Provider Guide

Adopting HIE to Add Value and Improve Patient Care
About California Health eQuality (CHeQ)
California Health eQuality (CHeQ) is a program of the UC Davis Institute for Population Health Improvement that administers statewide health information exchange (HIE) projects for California. Funded by the California Health and Human Services Agency, under the auspices of the Office of the National Coordinator for Health IT State HIE Cooperative Agreement, CHeQ is promoting coordinated and integrated care through health information exchange. Programs including a trusted exchange environment, improved public health capacity for electronic reporting, HIE acceleration funding opportunities, and the monitoring of HIE adoption lay a foundation for improved quality of care for all Californians. Please visit CHeQ at http://www.ucdmc.ucdavis.edu/iph/programs/cheq/.

About Institute for Population Health Improvement (IPHI)
The UC Davis Institute for Population Health Improvement (IPHI) is working to align the many determinants of health to promote and sustain the well-being of both individuals and their communities. Established in 2011, the institute is leading an array of initiatives, from improving health-care quality and health information exchange to advancing surveillance and prevention programs for heart disease and cancer.

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INTRODUCTION

Providers across California are seeking ways to improve care for their patients as well as efficiencies for their practices. Federal health reform is accelerating advancements to the delivery system. New models, such as accountable care organizations and patient-centered medical homes, are gaining traction, transforming our healthcare system from one based on single event provider-patient encounters to one where providers work together across the care continuum to manage the health of populations effectively.

Health information technology is the backbone for providers to meet the challenges of this new era. Tools that facilitate the secure sharing of patient information among trusted care partners are extremely valuable—and necessary—to meet the increasing demands of improving quality while lowering costs.

Whether you are a solo practitioner, clinician in a large medical group, or hospitalist or hospital manager, this Provider Guide offers the basic understanding, tools, and questions to consider, with resources to help you make informed decisions about choosing your path to secure exchange of health information.

What Is Health Information Exchange (HIE)?

Health information exchange is the action of sharing relevant health information electronically among trusted clinical partners regardless of where they are. This information sharing can be about a single patient in order to enhance the care of that patient, or about the health of a group of patients to track, analyze, and improve public health. In addition, patients can access their own vital medical information electronically, becoming more active participants in their healthcare.
Much of the focus on health information technology adoption has been on electronic health records (EHRs). While the widespread adoption of EHRs is underway, they are not necessary for providers to embrace HIE. This is an important point because providers still using paper records can begin health information exchange right away with other providers—including specialists, laboratories, pharmacies and hospitals—without first having to implement EHRs.

For the more than half of providers in California who have already made the switch to EHRs, HIE enables those EHR systems to “talk” to one another via a secure network that protects patient privacy and data integrity. There are hundreds of EHR vendors selling systems to hospitals and ambulatory care facilities, and those systems don’t have the inherent ability to communicate with one another. As a result of this, HIE, which provides the secure translation and transport channel of clinical information from one system to another, is absolutely essential for providers to share patient data across disparate EHR systems.

**What Is a Health Information Organization (HIO)?**

A health information organization is an entity that provides health information exchange services that comply with consensus standards for security and privacy protection. A community HIO is typically formed through a partnership of committed stakeholders who care for shared patients within a certain geographic region.

So while HIE is the action of sharing patient information, an HIO is the community organization tasked with ensuring its working structure.

**The Two Types of HIOs**

The term enterprise HIO typically refers to an HIO serving a single health system with a solo vendor system for related clinics. An example in California is Kaiser Permanente. This Guide does not address those enterprise systems. Instead, the term HIO in this Guide refers to community HIOs, where disparate, unrelated healthcare facilities and providers across a community exchange patient data, usually within a defined geographic region.

**THE BENEFITS OF HEALTH INFORMATION SHARING**

**How Can HIE Help My Practice?**

Appropriate and timely sharing of patient information can improve provider workflow and care quality in many ways. While some of this information sharing is happening already via fax machine and other paper-based methods, electronic sharing of information vastly improves efficiencies and expands the quality and depth of data pooled among trusted providers. The digital exchange of health information means providers have at their fingertips a fuller picture of their patients’ overall health status, any time of day, anywhere.
their fingertips a fuller picture of their patients’ overall health status. This can include patient medical histories, current prescriptions and allergies, and recent laboratory test results and immunizations. Below are just a few examples of how the electronic sharing of health information can improve your practice.

**REFERRALS AND DISCHARGES** Health information exchange facilitates the transfer of patient medical histories, including recent hospitalizations, test results and prescribed medications. HIE can allow referring physicians to ensure specialists and other providers have essential information prior to a new patient visit. Care transitions are a major focus at hospitals nationally—of course to improve care—and also because of new federal penalties for facilities with readmissions for certain conditions. HIE facilitates hand-offs because providers no longer have to rely on the patient to carry vital medical information when moving between facilities, which often does not happen. Hospitals and ambulatory physicians have no direct communications with four out of five patients after they leave the hospital. One in five Medicare patients is readmitted to a hospital post-discharge within 30 days.

**LAB AND RADIOLOGY ORDERS AND RESULTS DELIVERY** HIE improves efficiencies and lowers costs by being a single consistent, reliable, secure conduit for lab and radiology orders and results.

**PRECLUDING REDUNDANT TESTING** Duplication of medical testing is a financial burden to the health system and adds to the workload and time needed to accurately diagnose patients. This is of particular concern for X-rays and other radiology tests because of the risk associated with increased radiology exposure. In one study of 104 trauma patients in Massachusetts transferred between facilities, there were $639 charges per patient resulting from duplicative tests. In another study, 20% of patients seen in institutions without interoperable health records underwent non-clinically indicated duplicative testing. Having patient radiology and lab results available electronically, 24/7, wherever a patient presents, reduces duplicative testing and associated costs of care, as well as improves care. ER studies have shown HIE access to prior records cuts almost two hours off the time needed for a physician to treat a patient, while saving cost as well.

**MEDICATION MANAGEMENT** The electronic sharing of patients’ medications from multiple providers, with patient histories, helps providers gain a better picture of their patient’s prescriptions. An accurate account of a patient’s medications can help avoid adverse medication interactions. In addition, having patients take the
right medications at the right dosage at the right time is a growing focus in healthcare. Medicare patients who adhere to their medications have up to 49% lower overall monthly healthcare costs. Medication misuse can occur because of inaccurate or outdated drug lists.

**ANALYTICS AND REPORTING** With HIE, providers can engage in enhanced business intelligence and data analytics, which in turn can aid in population health management and meeting clinical quality measures, such as those included in Medicare’s **Physician Quality Reporting System**. For instance, accurate histories of preventative screenings can help empaneled patient management and boost quality scores, improving overall patient health. Since the healthcare delivery system is moving away from fee-for-service to paying for quality of outcomes, improved patient health will also boost the provider’s reimbursements.

**CHRONIC DISEASE MANAGEMENT** HIE is a helpful tool to meet standards set by the National Committee for Quality Assurance for virtual teams in chronic care management. Increased sharing of patient information can improve care coordination and outcomes, also meeting auditing requirements.

**PUBLIC HEALTH** HIE facilitates mandatory reporting to public health agencies. In October 2013, the California Department of Public Health launched its **HIE Gateway**. The Gateway is a single point of contact for both electronic submission of immunization data to the California Immunization Registry (CAIR), and for Title 17 reportable conditions to the California Reportable Disease Information Exchange (CalREDIE), then ultimately for all public health reporting.

HIE also improves information sharing for Community Vital Signs reporting to county public health departments, and for syndromic surveillance where allowed by law.
**PAPERWORK AND ADMINISTRATIVE BURDENS** Locating test results, responding to results requests, transcribing, deciphering handwriting—all are longstanding administrative burdens for medical practices. HIE reduces unnecessary paperwork, saving time and reducing costs while sharing valuable information among providers across the care continuum to improve speed, accuracy and quality of care delivered. HIE can also reduce the risk of patient privacy violations under the Health Insurance Portability and Accountability Act, HIPAA, and even more stringent state and federal laws.

**How Can HIE Help My Patients?**

**360-DEGREE HEALTHCARE DELIVERY, ANYWHERE, ANYTIME** Within the next few years, patients will have high-quality care coordination electronically, no matter where they travel nationwide, thanks to electronic health information exchange. Public-private partnerships backed by the federal government are launching in all states to create this national reality. Patients and their families will reap the benefits of these efforts with better health outcomes and experiences interacting with the healthcare system.

60% of patients who experience acute or urgent care episodes do not provide their primary care physician with documentation about that episode.

— eHealth Initiative

**PATIENT ENGAGEMENT** Patients can help complete a more accurate and up-to-date picture of their overall health status, enabling providers to design more effective interventions for chronic disease management, nutrition, or smoking cessation, for example. Detailed patient histories and updated records improve communication, build trust, and spur further engagement. Patients who are actively involved in their health decisions tend to have better outcomes. HIE can provide the channel for consumer-mediated exchange.
through a portal or Direct email account for a personal health record (PHR), which allows patients to contribute to managing their healthcare with information and insights.

**PATIENT SATISFACTION** In the new era of performance-based payments, hospitals must collect and submit patient satisfaction data (HCAHPS) to reap value-based incentives. Ambulatory medical practices participating in Medicare’s Shared Savings Program must report patient experience survey results. HIE has the potential to improve patient satisfaction by breaking down communication barriers in our fragmented healthcare system and encouraging patient participation, while improving outcomes.

**FEDERAL REQUIREMENTS FOR MEANINGFUL USE**

HIE has a very important role in delivering the promise of the “meaningful use” of EHRs. The 2009 federal stimulus package included $18 billion in incentives for qualifying healthcare providers to adopt EHRs and engage in the electronic transfer of health information. These providers—hospitals, clinics, medical groups and solo practitioners—must demonstrate the Meaningful Use (MU) of certified EHRs in three increasingly complex stages to reap Medicare and Medicaid incentive payments.

While MU Stage 1 lays the foundation of EHR adoption, Stage 2 incorporates the electronic exchange of health information. Providers must attest that they can electronically exchange structured information and enable patients to have secure access to their own electronic records.

What’s more, MU Stage 2 incorporates HIE within criteria including: e-prescribing, reporting of lab results, e-transfer of patient care summaries for transitions of care, and secure messaging with patients. Eleven out of the 23 MU Stage 2 requirements require interoperability (the extent to which systems can exchange data and

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**HIE Requirements for Stage 2 Meaningful Use**

1. Computerized provider order entry
2. e-Prescribing
3. Record demographics
4. Record vitals
5. Record smoking status
6. Use clinical decision support
7. Patients view, download, transmit
8. Clinical summaries to patients
9. Protect electronic health information
10. Incorporate lab results
11. Generate patient lists
12. Reminders for follow-up care
13. Patient educational resources
14. Medication reconciliation
15. Transmit care summaries for transitions of care
16. Report immunizations
17. Secure messaging with patients
18. Report syndromic data
19. Record electronic notes
20. Imaging results
21. Record family history
22. Report cancer cases
23. Report other registry cases

From CHEQ Presentation: HIE Strategy in California and Stage 2 Meaningful Use
Robert M. Cothren, PhD
Patient-Centered Health Home & Health Information Technology Conference
June 26, 2013
interpret that shared data). As many as 14 requirements can be facilitated through HIE, depending on the provider’s EHR’s compliance with supporting services, such as e-prescribing, order entry, and follow-up care reminders.

Stage 3 requirements are the most sophisticated, where providers must show they are using EHRs to: improve quality, safety, and efficiency, leading to better outcomes; offer decision support for national high priority health conditions; allow patient access to self-management tools; manage the health of populations; and, ever more importantly, that they have access to comprehensive patient data through HIE.

“PIN” Priorities
The Office of the National Coordinator for Health IT (ONC) identified the following priorities for health information exchange in a Program Information Notice (PIN) in 2011:

- e-Prescribing
- Electronic lab results delivery
- Care summary exchange
- ...and for Public health reporting...
- Immunizations
- Reportable conditions
- Syndromic surveillance

As appropriate on a per-state basis...

From CHeQ Presentation: HIE Strategy in California and Stage 2 Meaningful Use, Robert M. Cothren, PhD
Patient-Centered Health Home & Health Information Technology Conference, June 26, 2013

The Timeframe for Meaningful Use
MU Stage 2 began in 2013 for hospitals (fiscal year starting October 1) and 2014 for all other qualifying providers. In December 2013, federal officials proposed extending the timeframe for MU Stage 2 through 2016. This change would not delay the start of Stage 2, which is already underway. Federal officials also proposed moving back the start of Stage 3 to 2017 for providers who have completed at least two years in Stage 2. More details on the new proposed extension are expected in Fall 2014. Visit My EHR Participation Timeframe to find out more about the requirements for your specific situation.

Implications for MU Stage 2 Non-Compliance
What happens if providers do not comply with Meaningful Use?
- For Medicare reimbursement, “Medicare eligible professionals” must attest to Stage 1 MU by Jan. 1, 2015, or their fee schedule will be reduced by 1% each year up to a maximum of 5% cumulatively. Learn more about the penalty adjustment schedule on this government tipsheet.
• Medicaid (Medi-Cal) providers do not face initial penalties for non-compliance with MU, but will lose out on incentive payments available in a given year. Providers attesting to MU through the Medicaid program are able to “skip” every other year of attestation to MU and still receive incentive payments. They will continue to progress through the stages of the program normally, despite such a “skip.” You can evaluate your individual situation by reading this Health IT Adoption Toolbox.

• Many medical professionals have already adopted evolving electronic technology tools and are on track to deliver HIE as the industry standard. Patients are also starting to expect these capabilities from their doctors. But providers who don’t move forward will be left behind as the rest of their profession abandons paper records and fax machines in favor of digital storage and secure sharing of patient data.

• Providers will be at a disadvantage in delivering the highest quality of care for patients because they won’t have most complete medical information readily at hand.

CALIFORNIA’S APPROACH TO HIE

Because it is a large, diverse state, California chose a region-based approach to HIE. The state used federal funds to expand the capacity of existing HIOs as well as seed many new initiatives in areas without HIE at the time. Other, typically smaller, states have mandated the use of a single statewide system, while California’s approach promotes freedom of choice. In California, regional HIOs are knit together to create linkages across the state using voluntary adherence to consensus-based policies and procedures piloted by the state for inter-HIO communication. This way, providers in regional areas can choose HIE systems that meet the needs of their population best, while still being able to exchange data securely with HIOs from other areas as needed.

California seeks to make the statewide infrastructure supporting the exchange of health information as lightweight and user-friendly as possible. California is also facilitating access and data submission tools for public health systems such as immunizations and disease surveillance.

As California providers, it is important to understand this region-based approach to HIE. If you are in a region of the state with an existing HIO that fits your practice needs, it is worthwhile to investigate joining that organization. The benefit to joining an existing organization is that as more providers join, the organization’s patient information becomes richer, with a denser cohort of patients and sources for a more complete patient record. In addition, HIOs offer a number of value-added services to help in coordinating the care of your patients. However, if there is no existing HIO in your immediate area, consider partnering with other local caregivers to build a trusted community of exchange that can best serve your needs. There are a number of options at varying levels of sophistication that can allow you to start exchanging health information electronically, as described below.
CHOOSING A PATH TO HIE

Understanding Available Models

The most important thing to consider about choosing a path for HIE is that the governance and technology match your needs, not the other way around. This alone will help guide you through the choices in the marketplace today.

There are two overall technology models for HIE that can be deployed independently or in combination with each other. They are Directed Exchange and Query Exchange. Providers can deploy some simple forms of Directed Exchange on their own, but must partner with others in their community to engage in the more sophisticated Query Exchange that allows access to a patient’s longitudinal record, often from many sources. Either way, it creates more helpful exchange to have your referring partners involved in the HIE path you choose.

Directed Exchange

Directed Exchange allows for the direct transmission of electronic patient information in a secure environment. Providers send and receive that information—such as laboratory orders and results, patient referrals and discharge summaries—directly to another provider or health care facility. Directed Exchange can also be used to send immunization data to public health agencies or to report quality measures to the Centers for Medicare and Medicaid Services (CMS).

DIRECT

The most straightforward and simplest type of Directed Exchange is called Direct. Direct is a method to exchange health information securely in a manner similar to email. It is essentially an email system with a HIPAA-compliant security and trust framework. Direct is a point-to-point communication tool that is inexpensive and can be used without an EHR. To use Direct, providers obtain a Direct address (like an email address) and security certificate, and exchange encrypted information with other trusted providers who also have security certificates in place. Direct is also known as “push” messaging from one provider to another based on immediate need. More

Common Models for HIE

From CHeQ Presentation: HIE Strategy in California and Stage 2 Meaningful Use
Robert M. Cothren, PhD
Patient-Centered Health Home & Health Information Technology Conference
June 26, 2013
information about Direct can be found at the Direct Project, which has developed standards for Direct. To date many HIOs in California offer Direct. More information about those organizations can be found on cheqpoint.org and in the “Resources” section of this guide. California Health eQuality (CHeQ) is also making 1,000 Direct accounts available, free for the year 2014, to eligible rural providers as part of the Rural HIE Incentive Program. See californiadirect.org for more information.

**Benefits**

Possible to implement and use without an EHR;
Inexpensive;
Intuitive to use;
Low resource support needed;
All EHR technology certified for MU Stage 2 must enable Direct;
Acts as a foundation to add more extensive HIE functionality later if wanted.

**Considerations**

Limitations on the ability to share and analyze data over time;
No longitudinal patient record;
No public health or analytical capabilities;
May not be integrated with the EHR, requiring manual storage.

**DIRECTED EXCHANGE** Directed Exchange is “push” information delivery from one provider entity to another clinical organization, such as a medical office, hospital or laboratory, using a point-to-point interface. Directed exchange methods securely send structured and standardized patient information—such as lab results and discharge summaries—to another health professional, typically within an established healthcare relationship. The

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**Using Direct**

Example 1

Example 2

Example 3

From ONC Presentation: CHeQ Informational Webinar on HIE Certification for MU Stage 2
Paul Tuten, PhD
Senior Consultant, State HIE Program, ONC

Represents Certified EHR Technology or “CEHRT”
information is sent in encrypted HL7 format, often over the Internet. Whereas Direct facilitates the communication of patient information between providers, Directed Exchange enables the placement of orders or delivery of results between systems.

<table>
<thead>
<tr>
<th>Benefits</th>
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<tbody>
<tr>
<td>Allows communication between provider systems;</td>
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<tr>
<td>Usually includes structured data that can be easily integrated;</td>
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<tr>
<td>Automated to push data directly into an EHR and into a patient’s record;</td>
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<tr>
<td>Minimal impact to clinical workflow.</td>
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<table>
<thead>
<tr>
<th>Considerations</th>
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<tbody>
<tr>
<td>Usually used with an EHR;</td>
</tr>
<tr>
<td>Exchange is limited to automated data delivery, not data requests.</td>
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**Query Exchange**

While typically called Query Exchange, this model enables providers to view a longitudinal record for a patient. A longitudinal patient record is a comprehensive clinical summary of a patient’s healthcare experience, past and present. As a model of HIE, a longitudinal record system allows providers to send a single patient query to reach multiple trusted providers caring for that patient, or to a central database for all available patient information from multiple sources, and to receive a response. This response is often a consolidated patient medical record from several sources, including historical patient data (such as patient visits, hospitalizations, medication lists and allergies). This type of exchange is especially helpful for unplanned care (such as emergency department visits), new patient visits, or for follow-up visits after hospital discharge or specialist referrals.

While simple forms of Directed Exchange can be set up for communications between providers who do not participate in an established community HIO, longitudinal record exchange capabilities generally only exist in the context of an HIO. With the longitudinal record, providers benefit the most when there is a critical mass of provider participation because it can add richness to the patient data profile, which in turn helps improve care quality.

There are three general ways in which longitudinal patient health information is “stored” while it waits to be requested by a provider: centralized, federated and hybrid.

The **centralized model** is a community record where all information collected about patients from various sources (including EHRs) and in different formats is stored in one central location, known as a clinical data repository (CDR). When patient information is accessed, generally through an online portal, providers view information from the CDR. Clinical data stored can include lab and other test results, medications, allergies, patient summaries, insurance information and encounter notes. Additionally, the centralized model can produce repository-wide reports—especially helpful for population health management—based on provider and/or facility data. It also helps with quality and population health reporting, and facilitates analytics on individuals, allowing providers to receive tailored alerts to help better manage chronic diseases.
Introduction

The Benefits of Health Information Sharing

Federal Requirements for Meaningful Use

Choosing a Path to HIE

Determining an HIE Strategy

Resources

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Benefits

- Quick access to all available patient data in the repository, on-demand;
- Consolidated patient medical history available;
- Data continually collected and reconciled on a central server;
- Data does not need to be gathered from multiple sources upon receipt of query (which can take more time).

Considerations

- Requires significant upfront investment to build, as do all longitudinal patient record models;
- Requires trusted community agreeing to central collection and storage of each facilities’ patient data.

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**Centralized Model**

A centralized model takes health data from several sources, and stores it in a single data repository as a patient-centric, consolidated, longitudinal health record comprising information generated across the community. Since all of the data is stored in one location, it is available for analytics to help understand health trends in the community, as well as to better manage chronic conditions with a patient.

Learn more about the federated model and how it works for providers who want to keep organizational control or ownership of their data yet share information when requested for treatment purposes.

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Benefits

- Allows each organization to retain control of its data;
- Quick access to all available patient data in multiple repositories, on demand;
- Consolidated patient medical history available.

Considerations

- Makes population health analytics or chronic disease management more cumbersome.

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Adapted from CalHIPPO Presentation: HIE 101: Foundation and Current State of HIE

Richard Swafford, PhD, Executive Director, Inland Empire Health Information Exchange, August 15, 2012
The **hybrid model** is a combination of centralized and federated models, often with a central repository of information and “edge servers”—servers that reside on the “edge” of two networks—used for data storage. The combination delivers the instant access and capabilities for population analytics of centralized models, married with the ability to own one’s own data from the federated model. The hybrid model presents an attractive alternative for organizations preferring to make use of their existing IT systems, and is the most commonly used architecture in U.S. statewide systems.

**Benefits**

All benefits of both the centralized and federated models, including instant access: owning your own data and the ability to do population health analytics.

**Considerations**

The most complicated to implement and manage, sometimes with the greatest cost structure.
DETERMINING AN HIE STRATEGY

The three most important decisions in determining your HIE strategy are evaluating and choosing:

1. Community partners and governance for trusted exchange;
2. Priority services needed with an appropriate support structure at sustainable fees you can afford;
3. A technology service provider or vendor that offers identified priority services.

Conducting an internal HIE needs assessment helps in decision-making. This internal assessment could include:

- A mission statement;
- Primary reasons for needing HIE in daily workflow;
- Common problems that HIE can help solve;
- Organizational goals moving forward.

Creating a business case for HIE can help solidify your course of action as well. A business case delineates the costs of identified problems, such as duplicative lab tests, emergency room visits, and readmissions, comparing those against the costs of implementing each of the models presented in this Guide. The excellent “HIE Toolkit for Provider Decision-Making” offers worksheets and templates to help in this process. Additionally, you can find useful information for determining return on investment (ROI) at the National Rural Health Resource Center’s HIE Toolkit.

As you gather your medical community to initiate these discussions, ask medical partners, stakeholders and peers...
in your community if plans are already underway to develop an HIO. Is there an existing one that will meet your needs? Look up your county on [CheQ Point 2013](https://cheqpoint.org), a snapshot of HIE activity in California at the end of 2013. Regardless of where you choose to start on the continuum of HIE, staying in the discussion with your community and region can help improve care over time, while lowering costs and improving access.

If you practice in a smaller community, are not near an operational HIO, and/or find you need to begin to tackle HIE with a smaller, inexpensive, stepped approach, consider Direct services.

Another resource that can help you with financing and technical details for decisions is the CheQ HIO Development Guide. The HIO Development Guide presents the steps to get an HIO up and running and can be educational in determining a technology service provider. It offers a comprehensive view of the elements to launch and sustain a community HIO—including community engagement, financing, operations and technology.

**Key Questions to Ask Vendors and Yourself**

While federal regulators have defined many certification criteria for exchanging patient health information and requirements for EHR certification, those criteria will continue to evolve over time. With this in mind, there are key questions providers should ask themselves, as well as EHR and HIE vendors, to make sure they can support robust, efficient interoperability. Since almost half of California providers are still implementing EHRs, we offer the questions below for your consideration to help ensure a smooth path through to and including HIE.

**To the EHR vendor:**

1. Is interoperability part of the product I’m buying or an add-on later?
2. Can records I receive be viewed only, stored if desired, or actually integrated into the patient record so I can do charting?
3. Do you support eRx, electronic orders, patient View-Download-Transmit (VDT) capabilities, and/or Direct? Or do I need to seek separate solutions for those features?

**For yourself:**

1. Do I want results delivery capability into my EHR?
2. Do I want integrated electronic ordering?
3. Do I need a longitudinal patient record view?
4. Do I need or want the capacities to do population or individual patient analytics?

**To the HIE vendor:**

1. How hard (or how expensive) is it to connect my EHR so that data is incorporated into the patient record?
2. Do you translate and deliver data?
3. Do you support a longitudinal community record?
4. Can you support alerts or data analytics?
These questions are a starting point for you to explore your technology choices that will construct a firm HIT foundation moving forward. For more in-depth guidance as you choose or evaluate EHR and HIE capabilities and vendors, refer to the CHeQ HIE Ready Buyers’ Guide. This Guide identifies interoperability and interface features that should be in place to support healthcare data exchanges as well as suggested requirements for MU Stage 2. HIE Ready allows you to make side-by-side comparisons of important HIE features based on commonly accepted interoperability and interface standards embedded in the EHRs of the participants in HIE Ready. The Buyers’ Guide also provides information on how well an HIO supports those same standards.

Ensuring Interoperability Longer Term
As is the case with mobile phones, computers, websites, and other ubiquitous technology, HIE comes in different models and styles. On the plus side, that means that today you have good choices to facilitate HIE. On the downside, there is a range of choices and not all of them meet federal standards for interoperability. Systems that don’t comply with federal standards for interoperability won’t be adequate. The federal government—specifically the Office of the National Coordinator on Health Information Technology (ONC)—is responsible for coordinating the electronic exchange of health information. More information is available in the “Resources” section of this guide, offering sources to keep you up to date with current standards and certification as you evaluate vendors and your evolving needs.

Keeping Up with Advancements in HIE
Once you have selected your path for HIE and are actively using your solution or connection, you can join communities of practice and governance groups to keep up with the latest trends, regulations, technologies, and to learn from each other over time. The HIO governance group in California is the California Association of Health Information Exchanges (CAHIE), comprised of community and enterprise health information organization leaders working together to advance safe and secure HIE throughout California.
RESOURCES

California Association of Health Information Exchanges, CAHIE
http://www.ohii.ca.gov/calohi/PrivacySecurity/CAHIE.aspx

California Health eQuality, CHeQ
http://www.ucdmc.ucdavis.edu/iphi/Programs/cheq/index.html

California Office of Health Information Integrity, CalOHII
http://www.ohii.ca.gov/calohi/

CalHIPSO
HIE Toolkit for Provider Decision-Making

CHeQ HIO Development Guide
http://www.ucdmc.ucdavis.edu/iphi/Programs/cheq/resources/CHeQ%20HIO%20Development%20Guide%20121212.pdf

CHeQ Point 2013
http://cheqpoint.org/

The Direct Project
http://wiki.directproject.org/

DirectTrust
http://www.directtrust.org/

Healthway
http://www.healthwayinc.org/

National Association for Trusted Exchange, NATE
http://nate-trust.org/

National Rural Health Resource Center
HIE Toolkit (including ROI calculator)
http://www.ruralcenter.org/rhset/hietoolkit

Nationwide Health Information Network
http://www.healthit.gov/policy-researchers-implementers/nationwide-healthinformation-network-nwhin

Office of the National Coordinator for Health IT
Federal Guide to HIE, including Web-based Trainings
http://www.healthit.gov/HIE
GLOSSARY OF TERMS FOR HEALTH INFORMATION EXCHANGE (HIE)

ACO: Affordable Care Organization
An affordable care organization is a group of health care providers who come together to provide coordinated care to their Medicare patients, resulting in improvements in quality of care and reduction in cost and often improving access. By demonstrating high-quality care and cost reduction, an ACO is eligible to share in the savings it achieves for the Medicare program.

CAH: Critical Access Hospital
A critical access hospital is a rural community hospital that receives cost-based reimbursement. They tend to be smaller, often 25-ish bed hospitals, taking care of local populations, and referring to larger more urban hospitals when subspecialties are needed.

CCD: Continuity of Care Document
A continuity of care document is an HL7 standard based on the HL7 Clinical Document Architecture for the electronic summary of a patient’s current and historical clinical information. It is often consolidated from more than one source (PCP, specialists, labs/radiology, hospital discharge summary information).

As part of Meaningful Use requirements, the CCD and CCR were both selected as acceptable extract formats for clinical care summaries. To be certified, an Electronic Health Record (EHR) must be able to generate a CCD (or equivalent CCR) that has sections for allergies, medications, problems, and laboratory results, in addition to patient header information.

CCR: Continuity of Care Record
A continuity of care record is an ASTM (American Society for Testing and Materials) standard for the electronic summary of a patient’s clinical information.

As part of Meaningful Use requirements, the CCR and CCD were both selected as acceptable extract formats for clinical care summaries. To be certified, an Electronic Health Record must be able to generate a CCR (or equivalent CCD) that has the sections of allergies, medications, problems, and laboratory results, in addition to patient header information.

CDR: Clinical Data Repository
A clinical data repository is an aggregation of granular patient-centric health data often collected from multiple healthcare entities’ IT systems, storing them for use such as responding to a query by a provider caring for a patient, to view a fuller patient medical record. CDRs are also useful for analytics on a single patient over time, or when using de-identified data for population health analytics.

CEHRT: Certified EHR Technology
Certified EHR technology denotes certification of ability to deliver certain services according to agreed standards, many of which are included in MU by CMS. To receive MU incentive payments, health care providers must use an EHR that is certified specifically for the CMS EHR Incentive Programs. To learn which EHR systems and modules are certified for the Medicare and Medicaid EHR Incentive Programs, reference the Certified Health IT Product List (CHPL) on the ONC website: http://healthit.hhs.gov/chpl

Clinical Quality Measures
Clinical quality measures are tools that measure and track the quality of healthcare services provided by eligible professionals (EPs), eligible hospitals (EHs) and CAHs. In Stage 1 Meaningful Use (MU), CQM reporting is required as a core MU1 objective.

Directed Exchange
Directed exchange is the ability to send and receive secure information electronically between two care providers and/or healthcare facilities to support coordinated care. Direct messaging is one form of directed exchange. Directed exchange transmits information such as laboratory orders and results, patient referrals and discharge summaries, directly to another provider or health care facility. Directed exchange can also be used to send immunization data to public health agencies or to report quality measures to the Centers for Medicare and Medicaid Services (CMS).
**eHealth Exchange**
The eHealth Exchange operates as an independently sustainable public-private partnership routinely sharing information in production and is operationally supported by Healtheway.

**EHR: Electronic Health Record**
An electronic health record is an electronic collection of clinical health information. There are hundreds of different vendors offering EHR systems, suggesting providers check to ensure those they consider using are certified. Use of CEHRT qualifies health care providers for MU incentive payments.

**e-Prescribing**
e-Prescribing is the ability to send prescriptions from a provider office directly to a pharmacy by a prescribing provider.

**Healtheway**
Healtheway is a nonprofit, public-private partnership that operationally supports the eHealth Exchange (formerly referred to as the Nationwide Health Information Network Exchange), which was created to ensure a standards-based nationally interconnected exchange model.

**HIE: Health Information Exchange**
Health information exchange is the action of sharing relevant health information electronically among trusted clinical partners regardless of where they are. This information sharing can be about a single patient in order to enhance the care of that patient, or about the health of a group of patients to track, analyze, and improve public health. In addition, patients can access their own vital medical information electronically, becoming more active participants in their healthcare.

**HIO: Health Information Organization**
A health information (exchange) organization facilitates HIE within a medical trading area.

**HIT: Health Information Technology**
HIT is health information technology.

**HITECH Act**
The HITECH Act, or Health Information Technology for Economic and Clinical Health Act, seeks to improve American health care delivery and patient care through an unprecedented investment in HIT. The provisions of HITECH provide for the MU incentive payments to encourage healthcare delivery reform.

**HL7: Health Level Seven**
Health Level Seven is an organization that provides a framework and standards for the electronic exchange of health information. HL7 defines standards for how information is communicated, focusing on language and data types. HL7 standards support HIE.

**Interoperability**
Interoperability is the ability of two or more systems or elements to exchange information and to use the information that has been exchanged.

**LOINC: Logical Observation Identifiers Names and Codes**
Logical Observation Identifiers Names and Codes is a universal code system for identifying laboratory and clinical observations.

**Longitudinal Patient Record**
A longitudinal patient record is an electronic medical record used as a replacement for the medical record paper file for documentation of historical patient care over time, often created from numerous sources (PCPs, specialists, hospitals, labs, prescriptions, etc.) for ideally a complete picture of patient health.

**MU: Meaningful Use**
Meaningful Use is the set of standards defined by the Centers for Medicare & Medicaid Services (CMS) Incentive Programs that defines the objectives for use of electronic health records (EHR), and allows eligible providers and hospitals to earn incentive payments by meeting specific criteria. There are three stages of MU.
NATE: National Association for Trusted Exchange
Formerly known as Western States Consortium (WSC), the National Association for Trusted Exchange is an interoperability organization representing 13 states nationwide (as of 2013), working to address legal, policy, and technical barriers to health information exchange.

ONC: Office of the National Coordinator for HIT
The Office of the National Coordinator for HIT is the federal government division of HHS leading the Administration's health IT efforts to reform and improve healthcare delivery. ONC is a resource to the entire health system to support the adoption of HIT and the promotion of nationwide HIE to improve health care. ONC is organizationally located within the Office of the Secretary for the U.S. Department of Health and Human Services (HHS).

PHI: Protected Health Information
Protected health information is individually-identifiable health information, including demographic information.

PHR: Personal Health Record
A personal health record is an electronic application managed by patients to maintain and manage their health information privately and securely. PHRs can include self-reported patient information as well as information from healthcare providers.

Query Exchange
Query exchange is the ability for providers to request and/or find healthcare information on a patient from other providers and healthcare entities often in unaffiliated locations, usually via HIE, often used for unplanned ER care, or during a referral or any new patient visit. Ongoing use of query exchange by a PCP continues to update the full record of a patient seeing more than one provider for healthcare.

REC: Regional Extension Center
A regional extension center is an organization that has received funding under the HITECH Act to assist health care providers with the selection and implementation of CEHRT.

Trust Communities
Trust communities are a collection of healthcare organizations that choose to adopt a common set of policies and practices for health information exchange.