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# California HIE Landscape

2013

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To accomplish its mission, the Institute for Population Health Improvement (IPHI) will:

- Provide leadership and nurture scholarship in the art and science of health improvement.
- Develop and disseminate actionable intelligence that can be used to improve health and clinical effectiveness.
- Create and communicate knowledge that will inform policy, improve health equity and eliminate health disparities.
- Build health leadership capacity.
- Increase health care provider competence in recognizing psychosocial and environmental causes of health conditions.

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# Foreword

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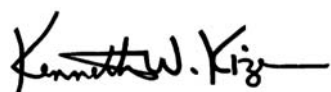
California has been an innovator in the electronic sharing of health information for more than 20 years, and as director of the University of California Davis Institute for Population Health Improvement and its California Health e-Quality (CHeQ) program, I have often fielded questions about the history of health information exchange (HIE) in the state. Many times I have wished that there were a single document that provided an overview of the development of HIE in California. Surprisingly, in view of the abundance of HIE-related activity over the years, there has not been such a source. I hope that this compendium will help fill this void.

*California HIE Landscape* provides a succinct review of the evolution of efforts to develop electronic sharing of health information in the state. It describes the roles that the federal and state governments, private nonprofit programs, and many others have played in promoting the deployment and use of HIE, and it highlights some of the many dimensions and complexities associated with the adoption of HIE technology.

Since September 2012, the CHeQ program has played an integral role in the maturation of HIE in California. CHeQ has fashioned and nurtured a trusted environment in which electronic exchange of health information could occur; funded and supported regional HIE planning, infrastructure expansion, and interface development; increased public health capacity for electronic reporting of immunization data, paving the way for the public health reporting gateway; pioneered the health information home; and tracked and documented the deployment of HIE in the state, among other things. These efforts have materially advanced the adoption of HIE and fostered more integrated health care in many areas of the state.

HIE is a critical enabling technology for patient-centered care, quality improvement and health care cost management, and it is encouraging to see the growing adoption of HIE by health care providers in many areas of California. As the emerging value-based health care economy matures, HIE will increasingly become an indispensable part of the health care infrastructure. And while my CHeQ colleagues and I are gratified by the progress that has been made, we are also mindful of how much remains to be done.

We hope this compendium will be helpful in the ongoing development of HIE in California by informing future strategies and policies of what has come before and offering some historical context and by providing a benchmark against which future development can be measured. And we especially look forward to seeing the day when electronic sharing of health information is the norm everywhere in California.



Kenneth W. Kizer, M.D., M.P.H.

January 2014



# Overview

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Health information exchange (HIE) development efforts in California started almost 20 years ago when provider organizations realized that the Internet was becoming a core component of business. Though considerable resources were focused on them, these early efforts were slow to expand and didn't grow beyond a handful of small, isolated successes until federal funding jump-started electronic health record (EHR) implementation in 2009. The subsequent escalation of EHR use among California hospitals and physicians created a need for secure pathways to share electronic patient data, which in turn set the expansion of HIE in motion.

The funding responsible for this rapid adoption of EHRs came through the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act. HITECH, which provides incentive payments for provider adoption of EHRs, also includes funds earmarked for the expansion of public, nonprofit health information organizations (HIOs) which govern and operate HIE. California applied its share of this funding to implement its HIE strategy, which includes expanding regionally-focused HIOs, supporting exchange between HIOs and developing an agreement framework to establish security and trust between and among them.

A significant amount of the state's HIE funding was directed toward underserved populations and regions. California's rural areas face challenges with access to health care, health information technology and broadband access. Today, community HIOs cover approximately 60 percent of the state's 58 counties, delivering the benefits of HIE technology to a potential 40 percent of the state's population, or 15 million lives—primarily in rural areas.



As California's community HIOs develop, use of HIE technology among the state's hospitals and integrated delivery networks (IDNs) is also growing. These HIE efforts are affected by two trends: federal incentives that have increased the use of EHRs among all segments of the provider market and changes in reimbursement that require analytics and reporting of data from multiple providers. Hospitals and health systems, clinics and community health centers, primary and specialty care physicians and the Department of Veterans Affairs have all significantly increased their use of EHRs and HIE since 2009.

California's health IT landscape continues to broaden through collaborative programs and pilots that either directly impact the expansion of HIE or indirectly encourage its use by fostering and funding innovation that requires HIE. These programs, many of them sponsored by California Health and Human Services (CHHS) agencies and the California Office of Health Information Integrity (CalOHII), focus on advancing public health with the growing stores of electronic public health data; continuing to expand meaningful use of health IT; developing standards to protect and secure health care data and innovating in patient-centered care.

Patient-centered care is particularly critical for California, which has much to gain from the expected care improvement and cost reductions that come with it. In brief, patient-centered care shifts the focus of care from hospital and physician systems and processes to patient needs. Nothing illustrates this shift better than the ownership and use of patient data. Hospital systems tend to fragment health data into departments, with lab data in one place, radiology images in another and prescriptions and diagnoses in a physician's EHR. With patient-centered care, data is associated with the patient not the department where it originated. Health IT, specifically HIE, makes it possible for an individual patient's data to be accessed by any physician caring for him or her. Advocates of patient-centered care say that access to a full span of patient data improves satisfaction and decreases the use of diagnostic testing, hospitalizations and referrals.

Consumer self-management is a strong corollary to patient-centered care and the expanding use of HIE technology. When all of an individual patient's electronic data is in one location, providing that patient access through either web-based portals or personal health records (PHRs) is a logical next step. Many California providers support and encourage patient access to their health care data, which makes overall care more effective. Major health care delivery organizations and several community HIOs are testing PHR security and reliability in pilot programs.

California's employers, most of which provide health insurance for their employees, are understandably concerned about health care quality, cost containment and the overall health of their workforce. Employer organizations are joining the effort to improve information access and encourage patient-centered care and cost transparency. HIE plays a significant role in these projects by providing both consumers and providers with access to their health information for making better health care decisions.

The growing wealth of patient data in EHRs and the expanding data sharing capacity of HIOs are perfectly timed to meet the requirements of health care reform. With patient data exchange supported by HIE, providers are making great strides to increase the quality of care, improve population health, reduce costs and, ultimately, build a healthier California.



## CHAPTER 1

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# HIE in California: An Introduction and Brief History

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### About Health Information Exchange

Every day, medical professionals take clinical notes and order lab or radiology tests with electronic health records (EHRs) running on computers, laptops and tablets. But EHRs are capable of much more than just storing a patient's health record electronically. They have capabilities that allow providers to:

- Order and view results of lab tests and radiology exams
- Order and refill prescriptions (e-prescribing)
- Enter immunization data for public health reporting purposes
- Store and forward images and other health care data over telehealth networks
- Produce care and discharge summaries from hospitalizations

The action of sending and receiving this clinical patient data between EHRs or other health IT is called health information exchange, or HIE. HIE tools and technology provide the secure pathways and connections that enable hospitals, physicians, clinics, laboratories, pharmacies and other health care delivery facilities to share and exchange electronic patient data, or engage in HIE. Among its many features, HIE technology includes functionality for correctly matching patients to their clinical data, controlling user authorization and access and, most importantly, providing access to patient data.

## Health Information Exchange: Governance and Oversight

The organizations that establish, implement and govern HIE are called health information organizations, or HIOs. HIOs make decisions on technology use and determine policies and procedures that comply with consensus standards for security and privacy. These policies and procedures protect both the privacy of individual patients and the integrity, or trustworthiness, of the data being shared and exchanged.

As HIOs developed across California, two distinct types emerged: enterprise HIOs and community HIOs. Large hospital systems or integrated delivery networks (IDNs), such as Kaiser Permanente and Sharp HealthCare, have established HIOs to improve and coordinate patient care. These enterprise HIOs provide the HIE services for physicians and departments within the health system to electronically share information of patients seen within those facilities. These services can also extend to hospitals' and health systems' other care locations, which often spread throughout a community or region. Hospital boards, operating committees or even hospital CIOs make all decisions regarding HIE technology vendor selections within their organizations. Most, if not all, funding to create, implement and support enterprise HIOs is privately generated by the system.

### Common Attributes of Community and Enterprise HIOs

	COMMUNITY	ENTERPRISE
ESTABLISHMENT FUNDING	Public, i.e. state, federal and county grants	Private (some public)
SUSTAINABILITY FUNDING	Member fees	Private
GOVERNANCE	Board of Directors created from stakeholder hospitals, physicians, community clinics and county or regional health care agencies	Committee or executive leadership
COVERAGE AND REACH	Regional, can extend further	Based on location and coverage of sponsoring hospital or integrated delivery network
DATA OWNERSHIP MODEL	Competitive	Cooperative

Community HIOs are typically nonprofit, community-based entities established either with membership funding or grants from federal, state and county agencies and nonprofit organizations. Like enterprise HIOs, community HIOs bring together community providers with the fundamental goal of improving patient care. Using HIE technology, otherwise unaffiliated community health care delivery organizations can coordinate patient care by sharing patient data. With their local focus, community HIOs generally work within a geographic medical service area.

Governance of a community HIO is the responsibility of stakeholders, or the groups with a vested interest in the HIO's success, such as physicians, hospitals, IDNs, health plans and public health organizations. Representatives from these stakeholder groups form a board of directors, which establishes, implements and runs all aspects of the community HIO. Interestingly, while community HIO stakeholders cooperate to create and govern a viable and useful HIO, they are frequently competitors in their health care markets.

## Creating a Safe, Secure and Reliable Trust Environment

Patient data security and mutual trust of that data between providers are two factors extremely important to California HIE development. Data sharing policies and agreements between HIO participants or members as well as compliance with federal privacy regulations such as HIPAA, create a trusted environment for safe and secure exchange of electronic patient health information.

In California, the strategy for creating a robust trust framework is predicated on working with the trust policies and processes already in place at both enterprise and community HIOs. Instead

of requiring these organizations to replace their policies with a new set of requirements, the state plans to create a third-party service, much like a notary public, that will ensure that all parties voluntarily adhere to a set of consensus policies and procedures.

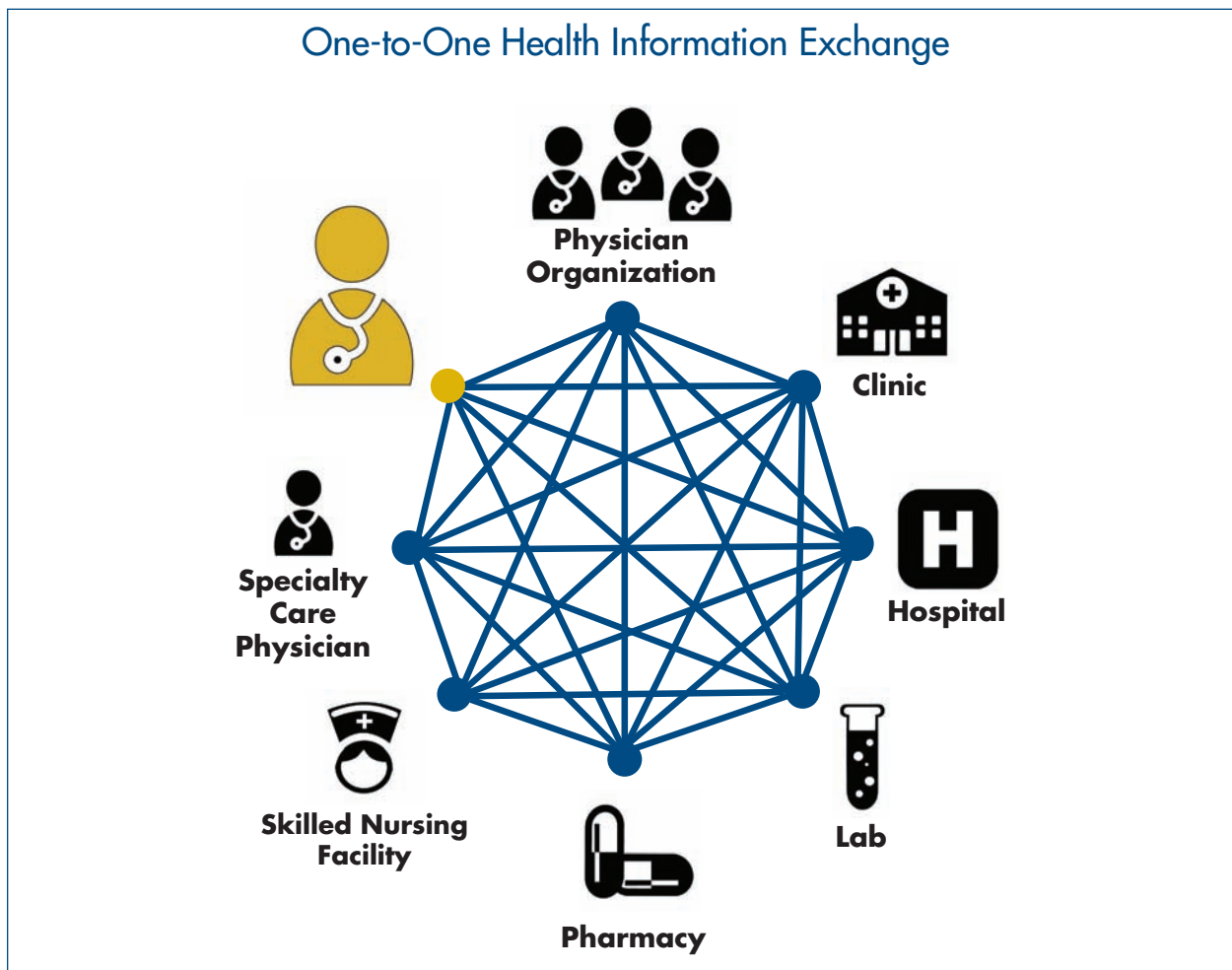
These policies and procedures are the focus of agreements between all participants in an exchange. To support patient data exchange between HIOs, California has adopted multiparty agreements for inter-HIO exchange.

## HIE FOR PROVIDERS OF ALL TYPES AND SIZES

As HIE technology evolves, new solutions offer California providers many alternatives for accessing the benefits of electronic patient data exchange.

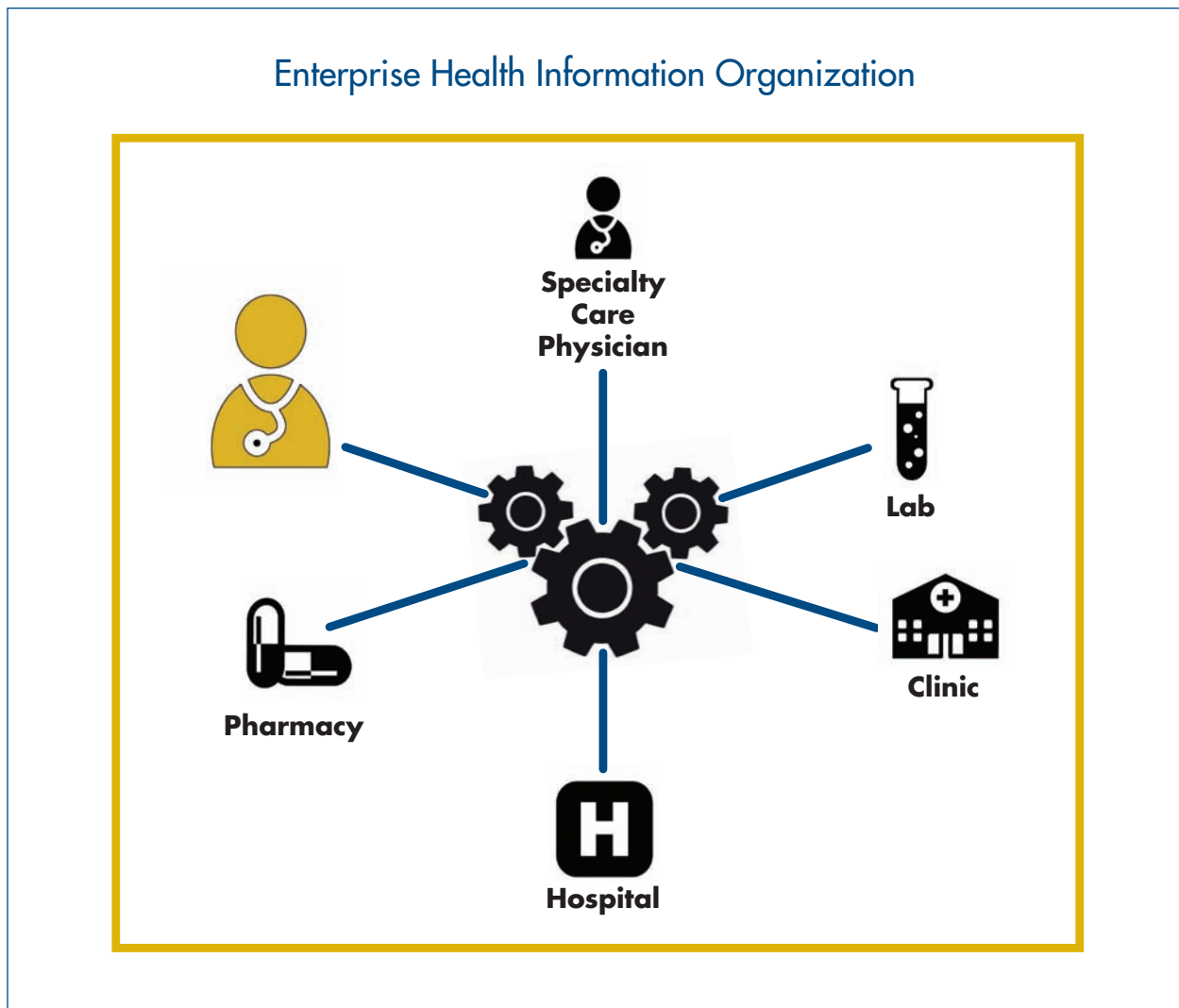
### One-to-One Health Information Exchange

One-to-one, or point-to-point, connections allow providers to share electronic data with each other and with ancillary providers such as labs and pharmacies. Using point-to-point connections, a physician (as pictured in the diagram below) can order or view a lab report, send in a prescription or submit immunization information to a data registry. These communications happen one at a time, with secure communications established each time data is shared. Many of California's community health centers and clinics currently use one-to-one HIE solutions.



## Enterprise Health Information Organizations

Many of California's hospital systems and IDNs have established enterprise HIOs to implement HIE technology. These providers rely upon HIE services to coordinate electronic data sharing among provider members for patient care, as well as for organizational operations such as billing and reporting. An enterprise HIO provides all required HIE services, from access control and authorization to patient permissions to centralizing patient data, for all providers within the enterprise. With these coordinated services, a network physician (as pictured below) can access and share patient data safely and securely with providers that are part of the same enterprise.

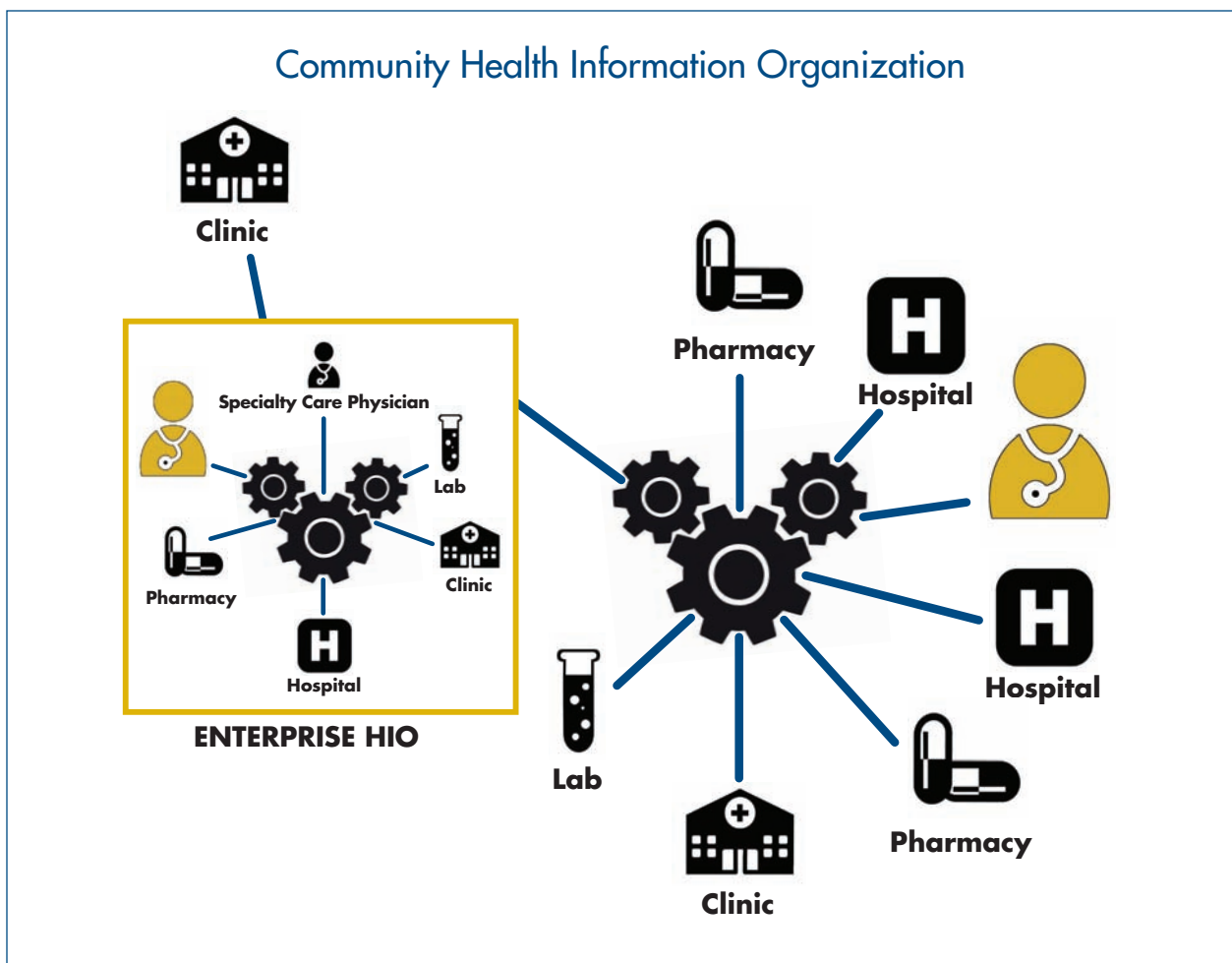




## Community Health Information Organizations

Community HIOs provide coordinated sharing and exchange of electronic patient data for any provider that joins the HIO. They serve regions that can cover several counties and include multiple hospitals, clinics, pharmacies and labs, as well as hospital systems and/or IDNs. Typically, community HIOs support secure data transport to safely send and receive or query and view patient data no matter where the data is located. The community HIO also manages user access and patient consent for all its members. For providers that already have enterprise HIOs in place, community HIOs provide access to patient data originating outside their enterprise and vice versa.

The complexity of the community HIO pictured in the diagram below reflects how HIE has grown in California. With enterprise HIOs already in place at large IDNs and hospital systems across the state, many community HIOs are connecting individual provider organizations as well as provider networks.



## A Brief History of HIE Expansion in California

HIE technology has evolved considerably since California's earliest efforts among community providers to electronically exchange data with one another. These first projects, started more than 20 years ago, were testing new technologies and developing new policies and practices for sharing sensitive patient data. While some projects weren't developed to completion, many of today's successful HIOs have roots in those earlier projects. Today's HIOs have benefitted from lessons learned by those HIE projects that weren't completed.

### EARLY HIE EFFORTS: SUCCESSSES, CLOSURES AND LESSONS LEARNED

The Santa Cruz HIE (SCHIE), founded in 1996, was initially funded by a local hospital that had implemented EHRs for its own clinics and was looking for a way to share electronic patient data with local providers. From the start, SCHIE engaged the region's physician and provider communities in its design, testing and implementation. Today, providers connected to SCHIE care for 95 percent of the county's population.<sup>1</sup> SCHIE processes more than 1.2 million web transactions each month. Providers exchange more 120,000 clinical documents monthly, including lab results, electronic prescriptions, electronic refill requests, pre-treatment authorizations, referrals and more.<sup>2</sup>

From the beginning, SCHIE was funded by member contributions and continues to be sustained through those contributions, which increase as new members join. SCHIE's chief information officer Bill Beighe also attributes the HIO's success to a continued focus on delivering value to its members.

"Everyone has skin in the game and they only pay if they receive value. Providers follow the data and we work hard at constantly bringing more data and more connections into the HIE," said Beighe in a 2013 interview. "Beyond results delivery and transitions of care one of the biggest satisfiers is a longitudinal patient record so that users, with the

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1 Beighe, Bill. (2012) *Connecting California to Improve Patient Care in 2012* [PDF] [www.redwoodmednet.org/projects/events/20120719/rwmn\\_20120720\\_beighe.pdf](http://www.redwoodmednet.org/projects/events/20120719/rwmn_20120720_beighe.pdf)

2 [santacruzhie.org](http://santacruzhie.org). Santa Cruz HIE, 2013.

appropriate patient consent can gain access to care delivered across the many unaffiliated entities in our HIE.”<sup>3</sup>

While Beighe and his colleagues were building SCHIE, another early HIE effort in Santa Barbara was also underway. Started in 1998 through a collaboration of 14 providers, county health agencies and local health care organizations, the ambitious Santa Barbara County Care Data Exchange (SBCCDE) got off the ground with funding from the California Healthcare Foundation (CHCF). The technical work of the project involved building a secure portal for viewing data from eight health care organizations.

Because standards were not widely adopted, the project required a great deal of customization, which took up most of its available resources. The project encountered an array of additional hurdles, including data integrity, data screening issues and provider concerns about liability for security or confidentiality breaches. In the end the SBCCDE halted its rollout before registering all users and was shut down in 2006.

Many lessons were learned from this experience, including the importance of active local governance, the need for an incremental approach to establishing data exchange and long-term planning for a sustainable business model. A post-mortem comment by CHCF’s vice president Sam Karp on planning, funding and execution proved prescient.

“Short of a massive infusion of federal funds...the myriad of lessons learned from Santa Barbara and elsewhere, suggest that through a series of well-designed and well-executed steps...the larger goals of health information exchange—to improve quality and care delivery—can still be advanced,” Karp commented in mid-2007.<sup>4</sup>

Interestingly, it was exactly that “massive infusion of federal funds” that pushed California’s HIE efforts to the next phase.

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3 Waters, Rob. “CIO Interview: Delivering HIT & HIE Services to California’s Independent Physician Practices,” August 16, 2013. *Healthcare IT Connect* [www.healthcareitconnect.com/cio-interview-delivering-hit-hie-services-to-californias-independent-physician-practices](http://www.healthcareitconnect.com/cio-interview-delivering-hit-hie-services-to-californias-independent-physician-practices)

4 “Health Affairs: Santa Barbara County Care Data Exchange Evaluation.” National Press Club, August 1, 2007. Remarks by Sam Karp, Vice President of Programs, California HealthCare Foundation. [www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/S/PDF%20SBCCDEKarpRemarks.pdf](http://www.chcf.org/~media/MEDIA%20LIBRARY%20Files/PDF/S/PDF%20SBCCDEKarpRemarks.pdf)

## Federal Funding and HIE Expansion in California

In 2009, the American Recovery and Reinvestment Act (ARRA) passed with the attendant Health Information Technology for Economic and Clinical Health (HITECH) Act to allocate funding for promoting both meaningful use of both EHR and HIE.

The HITECH Act marked the broadest federal support to date for HIE on several fronts. Its provisions strengthened privacy, security, and confidentiality of health care data by extending Health Insurance Portability and Accountability Act (HIPAA) rules to cover information shared through HIE. It also earmarked \$560 million in funds for “public,” or open, nonprofit HIE development throughout the country. California received \$38.8 million of that HITECH HIE funding. While foundations and organizations, including Blue Shield of California Foundation, California HealthCare Foundation, Tides Foundation and UnitedHealthcare had already generously funded community HIOs throughout the state, the advent of this concentrated funding offered greater opportunities to expand the reach and use of HIE technology.



As a first step, in 2010 California developed a strategic plan that reflects the needs of its large population and varied demographics. The plan delineates a neutral connectivity model and light-weight and flexible infrastructure to support both government systems and national standards. This approach supports the complexity of

the state's existing health care system, which includes community HIOs; large, geographically dispersed health providers with HIE technology already in place and electronically connected public health resources.

The plan also specifically supports local autonomy, an important approach given the state's regional diversity. California's strategy allows community HIOs to choose the HIE technology, standards and models that meet the needs of local providers and patients.

Starting in 2010, California Health and Human Service (CHHS) contracted with the nonprofit CaleConnect to implement HITECH funded programs in line with California's HIE strategy. In early 2012, this programmatic responsibility was transferred to California Health eQuality (CHeQ), a program of the Institute for Population Health Improvement (IPHI) at UC Davis Health System. CHeQ has since been the state's partner in developing and implementing California's HIE strategy as part of ONC's State HIE Cooperative Grant Agreement Program.

CHeQ promotes health care quality and coordination by encouraging the use of standards for secure, encrypted health information exchange between authorized care providers over the Internet. CHeQ also promotes sharing of immunization, laboratory and care information and other programs to promote population and public health and has worked to expand the HIE capacity in regions with underserved communities. (For more information on CHeQ, see page 53.)

## HIOs Expand Throughout California

Growing HIE capacity, increased use of HIE by providers and establishment of new community HIOs combined with CHeQ's HIE acceleration awards has increased HIE connectivity throughout the state. At the May 2013 California Office of Health Information Integrity (CalOHII) Stakeholder Summit, Dr. Kenneth W. Kizer, IPHI's director and Distinguished Professor at UC Davis School of Medicine, reported that:

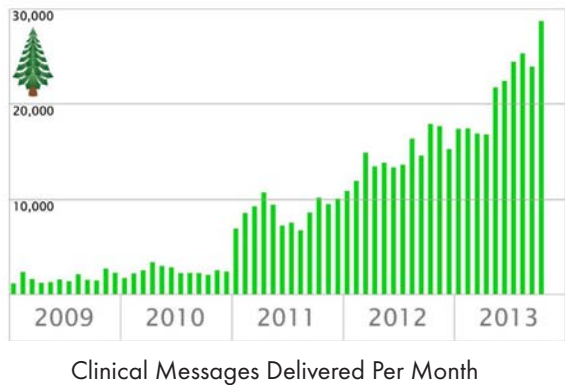
- Recipients of grant awards have established a total of 270 connections between HIE participant providers to transmit health information electronically
- More than 15 million lives are potentially reached by the services of HIOs<sup>5</sup>

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5 Kenneth W. Kizer, MD, MPH. *Integrating Health Care Through Integrated Information* May 8, 2013 [PDF] [www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Summit/20130508\\_Kizer\\_CHeQ.pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Summit/20130508_Kizer_CHeQ.pdf)



## Redwood MedNet Clinical Message Traffic



Source: Ross, Will. "Building HIE Services in Rural Communities." Connecting Rural Providers December 20, 2013. eHealth Initiative. [www.ehdc.org/resource-center/publications/view\\_document/360-webinar-materials-connecting-communities-rural-health-providers-connecting-communities-data-exchange](http://www.ehdc.org/resource-center/publications/view_document/360-webinar-materials-connecting-communities-rural-health-providers-connecting-communities-data-exchange)

On the ground, these benchmarks translate to 17 active community HIOs serving regions as far north as the Oregon border and as far south as San Diego. Active community HIOs include both emerging and operational organizations. Emerging HIOs are not yet transmitting data, but are actively setting goals and objectives, identifying funding sources and establishing legal and governance structures. Operational HIOs have completed those tasks and are transmitting data for participating providers.

For those community HIOs in operation, use continues to expand on a solid upward path. As one example, clinical message traffic for Redwood MedNet, which serves Marin, Napa, Sonoma, Colusa, Lake and Mendocino Counties, grew almost 200 percent between 2011 and 2013. With rapid HIE growth in both reach and use, California is building the HIE foundation its providers need to support the patient care coordination and cost reporting and containment requirements of both federal and state health reform measures.

## Community HIOs Deliver Care to Medically Underserved Californians in Rural and Urban Areas

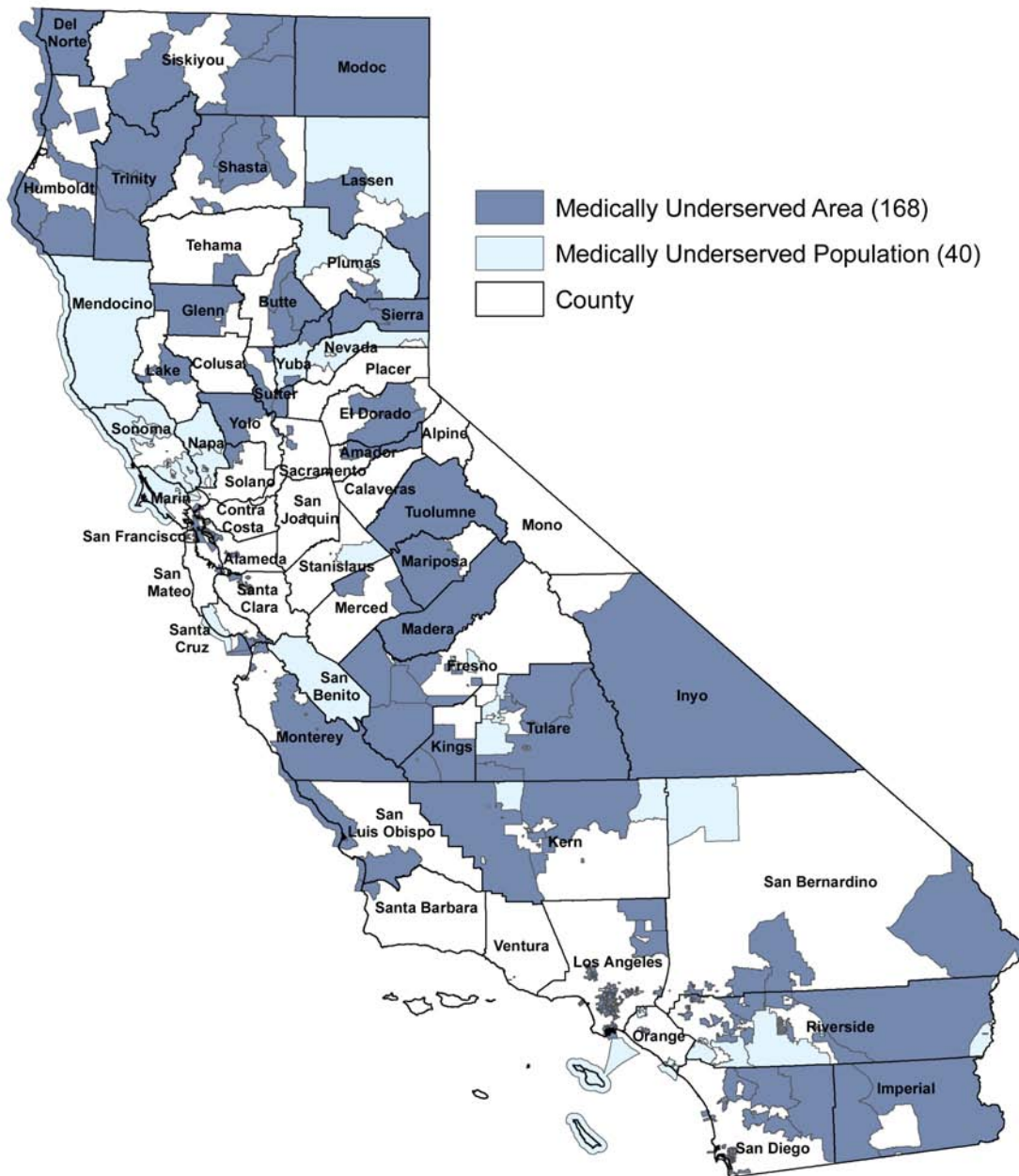
Much of the funding from CHeQ for community HIO expansion and development has been in step with the needs of its underserved regions. Rural, underserved populations not only have limited access to providers, the providers that do serve them don't have the health IT resources of large hospitals or health systems.

Six percent of California's population is part of a Medically Underserved Population (MUP) and another 17 percent live in Medically Underserved Areas (MUAs).<sup>6</sup> Both MUAs and MUPs have too few primary care providers, a high infant mortality and a

<sup>6</sup> [gis.oshpd.ca.gov/atlas](http://gis.oshpd.ca.gov/atlas) California Healthcare Atlas

high poverty and/or a high elderly population. Many of the California MUPs and MUAs are in rural areas, and those in non-rural areas have a disproportionately low number of primary care physicians. These residents are more likely to be Medi-Cal members or uninsured, which further decreases access to health care. In addition, MUAs often lack access to broadband communications and HIE capabilities.

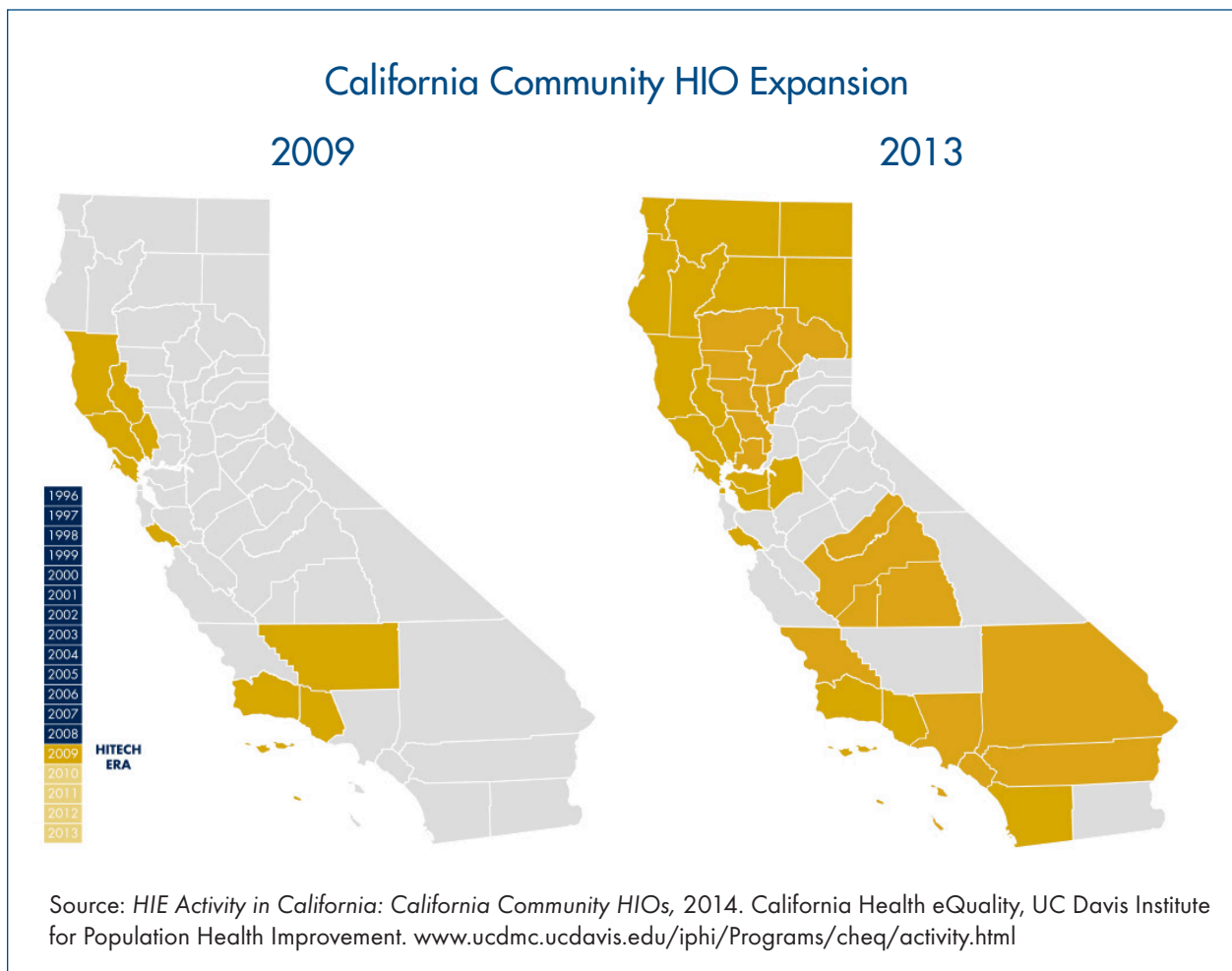
### Medically Underserved Areas and Medically Underserved Populations in California



Source: [gis.oshpd.ca.gov/atlas](http://gis.oshpd.ca.gov/atlas) California Healthcare Atlas

CHeQ’s Rural HIE Incentive Program has helped to lessen the growing digital divide in health care delivery. (For more on the use of health IT by community health centers and clinics, see page 30.) In addition, through CHeQ’s HIE Acceleration Award program, 40 grants were awarded to 20 different organizations, the majority going to community HIOs. These grants focus on accelerating development of regional, community HIOs throughout the state to better serve patients, coordinate care and develop policies and procedures to facilitate agreements and trust between providers participating in those efforts for inter-HIO communication.

A number of counties with high poverty rates, including Tulare, Kings, Humboldt, Imperial and Shasta counties have formed collaborations between their medical societies, physician organizations and clinic coalitions to develop community HIOs that will advance EHR implementation and decrease overall health care costs through better care coordination with providers in their surrounding counties. Community HIOs have also developed in areas with high population growth, such as San Joaquin Valley and Inland Empire.







## CHAPTER 2

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# HIE Use by Provider Organizations

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At the same time that HITECH funding was activating California's HIE planning and expansion, it was also influencing the adoption and use of electronic health records (EHRs) among providers through the Federal EHR Incentive Program. This program, run by the Office of the National Coordinator for Health Information Technology (ONC) and the Centers for Medicare and Medicaid Services (CMS), offered federal incentive payments to providers for using EHRs according to certain meaningful use requirements. From its start, the program has proved extremely successful in encouraging physicians to implement EHRs. As of November 2013, over 38,000 of eligible professionals in California were enrolled in the meaningful use incentive program and received \$1.5 billion in incentive payments.<sup>1</sup>

In 2012, 80 percent of California's physicians had implemented EHRs, an increase of 40 percent since 2008. About half of the state's hospitals had implemented EHRs by 2012, a 25 percent increase since 2007.<sup>2</sup> This growth contrasts sharply with the historically slow pace of adoption that hindered health IT use in California until federal initiatives stepped in.

EHR vendors also have been influenced by meaningful use requirements. Providers can only achieve meaningful use with an EHR that has met the requirements of an

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1 [www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/DataAndReports.html](http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/DataAndReports.html) CMS.gov

2 Simon, Jodi *Health Information Technology in California: Milestones and Miles to Go*, November 2011. [PDF] [www.chcf.org/publications/2013/11/state-health-it-ca](http://www.chcf.org/publications/2013/11/state-health-it-ca)

ONC-approved certification body. As EHR vendors have adopted functionality that meets these requirements, they have collectively moved toward including a baseline of common features as part of their EHRs.

Recognizing that a lack of training and support also contributed to slow adoption, the HITECH Act established funding to support and train solo practitioners and small group practices through Regional Extension Centers (RECs). In California, three RECs supported eligible providers to adopt and implement certified EHRs.

The State HIE Cooperative Agreement Program, governed by the ONC, had a direct impact on California's HIE landscape. Through this program, California Health and Human Services (CHHS) received funding to support HIE adoption and development across the state. San Diego's community HIO, now called San Diego Health Connect, got its original funding through the ONC's Beacon Community Cooperative Agreement Program.

With the support of these programs, EHR implementation and HIE development have now co-evolved to an important tipping point: patient data is ready to share and regional exchange systems are in place to facilitate that sharing. This chapter provides an overview of HIE use trends among California providers and spotlights field examples that illustrate how these providers are using HIE to share patient data.

## Hospitals and Health Systems

The work of hospitals is caring for patients. Today, the vast majority of that care is facilitated through the use of electronic tools such as EHRs that use HIE to exchange information with labs, radiology information systems and other hospital information systems. Data from recent studies show that HIE capability, whether via an enterprise HIO or a large community HIO, is growing for hospitals and health systems.

The percentage of hospitals using at least a basic EHR tripled to 44 percent in 2012, up from 12 percent in 2009.<sup>3</sup> A 2012 American Hospital Association (AHA)

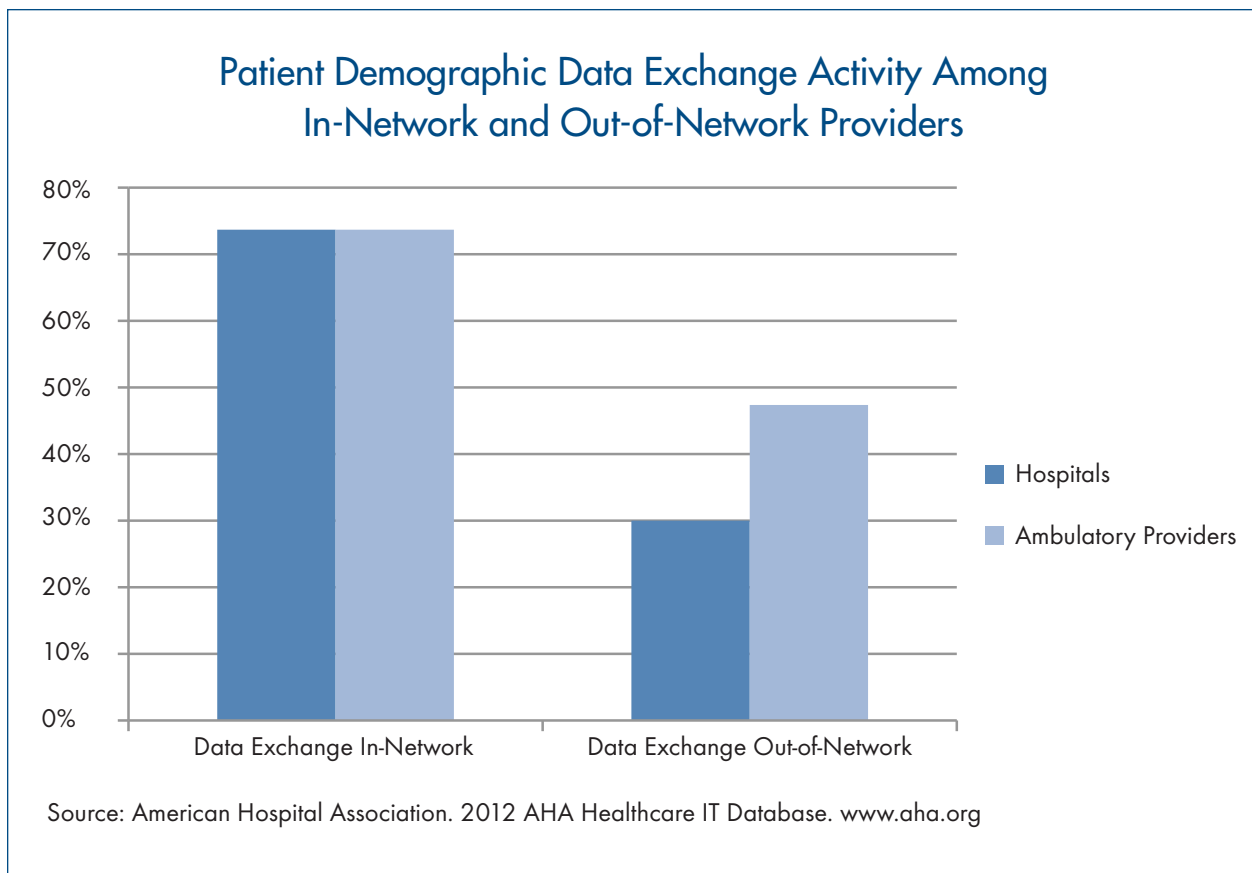
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<sup>3</sup> Simon, Jodi *Health Information Technology in California: Milestones and Miles to Go*, November 2013. [PDF] [www.chcf.org/publications/2013/11/state-health-it-ca](http://www.chcf.org/publications/2013/11/state-health-it-ca)

survey of 215 California hospitals provides further evidence that hospitals are building a strong foundation for electronic data capture and HIE:

- 85 percent of the hospitals surveyed reported that computerized patient demographics systems, which collect such data as preferred language, gender, race, ethnicity and date of birth, have completely replaced paper records across all departments
- 67 percent of those systems support electronic exchange of key clinical information with other providers<sup>4</sup>

Survey respondents indicated a much higher rate of data exchange with providers within the hospital system than with those outside of their network. As shown in the chart below, more than 70 percent exchange data with in-network providers, a percentage that decreases more than 20 percent for out-of-network providers.

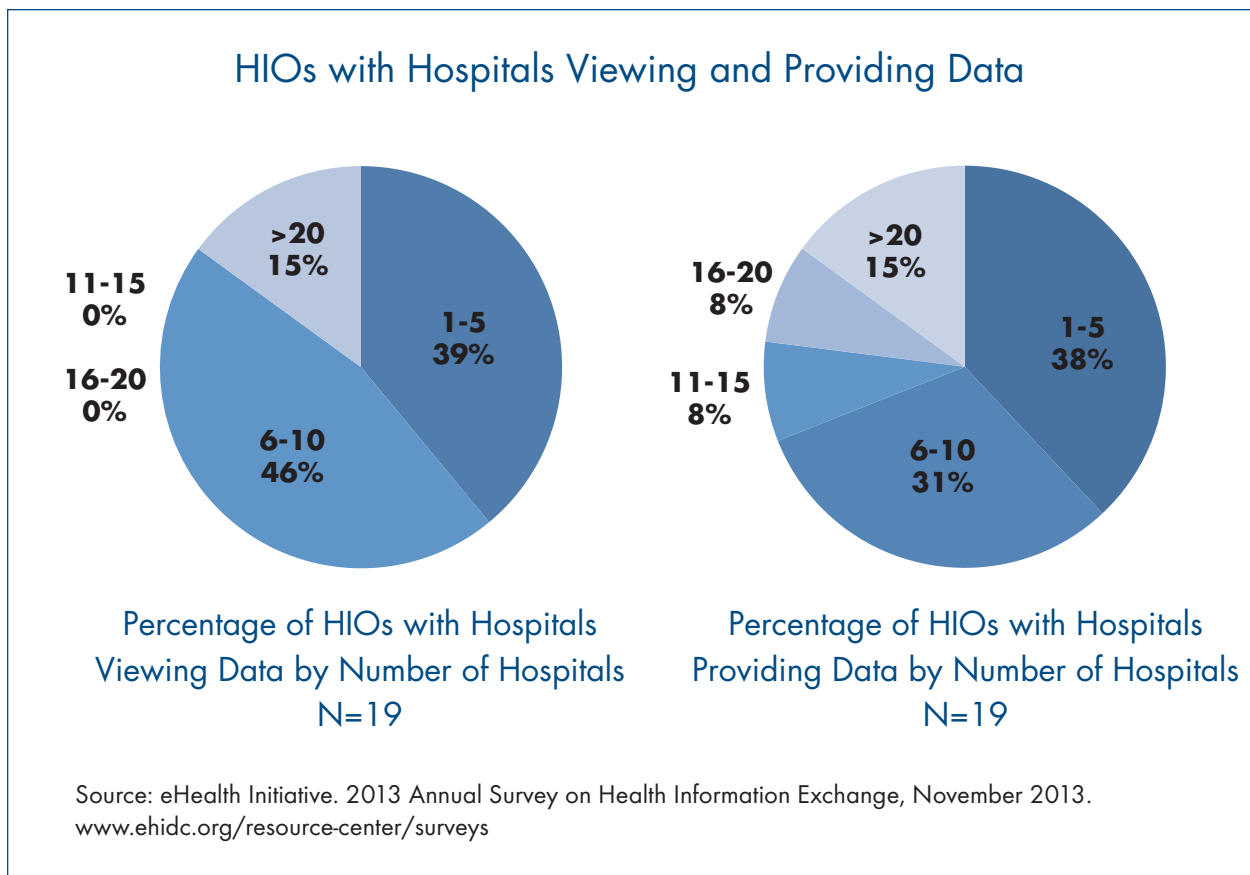


4 American Hospital Association. 2012 AHA Healthcare IT Database. [www.aha.org](http://www.aha.org)

While hospital and health system data sharing in 2012 took place primarily within hospital systems, about a third of respondents also said that their systems support data exchange standards to share patient information. This support is a direct reflection of the impact of meaningful use certification standards on hospital capability:

- 59 percent said their EHRs can send clinical/summary of care records in Continuity of Care Record (CCR), Clinical Document Architecture (CDA) or Continuity of Care Documentation (CCD) format
- 35 percent of all respondents said their EHRs can share transition of care summaries with a different EHR<sup>5</sup>

In addition to providing HIE capabilities for their systems and campuses, hospitals are also connecting with other HIOs. California’s largest HIOs count between one and 40 hospitals among their active participants. Almost 85 percent of these HIOs have between 1 and 10 hospitals providing data and about 70 percent have the same number viewing data. (Note: Many of California’s community HIOs provide services to regions that don’t have more than 10 hospitals.)



5 American Hospital Association. 2012 AHA Healthcare IT Database. [www.aha.org](http://www.aha.org)

Of California hospitals surveyed by AHA, 32 percent reported that their hospitals actively exchange data with at least one community HIO. Another 36 percent have a framework in place to support data exchange with community HIOs.<sup>6</sup>

While the AHA survey did not explore the drivers and vision behind hospital participation in community HIOs, the data suggests that California hospitals recognize the importance of hospital participation in community HIOs and the role community HIOs can play in facilitating care coordination among community providers.

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### FIELD EXAMPLE Sharp HealthCare Joins San Diego Health Connect

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Sharp HealthCare is a nonprofit integrated regional health care provider based in San Diego. Sharp includes four acute care hospitals, three specialty hospitals, two affiliated medical groups and a health plan,

as well as a full spectrum of other facilities and services. To connect and manage this portfolio of providers and services and coordinate patient care, Sharp is heavily invested in health IT. It has been named one of the nation's "Most Wired" providers by *Hospitals & Health Networks* magazine for 13 of the past 15 years, most recently in July 2013. In April 2013, the company launched a mobile version of mySharp, its patient portal that has more than 100,000 users.

In October 2013, Sharp expanded its HIE reach beyond its own network by joining San Diego Health Connect's community HIO. Along with Scripps Health, which joined the community HIO at the same time, Sharp's participation increases the potential patient reach of San Diego Health Connect from 800,000 to 2.1 million lives. One of Sharp's goals in joining the HIO is to improve care by making patient data available to the other HIO member providers, including Kaiser Permanente San Diego Medical Center, UC San Diego Health System, Rady Children's Hospital San Diego, VA San Diego Healthcare System, Family Health Centers of San Diego and 14 community clinics.

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<sup>6</sup> American Hospital Association. 2012 AHA Healthcare IT Database. [www.aha.org](http://www.aha.org)

“We look forward to collaborating with other providers to raise the quality of patient information that San Diego health care professionals can access, which will enable better care,” said Daniel Gross, RN, DNSc, executive vice president of hospital operations for Sharp HealthCare and a member of the San Diego Health Connect board. “The HIO allows data to be shared in common formats, overcoming interoperability challenges, and offers an aggregated view of treatment that helps providers make the best decisions when time is of the essence.”<sup>7</sup>

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## Community Clinics and Health Centers: Improving Care and Increasing Access for the Underserved

In 2011, California’s community clinics and health centers served a total of 4 million safety net patients, a 26 percent increase since 2008.<sup>8</sup> These clinics include Rural Health Clinics (RHCs), all located in rural areas, and Federally Qualified Health Centers (FQHCs), which are both urban and rural. An FQHC is a designation by Medicare and Medicaid that impacts reimbursement and funding to clinics that provide primary care services to underserved urban and rural communities. Despite their sometimes extreme geographical differences, both urban and rural clinics serve populations with the twin health care challenges of access and quality, challenges that health IT and HIE can help to solve.

Many of California’s community clinics already have increased their use of EHRs through meaningful use incentive programs. In addition, both rural and urban clinics also use telehealth applications, such as interactive video visits, store and forward data transmission and remote patient monitoring, to exchange patient data and deliver care.

In a 2012 survey by the California Primary Care Association of 120 FQHCs or other non-RHC health clinics, 70 percent of respondents said they had either fully or partially implemented EHRs. In 2012, 42 percent of community health centers surveyed were using telehealth systems and a total of 55 percent planned to do so in the next two

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7 San Diego Health Connect. “Newly Named San Deigo Health Connect Welcomes Scripps and Sharp HealthCare,” October 13, 2013. [press release] [www.sdhealthconnect.org/news/newly-named-san-diego-health-connect-welcomes-scripps-health-and-sharp-healthcare.html](http://www.sdhealthconnect.org/news/newly-named-san-diego-health-connect-welcomes-scripps-health-and-sharp-healthcare.html)

8 *California Community Clinics: A Financial and Operational Profile*, 2013, [PDF] [www.caplinc.org/images/stories/BSCF\\_CHCF\\_Report.9.4.13.pdf](http://www.caplinc.org/images/stories/BSCF_CHCF_Report.9.4.13.pdf)

years, bringing the total use of telehealth to 97 percent. For those clinics using telehealth systems, 64 percent used them for store and forward of images.<sup>9</sup>

A 2011 survey of RHCs by the California Healthcare Foundation showed a similar growth trend in the use of EHRs: 55 percent of California’s 313 RHCs were either using or implementing EHRs in 2011 and another 28 percent planned to do so in the next 12 months. Of those RHCs using EHRs, 58 percent used them to submit data to immunization registries and 48 percent exchanged key clinical information between care providers, two typical HIE applications. Five percent used telehealth for store and forward communications.<sup>10</sup>

A recent survey of 126 California urban and rural clinics, conducted by Katherine Kim at San Francisco State University Health Equity Institute in 2013, noted that a significantly higher percentage of rural clinics, compared to urban clinics, are exchanging data. This progress underscores how the state’s recent focus on rural HIE has impacted areas that previously lacked any access to HIE technology.

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**FIELD EXAMPLE** Redwood MedNet and Alliance Medical Center

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Alliance Medical Center, a FQHC located in Northern Sonoma County, provides care for 11,000 lives. As the safety net for its

community, more than half of Alliance’s patients receive government assistance with their health care costs. In addition to providing this important role in its community, Alliance is also a founding member of Redwood MedNet (RWMN), a community HIO that provides HIE services to more to 230 health care providers in Mendocino, Sonoma, Marin, Lake, Napa and Colusa Counties.

Alliance was the recipient of the first electronic laboratory test results sent via the HIO from Healdsburg District Hospital also located in Sonoma County in 2008. Community providers from seven different counties now use RWMN’s HIO services to receive lab

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<sup>9</sup> *Health Information Technology (HIT) Landscape Survey*, 2012. [PDF] [www.cpc.org/cpca2013/assets/File/Doc-Files/2012-11-07-CPCA\\_HITSurvey.pdf](http://www.cpc.org/cpca2013/assets/File/Doc-Files/2012-11-07-CPCA_HITSurvey.pdf)

<sup>10</sup> *California’s Rural Health Clinics: Obstacles and Opportunities*, 2012. [www.chcf.org/publications/2012/03/ca-rural-clinics-obstacles](http://www.chcf.org/publications/2012/03/ca-rural-clinics-obstacles)



results and send immunization reports to public health registries. RWMN uses national HIE standards to access patient medical information located at unaffiliated providers across state lines. Since the area attracts many tourists year round, the ability to access information in other states is particularly important to local providers.

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### **FIELD EXAMPLE** Health Information Exchange in Tulare and Kings Counties

Tulare and Kings Counties are among the poorest in California. The counties' combined 594,000 residents are impacted by a combination of socio-economic ills including chronic poverty, high unemployment and insufficient infrastructure. Just over 35 percent of residents are Medi-Cal patients and another 16.5 percent are uninsured. Against this backdrop of ongoing need, four hospitals, five clinics and about 100 non-affiliated doctors deliver health care services.

Despite a failed attempt at creating an HIO in 2010, a 2011 survey uncovered continuing strong community interest in health information exchange. Interest was further supported by the rollout of EHRs in the community's clinics, which have joined the ongoing EHR implementations among community hospitals. The Tulare Kings Health Information Exchange approved its initial charter in April 2012 and formed a governance committee that includes two hospitals, one clinic and an IPA representative. Stakeholders of the current effort feel HIE is critical as a means to help contain cost and improve quality of care in rural Tulare and Kings communities.

In 2012 they received a planning grant from CHEQ to develop their HIO strategic plan. Then in 2013 they merged efforts with neighboring Fresno and Madera counties to form the larger Central Valley HIO, which now has a contract with Inland Empire HIE to provide this new community HIO with HIE services.

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### **FIELD EXAMPLE** Open Door Mobile Outreach with HIE

Open Door Community Health Centers, headquartered in Arcata, CA with six other locations across California's north coast, is testing HIE use for care delivery to

underserved patients in remote rural area. Open Door’s unique structure includes fully equipped mobile health units with exam rooms, labs, pharmacies and all the tools and services of a doctor’s office. Fully staffed mobile units, created from 38-foot mobile homes, conduct regularly scheduled visits to Open Door community sites in Humboldt and Del Norte counties, providing medical services to all patients, including homeless, transitional housing residents and migrant and seasonal farmworkers and their families.

Open Door and its mobile outreach units participate in two community HIOs: the North Coast Health Information Network (NCHIN) and the Oregon Coast Health Information Network (OCHIN). Although headquartered in Portland, OCHIN spans 14 states and has an emphasis on working with safety net clinics and small practices. Open Door offers its patients access to OCHIN’s “My Chart” services for provider communications, lab results, appointment requests and prescription refills.

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### **FIELD EXAMPLE** Southside Coalition of Community Health Centers

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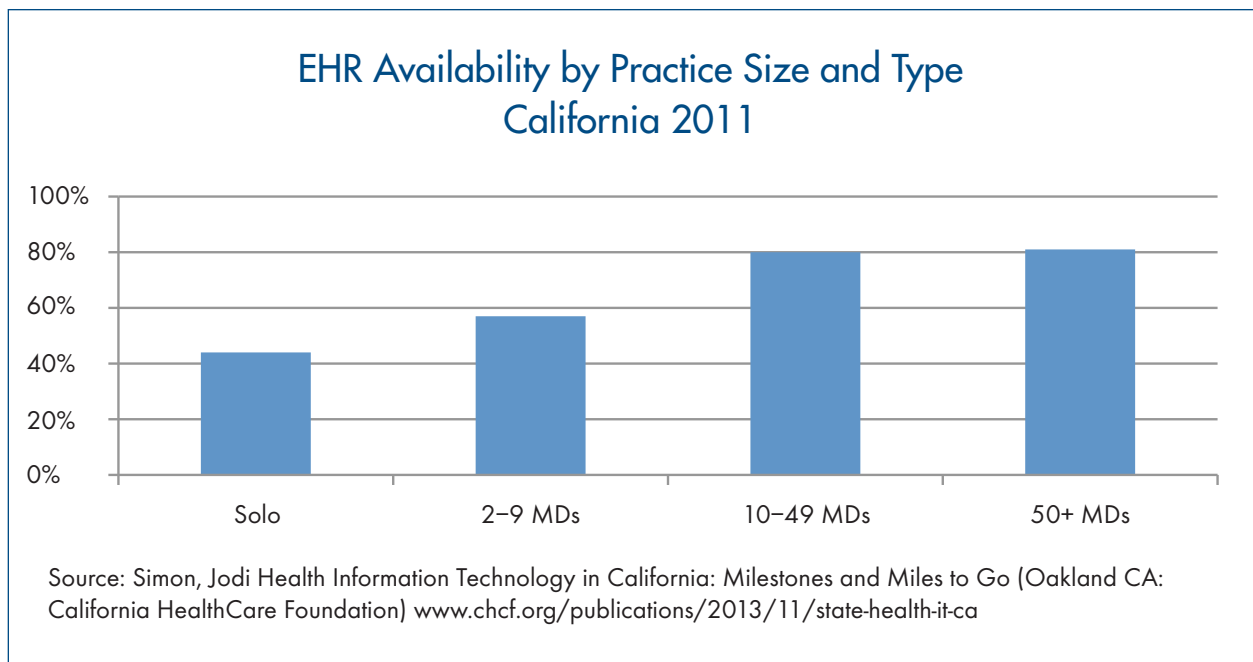
The Southside Coalition of Community Health Centers is a network of eight FQHCs that coordinate to improve health care access and delivery to the impoverished and vulnerable community members of South Los Angeles.

Southside’s health centers include 35 community- and school-based health clinics serving the South Los Angeles region making it the largest safety net health care provider in South Los Angeles. In 2012, Southside Coalition members provided 562,157 primary care visits to 158,033 (unduplicated) residents. About 52 percent of these patients were uninsured.

Southside and St. Francis Medical Center/Daughters of Charity have partnered to improve patients’ continuity of care. Funded by the Blue Shield of California Foundation, the pilot uses HIE technology to coordinate post-visit care between St. Francis and Southside’s clinic locations. For example, when a Southside patient visits the St. Francis emergency room, the hospital will be able to identify the patient’s medical home and coordinate follow up with that clinic. In addition, the patient will be assigned a Care Navigator to facilitate care coordination between the hospital and the clinic. Keeping track of patients through this system is expected to keep patients from revisiting emergency rooms for care that can take place at their home clinic.

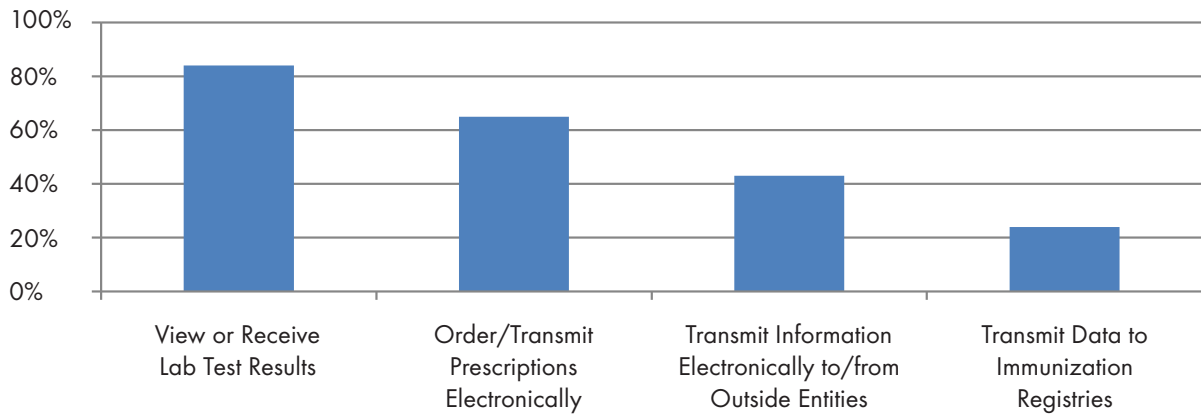
## Physicians: Growing EHR Use and Moving Toward HIE

Like the clinics and hospitals they work with, independent physicians and physician organizations have significantly increased their use of EHRs since the start of the meaningful use incentive program. About 60 percent of physicians surveyed in 2011 had an EHR available in their practice. Size of practice impacts the rate of use as well, with solo practitioners showing lowest rate of adoption at 41 percent.



As the number of primary care providers using EHRs grows, their need to share electronic patient data with one another also increases. In 2011, physicians using EHRs reported using them for a variety of HIE activities including e-prescribing, viewing lab results and transmitting data to registries.

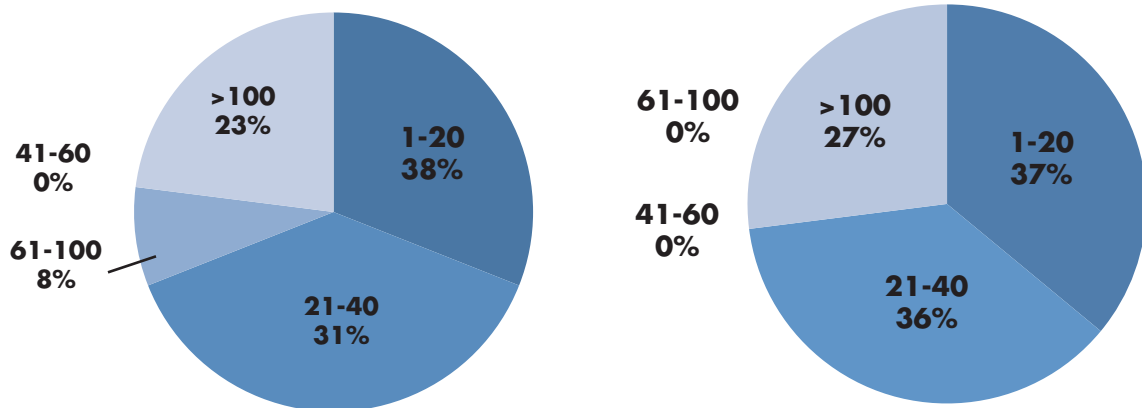
### Physician Use of HIE Functions in EHRs California 2011



Source: Simon, Jodi Health Information Technology in California: Milestones and Miles to Go (Oakland CA: California HealthCare Foundation) [www.chcf.org/publications/2013/11/state-health-it-ca](http://www.chcf.org/publications/2013/11/state-health-it-ca)

In the eHealth Initiative’s 2013 Annual HIE survey, California HIOs reported that physicians with ambulatory practices are viewing and providing data through HIOs.

### HIOs with Ambulatory Practices Viewing and Providing Data



Percentage of HIOs with Ambulatory Practices Viewing Data by Number of Practices N=19

Percentage of HIOs with Ambulatory Practices Providing Data by Number of Practices N=19

Source: eHealth Initiative. 2013 Annual Survey on Health Information Exchange, November 2013 [www.ehidc.org/resource-center/surveys](http://www.ehidc.org/resource-center/surveys)

## RECs and Meaningful Use

While meaningful use financial incentives offset some of the cost of EHR purchasing, small practices, clinics and public hospitals still have to meet the high costs of implementation, training and reporting. To remove this barrier to use, HITECH funded Regional Extension Centers (RECs) to provide support and training through all phases of EHR adoption, from vendor selection and workflow analysis to meaningful use reporting. In California, three RECs supported providers, including:

- **CalHIPSO** The California Health Information Partnership and Services Organization (CalHIPSO), the largest REC in the country, was supported by the California Primary Care Association, the California Medical Association and the California Association of Public Hospitals and Health Systems and served 56 of California's 58 counties.
- **COREC** The CalOptima Regional Extension Center (COREC) provided EHR implementation assistance throughout Orange County.
- **HITEC-LA** The Health Information Technology Extension Center for Los Angeles (HITEC-LA) County supported health care providers in Los Angeles County as an independent, nonprofit project of L.A. Care Health Plan.

Each of the three California RECs exceeded the goals they set for enabling providers to implement EHRs and reach stage 1 of meaningful use.

## SPECIALTY CARE PROVIDERS' USE OF HIE

In a 2012 survey of office-based physicians, 58 percent of the 48,000 specialty care providers surveyed reported they used EHRs.<sup>11</sup> For clinics and community centers that often lack access to specialists, HIE offers an efficient and effective method for patient referrals. In one urban region, a web-based referral system is helping to improve many aspects of patient care.

South Los Angeles is a diverse, low-income and medically underserved section of Los Angeles, with roughly 1.1 million residents. For these residents, wait times to see

<sup>11</sup> Simon, Jodi, *Health Information Technology in California: Milestones and Miles to Go*, [www.chcf.org/publications/2013/11/state-health-it-ca](http://www.chcf.org/publications/2013/11/state-health-it-ca)

# Sharing Patient Data with Telemedicine

While they are using EHRs, specialists' primary method of HIE is through telehealth systems and applications, which allow remotely located physicians and patients to connect using video conferencing and to share information using store and forward features. With store and forward applications and video conferencing, specialty care providers can assess the need for specialty care delivery, assist or advise primary care providers to treat the patient in the primary care setting and deliver care to patients. As a method of electronically sharing patient data, telehealth is included under the umbrella of HIE technology.

In California, store and forward efforts now cover a broad range of specialties, including dermatology, neurology, gastroenterology, cardiology, allergy, nephrology, podiatry, pain management and many others. Through the efforts of the California Telehealth Network (CTN), more than 850 providers participate in a statewide broadband network dedicated to health care use. In Los Angeles and San Diego, store and forward solutions have been shown to resolve as much as 50 percent of specialty care needs without requiring a face-to-face visit, and to reduce specialty wait times by as much as 60 percent.

specialists could be as long as six months to year. To solve this problem, which has a tremendous impact on health care costs, L.A. Care Health Plan, Department of Health Services of Los Angeles County (LACDHS), Health Care Los Angeles, MedPOINT Management and the Community Clinic Association of Los Angeles County banded together to create eConsult. eConsult is a web-based care coordination platform that allows primary care providers and specialists to share health information and discuss patient care electronically. The system's goal is to provide the right treatment at the best place in the shortest time.

eConsult is now used by almost 2,000 primary care providers in 182 community clinic/health center sites across L.A. County that serve 500,000 low-income individuals and families. More than 30 different types of specialists are available to review eConsults from primary care physicians. In November 2013, the program announced that these providers have initiated more than 50,000 electronic consultations with specialists since eConsult launched.

According to L.A. Care, eConsult supports faster access to specialty care and better health outcomes, enhances communications between providers and specialists, expands the scope of primary care practices, decreases unnecessary or inappropriate specialty referrals and produces higher patient satisfaction. Preliminary findings show a 56 percent cut in required face-to-face visits with a specialist; 36 percent of patients were taken care of by primary care doctors with a specialist’s support and 8 percent were helped through redirected web-based consults.

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**FIELD EXAMPLE** Monarch IPA Connects Physicians to Orange County HIE

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Monarch Healthcare, Orange County’s largest IPA and one of the state’s first Accountable Care Organizations, includes more than 2300 primary care and specialty providers and serves 175,000 patients. Through Care Connection, the IPA’s internal health IT solution, Monarch’s doctors use EHRs to coordinate patient care. The Monarch website describes the benefits that Care Connection offers to patients as follows:

“[Your doctors] will be able to see what drugs you are taking, and whether you’ve been in the hospital. In addition, your Monarch doctors can all share information to better coordinate the care that meets your health needs. It will also help eliminate the inconvenience, cost and risk of duplicate tests or services. Your privacy is very important to us, and you control the use of your personal information. We put important safeguards in place to make sure all of your medical information is safe, but you may opt-out of the sharing of medical information and electronic medical records at any time.”<sup>12</sup>

As the county’s largest IPA and a pioneer ACO, Monarch played an important role in the founding of the Orange County Partnership Regional Health Information Organization (OCPRHIO). Monarch’s need to access patient data for ACO reporting purposes provided a strong motivation to support a community HIO that would connect all Orange County providers. OCPRHIO, formed in 2012 with multiple funding grants from CHeQ, was created to improve coordination of care and integrate health IT into the Orange County’s health care delivery system through HIE.

OCPRHIO’s trusted “data broker” provides a single access point where providers can view longitudinal patient information. This single access point eases providers’ ability to use OCPRHIO’s services, particularly if they already have HIE technology in place.

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<sup>12</sup> [www.monarchhealthcare.com/monarch-cares-program/care-connection.html](http://www.monarchhealthcare.com/monarch-cares-program/care-connection.html). Monarch Healthcare, 2013.

With Monarch’s participation and perspective, OCPRHIO has built support for physicians into its operations and actively promotes the benefits of HIE.

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**FIELD EXAMPLE** Changing How Physicians Deliver Health Care with Santa Cruz Health Information Exchange

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Founded in 1996, Physician’s Management Group (PMG) is an IPA with 300 doctors located in Santa Cruz. As a strong participant in the Santa Cruz health care community, PMG led the development of

a community HIO to connect unaffiliated clinicians so they could communicate electronically with one another, share referrals and other patient data and improve patient care coordination. The Santa Cruz Health Information Exchange (SCHIE) is now one of the country’s most successful community HIOs.

Over its years of operation, SCHIE has fundamentally changed how physicians deliver care in Santa Cruz. Entire care teams can be copied on labs, chart notes, discharge summaries and medication reconciliation, which significantly improves coordination of care. The HIO connects eight different EHRs allowing physicians a choice of EHRs for their practices. Clinicians can use data in a way conducive to their workflow; they have complete information on their patients, benefit from automated processes and can easily communicate and collaborate with health care partners.

For Santa Cruz’s physicians, the combination of EHR and HIE capabilities creates a powerful tool for improving care and efficiency. Longtime user, Amy Solomon, MD says it well, “My EHR manages my practice, the HIO manages my community.” Today, SCHIE has 700 physician users sharing information with each other and two hospitals, ten safety net locations, two outpatient surgery centers and twelve lab and radiology imaging sites.

Recently, SCHIE was awarded a contract to pilot the use of personal health records (PHRs), which allow health care consumers to download their personal health information to their own computing devices. Instead of accessing their data through a patient portal, patients can use the PHR to bring their information into one record



that goes wherever they go. If a patient changes doctors or insurance their data goes with them.

With this pilot and other efforts to coordinate with Accountable Care Organizations, SCHIE continues to expand the reach and benefits of HIE. As Bill Beighe, SCHIE's CIO says, "We are only just beginning to scratch the surface on how HIE can help improve care and reduce overall health costs."

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**FIELD EXAMPLE** SynerMed Partners with Inland Empire HIE to Connect Hospitals with Patient Information

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SynerMed, one of the country's largest managed services organizations (MSOs), helps clinics, primary care providers and specialists manage and process the financial complexities of caring for safety net patients. In May 2012, SynerMed announced a partnership with Inland Empire HIE (IEHIE), a large community HIO, to connect its providers to the HIO. When fully implemented, SynerMed will add 10,000 providers and 650,000 lives to IEHIE.



The SynerMed/IEHIE partnership is an example of how a provider can leverage a community HIO's infrastructure to fulfill its enterprise HIE needs. SynerMed's independent physician affiliates exchange patient data with providers in the areas served by IEHIE's 15 member hospitals, 14 physician organizations and nine county and public health agencies. SynerMed is also using the IEHIE

platform to support its own enterprise-wide needs for access to data for the company's quality of care reporting initiatives. At the end of July 2013, SynerMed's Pacific Alliance Medical Center of Los Angeles and 20 of SynerMed's affiliated ambulatory practices were providing patient data to IEHIE. Very recently, SynerMed's claims data went live over IEHIE.

IEHIE's members will have access to patient data from SynerMed-affiliated providers in the region, which use EHRs from a variety of vendors.

## DEPARTMENT OF VETERANS AFFAIRS

For many years, the Department of Veterans Affairs has been leading the charge to implement health IT. The federal government invested billions of dollars in the development of VistA, the VA's version of an EHR, over a thirty-year period. Since its release in 2003, VistA has become one of the most widely used EHRs in the world.

In addition to its ground-breaking work with VistA, the VA has also partnered with the Department of Defense on a project called the Virtual Lifetime Electronic Record, or VLER. As described by the DoD, VLER is a broad reaching HIE “initiative to share data by use of common data interoperability standards, protocols, legal agreements, specifications, and services...to enable DoD and VA to securely share data not only with each other, but also with other federal and private sector health care and benefits providers.”<sup>13</sup>

VLER creates a lifetime record for every military service person that follows him or her from the time of the start of their military careers to the day they realize their last veteran benefit. VLER is being piloted at the Naval Medical Center in San Diego, which can exchange health care information with other local providers over the San Diego Health Connect's HIE services as well as with providers in other locations throughout California, such as Kaiser Permanente Southern California and UC Davis Medical Center.

“The VA is a pioneer and a leader of health information technology that improves patient-provider relationships, embraces wellness and improves health outcomes for the brave men and women who have served our Nation,” said Secretary of Veterans Affairs Eric K. Shinseki.<sup>14</sup>

In addition to developing VLER and VistA, the VA has also been an innovator in patient self-management. 2013 marked the 10-year anniversary of My HealtheVet, the VA's award-winning website that offers Veterans secure access to portions of their VA health care records anywhere and anytime. The VA also created an innovative personal health data management tool called BlueButton® which allows patients to download their health data to a computer, laptop or even mobile device. (For more on BlueButton and patient engagement in California, see page 66.)

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13 [www.prim.osd.mil/init/vler.html](http://www.prim.osd.mil/init/vler.html). Personnel and Readiness Information Management: Virtual Lifetime Electronic Record (VLER).

14 “VA Marks the 10-Year Anniversary of My HealtheVet,” November 26, 2013. [press release] [www.va.gov/opa/pressrel/pressrelease.cfm?id=2500](http://www.va.gov/opa/pressrel/pressrelease.cfm?id=2500)

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**FIELD EXAMPLE** VA San Diego and San Diego Health Connect

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San Diego is home to about 235,000 veterans, or 12 percent of the almost 2 million former military men and women that live in California.<sup>15</sup> As advanced users of health IT, the veteran and the health care communities of San Diego have worked together to increase communications and connectivity between health care providers.

The VA San Diego Healthcare System is a participant in the county's community HIO, San Diego Health Connect. San Diego Health Connect offers a health information utility that connects the entire San Diego health care community, including physicians, hospitals, private HIOs, ancillary providers, pharmacies and other health care stakeholders that need to share health information regardless of organizational boundaries.

Even before the advent of San Diego Health Connect, the VA San Diego Healthcare System was making waves in health information sharing. In 2010, the VA San Diego Healthcare System and Kaiser Permanente piloted a program that allowed them to share information between their respective EHRs. Because more than half of America's veterans and active duty service members receive some portion of their health care outside of VA or DoD facilities, interoperability between federal agencies and the private sector is an essential feature of their care delivery.

The San Diego-based pilot marked the first instance of a private health care organization sharing patient data with a federal agency. With this health data exchange capability, information that took weeks or even months to deliver on paper now can be transmitted electronically within seconds.

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<sup>15</sup> [www.quickfacts.census.gov/qfd/states/06000.html](http://www.quickfacts.census.gov/qfd/states/06000.html) US Census Bureau State and County Quick Facts

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## CHAPTER 3

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# State, Federal, and Nonprofit Organizations Advancing HIE Use

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California's HIE efforts are steered and funded by federal and state agencies and nonprofits that work collaboratively to stimulate the use of health IT and HIE. Many of the state's HIE efforts are funded at the federal level and managed by state agencies and nonprofit organizations. These programs focus on moving HIE forward and building a foundation for HIE by:

- Fostering innovation to accelerate and advance HIE
- Promoting standards and providing funding and services for better HIE
- Encouraging meaningful use
- Advancing public health

### Federal Organizations: Providing Guidance and Incentives for HIE

The U.S. Department of Health and Human Services (HHS) works closely with California's state and local governments to manage HHS-funded services, including Medi-Cal, which are provided locally by state or county agencies or through private sector grantees. HHS is led by the Office of the Secretary, which includes the Office of the National Coordinator for Health IT (ONC). HHS programs are administered by divisions that include human services agencies overseeing health IT and HIE activity.

## Centers for Medicare and Medicaid Services

The Centers for Medicare and Medicaid (CMS) provides health care coverage for over 100 million members across the country through Medicare, Medicaid and Children's Health Insurance Plans. In all states, Medicaid provides health coverage for some low-income people, families and children, pregnant women, the elderly, and people with disabilities. Most U.S. citizens over 65 who qualify for Social Security benefits also qualify for Medicare. California's state Medicaid agency, Medi-Cal, serves over 8.5 million residents.<sup>1</sup> In addition, there are over 5 million Medicare beneficiaries in California.<sup>2</sup>

### Meaningful Use: Incentives for EHR Adoption

In 2010, CMS established an incentive program to make incentive payments to providers and hospitals who meet specific eligibility requirements and use certified electronic health records (EHRs) to improve patient care according to a set of meaningful use criteria. To be eligible for the program, providers must see a minimum level of Medicaid or Medicare patients.

Stage 1 meaningful use requirements for data capture and sharing were aimed at replacing providers' paper charts with an EHR of the provider's choosing. Stage 2 recognizes that switching to an EHR requires a complete workflow transformation for an office's entire care team. Stage 2 requirements are intended to simultaneously increase providers' efficient use of the system and ensure that vendor features advance that use. To maintain certification, EHR vendors must meet these additional stage 2 meaningful use requirements.

Patients see an average of 19 physicians in their lifetime resulting in their health information being scattered and fragmented between those providers.<sup>3</sup> Many stage 2 meaningful use requirements address the need to coordinate patient information among disparate providers. These requirements need the secure exchange of HIE to support:

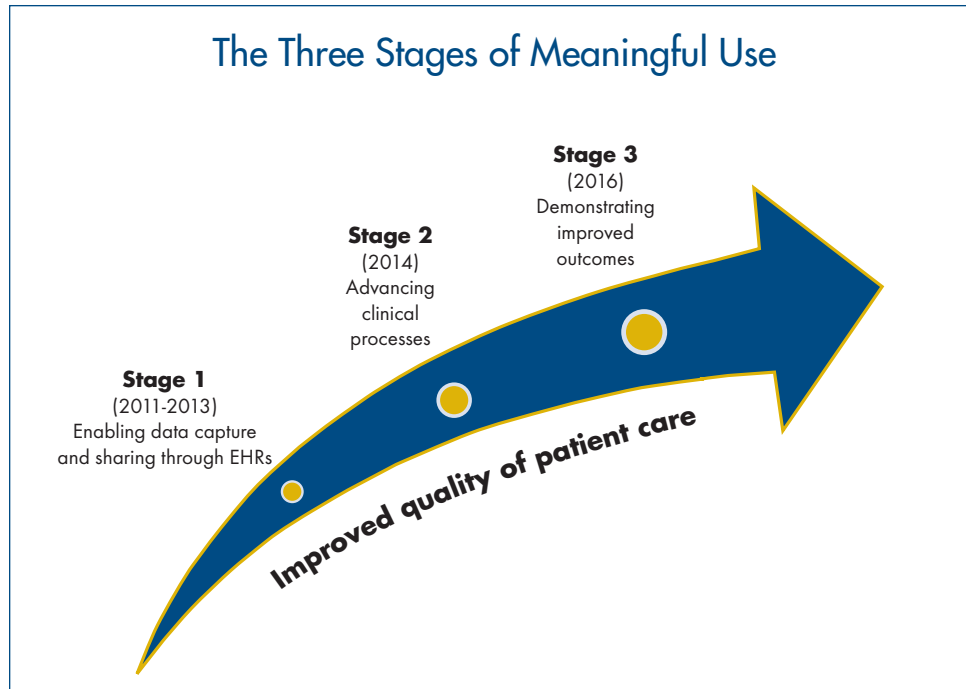
- Transitions of Care. Using clinically relevant information to identify patients who should receive reminders for preventive/follow-up care and providing a summary of care record for each transition of care or referral

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1 [www.dhcs.ca.gov/Pages/Medi-CalExpansionInformation.aspx](http://www.dhcs.ca.gov/Pages/Medi-CalExpansionInformation.aspx). Department of Health Care Services, 2014.

2 [www.kff.org/medicare/state-indicator/total-medicare-beneficiaries](http://www.kff.org/medicare/state-indicator/total-medicare-beneficiaries). Kaiser Family Foundation, 2012.

3 "Patients See 18.7 Different Doctors on Average," April 27, 2009. [press release] [www.prnewswire.com/news-releases/survey-patients-see-187-different-doctors-on-average-92171874.html](http://www.prnewswire.com/news-releases/survey-patients-see-187-different-doctors-on-average-92171874.html).



- Electronic Prescribing. Generating and transmitting permissible prescriptions electronically (eRx)
- Public Health Reporting. Submitting electronic data to immunization and other registries, submitting lab data for reportable conditions and, where allowed, for syndromic surveillance
- Patient Engagement. Enabling patients to view, download and transmit their own health records and providing clinical summaries for patients for each office visit<sup>4</sup>

In 2013, CMS began implementing the Affordable Care Act (ACA) by creating a Health Insurance Marketplace where individuals, families and small businesses can get health coverage; requiring insurance companies to cover people with pre-existing health conditions; and providing free preventive care. Through implementation of ACA, CMS is actively removing barriers to access. Directly and indirectly, implementation of ACA provisions drives ongoing developments in greater health IT care coordination for California providers.

#### Accountable Care Organizations

In October 2011, CMS announced its regulations for formation of Accountable Care Organizations (ACOs). ACOs are groups of doctors, hospitals, and other providers who

<sup>4</sup> [www.healthit.gov/providers-professionals/meaningful-use-definition-objectives](http://www.healthit.gov/providers-professionals/meaningful-use-definition-objectives). EHR Incentives and Certification. Health IT.Gov, 2011.

collaborate to give coordinated, high quality care to their Medicare patients. The goals of ACOs' coordinated care are to ensure that patients, especially the chronically ill, get the right care at the right time; to avoid unnecessary duplication of services and to prevent medical errors.

ACOs make providers jointly accountable for patient health and give them financial incentives to save money by avoiding unnecessary tests and procedures. If providers in an ACO can demonstrate that they are delivering high-quality care and reducing costs, they can qualify for financial incentives, or bonus payments.

For ACOs to work they need HIE in order to share information seamlessly. ACOs are specifically asked to demonstrate effective coordination with the full spectrum of a patient's providers, many of which may work with unaffiliated or competing hospitals or provider organizations. Both community and enterprise HIOs are considered instrumental in meeting ACO standards for and demonstrating care coordination among physicians, hospitals, clinics, specialty and other ancillary providers.<sup>5</sup>

### The Center for Medicare & Medicaid Innovation

The Center for Medicare & Medicaid Innovation (CMMI) is a CMS program that supports the development and testing of innovative health care payment and service delivery models to reduce costs and enhance the quality of care. In 2012 California organizations across the state received 21 CMMI model awards, providing funding to over one hundred provider organizations.<sup>6</sup> The plans of many of the California awardees described strong health IT-enabled approaches to patient-centered care delivery.

In addition, in February 2013, CMMI awarded model design funding to California to produce a State Health Care Innovation Plan (SCHIP).<sup>7</sup> In California, CMMI funding to support this plan is expected to play a key role in transforming ongoing care delivery and reimbursement and help strengthen the business case for HIE adoption. (For more information about California's State Innovation Model Award (CalSIM), see page 73.)

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5 McNickle, Michelle. "5 Reasons HIEs are Critical to the Success of ACOs," August 7, 2012. *Healthcare IT News* [www.healthcareitnews.com/news/5-reasons-hies-are-critical-success-acos?page=1](http://www.healthcareitnews.com/news/5-reasons-hies-are-critical-success-acos?page=1).

6 "Health Care Innovation Award Project Profiles," June 2012. [PDF] [www.innovation.cms.gov/Files/x/HCIA-Project-Profiles.pdf](http://www.innovation.cms.gov/Files/x/HCIA-Project-Profiles.pdf)

7 [www.innovation.cms.gov/initiatives/State-Innovations/index.html](http://www.innovation.cms.gov/initiatives/State-Innovations/index.html). State Innovation Models Initiative: Centers for Medicare and Medicaid Services, 2012.



## Agency for Health Research and Quality: Funding Technology Needs for Participation in HIE

As part of HHS, the Agency for Health Research and Quality (AHRQ) is tasked with producing evidence to make health care safer, higher quality, more accessible, equitable and affordable. AHRQ has spearheaded health IT initiatives to expand use of EHRs, make health information available electronically when and where it is needed, improve the quality of care and make it more cost-effective.

Since 2009, AHRQ has invested in over 71 projects benefiting California communities, hospitals, providers and health care systems.<sup>8</sup> These projects promote access to and encourage the adoption of health IT. In addition, they develop and disseminate evidence and tools about the impact of health IT on health care quality. The AHRQ projects are additional drivers of HIE expansion in California, with a particular focus on improved health outcomes for patients.

## HRSA: Providing Resources and Education to Support HIE Efforts

The Health Resources and Services Administration (HRSA), an agency of HHS, improves access to health care services for people who are uninsured, isolated or medically vulnerable. HRSA works to strengthen the health care workforce, build healthy communities and improve health equity by funding health care professional training, distributing providers to underserved areas and improving health care delivery. HRSA grants support HIE-related initiatives including providing health IT education and tools and expanding broadband and telehealth in rural areas.

In November 2013, HRSA granted over \$30 million to create 46 new California clinics and health centers that will provide health care “access points” in rural, underserved areas from Red Bluff to Los Angeles. In addition, in 2011, HRSA released over \$1 million in planning grants to 14 rural and underserved California clinics to develop plans to use HIE to connect with other providers in the community, including FQHCs, health departments, local hospitals, and rural health clinics, through HIE.<sup>9</sup>

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<sup>8</sup> [www.gold.ahrq.gov/projectsearch](http://www.gold.ahrq.gov/projectsearch). Grants Online Database: Agency for Healthcare Research and Quality.

<sup>9</sup> [www.hrsa.gov/about/news/2013tables/newaccesspointawards/ca.html](http://www.hrsa.gov/about/news/2013tables/newaccesspointawards/ca.html). California Health Center New Access Points FY 2014 Awards. Health Resources and Services Administration.



To help community health centers, safety net and other ambulatory care providers to expand their use of health IT, HRSA developed the Health IT Adoption Toolbox, a compilation of planning, implementation and evaluation resources. The Toolbox includes HIE-related topics such as using PHRs, developing privacy and security policies and implementing e-prescribing.<sup>10</sup>

## Palo Alto Medical Foundation: Using AHRQ Funds to Advance PHRs

The Palo Alto Medical Foundation (PAMF) received an AHRQ award to develop the Personal Health Care Project (PHCP) to respond to the needs and preferences of patients by providing continuous, convenient, online access to health records and facilitating frequent communication with clinicians. This patient-centered care model includes an online disease management system, integrated with an EHR and PHR, that supports a multifaceted care team. Through the pilot program, diabetic patients wirelessly upload their glucometer data to the EHR. They can also use a PHR and other online tools to create a patient-specific Diabetes Summary Status Report; upload nutrition and exercise logs; record insulin

tracking; send and receive secure messages with the health care team and access a nurse care manager and dietician, as well as patient educational materials, for advice and medical management.

At 6- and 12-months milestones, patients in the intervention group significantly reduced their HbA1c levels. Many of those who obtained glucose readings and regularly uploaded them to their PHR were able to sustain their reductions. As a result, the PHCP successfully engaged patients in their diabetes care and outcomes improvement.<sup>1</sup>

<sup>1</sup> <http://healthit.ahrq.gov/ahrq-funded-projects/patient-centered-online-disease-management-using-personal-health-record-system>

<sup>10</sup> [www.hrsa.gov/healthit/toolbox/HealthITAdoptiontoolbox/index.html](http://www.hrsa.gov/healthit/toolbox/HealthITAdoptiontoolbox/index.html). HRSA Health IT Adoption Toolkit. Health Resources and Services Administration, 2010.

## California State Agencies: Moving Forward HIE Efforts

The California Health and Human Services Agency (CHHS) oversees departments and offices that provide a wide range of services from health care and mental health to public health and support to people with disabilities. Several of these departments manage HIE-related activities, including the Department of Health Care Services (DHCS), the Department of Public Health (CDPH) and the Office of Health Information Integrity (CalOHII).

CHHS is committed to making health care affordable and accessible to all Californians and to reducing health disparities by developing prevention and wellness strategies. CHHS considers health IT a critical building block to achieving these goals. The goal of CHHS's strategic planning efforts is to break down information silos that adversely affect the ability of state health programs to efficiently and cost-effectively deliver patient-centered care.<sup>11</sup>

In 2009, as part of the HITECH Act, CHHS was awarded a four-year, \$38.8 million federal State HIE Cooperative Agreement grant to support and expand the use of HIE technology. As the state government agency with primary responsibility for executing this program, CHHS partnered with a number of state agencies and private stakeholders to meet the state's HIE goals.<sup>12</sup>

### California Department of Health Care Services

DHCS oversees Medi-Cal, the state's Medicaid public health insurance plan, which provides low-income individuals and families with access to affordable, high-quality health care to preserve and improve the physical and mental health of all Californians. More than 8.5 million residents, or one in five Californians, receive health care services financed or organized by DHCS, making the department the largest health care purchaser in the state.<sup>13</sup>

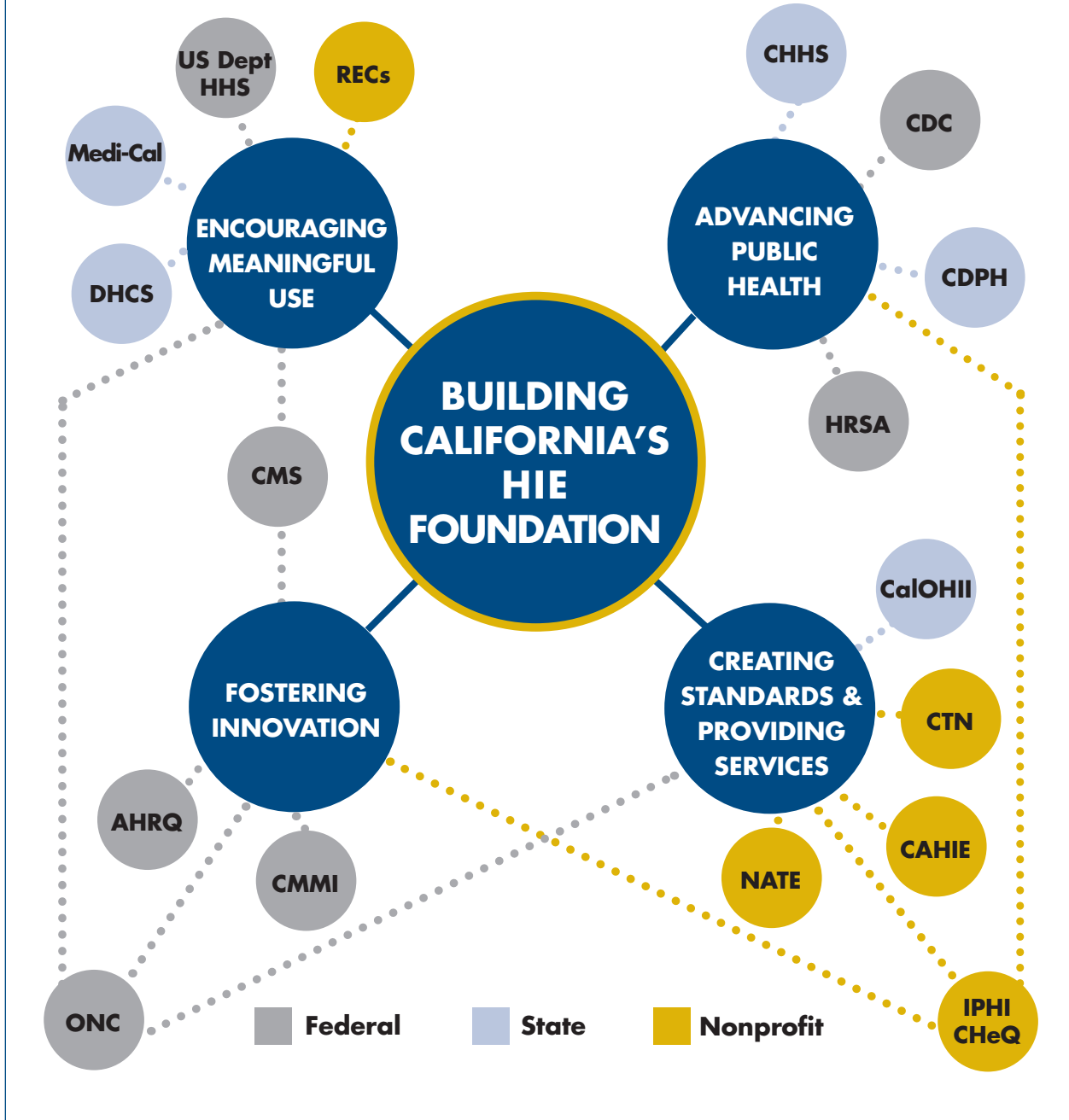
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11 *California Health and Human Services Agency Draft Systems Interoperability and Integration Plan*, California Health and Human Services, July 31, 2013. [PDF] [www.acf.hhs.gov/sites/default/files/assets/9\\_draft\\_strategic\\_plan.pdf](http://www.acf.hhs.gov/sites/default/files/assets/9_draft_strategic_plan.pdf).

12 *Collaborations and Letters of Support from Key Participating Organizations and Agencies*, California Health and Human Services, October 2009. [PDF] [www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Making%20HIE%20Happen/Plans%20and%20Reports/The%20American%20Recovery%20and%20Reinvestment%20Act%20of%202009/CA\\_HIE\\_CollabLOS.pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Making%20HIE%20Happen/Plans%20and%20Reports/The%20American%20Recovery%20and%20Reinvestment%20Act%20of%202009/CA_HIE_CollabLOS.pdf).

13 *California Department of Healthcare Services Strategic Plan 2013-2017*, California Department of Healthcare Services, 2012. [PDF] [www.dhcs.ca.gov/Documents/DHCSStrategicPlan.pdf](http://www.dhcs.ca.gov/Documents/DHCSStrategicPlan.pdf).

## Federal, State and Nonprofit Organizations Building California's HIE Foundation



# Partners in E: Advancing EHR and HIE Use Starting with E-Prescribing

To expand the use of e-prescribing across the state, CHHS and UCSF have developed a cooperative educational program called Partners in E, funded through a \$2.4 million ARRA grant. Partners in E supports expanded e-prescribing implementation across the state by educating future leaders in schools of pharmacy about health IT. The program then pairs these students with community pharmacies serving a high proportion of Medi-Cal patients to assist the pharmacies with learning and using their e-prescribing systems.

Elisa Ashton, Principal Investigator for Partners in E and a member of UCSF School of Pharmacy clinical faculty, says that Partners in E is a win-win because it trains the

next generation of pharmacists in e-prescribing while giving today's pharmacists technical support to achieve EHR adoption. This free technical support is much needed, as pharmacies are not eligible for Meaningful Use incentive programs despite their critical role in HIE use. Pharmacy students are now in the field, paired with community pharmacists, and applying their new knowledge.<sup>1</sup>

1 eHealth Initiative "Partners in E: A Novel Program Proving To Be A Learning Experience on E-Prescribing" July 3, 2013 CalOHII eHealth News <http://www.ohii.ca.gov/calohi/ehealth/newsevents/tabid/92/vw/1/itemid/80/partners-in-e-a-novel-program-proving-to-be-a-learning-experience-on-e-prescribing.aspx>

**“The EHR Incentive Programs have had a profound impact on the ability of health care professionals and hospitals to provide accessible, high-quality care to their patients.”**  
**—Dr. Linette Scott, DHCS Chief Medical Information Officer**

DHCS also oversees the Medi-Cal EHR incentive program, distributing meaningful use incentive payments to eligible professionals and hospitals that have met the program’s requirements. To help providers meet these requirements and obtain their earned incentive payments, DHCS provides communication and education on eligibility, payment, timeframes and other participation requirements. Through 2013, this support was provided by the state’s RECs which promoted the incentive program and provided technical assistance to California

providers. Now that HITECH-supported REC funding is near completion, providers will look to DHCS for EHR adoption and meaningful use support.

### California Office of Health Information Integrity

Under the auspices of CHHS, CalOHII oversees the State HIE Cooperative Agreement and is charged with managing the state’s HIE Strategic and Operational Plans. CalOHII policy guidance ensures that patients and their providers access health information in accordance with state and federal law. The office also convenes HIE state leadership meetings to discuss challenges and lessons learned and chart the course forward.

To promote the development and use of HIE, CalOHII offers tools and programs that make it easier for organizations to form the agreements necessary for exchanging patient information, including:

- **Privacy and Security Tools** including the Patient Authorization Guidance Tool for sharing information among providers and the HIPAA Security Toolkit to address organizational security needs.
- **Medical Privacy Enforcement** including investigating and prosecuting individuals who violate California medical information privacy laws, ensuring providers establish and implement appropriate administrative, technical, and physical safeguards to protect the privacy of a patient’s medical information, protecting confidential medical information from any unauthorized access or unlawful access, use or disclosure.

- **Consent Demonstration Projects** for evaluating consent and patient permission policies (opt-in and opt-out) as effective means of managing consent, when implemented successfully as part of a comprehensive privacy and security framework. Demonstration projects share lessons learned from the testing of consent management policies, including provider engagement, training and education, and HIE governance. (See page 64 for CalOHII Consent Demonstration Project highlights.)
- **Model Modular Participants Agreement (MMPA)** providing assistance with contract terms and conditions for HIOs. The MMPA outlines agreements between a community HIO and the parties who provide and obtain data through that community HIO's health information exchange. CalOHII enables individual HIOs to adopt the MMPA with their own changes and provisions. The MMPA tool also provides a resource for prospective HIE participants to identify issues and concerns that may arise during agreement negotiations with HIOs that do not use the MMPA as a model.<sup>14</sup>

## California Health eQuality: Setting Standards to Support and Expand HIE

CHeQ, a program of the Institute for Population Health Improvement at UC Davis, supports the expansion of HIE in California with funding from the ONC's State HIE Cooperative Agreement. CHeQ has made significant progress in building a trust framework, offering HIE to rural health providers and using HIE to support public health initiatives.

### Building a Trusted Exchange

CHeQ's California Trust Framework (CTF) documents policies and technologies that facilitate exchange between HIOs without requiring point-to-point data sharing agreements. The framework coordinates and distributes management of provider information through a federated provider directory. The CTF, which is being piloted across the state, aligns with the efforts of the National Association of Trusted Exchanges (NATE) to facilitate the sharing of provider directory information. (For more information on NATE, see page 60). CHeQ also informs ONC's trust pilots with lessons learned from organizations preparing for the exchange of patient health information using Direct as well as federated provider directory services. ONC regularly cites California's work in this area and is incorporating the state's feedback into meaningful

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<sup>14</sup> *Model Modular Participants Agreement*, California Office of Health Information Integrity, May 2013. [www.ohii.ca.gov/calohi/PrivacySecurity/ToolstoHelpYou/ModelModularParticipantsAgreement.aspx](http://www.ohii.ca.gov/calohi/PrivacySecurity/ToolstoHelpYou/ModelModularParticipantsAgreement.aspx).

use stage 3 requirements. As part of the EHR-HIE Interoperability Workgroup (IWG), CHeQ participates in directory pilots to test the newest standards and data models.<sup>15</sup>

### Promoting and Encouraging the Adoption of Health IT and HIE

CHeQ promotes regular stakeholder collaboration and provides multiple education and training opportunities. In addition, CHeQ provides technical assistance and maintains “HIE Ready,” a buyer’s guide for providers that tracks commercial EHR interoperability with other applications, and offers a mechanism for pricing transparency.

CHeQ also oversees a significant portfolio of regional HIE efforts (approximately \$7.5 million has been awarded to date) that expands the capacity of over 20 organizations in the areas of planning, infrastructure development, expansion, interface development and innovation. In addition, the CHeQ Rural HIE Incentive program expands HIE capabilities to under-serviced areas across the state.<sup>16</sup>

### Powering Blue Button for Medi-Cal Patients

The CHeQ pilot “Blue Button for Medi-Cal,” launched in November 2013 with L.A. Care Health Plan, enables Medi-Cal patients to view, download and save their prescription data with Blue Button. It is anticipated that the results of this effort will lead to a scaled implementation of Blue Button to allow all Medi-Cal managed care members to download their health information.<sup>17</sup> (For more information on LA Care Blue Button, see page 67.)

### Improving Public Health Capacity

CHeQ spearheaded an effort to connect CHHS, the California Department of Public Health (CDPH) and the California Immunization Registry (CAIR) and increase CDPH’s capacity to receive electronic immunization data as part of meaningful use requirements. Prior to the launch, meaningful use-eligible providers and hospitals were unable to meet this requirement. With this solution, providers now have a meaningful use-compliant way to submit immunization data using their EHRs or through a community HIO. This same submission model is being expanded to support additional public health reporting.<sup>18</sup> (For more information on CAIR, see page 57.)

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15 [www.cheq.wikispaces.com](http://www.cheq.wikispaces.com). CHeQ Wikispaces. California Health eQuality, December 2013.

16 [www.cheq.wikispaces.com](http://www.cheq.wikispaces.com). CHeQ Wikispaces. California Health eQuality, December 2013.

17 “Institute for Population Health Improvement funds state’s first ‘Blue Button’ project for Medi Cal,” November 18, 2013. [press release] [www.ucdmc.ucdavis.edu/publish/news/newsroom/8454](http://www.ucdmc.ucdavis.edu/publish/news/newsroom/8454).

18 *Immunization Messaging Portal*, Office of Health Information Integrity, July 30, 2013. [PDF] [www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Webinars/2013\\_07\\_30\\_CHeQ\\_CAIR\\_IMP\\_Webinar.pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Webinars/2013_07_30_CHeQ_CAIR_IMP_Webinar.pdf).



In addition, CHeQ sponsors project “INSPIRE” (interoperability to support practice improvement, disease registries, and care coordination) to coordinate care and support population health management for high-impact conditions. INSPIRE includes development of the health information home (HIH) which facilitates a shared view of health records for providers treating patients with cancer. HIH addresses the clinical need to create a more complete longitudinal record on high-impact conditions and, as a result, enable better public health reporting.<sup>19</sup>

### California Laboratory LOINC Mapping Assistance Project (LabMAP)

The CHeQ LabMAP project is a collaboration between IPHI and the California HealthCare Foundation (CHCF) to enable clinical laboratories in California to electronically exchange test results using Logical Observation Identifiers Names and Codes (LOINC) and Systematized Nomenclature of Medicine (SNOMED). LOINC and SNOMED are universal taxonomies, or sets of terms, for identifying laboratory and clinical observations. Meaningful use stage 2 requires that providers receive and use structural lab results using LOINC. In addition, labs must be able to report results to public health registries using LOINC and SNOMED.

LabMAP provides laboratories with technical assistance to map their internal and proprietary laboratory and clinical observation and result codes to LOINC and SNOMED. These services include helping laboratories map 1,000 of their most commonly ordered lab tests and tests for diseases that must be reported to CDPH. CHeQ will also provide assistance for up to 50 laboratories to map their internal and proprietary codes. The program will also develop a set of tools, references, project content and training aids for other laboratories in California and throughout the country that need to implement this LOINC and SNOMED taxonomy mapping.<sup>20</sup>

### Direct: An HIE Stepping Stone for Rural Providers

In December 2013, CHeQ announced that it will provide funds for free Direct accounts during 2014 for the first 1,000 rural providers in areas of California without existing Direct capacity through a community HIO, with particular attention to reaching rural providers in areas of the state that currently lack options for HIE. Providers will have access to free Direct accounts and technology that allows them to exchange health information over the Internet a manner similar to secure email.

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<sup>19</sup> [www.cheq.wikispaces.com](http://www.cheq.wikispaces.com). CHeQ Wikispaces. California Health eQuality, December 2013.

<sup>20</sup> [www.cheq.wikispaces.com](http://www.cheq.wikispaces.com). CHeQ Wikispaces. California Health eQuality, December 2013.



California’s rural providers, who are widely distributed and lack technology support and infrastructure, need low-cost, simple and intuitive HIE options. Direct offers such an option, allowing providers to engage in HIE-based care coordination with or without an EHR. With Direct accounts, rural ambulatory providers, clinics and hospitals can securely share protected health information with care team members across organizations; transmit referrals and care summaries; send alerts to all providers caring for a patient upon hospital admission, discharge, and transfer; enable patient access to their information electronically; connect to trusted health information exchanges and meet meaningful use requirements.<sup>21</sup>

### California Department of Public Health: Gathering Data to Improve Health and Safety

The implementation of EHRs across California simultaneously increased the transmission of lab test results data and chronic disease information, data that were required to achieve meaningful use incentives. The increase in volume and transactions of public health data demanded standards for its exchange along with proactive means of managing and sharing that data.

#### Gateways for Public Health Data

In October 2013, building upon the CHeQ project to create an Immunization Messaging Portal, the CDPH launched the Health Information Exchange Gateway to streamline the collection of public health data that is vital to surveillance and research. The web-based Gateway provides a single point-of-entry for health care providers to submit data to CDPH. As Dr. Ron Chapman, CDPH director and state public health officer, explains, “The information we gain through this effort will ultimately lead to more and better research that will improve individual and public health.”<sup>22</sup>

CDPH collects data from many stakeholders, including providers, hospitals, laboratories, local health jurisdictions and federal agencies. The Gateway provides a means for providers to register their intent to report data to CDPH; however, each registry is responsible for reporting to CDPH in order to meet meaningful use requirements. If they meet these objectives, hospitals and professionals receive financial incentives that are part of the

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21 “Direct Accounts for Rural Providers in 2014,” December 18, 2013. [press release] [www.ucdmc.ucdavis.edu/iphi/Programs/cheq/cheqrural.html](http://www.ucdmc.ucdavis.edu/iphi/Programs/cheq/cheqrural.html).

22 Gore, Anita. “CDPH Launches Health Information Gateway,” October 24, 2013. California Department of Public Health. [www.cdph.ca.gov/Pages/NR13-050.aspx](http://www.cdph.ca.gov/Pages/NR13-050.aspx).

**“The information we gain... will ultimately lead to more and better research that will improve individual and public health.” –Dr. Ron Chapman, CDPH Director**

HITECH Act’s goal to increase electronic health data submission and record keeping.

The Gateway currently accepts immunization data and infectious disease laboratory reports. It will eventually be expanded to accept data for the California Cancer Registry and the Childhood Lead Poisoning Prevention Program.<sup>23</sup>

#### Registry Projects: Aggregating Data for Public Health

Public health programs depend on health care data for setting policy and implementing treatment and prevention programs. With the expansion of HIE, aggregating public health-related data becomes significantly more efficient and increases the effectiveness, timeliness and accuracy of the data. Much of public health data is collected in registries created for specific purposes, most of which are designed to receive data submitted by providers. As EHR use and HIE connectivity increases, it will become possible for registries to pull public health data from existing data sources. CDPH has several registry projects of both types in operation.

**The California Immunization Registry (CAIR)**, established by CDPH in 2005, is a secure, confidential, statewide computerized immunization information system for California residents. The CAIR system consists of nine regional immunization registries that serve multi-county regions. Each registry is accessed online to help providers and other authorized users track patient immunization records, reduce missed opportunities and help fully immunize Californians of all ages.

Confidentiality and access to CAIR records is strictly managed. Only authorized users and the patient’s provider have IDs and passwords to view immunization information. California law allows health care providers to share patient immunization information with an immunization registry as long as the patient, or patient’s parent, is informed

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<sup>23</sup> [www.hie.cdph.ca.gov](http://www.hie.cdph.ca.gov). California Department of Public Health: Health Information Exchange Gateway, California Department of Public Health, 2013.

# ATHENA: Using Registry Technology for Innovation of Chronic Disease Management

In 2009, the University of California launched a statewide collaboration to design and test new approaches to research, technology and health care delivery for breast cancer patients. Funded by UC Office of the President, the Safeway Foundation and the INSPIRE program, the ATHENA Breast Health Network collaboration started with screening 150,000 women throughout California for breast cancer. Data from this population of women will be tracked in a registry on an ongoing basis by the five UC medical centers.

The project standardizes the collection of electronic structured data from both patients and physicians at the time of diagnosis in an interoperable and reusable format. HIE will

enable UC campuses to integrate clinical research and care and use the system's data to advance the science of prevention, screening, diagnosis and treatment of breast cancer.

Patients and providers will also have electronic tools to interact with one another to prevent and manage the disease. All women undergoing screening and treatment may contribute information about themselves and their breast cancer risk factors, including health status, diet, tobacco and drug use, environmental factors and medical and family history.<sup>1</sup>

<sup>1</sup> [athenacarenetwork.org/](http://athenacarenetwork.org/)

about the registry. Participation in CAIR is voluntary and is open to health care providers, schools, childcare facilities, county welfare departments, family child care homes, foster care agencies, WIC service providers and health care plans.

In addition to accessing patient immunization information, providers can use CAIR to determine when vaccinations are due, enter new patients or administered vaccine doses, manage vaccine inventory, run patient or inventory reports or run patient reminder/recalls. New patients or vaccine doses can either be entered directly into CAIR using a web interface or submitted electronically as aggregated data files (e.g. exported from their EHR systems).

In the coming years, CAIR will integrate its existing regional databases using HIE so that immunization data for patients residing anywhere in the state will be accessible to any CAIR user in California.<sup>24</sup>

**The California Cancer Registry (CCR)**, established in 1985, is program of the CDPH's Chronic Disease Surveillance and Research Branch (CDSRB). The Institute for Population Health Improvement (IPHI) contracts with CDPH to implement the CCR in collaboration with ten regional cancer registries, health care providers, cancer registrars and cancer researchers throughout California and the nation. CDSRB collects, analyzes, and disseminates information on cancer incidences and mortality. CCR data has been used for research and program evaluation to improve the spectrum of cancer control in California, including prevention, diagnosis, treatment and quality of life.

The CCR serves the public by collecting statewide data, conducting surveillance and research into the causes, controls and cures of cancer and communicating results to the public. The CCR monitors the occurrence of cancer among Californians, both incidence (new diagnoses) and mortality (deaths), and is an essential tool for the prevention and control of cancer in California. Since January 1988, all new cancer diagnoses in California must be reported to the CCR. The CCR has very stringent policies and procedures to ensure that reported data are maintained with the highest degree of patient confidentiality and privacy.<sup>25</sup>

In 2013, the California HealthCare Foundation formed a workgroup with UC Davis and IPHI, Stanford, UCSF and the University of Southern California, among other academic and industry leaders, to examine using the CCR to measure and improve the quality of cancer care through public reporting of quality metrics. The workgroup will optimize the CCR by merging existing data on care utilization, medication use and radiology images from claims systems and EHRs.<sup>26</sup>

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24 [www.cairweb.org](http://www.cairweb.org). California Immunization Registry, California Department of Public Health. 2013.

25 [www.ccrca.org/Inside\\_CCR/About\\_Us.shtml](http://www.ccrca.org/Inside_CCR/About_Us.shtml). California Cancer Registry. California Department of Public Health, 2009.

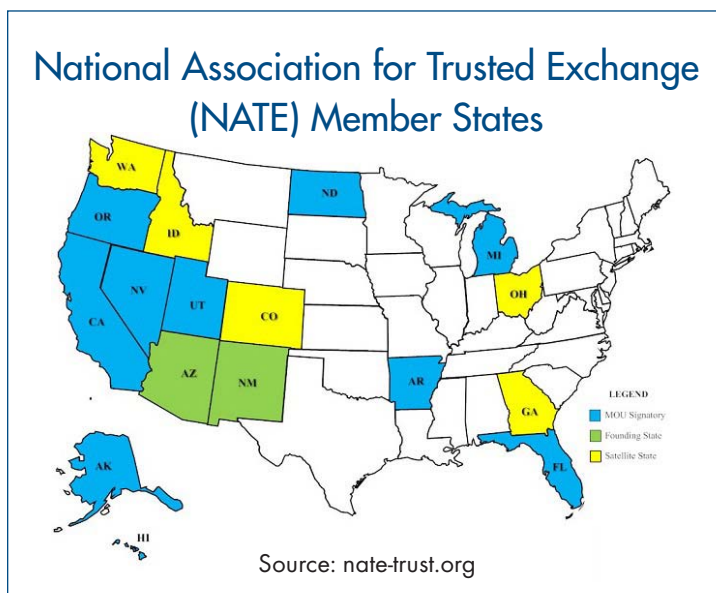
26 Hiatt, Robert A. *Leveraging the California Cancer Registry to Measure and Improve the Quality of Cancer Care*, October 30, 2013. [PDF] [www.chcf.org/~ /media/MEDIA%20LIBRARY%20Files/PDF/S/PDF%20Sacto10302013CancerHiatt.pdf](http://www.chcf.org/~ /media/MEDIA%20LIBRARY%20Files/PDF/S/PDF%20Sacto10302013CancerHiatt.pdf)

The California Reportable Disease Information Exchange (CalREDIE) is a web-based registry for reporting and surveillance of specified diseases and conditions that health care providers and laboratories must report to public health authorities. CalREDIE will use HIE to support integration with electronic lab reporting systems.

CalREDIE improves both surveillance and early detection of public health events using HIE and health IT. Its technology supports 24/7/365 reporting and receipt of notifiable conditions, and near-real time access to disease and laboratory reports for disease surveillance, public health investigation and case management. Health care providers use CalREDIE to report cases of public health interest and laboratories use it to report notifiable conditions to local health departments (LHDs) and the CDPH. Today, all 61 of California's LHDs use CalREDIE in some capacity and 57 of those use it to report all diseases.<sup>27</sup>

## Nonprofit Organizations: Continuing the Momentum

California's health IT and HIE expansion efforts led by state-designated organizations have spread much needed resources across the state. Now, these efforts are moving forward with leadership from nonprofit organizations steered by those who have achieved success in enterprise and community HIE efforts.



### National Association for Trusted Exchange (NATE): Piloting Exchange Across State Lines

While the majority of California's HIE efforts focus on in-state connections among and between enterprise and community HIOs, several state organizations are working to encourage collaboration across state lines. CalOHII is leading these efforts by supporting the expansion of the National

<sup>27</sup> [www.cdph.ca.gov/data/informatics/tech/Pages/CALREDIE.aspx](http://www.cdph.ca.gov/data/informatics/tech/Pages/CALREDIE.aspx). California Reportable Disease Information Exchange (CalREDIE), California Department of Public Health 2014.

Association for Trusted Exchange (NATE). NATE's mission is to enable the exchange of clinical information between providers across state lines for the purposes of patient treatment. NATE comprises a group of states, including California and its neighboring states, who collaborate on policy and procedure, laying the groundwork for safe interstate electronic transfer of secure health information.

In 2014, NATE will complete a pilot that uses Direct to enable patient-mediated exchange with PHRs. With patient-mediated exchange, consumers aggregate their health information in a PHR and use that data to coordinate their own care and share information with providers. For this project, NATE has partnered with three of the largest PHRs in the county and the VA, which has a PHR called MyHealthVet.

NATE is developing and piloting policies and procedures, defining roles and responsibilities, and creating a community of trusted partners and directory services to identify participating providers. NATE's accomplishments include:

- Developing common eligibility criteria for participation
- Evaluating participating states' pilot health information service providers (HISPs) for compliance with eligibility criteria
- Implementing address discovery using open-standards based query of provider directories across state lines<sup>28</sup>

## California Association of Health Information Exchanges: California Standards for Trust and Security

As HITECH funding comes to a close, California's HIE-related efforts will require new oversight. In 2013, a statewide group of community and enterprise HIO leaders formed the California Association of Health Information Exchanges (CAHIE) to advance safe and secure HIE throughout California. Building upon the California Trust Framework (CTF) pilot, CAHIE will continue development of a standards-based framework for trusted exchange. CAHIE is also working to ensure that all California providers can connect to and use Direct's secure messaging, as well as the national HIE standard, to support interoperability.

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28 Western States Consortium, *National Association for Trusted Exchange*, April 23, 2013. [PDF] [www.ohii.ca.gov/calohi/Portals/0/Documents/PrivacySecurity/WSC/2013\\_04\\_30%20NATE%20Transforamtion%20\(v1.2\).pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/PrivacySecurity/WSC/2013_04_30%20NATE%20Transforamtion%20(v1.2).pdf).

CAHIE's goal is to create a self-governance function for HIE in California and is modeling its operations on the policies and procedures of the Healthway Coordinating Committee, NATE Governance Body and CTF pilot. In addition, CAHIE addresses other requirements to achieve trusted exchange relationships. CAHIE's goals include:

- Developing and assisting with the voluntary adoption of a common set of policies and procedures, enabled by a light-weight technical infrastructure, to establish inter-organizational exchange beyond that enabled by eHealth Exchange
- Producing a California version of the Data Use and Reciprocal Support Agreement (DURSA), an agreement used by many HIOs across the country. All parties who sign the agreements will be able to interoperate using the national standards for Direct and Exchange
- Ensuring secure HIE that respects the privacy rights of individuals
- Establishing and maintaining the infrastructure for exchange between HIOs through oversight of California's provider directory and the CTF pilot



## CHAPTER 4

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# Patient Engagement and HIE

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As the ultimate consumers of health care, patients have a lot to gain from the higher quality care and lower costs enabled by providers' use of health IT. Employers that foot the bill for employee health care also have a vested interest in the impact of health IT on cost and quality. For both consumers and employers, health IT provides additional benefits when used as a platform for increasing patient engagement. Patient health records (PHRs) provide consumers with tools for accessing their health information and managing their own care, which make overall patient care more effective. Employers view PHRs as an opportunity to lower costs by allowing patients to interact with their health information and communicate with providers outside the traditional office visit. HIE is the underlying enabling technology that allows providers to offer patients access to their data and provides patients with the access they need to view and manage it.

### HIE AND PERSONAL HEALTH RECORDS

In California, HIE is considered critical to patient data access, requiring additional means of security and authorization protections to ensure accessibility. In 2010, over twenty consumer-focused organizations in California endorsed the Consumer and Patient Principles for Health Information Exchange, which presents nine principles supporting the notion that HIE can improve health outcomes and empower patients to participate actively in their care. These principles included the importance of improving individual and population health; inclusivity and equality of HIE; universal design, accessibility and



interoperability; privacy and security; preventing misuse of health data; partnership and health IT literacy and accountability and enforcement.<sup>1</sup>

California providers also have incentives to encourage patients to access and interact with their health information. The majority of providers use EHRs with features that allow patients to use HIE to send secure messages to their doctors, make appointments, refill prescriptions and view electronic lab results. By activating these features for patients, providers can comply with meaningful use stage 2 requirements that stipulate patient access to and control of their data and approaching stage 3 requirements for patient access to self-management tools.

## PATIENT CONSENT FOR ACCESS TO HEALTH INFORMATION

Integrating use of PHRs into provider and patient routines requires a new paradigm for doctor-patient communication. Part of that new paradigm involves patient consent for providers to share and exchange patient data. As providers implement EHRs, they must incorporate a process for capturing patients' consent to share and exchange their information using HIE. A common means of capturing patient consent is allowing patients to either “opt-in” and grant permission for their electronic records to be shared or “opt-out” and deny that permission.

CalOHII is currently administering three State Health Information Exchange Demonstration Projects that include both patients' access to and consent to provide their health information. Project participants include:

- San Diego Health Connect, which oversees the management of patients' consent for provider access to their information. Patients opt-in or opt-out through a patient portal; their consent status is stored in an EHR and transmitted to the HIO.
- Santa Cruz Health Information Exchange (SCHIE) is testing a process in which patient data is automatically included in the HIO and at the same time patients are actively notified of their right to opt-out of sharing that information. Patients receive education and notification at the point of care in the physician's office. SCHIE actively tracks which patients have been notified of the consent process.

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<sup>1</sup> *Organizations Endorsing the Consumer and Patient Principles for Electronic Health Information Exchange in California*, October 27, 2010. [PDF] [www.cpehn.org/pdfs/HIEPrinciplesEnglish.pdf](http://www.cpehn.org/pdfs/HIEPrinciplesEnglish.pdf).

- Inland Empire Health Information Exchange (IEHIE) is testing a similar opt-out process, in which patients' information and consent is stored in the HIO. Patients are notified by receiving an educational pamphlet by mail or upon their registration with the provider.<sup>2</sup>

## Kaiser Permanente: Promoting and Encouraging Patient Self-Management

Kaiser Permanente communicates a consistent message to consumers: stay healthy and “thrive.” Kaiser also leads the state in patient engagement efforts with My Health Manager, a personal health record that connects directly to the KP HealthConnect EHR. With My Health Manager, patients can exchange secure email with doctors, make appointments, view medical records, review benefits and manage prescriptions online.

Nationwide, over two thirds of Kaiser Permanente members, or more than 4.1 million patients, have My Health Manager accounts. My Health Manager transactions among users include:<sup>1</sup>

- 2.5 million lab results accessed online monthly
- 1.1 million patient emails delivered monthly
- 991,000 prescriptions refilled online monthly
- 263,000 appointments scheduled monthly

<sup>1</sup> My Health Manager. Kaiser, 2014. <https://healthy.kaiserpermanente.org/health/care/consumer/my-health-manager>

<sup>2</sup> [www.ohii.ca.gov/calohi/PrivacySecurity/DemonstrationProjects/CurrentDemonstrationProjects.aspx](http://www.ohii.ca.gov/calohi/PrivacySecurity/DemonstrationProjects/CurrentDemonstrationProjects.aspx). Current Demonstration Projects, 2013.



## THE BLUEBUTTON MOVEMENT

As standard frameworks for the patient consent process develop, provider organizations are also innovating with PHR development. The Department of Veteran Affairs has been instrumental in this innovation through its development of a PHR tool called BlueButton® that allows users to securely view, print and/or download their health information. BlueButton was originally created to increase veterans' access to care and improve their self-management of chronic disease conditions.

Released in 2010, BlueButton now allows members to download personal health data from My HealtheVet, the VA's web-based patient portal. Veterans who receive medications from VA can download their medication history—a feature particularly important to the elderly who often need to share this information with family members and caregivers (or merely keep it in their wallet).<sup>3</sup> BlueButton is in use today by the large population of veterans that live in California.

## iBLUEBUTTON: MOBILE, PATIENT-MEDIATED EXCHANGE

Innovative organizations and providers across California are following the VA's lead and testing both BlueButton as well as its mobile version, iBlueButton, which runs on smartphones and tablets. CalOHII and the National Association for Trusted Exchange (NATE) are using iBlueButton in a mobile patient pilot that complies with NATE's HIE trust standards.

The CalOHII /NATE pilot, called PHR Ignite, explores and implements processes for patient-mediated exchange of information between providers. With patient-mediated exchange, patients use their PHRs to transfer their information between providers. In the case of PHR Ignite, patients download health information originating from one provider to iBlueButton using Direct as their HIE solution and then send that information from iBlueButton, again using Direct, to another provider. With this exchange, patients can share their health data with other providers for referrals or second opinions, or simply to establish a baseline with a new physician. The pilot explores the mechanisms for nationwide trust between provider systems and PHRs, associating a data source with information provided by a PHR to establish a trusted, two-way flow of information between providers and their patients.

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3 Ricciardi, Lygeia. "The Blue Button Movement: Kicking off National Health IT Week with Consumer Engagement," September 12, 2013. *Health IT Buzz*. [www.healthit.gov/buzz-blog/electronic-health-and-medical-records/blue-button-movement-kicking-national-health-week-consumer-engagement](http://www.healthit.gov/buzz-blog/electronic-health-and-medical-records/blue-button-movement-kicking-national-health-week-consumer-engagement).

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## FIELD EXAMPLE L.A. Care Health Plan Blue Button Pilot

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In November 2013, L.A. Care Health Plan received CHEQ funding to implement Blue Button so that L.A. Care members can access their prescription data online. The project is the first in California, and among the first in the nation to develop a Blue Button tool for Medicaid beneficiaries.

This web-based Blue Button initiative allows patients to easily view and download their prescription data and share it with health care providers and caregivers. Making medication lists available through Blue Button will help L.A. Care members take an active role in managing their care, increase effective communication with their providers and avoid potential prescription errors. L.A. Care expects to begin extending the Blue Button service to Medi-Cal Managed Care beneficiaries by early 2014.<sup>4</sup>

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## CALPERS: ENCOURAGING PATIENTS TO PARTICIPATE IN COORDINATED CARE

California is home to some of the largest employers in the country. It also has one of the highest rates of chronic disease, demanding that employers and health care purchasers take an active role in managing increasing health care costs. The largest health care purchaser in California is the California Public Employees' Retirement System (CalPERS), which covers more than 1.3 million active and retired state, local government and school employees and their family members. In 2010, CalPERS, Blue Shield of California, Catholic Healthcare West and Hill Physicians Medical Group launched an Accountable Care Organization (ACO) pilot to reduce costs and improve health care for 41,000 state retirees in the Sacramento area.

The program encouraged patient participation by allowing CalPERS members to pay a reduced premium to participate in its “virtual integrated model,” which enabled the three health care organizations to share patient data and coordinate care. While the initiative faced challenges in achieving interoperability between the three different health IT systems, it made noted progress by motivating the health care organizations to work toward increasing care quality while reducing costs, enhancing communication and cooperation and crossing health care “cultures.” To drive the exchange of clinical data,

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4 “Institute for Population Health Improvement funds state’s first ‘Blue Button’ project for Medi Cal,” November 18, 2013. [press release] [www.ucdmc.ucdavis.edu/publish/news/newsroom/8454](http://www.ucdmc.ucdavis.edu/publish/news/newsroom/8454).

the program developed and implemented a Coordination of Care Document (CCD), which allowed the hospitals using EHRs to share information through an expanded HIE. The HIE facilitated automatic exchange of clinical and discharge summaries, along with other patient information.<sup>5</sup>

## IHA: HEALTH CARE QUALITY MEASUREMENTS FOR CONSUMERS AND EMPLOYERS

The Integrated Healthcare Association (IHA) is a nonprofit leadership group that promotes quality improvement, accountability and affordability of health care in California. The group provides consumers and employers with information on quality and cost variations of health care services.

IHA played a key role in the development of the State Health Care Innovation Plan (SHCIP), which incorporates results from IHA's California Pay for Performance (P4P) program. In P4P, providers are compensated for meeting quantitative quality and efficiency measures. IHA uses health IT and HIE to collect data, deploy a common measure set and report results for approximately 35,000 physicians in over 200 physician groups. P4P's goal is to improve transparency and accountability of the quality improvement process, facilitated by the data capture and reporting with EHRs.<sup>6</sup>

Tom Williams, Executive Director of IHA, proposes that providers use electronic data to produce valid, reliable cost and quality comparisons that meet consumer needs for transparent and trust-worthy health care information. In the P4P program, IHA captures clinical, patient experience and meaningful use measures with EHRs. These measurements are then used to produce quality and efficiency data scores for evaluating performance. HIE capabilities are integral to provider performance measurements, which include requirements for peer-to-peer sharing of electronic lab, prescription and discharge data. IHA uses HIE to support on-demand access to up-to-date data for its quality and performance reporting purposes.<sup>7</sup>

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5 [www.blueshield.com/bzca/about-blue-shield/newsroom/calpers-care-model.sp](http://www.blueshield.com/bzca/about-blue-shield/newsroom/calpers-care-model.sp). *Blue Shield of California, Catholic Healthcare West and Hill Physicians Medical Group to Pilot Innovative New Care Model for CalPERS*, Blue Shield of California, 2010.

6 *Draft California State Health Care Innovation Plan*, California Health and Human Services, 2013. [PDF] [www.chhs.ca.gov/PRI/CalSIM%20SHCIP%20Appendices%20Working%20Draft%2010-10.pdf](http://www.chhs.ca.gov/PRI/CalSIM%20SHCIP%20Appendices%20Working%20Draft%2010-10.pdf)

7 Williams, Tom *Using Data to Create Change*, Integrated Healthcare Association, November 15, 2013. [PDF] [www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Summit/2013\\_11\\_15\\_tom\\_williams\\_summit.pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Summit/2013_11_15_tom_williams_summit.pdf)

## PBGH: ADDRESSING COST VARIATIONS WITH PROVIDER AND PATIENT DATA

Rising health care costs are a constant concern for both consumers and employers. In California, costs for joint replacements have not only increased significantly but also vary widely in their cost per procedure. From 2001 to 2009, the cost for primary hip replacements increased by 52 percent, while the costs for primary knee replacements almost doubled. Joint replacements represented 10 percent of medical spending on CalPERS' basic plan in 2008, without taking into account costs associated with lost productivity before and after surgery. In 2011, hospitals and surgeons charged a collective \$8.5 billion on 90,000 joint replacements, placing them among the highest volume and highest cost procedures for both Medicare and private payers.

Combined, these facts presented the Pacific Business Group on Health (PGBH) and its members with a clear opportunity to control costs for both consumers and purchasers. Through its employer members, the Pacific Business Group on Health (PGBH) represents the interests of more than 10 million consumers. To demonstrate how health care policy and practice can effect cost savings and drive changes, PBGH jointly created the California Joint Replacement Registry (CJRR) with the California HealthCare Foundation (CHCF) and the California Orthopaedic Association (COA). The CJRR provides a scientific assessment of devices, treatment protocols, surgical approaches and patient factors that influence the results of hip and knee replacement surgeries.

The CJRR is unique in its consumer and payer involvement. The registry incorporates not only clinical information but also direct feedback from patients about the outcomes of hip and knee replacement surgeries. Participating in the registry requires clinicians to provide input, and in return, gives them incentives for contributing and reporting their data. PBGH encourages payers to provide these incentives, designing benefits and networks that send patients to providers who participate in the registry. In addition, payers can educate employees to select providers who participate in the registry and use registry data to improve their practice.<sup>8</sup>

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<sup>8</sup> [www.caljrr.org](http://www.caljrr.org) . California Joint Replacement Registry, 2013.



## CHAPTER 5

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# Initiatives to Watch

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While California's state agencies made the most of federal funding opportunities from HITECH, the state has been fully aware that this funding would not continue at the same rate. As state leaders strengthened the foundation of HIE, they sought other opportunities outside of HITECH to support HIE efforts on an ongoing basis. In parallel, they ensured that the state's plans for the advancement of health IT were aligned with an overall vision for improving the health of California's population.

### CMS Matching Funds Programs: Additional Funding for Health IT Adoption and Use

In addition to distributing meaningful use incentives, CMS also encourages health IT adoption and use by providing states with the opportunity to apply for matching funds. Under the CMS guidance for funding health information exchange (HIE), certain activities are eligible to receive federal matching funds. These matching funds include a CMS commitment of 90 percent of the program funding as long as the remaining 10 percent of funding is also committed by the state. To receive this funding, California DHCS must submit a State Medicaid Health IT Plan (SMHP). Through the approval of the SMHP, DHCS may receive funds for activities that support the success of the state's Medicaid (Medi-Cal) EHR Incentive Program including projects that are:

- Focused on facilitating the adoption and meaningful use of certified EHR technology
- Consistent with the ONC long-term vision for health information exchange
- Supportive of activities prioritized by ONC cooperative agreement funding, including secure messaging, electronic reporting of structured laboratory data and e-prescribing



90/10 funding is also available for the identification and development of health information exchange (HIE) tools, including record locator services, secure messaging gateways and provider directories, which meet the SMHP requirement of directly impacting the achievement of meaningful use for providers.<sup>1</sup>

## DHCS and Medicaid Information Technology Architecture

The CMS Medicaid Information Technology Architecture (MITA) program's mission is to ensure that Medi-Cal technology supports Medicaid's national standards. The program will require a five-stage state self-assessment with progressing technology maturity levels. The MITA data management strategy supports HIE across boundaries, identifying patterns for exchange and sharing of information, and optimizing data governance procedures. The strategy emphasizes processes and capabilities necessary for HIE, including:

- Identity management and access control to ensure the right people have secure access to the right data
- Confidentiality and privacy agreements
- A master person index ensuring health data is tied to the correct individual (patient)

MITA's five-stage maturity plan requires state health IT architecture to progress from manual processes to using HIE to automate processes with an ultimate goal of full automation and participation in the national HIE standards. The program encourages EHR adoption, participation in HIE with health care delivery partners, state and county departments and participation in federal incentive programs. MITA requires alignment between the DHCS Medi-Cal EHR Incentive Program, CHHS state systems interoperability and integration efforts and CalOHII privacy and security initiatives.<sup>2</sup>

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1 *California State Medi-Cal Health Information Technology Plan*, California Department of Health Care Services December 28, 2012. [PDF] [www.dhcs.ca.gov/provgovpart/Documents/OHIT/CA%20State%20Medicaid%20HIT%20Plan\\_v2.3.pdf](http://www.dhcs.ca.gov/provgovpart/Documents/OHIT/CA%20State%20Medicaid%20HIT%20Plan_v2.3.pdf).

2 Lane, Pamela. *California eHealth Stakeholder Webinar*, September 19, 2013. [www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Webinars/Final\\_2013-09-19\\_Webinar\\_CA\\_eHealth\\_Stakeholder.pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Webinars/Final_2013-09-19_Webinar_CA_eHealth_Stakeholder.pdf).

## **Let's Get Healthy California Task Force Charge: "What will it look like if California is the healthiest state in the nation?"**

**—Diana Dooley, Secretary**

### **California Health and Human Services Agency**

#### **California's State Innovation Model**

In 2012, Governor Jerry Brown created the Let's Get Healthy California (LGHC) Task Force, co-chaired by CHHS Secretary Diana S. Dooley and Dr. Don Berwick, founder and former president and CEO of the Institute for Healthcare Improvement (IHI) and former Administrator of CMS. This task force came together to form a plan for California's achievement of the IHI Triple Aim, providing a

foundation for state's CalSIM effort. LGHC's goal is to become the healthiest state in the nation. To support this effort, CHHS plans to use health care data to assess where the state is succeeding and where it is falling short. LGHC will create a Dashboard measurement tool to record patient-centered health care, coordinated outpatient care, hospital safety and quality of care data. These measures will rely on HIE to enable sharing of patient health information among providers.

Through the support of CMMI funding, the CalSIM program will carry forward LGHC work. In 2013, California was awarded a CMMI model design grant of \$2.6 million for the California State Innovation Model (CalSIM) program. (For more information on CMMI, see page 46.) This collaborative effort engages California health care leaders including the California Public Employees Retirement System (CalPERS), Department of Public Health (CDPH), Department of Health Care Services (DHCS), and the UC Davis Institute for Population Health Improvement (IPHI) to move the state forward in achieving the Triple Aim of better health, better care and lower cost.

As part of its strategy, CalSIM proposes several building blocks, including "redesigning the health system" to offer efficient, safe, patient-centered care; ensuring secure data access that protects patient privacy and data integrity and engaging patients and families

as partners in care. Health system redesign will require California to focus on enabling legislation and regulatory changes, and advancing HIE to ensure access to the health data necessary to improve efficiency, access and population health outcomes.<sup>3</sup>

Through the CalSIM program, California is now developing a State Health Care Innovation Plan (SHCIP), that builds on existing state and national initiatives for health IT and HIE advancement. SHCIP plans, facilitated by health IT and HIE, include health homes for complex patients, accountable care communities and public reporting on health care quality costs and population health. SHCIP projects will also support research and the development of case studies, encouraging the spread of health IT and facilitating data collection.

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<sup>3</sup> Dooley, Diana and Powers, Patricia. *HIE: An Essential Building Block for California's Health and Health Care*, May 8, 2013. [PDF] [www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Summit/20130508\\_HealthyCA\\_Dooley-Powers.pdf](http://www.ohii.ca.gov/calohi/Portals/0/Documents/eHealth/Summit/20130508_HealthyCA_Dooley-Powers.pdf).

# Conclusion

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California has managed a tremendous effort in coordinating its public and private health care stakeholders with federal, state and non-profit programs to improve access to, quality of and cost of care through HIE. With 40 percent of its population and 75 percent of its counties covered by HIO efforts, the state is well on the way to providing statewide support for electronic exchange of patient information. Provider organizations now have the capabilities and safeguards in place to share and exchange electronic patient data. Collaborative community HIO efforts are beginning to address the challenges of California's economic and geographic diversity. While the complexities posed by California's underserved population and its geographic diversity will continue to present challenges for health care delivery, emerging HIOs are closing the gap in access to information and care.

During 2014, many federally funded programs will come to a close prompting state agencies and organizations to address sustainability. Nonprofit organizations, including the National Association for Trusted Exchange (NATE) and California Association Health Information Exchanges (CAHIE), have already taken on the development of trust policies and security frameworks, building on the momentum created by HITECH funding. In addition, state agencies and offices continue to seek federal sources of funding for innovative health IT applications that include HIE as a core component.

California's HIE efforts have demonstrated that the state's organizations of all types—from the smallest clinic to the largest health plan—can learn from one another's experiences. California needs continuing leadership from public and private payers, providers, HIOs and funders to build on its HIE foundation and continue the momentum established through HITECH's support. California cannot achieve the improved quality, decreased costs and healthier population promised by health care reform without a solid HIE foundation.



# Appendices

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## Appendix 1

### GLOSSARY

#### Accountable Care Organization (ACO)

An Accountable Care Organization (ACO) is an organization of physicians and other health care providers held accountable for the overall quality and cost of care delivered to fee-for-service Medicare beneficiaries who are assigned by CMS to an ACO. The theory behind the ACO concept is that effective delivery of care, coordination of care and cost savings are difficult to achieve without integration among the providers that deliver patient care. ACOs are incented, in the form of “shared savings,” to manage care in a manner that results in cost savings. The ACO also holds providers accountable for clinical outcomes through reporting and other performance measures. The goal of the ACO is to ensure that patients, especially the chronically ill, get the right care at the right time, while avoiding unnecessary duplication of services and preventing medical errors.

#### Ambulatory Care

Ambulatory care is a type of medical care that is provided to patients who do not need to be admitted to a hospital for treatment. Ambulatory care provides health services on an outpatient basis to those who visit a hospital or another health care facility and depart after treatment on the same day. Many hospitals provide ambulatory care in their emergency rooms for patients who can be treated without being admitted, such as a child with a simple broken arm. Urgent care clinics, optometrist’s offices and doctor’s offices also provide this type of care.

## Continuity of Care Document (CCD)

The Continuity of Care Document (CCD) supports interoperability of clinical data by allowing physicians to send electronic medical information to other providers without loss of meaning. CCD is an implementation guide for sharing Continuity of Care Record (CCR) patient summary data using the HL7 Clinical Document Architecture (CDA). CCD establishes a rich set of templates representing the typical sections of a summary record, and expresses these templates as constraints on CDA. These same templates for vital signs, family history, plan of care, etc. can then be reused in other CDA document types, establishing interoperability across a wide range of clinical use cases.

## Data Use and Reciprocal Support Agreement (DURSA)

The Data Use and Reciprocal Support Agreement (DURSA) is a legal agreement created to promote and establish trust among multiple participants, eliminating the need for point-to-point agreements. It is entered into voluntarily by all entities, organizations and Federal agencies that desire to engage in electronic health information exchange with each other using an agreed upon set of national standards, services and policies developed in coordination with ONC and HHS. The DURSA builds upon the various legal requirements that participants are already subject to, describes the mutual responsibilities, obligations and expectations of all participants to create a framework for safe and secure health information exchange, promote trust among participants and protect the privacy, confidentiality and security of the health data that is shared.

## Direct

The Direct Project is a simple, secure, scalable, standards-based method for sending authenticated, encrypted health information directly to known, trusted recipients over the Internet. Participants include EHR and PHR vendors, medical organizations, systems integrators, integrated delivery networks, federal organizations, state and regional health information organizations, organizations that provide health information exchange capabilities and health information technology consultants. Direct transport standards may satisfy some stage 1 meaningful use requirements. For example, a primary care physician who is referring a patient to a specialist can use the Direct Project to provide a clinical summary of that patient to the specialist and to receive a summary of the consultation.

## Electronic Health Records and Electronic Medical Records (EHR and EMR)

An electronic medical record (EMR) is a digital version of a paper chart that contains all of a patient's medical history from one practice. An EMR is mostly used by providers for

diagnosis and treatment. An EMR contains the standard medical and clinical data gathered in one provider's office. Electronic health records (EHRs) go beyond the data collected in the provider's office and include a more comprehensive patient history. For example, EHRs are designed to contain and share information from all providers involved in a patient's care. EHR data can be created, managed, and consulted by authorized providers and staff from across more than one health care organization.

### E-Prescribing

E-Prescribing is a prescriber's ability to electronically send an accurate, error-free and understandable prescription directly to a pharmacy from the point-of-care—an important element in improving the quality of patient care. Recently, the role of e-prescribing in reducing medication errors has received widespread publicity, helping to build awareness of e-prescribing's role in enhancing patient safety. Adopting the standards to facilitate e-prescribing is one of the key action items in the meaningful use, expediting the adoption of EHRs and furthering HIE.

### eHealth Exchange

The eHealth Exchange program (formerly NwHIN) is a group of federal agencies and non-government organizations that came together to improve patient care, streamline benefit claims, and improve public health reporting through secure, trusted, and interoperable health information exchange. Participating organizations agree to common set of standards and specifications that enable the establishment of a secure, trusted, and interoperable connection among all participating Exchange organizations for the standardized flow of information.

### Federally Qualified Health Center (FQHC)

Federally Qualified Health Centers (FQHCs) are urban and rural health clinics that receive grants under Section 330 of the Public Health Service Act (PHS). FQHCs qualify for enhanced reimbursement from Medicare and Medicaid, as well as other benefits. FQHCs must serve an underserved area or population, offer a sliding fee scale, provide comprehensive services, have an ongoing quality assurance program, and have a governing board of directors. Certain tribal organizations and FQHC Look-Alikes (organizations that meet PHS Section 330 eligibility requirements, but do not receive grant funding) also may receive special Medicare and Medicaid reimbursement. FQHC status is restricted to nonprofit corporations and public agencies.



## Health Information Exchange (HIE)

Electronic health information exchange (HIE) allows doctors, nurses, pharmacists, other health care providers and patients to appropriately access and securely share a patient's vital medical information electronically—improving the speed, quality, safety and cost of patient care. The term HIE encompasses two related concepts:

- Verb: The electronic sharing of health-related information among organizations
- Noun: An organization that provides services to enable the electronic sharing of health-related information

## Health Information Homes

Disease trend reporting can lag behind actual incidences by as much as 24 and 36 months. It takes that much time to extract data by hand from paper charts and report the data to the appropriate public health organization. To solve this problem, state organizations are developing a new kind of health care information registry called a Health Information Home (HIH). HIHs will actually reach out to patient EHRs through HIE connections and extract disease data in real time. That information will then be aggregated in a single location providing a complete history of diagnosis, plan and treatment for such health issues and cancer or heart disease.

## Health Information Organization (HIO)

A health information organization (HIO) is an organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards. Because HIOs may take any number of forms and support any number of functions, for clarity and simplicity, the HIO facilitates the exchange of electronic PHI primarily for treatment purposes between and among several health care providers (e.g., hospitals, doctors, and pharmacies), many of which are HIPAA covered entities.

## HL7

Health “Level Seven” (HL7) is part of the International Organization for Standardization (ISO) seven-layer communications model for Open Systems Interconnection (OSI). HL7 interfaces directly to an application and performs common application services for its processes. Although other protocols have largely superseded it, the OSI model remains valuable as a place to begin the study of network architecture.

## Health Information Registry

A health information registry is a collection of a clearly defined set of health and demographic data for patients with specific health characteristics, held in a central database for a predefined purpose. A registry is a single, centralized location for aggregating health information such as cancer diagnosis and immunization records. The California Cancer Care registry, for example, has been collecting information on cancer diagnosis for over 20 years. This information offers a powerful tool for epidemiological research and public health. HIE provides the important connectivity that enables efficient collection of and access to registry data. Another California registry project, the California Immunization Registry (CAIR), has implemented a gateway and messaging system to allow the state's regional registries to share data and to create a single statewide aggregation of immunization data.

## Health Insurance Portability and Accountability Act (HIPAA) Covered Entity

The Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule standards address the use and disclosure of individuals' health information—called “protected health information” by organizations subject to the Privacy Rule — called “covered entities,” as well as standards for individuals' privacy rights to understand and control how their health information is used. HIPAA covered entities must comply with requirements to protect the privacy and security of health information and must provide individuals with certain rights with respect to their health information. If a covered entity engages a business associate to help it carry out its health care activities and functions, the covered entity must have a written business associate contract or other arrangement with the business associate and requires compliance with HIPAA requirements.

## Health Information Service Provider (HISP)

A health information service provider (HISP) is an organization that provides services on the Internet to facilitate use of HIE technology such as Direct. A HISP encompasses services that are required for information exchange, such as the management of trust between senders and receivers. It may be a separate business or technical entity from the sender or receiver. A user typically agrees to allow the HISP to maintain a digital certificate on his/her/its behalf. Using this digital certificate, the HISP can securely send or receive information (e.g. Direct messages) for the entity. The user initiates outgoing messages, and accesses incoming messages, through facilities provided by the HISP (often through a secure e-mail portal or client).

### Integrated Delivery Network (IDN)

An Integrated Delivery Network (IDN) is a network of facilities and providers that offer a continuum of care to a specific geographic area or market. IDNs address common concerns such as capitation, excess capacity, decreased margins and complaints from patients regarding access. IDNs include many types of associations including hospitals, health care management programs, physician hospital organizations, home health agencies and hospice services. Multi-hospital systems and mergers may be considered limited IDNs, since different entities are joining together to provide care.

### Independent Practice Association (IPA)

An Independent Practice Association (IPA) is a physician alliance in which the physicians own the practice, as opposed to physicians employed by an entity such as a health maintenance organization. Physicians in the IPA are legally organized as a corporation, partnership, professional corporation, or foundation to contract as a group to provide services. Economic risk is shared, but overhead is not. The IPA may contract with a health maintenance organization (HMO) to service enrollees but will usually still see non-HMO clients.

### Logical Observation Identifiers Names and Codes (LOINC)

The Logical Observation Identifiers Names and Codes (LOINC), a standard for identifying medical laboratory observations, was created in 1994 by the Regenstrief Institute Inc., affiliated with Indiana University, in response to demand for the electronic movement of clinical data. LOINC applies names and identifiers to more than 58,000 medical terms that can be kept in an EHR. LOINC is one of several standards used by the United States government to exchange clinical health information, and it has been identified as the preferred standard of HL7.

### Managed Service Organization (MSO)

A Managed Service Organization (MSO) is an entity that under contract provides services such as a facility, equipment, staffing, contract negotiation, administration, and marketing. Services may be provided to solo practitioners or groups. Approaches to establishment of the MSO include the hospital-related MSO; the provider-of-care, hospital-related, tax-exempt clinic MSO; and the nonprofit, hospital-sponsored equity MSO.

## Master Patient Index (MPI)

A Master Patient Index (MPI) is an electronic medical database that holds information on every patient registered at a health care organization. The MPI stores information like patient name, date of birth, gender, race, social security number and place of residence alongside the patient’s medical history. MPIs ensure that every patient is represented only once, and with constant demographic identification, within all systems of hospital data. An enterprise master patient index (EMPI) is a large index that links several smaller MPIs together, from outpatient clinics to rehabilitation facilities to medical centers.

## Meaningful Use

The CMS Medicare and Medicaid EHR Incentive Programs provide incentive payments to eligible professionals, eligible hospitals and critical access hospitals (CAHs) as they adopt, implement, upgrade or demonstrate meaningful use of certified EHR technology. To participate in the Medicaid EHR incentive program, EPs are required to demonstrate a patient volume of at least 30% Medicaid patients. Eligible professionals (EPs) and hospitals need to successfully attest to demonstrating meaningful use of EHRs to qualify for incentive payments. Meaningful use criteria, objectives and measures evolve in three stages:

STAGE 1: 2011-2012 DATA CAPTURE AND SHARING	STAGE 2: 2014 ADVANCE CLINICAL PROCESSES	STAGE 3: IMPROVED OUTCOMES
Electronically capturing health information in a standardized format	More rigorous health information exchange (HIE)	Improving quality, safety, and efficiency, leading to improved health outcomes
Using that information to track key clinical conditions	Increased requirements for e-prescribing and incorporating lab results	Decision support for national high-priority conditions
Communicating that information for care coordination processes	Electronic transmission of patient care summaries across multiple settings	Patient access to self-management tools
Initiating the reporting of clinical quality measures and public health information	More patient-controlled data	Access to comprehensive patient data through patient-centered HIE
Using information to engage patients and their families in their care		Improving population health

## Patient Protection and Affordable Care Act (ACA)

The Affordable Care Act (ACA) gives Americans the ability to make informed choices about their health, including the following components of the Patient's Bill of Rights:

- Coverage—ends pre-existing condition exclusions for children, keeps adults under 26 covered, ends arbitrary withdrawals of insurance coverage, and guarantees the right to appeal
- Costs—ends lifetime limits on coverage, reviews premium increases, helps maximize premium dollars
- Care—covers preventive care at no cost, protects choice of doctors and removes insurance company barriers to emergency services

## Personal Health Record (PHR)

A Personal Health Record (PHR) is an electronic application patients use to maintain and manage their health information in a private, secure, and confidential environment. PHRs can include information from a variety of sources, including health care providers and patients themselves and help patients securely and confidentially store and monitor health information, such as diet plans or data from home monitoring systems, as well as patient contact information, diagnosis lists, medication lists, allergy lists, immunization histories, and much more. PHRs are separate from, and do not replace, the legal record of any health care provider. They are distinct from portals that simply allow patients to view provider information or communicate with providers.

## Regional Extension Center (REC)

Regional Extension Centers (RECs), located in every region of the country, serve as a support and resource center to assist providers in EHR implementation and Health IT needs. RECs bridge the technology gap by helping providers navigate the EHR adoption process from vendor selection and workflow analysis to implementation and meaningful use. Through ARRA, ONC established 62 RECs that assist primary care providers in the adoption and meaningful use of electronic health records. The REC program was designed to leverage local expertise to provide practical, customized support to meet the needs of local health care providers. RECs are part of working groups on emerging business lines in support of practice transformation including: privacy and security, accountable care organizations, patient centered medical home, health information exchange, and patient engagement.

## Rural Health Clinic (RHC)

A Rural Health Clinic (RHC) must be located in a Medically Underserved Area (MUA) or Health Professional Shortage Area (HPSA) and defined by the U.S. Department of Commerce, Census Bureau as non-urbanized (fewer than 50,000 people.) Its corporate structure can be unincorporated, public, nonprofit or for profit. An RHC is required to employ a mid-level provider (MLP) at least 50 percent of the time the practice is open to see patients. The importance of whether a clinic is designated urban or rural is due to the difference in payment caps that exist for rural versus urban FQHCs.

## Safety Net Providers

Health care Safety Net Providers are institutions that are critical in providing care and services to vulnerable populations in low-income, medically underserved, immigrant and communities of color. These facilities are most often located in these communities, or nearby, and are serving the community. Most have limited health care resources available forcing residents to go without care or having to travel outside of their own community for services. Safety net providers are distinguished by their commitment to provide access to care for people with limited or no access to health care due to their financial circumstances, insurance status, or health condition.

## SNOMED

SNOMED CT (Systematized Nomenclature of Medicine -- Clinical Terms) is a standardized, multilingual vocabulary of clinical terminology that is used by physicians and other health care providers for HIE. SNOMED CT contains more than 300,000 medical concepts, divided into hierarchies from body structure, clinical findings, geographic location to pharmaceutical/biological product. Each concept is represented by an individual number and several concepts can be used simultaneously to describe a complex condition. By using numbers to represent medical concepts, SNOMED CT provides a standard by which medical conditions and symptoms can be referred, eliminating the confusion that may result from the use of regional or colloquial terms. The numerical reference system also facilitates the exchange of clinical information among disparate health care providers and EHRs.

## Telehealth

Telehealth uses telecommunications technology to provide health care to patients who are not in the same physical location as the provider. Telehealth includes activities, also called telemedicine, such as patient consultations using video conferencing, remote or

home monitoring of vital signs, and store and forward transmission of still images or data. In addition to clinical applications, telehealth also includes remote non-clinical services, such as provider training, administrative meetings, and continuing medical education, in addition to clinical services. Telemedicine, and telehealth in general, offers an important tool to rural primary care physicians who can offer patients access to specialty medicine, for example, without having to travel long distances. As a category, telehealth is expanding with a variety of new applications that use wireless technologies, email and smart phones, to name a few examples.

### Triple Aim

The Triple Aim is a framework developed by the Institute for Healthcare Improvement (IHI) that describes an approach to optimizing health system performance. The Triple Aim recommends that new designs must be developed to simultaneously accomplish three critical objectives, improve the health of the population; enhance the patient experience of care (including quality, access, and reliability); and reduce, or at least control, the per capita cost of care.

## HIE Resources

Web sites with current information on health IT, HIE and HIE-related projects.

Agency for Healthcare Research and Quality (AHRQ)  
[www.healthit.ahrq.gov](http://www.healthit.ahrq.gov)

Blue Button +  
[www.bluebuttonplus.org](http://www.bluebuttonplus.org)

California Association of Health Information Exchanges (CAHIE)  
[www.ohii.ca.gov/calohi/PrivacySecurity/CAHIE.aspx](http://www.ohii.ca.gov/calohi/PrivacySecurity/CAHIE.aspx)

California HealthCare Foundation (CHCF)  
[www.chcf.org/topics/health-it](http://www.chcf.org/topics/health-it)

California Health and Human Services Agency (CHHS)  
<http://www.chhs.ca.gov/pages/pritab.aspx>

California Health equality (CHeQ)  
<http://cheqpoint.org/>  
<http://www.ucdmc.ucdavis.edu/iphi/Programs/cheq/cheqawards.html>

California Healthline  
[www.californiahealthline.org](http://www.californiahealthline.org)

California Office of Health Information Integrity (CalOHII)  
[www.ohii.ca.gov/calohi/eHealth/MakingHIEHappen.aspx](http://www.ohii.ca.gov/calohi/eHealth/MakingHIEHappen.aspx)

Centers for Medicare and Medicaid Services (CMS)  
[www.innovation.cms.gov](http://www.innovation.cms.gov)

California Department of Health Care Services (DHCS)  
<http://www.dhcs.ca.gov/provgovpart/Documents/OHIT/Provider%20FAQs.pdf>



US Department of Health and Human Services (HHS)  
[www.hhs.gov/recovery](http://www.hhs.gov/recovery)

Health Resources and Services Administration (HRSA)  
[www.hrsa.gov/index.html](http://www.hrsa.gov/index.html)

HIE Watch  
[www.hiewatch.com](http://www.hiewatch.com)

Institute for Healthcare Improvement (IHI)  
[www.ihl.org/offerings/initiatives/tripleaim/pages/default.aspx](http://www.ihl.org/offerings/initiatives/tripleaim/pages/default.aspx)

Institute for Population Health Improvement (IPHI)  
<http://www.ucdmc.ucdavis.edu/iphi/Programs/cheq/index.html>

Integrated Healthcare Association (IHA)  
[www.ihl.org/performance\\_measurement.html](http://www.ihl.org/performance_measurement.html)

Let's Get Healthy California  
<http://www.chhs.ca.gov/pages/LGHCTF.aspx>

National Association for Trusted Exchange (NATE)  
[www.nate-trust.org](http://www.nate-trust.org)

Office of the National Coordinator for Health Information Technology (ONC)  
[www.healthit.gov/HIE](http://www.healthit.gov/HIE)

Office of Statewide Health and Planning Data (OSHPD)  
[www.oshpd.ca.gov](http://www.oshpd.ca.gov)

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