
Public Health Informatics Profile Toolkit

**Developing a Public Health Informatics Profile:
A Toolkit for State and Local Health Departments
to Assess their Informatics Capacity**

DEVELOPED BY:

The Minnesota Department of Health

SUPPORTED BY:

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Jennifer Ellsworth Fritz, Priya Rajamani, Martin LaVenture

Minnesota Department of Health

Principal Developers

Bill Brand, Debra Robic

Public Health Informatics Institute

Editorial Reviewers

FOR MORE INFORMATION

Public Health Informatics Institute

Visit www.phii.org

Call toll-free (866)815-9704

E-mail info@phii.org

Minnesota Department of Health

Visit www.health.state.mn.us/ehealth

Call Priya Rajamani @ 651-201-4119

E-mail Priya.Rajamani@state.mn.us

Call Jennifer Ellsworth Fritz @ 651-201-3662

E-mail Jennifer.Ellsworth@state.mn.us

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Introduction

Public health plays a critical role in the collection and dissemination of health information (e.g., immunization registries, disease reporting, and disease registries). However, the systems that support this information are often fragmented, particularly at the state and local level, and afford little opportunity for inter-program communication. A challenge facing the entire health care system is the need for timely and accurate health information and a more integrated information system. This has prompted the private sector to move towards more standards-based, electronic health information exchange. Such environmental and systems changes are being driven and supported by several federal policy initiatives, such as the Health Information Technology for Economic and Clinical Health (HITECH) Act and the national eHealth Initiative as well as state-based e-health initiatives (see Additional Resources section on page 25 for more information). The challenge for public health is to respond in kind by overcoming common barriers, including competing priorities, lack of funding and other resources, and a lack of understanding of the big picture. Public health must strategically approach the modernization (see definition on page 6) of its information systems.

With this in mind, the Minnesota Department of Health (MDH) designed the **Public Health Informatics Profile Toolkit**. The Toolkit is a resource for state and local health departments to assess needs and readiness for health information exchange in today's rapidly changing health information environment. It is meant to be an adaptable set of resources that can be tailored to your agency's individual needs, and is based upon the work done by the MDH's own assessment regarding its readiness for electronic information exchange.

Frequently Used Terms in this Toolkit

Below are definitions of frequently used terms in this Toolkit.

ASSESSMENT

As used in this document, the term refers to the process for conducting an evaluation of your agency's current and projected information system needs and opportunities, which includes developing a conceptual framework, project scope, and goals in order to fashion a detailed public health informatics profile for your organization.

COMMON GROUND

This program facilitates the exchange of ideas and best practices in the areas of public health preparedness and chronic disease prevention and control. The Public Health Informatics Institute provides management and technical support to 31 initiative grantees (including the MDH), helping state and local public health agencies to better respond to health threats by improving their use of information systems through analysis and redesign of business processes, and defining information system requirements. The program is sponsored by the Robert Wood Johnson Foundation.

DATASET

A dataset is a collection of records, electronic or paper-based, organized for a particular purpose. Some small datasets could logically be grouped together. For example, several datasets about food-borne outbreaks could be grouped together because, even though each dataset tracks an independent outbreak, all of the datasets contain essentially the same kind of information.

DATA STANDARDS

Standards facilitate the electronic movement of data across various information systems. In order to share and utilize data across numerous organizations / departments, data must hold similar

information (data elements), utilize similar words (vocabulary), and use an agreed upon way to communicate (messaging). When information systems collect and store data in the same way, it is much more efficient for one system to send that data to another and that data can be utilized accurately and consistently for its intended purpose.

HEALTH INFORMATION EXCHANGE

This term describes the mobilization of healthcare information electronically across organizations within a region or community. Health information exchange provides the capability to electronically move clinical information between disparate healthcare information systems while maintaining the meaning of the information being exchanged. The goal of health information exchange is to facilitate access to and retrieval of clinical data to provide safer, timelier, efficient, effective, equitable, and patient-centered care.

HITECH

The Health Information Technology for Economic and Clinical Health (HITECH) Act, part of the American Recovery and Reinvestment Act (ARRA), has set a goal of 2014 to increase the number of health care providers who have, and effectively use, electronic health records (EHRs) and health information exchange (HIE).

Note: Public health agencies are viewed as critical electronic health information exchange stakeholders that are expected to assess their information systems (particularly for disease reporting and immunization registries) to be able to exchange health information when needed.

INFORMATIONLINKS (INFOLINKS)

A collaborative project of the Public Health Informatics Institute and the Centers for Disease Control and Prevention's National Center for Public Health Informatics. The project assists public health departments in partnering with the private healthcare sector on Health Information Exchange (HIE) issues, and facilitates a community of practice comprised of public health practitioners who

seek to use HIE as a means of improving health-care quality and safety and population health.

INFORMATION SYSTEM

This term, as it is used in the Toolkit, refers to a business application of the computer. It is made up of the database, application programs, as well as manual and machine procedures. It also encompasses the computer systems that do the processing. The database stores the subjects of the business (master files) and its activities (transaction files). Application programs provide the data entry, updating, query, and report processing. Examples of public health information systems include cancer surveillance, immunization registries, disease surveillance, and vital records.

INFORMATION SYSTEM MODERNIZATION

This term is used in the Toolkit to describe the process and outcome of upgrading or modifying an information system to meet changing needs. Modernization may include: upgrading software, developing a web-based interface, utilizing more current versions of standards, modifying the user interface, enhancing a system to accept or exchange information electronically, etc.

INTEROPERABILITY

The ability of information technology systems from various programs and software applications to communicate, to exchange data accurately, effectively, and consistently, and to use the information that has been exchanged.

PERSONAL HEALTH INFORMATION

Personal Health Information means individually identifiable health information that is transmitted or maintained by electronic media or is transmitted or maintained in any other form or medium. "Health information" is any information relating to the past, present, or future physical or mental health or condition of an individual.

PUBLIC HEALTH INFORMATICS

The systematic application of information and computer science and technology to public health practice, research, and learning.

PUBLIC HEALTH INFORMATICS PROFILE

This term refers to the end result of the assessment; the report that is generated based on the information derived from the assessment.

TOOLKIT

We use this term to refer to the resources described in this document, which describes the assessment process, the methods used, and the resultant profile.

Purpose of a Public Health Informatics Profile

What is a public health informatics profile?

A public health informatics profile is a comprehensive summary of an agency's current and projected information system needs and opportunities. The profile can be used to inform your agency decisions and priorities regarding system modernization (as defined on page 6). For example, priorities may be based on needs for electronic connections with public and private stakeholders. Information in your public health informatics profile can include the collection, analysis, and representation of information pertaining to the information systems that support your public health programs, as well as an assessment of future informatics needs and opportunities.

The information can be collected at the agency or other organizational level. The profile can include various relevant areas such as:

- Current and desired technical capabilities of information systems
- Current and future use of and need for public health information
- Current and desired information exchange partners and capabilities
- Resource needs

The Public Health Informatics Profile Toolkit is meant to serve as a guide that you can use to create a public health informatics profile. The Toolkit provides practical tips and direction for tailoring a profile that realistically reflects your system needs. Ultimately the profile must meet the specific system requirements of your agency, therefore, these tools are not meant to be a cookbook, but rather a set of ingredients that you assemble in a recipe that meets your needs.

Note: *Sample tools are referenced throughout the Toolkit and can also be found in the appendices.*

Why conduct a public health informatics profile?

The need for public health agencies to electronically exchange information with our stakeholders is growing, and the expectations for high levels of service requires modernization of many of our information systems by making them integrated, interoperable, and standards-based.

Any public health organization responsible for collecting, managing, or using public health data can benefit from conducting the kind of assessment we describe in the Toolkit to generate a public health informatics profile. An assessment of public health information systems including the technical as well as human skill and knowledge resource aspects can help your agency identify areas of opportunity, and assist in agency-wide planning efforts. A public health informatics profile can provide your organization with a portfolio of program and/or information system needs, human resource needs, and reveal departments or divisions where there may be synergies for working together on a similar issue, such as electronic health information exchange.

For public health to become an important player in health care reform, public health agencies will need to upgrade their systems in order to be an equal partner in health information exchange initiatives with the private health care sector (HITECH funding may support the development of this type of exchange). Conducting a readiness assessment for your organization can provide useful information for planning purposes, and can become a motivator for change within your organization.

Who would benefit from a public health informatics profile?

Depending on the needs of your agency, the public health informatics assessment as described in this Toolkit can be conducted to evaluate key information systems on a program-specific level, or

can provide an enterprise-wide view. Therefore, a public health informatics profile can benefit individuals at all levels of an organization, whether you are an executive responsible for overall organizational leadership or a program manager responsible for a particular program area.

For example, executives benefit by having an overall assessment to support strategic and tactical planning and overall information system portfolio management. Individual program staff can benefit from an assessment conducted within an organization, which can reveal those programs that are exchanging data electronically, which ones are not, and where some of the gaps are in the process. The assessment can also expose areas of opportunity to coordinate within an agency. For example, a program manager who needs to implement electronic exchange with hospitals or clinics can see which programs are already doing this and can benefit from their experience by partnering with them on staff and other shared resources.

An assessment can also be conducted outside of the organization, providing a better picture of needs and opportunities in the external environment. For example, the readiness of health information exchange among community partners (hospitals, etc.) can be determined.

A Minnesota story

As momentum was building in Minnesota regarding the adoption of electronic health records and the desire for bi-directional exchanges between the public and private sectors, the Minnesota Department of Health (MDH) decided to learn more about its agency's readiness and needs with respect to electronic health information exchange. It wanted a fairly comprehensive view that would reflect the full range of needs within its agency, so it created and conducted a public health informatics assessment. This assessment allowed the MDH to gain insight into the information system needs of its various program areas, and to use this information to initiate a dialogue about an overall agency-wide approach to information system modernization. Using relevant

qualitative data generated by the assessment, the MDH was able to concretely identify some of its challenges as well as possible action steps for moving forward to create an agency-wide tactical plan regarding the interoperability and integration of information systems. The MDH has used the experience and results of this work to create the Public Health Informatics Profile Toolkit, developed with support from the Centers for Disease Control and Prevention and the Robert Wood Johnson Foundation through the InfoLinks and Common Ground grant programs, respectively (see page 5 for program descriptions).

Getting Started

There are many things to consider before starting an initiative like this, such as developing a project management plan, developing a business case to garner support for the project, identifying project stakeholders, and identifying the scope of the project. This section describes how to develop a broad conceptual overview of the project, how to define the project scope, followed by defining the project goals.

How do we develop a conceptual view of the project?

Developing a conceptual view of the project in the form of a diagram or other graphic element can help clarify project goals, and can provide a visual tool for communicating those goals and project scope to a broad audience. A framework assists the project by “getting everyone on the same page” about what the project entails or excludes. This view is often conveyed using a picture or figure.

TIPS FOR DEVELOPING A FRAMEWORK

- Use pictures whenever possible to provide a visual interpretation for the project.
- Show how various components/elements are related to one another to ensure a common understanding among the project team and with project stakeholders.
- Keep it simple, and include the key elements that should be conveyed.

Developing a framework can be an iterative process, and may take multiple versions before getting it right.

A Minnesota example

Figure 1 provides an example framework that could be used for a public health informatics profile. This framework depicts how Minnesota’s public health informatics profile assessment focused on collecting data and sending data with an emphasis on data partners, datasets, and applications as well as an emphasis on data input,

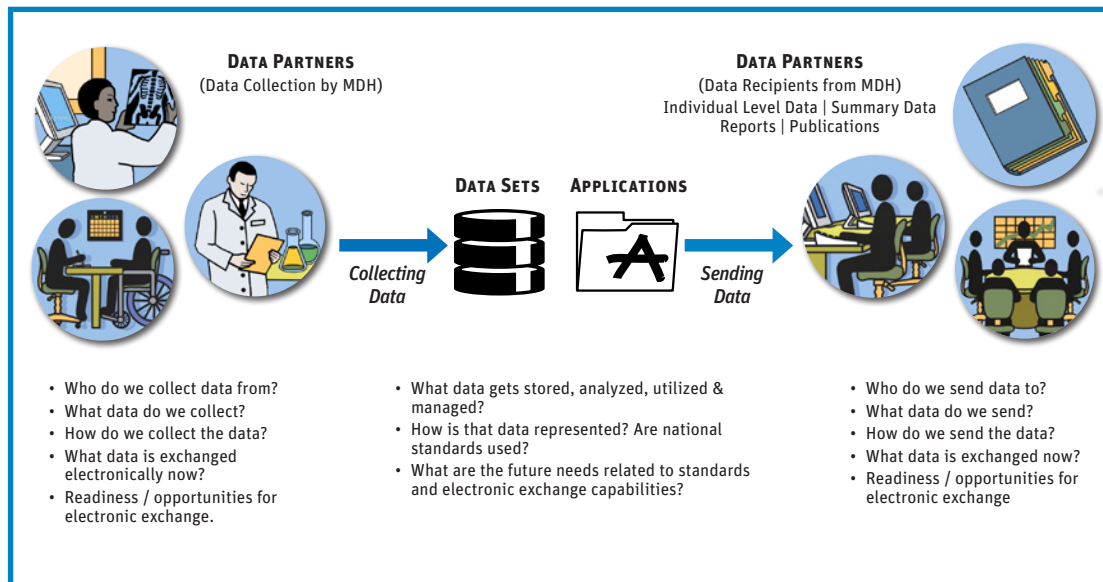


FIGURE 1: MDH INFORMATICS PROFILE CONCEPTUAL MODEL (INCLUDES INFRASTRUCTURE, DATA SETS AND APPLICATIONS)

For purposes of this survey, the questionnaire will focus on applications, data input, data output and exchange capabilities of an information system.

data output, exchange capabilities, and utilization of standards in an information system. For additional ideas, see Appendix C.

How do we define project scope?

Before starting the project, it is essential to clarify the scope of the project. Defining the scope up front is critical for developing a project plan that is realistic and attainable, and defining the scope early in the project assists when “scope creep” attempts to broaden the project beyond the original project objectives. Given that there are many stakeholders to consider, making the scope manageable can be challenging. Therefore, it is essential at this point of the project to keep project parameters narrow by determining what should be included or excluded from your assessment. The following are some key points to consider when defining project scope.

- Explore the answers to questions such as:

- Will your assessment be conducted agency-wide or will it focus in an area or two (e.g., a public health area such as chronic disease or maternal and child health)?

- Will the assessment be limited to systems that have electronic applications or will programs that have paper-based systems be included as well?
- Do the systems need to have a certain size or functionality to be of interest?
- Will the scope include external partners or will the focus be internal only?
- Identify and engage key stakeholders (see tips below and the Stakeholder Analysis tool in Appendix I).
- Include sponsors, project team, and stakeholders in defining the project scope. Brainstorming sessions/methods can be useful for getting input into the scope.
- If resources are a constraint, consider what resources are available before broadening project scope.
- Consider relevant factors such as agency priorities or relevant policy directions as a place to prioritize.
- Consider a scope that would look at the public health expectations that are in the Health Outcomes Policy Priorities, Meaningful Use Matrix (released by the Department of Health and Human Services in 2008 and updated in 2009) which provides guidance to states

on priorities. For more information on the matrix, see the following document: http://healthit.hhs.gov/portal/server.pt/gateway/PTARGS_0_10741_876940_0_0_18/Meaningful%20Use%20Matrix%2007162009.pdf

- Consider multiple phases to your approach (e.g., phase one to collect the most critical information and phase two to collect information that is less urgent).

Tips for identifying key stakeholders

As with any project, it is important to identify key stakeholders and consider their desires and needs for the project. Stakeholders can serve as important champions for the project if they are engaged early on, particularly if they are able to shape the project in the project definition phase.

Sometimes it is helpful to think of stakeholders in two groups. The first is a broad list of people and organizations affected. In public health this typically can be a wide range of persons from legislators to clients. This is an important list to the business case. The second group is often a small subset of this group, and will include persons and programs that have the most knowledge about the public health system.

Things to consider when identifying project stakeholders include:

- Consider the planned scope of the project and identify individuals across the organization that may have an interest in the project.
- Using the appropriate communication techniques is important throughout the entire project (see Stakeholder Analysis in Appendix I).
- Tailor messages to individuals if needed.
- Ask for their help or support of the project.

Tips for involving stakeholders: Minnesota example

Once the public health informatics profile report was issued, the project team asked key stakeholders to be “supporters” for a new project to develop an agency-wide plan for data integration

and interoperability. By requesting support of key project stakeholders, the project team was able to demonstrate broad support for their proposed project.

For an example scope statement, please see the Minnesota Department of Health Scope Statement in Appendix B.

A Minnesota story

Recognizing that its many stakeholder groups wanted to benefit from the project, the MDH held a special one-day meeting prior to conducting its assessment to refine the project scope and identify goals for the assessment. The range of stakeholders included:

- The IT department, who wanted to create and populate a detailed database of all department databases;
- The security staff, who wanted an inventory of security practices across the agency;
- The privacy staff, who wanted to document the legal status of reporting on certain information;
- The program staff, who did not want to participate in a long survey;
- The e-health program staff, who wanted to assess the readiness of systems for electronic exchange of health information;
- The Common Ground program staff, who wanted to learn about the chronic disease program areas and complete their project in a defined timeframe.

Note: *The MDH is one of 31 Common Ground grantees (see program description on page 5).*

Bringing the various stakeholders together allowed the project manager to identify the various needs and to carve out a realistic scope for the project. Ultimately the scope was defined to meet mainly two of these needs due to limitations on resources to carry out the project.

How do we define our goals for a public health informatics profile assessment?

Because there will be different levels of understanding among your various stakeholders about the need for a project like this, it is important to consider the following:

- Define parameters of project management;
- Describe the context and key drivers;
- Adequately and concretely describe the business case to justify the project (in other words, what problems will the profile help solve?);
- Develop a project charter;
- Secure executive leadership sponsorship for the project.

Tips for managing the project

Because a project like this may have significant scope and implications agency-wide, it is critical to follow solid project management principles. For example, it is important to:

- Designate a lead project manager to oversee the project schedule, manage scope changes, identify and resolve issues, and be a central point-of-contact for the project.
 - Responsibilities of a project manager include:
 - Building an effective project team
 - Developing a schedule and budget
 - Directing the overall project
 - Managing project risk
 - Involving stakeholders
 - Ensuring quality deliverables
- Develop a project charter outlining the goals of the project in order to garner support for the project.

- Clarify the scope of the project early on by considering the needs of the project sponsor as well as key stakeholders.
- Develop a project management plan to use for overseeing the project once it is initiated.
- Develop a communications plan to ensure all stakeholders are kept informed and engaged. For large projects, conduct a stakeholder analysis to identify your communications strategies for different groups based on their level of interest and their level of influence.
- Be realistic about all the resources you will need, especially staff and time.

Tips for exploring context and drivers for interoperability and modernization of public health information systems

It is important to be able to articulate the context and drivers for the public health informatics profile assessment to various stakeholders with different perspectives. Some stakeholders will understand the need for the project early on, while others will need a little more convincing. For example, the context or rationale for planning and conducting your assessment may be the availability of ARRA funds and the need to prepare for health care reform.

Example drivers

ON A STATE AND LOCAL LEVEL:

- The desire and need for integrated and interoperable information at the state or local health department level in order to provide higher quality services and more timely information.
- The need for better electronic exchange with data partners and expectations of bi-directional exchanges with the clinical sector, allowing for improvements in overall clinical services to patients and population health.
- Meeting compliance with the “meaningful use criteria” as part of the American Recovery and Reinvestment Act (see ‘On a national level’ below).

- Organizational needs around project portfolio management and identifying agency priorities based on needs and prioritization of resources.
- The need to improve services to clients, such as children, by having greater access to timelier and fully integrated information.

ON A NATIONAL LEVEL:

- The American Recovery and Reinvestment Act (ARRA), which includes the Health Information Technology for Economic and Clinical Health (HITECH) Act, has set a goal of 2014 to increase the number of health care providers who have and effectively use electronic health records (EHRs) and engage in health information exchange (HIE) in an effort to improve our health care system. Public health agencies are a critical electronic health information exchange stakeholder, and should therefore be prepared to assess their information systems (particularly disease registries and immunizations registries) to be able to exchange health information with the private sector when needed.
- State Alliance for e-Health has prepared a report for states regarding electronic health information exchange, which provides interim guidance to state leaders as they begin to implement HITECH. The report specifically calls on states to assess their current systems for readiness for electronic health information exchange (www.nga.org/Files/pdf/0908ehealthhitech.pdf).
- The eHealth Initiative drives improvement in the quality, safety, and efficiency of health and healthcare through information and information technology, including a focus on population health with the desire that consumers, health care providers, and those responsible for population health will have ready access to timely, relevant, reliable and secure information and services through an interconnected, electronic health information infrastructure to support better health and healthcare (www.ehealthinitiative.org).
- The Centers for Disease Control and Prevention (CDC) Public Health Information Network (PHIN) is a national initiative to improve the capacity of public health to use and exchange information electronically by promoting the use of standards and defining

functional and technical requirements. The goal of PHIN is to improve public health by enhancing research and practice through best practices related to efficient, effective, and interoperable public health information systems (www.cdc.gov/phih).

- Health care reform initiatives
- Other factors such as:
 - Consumers' increasing expectations for electronic government and thus driving public information system modernization.
 - Consumers' desire to access their information.
 - Decreasing levels of resources and the need for improving workflows in public sector.
 - Changing of the workforce and generational expectations for electronic information.
 - Expectations for rapid, coordinated responses for natural and human created disasters and outbreaks.
 - Local laws and regulations.
 - Public desire for strong privacy protection.

For an example of how the MDH described the context and drivers, see the example context/drivers in the sample profile report in Appendix E.

Tips for making the business case

Once the context and drivers have been articulated and the key stakeholders have been identified, a business case can be made to justify why the project is an important part of a solution to the context, issues, and challenges you've just described. In making the business case, it is important to:

- Link the project to the context and drivers for the project; show how it will help solve problems.
- Ensure alignment of the project to the strategic direction of the organization by answering the question, "How will the project help achieve our strategic goals?"
- Explain how the project will benefit key stakeholders.

Tips for developing a project charter

Your organization may have a preferred format for developing a project charter. The charter is a vital tool that uses clear and concise language to describe the project goals and initial project management plan. Charters do not have to be long — many are just a few pages in length. However, they need to be clear and concise.

Charters frequently contain many common elements. Important elements to consider are the following:

- A solid business case, context, and drivers for the project;
- The project's preliminary scope,
 - The scope should be clear about what the project will or will not accomplish;
- Project goals/objectives;
- Project constraints and assumptions,
 - Assumptions are project factors you assume to be real,
 - Constraints are existing, immovable limitations on the project;
- Potential risks to the project that should be evaluated throughout the project;
- Cost and schedule estimates to as much reasonable detail as possible;
- A project manager named as the lead to oversee the project;
- Project sponsor sign-off.

For an example charter, please see the Minnesota Department of Health Charter in Appendix A.

Assessment Methods

How do we establish inclusion and exclusion criteria?

It is important to be clear about what datasets or information systems will be included in your public health informatics profile assessment, as there will inevitably be possible items that fall into a gray area. Being clear about your inclusion and exclusion criteria will allow you to manage the scope of the project, and to succinctly develop the methods (based on your needs) that you use to collect the assessment data.

A Minnesota example

The MDH was fortunate to have a relatively current existing inventory of datasets to use as a starting point. Upon reviewing this information, they were able to identify those datasets that contained program-level information, and then to choose those datasets that met various criteria for its two major stakeholders (as determined during the discussions regarding project scope). The MDH was able to logically group those datasets into twenty information systems of interest that served as the basis for conducting their assessment. See diagram on page 17 for a representation of their inclusion criteria.

What assessment questions should we consider?

There are many factors to consider in determining what questions to ask in the public health profile assessment, the most important of which are the purpose and scope of the assessment — in other words, what system capacities are you assessing and for what purpose? Here are some additional tips for developing questions.

Tips for developing your assessment questions

- Consider stakeholders need for information, and develop questions that meet their needs.
- Consider your data analysis plan to be sure that you will be collecting the data you need.

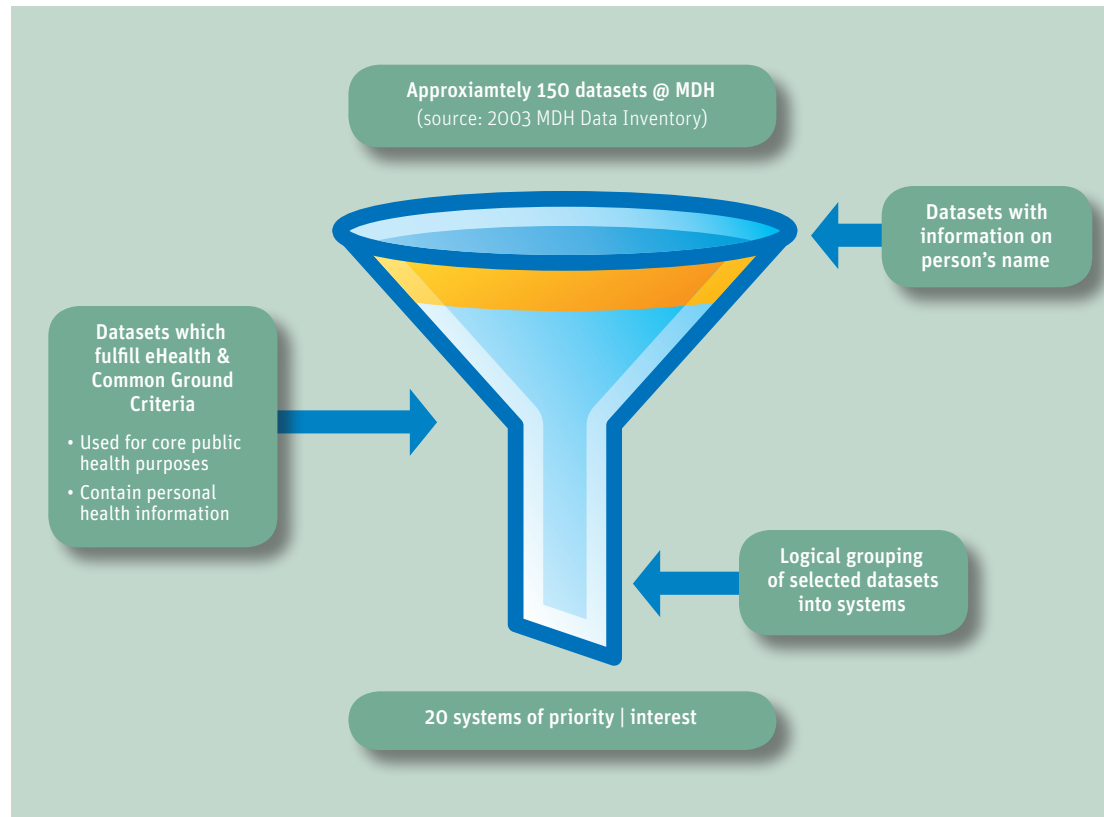


FIGURE 2: REPRESENTATION OF INCLUSION CRITERIA FOR MINNESOTA'S PROFILE

- Be very clear and concrete about how you will actually use every bit of information collected. If you don't have a clear purpose for a piece of information, don't collect it.
- Try to test questions and/or get feedback on questions as much as possible before implementing the assessment, since public health informatics questions may be complicated and may require additional refinement before implementing.
- Provide definitions and agency examples of terms not commonly understood or terms that may mean different things to different people.
- Use a mixture of questions — those that solicit discreet answers and those that require descriptive answers.

For an example assessment tool, see the Minnesota Department of Health assessment tool in Appendix D.

Now that we know what we want, how should we collect the information?

There are several ways that information can be collected, including surveys, focus groups, and key informant interviews. Here are some tips for determining how to collect the information.

Tips on selecting the types of assessments

- Consider your audience, their knowledge level of the questions, the level of resources you have, and the timeframe in which you have to collect the information.
- Use existing data/information when it exists. You may be able to save time by validating the existing information with your responders.

- In-person interviews work well when questions are complicated or when a dialogue is desired. Conversations are important to assure that the responder understands your question completely. They are also important for clarifying questions as needed for future interviews. The risk is that the interviewer can unintentionally lead the responder to certain responses. In-person interviews can assist by increasing the overall response rate.
- More traditional surveys can be useful for simple / straightforward questions that will be commonly understood among your audience.
- Focus groups or group discussions can also be beneficial when you are interested in more of a group consensus on a topic.

A Minnesota Story

The MDH decided to collect their information through in-person interviews, because the information they were collecting was complex and not necessarily commonly understood across the agency. This worked well because the interviewers were able to create a dialogue with interviewees, which provided more richness to the information collected and provided greater insight for the interviewers that led to additional themes being identified during discussions. For example, by collecting the information in person, MDH staff was able to correctly categorize four levels of interoperability.

After the information was collected, analyzed, and synthesized the project team held a group meeting with others in the agency not only to validate their findings, but also to offer the larger group (across the agency) an opportunity to provide their own insights and conclusions. This process was well-received by the group and assisted in the overall quality of the project team's final report. Staff found that logistically the process they used took longer to complete because it required individual interviews with program staff.

How should we conduct the assessment?

Because your survey or focus group respondents may not have a lot of experience with type of questions you are about to ask, it is important to be effective in your communications about the project, including why you are collecting the information and what you will be doing with the information once it is collected.

Tips for conducting the assessment

- Communicate the purpose of the assessment up front and what you are going to do with the information.
- Explain your role and that of your respondents in collecting the information.
- Consider providing a copy of the questions before meeting with people if you have decided to do in-person interviews.
- Allow responders to change their responses if needed (i.e., after they see a draft report) in case there was a misunderstanding.
- If you are conducting an in-person interview, have a person taking notes and capturing responses, and another person asking questions.
- Be clear on the amount of time needed and that some follow-up may be needed.
- Let the program staff know that you may want to collect copies of existing forms or other program materials that help describe the activity and information being used.

Interpreting the Results

What factors should we consider about analyzing the data?

Analyzing the information you've collected can be an overwhelming task considering the wide array of information you may have. It is helpful to keep a few important things in mind before beginning to analyze the information you've collected.

Tips for analyzing the data

- Consider creating a spreadsheet or some other database for tracking all of the various responses to questions, both for analysis, as well as for future reference.
- Consider, up front, what information you want to analyze and develop an analysis plan that is in accordance with your original goals/objectives for the project.
- Think about how to display the information in a format that will appeal to your target audience (e.g., stakeholders, program staff, and/or agency leadership), and then determine how to best analyze the data.
- Consider what message you are trying to convey; data can convey different messages depending on how it is represented / displayed.
- Qualitative responses can be as, if not more, valuable than quantitative data. Depending on how you collect the information, you may collect a wide range of rich responses.
- Qualitative analysis, such as identifying themes, can be very effective at communicating a message.
- You may want to start by tabulating responses to each question and displaying them in a table. Whenever possible, you may also want to graph your findings.
- Consider taking a second look at the data once it is all reviewed to identify possible associations.

Creating your Public Health Informatics Profile

What factors should we consider about interpreting and communicating the results?

One of the most important parts of a project like this is the interpretation of results and ability to communicate them to your audience (e.g., stakeholders, program staff, and/or agency leadership). It is important that enough time is allocated to this critical step. Here are some tips for interpreting and communicating the results.

Tips for interpreting and communicating the results

- Make sure your tables, graphs, and figures show the facts. It may be helpful to validate results with interviewees and other key groups to ensure that the information was understood and is consistent with what they were communicating to you.
- If you conducted interviews, use your understanding acquired to provide additional meaning and interpretation of the findings.
- Consider engaging interviewees in drawing conclusions in which they hold a stake. Not only will you draw a better conclusion, but you will get their support for the recommendations emerging from the findings.
- Display results in a way that your audience can interpret and understand.
- Provide talking points for other speakers.
- Consider written reports as well as Power-Point level summaries.

Minnesota examples

The examples on the following pages show how Minnesota chose to communicate their findings regarding current state and desired state exchange partners to an audience of program staff and agency leadership. In Figure 3, they describe the wide breath of current exchange partners among the twenty identified information systems. Yet, Figure 4 shows that many of them desire to exchange information with a relatively shorter list of exchange partners. As a result, a need

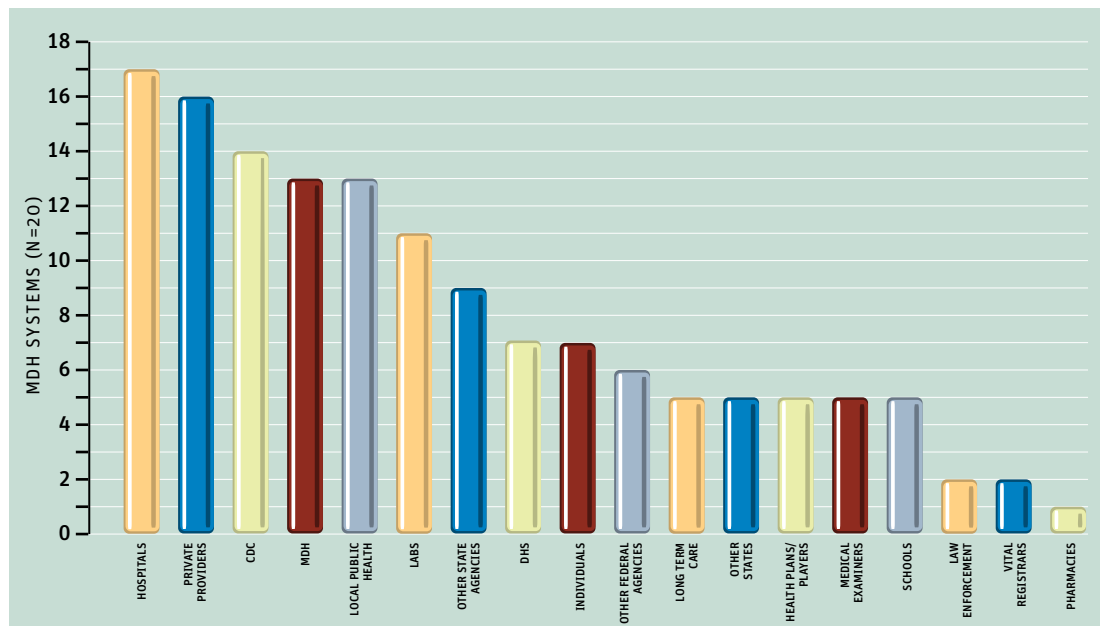


FIGURE 3: CURRENT MDH INFORMATION EXCHANGE PARTNERS

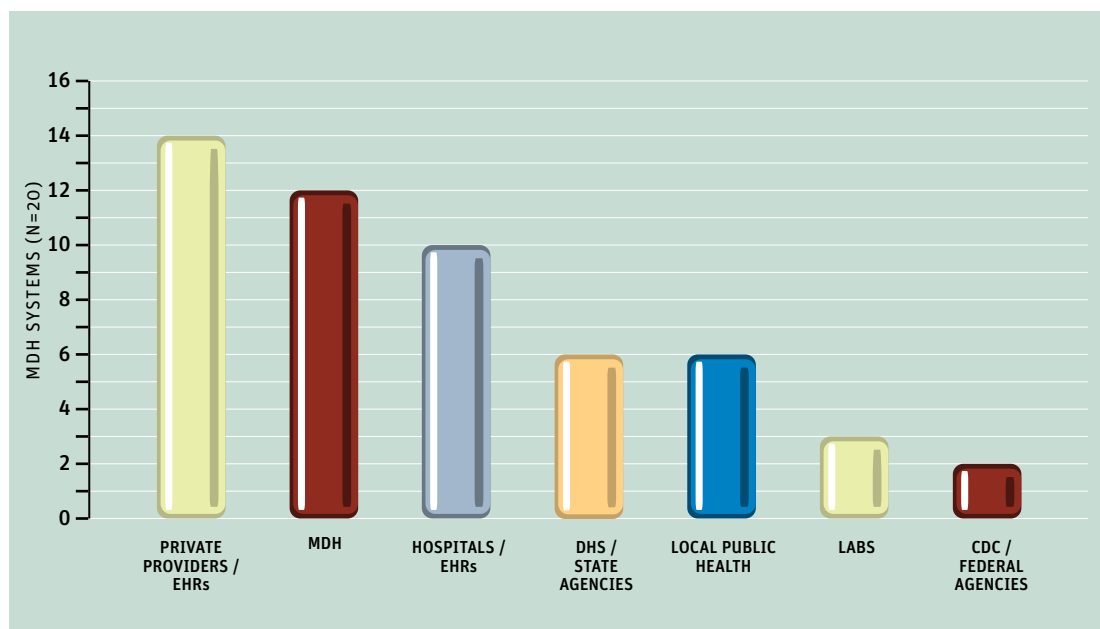


FIGURE 4: DESIRED INFORMATION EXCHANGE PARTNERS

was identified regarding the desire to be able to electronically exchange information with private providers/EHRs, hospitals/EHRs, and then within their own organization.

Staff at the Minnesota Department of Health was surprised to see the strong desire to be able to exchange information internally within their

organization, so they analyzed their information further to understand the current and desired linkages or exchanges among MDH programs. See figures 5 and 6 to see how the MDH was able to communicate a compelling message — that even within their own organization, there was a need for greater linkages among systems.

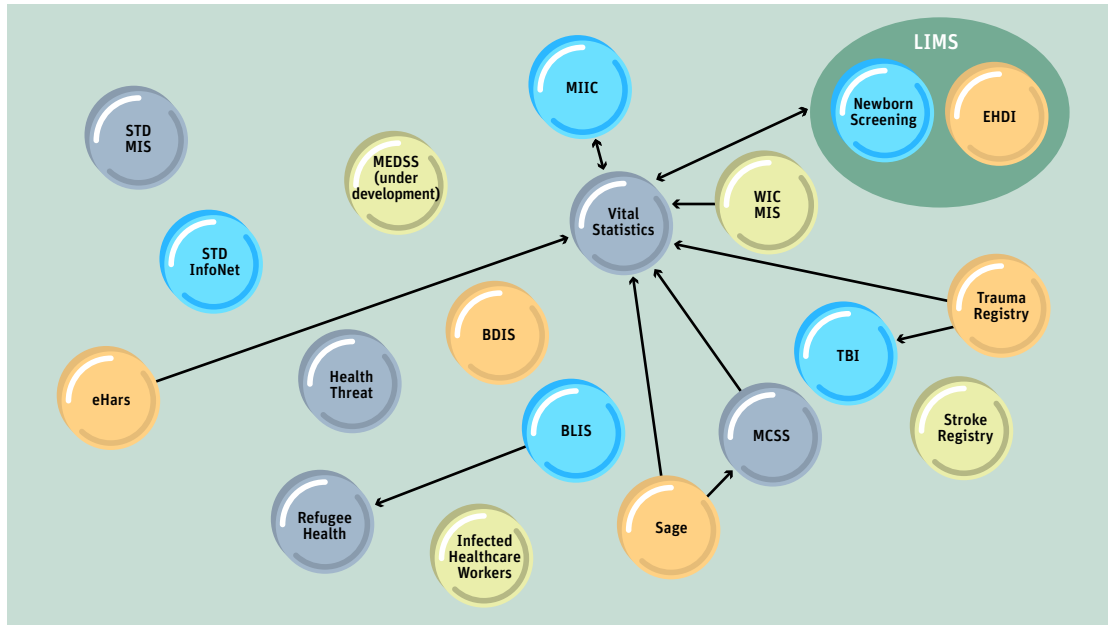


FIGURE 5: CURRENT INFORMATION EXCHANGE PARTNERS WITHIN MDH
CURRENT LINKAGE, MERGING, OR EXCHANGE WITH OTHER DATA SETS/SYSTEMS

Note: The arrows depict MDH's current ability to link, merge, or exchange information. The acronyms and names listed in the circles represent information systems at the Minnesota Department of Health and are meant to be for illustration purposes only.

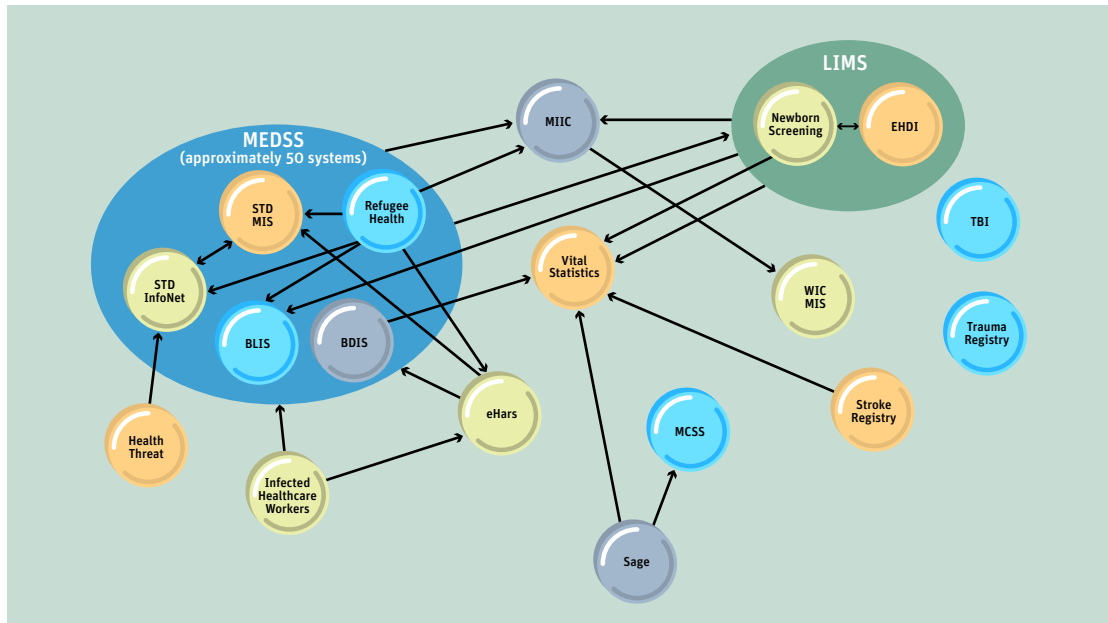


FIGURE 6: DESIRED INFORMATION EXCHANGE PARTNERS WITHIN MDH
EXPRESSED INTEREST IN LINKAGE, MERGING, OR EXCHANGE WITH OTHER DATA SETS/SYSTEMS

Note: The arrows depict interest in being able to link, merge, or exchange information, not current status. The acronyms and names listed in the circles represent information systems at the Minnesota Department of Health and are meant to be for illustration purposes only.

For additional examples of graphical representations of the public health informatics profile data, see the sample profile report and PowerPoint in appendices E and F.

Acting on the Results

How can we use the results to support planning efforts?

Once you have completed your assessment and created a report that provides a snapshot view of the various information systems, informatics needs, and opportunities within your defined scope, you can use the report for assisting in your overall planning efforts. Whether you are an executive leader within your organization or a program manager, you can utilize the results to support planning. The results may provide insight into opportunities for different groups to work together to solve a common problem or they may provide a view of the various systems and needs across an agency, leading to better overall planning efforts for information exchange, integration, and/or interoperability.

Tips for using the results

- Identify opportunities for working together with different groups within the organization.
- Identify small steps that can be accomplished now, even if the overall goal seems daunting.
- Identify opportunities to address barriers collaboratively across the agency or program.
- Use the information to advocate for resources for planning efforts (i.e., system modernization).
- If your jurisdiction has a centralized IT department, identify how it could support your efforts. They may also have requirements which you would need to adhere to in implementing your plan.
- The results will need to be translated into priorities, goals, and activities that can be incorporated into plans and budgets across the agency. Otherwise, its impact will be minimal.

Minnesota examples

HOW THE REPORT SUPPORTED OVERALL AGENCY-WIDE PLANNING

In Minnesota, the report was used initially to inform key exchange partners and served as an overview of the various systems and their level of readiness for electronic information exchange and interoperability. It provided an overall view that was used to articulate the need for future planning efforts regarding electronic exchange and interoperability. One of the surprising findings within the report was that there was as much, if not greater, interest in exchanging information internally within the organization, when appropriate, and therefore an intra-agency integration/interoperability plan was needed.

HOW AN INDIVIDUAL PROGRAM WAS ABLE TO USE THE RESULTS

The profile revealed to one MDH program (involved with breast and cervical cancer screening) that its system was the least prepared for electronic exchange in terms of automation and interoperability, but the information it collected of most value, especially in light of a recent state law requiring electronic submission of billing data. This information provided additional strength to MDH's request for additional resources to modernize its system to enable electronic exchange of information.

Now that we have the assessment information, what do we do with it?

Once the assessment has been conducted and the profile produced, one of the biggest challenges is to make sure that it does not sit on a shelf, but that it gets used in a way that assists future planning. Barriers to address include: lack of interest or perceived influence of key decision makers, competing priorities for projects and resources, and possibly even lack of buy-in or support for the recommendations contained in the report. When

an assessment is conducted agency-wide, it can be especially challenging to try to think of where to start with the recommendations. Sometimes, it will even require a change in the environment before the findings in your report will take notice (e.g., through the *Meaningful Use Criteria*).

Tips for addressing challenges

- Whenever possible, keep recommendations clear and concrete. If necessary, prioritize them in order of most importance.
- Identify how the results can be translated into recommendations and priorities that can be incorporated into agency or program plans and budgets in a coordinated way.
- Try to articulate possible next steps and quantify the resources needed to accomplish those steps. Consider developing a project charter to articulate next steps and needs.
- Explore a wide array of approaches in communicating your message and keeping people engaged.
- Repetition is important. Sometimes it takes people hearing a message multiple times and in different ways before the message will begin to sink in. As a result, seek additional ways to deliver your message, whether it be through formal communications (e.g., through reports, memos, presentations) or informal communications (e.g., through conversations).

See the example memo and project charter in the appendices G and H that show how Minnesota chose to communicate their results and to whom.

Additional Resources

Defining Informatics and Public Health Informatics

Friedman C: A 'fundamental theorem' of biomedical informatics. *Journal of American Medical Informatics Association* 2009 Mar-Apr, 16(2): 169-170 [epub].

Public health informatics and information systems. Patrick W. O'Carroll, William A. Yasnoff, M. Elizabeth Ward, Laura H. Ripp, Ernest L. Martin (eds). Springer-Verlag, 2003.

Yasnoff WA, Overhage JM, Humphreys BL, LaVenture M, Goodman KW, Gatewood L, Ross DA, Reid J, Hammond WE, Dwyer D, Huff SM, Gotham I, Kukafka R, Loonsk JW, Wagner MM. A national agenda for public health informatics. *Journal of Public Health Management Practice*, 2001 Nov;7(6): 1-21.

Yasnoff WA, O'Carroll PW, Koo D, Linkins RW, Kilbourne EM. Public Health Informatics: Improving and Transforming Public Health in the Information Age. *Journal of Public Health Management Practice* 2000Nov; 6(6): 67-75.

Public Health and e-Health Connection

Preparing to Implement HITECH: A State Guide for Electronic Health Information Exchange; 2009 Report from the State Alliance for e-Health. <http://www.nga.org/Files/pdf/O908EHEALTHHITECH.PDF>

A Practical Guide for Effective Use of EHR Systems, Released June 2009. Minnesota e-Health Initiative. Community health improvement section identifies opportunities for increasing the value of EHRs and includes exchange of data on individuals for public health purposes such as disease reporting and health status of populations. www.health.state.mn.us/e-health/summit/g4effectiveuse2009.pdf

Mostashari F, Tripathi M, Kendall M: Lessons learned from two large community electronic health record (EHR) extension projects. *Health Affairs* 2009, 28:345-356.

Mostashari F, Tripathi M: Achieving Meaningful EHR Use: Leveraging Community Structures. Oakland, CA: California Health Care Foundation; 2009. www.ihealthbeat.org/Perspectives/2009/Achieving-Meaningful-EHR-Use-Leveraging-Community-Structures.aspx

Using Automated Alerts to Improve Physician Reporting - Joseph Lurio, Frances Morrison, Michelle Pichardo, Rachel Berg, Michael Buck, Winfred Wu, Nicholas Soulakis, Farzad Mostashari, Neil Calman. www.syndromic.org/conference/2008/presentations/Track%20ISDS%20Conference_12_4_08.ppt

Public Health Informatics Toolkits

Public health informatics tool kit by NACCHO www.naccho.org/toolbox/

Evaluation tool kit for Integrated Health Information Systems by Public Health Informatics Institute. www.phii.org/resources/doc/Evaluation-Toolkit_2007-03-16.pdf

Connecting Communities toolkit by eHealth Initiative. www.ehealthinitiative.org

AHRQ National Resource Center for Health Information Technology.
Health IT tools: <http://healthit.ahrq.gov>

Public Health Informatics Workforce and Competencies

Hersh W, Wright A: What workforce is needed to implement the health information technology agenda? An analysis from the HIMSS Analytics™ Database. *AMIA Annu Symp Proc* 2008, 303-307.

Hersh W: Who are the informaticians? What we know and should know. *Journal of the American Medical Informatics Association* 2006, 13:166-170.

Public Health Informatics Competencies. <http://www.nwcp.org/resources/phicomps.v1>
<http://www.phi.washington.edu/resources/PHI-Competencies.pdf>

Organizational Resources

American Medical Informatics Association (AMIA):

Focuses on the development and application of biomedical and health informatics in the support of patient care, teaching, research, and health care administration; offers many tools and publications. www.amia.org

CDC Public Health Information Network (CDC PHIN):

Aims to improve the capacity of public health to use and exchange information electronically by promoting the use of standards, defining functional and technical requirements. www.cdc.gov/phn

Connecting for Health:

Aims to catalyze the widespread changes necessary to realize the full benefits of health information technology (HIT), while protecting patient privacy and the security of personal health information; explores the concept of how the common framework can be applied to address the requirements related to population health objectives such as quality improvement, research and public health. www.connectingforhealth.org/resources/cfh_ahrq_aqa_rfi_073007.pdf

Joint Public Health Informatics taskforce (JPHIT):

Provides a common voice in public health informatics for a more robust enterprise capable of better protecting the population and seeks to unify the public health message in the context of growing and moving towards accrediting public health departments with specific capabilities and to provide measured performance improvement in the area of health information exchange. www.aphl.org/aphlprograms/informatics/collaborations/jointpublic/pages/default.asp

Public Health Informatics Institute (PHII)

Aims to improve the performance of the public health system by advancing public health practitioners' ability to strategically manage and apply health information systems. www.phii.org

Appendices

Appendix A:

[Public Health Informatics Profile Project Charter](#)

Appendix B:

[Public Health Informatics Profile Project Scope Statement](#)

Appendix C:

[Public Health Informatics Profile Conceptual Diagram](#)

Appendix D:

[Public Health Informatics Profile Assessment Tool](#)

Appendix E:

[Public Health Informatics Profile Report](#)

Appendix F:

[Sample Presentation](#)

Appendix G:

[Sample Memo to Accompany Profile Report](#)

Appendix H:

[Sample Project Charter to Accompany Profile Report](#)

Appendix I:

[Stakeholder Analysis and Communication Strategies](#)