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# **PUBLIC HEALTH INFORMATION NETWORK (PHIN) STRATEGIC PLAN**

## ***STRATEGIES TO FACILITATE STANDARDS- BASED PUBLIC HEALTH INFORMATION EXCHANGE (2011 – 2016)***

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10/13/2011

## VERSION HISTORY

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## PHIN STRATEGIC PLAN EXECUTIVE SUMMARY

Reliable, timely, and quality data and information drives public health and can make the difference between retrospectively analyzing an outbreak or proactively managing one to prevent morbidity and mortality. This requires public health agencies to receive and manage reliable information in near real time; to share, analyze, and comprehend it rapidly; and to produce and disseminate timely and useful communication tailored to various types of users (e.g., health professionals, the public, public health and emergency management agencies, the media, etc.). Together, this constitutes a “supply chain” of public health information. By improving the value created at each step of the supply chain (improving speed, quality, or cost) public health can better meet the needs and expectations of its stakeholders and can help secure the health of the nation.<sup>i</sup>

CDC plays a central role to improve the value of this information supply chain. One key to the effort is to use standards to enable various information systems to send and receive data and information (e.g., laboratory results, directory information, case reports, and immunization administration records) electronically with minimum human effort (electronic information exchange). In past years, the Public Health Information Network (PHIN) provided foundational shared standards, services, practices, and policies to support public health information exchange. Now that approaches to electronic information exchange are rapidly evolving in healthcare and healthcare information technology, PHIN must also evolve and align to national health information exchange (HIE) strategies. The newly organized Public Health Informatics and Technology Program Office (PHITPO) in CDC’s Office of Surveillance, Epidemiology, and Laboratory Services (OSELs) will actively manage this evolution and alignment.

With recent federal legislation around health information exchange and health care (e.g., Health Information Technology for Economic and Clinical Health (HITECH) Act, Affordable Care Act (ACA)) there is an increased urgency to update public health’s role in the healthcare information environment. This PHIN Strategic Plan describes how current and future PHIN activities will align CDC activities and funding with these national efforts, including the Nationwide Health Information Network, Pandemic and All-Hazards Preparedness Act (PAHPA), and Electronic Health Records (EHR) Meaningful Use initiatives.

The PHIN team, PHITPO leadership, and CDC’s Enterprise Architecture Team has updated the vision, mission, and goals of PHIN.

**Vision:** An integrated healthcare and public health system using information effectively to advance population health and well being<sup>ii</sup>.

**Mission:** To establish and support shared policies, standards, practices, and services that facilitate efficient public health information access, exchange, use, and collaboration among public health agencies and with their clinical and other partners.

### **Goals, Objectives and Strategies:**

- 1. Provide leadership in the selection and implementation of shared policies, standards, practices, and services for nationwide public health information exchange**

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- 1.1. *Develop a PHIN decision-making and policy framework that supports public health information exchange and information security*
    - 1.1.1. Establish governance structures and processes to prioritize and develop implementable public health information exchange specifications
    - 1.1.2. Define and maintain an architectural framework for public health information exchange
    - 1.1.3. Foster development of information-sharing policies and agreements that enhance appropriate use while protecting privacy and security
  - 1.2. *Align PHIN standards and initiatives with national health IT initiatives*
    - 1.2.1. Harmonize PHIN as a population and public health component of the Nationwide Health Information Network
    - 1.2.2. Develop, publish, and maintain PHIN public health information exchange specifications as part of the larger Nationwide Health Information Network framework
  - 1.3. *Support a public health Standardization and Interoperability Framework leveraging models established by the Office of the National Coordinator for Health Information Technology (ONC)*
    - 1.3.1. Leverage federal initiatives for PHIN specification development and improvement
    - 1.3.2. Establish PHIN certification for public health information technologies
    - 1.3.3. Support public health information exchange pilots
  - 1.4. *Promote and enable PHIN participation*
    - 1.4.1. Communicate the value of public health information exchange and the benefits of participating in PHIN
    - 1.4.2. Align CDC program guidance and funding language with PHIN specifications
    - 1.4.3. Educate and engage participants at public health and health care informatics meetings
- 2. Define, advocate for, and support public health needs and roles in national health information technology and exchange initiatives**
- 2.1. *Facilitate public health participation in national health IT and exchange policy, standards, and implementation processes*
    - 2.1.1. Participate in ONC Federal Advisory Committees (FACA)
    - 2.1.2. Participate in national standards and implementation processes
  - 2.2. *Develop and monitor metrics of participation in national public health information exchange*
    - 2.2.1. Monitor the progress of public health information exchange
- 3. Perform key public health information exchange and standards management roles**
- 3.1. *Operate and improve vocabulary, messaging, and brokering infrastructure*
    - 3.1.1. Support reusable and extensible vocabulary, data messaging and brokering, and directory technologies to streamline application development and public health information exchange
    - 3.1.2. Develop and maintain public health vocabularies, identifiers, and metadata infrastructure
  - 3.2. *Provision key public health data sets, including data sets of national importance*
    - 3.2.1. Provide “data hub” services for national data sets
-

- 3.3. *Provide technology to support collaboration of public health information exchange*
- 3.3.1. Provide technical services that help public health agencies collaborate in standardization and interoperability processes, achieve interoperability, and perform necessary testing and certification

Building on the foundations of PHIN, CDC is in a unique position to shape the future of public health information exchange. The following plan presents the goals, objectives, strategies, and milestones for the PHIN Program over the next five years. The plan provides an overview and potential roadmap for PHIN activities to be coordinated through PHITPO and its Federal, state, local, tribal, territorial, clinical and industry partners. PHITPO and its partners should continue to monitor and refine these activities to maximize the value of public health information exchange activities in the health information supply chain.

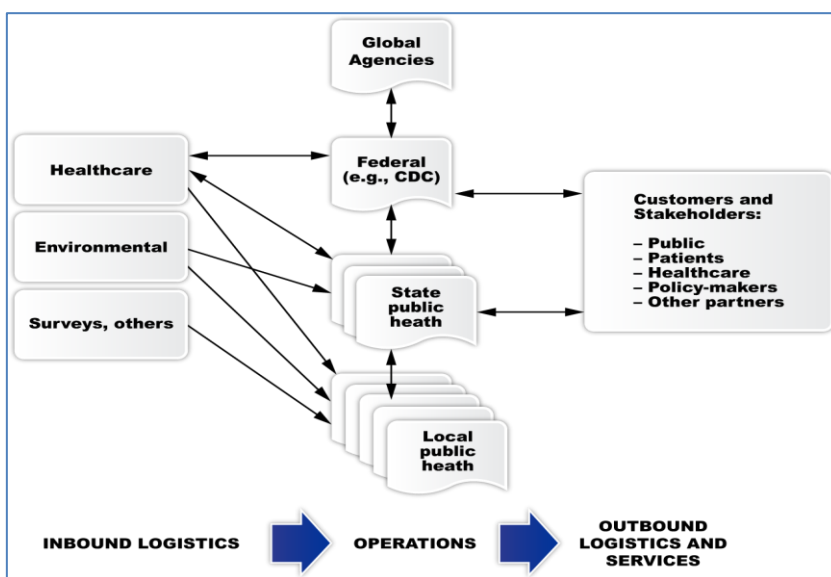
## 1. INTRODUCTION

### 1.1 The Public Health Information Exchange Supply Chain

Reliable, timely, and quality data and information are critical to driving public health outcomes.

For public health information to be most effective, the supply chain of public health information must be explored, and each component improved, to meet the needs and expectations of its stakeholders<sup>iii</sup>.

Figure 1 illustrates the information supply chain of public health. CDC and its public health partners rely on thousands of clinical care providers, laboratories, and other organizations to supply data and information for analysis, interpretation, and



*Figure 1: The Public Health Information Supply Chain*

other operations important to public health agencies. These agencies then work to provide information and services to healthcare, patients, and policy makers who assist in implementing daily public health interventions and preventing outbreaks. Emerging healthcare information technology offers an opportunity to make this multi-directional collaboration more efficient and effective. Standardizing and automating elements of this supply chain add value when they improve the speed, quality, and/or cost of information transmission or use, and the effectiveness and efficiency of public health decisions and actions. Specifically, services such as data transport, brokering, warehousing, and validation help support the process of moving raw data to public health agencies and stakeholders. Enhancing the effort to integrate public health information is a dual challenge of creating networks to deliver data to people and simultaneously creating networks of people (supported by interoperable information systems) to turn the data into actionable knowledge.

Recent policy and market changes offer new opportunities to leverage public health information to advance public health outcomes. The rapid expansion and investment of health information technology (HIT) and standards-based health information exchange offers further opportunities for public health and clinical care to converge. With the Health Information Technology for Economic and Clinical Health Act (HITECH) investments for Electronic Health Records (EHR) and the evolution of other healthcare information technology to focus on “Meaningful Use”<sup>iv</sup> of certified EHR, there is the potential to shift the public health-clinical care relationship to more actively prevent, detect, and manage diseases. A well-designed health information exchange ecosystem will ensure that public health and clinical providers have access to reliable information at the right time, in the right format, delivered to the right people, thus informing decisions both at the patient and community levels.

## 1.2 Public Health Information Network – Historical Challenges

In past years, CDC’s Public Health Information Network program has promoted the use and exchange of standardized public health information, with a focus on public health preparedness and response. PHIN has strived to improve public health by enhancing research and practice through best practices related to efficient, effective, and interoperable public health information systems<sup>v</sup>. Unfortunately, while some progress has been achieved, PHIN has also faced significant challenges, including, but not limited to:

- Inadequate, confusing, and sometimes competing governance and decision-making structures. Without a clear direction, PHIN priorities, technical specifications, and tools were not always aligned with stakeholder needs and other national initiatives and priorities;
- Disjointed program planning, leading to projects and operations that lacked a shared and predictable roadmap to advance public health information exchange. This also led to challenges in communicating the progress, value, and reasoning of PHIN activities and any changes that occurred within the program;
- Standardization and certification efforts which emphasized benefits to national vertical reporting over local information management, thus alienating state and local users;
- Support burden resulting from an emphasis on developing and implementing software rather than the standards and underlying services enabling information exchange. This also added risk to both CDC and their public health partners if the tools were released behind schedule or with unmet partner needs;
- Costs for PHIN compliance and certification, exceeding available resources.
- Lack of necessary technical capability in many public health settings, and technical support from CDC was not always adequate.

As a result, many public health leaders across local, state, and Federal agencies have not realized and promoted the value of standardization and automation, and programs participating in PHIN often did not experience the gains they anticipated.

## 2. PUBLIC HEALTH INFORMATION NETWORK PROGRAM— UPDATED VISION, MISSION, AND GOALS

To address the new opportunities and past challenges, the PHIN program has updated its vision, mission, and goals. The following plan identifies these critical program characteristics and provides a five-year strategic plan that elaborates how the PHIN program will aim to meet them.

### PHIN Vision

PHIN’s vision is to become an integrated healthcare and public health system using information effectively to advance population health and well being<sup>vi</sup>.

### PHIN Mission

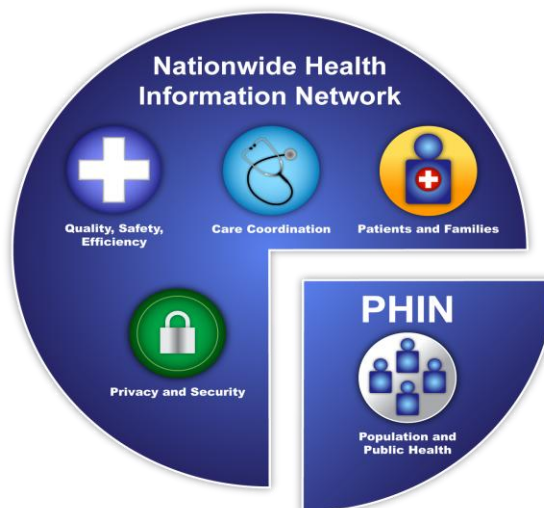
PHIN’s mission is to establish and support the shared policies, standards, practices, and services that facilitate efficient public health information access, exchange, use, and collaboration, among public health agencies and with their clinical and other partners.



## **PHIN Goals**

In an effort to organize support of this new vision and mission, the PHIN support team, PHITPO leadership, and CDC's Enterprise Architecture Team defined three goals for PHIN. These goals are designed to enable adoption and meaningful use of health information technology in support of population health outcomes and practice, and include PHIN's efforts to:

1. Provide leadership in the selection and implementation of shared policies, standards, practices, and services for nationwide public health information exchange.
2. Define, advocate for, and support public health needs and roles in national health information technology and exchange initiatives.
3. Perform key public health information exchange and standards management roles.



*Figure 2 PHIN - The Population Health Portion of the Nationwide Health Information Network. PHIN will utilize and expand the Meaningful Use objectives, as well as the standards, services and policies of the Nationwide Health Information Network to advance population health outcomes and public health practice.*

In this process, PHIN will align with, and become integral to, the Nationwide Health Information Network, creating the easy-to-find “on- and off-ramps” that enable public health information management systems to use the Nationwide Health Information Network superhighway. The following sections describe PHIN's goals, their associated objectives, and strategies in greater detail.

### **2.1 PHIN Goal 1: Provide leadership in the selection and implementation of shared policies, standards, practices, and services for nationwide public health information exchange**

PHIN will develop consistent public health information exchange legal, policy, and decision-making frameworks that promote interoperability and information security. PHIN's activities will align public health information exchange standards, services, policies, testing, and certification criteria with the Nationwide Health Information Network, and tailor such standards, services, and policies appropriately to meet the needs of the public health community.

#### **GOAL 1, OBJECTIVE 1**

*Develop PHIN decision-making and policy framework that supports public health information exchange and information security*

#### **Strategy 1.1.1: Establish governance structures and processes to prioritize and develop implementable public health information exchange specifications**

Well-defined, well-accepted, and well-operating governance structures and processes are required to manage information practices across an enterprise as complex as public health, with its different levels of government and public-private collaboration. Governance selects,

promotes, and applies mutually-acceptable principals and tools in support of standards-based public health information exchange. In conjunction with CDC's Information Resource Governance Council, as well as CDC's public health association partners, CDC PHITPO will establish and manage structures and procedures for fostering public health information exchange priorities and adoption and for directing the activities of the PHIN program.

### **Strategy 1.1.2: Define and maintain an architectural framework for public health information exchange**

Given the need to accommodate a variety of information exchanges and users, the supporting architecture must be designed with the flexibility to support a wide range of public health business and technical needs, while easily adapting to evolving health information technology. To serve in this capacity, the public health information exchange architecture and PHIN will continue to evolve based on the principles of:

**Modularity:** Public health information exchange tools and technologies will be designed as components that could be used individually.

**Substitutability:** Based on PHIN certification policies, software components and tools should be easily substituted with compatible tools. This will reduce implementation costs as well as foster a marketplace ecosystem of service and tool sharing among the community.

**Publicly Available:** Public health information exchange components are intended to be resources for the broader healthcare community, in support of public health information exchange.

**Product Neutrality:** CDC and its Federal, state, tribal, local, and territorial partners must serve varying technical needs.

**Agility:** PHIN will sponsor and promote agile methodologies to allow for iterative PHIN module development and traceability between requirements and changes to public health priorities.

**Cross-Activity Integration:** As illustrated by the S&I framework, the PHIN tools will be a part of a larger spectrum of interdependent interoperability and standards activities. Cross-coordination between PHIN tools and other related activities is critical to successfully accomplishing the broad objectives of PHIN.

PHITPO will coordinate and facilitate resources necessary to help the public health community meet the laboratory and surveillance meaningful use requirements. Public health and health information exchange stakeholders will work through PHIN to share approaches, techniques and lessons learned while architects from CDC will use established Enterprise Architecture best practices to develop a functioning model to ensure public health information exchange activities, resources and components support laboratory reporting and surveillance. The EA activity will create a set of functional, useful models that will help Federal, state, tribal, local, territorial, and vendor partners plan and coordinate needed IT and informatics resources.

### **Strategy 1.1.3: Foster development of information-sharing policies and agreements that enhance appropriate use while protecting privacy and security**

The requirements and technologies for collecting, managing, storing, and transmitting public health information are rapidly evolving. To ensure that information is available to make the decisions affecting public health outcomes, CDC, along with its Federal and non-Federal

government partners, must strive to ensure that public health information will be available and accessible to authorized users, while promoting privacy and security policies (including regulations and guidance) that keep pace with this evolving field. As a first step, PHIN will create, publish, and maintain service level and reusable data use and sharing agreement templates that facilitate public health information exchange within and across public health jurisdictions. Additionally, CDC, in consultation with National Institute of Standards and Technology (NIST) and ONC, will issue guidance to its public health partners on key privacy and security elements for public health information exchange.

PHIN will also work with the Office of the National Coordinator for Health Information Technology (ONC) to develop an educational and guidance approach to support public health information exchange. This may include the development of toolkits and training materials for privacy and security requirements for clinical providers and government agencies implementing public health information exchange, particularly for those providers working to achieve meaningful use.

### **GOAL 1, OBJECTIVE 2**

*Align PHIN standards and initiatives with national health IT initiatives*

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#### **Strategy 1.2.1: Harmonize PHIN as a population and public health component of the Nationwide Health Information Network**

As public health, clinical care, the information technology, and health information standards communities develop and promote standards for information exchange, PHIN will need to adapt to and contribute to new industry standards. This requires:

- Identification, harmonization, and, when needed, development of use cases and health information standards appropriate to population health and public health functions;
- A process to evaluate, test, and refine the standards for data exchange;
- Certification of products and systems that meet security and interoperability standards;
- Technical infrastructure for operation of the public health information exchanges in pilot and real-world environments;
- Tools to support the adoption and use of health information standards in production.

#### **Strategy 1.2.2: Develop, publish, and maintain PHIN public health information exchange specifications as part of the larger Nationwide Health Information Network framework**

One of the purposes of PHIN is to facilitate and expand the secure, electronic movement and use of health information among organizations according to nationally recognized standards. For those standards to be widely used in production health information exchange, they must be implemented and tested in real world settings. The development and publication of interoperability specifications, is a central component of that progression. PHIN will serve as the trusted source for public health information exchange specifications by providing online access to these specifications for use by the community.

### **GOAL 1, OBJECTIVE 3**

*Support a public health Standardization and Interoperability Framework leveraging models established by the Office of the National Coordinator for Health Information Technology (ONC)*

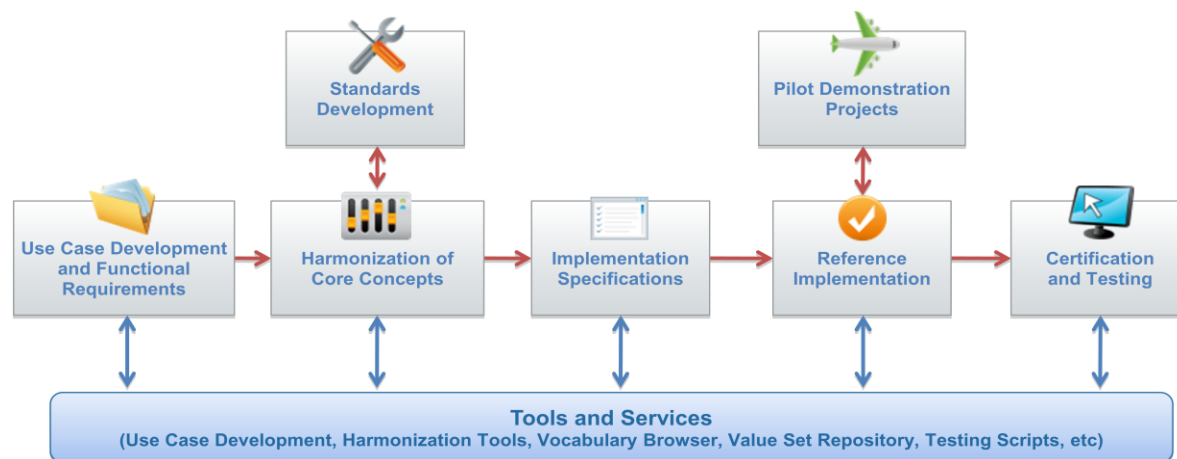
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### Strategy 1.3.1: Leverage federal initiatives for PHIN specification development and improvement

The PHIN program will collaborate across public and private stakeholders in meeting these needs by adopting processes and tools of the Nationwide Health Information Network Standards and Interoperability Framework (S&I Framework), with a special PHIN focus on the needs of public health and population health. The goal of the Framework (Figure 3) is to ease real-world implementation and adoption of information exchange specifications between and among clinical partners and public health agencies. In so doing, PHIN and its partners will:

- Develop easier-to-implement, industry-harmonized and tested information exchange specifications using methods similar to the rest of the health industry;
- Link requirements to the entire lifecycle of implementation, including certification, maintenance, and operations; and
- Engage experts and stakeholders across the process, to improve functionality, standardization and adoption.

The work streams will provide scalable processes, tools, and testing criteria to help public health programs and partners implement standards-based information exchanges that help advance population health practice and outcomes. The framework will also harmonize existing standards and provide a method to describe standards and interoperability specifications. By aligning and coordinating PHIN information exchange activities, PHIN will help public health programs meet Nationwide Health Information Network requirements and expand its functionality, by providing expertise and support to the public health community.



**Figure 3: The Nationwide Health Information Network Standards & Interoperability Framework<sup>vii</sup>.** The S&I Framework provides a coordinated approach and standardized artifacts to help drive public health information exchange requirements definition, standards harmonization, testing, and implementation.

### Strategy 1.3.2: Establish PHIN certification for public health information technologies

Certified, standards-based public health information exchange can support public health reporting, which help public health agencies quickly identify relevant data sources that could be critical to preventing disease outbreaks. This will greatly improve the breadth, depth, timeliness, and reliability for disease surveillance, patient care quality monitoring, and adverse event

reporting. With better and timelier data, public health agencies can analyze, identify, and respond to both routine and emerging public health threats.

Currently, PHIN certifies the functions of electronic information systems to: compose standards based messages; send messages; receive and process messages; implement and use a standardized Public Health Directory; and provide system access, security and availability. This type of certification promotes a minimal level of functionality for systems that are being evaluated. Regardless of functional or technical certification, public health information exchange certification priorities need to be augmented with governance frameworks ensure that the systems and exchanges being certified provide optimal value in terms of public health practice and outcomes. The PHIN Technical Assistance team will lead health information technology certification for the exchange of critical public health information between public health, healthcare organizations, emergency management, and other critical partners, to support current and future federal health initiatives.

### **Strategy 1.3.3: Support public health information exchange pilots**

With the emergence of Nationwide Health Information Network, interfacing with health information exchanges and EHRs is a relatively new concept requiring a complex set of operations between individual users, government agencies, and provider organizations. In order to understand the individual and organizational roles, system interfaces and functions, overall architectural options and standards, as well as advance the informatics science required to facilitate public health action, PHIN will explore projects that will inform the long-term public health goals.

Currently, PHITPO has the Public Health Laboratory Interoperability Solutions and Solutions Architecture (PHLISSA) project to help build the public health laboratories' capacity to electronically exchange laboratory orders and results between public health laboratories, public health agencies, and clinical care providers, while meeting state laws and regulations. This objective will be addressed through three components: architecture, interoperability through an HIE, and an Enterprise Service Bus deployed at CDC. The policies, standards, services, and tooling related to these efforts will expand CDC's and PHIN's capacity to supporting nationwide health information exchange between laboratories and other stakeholders in the healthcare system. As pilots and projects such as this one evolve, PHIN can support these efforts to further elaborate requirements, standards, and specifications so that they can be incorporated nationwide by other vendors, health systems, and public health agencies.

PHIN will help PHITPO and other CDC initiatives explore other functions and services that could be identified to support a range of public health conditions. Such pilots may include working with other electronic health record vendors, health information exchange platform – including the open source Nationwide Health Information Network CONNECT<sup>viii</sup>, personal health record products, and platforms available in state and local public health agencies.

## **GOAL 1, OBJECTIVE 4**

*Promote and enable PHIN participation*

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**Strategy 1.4.1: Communicate the value of public health information exchange and the benefits of participating in PHIN**

Public health informatics and information exchange are very complex topics, with several different efforts and interested stakeholders. PHIN brings a perspective focused on the use of these technologies and standards to support population health outcomes. By creating awareness of its goals and activities through publications, distance-learning presentations, conference presentations, active participation in other initiatives, and other active knowledge sharing, the program will help promote acceptance and adoption of this type of public health and clinical care interoperability.

To help establish a collaborative forum, the program will use partnerships and knowledge sharing tools. Currently, this is done through the use of an internal CDC wiki; as PHIN establishes its governance and shared approach with its stakeholders, communication and knowledge sharing may be handled through the PHIN Listserv, phConnect, and other knowledge management tools.

**Strategy 1.4.2: Align CDC program guidance and funding language with PHIN specifications**

Most public health prevention and wellness initiatives receive and manage categorical funds to advance specific outcomes. Informatics and information has implications across programs, but often not categorically funded. To help ensure consistent information exchanges are based on accepted nationwide standards, and enable “unlocking” data within each program silo, CDC PHITPO will create reusable policies, cooperative agreement guidance, and contract language for public health partners to identify and develop best practices to electronically exchange health information among organizations with varying privacy policies. Through these efforts, recipients of CDC cooperative agreement and contract funds will be encouraged to incorporate data standards exchange, as well as data availability, privacy and security provisions into their implementation plans. PHITPO will also work with CDC programs to encourage the interoperability of categorical program information systems, and to allow flexible funding for cross-system interoperability.

**Strategy 1.4.3: Educate and engage participants at public health and health care informatics meetings**

While knowledge sharing technologies and educational programs are essential for daily operations, conferences and meetings provide other essential opportunities for communication and coordination. PHIN will continue to engage with partners through meetings and conferences to share and learn from other for public health professionals’ critical lessons learned, identify leading standards, services, and policies, and collaborate to solve specific challenges. It is important to participate in both public health meetings as well as health care venues where informatics leaders and its federal, state, tribal, local, and territorial partner representatives may have the opportunity to discuss national public health standards and practices directly with the vendor community (e.g., HIMSS). With the wide variety of public health and health information technology conferences that occur annually, it will be important for the PHITPO leadership determine which conferences make the most programmatic and fiscal sense to attend.



## **2.2 PHIN Goal 2: Define, advocate for, and support public health needs and roles in national health information technology and exchange initiatives**

PHIN will help steward participation with public health partners, partner organizations, and standards communities in the identification, development, harmonization, documentation, and publication of reusable and implementable public health information exchange specifications. Communication, collaboration, and coordination within CDC, other Federal agencies, other public health stakeholders represented in the Joint Public Health Informatics Taskforce, as well as academia and private industry, will be an ongoing activity, essential to the success of the PHIN initiative.

### **GOAL 2, OBJECTIVE 1**

*Facilitate public health participation in national health IT and exchange policy, standards, and implementation processes*

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#### **Strategy 2.1.1: Participate in ONC Federal Advisory Committees (FACA)**

Meeting the ambitious vision of PHIN will require coordination and elaboration of the national health IT and health reform agenda. The PHIN program will take responsibility for ensuring federal, state, and local public health agency goals are considered in the development of health information technology policies and standards. Members supporting PHIN will observe national committees and participate in working groups including<sup>ix</sup> the following: HHS Health IT Policy Committee (HITPC), HIT Standards Committee (HITSC), National Committee on Vital and Health Statistics (NCVHS). Additional workgroups and taskforces may be identified in the future.

#### **Strategy 2.1.2: Participate in national standards and implementation processes**

PHIN will participate in national standards and implementation processes through organizations such as HL7, Public Health Data Standards Consortium, and the Integrating Healthcare Enterprise (IHE) to promote the development and adoption of standards and certification. The PHIN program will work with national partner organization to identify public health needs and priorities and ensure policies and standards are promulgated to our public health stakeholders.

### **GOAL 2, OBJECTIVE 2**

*Develop and monitor metrics of participation in national public health information exchange*

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#### **Strategy 2.2.1: Monitor the progress of public health information exchange**

The PHIN program will develop metrics for public health information exchange to measure and monitor data exchange across the public health enterprise. PHIN will assess jurisdictional capabilities to support public health information exchange using PHIN standards (e.g., PHIN requirements, message mapping guides, and vocabulary and format standards). Progress will be monitored on an annual basis.

## **2.3 PHIN Goal 3: Perform key public health information exchange and standards management roles**

PHIN will provide and maintain key national public health data exchange and standards management activities. PHIN will work with the global community on standards development

and other services to support global public health information exchange. PHIN will support public health vocabulary, messaging, and brokering infrastructure, and provision key public health data sets for surveillance, epidemiology, and laboratory services.

### **GOAL 3, OBJECTIVE 1**

#### *Operate and improve vocabulary, messaging, and brokering infrastructure*

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##### **Strategy 3.1.1: Support reusable and extensible vocabulary, data messaging and brokering, and directory technologies to streamline application development and public health information exchange**

Several operations are common between public health programs and the information exchanges that support them. These include the need to send and receive electronic messages, securely, and reliably. Given the flexibility required to support partners using different data formats and standards, data and security services are often needed. PHIN will continue to provide public health partners with tools, utilities, and services that streamline development and implementation of common public health information exchange operations. Tools and services such as PHIN Messaging System (PHINMS)<sup>x</sup> and the PHIN Public Health Directory (PHINDir)<sup>xi</sup> will also continue to be made available for vendor partners to incorporate, expediting population health exchange components within their product line.

##### **Strategy 3.1.2: Develop and maintain public health vocabularies, identifiers, and metadata infrastructure**

The management of vocabularies based on the Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT®)<sup>xii</sup>, Logical Observation Identifiers Names and Codes (LOINC®)<sup>xiii</sup>, the International Classification of Diseases (ICD)<sup>xiv</sup>, and other standards can affect many public health initiatives, including surveillance, disease outbreak management, and alerting. PHIN will continue the development and enhancement of tools, such as the PHIN Vocabulary Access and Distribution System (PHIN VADS)<sup>xv</sup>, for managing, accessing, distributing, and extending consistent standards-based value sets, identifiers, and metadata across public health stakeholders. PHIN VADS will continue to make public health vocabularies available for access and management by public health information exchange stakeholders and will also be leveraged for global public health information exchange. PHIN will also work with ONC and other Federal stakeholders to explore provisioning services which will support CDC developing a primary version of the data, and to send updates to all other interested parties.

### **GOAL 3, OBJECTIVE 2**

#### *Provision key public health data sets, including data sets of national importance*

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##### **Strategy 3.2.1: Provide “data hub” services for national data sets**

PHIN will support Federal, state, and local partners by identifying and facilitating the sharing of available national and aggregate data public health data sets. PHIN will investigate how to share more timely data with the public health community. This effort includes both secure sharing and public sharing based on data’s sensitivity requirements. Through the PHLISSA project, PHIN will also work with data providers such as large national reference laboratories, to define solutions in providing key data sets to state and local health agencies. This concept can be



expanded for data providers (e.g., poison control centers, retail data monitors, news feeds) that supply commonly needed data to one “hub” to provision to state and local health agencies.

### **GOAL 3, OBJECTIVE 3**

*Provide technology services to support collaboration of public health information exchange*

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#### **Strategy 3.3.1: Provide technical services that help public health agencies collaborate in standardization and interoperability processes, achieve interoperability, and perform necessary testing, and certification**

To ease the implementation of PHIN information exchange standards and specifications, CDC will work with public health partners to develop tools to facilitate the entire standards lifecycle. As PHIN aligns to the Nationwide Health Information Network S&I framework, its technical infrastructure will need to support multiple activities across the entire standards and interoperability process. Investments in tools and standards development infrastructure will make the process of finding, selecting, implementing, and using standards easier for the developers and will support the standards development life cycle by maintaining, updating, and reusing standards in the repository.

PHIN will implement key technologies, including:

- Collaborative development infrastructure, such as wiki source code / version control repositories to help with message specification and software development;
- Vocabulary and metadata repositories, such as the PHIN Vocabulary Access and Distribution System, for browsing, selecting, and implementing appropriate standards;
- Testing harnesses to facilitate prototyping, proof-of-concept development, and certification of information exchanges for public health programs, including those associated with meaningful use, and
- Certifying public electronic public health information exchange capability.

### **3. ASSUMPTIONS AND RISKS**

As can be seen from the previous sections, PHIN will consist of a complex set of activities, with co-dependencies on many work strategies to advance the effective use of information to advance public health outcomes. This section provides an introduction to many of the assumptions and risks for the program. In overseeing and coordinating PHIN, CDC should continually revisit these to mitigate properly, and find solutions to most effectively utilize scarce program resources.

#### **3.1 Program Planning Assumptions**

The following assumptions were made in the development of this strategic plan.

- PHITPO will gain buy in from CDC leadership with the vision, mission, goals, and objectives of outlined in this plan;
- PHIN is a multifaceted collaborative effort, under the stewardship of PHITPO. PHITPO will engage both CDC and stakeholders to collaborate in public health information exchange priorities, including its standards, services, and policy agenda;
- As PHIN stakeholders are identified, they will be active participants, with appropriate time allocated to advance standards, policies, and services;

- PHIN will continually evaluate to assess how it can improve the information exchange value chain supported by its standards, policies, and services;
- PHIN will continue to align and enhance the standards, policies, and services of national health information initiatives such as the Nationwide Health Information Network

### 3.2 Risk Matrix

The table below presents foreseen risks and mitigation strategies for PHIN to consider as it evolves.

Risk Domain	Risk	Mitigation
<b>Governance</b>	Public health information exchange requires time, investment, and collaborative development with scarce resources.	Currently, CDC information resource governance is not actively addressing cross-functional public health information exchange initiatives, often leading to redundant or inefficient utilization of resources. PHIN, PHITPO, and CDC leadership will work together to define the governance organization, processes, roles, and responsibilities to advance public health information exchange.
<b>Collaboration / Stakeholder Engagement</b>	Limited stakeholder understanding and support of vision, mission, goals, strategies, objectives, and milestones with PHIN.	PHIN will have regular and consistent communication with stakeholders to advance the PHIN vision, mission and goals.
<b>Collaboration / Stakeholder Engagement</b>	Reduced communication with PHIN partner organizations.	Many of the existing methods of communication with external PHIN partners have not been used recently. A formal communications plan was delivered to outline vehicles for communication as the PHIN strategy evolves. External communication practices will be restated in order to educate and engage these partners.
<b>Collaboration / Transparent Development</b>	Reduced resources coupled with the need to drive stakeholder information exchange.	PHIN activities will adopt transparent and collaborative methodologies to spur requirements definition, standards elaboration, specification development, and technical development and support as necessary.
<b>Strategic Alignment</b>	Lack of visibility and collaboration with CDC, ONC, OMB, and other initiatives.	To be effective, PHIN will coordinate and support other strategic initiatives. This will also require further alignment of PHIN strategic plans with other strategic plans, including plans within PHITPO, OSELS, and the CDC enterprise.
<b>Government Mandates</b>	Implications for PHIN from other Federal initiatives beyond ONC.	There are several Federal programs and plans, including the Nationwide Health Information Network <sup>vii</sup> , Federal Health Architecture <sup>xvi</sup> , the Federal Information exchange Environment Initiative <sup>xvii</sup> , the Open Government Initiative <sup>xviii</sup> , and the US CIO “25 Point Plan to Reform Federal Information Technology Management” <sup>xix</sup> , that may have implications for PHIN initiatives. To be effective, PHIN must coordinate with CDC’s Information Technology Services Office and other CDC centers to determine impacts of these and other plans on PHIN.
<b>Organizational</b>	Availability and capacity of resources to support the execution of activities outlined in this plan.	Resources will be in support of the vision and mission. In addition, they will have a role that supports the strategies. This will require further hiring, training, and possibly realignment of current organization to in support of the strategies defined here.

Risk Domain	Risk	Mitigation
<b>Budget</b>	Limited resources to execute many of the strategies defined in the plan.	Budget and cost constraints need to be considered as PHIN activities evolve, particularly to meet the needs of Meaningful Use Requirements. The timelines should be revisited quarterly or at appropriate portfolio management checkpoints. Consider partnerships and external relationships to expand on funding sources.
<b>Industry</b>	Changes in health technology landscape.	It will be critical to remain involved in partnerships with stakeholders and external entities to ensure that any changes to the future role of public health data and information exchange is captured and addressed. Industry partners can be critical to meeting the needs for developing and using shareable information assets and services.
<b>Project Management</b>	Complex strategies and dependencies throughout the proposed implementation schedule.	Execution of the plan will require strong program and project management support to proactively address dependent issues, prioritize activities, and advance projects to meet the goals of the Program.

#### 4. CONCLUSION AND NEXT STEPS

Building on the foundations of PHIN, CDC's leadership in public health information exchange and applied informatics can advance public health practice and outcomes. Through PHIN, CDC and its public health partners can help close the gap between the clinical and public health community by providing healthcare workers with important information for individual care. PHIN will be complex to execute, but with careful monitoring and community wide participation, it is positioned to advance public health information exchange initiatives across the nation.

Two important steps are critical to successfully execute this plan. First, components from this plan should inform and align the strategic plans for the Divisions and Units within PHITPO and the Office of Surveillance Epidemiology and Laboratory Services. Second, this plan should be reviewed and aligned with stakeholders outside of CDC, with special attention to Federal, State, Tribal, Local, and Territorial Partners. In so doing, PHIN can only gain the much needed collaborative relationships and buy-in that required for these activities.

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