

## Medicaid and Public Health Integration Learning Series

# Public Health Informatics

### CONTENTS

#### Overview

- [What is Public Health Informatics?](#)
- [National Drivers for a Growing Field](#)
- [Informatics in Public Health Agencies](#)

#### Opportunities for Partnership

#### Key Issues

- [Meaningful Use Public Health Objectives](#)
- [HITECH Federal Financial Participation for Public Health Activities](#)
- [Value Through Shared Infrastructure: The Public Health Community Platform](#)

#### Resources





### OVERVIEW

The exchange and use of appropriate and timely information on health conditions and populations are at the heart of public health. Raw data from healthcare, labs, surveys, and other sources are converted into information through analysis, and information is turned into knowledge that can be applied to essential public health decisions to prevent illness and protect the health of communities. State and territorial health agencies also supply data, information, and knowledge to a variety of constituencies, including individual citizens, public and private organizations, local or tribal health departments, and federal agencies.

### What is Public Health Informatics?

Public health informatics is the systematic application and science of the effective use of data, information, and knowledge to improve the health of individuals and communities.<sup>1</sup> Informatics includes the information technology (IT) aspects of the nationwide public health information infrastructure but also encompasses the communication, governance, and legal and policy issues involved in managing, exchanging, and using public health information. Informatics is an interdisciplinary field that applies information, computer science, and technology to public health practice, research, and learning.<sup>2</sup> Using a combined technical and public health skillset, public health informaticians distill data from IT applications within and outside of the health agency into actionable information to improve population health.

Guided by informatics policies and principles, state and territorial health agencies rely on information systems to facilitate good decisionmaking by providing the right information to the right people at the right time. Information systems create bridges linking public health, clinical care, individuals, and communities that foster overall improved health system performance and population health status. Public health leaders ensure that the collection, analysis, and dissemination of information drive quality and efficiency in public health systems across geographical levels, which will ultimately lead to improved individual and population health.

### National Drivers for a Growing Field

In recent years, new technologies, national policies, and increased health IT (HIT) adoption have contributed to the growth of informatics in public health agencies and transformed public health surveillance and information systems. Public health traditionally received information such as state-mandated disease reporting and vital records through paper, phone, and fax collection. Evolving technologies such as electronic health records (EHRs), electronic laboratory results reporting, and immunization information systems allow for faster and more accurate reporting to public health. User expectations have kept pace with technology as clinicians, public health professionals, and the general public increasingly expect to have simple and timely access to public health information. In addition, states report to national surveillance initiatives operated by CDC, including the [National Notifiable Diseases Surveillance System](#), [National Syndromic Surveillance Program](#), and [National Vital Statistics System](#), which require standardized, structured data reporting from public health information systems.

The Office of the National Coordinator for Health IT (ONC) was formed in 2004 to provide national oversight and support of informatics activities, including those pertaining to public health. The federal government released several informatics reports and frameworks that highlight the important role of public health agencies in disease surveillance, situational awareness, and overall population health, including the [Federal Health IT Strategic Plan](#) and the [Nationwide Interoperability Roadmap](#). ONC has placed increasing emphasis on interoperability to facilitate information exchange between organizations and has encouraged state and local health agencies to develop the appropriate technical and administrative infrastructure for this exchange.<sup>3,4</sup>

## Overview

The 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act, enacted under the American Recovery and Reinvestment Act, created a number of programs designed to promote the adoption and expansion of HIT to improve healthcare quality, safety, and efficiency. These programs included the [Beacon Community Program](#), [Consumer eHealth Program](#), cooperative agreements and grants to support [State Health Information Exchanges](#), [Regional Extension Centers](#) for technical assistance, and a number of [workforce development programs](#) to train healthcare workers in HIT. The HITECH Act also created the [Medicare and Medicaid EHR Incentive Programs](#) (Meaningful Use) to incentivize EHR adoption and use among healthcare organizations and professionals. HIT adoption has grown in the past several years: in 2013, 59 percent of hospitals and 48 percent of physicians had an EHR system, which was a 47 percent and 26 percent increase respectively since 2009.<sup>5</sup> Meaningful Use has also significantly increased electronic provider reporting from hospitals and providers to public health through optional and required public health reporting. According to a 2014 ONC report, 87 percent of attesting hospitals selected a public health reporting measure, with immunization reporting as the most popular.<sup>6</sup>



### Informatics in Public Health Agencies

Due to the federal initiatives and local priorities described above, public health agencies have markedly increased their informatics activities. In 2012, 52 percent of public health agencies reported using health information exchange (HIE) for disease surveillance, an increase from 42 percent in 2010. All but one state reported having an immunization registry system in 2012, and 62 percent of the states have bidirectional immunization data reporting and exchange capabilities.<sup>7</sup> In addition to clinical surveillance data, public health agencies leverage data on the environment from social services and other state programs for complex data analysis and mining to create more complete representations of population health.

Despite overall growth in informatics activities, informatics in public health agencies also faces many challenges. Public health agencies need specially trained informatics staff to design, implement, and maintain increasingly sophisticated systems and perform advanced database analytics for managing population health. However, without appropriate, dedicated job classifications and salary levels, agencies may struggle to hire and retain these specialized staff.<sup>8</sup> In addition, public health information systems provide essential data management and exchange infrastructure that cuts across programs, but resources to develop and maintain these systems are often difficult to find because programs are largely funded through federal grants and cooperative agreements specific to particular diseases or public health problems. This funding often results in siloed systems that serve specific purposes but are limited in their ability to interoperate or exchange data with other systems.

Interoperability among public health systems, other governmental agencies, and with the clinical sector is an increasing informatics challenge as HIT adoption and expectations for electronic information exchange continue to grow. Standards for the format and content of messages exchanged between systems are key to this interoperability and help ensure that systems can “talk” to one another. Standards development organizations, such as [Health Level 7 \(HL7\)](#) and [Integrating the Healthcare Enterprise](#), coordinate the development of these standards and implementation guides. It is critical for public health to be at the table for these discussions, though participation is usually a volunteer effort on the part of public health informaticians.

### OPPORTUNITIES FOR PARTNERSHIP

There are many opportunities for public health and Medicaid to collaborate on informatics activities. Meaningful Use, in particular, presents many partnership opportunities for public health and Medicaid programs, emphasizing the importance for public health and Medicaid to understand each other's roles, priorities, and resources. Connecting data from public health and Medicaid information systems can lead to better and more complete information for patient care, as well as performance improvement and public health and policy decisionmaking. In addition, public health informaticians have expertise in information management, systems design, data analytics, and visualization that can be beneficial to Medicaid activities.

ASTHO highlighted successful collaborations between state public health and Medicaid programs through the Public Health-Medicaid Collaboration Award for HIT, awarded by ASTHO in 2011 and 2014 in partnership with Centers for Medicare & Medicaid Services (CMS) and CDC. Successful partnerships for HIT and informatics activities included:

- Integrating public health activities into State Medicaid Health IT Plans (SMHPs).
- Accessing Medicaid 90/10 funding to support public health information systems associated with Meaningful Use.
- Coordinating programs that determine whether eligible professionals and hospitals met public health measures for Meaningful Use.
- Implementing innovative strategies for providers to work with HIE, Medicaid, and public health agencies.

The Michigan Department of Community Health, winner of the 2014 Public Health-Medicaid Collaboration Award, integrated public health into their SMHP by connecting electronic public health reporting systems and Medicaid systems via the state Data Hub. This connection will allow providers to submit reportable public health information for immunizations, syndromic surveillance, cancer, vital records, disease surveillance, and other public health registries. Michigan's Medicaid program is leveraging HIT and Medicaid Management Information Systems funding to build the infrastructure needed to consume information from public health systems via the Data Hub to improve patient care. For example, Medicaid providers would be able to query immunization records from the state registry to identify patients who are due for appropriate vaccinations.

The Georgia Department of Public Health collaborated with state Medicaid to establish the Georgia Health Information Exchange Network (GaHIN), which provides technical infrastructure and governance for statewide connectivity to public health systems, such as the immunization registry, electronic lab reporting, and disease surveillance system, as well as Medicaid, regional HIEs, large health systems, and other strategic partners. GaHIN supports Medicaid providers in submitting data from EHRs to public health to meet Meaningful Use, but beyond that, the state is also considering the use of this statewide HIE to address critical health issues for Georgia Medicaid members, such as asthma and HIV. The HIE can enable rapid-cycle data sharing among hospitals, emergency departments, Medicaid claims, and providers to inform efforts to reduce asthma burden in the state, while bi-directional connections between providers and the public health department via the HIE can help improve the continuum of care for HIV patients by identifying and re-engaging those who are out of care to help them better manage their illness.

### KEY ISSUES

#### Meaningful Use Public Health Objectives

CMS's EHR Incentive program includes a number of objectives for reporting to public health agencies. [Stage 1](#) included menu options for reporting to immunization registries, syndromic surveillance reporting, and electronic laboratory results reporting. To meet the measures, Eligible Professionals (EPs), Eligible Hospitals (EHs), or Critical Access Hospitals (CAHs) were required to send test messages from their certified EHR technology to a public health authority. [Stage 2](#) required "ongoing transmission" to public health and expanded the public health measures to include reporting to cancer registries and other specialized registries. The [final rule for Stage 3](#) published in October 2015 restructured the public health reporting measures into one objective with six options for "active engagement" to submit data to a public health authority. The Stage 3 rule introduced public health case reporting as a new measure and reconfigured the registry measures into one for public health registries and one for clinical data registries. The Stage 3 final rule also included modifications to Stage 2 in 2015 through 2017 to align all program requirements into one stage.

#### Meaningful Use Stage 3-Public Health and Clinical Data Registry Reporting Objective Measures:

- Immunization registry reporting
- Syndromic surveillance reporting
- Case reporting of reportable conditions
- Public health registry reporting
- Clinical data registry reporting
- Electronic reportable laboratory results

The public health Meaningful Use measures represent core systems for public health surveillance and monitoring population health. Surveillance of diseases and health conditions is an essential function and source of information for public health agencies, and Meaningful Use has been a key driver for encouraging providers and hospitals to engage with public health and exchange data in standardized ways. Although reporting to public health is often mandated by state and local laws, under-reporting is a significant problem. Meaningful Use has enabled public health agencies to improve communication and relationships with providers and hospitals and increase coverage of reporting, which ultimately leads to better information for public health action and a clearer picture of health status in the community.

Implementation of Meaningful Use has often been challenging for public health agencies, requiring coordination and management of systems and clinical partner relationships with no additional public health resources for these activities. For states that have successfully leveraged Medicaid funding through the HITECH 90/10 match opportunities to support public health activities, these resources have been critical for funding staff and infrastructure to coordinate Meaningful Use activities and assist providers in connecting to health information exchanges and public health systems. The process of "onboarding" providers and hospitals to submit data to public health is a long and involved process, for both the clinical side and the public health agency. For public health reports from EHRs to be useful, messages must be complete and adhere to strict standards and implementation guides. The process of connecting a provider or hospital to public health systems involves close communication and education on public health needs and may be hampered by competing priorities for clinical partners.

### **HITECH Federal Financial Participation for Public Health Activities**

To support public health onboarding efforts for Meaningful Use, state public health agencies have collaborated with their Medicaid offices to secure federal financial participation (FFP) funds, also known as “90/10 Match Funds,” provided for in the HITECH Act that established the EHR Incentive Program. In addition to the 100 percent FFP for incentive payments to Medicaid providers that meet Meaningful Use, section 4201 of the Recovery Act also provides 90 percent federal financial participation for state administrative expenses related to the Medicaid EHR Incentive Program.<sup>9</sup> These 90/10 funds are a very important resource for many state public health agencies, since few other funds are available to support the increased workload of Meaningful Use implementation and coordination.

To receive HITECH FFP funds, states must submit an HIT Planning Advance Planning Document (HIT P-APD), a SMHP, and an HIT Implementation Advance Planning Document (HIT IAPD). The HIT IAPD details how states plan to administer the Medicaid incentive payments, conduct oversight of the program, and encourage the adoption of certified EHR technology and HIE.

As defined by CMS, the following categories of time-limited activities that are potentially eligible for HITECH FFP include: activities related to provider payment, oversight, and outreach; planning activities; outreach and education activities; trainings/meetings; travel; hardware; software; and oversight and reports.

These activities can be classified into two broad categories:

1. On-boarding activities that connect providers to HIEs and enable them to use HIE services.
2. Activities pertaining to infrastructure design, development, and implementation to support HIE and Meaningful Use.<sup>10</sup>



## Sample Funded Public Health Projects

HIE Activities	Infrastructure Activities
<ul style="list-style-type: none"> <li>• Technical and business support for public health or Medicaid’s connection to the state HIE.</li> <li>• Connect state registries with an HIE, managing communications with external data providers.</li> <li>• Build connections to enable Medicaid providers to query public health registries (e.g., the immunization registry).</li> <li>• Assess county health departments’ readiness to connect to HIEs.</li> <li>• Offer incentives for Medicaid hospitals and providers to participate in HIEs.</li> </ul>	<ul style="list-style-type: none"> <li>• Add staff to support onboarding and message analysis for public health programs that are Meaningful Use objectives (immunization, electronic lab reporting, cancer, and/or syndromic surveillance).</li> <li>• Modify the state laboratory information management system to receive electronic orders and transmit results.</li> <li>• Develop a crosswalk of local laboratory codes to Logical Observation Identifiers Names and Codes (LOINC) codes.</li> <li>• Upgrade immunization registry to HL7 2.5.1.</li> </ul>

ASTHO conducted interviews with ten states about their experiences in applying for HITECH FFP funds for public health activities. Most states interviewed had similar approaches to writing the IAPD: public health provided the public health content (i.e., project descriptions, position descriptions, and budgets), and their Medicaid agency incorporated this content into the IAPD. Frequent, open communication between public health and Medicaid staff and mutual understanding of their respective activities, priorities, and challenges were key to successful public health and Medicaid partnerships, particularly when public health and Medicaid were organized in separate state agencies.

For example, the Washington State Department of Health and state Medicaid agency worked together to develop the SMHP and HIT IAPD to secure Medicaid 90/10 match funding, making the case for additional resources and staffing to connect Medicaid eligible hospitals to the state HIE to submit electronic laboratory reports. Resource investments were needed to connect the Department of Health to the state HIE, and for staff to assist with onboarding hospitals to ensure that complete and accurate information is sent through the system. The separate public health and Medicaid agencies had to collaborate and educate each other about their roles, resource gaps, and Medicaid requirements to move toward their common goal of a more integrated healthcare and public health system.

Collaboration around HITECH FFP applications often leads to improved public health-Medicaid working relationships for other activities, such as more strategic planning regarding public health and Medicaid data integration, as well as planning for the use of data from public health information systems and statewide HIEs to identify and address health issues facing both Medicaid populations and the overall state population.

### **Value Through Shared Infrastructure: The Public Health Community Platform**

To benefit from health systems transformation and increased integration between public health and healthcare, public health agencies need to connect their often fragmented and siloed information systems and improve their information exchange infrastructure. To this end, ASTHO was funded by CDC to develop a cloud-based platform governed by the public health community to modernize the technology infrastructure and provide shared solutions for governmental public health.

[The Public Health Community Platform \(PHCP\)](#) provides technology infrastructure based on industry standards with services and applications for interacting with many types of public health and healthcare data. The PHCP will enable public health agencies to rapidly access information for critical decisions and share that information with healthcare providers, policymakers, and communities. Potential uses for the PHCP include: immunization information system data sharing, data analysis and visualization tools for community health assessments, and electronic case reporting from healthcare providers via EHRs.

Electronic case reporting from EHRs to public health will be the first core service of the PHCP. For doctors and hospitals, reporting diseases to public health is a time-consuming, manual process. Reporting from EHRs would reduce the burden for providers to report and for public health to identify and investigate cases, as well as improve the timeliness of reporting. CMS has included case reporting as a new option in the public health objective for Meaningful Use Stage 3 starting in 2018, but few states currently have the technical infrastructure for it. The PHCP will offer that infrastructure and the necessary shared applications to connect EHRs to public health.

The PHCP is an opportunity to transform the way public health systems are developed. Instead of every agency building and maintaining their own systems, they can reduce costs and save resources by sharing infrastructure and applications. Sharing data via the platform will lead to better information and better decisionmaking for public health, Medicaid, and healthcare partners.

Both for existing programs such as Meaningful Use and developing platforms such as the PHCP, informatics is an important area of growth in state public health agencies. Medicaid and public health partnerships can help align resources and information toward the mutual goal of safeguarding population health.

## RESOURCES

- **ASTHO's eHealth Policy Statement:** <http://www.astho.org/Policy-and-Position-Statements/Policy-Statement-on-eHealth/>. *Provides an overview of public health informatics principles.*
- **ASTHO's Informatics Workforce Position Statement:** <http://www.astho.org/Policy-and-Position-Statements/Position-Statement-on-Informatics-Workforce/>. *Provides support for informatics career series within state and local health agencies.*
- **“Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap, FINAL Version 1.0.”** ONC. <https://www.healthit.gov/sites/default/files/hie-interoperability/nationwide-interoperability-roadmap-final-version-1.0.pdf>. *Describes national vision and roadmap for interoperability in healthcare and public health.*
- **CMS Resources on HITECH FFP for Public Health Activities:**
  - State Medicaid Director Letter #09-006 No subject line. <https://www.medicaid.gov/Federal-Policy-Guidance/downloads/SMD090109.pdf>.
  - State Medicaid Director Letter #10-016 “Re: Federal Funding for Medicaid HIT Activities.” <http://downloads.cms.gov/cmsgov/archived-downloads/SMDL/downloads/SMD10016.pdf>.
  - State Medicaid Director Letter #11-004 “Re: Use of administrative funds to support health information exchange as part of the Medicaid EHR Incentive Program.” <http://downloads.cms.gov/cmsgov/archived-downloads/SMDL/downloads/SMD11004.pdf>.
  - CMS FAQ (Sept. 10, 2013) “Eligibility for 90 percent Federal matching funds for health information exchange activities through the Medicaid Electronic Health Record Incentive Program.” <http://www.medicaid.gov/federal-policy-guidance/downloads/faq-09-10-2013.pdf>.
- **CDC Meaningful Use Website:** <http://www.cdc.gov/ehrmeaningfuluse/>. *Includes resources and guidance on the Meaningful Use public health measures.*
- **The Public Health Community Platform:** [www.thephcp.org](http://www.thephcp.org). *Technology infrastructure for shared applications and services, driven and governed by the public health community.*

### REFERENCES

- <sup>1</sup> ASTHO. “eHealth Policy Statement.” Available at <http://www.astho.org/Policy-and-Position-Statements/Policy-Statement-on-eHealth/>. Accessed 3-6-2016.
- <sup>2</sup> CDC and University of Washington’s Center for Public Health Informatics. Competencies for Public Health Informaticians. Atlanta, GA: HHS, CDC, 2009.
- <sup>3</sup> ONC. “Federal Health IT Strategic Plan: 2015-2020.” Available at [https://www.healthit.gov/sites/default/files/9-5-federalhealthitstratplanfinal\\_0.pdf](https://www.healthit.gov/sites/default/files/9-5-federalhealthitstratplanfinal_0.pdf). Accessed 10-20-2015.
- <sup>4</sup> ONC. “Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap, FINAL Version 1.0.” Available at <https://www.healthit.gov/sites/default/files/hie-interoperability/nationwide-interoperability-roadmap-final-version-1.0.pdf>. Accessed 10-20-2015.
- <sup>5</sup> ONC. “Report to Congress: Update on the Adoption of Health Information Technology and Related Efforts to Facilitate the Electronic Use and Exchange of Health Information.” Available at [http://www.healthit.gov/sites/default/files/rtc\\_adoption\\_and\\_exchange9302014.pdf](http://www.healthit.gov/sites/default/files/rtc_adoption_and_exchange9302014.pdf). Accessed 2-4-2015.
- <sup>6</sup> *Ibid.*
- <sup>7</sup> ASTHO. ASTHO Profile of State Public Health, Volume 23. 2014. Available at <http://www.astho.org/Profile/Volume-Three/>. Accessed 2-4-2015.
- <sup>8</sup> ASTHO. “Informatics Workforce Position Statement.” Available at <http://www.astho.org/Policy-and-Position-Statements/Position-Statement-on-Informatics-Workforce/>. Accessed 3-6-2016.
- <sup>9</sup> CMS. State Medicaid Director Letter #09-006 (September 1, 2009) No subject line. Available at <https://www.medic-aid.gov/Federal-Policy-Guidance/downloads/SMD090109.pdf>. Accessed 4-4-2016.
- <sup>10</sup> CMS. FAQ (September 10, 2013) “Eligibility for 90 percent Federal matching funds for health information exchange activities through the Medicaid Electronic Health Record Incentive Program.” Available at <http://www.medicaid.gov/federal-policy-guidance/downloads/faq-09-10-2013.pdf>. Accessed 2-4-2015.