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the InfoLinks and Connections Communities of Practice

The Value of Health IT in Improving Population Health and Transforming Public Health Practice

A Brief for Local and State Health Officials

November 2009

Introduction

Federal stimulus spending on health information technology through the American Recovery and Reinvestment Act (ARRA) of 2009 is creating an unprecedented opportunity for public health leaders to engage the healthcare sector on public health and population health priorities. Among the uses of electronic health records that providers will have to demonstrate in exchange for Medicare and Medicaid incentives are: two-way information exchange with public health agencies, and quality reporting on population health metrics.

This raises two questions for public health leaders:

1. Are you clear about which population health/quality improvement priorities are most important to your community, and
2. *Is your agency ready to receive, manage and effectively use the potential tidal wave of incoming electronic health information?*

Health Information Technology in Public Health

This paper introduces key elements of the current federal policy and financial incentives that are elevating public health and population health issues to levels of awareness unprecedented in this country. It also includes action steps that senior leaders in public health can take to capitalize on these historic opportunities. (See Appendix A: The Nationwide Health Information Network and Public Health.)

“Health information technology and electronic health information exchange have emerged as a primary means of shaping a health care system that is effective, safe, transparent and affordable. When linked with other health system reforms, technology can support better quality health care, reduce errors... and improve population health.”ⁱ

ARRA, HITECH and Opportunities for Public Health

Health information technology (health IT) has become a critical component of the healthcare reform dialogue nationally. Electronic health record (EHR) systems and other types of health IT are seen as powerful tools to decrease healthcare costs, support prevention and evidence-based care, and improve overall health outcomes in individuals and populations.^{ii iii iv} Such uses of health IT have the potential to bring many benefits to public health agencies, including:

- Earlier detection of infectious disease outbreaks
- Improved tracking of chronic disease management
- Improved coordination of care across public and private providers
- More accurate assessments of disease burden in the community, or of the impact of community-wide prevention initiatives

Public health has always been data and information driven—public health entities are in fact information brokers in their communities. Rapidly developing electronic health networks represent a wholesale change in how health data is or may be reported to public health agencies, which will require corresponding rapid and substantial evolution in public health business processes and information technology. The axiom of the near future will be to ‘enter once, use many times,’ so public health will

need to modernize its own information systems to harvest data from various information sources rather than relying on paper and manual processes.

A major component of ARRA is the Health Information Technology for Economic and Clinical Health (HITECH) Act. The [HITECH Act](#) authorized new federal spending to ensure that the adoption and use of health IT contributes to a more efficient, effective and safe healthcare system that achieves improved health outcomes. The provisions of the HITECH Act that relate to public health agencies are listed in the table below. Each of these provisions is being administered or overseen by the Office of the National Coordinator for Health Information Technology ([ONC](#), or sometimes ONCHIT).

HITECH Act Provision	Key Elements (excerpts only)	Opportunities for Public Health
Immediate Funding to Strengthen the HIT Infrastructure: Regional or Subnational (Subtitle C, Sec 3011)	<ol style="list-style-type: none"> 1. HIT architecture to support nationwide exchange 2. Training on and dissemination of best practices 3. Promote interoperability of clinical data 4. Protect health information 5. Improve/expand public health IT 	<ul style="list-style-type: none"> ■ Respond to CDC and other federal requests for proposals on use of stimulus funding. ■ Contribute to/participate in training on best practices, focusing on using data to assess/improve population health. ■ Identify/prioritize high value datasets for exchange with clinical care; e.g., immunizations, lab reports, reportable conditions.
State Grants to Promote HIT: Planning and Implementation Grants (Subtitle C, Sec 3013)	<ol style="list-style-type: none"> 6. Enhance HIT, identify state/local resources, provide technical assistance, promote HIT for underserved areas, assist patients to use HIT, support use of regional extension centers, support public health IT, promote quality measurement 	<ul style="list-style-type: none"> ■ Respond to federal RFPs for allocating stimulus funds. (Some will be targeted, such as for Immunization Information Systems.) ■ Focus on upgrading systems that align with the “meaningful use” criteria and measures for private providers. These will be the areas where information exchange will be most critical.
HIT Implementation Assistance (Subtitle C, Sec 3012)	<ol style="list-style-type: none"> 7. National HIT Research Center: Focus on identifying and disseminating best practices. 8. HIT Regional Extension Centers: Focus on helping rural providers, Critical Access Hospitals, and others serving uninsured/underinsured populations to effectively adopt and use certified EHRs. 	<ul style="list-style-type: none"> ■ Work through professional associations to advocate for the national center to authorize support for public health agencies in addition to the providers listed in the law. ■ Reach out to the regional extension centers (once formed in 2010) to help them understand the information exchange needs of your region.

The major provisions of HITECH are based on larger national trends in e-health that are important to public health. These include:

- Health Information Exchange (HIE) entities are emerging across the country as vehicles through which health information is consolidated and delivered electronically to clinicians. The implications of an HIE entity for a state or local health department can be considerable. To begin with, health data on individuals who are seen by public health practitioners will need to be contributed to the HIE entity so that complete records for those individuals can be made available to all others who provide care for them. Public health staff will also want access to those complete records, so it will be necessary to join in the data sharing and other agreements of this new entity. Data reported to public health will likely increasingly flow through such vehicles, so public health engagement in establishing the information exchange priorities, the privacy and security provisions, and other aspects of HIE governance will also be crucial, particularly as the current definition is a fluid concept that includes EHRs and personal health records (PHRs). Finally, an HIE entity can be a powerful force for a community-wide initiative to improve population health. See also the sidebar on the roles and value of HIE to public health and population health. Examples include [Northeast Florida Health Informatics Consortium](#), the [Minnesota e-Health Initiative](#), and the e-health initiatives in [New York State](#).
- The national move toward health IT includes a major effort to establish and universally adopt standards so that information systems can be interoperable; that is, be able to securely exchange data between information systems while retaining the meaning of the data. (There are thousands of standards related to health information. Narrowing those to a manageable number that can be more universally adopted is currently the job of the Health Information Technology Standards Panel or [HITSP](#).) For public health to be interoperable with healthcare providers, it will need to modernize its key information systems, such as disease surveillance, newborn screening, birth and death registries, and immunization information systems.
- Modernizing public health information systems must be undertaken with a strategic, agency-wide view. Many health departments around the country are developing plans to guide how policies, staffing, information technology, security, and other elements should be structured to effectively manage, safeguard and exchange information (such plans are generally known as [enterprise architecture](#) (EA) plans). To learn more about EA in public health, consider joining the [EA Community of Practice](#).

Role of Public Health in HIE

- Source of clinical and other health information on clients seen by public health, or on specimens tested by public health.
- Source of information on emergent issues in a community that could assist a clinician in diagnostic and treatment decisions.
- Source of population based analysis of individual disease data to provide improved trends to providers.
- Recipient of reportable disease information.
- Recipient of biosurveillance data reporting streams
- Provider of expert knowledge in population health improvement, and in clinical and treatment guidelines.

Role of HIE in population health

- Source of improved population health data collection
- Ability to promptly route and deliver to community clinicians emergent information from public health
- Assist public health in cross-jurisdictional collaboration on data collection and sharing

- Designing and implementing a forward-thinking, agency-wide plan requires the vision and skills to both conceive of it and carry it out. This means not only having skilled IT staff but, just as important, staff skilled in *public health informatics*. Informatics is the discipline that bridges the worlds of programs and IT, helping to ensure that information systems are designed and effectively used to truly support and enhance the work of the programs and the staff.

Novel Influenza A (H1N1) and Health Information Technology

The emergence of the novel H1N1 influenza virus highlights the need for electronic health information exchange for rapid detection of threats to community health. Rather than depending upon providers or infection control practitioners to submit paper disease reports, data already collected in electronic health records and other tools can be automatically sent to public health. This has tremendous potential to increase the timeliness, and thereby the usefulness, of surveillance information. Information technology will not replace human skills in basic epidemiologic investigation, but it can provide powerful tools to support decision making and to facilitate better coordinated and more timely responses. Whether capturing influenza-like illness syndromic surveillance information in emergency departments, or electronic laboratory reporting on confirmed cases, interoperable health IT is improving the flow of information on which public health decisions are made.

Action Steps

Given these historic opportunities and the potential for transformative change for both healthcare and public health, what actions can you take to prepare your agency to both participate in and profit from these changes?

Action Steps Focused on Your Community

- Work collaboratively with the medical community to develop strategies for providers to meet the “meaningful use” measures for their EHR systems related to public health or population health improvement. Such strategies could include:
 - a) bi-directional exchange with public health information systems such as immunization registries and surveillance systems;
 - b) development of chronic disease registries, decision support systems and other tools to support effective disease management; and
 - c) providing the ability to generate quality improvement reports based on community-specified goals (see next bullet).
- Work collaboratively to establish population health goals for your community or state in order to focus quality improvement efforts across all providers. Develop consensus on how to incorporate such quality reports within the meaningful use of EHR systems for your area.
- If an HIE entity is established or emerging in your jurisdiction, get involved if you are not already. Have clear messages about the value that public health brings to such discussions. The Institute for Public Health Informatics and Research, Duval County Health Department, has developed a [guide to local agency leadership](#) in developing a community health information exchange that incorporates all community healthcare stakeholders, including public health.
- If no HIE entity currently exists, serve as a neutral convener to explore the benefits to all stakeholders of creating one. Federal stimulus funding is available to states to support both adoption and planning

activities for EHR and HIE. Be at the table as these funds are being targeted for your state, to ensure that population health and public health needs are being addressed.

- Serve as a neutral convener for providers newly adopting EHRs so they have a forum in which to share lessons learned on adapting workflows and effectively using health IT to improve care processes and quality outcomes. The [Minnesota e-Health Initiative](#) has developed a comprehensive guide to effective use of EHRs that includes public health/population health.

Action Steps Focused Within Your Agency

- Create a cross-program task force to research and make recommendations around preparing for e-health. Understand how the historic changes described above will impact your agency and how you do your work. A roadmap for creating an agency e-health strategy can be found in Appendix b.
- Develop an enterprise architecture plan to guide the way in which you will modernize information systems, developing related policies and staffing plans, not only to accommodate but to truly take advantage of e-health changes and healthcare reform opportunities. Consider architecture design models that will allow the agency to produce consolidated records for individuals who receive services from the public health agency, and allow this information to be shared with clinical providers through health information exchange. The Connections Community of Practice has developed the Unique Records Portfolio, a book that describes common architectures to match and merge records from disparate data systems.
- Assess the capacity of your agency to respond to and implement your plans, including staff competencies in informatics, current and prospective data exchange partners, IT vision and technical support, and executive leadership.
- Inventory which of your information systems will need to be modernized to enable automated electronic information exchange with clinical care and others. [A guide to conducting such an informatics profile](#) was developed by the Minnesota Department of Health.

Action Steps to Contribute to National Impact

- Participate through your professional associations, Governors offices, and other venues to advocate for public health agencies and population health goals to be considered as an integral component of healthcare reform. For healthcare reform to be truly successful in achieving higher quality for less cost, public health will need to be “baked in” from the start.
- Regional Extension Centers for health IT are projected to be established in 2010 to support Critical Access Hospitals, rural providers and others. Reach out to urge these regional centers, and their national office, to support public health agencies—as entities working with under-served populations, often in rural areas—in upgrading and modernizing information systems to be more interoperable with the targeted providers.
- Work with your professional associations to provide ongoing input on the population health/public health perspective on “meaningful use” of EHR systems. The objectives and measures used to determine meaningful use will likely evolve over time. Visit the [ONC site](#) to follow the development of definitions and reporting criteria for meaningful use.
- Work through your professional associations to identify those programmatic areas where timely, automated, bi-directional exchange of information with clinical care would have the greatest value for public health. If it is an area for which standards are not being identified (currently through the Health Information Technology Standards Panel ([HITSP](#))) or for which EHRs are not being certified

(currently through the Certification Commissioner for Healthcare Information technology ([CCHIT](#))), advocate for their inclusion in those national activities.

Regardless of where your agency and your community partners are in terms of adopting health IT, the time to fully understand and actively engage in e-health initiatives is now. If you have not yet begun, assemble your team, identify the informational and staffing resources you need, and identify your priorities. If you have already begun, share your lessons learned through your professional associations. The long-term potential to improve health outcomes and health status in your communities is unprecedented.

References

- ⁱ State Alliance for e-Health. Preparing to Implement HITECH: A State Guide for Electronic Health Information Exchange. August, 2009. Available at <http://www.nga.org/Files/pdf/0908ehealthhitech.pdf>
- ⁱⁱ The White House. Health Care. Available at: http://www.whitehouse.gov/issues/health_care/. Accessed September 23, 2009.
- ⁱⁱⁱ Steinbrook R. Health care and the American Recovery and Reinvestment Act. *NEJM* 2009; 360: 1057-60.
- ^{iv} Department of Health and Human Services. The ONC-Coordinated Federal Health Information Technology Strategic Plan: 2008-2012. Synopsis. June 3, 2008. Available at: <http://healthit.hhs.gov>. Accessed May 20, 2009.
- ^v Committee on Ways and Means. Health Information and Technology for Economic and Clinical Health or HITECH Act. Available at: <http://waysandmeans.house.gov/media/pdf/110/hit2.pdf>. Accessed May 20, 2009.

Resources

State Alliance for e-Health. *Preparing to Implement HITECH: A State Guide for Electronic Health Information Exchange.*

Available at <http://www.nga.org/Files/pdf/0908ehealthhitech.pdf>

U.S. Department of Health and Human Services. Health Information Technology.

Available at: <http://healthit.hhs.gov/>

eHealth Initiative. *Navigating the American Recovery and Reinvestment Act.*

Available at: <http://www.ehealthinitiative.org/>

U.S. Department of Health and Human Services. Health Care Reform.

Available at: <http://www.healthreform.gov/>

Glossary

Office of the National Coordinator for Health Information Technology (ONC or ONCHIT)

Established in 2004, the ONC is the principal Federal office responsible for coordinating national efforts toward implementation and use of electronic health information exchange. The Office is under the aegis of the Department of Health and Human Services. Source: <http://healthit.hhs.gov/>

eHealth is a relatively recent term for healthcare practice which is supported by electronic processes and communication. The term can encompass a range of services that are at the edge of medicine/healthcare and information technology, including use of EHR and HIE. Source: <http://en.wikipedia.org/wiki/EHealth>

Enterprise Architecture (EA) defines how your agency works (the processes, people and policies), and the information and the technologies necessary to support that work, including how to transition to new technologies in response to the changing needs. EA links strategic goals and objectives to investments and to measurable performance improvements. Source: http://www.iese.edu/en/files/6_29338.pdf

Health Information Technology (Health IT) includes electronic health records and tools used for e-prescribing, telehealth, and health information exchange. EHRs and other forms of HIT have the potential to more rapidly and completely collect and report information to public health authorities than current manual processes, leading to earlier detection of community health threats, both acute and chronic.

Health Information Exchange (HIE) is the secure and authorized electronic transfer of health information from one point to another with the purpose of improving continuity of care, health care quality, and patient safety; that is, ensuring that the right information on the right person is available to the right clinician at the right time to support the right decision. HIE is also often used to refer to an organization established to facilitate and govern secure exchange of health information among providers, payers, and others.

“Meaningful Use” The American Recovery and Reinvestment Act authorizes the Centers for Medicare & Medicaid Services (CMS) to provide a reimbursement incentive for physician and hospital providers who are successful in becoming “meaningful users” of an electronic health record (EHR). These incentive payments begin in 2011 and gradually phase down. Starting in 2015, providers are expected to have adopted and be actively utilizing an EHR in compliance with the “meaningful use” definition or they will be subject to financial penalties under Medicare.

Source: <http://healthit.hhs.gov>, under Health IT/Recovery

Public Health Informatics is “the systematic application of information and computer science and technology to public health practice, research, and learning”

Source: Public Health Informatics: Improving and Transforming Public Health in the Information Age, William A. Yasnoff et al, J Public Health Management Practice, 2000, 6(6), 67–75).

Appendix A:

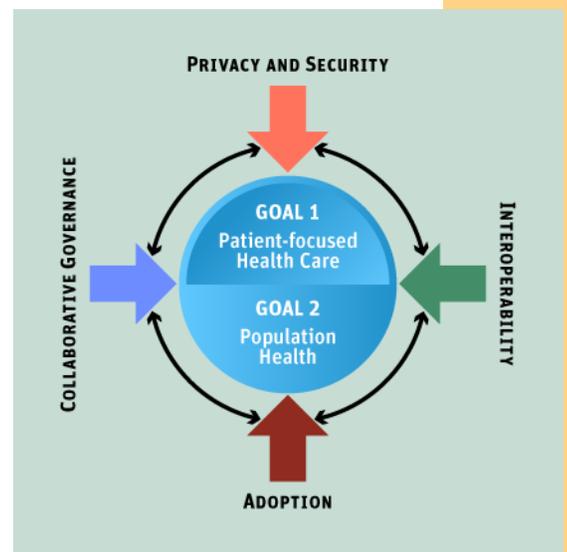
The Nationwide Health Information Network and Public Health

The figure below represents a [national vision](#) of how HIT can contribute to both patient-centric care and population health, as articulated by the ONC in 2008.* The vision calls for comprehensive management of medical information and its secure exchange between healthcare consumers, providers, and other organizations involved with population and community health. Among the ONC's objectives* are to:

- facilitate electronic exchange, access, and use of electronic health information, with EHRs and personal health records (PHRs) as key technologies
- enable exchange of health information to support population-oriented uses
- establish coordinated organizational processes supporting information use for population health

The Nationwide Health Information Network and Public Health

The Nationwide Health Information Network ([NHIN](#)) is under collaborative development to provide a secure, nationwide, interoperable health information infrastructure to connect providers, consumers, public health and others involved in supporting health and healthcare. Major goals for the NHIN are to enable health information to follow the consumer, be available for clinical decision making, and support appropriate use of healthcare information beyond direct patient care, so as to improve community health.



The NHIN is thought of as a “network of networks” which will connect diverse entities for the purpose of exchanging health information to improve individual and population health. It is conceived of as the vehicle through which health information will be exchanged, replacing duplicate data entry into multiple information systems with automated electronic interfaces, and where relevant, replacing or reducing the need for fax or mail delivery of health data. The NHIN recently completed its second phase (trial implementation) to test converging federal approaches and implementations to ensure secure and timely information exchange for patient care and population health. Current ARRA funding will be used to support the third phase (limited production deployment) of the NHIN.

Local and state health departments and the CDC—the public health network, so to speak—will be part of this network of networks to both send and receive individual health information, and to access anonymized and summary data to detect health threats and assess community health status. Local and state health departments will need to: (1) be engaged in the formation and/or governance of HIE entities operating within their jurisdictions; and (2) modernize all electronic health information systems to adapt to the emerging federal standards for exchange of data in the healthcare sector. Both are critical for public health to benefit from and adapt to new sources of relevant health information flowing electronically to and from EHR systems and across new HIE networks.

* In the HITECH ACT, Congress required the ONC to update the strategic plan in 2009. The objectives listed are from the original 2008 plan.

Appendix B: Creating a Public Health Strategy for e-Health: A Roadmap

Stage 1: Strategic Vision and Alignment

What is our vision? How will we organize to achieve it? How do we align with and leverage other relevant initiatives?

- **Create a clear vision for e-health within your agency.**
CONSIDERATIONS: The vision should align with agency mission, statewide health information technology (HIT) and health information exchange (HIE) plans, national and state e-government or IT strategies, and other relevant initiatives, and should link e-health with improved population health. The use of health information technology and health information exchange must support the public health mission. Tying to other initiatives can help inform your strategy, as well as help build support with key stakeholders.
RESOURCES: Minnesota e-Health Initiative (<http://www.health.state.mn.us/ehealth>); New York eHealth Collaborative (www.nyehealth.org/)
- **Be aware of your state’s HIE plans.**
CONSIDERATIONS: All states are submitting plans for administrating HIE in their states. If you are not aware of your state’s planning activities, find out who the officially designated agency and person is.
RESOURCES: Statewide plans for implementing e-health initiatives in a way that includes public health and population health goals can be found at the [Minnesota Department of Health](#), the [New York eHealth Collaborative](#), and the [Northeast Florida Health Informatics Consortium](#).
- **Convene an agency-wide, cross-program taskforce with executive sponsorship.**
CONSIDERATIONS: Convene the taskforce under the leadership of (or engage) the person (and perhaps the office) designated as the HIT Coordinator for your state. Create a mix of management and program staff. The key is that participants should be visionary enough to be able to see a different and better future. If you are a state health department where the Medicaid program is housed in a separate agency, consider adding someone from the Medicaid program to your taskforce.
- **Create a liaison position to coordinate efforts between your agency and other healthcare organizations around e-health issues.**
- **Charter the project by crafting a formal charter document that has executive sign-off.**
CONSIDERATIONS: The charter should include: reasons for the project; expected benefits (the “value proposition”); the e-health vision; taskforce membership, charge and authority; work plan and timeline (based on this roadmap); list of planned deliverables; and any other issue(s) relevant to formally establishing, defining and empowering the project and its taskforce. You may identify preliminary strategic priorities for the charter, or wait for the planning phase and base priorities on results from the assessment.

Stage 2: Assess

What are the opportunities? How ready are we?

■ **Develop both an internal and external assessment plan.**

CONSIDERATIONS: A good implementation plan first requires a solid assessment of opportunities and barriers, existing and potential resources, and current capacity.

INTERNAL ASSESSMENT: Identify and engage internal stakeholders who can help determine what to assess, how best to do it, and how to interpret the results. Candidate areas for internal assessment include:

- Current data exchange: What data is exchanged, with which partners? How is the exchange accomplished (paper, fax, electronic batch, electronic real-time, etc.)?
- Which programs use what data?
- Where does the data reside? How do you access the data when needed?
- Where does the information flow/exchange break down (“data failures”)?
- What is your informatics capacity, including information system inventory (use of standards, platform(s), current level of interoperability, data trading partners, etc.), and what is your level of workforce readiness (knowledge of standards and interoperability; training needs).

RESOURCE: Minnesota Department of Health Informatics Profile Toolkit (<http://www.phii.org>)

EXTERNAL ASSESSMENT: Understand how Federal incentives and stimulus dollars will impact the priorities and decisions of private providers, the Medicaid program, and others. (Knowing their priorities can help you establish your own priorities in order to leverage their work.) Be aware of any legislative or regulatory barriers to exchanging data, and know who from your agency is involved with existing and emerging HIE organizations.

RESOURCE: The Value of Health IT in Improving Population Health and Transforming Public Health Practice (<http://www.phii.org>) (the parent document to this appendix)

Stage 3: Plan

What are your priorities? How will you get there?

■ **Review the assessment results.**

CONSIDERATIONS: Identify key opportunities, and develop strategic priorities for achieving the vision. Again, wherever possible and appropriate, align with other agency, jurisdiction, statewide or national strategic priorities. Areas of strategic priority for the plan could include:

- Health Information Exchange opportunities:
 - Opportunities for exchanging data never before shared, such as height and weight data on children 0-18 years; improved ways of exchanging data currently being shared (streamlined processes, 2-way versus 1-way, etc., in areas such as mandatory communicable disease reporting).
- Integration and interoperability:
 - Establish an overall approach and priorities for enabling integration of related data, such as child health or communicable diseases. Data can be integrated at the “back-end” (database) level, or can be brought together in an integrated view/application for the end user.

- Ascertain the standards most important for achieving automated, computer-to-computer exchange of information. Many of these standards have been identified by the national Health Information Technology Standards Panel (<http://www.hitsp.org>).
 - Enterprise Architecture (EA) plan:
 - EA defines for an organization its business, business processes and supporting IT infrastructure, and shows how they all relate, with the goal of improving organizational efficiency and effectiveness. Also, an EA plan demonstrates that IT supports the programs and business processes of your agency, based on mission and strategic goals.
RESOURCE: Enterprise Architecture Community of Practice (<http://www.cdc.gov/phn/communities/current-cops/ea/index.html>).
 - Modernizing and transforming information technology/information systems.
 - Identify which systems would provide the greatest value in being web-enabled, and define an overall path for getting there. Identify how your systems could better support your work. Where are the frustrations and inefficient work processes? Re-design your workflows and systems to better support effective and efficient work. Identify improved uses of your data. What standard or ad hoc reporting capabilities could provide significant value to you or your partners? Define a path for building HL7 capacity, since this is the messaging standard you will use most for exchanging data with clinical care entities. Identify which systems would provide the greatest value for you and your partners with an HL7 engine.
RESOURCE: Messaging and Vocabulary Community of Practice (<http://www.cdc.gov/phn/communities/current-cops/vm/index.html>)
 - Build in objectives that would be likely early successes to build credibility, and reassure supporters and skeptics alike.
- **Define the value proposition for involvement in an HIE organization.**
CONSIDERATIONS: Look at the benefits to the public health agency, but also look at how your expertise and involvement can help the HIE organization meet its business, quality improvement, safety or other goals. Help the HIE organization recognize the benefits to making exchange of select public health data a priority. What are the compelling business reasons for an HIE organization to be an intermediary for provider reporting of public health data; that is, how do you make it a selling point for their customers?
RESOURCE: Public Health & Electronic Health Information Exchange: A Guide to Local Agency Leadership (<http://www.phii.org>)
 - **Draft a strategy and implementation plan.**
CONSIDERATIONS: Identify benchmarks, needed resources, responsible persons/teams, etc. Be realistic about what financial resources can be garnered. Your objectives should include activities that do not require new funding, but perhaps require new ways of working together. Include how to build workforce/organizational informatics and IT capacity. Clearly define workforce roles and responsibilities and workflow (may require business process redesign). Include contingencies/inter-dependencies to identify activities that depend on prior events taking place in order to proceed. Investigate the possibility of taking a patchwork approach to resourcing that pools some staff positions and portions of budgets. Stage the activities in your plan for incremental implementation and cost management. Make sure the activities build on one another and that you understand the inter-dependencies among them.
 - **Develop and achieve consensus on data-sharing agreements.**
CONSIDERATIONS: Review based on federal and state law and regulations to ensure legality.

- **Engage external stakeholders.**

CONSIDERATIONS: Get feedback on the plan from your data trading partners. Tie your plan to other relevant initiatives to achieve buy-in and support.

Stage 4: Implement

How do we engage our staff and community partners in implementing the plan?

- **Gain agreement on a shared vision.**

CONSIDERATIONS: Gaining consensus with external stakeholders on a vision for improved population health (from Stage 1) provides a foundation on which to build agreement on other issues.

- **Implement activities in a staged, incremental way based on your plan.**

- **Develop a protocol for establishing, testing, and “going live” with interfaces.**

CONSIDERATIONS: Plan to include time for quality assurance.

- **Establish data quality protocols for ensuring completeness and accuracy of data.**

- **Keep stakeholders informed.**

CONSIDERATIONS: Plan regular communications so that interest and commitment don't fade.

- **Always be prepared to discuss privacy and security with policy makers, advocates or the media.**

Stage 5: Maintain

How will we evaluate, grow and sustain?

- **Monitor progress and refine the plan over time.**

CONSIDERATIONS: Be prepared to adjust the schedule and order of activities as staff, financial and other resources wax and wane.

- **Ensure knowledge transfer.**

CONSIDERATIONS: Knowledge gained from exchanging data in one area should be applied to subsequent exchanges. Create mechanisms for staff to learn from one another, and for improvements to the protocols and processes to be discussed, refined and adopted agency-wide.

- **Don't count on ongoing direct ARRA or HITECH funding.**

CONSIDERATIONS: Instead of relying on such funding coming directly to your agency, plan on how to leverage the much larger amounts of funding being made available to the healthcare sector. Make advancing your agency's capacity in interoperability and HIE a part of every program's responsibility by including appropriate activities and funding requests in all of your state and/or federal funding proposals. Alternatively, consider adding to indirect funding a percentage that is earmarked for IT and interoperability infrastructure, such as shared HL7 expertise, development of single sign-on capability for public health applications, etc.

- **Continue to identify new priorities based on value to stakeholders and the community.**

- **Communicate successes to all stakeholders, including policy makers.**

- **Remember that credit is infinitely divisible!**