Merced Community Health Information Exchange Plan

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Merced Community HIE Plan

Executive Summary

In 2015, the Merced County Department of Public Health received funding from the Centers for Disease Control and Prevention (CDC) under the Partnership to Improve Community Health (PICH) grant program to facilitate the planning of Health Information Exchange (HIE) activities in the Merced County geography. The goal of this process was to develop an HIE plan that would reduce the cost and improve the quality of care to patients across the care continuum. PICH grant funds were leveraged to bring together a group of stakeholder organizations -- including behavioral health, public health, primary care, hospitals, and the local Medicaid managed care plan -- from Merced County (some of which also provide health care in neighboring counties) to discuss the concept of HIE in their region. The focus of these discussions was set around determining how HIE could help bridge existing care gaps, what types of HIE services would be most useful for the county, and the best approach to implementing HIE services in the county from a technology and technology services perspective.

Merced County is a part of a large "White Space" of HIE activity in California, with no current community-wide efforts enabling, governing, or administering health data exchange activities between unaffiliated healthcare organizations. Meanwhile, provider organizations nationally, statewide, and in this community are increasingly being required to exchange data in order to support improved patient care and the Triple Aim. Both to the north and the south of Merced county, local community HIE efforts are present but relatively new to their respective communities, and California currently offers no overarching Statewide process, infrastructure, or support for implementing HIE services in HIE white spaces.

This document details the plan for HIE development in Merced County developed through consensus by County stakeholders under the PICH grant. Due to the presence of local regional HIEs both to the north and south of Merced County, the plan is centered around evaluating and joining the regional HIE which best presents the capability to remain sustainable as an organization, affordable to Merced County stakeholders, and that best matches the use-cases for HIE that are most relevant to health care provider organizations in Merced. This document includes information on HIE activity and standards derived as a part of an initial discovery phase, and also contains information on the specific HIE needs articulated by Merced County stakeholders. Next steps for the County and the HIE stakeholder group will include conducting due diligence on the two nearby HIE efforts, including understanding which HIE will be best suited to meet the specific interests of the Merced County stakeholders, determining a go-forward strategy for including additional stakeholders in the planning process, and determining a contracting process for bringing one of the two local HIEs into Merced County.

Merced HIE Planning Process

Beginning in April 2015, the Merced County Department of Public Health has facilitated HIE Round Table (also called "HIE Stakeholder Group") meetings to discuss the prospect for HIE in Merced County. This group's membership has grown over time, and the group has continued to meet quarterly. In order to facilitate more rapid investigation into detailed HIE concepts, and to determine if the best overall strategy would be to join an existing HIE rather than create a new HIE in Merced County, the Stakeholder Group created a smaller "HIE Steering Committee" in September 2015. This smaller group held monthly meetings between September and December of 2015. The Steering Committee also evaluated details around recommended technical architecture and use-cases that would be required to meet the HIE goals outlined by the Stakeholder Group. The table below outlines the specific healthcare organizations that participated in each of the two groups:

Organization	Round-Table Group	Steering Committee
Castle Family Health Centers	**X**	**X**
Central Valley Alliance for Health	**X**	**X**
Golden Valley Health Centers	**X**	**X**
Livingston Community Health	**X**	**X**
Memorial Hospital Los Banos	**X**	
Merced County EMS	**X**	**X**
Merced County Jail	**X**	
Merced County Mental Health	**X**	**X**
Merced County Public Health / Epi	**X**	**X**
Merced Faculty Group	**X**	
Mercy Medical Center Merced	**X**	**X**

In December 2015 the Round-Table Group / Stakeholder Group approved the core recommendation of the Steering Committee to seek to join an existing HIE rather than build a new HIE in Merced County. This HIE plan details the information derived from the discovery process that led to this decision.

HIE Background

In order to create more connected relationships between patients and providers and bridge existing gaps, the federal government, through organizations such as the Centers for Medicare and Medicaid Services (CMS) and the Office of the National Coordinator for Health IT (ONC), is promoting more integrated care through establishment of accountable care organizations (ACOs), Meaningful Use requirements, the Merit Based Incentive Payment System (MIPS), bundled payment options, and patient centered medical homes (PCMHs). In an effort to provide improved care integration, healthcare practitioners are more motivated than ever to use solutions such as Health Information Exchange to give patients and providers the opportunity to share data and monitor health more effectively on common patients and to eliminate data silos that exist between disparate Electronic Health Record (EHR) systems.

Health Information Exchange (HIE) refers to the electronic exchange of protected health information among multiple stakeholders including healthcare providers, payers, public health organizations, state and local health information organizations, federal government agencies, and patients. The U.S. Government has allocated $548 million toward various HIE efforts at the state and local level. HIE is a leading component of the Federal Government's drive to increase the use of Health Information Technology (HIT) through the HITECH Act and meaningful use Program.

IT system interfacing, identity management, data transport, security, and data conversion are all common HIE functions required to transcend the barriers to interoperability that currently exist between EHR systems. Since most health care entities have a multitude of medical trading partners, Health Information Organizations (HIOs) have been formed since the mid-1990s to manage HIE services for a variety of medical communities with the goal of reducing overall technical complexities and costs. HIOs perform a broad range of activities depending on the needs of their members. Common HIO service lines include consolidating patient health data into a longitudinal, community health record for each patient accessible via an online portal; moving data point-to-point in a standardized fashion; providing a results delivery platform for data elements such as ER discharge summaries or lab results; providing a platform for streamlining referrals; hosting patient engagement tools such as patient health record (PHR) platforms; and/or providing a repository of clinical documents on a given patient (rather than consolidating the data). In some cases, HIOs may offer specialty services such as streamlined quality reporting systems (HEDIS, PQRS, etc.) that move data directly to payers, or population health data management tools for public health or ACO monitoring purposes.

HIE Landscape

HIE Nationwide

HIOs have had a difficult history in the United States since their inception in the 1990s due to a number of factors, one of which has been the low adoption rate of EHR systems. This factor has significantly changed since 2009 as a result of the ONC's meaningful use program, which saw

over 70% of providers in the U.S. adopt EHR systems by 2012 from less than 40% in 2008. Another key factor limiting the development of HIOs, but paradoxically necessitating their existence, has been a continued, largely unmitigated tendency for EHR vendors to develop their products as virtual health data silos.

As of 2016, there remains no national governance entity for HIE, and the era of large-scale funding for HIEs at the federal level through the HITECH and ARRA Acts is generally over. Today, the federal government is instead encouraging states to adopt their own HIE strategy through statewide collaboration or partnership at the local level. There continues to be an increasing focus on including Behavioral Health, Emergency Medical Services (EMS), and local public health entities as stakeholders in HIE; federal grants are now occasionally available to fund such efforts. In fact, many subunits of Health and Human Services (HHS) hold a stake in HIE governance and regulation, while other entities such as the Department of Transportation and DHS have taken steps to become more involved in HIE. HealtheWay, recently rebranded as The Sequoia Project, is a public/private partnership that governs the eHealth Exchange, a technology that can be used by both public and private HIOs to query and retrieve clinical information from other HIOs, although the relatively high cost and barrier to entry of this exchange makes it less accessible to smaller organizations as a solution for HIE.

State and local level HIE adoption and interaction continues to be impacted by CMS's EHR Incentive Program (also known as meaningful use) requirements, including requirements to exchange discharge summaries and to utilize direct messaging for care transitions. The three stages of meaningful use are designed to guide eligible professionals and hospitals with implementing and using EHRs to help improve the quality and safety of the U.S. healthcare system. Essentially, to receive incentive payment from the CMS under this program, providers must show they are using certified EHR technology that can be measured in quality and in quantity by meeting the criteria for each stage. Stage 1 focuses on patient data capturing and sharing, Stage 2 focuses on advanced clinical processes, and Stage 3 focuses on improved patient outcomes.

Despite the push by the Office for the National Coordinator for Health IT (ONC) and CMS for each State to independently support HIE implementation within their borders, HIE adoption has been uneven State-by-State. Certain states like Colorado, Arizona, and Rhode Island have singular statewide HIE's that are steadily expanding, whereas others such as New York, Michigan, and Texas have multiple government-supported regional HIE's that are charged with delivering certain basic services. California, among others like Oregon and Nevada, have uneven HIE deployments with a comparatively low degree of state-level control or involvement.
Local Public Health entities are increasingly participating in HIE, especially in states where no single HIE entity exists, or where regional entities do not have significant government support at the state-level. The capability to conduct population health data analytics and population health management is a powerful public health tool. In fact, local public health departments are often seen as a "neutral" convener, especially of safety-net organizations. Similarly, medicaid managed care plans are increasingly becoming involved as stakeholders of HIE, especially where plans are localized to specific counties, such as in California, or in smaller states such as Rhode

Island and Kansas. Analytics tools can be leveraged to more efficiently manage quality improvement (QI) programs, and overall cost-reductions from activities supported by HIE are most commonly at the plan, rather than the individual provider organization level.

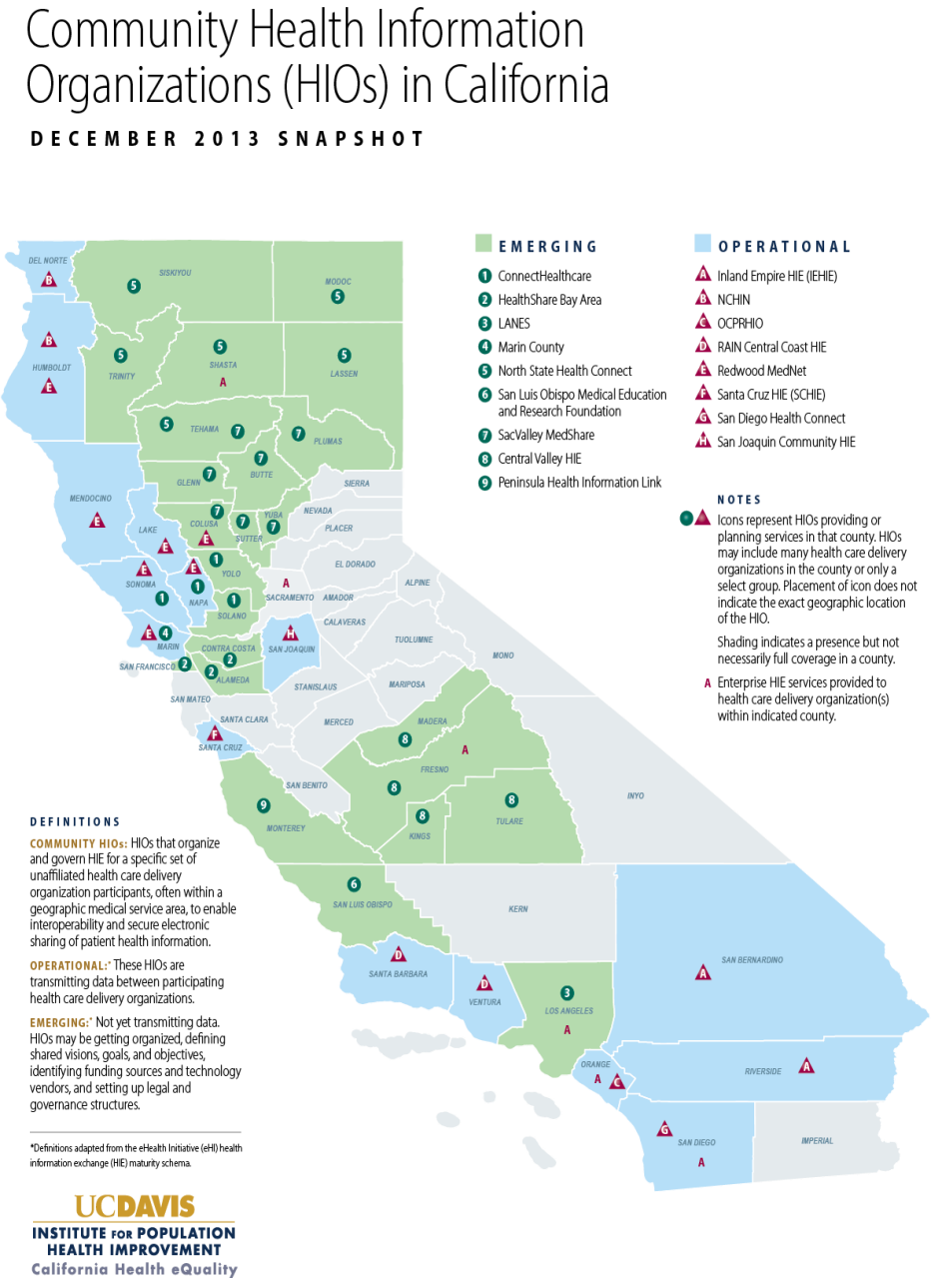
California HIE Landscape

Regional HIE efforts have existed in California since as early as 1996, when a group of provider organizations in Santa Cruz County set up the privately owned and operated Santa Cruz HIE, which continues to operate in 2016. Regional HIE efforts continued to develop in the pre-HITECH era (prior to 2008) but generally were constrained to small geographies or specific counties. In 2008, California received funds under both the HITECH Act as well as the American Recovery and Reinvestment Act (ARRA) to fund HIE development. Given the existence of a number of small regional HIE efforts at that time, the State opted to set up a statewide governing entity called Cal eConnect to administer grant funding, coordinate and expand regional HIE efforts, and determine if new local efforts could/should be set-up in HIE "White-Spaces." Similar regional approaches to statewide HIE were taken in other large states, such as Texas and New York. In 2012, Cal eConnect was rolled into a joint HIE administration program through UC Davis called California Health eQuality (CHeQ), which has since been disbanded following the end of the ARRA-funded grant period in 2013.

The result of this regional approach in California has been that while many regional HIE efforts now exist in the State, including multiple "Enterprise" HIOs operated by large hospital systems to provide HIE services to their integrated care delivery networks. There continue to be significant White-Spaces where regional HIEs could not create scalable and/or viably sustainable models, or where no local support for HIE had coalesced by the end of the grant funding period (roughly 2013) -- much of the southern Central Valley, the San Francisco Bay Area, and Sacramento Metropolitan Area fall into this category. The remaining 13 regional HIE efforts in California are by-and-large financially sustainable, but often have limited capability to expand their service areas due to lack of available capital funding combined with difficulty in convening entirely new geographic referral networks to simultaneously join their HIE. Providing value to healthcare organizations outside of an HIE's core geography without also already having on-boarded that organization's primary health data trading partners is generally very difficult.

The California Association of HIEs (CAHIE) is the current statewide governance entity. A voluntary, trade-based 501c3 organization, CAHIE exercises no legal authority, but is seen as an authority on issues related to HIE in the State, and serves as a forum for HIEs and their stakeholders to coordinate. Currently, all operating Community HIEs and most Enterprise HIEs in California are members. CAHIE promotes the use of the eHealth Exchange and Direct messaging between provider organizations as modes of HIE where community or enterprise HIE resources do not currently exist. The State is not currently funding any new or sustaining HIE efforts directly.

The map below displays the state of HIE in California in December 2013, the most recent date for which a comprehensive survey was conducted. Major differences in the current-state include the disillusion of Health Share Bay Area (Emerging HIE #2), the promotion to "Operational" status of SacValley MedShare, Connect Healthcare, and the Central Valley HIE, as well as the emergence of Cal Index as an emerging Enterprise HIE effort funded statewide by Anthem and Blue Cross as a health plan-based HIE. The number of enterprise HIE efforts in specific counties has increased substantially since 2013, and includes a presence in much of the state. Example Enterprise HIEs not displayed in this map include the Dignity Health HIE and the Sutter Health HIE. This map was developed by the University of California Davis Institute for Population Health Improvement, the organization primarily responsible for the last stage of the ARRA HIE grant funded initiative in California.



Merced HIE Landscape

Merced County is an HIE white space with the exception of data sharing within the Dignity Health enterprise HIE system and between Dignity's HIE and a small but growing number of community providers. However, even this nascent HIE functionality is limited to uni-directional point-to-point interfaces between the Dignity HIE and community providers focused on narrow use-cases, such as laboratory result delivery. This model, while enabling some measure of data exchange in the community is not a scalable model for HIE, especially since the other hospital in the county is not part of the Dignity enterprise HIE system, and the large number of tertiary healthcare organizations that operate in the county such as independent laboratory and radiology groups are not included. The EHR systems of ambulatory provider organizations receiving this data are also limited in their capacity to include the data received in a structured manner, causing many to result in unstructured data exchange workflows.

This HIE white space extends to all of the neighboring counties except for Madera County to the South. However, two regional community HIOs are in various states of deployment to the North and South, respectively. The San Joaquin Community HIE (SJCHIE) in San Joaquin County and now expanding to Stanislaus County, and the Central Valley HIE (CVHIE) in Fresno, Madera, Tulare and Kings counties.

The six-member SJCHIE was formed in 2011 through the use of HIE start-up funding provided by the Blue Shield of California Foundation. Key founding stakeholders included the Health Plan of San Joaquin (HPSJ), the County of San Joaquin (including HHS and Behavioral Health Services), San Joaquin General Hospital, and Community Medical Centers. SJCHIE's core use-cases for HIE include:

- Facilitating care coordination between hospitals and primary care;
- Integration between physical and behavioral health;
- Coordinating care management with HPSJ;
- Supporting new models of care such as PCMH;
- Assisting participants in achieving meaningful use;
- Facilitating value-based data sharing for efficiency and cost reduction in care delivery;
- And assisting in public health / population health improvement.

SJCHIE currently maintains a 501c3 IRS designation – a common marker of a mature not-for-profit community HIO -- and utilizes a governance and policy framework that was created through its initial stakeholder-driven investigative processes, including a seven member governing board of directors (only five members are currently seated). SJCHIE is currently evaluating movement towards the California Office of Health Information Integrity (CalOHII) endorsed Model Modular (HIE) Participation Agreement (MMPA) once that document has gone through a revision process expected to be completed by CalOHII in the second half of 2016. Moving to the MMPA will move SJCHIE into a more standardized policy framework in regards to the agreement that data exchange partners sign in order to share data with the HIE and with

each other, whereas their current model is relatively customized. Part of the initial decision of SJCHIE to create their own policy framework was derived from their unique desire (in 2011) to facilitate behavioral health – primary care data sharing, which they were successfully able to accomplish in 2015, a first for the State of California. SJCHIE also recently conducted a revision of their privacy and security policies and board by-laws in an effort to consolidate and update their overall governance framework.

The much larger 14-member CVHIE was formed in 2013 through a merger of two nascent HIE efforts: the Tulare-Kings HIE which received funding from Cal-e-Connect as a start-up HIE in 2012, and a stakeholder group that had been meeting to discuss HIE in Fresno and Madera counties through a facilitation effort of the Hospital Council of Central California that had been ongoing since 2011. These two adjacent efforts hired a project director and currently operate under the Hospital Council as an incubating entity while the HIE applies for 501c3 status and forms a formal governing board (expected to occur sometime in 2016). The current governing body is a 14-member stakeholder group which is comprised of all of the current HIE stakeholder organizations in the four-County area. The CVHIE stakeholder group operates by consensus, but currently exercises no specific legal authority. CVHIE's policy framework for data sharing is derived from the Inland Empire HIE policies, of which they are a part (see below).

Both SJCHIE and CVHIE contract with Orion as their HIE vendor through Inland Empire Health Information Exchange (IEHIE) as franchises. IEHIE was formed in 2010 with an initial service area in San Bernardino and Riverside counties, with multiple large local hospital systems and the Inland Empire Health Plan (a managed care plan) as key initial stakeholders. Both SJCHIE and CVHIE send representatives to the larger IEHIE governing council, which in turn reports to the Inland Empire EHR Resource Center (IEEHRC) board, which has legal governing authority over the HIE. SJCHIE and CVHIE both initially utilized a common policy framework derived from IEHIE as well, although SJCHIE has begun the process of defining a unique policy framework, as discussed above. Since these two HIEs are both "franchises" of the larger IEHIE, they utilize a common data exchange framework from a technology perspective, including sharing a common clinical data repository. Access to this repository is limited by attribution of specific patients to individual health care facilities participating in either HIE, but if a patient-provider relationship is established with two providers that are each a member of either CVHIE or SJCHIE, those two organizations can currently share data on that common patient today. This common data framework is a significant advantage to joining one of these two existing HIEs, given the common referral networks across the Central Valley region.

Purpose & Goals

It is the goal of Merced County to join an efficient and cost-effective Health Information Exchange to improve access to patient data, enable meaningful use, and advance quality and efficiency of care for health care consumers in and around Merced County. By joining an existing HIE, healthcare organizations in Merced County can take advantage of the infrastructure, policies, and procedures already put in place by the HIE and participate in a

larger analytics base that may have value in future trends analysis and quality improvement research. Furthermore, joining an existing HIE as a service provider is less expensive than investing in an HIE product directly from a technology standpoint, since new services would not need to be built from the ground-up. Finally, joining one of existing regional HIE efforts in the Central Valley would facilitate a unique capability to enable a wider convergence of interoperability between EHR systems in the Central Valley region since both CVHIE and SJCHIE currently maintain the same clinical data repository.

Merced HIE Functionality Goals:

- Decrease emergency department recidivism;
- Increase medication compliance;
- Provide more integrated care coordination;
- Comprehensive data sharing between behavioral health and physical health care providers;
- Increase efficiency by reducing the need for chart review to support quality program compliance, and through collective electronic quality measure reporting;
- And to utilize analytics in support of improved public health initiatives and more integrated community care management.

Joining an Existing HIE

The organizations represented in the Merced County HIE stakeholder group will benefit from joining an existing regional HIE effort in four primary ways: overall cost reduction (both long and short term), a reduction in time until HIE functionality becomes available, capability to leverage an existing policy and governance framework, and capability to share information across the greater Central Valley region through the use of a common clinical data repository. By joining and existing effort, Merced stakeholders can begin using the existing HIE's capabilities almost immediately, creating a quicker path to achieving the group's goals than would be the case under a new HIE implementation, as well as a quicker path to realizing a system wide return-on-investment from HIE activity. Stakeholders will also gain more immediate access to a wider range of exchange partners throughout the greater Central Valley, particularly since both CVHIE and SJCHIE both leverage the IEHIE technical framework, meaning that among other elements of technical infrastructure they share a common clinical data repository and rules for controlling HIE stakeholder access to that repository.

Joining either of the existing regional HIEs may motivate SJCHIE and CVHIE to re-evaluate their current financial model to incorporate Merced County stakeholders, including potential fiscal benefits derived from increased economies of scale. Both local HIEs have already developed robust governance and policy frameworks to protect the privacy of the patient data and ensure that the HIE is secure -- the development of which can be difficult for communities to embark on without significant funding given costly legal review processes.

As a critical next-step, the Merced stakeholder group will need to determine the capacity of either of these HIEs to accommodate the array of organizations present in Merced County in a manner that will continue to confer the benefits observed above. Among the evaluation criteria should be capability to expand governance infrastructure to include more organizations, capability to expand technical infrastructure in a timely and effective manner, and capability to maintain organizational sustainability through such an expansion.

Governance

HIE governance refers to the creation and oversight of an accepted set of policies and standards that enable trusted electronic health data exchange among a set of otherwise unaffiliated participant organizations, who at times may be direct competitors. Merced County seeks to join an HIE that leverages an active and accountable elected Board of Directors and set of policies and procedures that were established to coordinate the administration of the HIE. SJCHIE has a partially elected board, while CVHIE is still in the beginning stages of establishing an elected board and each group meets monthly. Currently, SJCHIE has two "at-large" board seats open.

Proposed Merced Governance Structure

One of the primary advantages identified by the Merced HIE stakeholder group in joining an existing regional HIE as opposed to creating a new entity is the existing governance structure of those entities. This existing governance infrastructure includes:[1] [2]

- Established Board of Directors with non-profit compliant policies and procedures;
- HIE data sharing and consent policies derived from CalOHII-endorsed source material;
- 501(c)3 community benefit organization IRS-designation;
- Privacy and security policies/framework, including data classification and data breach policies;
- Health data sharing contract templates, including HIPPA-required Business Associate Agreement templates;
- Established avenues for stakeholder engagement with the Board and HIE leadership;
- And dedicated staff focused on project and technical management / coordination.

Establishing the above core governance elements as a new HIE entity could take 9-18 months of independent work, even considering State-provided the resources available to County stakeholders such as the MMPA, and would very likely incur significant additional cost in legal consultation fees alone. Therefore, joining an existing HIE effort presents benefits both to overall timeframe to begin exchanging data, and to start-up costs. The difficulty in joining an existing effort is that an existing HIE will need to expand its governance framework to accommodate a larger service area and the diverse group of community stakeholders in Merced County, including behavioral health, EMS, law-enforcement, County public health, and payor

organizations that are not currently participating in one or more of the two local HIE efforts in the Central Valley today.

County stakeholders anticipate that as health care organizations in Merced County join an existing regional effort, the above elements will be expanded to include those organizations and to take their levels of participation into appropriate context. This will likely include an expansion of or change to the Board structure of one of the other regional efforts, especially where Board seats may be assigned by geography or health care organization type. Investigation into the capability of existing HIE governance structures to accommodate Merced stakeholders will be a primary part of the due-diligence process in evaluating the best local effort for the community to associate with. Some modification to the policies of the HIE itself may be needed in order to accommodate the specific set of organizations in Merced County that seek to exchange data.

Data Privacy and Security

Consent to Share Health Information: In an effort to avert any potential concerns regarding personal privacy—and to avoid any possible conflict with legal privacy requirements mandated by HIPAA and the State of California, the joined HIE should adopt an opt-out state for all consumer participants. This means that each consumer will have to personally and intentionally change their sharing option in order for their health data to be removed from the health information exchange. The County stakeholders will verify that the regional HIE they recommend joining will adhere to this policy, or offer specific reasoning for choosing an alternate direction.

Patient-Provider Attribution: Regional HIEs may differ in their approach to provider-patient attribution to allow information to be viewed on a patient if that individual has not been identified as "associated" with the specific healthcare entity requesting their data. Restrictions in this area could range from no attribution restrictions to strict capability to view data only if a patient has been confirmed to have had a visit (via an ADT message or some other means) at a specific site where the individual querying for patient data is located (identified by IP Address, etc.) Some HIEs may or may not allow for "Break-The-Glass" capabilities in cases of emergency (or other specific situations) to bypass attribution restrictions, or even consent restrictions. The specific policies around this activity will need to be evaluated by the Merced stakeholder group to determine if they fit the specific contexts of its members, particularly for EMS, behavioral health, and law-enforcement organizations.

Behavioral Health Data: Due to behavioral health stakeholders representing a core constituency among the Merced County stakeholder group, as well as data sharing between behavioral health and primary care providers being a goal of the stakeholder group, consideration of behavioral health data restrictions in the policy framework of the HIE that is joined will be important. In addition to certain restrictions associated with data classified under CFR 42 Section 2, which can include certain behavioral health data associated with substance use and treatment, the California Health and Family Code outlines specific restrictions around

Behavioral Health Data that are unique to California. Detailed incorporation of these considerations in the privacy policy of the HIE joined will need to be vetted by stakeholder group.

Data Breach and Liability: The stakeholder group additionally identified the risks associated with data sharing, including liability of individual provider organizations in the case of a data breach at the HIE-level. Assignment of legal responsibility and a comprehensive understanding of the risks and protections involved in HIE participation from a legal standpoint will be important. These factors too will need to be evaluated as a part of the due diligence process of joining an existing HIE.

Data Security: As high-profile cases of health data breach continue to become more frequent, the issue of data security is a critical aspect of HIE services. Given that both CVHIE and SJCHIE share "franchised" technical architectures with IEHIE, the group should closely evaluate the security policies, safeguards and system security plans maintained by IEHIE. This should include an evaluation of the policy flowdowns to both CVHIE and SJCHIE to maintain endpoint and data access security measures, since those two organizations are responsible for their own user-base.

Finance

Both regional HIE efforts have adopted a subscription-fee model to support their HIE services, charging different combinations of sliding-scale and fixed-price annual fees to provider organizations. As identified through the initial discovery phase in the third quarter of 2015 by the HIE Steering Committee, neither regional HIE has determined fee-structures for all of the organization-types represented in the Merced HIE stakeholder group. Identification of all fee structures will be an important next step through the due diligence process involved in selecting an HIE partner. The table on the following page outlines the perceived gaps in the fee structures of SJCHIE and CVHIE that will need to be identified:

Provider Type	SJCHIE	CVHIE
Hospitals	YES - Fixed Fee + Variable	YES - Fixed Fee
Medical Providers	YES – Variable	YES – Variable
Independent Laboratory	NO	YES - Fixed Fee
Independent Radiology	NO	NO
County Public Health	YES - Fixed Fee + Variable	YES – Variable
Behavioral Health Providers	Not differentiated	Not differentiated
EMS	NO	NO
Law Enforcement	NO	NO
Health Plans	Under Development	NO

Based on the cost model developed in the "HIE Benefit Estimation Tool" developed as a part of the HIE Toolkit for Provider Decision Making[1], the total cost for HIE in Merced County could feasibly range from $250,000 to $500,000 annually for the collective group represented at the Round-Table meeting to obtain HIE services from one of the two existing regional HIEs, using the cost-sheets obtained in Q3 2015 (this cost estimate does not take into account the potential reduction of HIE participation fees that may be associated with expanded economies of scale as either of the two regional HIE efforts expands).[2]

Also leveraging the "Benefit Estimation Tool," savings from HIE activity could reach as much as $6 million system-wide in the County five years out from the implementation of HIE services, offsetting projected costs by as early as the second year of HIE participation, assuming that all of the organizations participating the HIE stakeholder group begin participating in the first year. Realistically, these savings may not fully-offset costs until the third year, taking staged HIE implementation into account.

Some members of the HIE stakeholder group have pointed-out that one of the challenges with HIE is that the savings are largely seen by the payers, not by individual provider organizations, or might be "clawed-back" since funding streams for partners like critical access hospitals and others is distributed on a cost-basis. The group identified that finding a funding stream that recognizes these funding challenges or that realigns incentives for HIE participation appropriately would be ideal (i.e. reinvesting saved dollars to fund the HIE). The group additionally identified a number of potential streams of funding for HIE activity, including:

[1] Kim et al., HIE Toolkit for Provider Decision Making, 2013 – Appendix F

[2] Costs to "Start-Up" a new HIE were approximated at $800,000 annually, also leveraging the "Benefit Estimation Tool."

- Health Home Funding via the California Endowment;
- Accountable Communities for Health ACO development funding;
- Provider Capacity Grant funding through the Central California Alliance for Health, a local managed care plan and member of the HIE Stakeholder Group;
- Individual organization participation fees;
- CalEMSA ePOLST and Disaster Response funding;
- And collective reinvestment of dollars received through MU and PCMH programs enabled by HIE services.

Evaluation of the sustainability of the regional HIE that the stakeholder group decides to join will be an important part of the evaluation process. This process will need to include evaluations of continued sustainability given the changes to income/cost associated with bringing Merced County stakeholder organizations into the HIE.

Technical Infrastructure

The Merced County HIE Steering Committee conducted a detailed analysis of common HIE models and functionality in the context of the overall goals articulated by the group in the 3rd and 4th quarters of 2015. Through this process, the group isolated nine primary elements of desired functionality, some of which are currently being offered by either CVHIE or SJCHIE. Neither of the two regional HIEs currently provide all of the desired functionality, but many of the elements are on their technology roadmaps for 2016/2017. The Committee also determined that either a hybrid or centralized HIE model would best accommodate the needs of the Stakeholder Group – both CVHIE and SJCHIE currently operate centralized HIE models.

HIE Use-Cases and Architecture

In order to support the HIE goals outlined in the *Purpose & Goals* section, above, the Merced stakeholder group identified the following eight core technical use-cases for HIE that would be most impactful for Merced County stakeholders:

Specific Identified HIE Use Case	Current-State	Who is Impacted?	What are the benefits?
Query Capability for Longitudinal Community Patient Records (Includes shared access to clinical notes and care plans)	No cross organizational sharing outside of Enterprise HIEs, no comprehensive community records	Everyone, particularly emergency providers	ED can quickly call up data on unknown patients, community med list could be available and managed, better coordination on care plans for patients

Specific Identified HIE Use Case	Current-State	Who is Impacted?	What are the benefits?
Behavioral Health / Primary Care Data Sharing	Ad Hoc, paper-based data sharing	Everyone	Better comprehensive patient care, particularly in jail entry/exit use-cases where patients may have complex relevant history
Epi / Public Health Analytics	No access to real-time, structured clinical data	Public health	Multiple benefits for community health and community QI projects
Care Alerts for PCPs on Their Patient Panel (i.e. specialist visits, hospitalizations, etc.)	Care alerts delivered from Dignity via a portal (not pushed into EHRs), other alerting is inconsistent	Primary care	Better care-coordination community-wide, better capacity for PCPs to operate as true medical homes, PCMH program benefits
Electronic Results Delivery of Lab and Radiology Report Data	Electronic delivery already available from Quest, others largely on paper	Ambulatory providers	Elimination of paper-based workflows, more comprehensive test data available in EHRs
Provider-to-Provider Secure Clinical Messaging	Paper-based care transitions	BH and ambulatory providers	Elimination of paper-based workflows
Community eCQM, QI Data, and Registry Reporting	Each organization responsible for their own reporting	Everyone	Greater efficiency, elimination of point-to-point data interfaces, capability to calculate community metrics more easily
Capability to Conduct Federated eHealth Exchange Queries (HIE-to-HIE query-based exchange)	No use of eHealth Exchange in Merced outside of Dignity's Enterprise HIE	Everyone	Allows collective onboarding to the eHealth Exchange (normally a very difficult and expensive process for individual organizations)
Capability for medical providers to conduct closed-loop referrals to non-medical, community-based organizations	No common platform for referral management, no capability to track referrals	Everyone, particularly ambulatory providers	Will allow for increased coordination between medical and non-medical / social services organizations, including capability to create metrics on these interactions

While the majority of the use-cases identified could be supported by multiple HIE architecture models, the Epidemiological / Public Health Analytics and the Community eCQM, QI Data, and Registry Reporting use-cases would be difficult to achieve in a federated HIE architecture. This would necessitate the use of either a hybrid or centralized system, meaning that a central data repository or a set of closely linked enterprise data repositories containing normalized data elements would be needed. These models of HIE are both more costly to set-up and maintain than a federated model would be, accounting for a significant proportion of the cost articulated in the finance section around setting up a new HIE in Merced County.

SJCHIE and CVHIE do not offer all of the services articulated in the table above. However, the majority of these items are on the CVHIE and SJCHIE roadmaps to be implemented in either 2016 or 2017. Both HIEs are partially constrained in advancing new service-lines by their reliance on the IEHIE as their common HIE vendor. The table below details a crosswalk of the use-cases identified by the Merced Stakeholder Group and those available through the two regional HIEs as of December, 2015:

HIE Use Case Identified by Merced	Central Valley HIE (CVHIE)	San Joaquin Community HIE (SJCHIE)
Query Capability for Longitudinal Community Patient Records (Includes shared access to clinical notes and care plans)	**YES**	**YES**
Behavioral Health / Primary Care Data Sharing	**NO**	**YES**
Epi / Public Health Analytics	**Future Functionality**	**Future Functionality**
Care Alerts for PCPs on Their Patient Panel (ie specialist visits, hospitalizations, etc)	**YES**	**YES**
Electronic Results Delivery of Lab and Radiology Report Data	**YES**	**Partial – Lab Results Only for Now**
Provider-to-Provider Secure Clinical Messaging	**Partial –** Available but not in Use	**Partial –** Available but not in Use
Community eCQM, QI Data, and Registry Reporting	**Future Functionality**	**Partial –** Registry Reporting Only
Capability to Conduct Federated eHealth Exchange Queries (HIE-to-HIE query-based exchange)	**Partial –** Can Conduct Targeted Queries Only	**Partial –** Can Conduct Targeted Queries Only

The ninth use-case – "Capability for medical providers to conduct closed-loop referrals to non-medical, community-based organizations" – was not evaluated because it was introduced after the initial functionality vetting process was completed. The Group expects to determine the status of this functionality among the two local HIE efforts during a second phase of evaluation.

From a granular functionality standpoint, both HIE's have the ability to deliver care alerts for PCP's on their patient panel and the capability to query for longitudinal community patient records. SJCHIE is working to enable community eCQM and QI data reporting, epidemiology / public health analytics, and the capability to conduct federated eHealth Exchange queries. CVHIE is currently working to set up epidemiology/public health analytics, behavioral health and primary care data sharing, community eCQM and QI data reporting, and provider to provider secure clinical messaging while improving their capability to conduct federated eHealth Exchange queries.

As part of a due-diligence process, the Stakeholder Group will need to evaluate specific capabilities of CVHIE and SJCHIE to close functionality gaps as a part of the partner selection process. While some functionality may be on the longer-term roadmap for a perspective HIE partner, the trade-off in both long- and short-term cost reduction was judged by the Group to be sufficient to recommend partnering with one of the two local HIE efforts, regardless.

Outreach & Communications

As the Merced Stakeholder Group considers options for HIE in the area, it will be important to consider the impact of the general Merced provider population joining a single HIE versus joining multiple HIEs. This is especially the case considering that at the base-line level of data exchange, the choice of CVHIE and SJCHIE does not matter in terms of access to data, since both HIEs share the IEHIE data repository. The greater the concentration of provider organizations in Merced that move in the same direction, the greater the weight of their collective ability to influence a common HIE partner to implement the HIE use-cases and functionality that is important for Merced Stakeholders. This same collective momentum will also assist in driving down the cost of HIE for all Merced stakeholders. As more organizations join a not-for-profit HIE entity, the burden of cost on each individual organization tends to go down – one reason for the lower organizational price-tag for CVHIE services compared to those from SJCHIE as of 2015.

In addition, shared governance among all provider organizations in the county will help to build trust for data exchange. A fundamental condition of trust in HIE is an understanding of what one organization needs to know about another organization in order to exchange data. A common awareness framework for the attributes of trust may minimize the need for one time trust agreements and allow the extension of existing trust communities to handle more use cases in the future. Trust attributes can be established through various forms of certification and accreditation, self-attestation, and contractually defined obligations; but working together in a common, transparent governance framework is perhaps the most tested path.

In light of the above, it will be beneficial for the Merced HIE Stakeholder Group to continue to include additional voices to the conversation as the group reaches key milestones. The next such milestone will be having determined the best local HIE partner, at which point the group should likely be expanded, and use-cases evaluated to ensure that a wide initial stakeholder group can commit to onboarding with a local HIE partner simultaneously. The Stakeholder Group has already identified key additional stakeholders, including UC Merced, independent laboratory and radiology groups, and dentists.

Next Steps

As the Merced County HIE Stakeholder group closes out the initial discovery process toward implementing HIE in the county, there are a number of clear next-steps for the group. The primary group of next steps is focused around selecting an HIE to join: either CVHIE or SJCHIE. The community group has determined a specific methodology for selecting an HIE partner, including:

- Evaluating the policy and governance models of the two HIEs to determine if one HIE is better suited to meet the governance needs, including privacy, security and board representation of the Merced Stakeholders;
- Evaluating the business and pricing models of the two HIEs, including any capabilities of either organization to expand their pricing models to include all of the organization types that Merced Stakeholders seek to bring onboard;
- Evaluating the sustainability models of each HIE;
- Evaluating the capability of each HIE to accommodate the priority use-cases of the Merced Stakeholders, including timelines for expanding each HIE's scope of services;
- Determining an appropriate process to facilitate contracting between Merced Stakeholders and the best regional HIE partner, given the above.

Ideally, the above steps should be completed by the end of the second calendar quarter of 2016 in order to begin the contracting process with the community HIE of choice for Merced County and its stakeholder organizations.

In addition, the Stakeholder Group will continue to evaluate the current composition of the Group and decide if and when additional organizations should be included, taking into consideration the benefits of collectively negotiating the onboarding process, but also the necessity of choosing a limited subset of HIE use-cases that are important to the Group.