent activities of daily living and a nurse supported medication management. A dual boarded family medicine and psychiatry physician served as the medical director for the program. The project manager conducted daily case management meetings each morning to prioritize interventions and activities for the day. Services provided to participants included medical, dental, mental health, medication management and delivery, drug and alcohol abuse treatment including a harm reduction approach, landlord mediation, disability benefits advocacy, payee program, and life skills coaching. Medical/mental health services were provided by a medical clinic for the homeless in SVdPV.

Analysis

Data from public service providers were collected quarterly by a data manager at SVdPV. Data were independently analyzed by Fermanian Business & Economic Institute at Point Loma Nazarene University. Baseline cost data from 2010 (pre-intervention) were compared to cost data from 2011, and 2012. Assuming that participants would have maintained their public service utilization frequency if they did not receive any intervention, anticipated public service costs in 2012 and 2013 were extrapolated using baseline 2010 data and adjusting for inflation with consumer price index for hospital services and personal consumption expenditures price index for other expenses. Descriptive statistics were used to demonstrate pre- and post-intervention changes in public service utilizations and cost.

Results:

Demographics (table 1)

Participants were predominately male (86%), white (78%), ages 40-59 (82%), non-hispanic (93%), civilians (82%), suffering from a disabling condition (100%), mental health illness (89%), and substance use disorder (89%).

Table 1: Project 25 Participant Demographics (n = 28)					
	Male	*Female*			
Gender	24 (86%)	4 (14%)			
	Black	*White*	*American Indian/Alaska Native*		
Race	5 (18%)	22 (78%)	*1 (4%)*		
	Hispanic	*Non-Hispanic*			
Ethnicity	2 (7%)	26 (93%)			
	20-29	*30-39*	*40-49*	*50-59*	*60+*
Age	3 (10%)	1 (3.5%)	13 (46%)	10 (36%)	1 (3.5%)
	Less than 12 years	*High School Diploma or GED*	*At least some college*		
Education	7 (25%)	16 (57%)	5 (18%)		
	Yes	*No*			
Veteran	*5 (18%)*	*23 (82%)*			
Disabling Condition	*28 (100%)*	*0 (0%)*			
Mental Health Illness	*25 (89%)*	*3 (11%)*			
Substance Abuse	*25 (89%)*	*3 (11%)*			
Victim of DV	*3 (11%)*	*25 (89%)*			
Income	*11 (39%)*	*17 (61%)*			
	$0-500	*$501-1000*	*$1001-1500*	*$1501-2000*	
Level of Income	17 (61%)	8 (28.5%)	2 (7%)	1 (3.5%)	

Public Service Utilization (table 2)

For the 28 enrolled participants, comparing aggregate baseline utilization in 2010 to 2013, the total number of hospitalizations decreased from 189 to 47 (-84%), the number of hospital days decreased from 1301 to 488 (-62%), the total number of emergency department visits decreased from 1171 to 278 (-76%), the number of arrests decreased from 82 to 18 (-78%), the total number of jail days decreased from 773 to 285 (-63%), and the number of ambulance rides decreased from 620 to 147 (-76%). The composite utilization of crisis houses, detox centers, homeless shelters, legal assistance, and psychiatric emergency response also decreased from 151 to 96 (-36%). Comparing baseline 2010 utilization data to 2012 data, there is already a marked reduction in utilization, which is sustained in 2013.

Comparing median participant public service utilization between baseline 2010 and 2013, hospitalizations decreased from 10 to 2, hospital days decreased from 46 to 17, ED visits decreased from 42 to 10, arrests decreased from 3 to 0, jail days decreased from 28 to 10, ambulance rides decreased from 22 to 5 and other (crisis house, detox centers, homeless shelters, legal assistance, PERT) decreased from 5 to 3. There was

already marked decreased in median participant utilization between baseline 2010 and 2012 and these changes were sustained in 2013.

Table 2: Total (Median) Public Service Utilization						
	Total 2010 baseline	Total 2012	Total 2013	Total %change from 2010 to 2012	Total %change from 2012 to 2013	Total %change from 2010 to 2013
Hospitalizations	289 (10)	112 (4)	47 (2)	-61%	-58%	-84%
Hospital Days	1301 (46)	399 (14)	488 (17)	-69%	+22%	-62%
ED Visits	1171 (42)	367 (13)	278 (10)	-69%	-24%	-76%
Arrests	82 (3)	28 (1)	18 (1)	-66%	-36%	-78%
Jail Days	773 (28)	565 (20)	285 (10)	-27%	-50%	-63%
Ambulance Rides	620 (22)	219 (8)	147 (5)	-65%	-33%	-76%
Others	151 (5)	79 (3)	96 (3)	-48%	+22%	-36%

*includes: crisis house, detox centers, homeless shelters, legal assistance, psychiatric emergency response team (PERT)

Pre and post intervention cost data (table 3)

Between baseline 2010 and 2013, total public service cost for the 28 participants decreased from $3.475 million to $1.141 million (-72%). Stratifying by public service, cost for ambulance transportation decreased from $279,576 to $90,182 (-69%); cost for arrests decreased from $12,300 to $2,700 (-79%); cost for ED visits decreased from $750,977 to $164,819 (-81%); cost for hospitalization decreased from $2,214,060 to $818,306 (-68%) and all other costs decreased from $112,361 to $14,840 (-79%). From baseline to 2013, the average and median expense per Project 25 participant decreased from $142,943 and $110,715 to $40,738 (-72%) and $11,717 (-91%), respectively.

The programmatic cost of running Project 25 and the total public service cost in 2012 was $754,294 and $1,527,414 (total $2,281,708) in 2012 respectively and $790,202 and $1,140662 ($1,930,864) in 2013, respectively. Assuming that participants would have maintained their public service utilization frequency if they did not receive any intervention, anticipated public service costs in 2012 and 2013, extrapolating from baseline 2010 data and adjusting for inflation are $3,840,962 and $4,002,410. Using this extrapolated estimate of costs as our pre-intervention baseline, the intervention saved a net total of $1,559,254 in 2012 and $2,071,547 in 2013 for a combined total of $3,630,801.

Table 3: Public Service Utilization Cost Data and Percent Change by Year						
Expenses	Baseline 2010	2012	2013	%change from 2010 to 2012	%change from 2012 to 2013	%change from 2010 to 2013
Hospitalization	$2,214,060	$1,092,019	$818,306	-56%	-28%	-68%
ED Visits	$750,977	$225,661	$164,919	-73%	-30%	-81%
Arrests	$12,300	$3,750	$2,700	-71%	-29%	-79%
Jail Days	$105,901	$61,787	$39,715	-44%	-36%	-64%
Ambulance Rides	$279,576	$122,647	$90,182	-58%	-27%	-69%
Others	$112,361	$21,549	$24,840	-82%	+14%	-79%
Total Expenses	$3,475,174	$1,527,414	$1,140,662	-60%	-28%	-72%

Average Expense/Person	$142,943	$56,847	$40,738	-60%	-28%	-72%
Median Expense/Person	$110,715	$26,364	$11,717	-78%	-57%	-91%
Total Project 25 Program Costs	-	$752,294	$790,202	-	+4%	-
Average P25 Costs / Person	-	$26,868	$28,222	-	-	-
Extrapolated Total Baseline Expenses	-	$3,840,962	$4,002,410	-	-	-
Total Expense + Program Costs	-	$2,281,708	$1,930,864	-	-	-
Net Savings	-	$1,559,254	$2,071,547	-	-	-

Discussion:

Project 25's pilot housing first program has demonstrated marked reductions in all public service expenses and their corresponding costs—saving the County of San Diego an estimated total of over $3.6 million between 2011-2013. Although the sample size is small and there was no control group for comparison that did not receive the housing first or intensive case management intervention, the results of the pilot add to the growing body of evidence that a housing first approach may be the best model for addressing chronic homelessness.

Keys to success for this project included intensive case management and the flexibility to meet the needs of participants during all hours, balancing participant autonomy with prioritizing housing stability, and relationship building. For example, case managers would take turns carrying on-call phones that participants could call at anytime. Housing stability was crucial to decreasing costs and this involved developing working relationships with landlords in the community and working with life coaches as well as case managers to maintain clean living conditions. Perhaps the most important component to success was developing a therapeutic and trustworthy relationship between the participants and team members. These socially and medically complex patients have varying levels of trust with the health system given that the current system has not been able to address their needs, hence their "super" utilization.

Generalizability of these data to the broader homeless population are limited, given there was no control group and participants in the pilot were the highest utilizers and disproportionately disabled with co-occurring mental health illness and substance abuse at rates much higher than the average homeless person. The results are also biased given that participants were selected based on high public service cost for largest possible impact on cost savings. In addition, given the intensity of case manager involvement, it will be difficult to scale up this model, but there may be a threshold number of high cost patients at which the net savings of the program would break even. Identifying the threshold will be a challenge.

One recent study in an urban setting found that for many super-utilizers, their public service use was temporary, with less than half of the original super-utilizers still meeting criteria 7 months later (12). Future studies may consider investigating which individuals are most likely to experience sustained levels of high utilization and/or identify factors that would put individuals at risk for high utilization. Developing other methods besides using past public service cost may be important for identifying chronically homeless individuals who should be prioritized for housing-first programs.

Since the completion of the successful pilot program, a new cohort of super-utilizer chronically homeless patients has been recruited in San Diego. Since role out of the affordable care act, most of the chronically homeless are now eligible and enrolled in MediCal, California's Medicaid. Different subcontractors of MediCal have now become the largest financial stakeholders and are referring their high-costing homeless clients to Project 25. This may be one possible sustainable model for housing-first and super-utilizer programs moving forward, especially in states that have expanded Medicaid.

There are likely many potential community and public partners that are saving money from Project 25 and in the future, those partners may be leveraged to become stakeholders in a collaborative funding model. Besides insurance companies, potential partners may include hospitals, police and fire departments, and the criminal justice system. Decreasing the number of super utilizers also frees public service staff time for other responsibilities and can help reduce burnout. Lastly, it is hard to quantify the individual value of housing first programs to the homeless, but there is no doubt tremendous benefit to the homeless and society of having improved health, stable housing, reduced utilization of services, and improved employment prospects and relationships with people.

Most importantly, this study has had a profound impact on San Diego's local homelessness and other safety net policies and programs. Given Project 25's success, the County of San Diego has announced an initiative to end homelessness among those with mental illness by adopting the Project 25 model. Project 25 has also influenced local data sharing technologies, including San Diego's Community Information Exchange—which allows care coordination between different social service agencies and care providers in San Diego. It has also informed local homeless maintenance information system data sharing protocols. Project 25 from the beginning has been an innovative partnership and collaboration between multiple stakeholders and community organizations, which has both contributed to its success and its continuing influence in local programs and policies.

Acknowledgments

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