

The Story of San Diego's Community Health Information Exchange:

Data Sharing, Care Coordination and Population Health;
Recommendations to Make Your Journey Easier

A Learning Guide

"It's not only about technology. It is about people and process."

The Community Health Peer Learning (CHP) Program aims to advance progress toward population health improvements through the expanded capture, sharing, and use of electronic health data from diverse sectors. Engaging ten Participant Communities and five Subject Matter Expert (SME) communities in a peer learning collaborative, the CHP Program builds community capacity and supports the identification of data solutions, acceleration of local progress, and dissemination of best practices and lessons learned.

This learning guide is part of a series developed by CHP SME communities - highlighting their practical experiences, noting key lessons, and sharing insights relevant to those working as part of local initiatives to improve population health. The guides are intended to inform the ongoing work of CHP Participant Communities, as well other projects supported through a rapidly growing number of place-based health improvement initiatives. While individual guides address specific topics, such as community-wide information exchange capacity building, at their core, they also tell a story of how data infrastructure development, enabled through purposeful collaboration, can help drive better care, smarter spending, and healthier communities. We hope you find these stories to be engaging, practical, and useful!



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Introduction

San Diego Health Connect is a health information organization that is responsible for developing and maintaining a regional health information exchange. It has been working over the past several years to increase connectivity between health care providers in order to deliver quality, comprehensive information for better care. While the focus initially was on increasing the number of health care organizations connected to the HIE, the more recent focus has been on improving care coordination between organizations, and supporting those interested in using the HIE for regional population health improvement.

The purpose of this learning guide is to offer the reader key insights and lessons learned related to connectivity, care coordination and population health. It briefly describes the background of SDHC and its services, characterizes the **technical architecture** selected, and makes recommendations to communities at the early stages of determining architecture needs based on existing community assets (e.g., HIE infrastructure) and liabilities. Because topic-oriented, collaborative **workgroups** were instrumental to every aspect of the SDHC HIE, these are described early on to set the stage for how its members identified and solved challenges, and elevated recommendations to the board level. The guide then explains the **patient consent model** used - clarifying which organizations can view patient information - as well as how the HIE has increased accuracy in. Moving to the macro level, the guide then describes how SDHC is collaborating with two newer information systems in San Diego County - the **Community Information Exchange** that focuses on social service information and is housed at 2-1-1; and **ConnectWell San Diego**, a platform of data integration in development that will link many of the services clients receive by the County of San Diego. The guide ends with concrete examples of both ongoing and anticipated in which SDHC is involved with different partners.

The primary intended audiences for this learning guide are health information organizations and health care partners who are either considering developing a community health information exchange, or already have one in progress. They may have a situation arise where they would like to know how another HIE handled similar challenges. Other audiences that could benefit from the lessons learned include community-based organizations and other potential data sharing partners; community collaborations looking to form new or build on existing HIE infrastructure to advance their specific program aims; and groups of population health initiatives looking to leverage their region's HIE for core services. Local policymakers and leaders in health and human services could also find the information useful since it could give them greater insights into how to create policy that supports

information sharing, why it is important to encourage partnership building across sectors, and why continued or increased funding is a priority. SDHC's lessons learned from both successes and challenges are described in a candid manner, with recommendations clearly stated at the beginning of each section. Although SDHC has not solved every problem, and the HIE is a work in progress, we hope that others will benefit from our experience.

Background

San Diego Health Connect began as the **San Diego Beacon Community**, which was an effort to improve healthcare in San Diego, and was spearheaded by the University of California San Diego. In April 2010, UCSD received a \$15.3 million Beacon cooperative agreement from the Office of the National Coordinator for Health Information Technology (ONC) on behalf of the community. The funding was allocated for three years through 2013. One of only 17 Beacon grant awardees in the United States, the San Diego Beacon Community was tasked with 1) building and strengthening local health information technology infrastructure, and 2) implementing new approaches for making measurable improvements in the cost and quality of health care. The focus of the Beacon work was on emergency medical services, cardiology and public health. Its main accomplishments were to get all the key regional healthcare systems to the table, agree on an architecture, and create the initial HIE.

When the grant ended, the community supported transitioning the Beacon Community Program into a self-sustaining independent 501-c-3 called San Diego Health Connect, thereby creating a more neutral ground for its work. To ensure that SDHC is a truly community-based exchange, SDHC carefully established a Board of Directors whose members were representative of the variety of healthcare stakeholders operating in the region. SDHC governance is as diverse as it is balanced, comprised of leadership from across the healthcare community, including hospitals systems, community clinics, medical groups, health plans, industry experts and local government (**see Attachment 1**). The Board is balanced with an even functional representation between clinical, administrative and technology management.

Among the board's greatest early successes was gaining agreement from its directors to sign the same SDHC Contract and Business Associates Agreement, regardless of the size or type of organization. This was considered a success because such variability between providers typically necessitates more customized agreements. That was not the case here. Instead, everyone acknowledged contractually that there was a level playing field, and that they all shared the same goals and responsibilities.

SDHC's membership today includes private, not-for-profit hospitals, a children's hospital, naval medical centers, veterans' services, and a national HMO (Kaiser Permanente); federally qualified health centers (FQHCs), including an Indian health centers and rural health centers; EMS agencies; and the County Health and Human Services Agency and the Sheriff's Department. Additional hospitals and medical facilities, such as imaging specialists, and the two hospitals serving neighboring Imperial County, are currently in the onboarding process. **See Attachment 2** for a list of participating organizations.

SDHC's Mission, Vision, and Values are as follows:

Mission: To connect healthcare stakeholders to deliver quality, comprehensive information for better care.

Vision: Every clinician, every day, will rely on the health information exchange for better care.

Values: Trustworthy, Accountable, Agile, Collaborative, Transparent

From the start, SDHC and its Board of Directors identified and committed to the following collaborative principles to guide the information exchange journey and to maximize value to information exchange users: 1) to build on existing infrastructure and resources; 2) to collaborate and engage the broader community; and 3) to promote community standards and shared accountability.

Health Information Exchange Services

SDHC offers the following services through its HIE:

- **Query-based exchange.** Any HIE user (e.g. physician, integrated delivery network or emergency department) can query the HIE via the portal or EHR to access patient information from other participating HIE service providers and assemble a longitudinal patient health record. The patient's summary clinical record can also be queried in the HIE portal or EHR and immediately available to a provider prior to a patient visit. Current core data elements included in the viewable record are shown in **Figure 1**.
- **Alerts to transitions of care.** SDHC provides real time alerts to its participants during transitions in care, for example if an organization's patient is admitted to or discharged from another participating hospital. These automated notifications can be sent to designated providers, payers or caregivers. Once the patient's medical home has been notified of an event, it can access the medical records exchange to view details about the care transition and see if the patient requires follow-up care.

Patient Scenario: Use of HIE in the Pediatric Emergency Department

I had a teenage girl with severe abdominal pain, for which the differential diagnosis is huge--from nothing to a surgical emergency. I went in to San Diego Health Connect and saw that the patient had multiple workups at multiple hospitals including MRIs, CTs, and psychiatric follow-up, however, her mom had offered none of this information and said she had never been seen. I was then able to skip a lot of a workup and get her to the appropriate help.

Physician, Scripps Health

- **Direct secure messaging between providers.** Direct secure messaging is a secure email for exchanging health information with other care providers over the internet. More secure than fax and more cost-effective than telephone calls, secure messaging helps physicians coordinate care with providers outside of their organization. For many organizations, this messaging also helps them satisfy Meaningful Use requirements.
- **Reporting to public health departments.** SDHC set up a system with its providers to transmit immunization information, reportable lab studies, and syndromic surveillance electronically, rather than by fax or mail, to the appropriate county department. This ensures faster more efficient processing with the potential of preventing or promptly responding to local disease outbreaks.
- **Better coordination between emergency medical services (EMS) agencies and the hospital emergency department.** SDHC designed an EMS functionality based on requirements provided by the California Emergency Medical Services Agency to ensure that paramedics and the receiving hospital have as much information as possible about a patient prior to reaching the emergency department (ED). The functionality uses wireless technology to provide paramedics with a patient’s problem list, medication list, and allergy list when they are in the field, and transmit the data from EMS vehicles to the hospital while they are en route. Because emergency departments receive health information such as electrocardiograms from EMS before the patient arrives, ED staff can appropriately prepare resources and reduce time to treatment. ED staff view pre-hospital reports via the HIE’s web portal or they print the reports in a PDF format.

Figure 1: Clinical Information Available to View on the HIE’s Patient Health Record

Demographics	Encounters	Problem List/ Coded Diagnosis
Allergies	Medications	Labs
Narrative Imaging Reports	Progress Notes and Discharge Summaries	Immunizations

Patient Scenario: Use of the HIE to Locate a Patient with a Critical Lab Result

I had a new patient to Scripps come in to see me. As part of the initial work up, lab studies were ordered and a follow-up scheduled. One lab study came back critical and potentially life threatening. Repeated calls to his cell phone number went unanswered and his emergency contact number also went unanswered. I then decided to try the HIE and went in to it through Allscripts. I was able to find an external document from Sharp that listed a different emergency contact number. I called that number and immediately got ahold of a family member who was able to track down the patient. He was then able to get the care he needed in time to prevent a potentially bad outcome from any delay.

Physician, Scripps Health

Achievements

Key achievements as of March 2017 were as follows:

- Over 5.5 million transactions (medical records exchanges, alerts to transitions of care, secure messages, etc.) are exchanged each month.
- 4.4 million patients have been properly identified in its master patient index/record locator service; 2.8 million patients have consented to share information.
- 21 of 23 San Diego hospitals, and 16 of 18 federally qualified health centers, are participating.
- 70 skilled nursing facilities and 5 hospices now exchange health information via SDHC's implementation of direct protocol.

Information Exchange Evolution

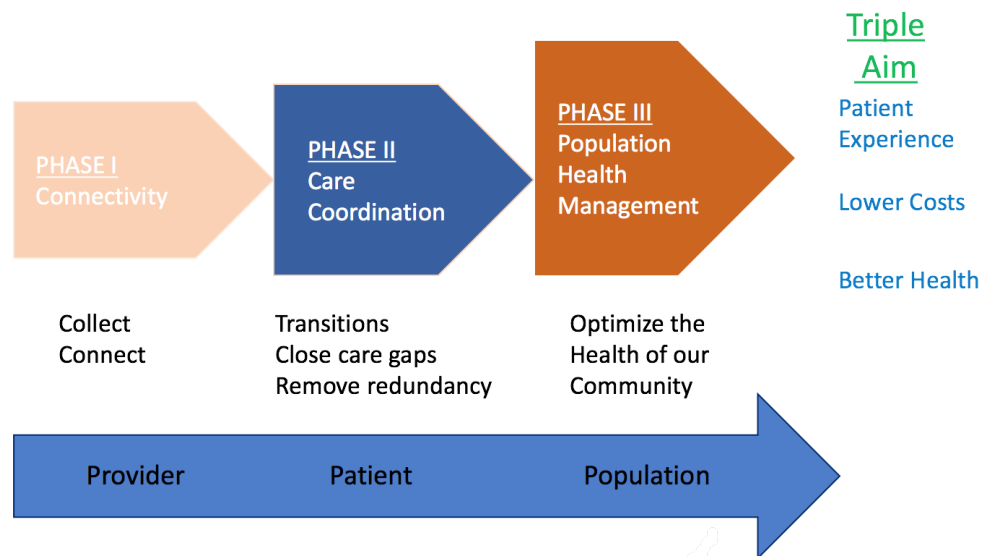
The development of SDHC's HIE is following a three-phase progression of connectivity, care coordination and population health (see **Figure 2**), with the ultimate goal of addressing the triple aim of an improved patient experience, lower costs, and better health outcomes. This evolution aligns with the *Office of the National Coordinator's Connecting Health and Care for the Nation: A 10 Year Vision to Achieve an Interoperable Health IT Infrastructure* that describes the ONC's broad vision and framework for interoperability. Each phase shows progressive advancement in maximizing the impact of the HIE, however SDHC continues to work on these phases simultaneously with more time and resources devoted to the more advanced uses today.

Phase 1 is focused on connectivity between healthcare providers and the HIE. Activities to date in this phase have been primarily focused on meeting provider needs, adding providers to the network, and building trust. Now that over 50 health care organizations participate in the HIE, this phase has shifted to extending the provider network and adding new types of providers and health plans.

Phase 2 is focused on improving patient care coordination. With the infrastructure in place to support secure information sharing, SDHC evolved into a utility that enables community partners to more effectively collaborate and coordinate care, for example by sending a message to a community health center when one of their patients receives emergency department services, or preventing redundancies such as repeating lab tests or x-rays unnecessarily. New strategies for improving care coordination, such as enabling electronic bi-directional communication between the HIE and community-based programs, continue to be developed.

Phase 3, population health management, is also in progress. SDHC is expanding partnerships and infrastructure to move beyond traditional medical record exchange among healthcare providers to supporting organizations in understanding the health of residents or patients in defined geographic areas. The HIE is being used to electronically communicate reportable diseases from healthcare providers to County Public Health almost instantaneously, which can potentially prevent a disease outbreak. The HIE relays information from healthcare providers to health plans so they can identify patients in their population needing follow-up services. SDHC is working with other community-based partners to provide the data they need to better understand the health of their target populations. Discussions are taking place about how to add population health data to the HIE, and communicate with other information exchanges. These strategies will be described in more detail later in the guide.

Figure 2: The HIE Strategic Trajectory



Insights and Lessons Learned

This section describes insights and lessons learned about HIE components, and provides examples of population health efforts. The following topics will be explored in this section:

- Technical architecture
- Partner engagement
- Patient consent
- Patient identity and matching

- Community IT Assets
- Population Health
 - County Public Health
 - Be There San Diego
 - Health Plans
 - Physician Orders for Life Sustaining Treatment Registry
 - Other Partnerships in Development

Because of space limitations, not every important topic or lesson learned is included in this guide. Instead the report touches on key HIE concerns and describes examples in enough detail that other HIE communities can learn from San Diego's experience.

Technical Architecture

Recommendation 1: Select a technical architecture that supports long-term goals.

Experience. Committing to a technical architecture is a key decision point for an information exchange community and has implications for the short-term and long-term utility of the information exchange platform. The three main types of HIE architecture are:

Federated (decentralized) model: Interconnected databases allow for data sharing and exchange, and enable users to access the information only when needed through query and response. The information is stored within providers' systems rather than centrally.

Repository (centralized) model: Patient data are collected and stored in a central repository, data warehouse, or other database(s).

Hybrid model: Federated and repository architectures are combined to take advantage of the strengths of both models.

After significant discussion and input from its member health care organizations, the Beacon Grant's Board of Directors made the initial decision to move forward with a pure federated model, rather than storing any clinical information in a central data repository. Bear in mind that in 2010 when the Beacon grant was awarded, an HIE was a new, unfamiliar and relatively untested model. It was a bold endeavor for the Beacon Board of Directors to ask local health care organizations to support a start-up organization, in which its partners were competitors, and join together to implement a new information exchange model with many risks attached. The competitive pressures, expense, a new management team and newness of the technology all caused concern among potential members.

The San Diego Beacon Community's rationale for starting with a federated (decentralized) model seven years ago was that it was the lowest risk start-up model at the time. Other factors that influenced the decision were that 1) the Beacon Community Program grant was originally held at UCSD, an academic medical center that is also an integrated delivery network, and competing healthcare organizations had concerns about allowing their data to be stored with a competitor; and 2) nationwide or government providers, such as Kaiser Permanente, the Department of Defense and the Veterans Administration, would find it challenging to share data in a central repository. Leadership thought that being flexible and working with each health care system's existing EHR would result in minimal organizational resistance to joining the HIE and therefore increase membership and garner adoption.

As HIEs continued to develop over the next few years, it became clear that the federated model was not as advantageous as a repository model, especially if the longer-term objective included supporting population health. In a repository model, the response times to queries are faster since the data have already been collected; there is less dependence on other HIE participants' systems functioning well (e.g. not being down at the time of inquiry); and it allows for population health data analysis and potentially predictive analytics. The risks and limitations of the model are that the central database needs to be well managed by a trusted entity; data timeliness could be an issue if HIE participants don't regularly upload data; and systems need to be put into place to assure system integrity, such as patient data matching and records being free from duplication.

Subsequently, SDHC and its Board began looking at ways to collect and store at least some limited and defined patient data in a repository, and ultimately started moving toward a hybrid model with the goal of improving data query and response times, creating a more complete patient record, and gathering data to begin creating a complete population health picture. SDHC continues to layer functionality and grow the technical infrastructure in response to user needs and changes in the environment, as well as new opportunities impacting information exchange. Community receptivity to the change in architecture has been very positive. SDHC users recognize the power and value of the HIE. SDHC users continually request more information and understand that the only way to efficiently deliver the information is through a repository model.

Lessons Learned. Communities should try their best to adopt a centralized data repository rather than a federated model for their HIE because information is more readily available to users, and the architecture positions the HIE to address population health issues in the future. Information exchanges that are reticent to create a repository because of competition between

providers should problem-solve about concerns rather than compromise and rely solely on a federated model with the associated utilization limitations. The change management required to modify the architecture can be onerous, disruptive and expensive. An alternative would be to initially create a hybrid model in which as much data as possible is put into a central repository, with additional data available through the query and response that a federated model offers.

- **Case example: Creating a centralized repository for federally qualified health centers.** FQHCs in San Diego decided they wanted to participate in a centralized data repository. They saw the advantages of aggregating data for all health centers to leverage negotiating power with health plans, and felt that by doing so they would be more on par with the hospitals in terms of healthcare information technology and health information sharing. They also thought it would speed up responses to their queries. After a six-month software conversion project, SDHC brought online 15 out of 18 FQHCs who were using four or five different EHR systems. This move offered tremendous improvement in performance and serviceability that addressed almost one third of the local patient population. For the community, this was a demonstration of trust in the HIE's flexibility in managing diverse technical capabilities. For the HIE, it also provided a whole new efficient mechanism for onboarding smaller, less technically sophisticated provider organizations.
- **The cost of early flexibility:** The HIE's early implementation of the federated model required creative technical solutions to accommodate the variety of health system EHRs. These early technical solutions were laborious in terms of change management and performance, making them inefficient and hard to scale. In a repository model, normalization of data happens prior to the need/use of data. There is time for correction as the HIE can reject transactions that do not meet minimum data standards. In a federated model, each time a patient is queried the data has to be put together and errors are never corrected in the source system as notifications of the issues are not sent to the source system. The federated model ultimately did not position the community as well for the future when data would be needed to manage population health. But at the time, because the HIE field was so new, little was known about the disadvantages of the federated model, and "population health" had not yet fully entered the lexicon of health care or IT sectors. Today, with advancements in both fields, it clearly makes more sense to design a centralized model up front as the advantages of this approach have become apparent.

Partner Engagement

Recommendation 2: Establish workgroups to enhance communication, collaboration and problem-solving.

Experience. SDHC developed a workgroup process to facilitate and support collaboration and partner engagement (see Attachment 3 for a list and brief description of the workgroups). The purposes of the workgroups are to provide input on questions that arise and to solve problems identified by the workgroup members or someone from their organization. There are a total of 10 workgroups, many of which began during the Beacon project. Each workgroup has about 6-12 members per group comprised of representatives and subject matter experts from member hospitals and health care systems. Most groups meet monthly, and are split as far as meeting in person or by phone. Groups are led by representatives of different member organizations. Each workgroup routinely reports on their progress to the Board of Directors. Below are short descriptions of some of our workgroups accomplishments.

- The **Cross-Organization (Cross-Org) Workgroup** created a uniform process by using a standardized script to test queries and responses between organizations to ensure that HIE end-users were seeing complete and accurate information via the presentation of their enterprise EHRs. Because of the technical expertise of the Cross-Org workgroup, several major HIE software enhancements have been implemented over the last two years with very few issues.
- The **Clinical Workgroup** identified core clinical data for all health care providers to report (listed in **Figure 1**), and they have made recommendations on how to expand that list, for example by adding access to images, history and physicals, and vitals, among other data. This workgroup has also made recommendations on how to improve clinical quality and utilization of the HIE.
- The **Security and Privacy Workgroup** evaluated collaborative solutions to increase patient consent. The workgroup reviewed best practices in implementing HIE consent models across a community while balancing a patient's privacy with the need to know from a care delivery perspective. The workgroup developed community standards, and shared goals and metrics related to patient consent. The higher the number of consented patients, the more valuable the queries are to clinical end-users.
- The **Master Patient Index Workgroup** members collaborated on solutions to substantially reduce the number of potential unmatched links. They developed community standards for matching patients, including a strict matching schema to create an automated match. The MPI workgroup also

established a standard related to patient naming. The higher the match rate, the more valuable the queries are to clinical end-users.

Lessons learned. The workgroup format is an **effective way to support community** collaboration and consensus building. Members look beyond the needs of their own organizations to make recommendations for the good of the whole. It is a forum to grapple with challenges as they arise and to identify solutions using the experience and expertise of those in the room, whose organizations are also SDHC's customers. It can be time-consuming to reach agreement *between all parties, but the* process is valuable since in the end it results in more creative problem-solving and greater buy-in between workgroup members especially when they address common obstacles. The role of the workgroups is creating consistent convention, processes and workflows, effectively creating community based standards.

One of the challenges of the workgroup format is that every workgroup can be different in how they approach their work. Some have expressed the need to create a more formalized structure for the workgroups by identifying a goal, describing the problem, giving clear examples of how the problem manifests, defining the desired objective, and then identifying measures to demonstrate success. Whether or not the workgroups have a formalized structure, they need to be able to communicate the issues they are pondering and their accomplishments, and relay the information to the SDHC Board of Directors. The Board can then take the information back to their respective organizations to demonstrate the value of HIE membership, and obtain additional inputs or executive approval if needed.

Patient Consent

Recommendation 3: Use a community-wide “opt-out” consent model to increase patient participation percentages.

Experience. The selection of a consent model is influenced by several factors including not only federal and state law, but also input from providers and patients. It is important to note that this consent is only to share information in an electronic form in the HIE; a clinician can always request and receive information through the traditional process of filling out a paper request form, faxing it to an organization, and receiving the information either by fax or some other means.

An HIE may choose to implement an opt-in or an opt-out model. Once they do, they need to decide whether the consent is by source (every organization serving the patient has to obtain their own consent) or community-wide (allows the patients to consent for all the HIE providers to access all of the patients' information.) Once a model has been selected, the com-

munity participants and the HIE agree to implement the policy in a uniform manner across the entire community. The definitions for these options are described further below.

Opt-in: No patient data are available for electronic exchange until patients actively sign off to give their permission.

Opt-out: Patient data are automatically added to the HIE unless patients indicate they do not want to participate, in which case their data are removed.

Source (organization-by-organization) patient consent: Every organization the patient is involved with gets a separate consent; only organizations that have obtained consent can share the patient information with the HIE.

Community-wide patient consent: A multi-provider consent allows all of the patient's providers in the HIE to access to the information.

The State of California did not take a position on consent, leaving the option open for California communities to choose their own consent model. Consistent with the original HIE architecture decision to offer maximum flexibility for HIE participants, HIE leadership elected to implement an opt-in source model for consent. While the source model offered more control for participating organizations, it was challenging and slow to implement for several reasons including cost, legacy system limitations, participant variability in patient messaging, and participant administrative and workflow changes needed to obtain consent status from each participant patient. With this model, physicians became frustrated that searches for patient data often came up empty. In addition, the percentage of patients consenting to share their records was low because patients simply did not bother to opt-in and there was not a consistent way in which various health systems consented their clients. It became very clear to HIE staff and governance that the opt-in source approach to consent would not scale, and if continued, the lack of participation would fatally detract from HIE adoption and utilization.

To address this challenge, the Security and Privacy Workgroup reviewed consent model best practices and made a recommendation to the Board to transition to an opt-out model, which the Board agreed to. All participating organizations are now in various stages of moving toward implementing the opt-out model, while maintaining the source approach. Three of the major healthcare systems, representing more than 55% of San Diego's healthcare consumers, have already changed their institutional consent model to opt-out, and they are now taking it a step further by supporting a move to a community (multi-provider) approach. The County of San Diego

is also committed to the community opt-out approach. It is considering a policy to share patient information within the community and not require patient consent unless it is for sensitive data. The SDHC Board is moving quickly to educate its healthcare partners about the advantages of implementing a community-wide opt-out policy, which would further increase patient consent percentages and improve HIE data query and response capability.

Challenges. One remaining barrier to 100% patient consent is that nationally, the Veterans Administration (VA) is still an opt-in participant requiring veterans to go to a website to consent, resulting in veterans' consent rates of 3-6%. The remaining 94% of VA patient records cannot be shared. Challenges have been further exacerbated with the decision that veterans with appointment wait times over a certain number of days can go outside the VA to receive treatment, meaning to an organization or practice that may not participate in the HIE. This means that a substantial portion of the patient's information would not be accessible through the HIE. Unfortunately, in this case, the veteran's information is not accessible from the VA nor the non-participating provider entity to the HIE community. When a veteran goes to a HIE participating organization and does not opt-out at that participating organization, the patient's information from that HIE participating organization can be viewed by the VA. Additional consent challenges have emerged related to sensitive data including HIV/AIDS, behavioral health and substance abuse data. SDHC is in discussion with its members and subject matter experts on how to integrate the sensitive data authorization process into the HIE infrastructure. The Privacy and Security Workgroup suggests starting by establishing community standards and metrics to ensure the patient has consented to the integration of sensitive data sources and that access is appropriate. Since the County of San Diego Health and Human Services Agency (HHS) administers the contracts for HIV/AIDS services and behavioral health services in San Diego, the HIE can build on existing partnerships with County HHS and healthcare participants to address these new use-case consent challenges.

A third consent challenge on the horizon and under discussion is related to defined populations based on eligibility for specific programs or services (e.g., criminal justice, Medi-Cal, and/or homeless populations) and the potential special authorization that may be needed to access or store their information. SDHC and its partners are discussing how to protect civil liberties and patient privacy, and not create a risk for insurability, particularly related to sharing sensitive information with eligibility determination organizations (e.g., health plans and the County of San Diego). An example of an emerging question from these discussions is "what data elements are

considered permissible to be consented and shared as part of the standard medical record and what data elements require separate or additional authorization?" The Privacy and Security Workgroup is contemplating this question among HIE users and subject matter experts.

Lessons learned. To assure the highest patient participation rate possible and therefore the highest availability of information to treating providers, HIEs should start with an opt-out, community (multi-provider) consent. This is particularly important in communities like San Diego with multiple health-care organizations and systems participating in the regional HIE.

Successful Strategies:

- To increase the number of patients participating in the HIE, two large healthcare systems sent letters to over 1 million patients to inform them that the organization was changing to an opt-out consent process, and explaining how to withdraw their information if they preferred. Although this notification was not required by law and albeit expensive, this was a successful way of increasing HIE participation.
- The consent percentage is part of the HIE scorecard reviewed at the board level that shows consent percentages for each participant organization. This helps to identify organizations that need to increase their patient consent percentages, and allows those who are successful to share strategies that work.

Patient Identity and Matching

Recommendation 4: Improve patient matching by being vigilant about data quality, establishing a strong master patient index and record locator service, and working with a patient matching management company.

Experience. Should a patient with a hyphenated last name be filed in the EHR under the first or second of those names? What if two people with the same name also have the same birth date? When someone gets married and changes their name, how is their health information tied back to the original name on the record?

Patient identification is challenging for several reasons, including lack of consistent naming conventions across data sources, variability in registration processes at the point of care, errors in entering demographic data, and naming challenges related to birth, ethnic origin, marital status, and hyphenated names. As many as 30% of EHRs have patient identity data such as names, addresses, or Social Security Numbers that are old, incomplete, or incorrect, and therefore cannot be matched across providers without someone looking at those records. Accurate patient matching is complicat-

ed enough within one organization, but these challenges are multiplied in an HIE with numerous participants and naming conventions. False matches, meaning matches that are incorrect and should not have been made, can result in medical errors and breaches of confidentiality.

Key to the success of any HIE is its ability to correctly match a patient with their medical record. This is done by employing a master patient index and a record locator service, defined as follows:

The **master patient index (MPI)** is a database that maintains a unique identifier for every registered patient in a healthcare organization. The MPI is used to ensure a patient is logically represented only once and with the same set of demographic data. It is the link tracking the patient, person, or member activity within an organization or across patient care settings.

A record locator service (RLS) holds information authorized by the patient about where authorized information can be found, but not the actual information the records may contain. It thus enables a separation, for reasons of security, privacy, and the preservation of the autonomy of the participating entities, of the function of locating authorized records from the function of transferring them to authorized users. It provides pointers to the location of patient information across multi-stakeholder networks, enabling users to access and integrate healthcare data from distributed sources without relying on data repositories.

The MPI/RLS is what assures that when a provider seeks information on a patient, correct and complete information comes up on the screen. A strict matching schema needs to be put into place so that patients with similar names or birthdays are not confused. The six elements SDHC requires for the automated match include:

- First Name
- Last Name
- Middle Initial
- Date of Birth
- Gender
- Social Security Number

Examples of schema used by other organizations or agencies include current address, previous addresses, phone numbers, or race/ethnicity, among other demographic data. It is up to the HIE to select the elements they feel are most important.

Lessons learned. There is no “silver bullet” for patient matching. It is a process that requires constant vigilance, discipline, and the commitment of member organizations to keep their own enterprise MPIs in order. Every time the HIE brings on a new organization, they may have dirty data and mismatched records, which sets everyone back. The HIE relies on all its member organizations to make continual efforts to maintain fidelity to data entry expectations and to do so with the utmost accuracy.

One effective way of increasing accuracy in patient matching is to use an **identity referential matching management company** with specialized technology to correctly link patients with existing records, to correct errors, and to eliminate duplicate records by using public record databases to improve the match rate. Such a company also has a process to resolve outlier patients who cannot be matched through the automated matching algorithm. SDHC found that after implementing this service, 187,000 patients were expeditiously linked, merged and/or matched. In addition, 126,000 records were detected whose demographics were previously unmatched, and they were correctly linked and/or merged with existing records. SDHC also gained agreement from the vendor to allow each participant organization to run the algorithm against its own organization’s MPI to help clean up duplicate patient records at the source. This source correction prevents the problem from re-creating itself and is key to the HIE’s ongoing performance.

In 2017, the matching algorithm will move from a batch process performed every two months to a real-time process, thus proactively catching and flagging potential duplicate patient records before they get into the HIE’s MPI. Because accurate patient matching is a foundation for an effective HIE, it is a worthy investment to contract with an identity management company.

Recommendation 5: Leverage patient matching capability with community partners.

Experience. San Diego Health Connect is committed to housing, maintaining and promoting the HIE MPI as the single, centralized source of truth for patient identity in the community, while making the MPI available to all HIE participants and community initiatives as needed. This is because SDHC and its members believe it has the most sophisticated and accurate matching process in the community, after investing significant time, expertise, and finances to make it possible. The MPI/RLS is fundamental to improving quality, preventing fraud and abuse, providing analytics, and achieving population health. Accurate matching is an essential part of the foundation of any information exchange, regardless of where it is based.

While the MPI is the strongest SDHC offering to other information exchanges, other services being used by multiple stakeholders include the HIE's event notification system (e.g., notifying organizations when one of their patients visited an emergency room), real time access to EHRs, and electronic transmission of public health reports. Because patient matching is an integral function of an HIE and is very expensive to get right, SDHC recommends that HIEs first and foremost leverage patient matching capability with community partners.

Example. SDHC is in early discussions with San Diego County and 2-1-1 San Diego (which houses the Community Information Exchange) regarding the opportunity to use the HIE's MPI/RLS for the single source of truth of consented patients, identification and demographics.

Community Information Technology Assets

Large and small communities alike are likely to have an information technology (IT) infrastructure comprised of multiple information exchanges and population databases. This is for good reason, since various sectors have done their best to transition client information from paper records to digital records, and then to connect electronic systems to one another to ensure that providers have as much information as possible about a client at the point of care. This is true for health care providers, who converted from paper medical records to EHRs; for 2-1-1, who transitioned from binders of provider information to electronic information; and for the San Diego County systems such as public health, housing, veterans programs, and alcohol and drug services that all had their own program specific locked filing cabinets of patient information. Gradually, each of these systems, as well as those in other sectors, obtained the funding to transition to a variety of electronic databases - a process that took several years.

Today, with the infusion of funding from the federal government as well as private funders, a confluence of factors is pushing these independent IT systems and challenging health and social service providers to expand their view of health and wellness. First, various sectors now want to link together to get a more complete client picture, thereby considering **whole person health** - the combined picture of physical health, behavioral health, and social connections, among other aspects - to better understand a person's comprehensive status.

Second, health and social service sectors now more fully recognize the importance of the **social determinants of health**. The Institute of Medicine defines these as conditions in which people are born, grow, live, work and age. For example, individuals who grow up in poverty or experience racism are more likely to have poorer health than those that do not. Today, some

'The 2015 Edition Health Information Technology (Health IT) Certification Criteria, Base Electronic Health Record (EHR) Definition, and ONC Health IT Certification Program Modifications Final Rule includes certification criterion to enable a user to record, change, and access a patient's social, psychological, and behavioral information, including patient data on financial resource strain, education, stress, depression, physical activity, alcohol use, social connection and isolation, and exposure to violence (i.e., intimate partner violence). See also: 2015 Edition Certification Companion Guide and 2015 Edition Final Rule: Addressing Health Disparities.

organizations and programs in the health care sector are looking beyond physical risk factors (like high cholesterol or blood pressure) and behavioral risk factors (like smoking or unhealthy eating) to better understand these social determinants that are equally relevant if not more important.

Third, providers are now being asked to look beyond the health of individual patients to **population health**. Adoption of EHRs has created the potential for health care providers to perform data queries that identify all their patients with high blood pressure who have not had a visit in more than a year, for example.¹ If these patients are congregated in one geographic area, a provider might use health educators or health coaches to reach out to the community to perform health screenings, and refer or help navigate those at risk to nearby health and social providers for care and support.

Recommendation 6: Know your region's community information technology assets; build trust with potential partners, such as the County or 2-1-1.

Experience. Seven years ago, when the HIE was first forming as part of the Beacon community, there were no other information exchanges in existence in San Diego County. It has only been in the last year or two that other exchanges have emerged. In addition to the health-focused HIE, there are two other comprehensive information exchanges in the early stages of implementation: the Community Information Exchange (CIE), which is a part of 2-1-1, and focuses on care coordination in the social services sector; and ConnectWell San Diego (ConnectWellSD), which is the County's internal platform to connect their various data systems. ConnectWellSD began development in 2016 and will create a client record of services received in the County system, such as housing, mental health services, and probation. Whereas the HIE's early efforts focused on building trust between health care partners to join in an HIE venture, SDHC is now working on building trust with other exchanges and communicating about mutual goals and possible collaborations. Today it is safe to say that the organizations housing these databases would very much like to be able to link the information from all sources to create an integrated whole person view for the clients they have in common (see **Figure 3**), and anticipate that one day soon that will be the case. In the meantime, community IT assets continue to evolve, and each organization is working on making their own information exchange the best it can possibly be. Agencies remain open to opportunities for the different HIEs to connect and share information between organizations where it is useful based on patient needs.

- **2-1-1 San Diego**, a community information and referral service, has connections with over 6,000 community, health, and disaster services. 2-1-1

provides confidential phone service in over 200 languages, and has a searchable online database. They have served 1.5 million clients over 10 years.

- **Community Information Exchange (CIE) San Diego**, a technology of 2-1-1 San Diego, facilitates seamless care coordination that improves client health and social outcomes. As part of their **360° Community Coordination** initiative they are using a contact management and customer tracking software to create an interactive, shared client record that provides a longitudinal view of services received. They do this by enabling the near real-time capture, exchange, and analysis of client-specific social service data across many organizations, providing a view of a client's past and present referrals and outcomes. CIE partners include homeless organizations, FQHCs, EMS, and hospitals, among others. Some of these partners also participate in the HIE, such as UCSD, Scripps Mercy Hospital and Family Health Centers of San Diego.
- **ConnectWell San Diego** will be a county-wide electronic information sharing hub allowing County staff and contractors from different systems and sectors to share client-specific information to provide better, more efficient services to clients. ConnectWellSD will connect information for the following services: mental health, alcohol and drug, eligibility, public health, aging and independence services, housing and community development, and probation. The website is expected to be up and running in the last quarter of 2017.

SDHC is in discussion with the County HHSA, 2-1-1 and the CIE about using SDHC's master patient index. SDHC has also suggested centralizing and sharing the record locator service, secure messaging between participants, notifications and alerts (e.g., regarding ED visits or hospital admissions), and storing information - all current services of the HIE.

Data exchange privacy concerns. In addition to the technical challenges involved in getting databases to communicate with each other, concerns about privacy and security are at the forefront. For example, someone may wonder why 2-1-1 or a CIE customer service representative isn't allowed to access information from the HIE when they feel it would benefit the client. The reason requires an understanding of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and protected health information (PHI).

According to HIPAA (Public Law 104-191), PHI is subject to the Privacy Rule, which protects individually identifiable health information in three types of *covered entities*: health care providers, health plans, and health care clear-

Figure 3: Information Exchanges in San Diego County and their Shared Aim of the Integrated Whole Person View



inghouses. The Security Rule sets national standards for protecting the confidentiality, integrity and availability of electronic PHI.

2-1-1 is not a covered entity, so they cannot view PHI unless a health care provider or health plan asks them to do so as part of treatment or follow-up. For example, if a hospital asked 2-1-1 to follow-up with a list of 15 patients who were in the ED for flu, then the call center staff would be able to do that. Without being directed to do so by a covered entity, 2-1-1 would not be permitted to access that information.

Lessons Learned

- The most important work at this stage, when there are multiple information systems in place, is building trust, maintaining open lines of communication, and staying committed to making one's own information exchange as strong as it can possibly be. Opportunities to leverage resources and share funding opportunities can also be explored.
- If multiple organizations want to unite to serve a shared population, it is best to start by targeting a well-defined agreed upon population that does not raise extra concerns about privacy. For example, the CIE

brought together six agencies who served the homeless and created a client record that they could all view, which they found to be very successful. It would have been more challenging if they tried to incorporate sensitive information such as mental health, substance abuse, and HIV/AIDS data into their initial shared client record. This is because these data are subject to stricter privacy rules and cannot easily be shared. Although there would clearly be benefits to knowing this information to better serve the client, it is not practical at this time to do so. For this reason, it is better for multi-agency initiatives to focus on data exchange that is less restricted for their early coordination efforts.

Population Health

Stakeholders and community leaders in San Diego are focused on developing the relationships, trust and technical capacity with the three information infrastructures to support data sharing, integration and analytics across multiple organizations and service sectors with the common goal of improving population health.

Population health: The health outcomes of a group of individuals, including the distribution of these outcomes within the group.

To achieve this larger vision, SDHC is committed to expanding partnerships and infrastructure to move beyond traditional medical record exchange among healthcare providers to better respond to larger population health needs and opportunities.

Recommendation 7: Help healthcare providers achieve Meaningful Use; establish electronic transmission of reportable events to the County Public Health Department.

Experience. As part of achieving Meaningful Use requirements (Stage 2), eligible hospitals and providers are required to establish ongoing data communication with County Public Health for immunization records, reportable lab studies and syndromic surveillance. The HIE helped health care providers achieve Meaningful Use for this requirement by providing the infrastructure needed to link them with the County to transmit these data electronically instead of by fax or mail. Electronic submissions make it easier for providers to forward the results, and speed up the process for informing the County about potential disease outbreaks. Today there are over 2 million automated electronic lab reporting and syndromic surveillance transactions per month with San Diego County Public Health.

Success Stories

- **Electronic Lab Report.** Whereas at one time it typically took days to initiate an investigation after a suspicious lab result, it now takes less than an hour. For example, in March 2016, a hospital made an electronic lab report (ELR) of a culture result for *Vibrio* Species (pathogens causing seafood-borne illnesses that can be fatal). After the hospital reported the result electronically into the HIE, it took only 56 minutes for the HIE to send the ELR to the county's disease registry, for the county to register the incident and assign it to an investigator, and for County Public Health to initiate the investigation (see **Attachment 4**).
- **Weekly Influenza Watch.** Hospitals, emergency departments, and congregate living facilities (i.e. nursing homes) have always reported flu cases, emergency department visits for flu, and flu-related deaths. When reports had to be faxed, however, compliance was less than 10%. Now that data can be transmitted electronically through the HIE, closer to 75% of cases are reported. Based on immediate and more complete data, the County Epidemiology and Immunization Services Branch enhanced the "*Influenza Watch*" flu report, which it now sends to health care providers on a weekly basis with the most current data available (see **Attachment 5** for a sample cover page).

Lessons Learned

- It is effective to develop HIE partnerships around Meaningful Use requirements, such as electronic reporting of immunizations, syndromic surveillance, and critical lab reporting. Healthcare organizations are more motivated to cooperate with efforts that will benefit their own organizations.
- Submitting electronic data to the County helped the HIE gain a better understanding of the steps that are necessary to meet County data submission standards and adjust HIE systems and processes accordingly. Making these adjustments supports the entire community by utilizing the existing infrastructure for multiple purposes.
- Syndromic data such as flu data had to be de-identified, meaning identifying patient information had to be stripped out of the record. Some healthcare participants were not able to de-identify the report, so the HIE set up a process to do it for them.
- The closer an HIE can get to meeting state requirements for public health data submission, the better, since this is a clearly defined standard that providers in multiple counties can meet.

Recommendation 8: When working with community partners on population health, start small with a defined condition or population.

Using the HIE to improve population health is something that happens incrementally – not all at once. Creating the data connections to take HIE to the next level is like putting together a patchwork quilt. First the squares are sewn and connected, then sections, until the blanket is complete. Creating population health capability is similar in that it makes the most sense to do so gradually due to limited funding, a continuously evolving IT environment, the ongoing addition of new partners, the mandate to build and maintain trust in an ever-changing environment, and the need to demonstrate return on investment. An incremental, collaborative approach makes it possible to design an HIE plan that is achievable, and at the same time leaves room to identify challenges and solve them on a smaller scale.

SDHC brings the following core competencies to any community-based population health program:

- Patient matching
- Automated extraction of data from EHRs
- Repository or registry hosting
- Role-based access control
- Event notification
- Information sharing technologies
- Information standards
- Portal presentation and interaction
- Simple, comprehensive reporting

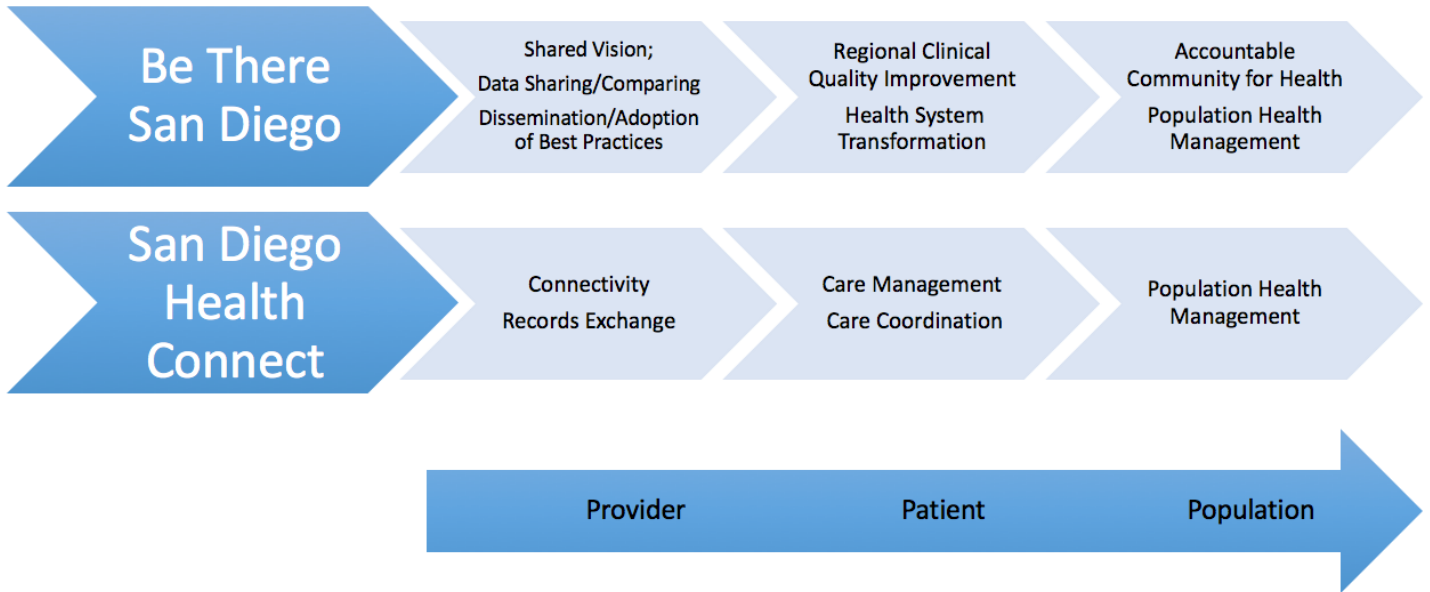
SDHC is involved with several organizations, programs and initiatives that are working to improve population health such as *Be There San Diego*, health plans, the County of San Diego, and a *Physician Orders for Life Sustaining Treatment* registry. These pilots, and others that are just getting underway, are described in more detail below.

Be There San Diego

SDHC is partnering with *Be There San Diego* (BTSD), a collaborative of healthcare organizations with the shared goal of reducing heart attacks and strokes by 50% in a target population of 4,000 patients. Figure 4, shows that BTSD and SDHC have a mutual goal of population health management, but the steps they are taking to reach that goal are different. BTSD views quality improvement and health system transformation as stepping stones, and SDHC is ensuring that providers have the connectivity they need,

leading to better care management and care coordination. Ultimately, both want to continue their pathway into population health management, and the work they do together will likely inform future SDHC services with other partners to achieve the same goal.

Figure 4: Partnering to Improve Population Health: Be There San Diego and San Diego Health Connect on Parallel Paths



To reduce heart attacks and strokes in San Diego County, BTSD facilitates a collaborative between the large healthcare organizations, public health, community health centers, health plans and the broader community. BTSD is working with nine healthcare teams across San Diego County to deploy a **health coach program** to support enrolled patients to reduce cardiovascular risk factors.

SDHC is working with BTSD to track health care utilization of patients at high risk for heart attack and stroke; to monitor major adverse cardiac events (MACE) at participating HIE hospitals, including heart attack, stroke and death; and to use the event notification system (ENS) to notify BTSD when one of their program participants visits the emergency room or is admitted to the hospital. Once BTSD receives an alert on one of the BTSD patients, a BTSD coach will access the HIE to get more information on that patient’s encounter. BTSD reached out to SDHC because SDHC already has the data use agreements and secure connections in place with all the major health care systems in the region. In addition, BTSD does not want to duplicate the infrastructure, including the MPI/RLS that SDHC has already created. The program is also benefitting from the ENS registry for high-risk patients that is already in place. BTSD plans to use the information gleaned

as a result of this partnership to track MACEs, and to evaluate the effectiveness of their interventions, as well as the utilization and cost of care for their patients. For these reasons and more, the relationship between SDHC and BTSD is mutually beneficial. SDHC and BTSD hope to expand their relationship through a greater offering of reports, analytic tools and services customized to the BTSD target population.

The data BTSD collects or compiles for their patient population are listed in **Figure 5**. Shown in the same figure are data BTSD would like to have access to, including vital signs (blood pressure), and prescription fill data, to better understand the health and risk factors of their patient population. Although the HIE compiles information about the patients' current medication lists, the exchange does not retrieve data on whether the prescriptions were filled. BTSD wants to be able to identify patients who did not get their prescriptions filled at all, or not re-filled according to schedule. Because of their history and good relationship with SDHC, BTSD approached the HIE organization about uniformly collecting additional data they need.

Figure 5: Data Currently Collected for Be There San Diego Patients and Additional Data Needs

Data Currently Available	Additional Data Needs
Demographics	Vital signs (blood pressure)
Socioeconomic indicators	Prescriptions filled
Medications prescribed	Death data
Diagnosis	Claims data
Lab results	
Health coach encounter data	

As one possible solution, SDHC is identifying third party vendors that would be able to secure the needed data on dispensed medication for the HIE, and BTSD has been testing and giving feedback on some of these vendors. One vendor has the capability to pull pharmacy claim data, but it is not in a format that BTSD would be able to use. This is because it uses *drug names*, which are not recognizable by non-physicians, without an indication of *drug classes*, such as cardiovascular medication, which would be understandable to the non-clinical staff conducting the review. Identifying potential solutions is a work in progress and presents a good learning opportunity to SDHC to apply lessons learned to other population health programs.

Lessons learned. BTSD's additional data request has generated valuable conversations between BTSD and SDHC, and has been a good case study about two things: 1) how SDHC can be responsive to unique data requests

from community-based programs; and 2) how a technical organization (trying to find a technical fix) and a community-based program (needing data about patient risk factors) can find a common language to both identify and find solutions to meet the need. This is a good example of some of the challenges that arise in obtaining data that is both understandable and practical for community-based health programs.

Health Plans

SDHC added its first health plan users, Community Health Group (CHG) and Molina Healthcare, to the HIE in 2016. Health plan users benefit by being able to access clinical information and notification alerts on their patient populations. With real-time access to the HIE patient clinical data, health plans can improve care management, care coordination and population management for their patient population. Clinical data in the HIE is more timely than claims data, which has a lengthy lag time. The Event Notification System (ENS) notifies CHG and Molina Healthcare that a patient they are responsible for has had an encounter at one of the HIE's participant organizations. For example, the ENS gives CHG and Molina Healthcare real-time notification that one of their members has visited the ED or has been admitted to the hospital. The alerts can be managed for the entire health plan membership or a subset, such as for members with a certain type of condition or disease. This real-time, automated alert assists in care coordination, referral management, care management, medication adherence, and chronic disease management, and ensures that the health plan member is being seen in the health plan network. SDHC is working to get other health plans on board with the ENS.

County of San Diego

SDHC is working with the County of San Diego Vital Records Department to link its birth and death data to the HIE. SDHC will add a death indicator to the virtual record (as a result of query and response) so that a querying participant can see if a patient is deceased. Having the HIE incorporate the death registry data in the HIE using the existing MPI/RLS will result in increased speed in data retrieval, improved quality of data, reduced duplication of data, improved workflow, improved research capabilities, and reduced costs, and it will further assist in population health efforts.

Physician Orders for Life Sustaining Treatment Registry

SDHC received funding from the California Health Care Foundation in August 2016 to serve as one of two pilot sites in a statewide initiative to develop an electronic registry for Physician Orders for Life Sustaining Treatment (POLST). POLST is a standardized form with physician's orders that clearly states what level of medical treatment a patient wants during serious illness

or toward the end of life. Currently, most POLST information is placed in a medical record only as a pink piece of paper, a copy of which the patient may or may not keep. If POLST information is needed during an emergency, it may not be readily available, thereby hindering care or resulting in care that is against the patient's wishes. While the state's ultimate goal is to create a statewide POLST cloud-based registry, SDHC received funding to work with its regional ecosystem to develop its own local registry.

The SDHC deliverable is to have a working registry in place by June 2018. The HIE's role will be to ensure that all providers including EMS will have immediate access to POLST information correctly matched to the right patient - which SDHC considers to be one of its core competencies. The HIE will host and provide controlled access to POLST information. Possible challenges could arise in automating the input of POLST forms from smaller providers, and ensuring the integration of POLST forms into the wide variety of EHRs, but SDHC is committed to resolving these difficulties.

Other Partnerships and Pilots in Development

Whole Person Wellness (County of San Diego): The County of San Diego began implementation of the Whole Person Wellness pilot in January 2017 with funding obtained through the California Department of Health Care Services' Medi-Cal 2020 Waiver and its Whole Person Care program. The County will develop a systemic approach to providing services and comprehensive care coordination to an identified population comprised of people who are high multi-system utilizers; homeless or at-risk of homelessness; and experience serious mental illness, a substance use disorder and/or a chronic health condition. Without a coordinated system to navigate through the maze of services, the highest utilizers end up with multiple emergency department visits, while continuing to live on the streets, in shelters, or in unstable or unsafe housing arrangements.

Planned SDHC role. The County has asked SDHC to inform them when an individual in the Whole Person Wellness registry appears in the ED. For example, individuals who are homeless or at risk of homelessness will sometimes go to the ED when they want a shower or a warm place to stay overnight. To break the cycle of this behavior, the goal is for the County Whole Person Wellness navigator to link the person with more appropriate and more comprehensive care, whether with 2-1-1 for immediate services, or to a homeless serving organization or a shelter for the longer term. Once identified, the plan is for the HIE, which is the only organization capable of identifying when an individual visits any ED in the county, will notify the lead Whole Person Wellness navigator, who will immediately follow up with the patient.

California Accountable Community for Health Initiative (Be There San Diego). *Be There San Diego* received funding through the California Accountable Communities for Health Initiative (CACHI). The program's goal is to test the Accountable Community for Health (ACH) concept and advance innovative health models focused on improving population health and reducing health disparities. Under CACHI, an ACH is defined as a partnership between health systems, health care providers, health plans, public health departments, key community and social services organizations, schools, and other entities serving a population in a particular geographic area. An ACH takes responsibility for improving the health of the community, with explicit attention to achieving greater health equity among its residents.

Planned SDHC role. Because of its existing partnership with SDHC, BTSD asked the information exchange to play a primary role in providing the technical infrastructure to support data sharing and community-clinical linkages across multiple sectors. As SDHC is currently doing with BTSD, the former will bring its resources to the table and work collaboratively to try to meet any unique data collection and exchange requests.

Social Determinants of Health Workgroup (Hospital Association). SDHC is planning to partner with the Hospital Association of San Diego and Imperial Counties to convene a joint Social Determinants of Health (SDoH) Workgroup to address the electronic capture of these data, initially from health care providers. The workgroup anticipates beginning in Summer 2017, though possible partnering discussions are already underway.

SDHC anticipates that a top priority will be integrating data on screening and referral processes for food insecurity by health care providers. This could be selected since some providers have already begun asking their patients if they have difficulty accessing food on a regular basis. The workgroup may also track patients who are screened for diabetes and refer them to diabetes prevention programs and other lifestyle management programs offered by health care providers.

Planned SDHC role: SDHC has made itself available as a willing partner, though it anticipates many challenges associated with tracking SDoH data. It has questions such as what aspects of SDoH are going to be collected, and in what standard data format? Who will store the information, and how will they store it from a technical point of view? Once stored, who will have access to this information and how will they retrieve it? SDHC is bringing to the table its expertise in MPI/RLS, as well as its ability to implement and store an SDoH community registry. SDHC could be the entity responsible for integrating SDoH information from

health care EHRs. The challenge will be how to navigate sharing this information between covered and non-covered entities, while complying with all HIPAA requirements.

Lessons learned: Once an HIE establishes connectivity with a critical mass of the provider base and can share quality information, the HIE should strive to make the HIE infrastructure part of all multi-organizational information sharing pilots. This requires informing potential partners of HIE capability across the continuum of care and health care ecosystem. It assumes that the HIE has not only established the technical infrastructure, but also created the policy, security and governance framework. This investment can then be leveraged to reduce the time and cost for multiple pilot implementations.

Conclusion

This learning guide provides an insider's look at how one HIE put systems in place to increase connectivity and care coordination, and to support population health activities. While there may be a perception that HIEs focus solely on hardware and software solutions, it should be apparent by now that success depends as much (if not more) on the people involved and relationships that have been put into place. It takes "people power" to imagine the possibilities of working together, to create environments where ideas can flow, and to get through the challenging times. It takes "process power" to put systems into place that support collaboration, change management, and decision-making. Only then can a community realize the benefits of a community health information exchange as they embark upon this journey together.

The Office of the National Coordinator for
Health Information Technology




AcademyHealth

This learning guide was produced as a part of the Community Health Peer Learning (CHP) Program.

In 2015, the Office of the National Coordinator for Health Information Technology (ONC) awarded AcademyHealth \$2.2 million to cooperatively lead 15 communities in the CHP Program. Through this two-year program, AcademyHealth is working to establish a national peer learning collaborative addressing community-level population health management challenges through expanded collection, sharing, and use of electronic data. Learn more at www.academyhealth.org/CHPhealthIT.

Resources

National Call to Action: Office of the National Coordinator for Health Information Technology. (2014, June). Connecting health and care for the nation: A 10-year vision to achieve an interoperable health IT infrastructure. Link to report is available on the HealthITBuzz [website](#).

Patient matching: Godlove T. & Ball AW. (2015, Spring). [Patient matching within a health information exchange](#). Perspectives in Health Information Management, v12. Published online April 1, 2015.

Master patient indexing: Purkis B, Morris G, Afzal S, Bhasker M & Finney D. (2012, September 30). [Master data management within HIE infrastructures: A focus on master patient indexing approaches](#). Prepared for the Office of the National Coordinator for Health Information Technology.

EMS partnership: The Office of the National Coordinator for Health Information Technology. (2017, January). Emergency medical services (EMS) data integration to optimize patient care.

Attachments

Attachment 1: Board of Directors, San Diego Health Connect

CHAIR: Robin Brown, Jr., Chief Executive, Scripps Green Hospital, Scripps Health

VICE CHAIR: Nick Yphantides, MD, Chief Medical Officer, Health and Human Services Agency, County of San Diego

TREASURER: Albert Oriol, Chief Information Officer (CIO), Rady Children's Hospital San Diego

SECRETARY: Cassi Birnbaum, Director of Health Information Management, University of California, San Diego

Dimitrios Alexiou, President and CEO, Hospital Association of San Diego and Imperial Counties

Norma Diaz, CEO, Community Health Group

Nora Faine, MD, Medical Director, Molina Healthcare

Brian Fennessy, Fire Chief, City of San Diego

David Guss, MD, University of California, San Diego

Paul Hegyi, CEO, San Diego County Medical Society

Alfred Joshua, MD, Chief Medical Officer, Public Safety Group, County of San Diego

Ken Lawonn, CIO, Sharp Healthcare

Della Shaw, Executive Vice President, Palomar Health

Robert Smith, MD, Director, Veterans Administration

Laura Sullivant, RN, Area Information Officer, Kaiser Permanente

Henry Tuttle, CEO, Health Center Partners of Southern California

Attachment 2: Participating Organizations in the San Diego Electronic Health Information Exchange

Hospitals and Affiliates

Sharp HealthCare

Scripps Health

University of California - San Diego

Rady Children's Hospital - San Diego

Kaiser Permanente

U.S. Department of Veteran Services

Navy Medical

Palomar Health

Sharp Community Medical Group

Balboa Nephrology Medical Group

Hospitals and Medical Facilities in Test

Tri-City Medical Center

El Centro Regional Medical Center

Pioneers Memorial Healthcare District

Imaging Healthcare Specialists of San Diego

Other Medical Facilities

Borrego Community Health Foundation

Clinicas de Salud del Pueblo, Inc.

Family Health Centers of San Diego

Imperial Beach Health Center

Indian Health Council

La Maestra Community Health Centers

Mountain Health & Community Services

Neighborhood Healthcare

North County Health Services

Planned Parenthood of the Pacific Southwest

San Diego Family Care

San Ysidro Health Center

St. Vincent de Paul Village Family Health Center

Vista Community Clinic

County of San Diego Health and Human Services

County of San Diego Public Safety Group

Attachment 3: San Diego Health Connect Workgroups

San Diego Health Connect Workgroups

Clinical Workgroup provides clinical guidance and decision-making regarding the importance and presentation of clinical content both in the record sent to the requestor or in the SDHC Portal view.

Communications Workgroup aligns the SDHC public messaging with participant messaging and approves marketing materials.

Cross Organization Testing Workgroup validates and improves the queries and responses between participants through a thorough, agreed to testing methodology.

Emergency Medical Services (EMS) Workgroup assesses and organizes EMS requirements across impacted areas including the emergency department, local EMS authority (LEMSA), ambulance companies, and on-scene medical staff to provide critical health information on the patient experiencing the emergency.

Imaging Workgroup will develop a process to share/exchange images across the SDHC community via integrated views.

Master Patient Index (MPI) Workgroup reconciles participant MPIs with the SDHC community MPI.

Meaningful Use Workgroup prioritizes the communities' efforts to attest to MU, the Medicare Access and CHIP Reauthorization Act (MACRA), and the Quality Payment Program (QPP). *(Note: the Direct Messaging Workgroup merged into this one.)*

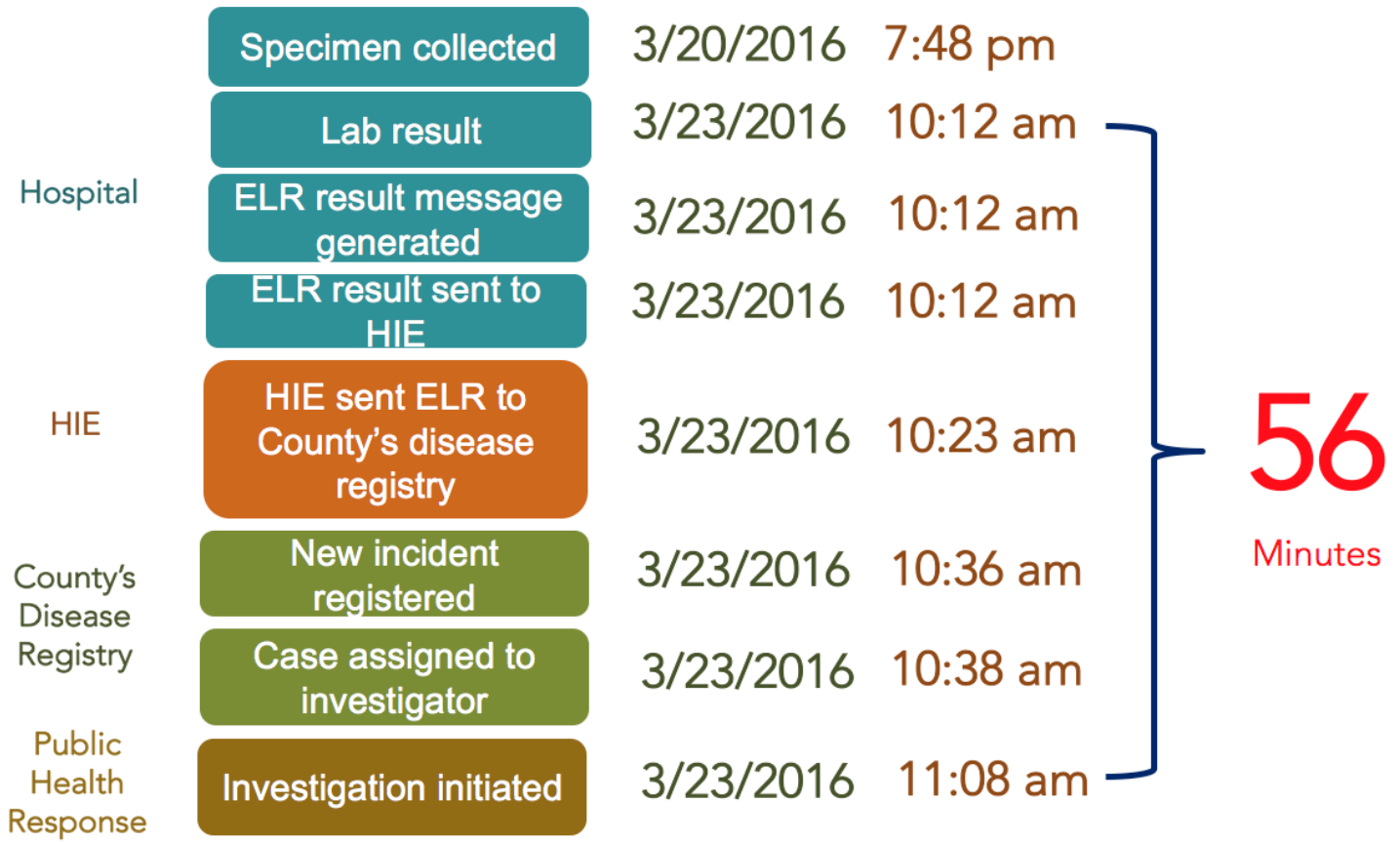
Physician Orders for Life-Sustaining Treatment (POLST) Workgroup will provide the framework and requirements for the San Diego implementation of a common POLST eRegistry.

Referral Workgroup was recently formed to review and set standards for a community-wide referral processes and systems and to integrate referral functionality within the HIE, including the capacity for transitions of care, Meaningful Use requirements and bi-directional referrals; initial use cases include 1) referrals from acute to primary care, 2) referrals from primary to specialty care and 3) referrals to community programs (e.g., community-clinical linkages).

Security and Privacy Workgroup provides input and guidance to SDHC on matters of privacy and security.

Technical Workgroup provides guidance on architecture, connectivity, interface and integration.

Attachment 4: Life Cycle of an Electronic Lab Report Message





County of San Diego

March 22, 2017
Volume 16, Issue 24

INFLUENZA WATCH

Week 11
Ending 3/18/2017

The purpose of the weekly *Influenza Watch* is to summarize current influenza surveillance in San Diego County. **Please note that reported weekly data are preliminary and may change due to delayed submissions and additional laboratory results.**

Report Contents
 Page 1: Overview & Indicators
 Page 2: Virus Characteristics
 Pages 3-7: Trend graphs
 Page 7: Reporting Information

Current Week

Current Week 11 (ending 3/18/2017)

- 200 new influenza detections reported: *Elevated*
- 3% influenza-like-illness (ILI) among emergency department visits: *Expected level*
- 4 influenza-related deaths reported this week
- 8% of deaths registered with pneumonia and/or influenza: *Expected level*

Current Season Summary

4,944
Total Cases

97
ICU Cases

72
Deaths

32
Outbreaks

Virus Characteristics

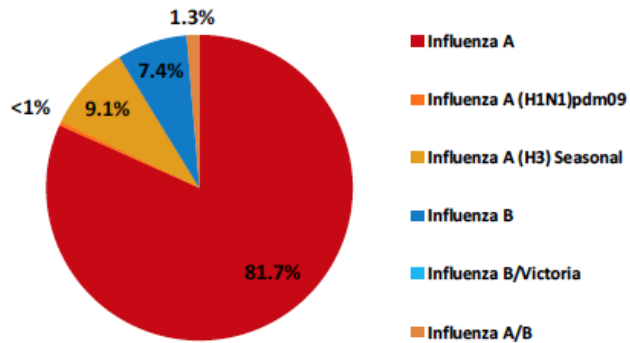


Table 1. Influenza Surveillance Indicators

Indicator	FY 2016-17*			FY 2015-16		Prior 3-Year Average**	
	Week 11	Week 10	FYTD [#]	Week 11	FYTD [#]	Week 11	FYTD [#]
All influenza detections reported (rapid or PCR)	200	277	4,944	356	5,437	174	5,441
Percent of emergency department visits for ILI	3%	4%		5%		5%	
Percent of deaths registered with pneumonia and/or influenza	8%	8%		12%		9%	
Number of influenza-related deaths reported [^]	4	7	72	4	57	2	71

* FYTD=Fiscal Year To Date (FY is July 1- June 30, Weeks 27-26). Total deaths reported in prior years: 68 in 2015-16, 97 in 2014-15, and 70 in 2013-14.
 ** Previous weeks case counts or percentages may change due to delayed processing or reporting.
[#] Includes FYs 2013-14, 2014-15, and 2015-16.
[^] Current FY deaths are shown by week of report; by week of death for prior FYs.



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