



# ***Public Health Information and Technology Infrastructure Modernization Funding Report***

Core Investment Strategies to Modernize  
and Interoperate Federal, State, Local,  
Tribal Public Health Systems



**HIMSS**<sup>SM</sup>

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### ***Core Investment Strategies to Modernize and Interoperate Federal, State, Local, Tribal Public Health Systems***

HIMSS provides public policy and guidance on the core investment strategies that support health system transformation and public health data modernization based on lessons learned from the COVID-19 pandemic. This guidance builds upon strategic goals outlined in the 2020 [HIMSS COVID-19 Global Policy Call to Action](#) and emphasizes the public policy and business processes that must transform in order to securely transmit bi-directional reports electronically to public health agencies, healthcare facilities and health data exchanges in the U.S. As recommended in the HHS Report [Public Health 3.0: A Call to Action to Create a 21st Century Public Health Infrastructure](#), we need to develop timely, locally relevant health information systems across state, territorial, local and tribal (STLT) governmental health agencies. Currently STLTs rely on outdated data, merged across years to improve sample size and not actionable at the neighborhood level.

HIMSS calls on Congress and the Department of Health and Human Services to provide the necessary interoperable technology (hardware and software) to receive public health data (as defined by the Promoting Interoperability Program) and other data required to perform critical public health tasks (contact tracing) from health systems. STLTs must be equipped to analyze and share electronically transmissible visualized data and insights with eligible hospitals. Suppose we do not have the infrastructure to receive and analyze the data that the federal government requires public health authorities and healthcare systems to collect and report. In that case, we lose any value that could be gained from core lessons learned from the COVID-19 response and data collection.

The priority areas for modernization in the next 1-3 years are as follows:

- Build a foundation of interoperable platforms to facilitate broad-based data exchange
  - Immunization registry reporting
  - Syndromic disease surveillance reporting
  - Electronic case reporting and contact tracing
  - Public health registry reporting
  - Vital records reporting
  - Electronic reportable laboratory results reporting

- Develop local public health informatics workforce and systems compatibility

Modernization must also include the following recommended programs and resources for meaningful and sustained system transformation by 2030:

- Support the coordination of easy, trusted and secure access of multi-modal health data across virtual, remote or in-person services
- Establish a nimble rapid cycle learning health system environment (analytics, strategic coordination)
- Improve health IT innovations and workforce capacity to support cross-sector data analytics, visualization, reporting and care coordination platforms
- Build a foundation of interoperable platforms to facilitate broad-based data exchange, health data analysis, visualization and reporting

## Baseline Funding Assessment

Legacy technology and policies (e.g., remote working, issuing devices) must be updated to respond to modern, electronic data processes. Public health agencies must prioritize the digitization of essential services at all levels. Moreover, comprehensive cross-agency strategies should be employed to address current Band-Aids across agencies taking a siloed approach to modernization of services. This means that STLTs will need to realize an enterprise strategy taking into account both the hardware and software functionality than the staffing expertise to leverage these modern data solutions and approaches, keeping in mind the legal requirements of the state and federal guidelines.

To calculate a baseline of investments needed to modernize and transform public health systems, HIMSS considered the following five determining factors to arrive at baseline costs for 21st century public health system transformation and data modernization among governmental health agencies.

1. Defining the universe of funding across all HHS systems.
  - a. What is currently being spent?
  - b. What is needed (short-term)?
  - c. What is needed (long-term)?
2. What role can HHS/ONC/CDC/CMS/HRSA/ASPR play in an enterprise modernization approach?
3. What is needed to determine a common standard of public health data infrastructure?
4. What infrastructure already exists (e.g., role of HIEs, state health IT roadmaps, emergency preparedness plans, etc.)?
5. What are the connections with other organizations, e.g., State Medicaid?

There are approximately 3,000 local health departments in the United States (National Association of County & City Health Officials) coupled with 50 state departments of health, 8 territories, and the District of Columbia. **Through interviews with Data: Elemental to Health Campaign partners and other key stakeholders at state and local public health agencies, health systems, market suppliers, and interoperability experts, we/HIMSS have developed estimates for price points on salaries, hardware, software, licensing, training, and additional anticipated costs.**

A = Labor Costs

B = System Costs

C = 3050 departments

1. Electronic case reporting:  $A (6 \text{ FTEs} \times \$175,000 = \$1,050,000) + B (0) \times 50 \text{ (state level)} = \$52,500,000$
2. Disease surveillance system purchase :  $A (0) + \$5,000,000 \times 50 = \$250,000,000$ 
  - a. Disease surveillance system maintenance:  $\$2,000,000 \times 50 = \$100,000,000$
  - b. Disease surveillance system staffing:  $(A) \$875,000 \times 50 = \$43,750,000$
3. Laboratory information management system (LIMS)  $\$1,000,000 \times 50 = \$50,000,000$ 
  - a. Electronic test ordering and reporting (ETOR)  $\$1,000,000 \times 50 = \$50,000,000$
  - b. Electronic lab reporting – staff  $(7 \text{ FTEs} \times 175,000 = 1,225,000) \times 50 = \$62,500,000$
4. Vital records purchasing  $\$5,000,000 \times 50 = \$250,000,000$ 
  - a. Vital records maintenance  $\$100,000 \times 50 = \$5,000,000$
  - b. Vital records staffing  $\$1,005,000 \times 50 = \$500,025,000$
5. Disease/syndromic surveillance  $\$700,000 \times 50 = \$250,000,000$

### **State, Territories, Local and Tribal (STLT) Level Transformation = 1.363775 billion**

Local functionality theory formula:

- Staffing cost estimate  $\$100,000 \times \text{role (lab reporting, DS, CR = 3)} \times 2 \text{ people} \times 3000 = \$1,800,000,000$
- Hardware, maintenance, and licensing  $\$14,800,000 \times .50 \text{ (local level)} \times 3000 = \$22,200,000,000$

Support state funding for:

- a. State level total  $\$1,363,775,000$
- b. Local staffing  $\$1,800,000,000$

c. Local HW/SW/M/L \$22,200,000

**Total ~\$25,363,975,000**

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## Immediate Recommendations for Implementation (Years 1-3)

Beginning now and over the next 1-3 years, U.S. health systems must realize critical improvements related to the current public health emergency response. Many of these improvements are underway and are represented in the approximate \$25,363,975,000 estimate. For example, an investment of \$50 million in Fiscal Year (F.Y.) 2020 marked the start of the Data Modernization Initiative (DMI) at the CDC. With \$50 million in F.Y. 2021, \$500 million in the CARES Act, and approximately \$300 million in the American Rescue Plan Act, DMI is beginning to build a standards-based, interoperable public health information ecosystem ready to confront any emerging threat.

While improvements are being made with these dollars, significant and sustained funding is needed so jurisdictions can confidently invest in the systems and workforce they need to bring their data systems into the 21st century. It will take time and continued funding to support the critical investments made to date and to ensure data delivery and collection address health equity. HIMSS, a member of the Data: Elemental to Health Campaign, is grateful to Congress and the Administration for recognizing this need and supporting these early investments.

***HIMSS supports the Data: Elemental to Health Campaign in urging Congress to (at minimum) provide \$1.57 billion per year to fully modernize our public health data infrastructure at the state and local levels.*** This funding is essential to invest seriously in new technology in every jurisdiction and attract, train and retain the diverse workforce needed at the state, local, tribal and territorial levels to build, implement and sustain a modern public health data infrastructure across the U.S.

The foundation of the DMI is built on a set of guiding principles: an enterprise approach to data exchange, interoperability between public health and health care systems, security to protect patient data, a workforce empowered to build and maintain the systems, and public-private partnership to drive innovation.

**Modernizing Hardware and Software for the Promoting of Interoperability  
Required Data**

**HIMSS supports the following recommended funding and technical assistance goals included in the \$25,363,975,000 estimate:**

- 6. ELECTRONIC CASE REPORTING and Contact Tracing:** Electronic Case Reporting (eCR) is the automatic submission of disease reports directly from electronic health records (EHR) at clinical care sites to state, territorial, local, and tribal health departments. eCR connects clinical and public health data to improve data completeness—ensuring that public health has the race and ethnicity data critical for achieving equity in our response. Moreover, governments at all levels should immediately consider the engagement and deployment of mobile or digital contact tracing applications that can help expedite outbreak management and response including hot-spotting; and that support the development of vital information at the community level, including:
- a. The daily number of cases
  - b. The number of contacts identified
  - c. To determine how quickly patients are isolated, and contacts are notified and advised to stay home, self-monitor, and maintain social distance from others
  - d. To inform human services and social support systems to assist the most vulnerable
  - e. To inform and support data analytics for informed policymaking at all levels of government

*Hiring epidemiologists and building systems to manage eCR requires at least \$656 million over five years, of which \$336 million are human costs and \$320 million are for systems. \$100 million is included for secure, connected tracing applications and tracing analytics workforce capacity.*

**LABORATORY INFORMATION MANAGEMENT SYSTEMS:** LIMS forms the backbone for laboratory data collection, analysis, management and sharing. Electronic Laboratory Reporting (ELR) and Electronic Test Ordering and Reporting (ETOR) support the automated electronic transmission of laboratory results from commercial and hospital laboratories to public health departments. ETOR facilitates the collection of complete demographic information so that laboratories can report complete data and results to public health.

*Putting LIMS, ELR, and ETOR in place requires \$1.032 billion over five years, of which \$392 million are human costs and \$640 million are for systems.*

**SYNDROMIC SURVEILLANCE:** Syndromic surveillance uses near real-time data collection from hospital emergency department visits and other data sources such as urgent care centers, poison center calls, or emergency medical service runs for continuous monitoring of community health. Data from both inpatient encounters and intensive care unit admissions are also needed for public health.

*Implementing syndromic surveillance systems requires \$310.4 million over five years, of which \$86.4 million are human costs and \$224 million are for systems.*

**ELECTRONIC VITAL RECORDS:** The electronic vital records system provides a secure electronic collection of birth and death data from hospitals, funeral homes, health care providers, and medical examiners. Electronic death registration systems (EDRS) provide timely mortality data. Our vital records systems are in dire need of upgrades to be interoperable with public health and EHR data systems. They are often funded through departments outside the public health department. Funding and action coordination across state and local departments is essential to the successful collection of eVital Records collection and transmittal.

*Modernizing vital records systems requires \$688 million over 5 years; of which \$336 million are human costs and \$352 million are for systems.*

**NATIONAL NOTIFIABLE DISEASE SURVEILLANCE SYSTEM:** NNDSS collects, aggregates, and analyzes at the national level de-identified data from all individual cases of reportable diseases and conditions from state, territorial, local and tribal public health agencies reported by hospitals, health care providers and laboratories. NNDSS requires rapid electronic data streams from health departments to aggregate national data for decision-making and is a critical component of public health response.

*Bringing NNDSS into the 21<sup>st</sup> century requires \$1.24 billion over five years, of which \$280 million are human costs and \$960 million are for systems.*

**LOCAL WORKFORCE AND SYSTEMS COMPATIBILITY:** Local, county and city health departments play a critical role in our public health infrastructure. A skilled workforce and compatible data systems at the local level are necessary to ensure that data can flow seamlessly into state and federal systems and that all communities can use that information to provide efficient and effective public health practices.

*Supporting local health departments' data infrastructure needs requires at least \$3 billion split evenly between system and human costs over five years.*

**Funding Estimate: ~\$7.1 Billion**

### **Improve Health IT Innovations and Workforce Capacity to Support Cross-Sector Data Analytics, Visualization, Reporting and Care Coordination Platforms**

**Funding Recommendations:** The success of our nation's health system transformation efforts hinge on a well-trained healthcare workforce. As public health and healthcare delivery become even more data-driven and analytically focused, our workforce needs to support the development of more technologists, data scientists, strategists, epidemiologists and informaticists.

STLTs need to nurture a labor force that can use analytical methods and leverage cross-sector data, thus informing evidence-based policymaking. This shift also calls for training, peer exchanges, and the creation of new apprenticeship programs to ensure that we are producing a skilled labor force that public health agencies and health care employers

need. A highly trained workforce provides the backbone for the healthcare transformation efforts underway and is what our nation will require in the future.

We recommend that HHS and STLTs focus on the following topics to help develop a skilled healthcare workforce:

- Provide seed funding for industry intermediaries to develop innovation challenges and to increase scholarships for STEM and STEAM programs establish apprenticeship programs targeted to analytical and data-driven healthcare professions, care settings, and state agencies with the most significant health IT workforce needs.
  - **2 year x \$200 mil/year workforce program = \$400 mil**
- Provide incentives that support coordination among state, regional and local public entities and public institutions of higher education. Informatics fellows, students and public health officials can access and share this data, including open data, across all levels of government, to improve the efficiency and efficacy of services, improve social determinants of health outcomes and promote data-driven policymaking, decision making, research and analysis similar to the Virginia Open Data Portal and the Indiana Data Hub.
  - **2-year loan forgiveness incentive program @ \$100 mils (Based on 2018 numbers from V.A./Indiana) for STLT public health** department program data analytics, epidemiology, informatics staff = **~\$200 mils**
  - **Applied informatics fellowship program (CDC)**
    - 58 STLTs x 1 Fellow x \$100K avg. salary x 2 year appointment (4 year = **~\$116,000,000 mil**)

**Funding Estimate: ~\$716 mil**

### **Support the Coordination of Easy, Trusted and Secure Access of Multi-Modal Health Data Across Virtual, Remote or In-person Services**

**HIMSS Recommendation:** Establish equitable financial supports and incentives to connect with health information exchanges; and implement and adopt health IT solutions using incentives, standardized processes, and specific data standards for providers to collect and exchange demographic, personal health and social information. STLTs should also be proactive in advancing a scalable data-sharing platform that leverages core data services and existing STLT IT infrastructure in a zero-trust environment vital to health system modernization efforts.

As outlined in President Biden's executive order on "Improving the Nation's Cybersecurity," STLTs should also apply the latest data encryption standards, particularly as governmental health organizations move towards cloud-based services and will be increasingly required to thwart cyberattacks on agencies, which hold valuable health information. Moreover, STLTs will need to adopt specific consent forms and processes across all providers,



community-based organizations, state and local agencies that enable STLTs to authorize the exchange of health and social data between partners. This also means coordinating with federally funded health systems to leverage the shared funding to ensure broad compliance.

Additionally, STLTs need funding to ensure the public can access virtual and remote services, including high-speed broadband and ongoing reimbursement of virtual health services across the spectrum of care, and accelerate opportunities for digital health equity.

Overall, HIMSS recommends at least a 3 billion investment for privacy, security, and cybersecurity modernization over the next five years to help implement STLT governmental health agency modernization and system transformation.

**Funding Estimate: ~3 Billion**

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## Long-term Recommendations Supporting Optimization and Sustainability (Years 2-10)

Other considerations as visioned in the HIMSS COVID-19 Global Call to Action and from the PPC feedback on what healthcare needs P.H. functionality to:

**Establish a Nimble Rapid Cycle Learning Health System Environment (analytics, strategic coordination)**

**Funding Recommendation:** Provide sustained funding to advance a Public Health 3.0 environment across state and local levels to modernize the public health system to better adapt to shifting public health and health care changes over time. This flexibility must assume ongoing strategic coordination between STLTs public health systems, **healthcare providers** and the federal agencies to meet emergency health priorities as well as routine essential services and functions. Specifically, we would like to see an integrated funding mechanism (coordinated funding alignment across all HHS funding programs – including CMS) that would support a public health IT strategist (1 FTE/State) to work as or with state health IT coordinators, CDC, ONC, and other public and private stakeholders to address immediate priorities and future topics. As such, planning funds to support the development of HIT Roadmaps, emergency preparedness, and business process analysis to ensure we achieve smart cities and communities envisioned for the 21st century solutions. Such solutions must be executed and funded (ARPA, CARE, future federal incentives, etc.) for STLTs to meet key strategic national goals and address specific local gaps.

- **1 State PH Strategist** (1/FTE and .25 support Staff) - \$175,000 each state/territory (7 year period) ~ \$67 mil
- Add, e.g. (Chief informatics officer/chief data officer (not sufficient – need interoperability assessment across the spectrum)

- **Health IT Assessment/State Health IT Road-mapping** – 150,000/4 year intervals (May include state/M.U. match requirement) ~ \$8.2 mil

**Funding Estimate: \$75 mil**

### **Build a Foundation of Interoperable Platforms to Facilitate Broad-Based Data Exchange**

**Funding Recommendation:** Leverage state, local or regional HIEs – incentivized to support public health bi-directional exchange across public health reporting systems and EHRs, prioritizing critical access hospitals and community health centers. There are model practices such as the Indiana HIE, which sends daily alerts of reportable labs to public health departments, which can be leveraged by healthcare and policy officials. Additional models such as Healthix in N.Y. should be replicated. Such models support SDOH and ongoing situational awareness, extending the tools of the state/local epidemiologist and health strategists when reporting more real-time data, including:

- Demographics
- Encounter type and location
- Lab orders and results (ex. COVID-19 LOINC Codes)
- Diagnoses
- Ventilation
- Discharge disposition
- eCR, eLR, Syndromic surveillance, immunization and vital stats
- Certified EHRs taken to the next level – through validation - to ensure consistency in eLR messaging and completeness of demographics

The modernized strategies above can be broadly implemented by extending and expanding the ONC's HIE program to strengthen and expand the ability of health information exchanges (HIEs) to support public health agencies in their response to public health emergencies and pandemics such as Coronavirus Disease 2019 (COVID-19).

**Public-Private incentives to drive this solution should include up to 40 million for functional regional/state HIEs supporting public health agencies over five years**

- Funding for P.H. "Regional Extension Centers" to provide the technical support for business process analysis and redesign, cross-sector system mapping, and to support the development of strategic and operational plans supporting implementation and procurement per national interoperability standards, STLT business environments, enterprise DMI priorities and smart communities-cities investments.
- HHS funding of at least **10** million for an academic partner(s) to evaluate the cost-benefits of HIEs on P.H. response to COVID-19 is also recommended. Evaluation efforts

will set a baseline for ROI and highlight state/regional best practices and optimal implementation efforts.

**Funding Estimate: ~ 50 mil**

### **Ongoing licensing costs, software updates, hardware updates**

Recent recommendations outlined in the NNPHI-Kresge report - <https://nnphi.org/wp-content/uploads/2021/06/NNPHI-E2A-Kresge-Report-Web.pdf> suggest that future P.H. System Transformation funding should also support:

- Expanded cloud-based services, e.g., IIS in the cloud (AWS)
- Emergency response systems updates including enhanced syndromic surveillance that may need expanded geospatial data systems (ArcView GIS). Also requires workforce trainings for E.M./first responder staff based on use cases that involve synchronization with healthcare/public health/HIE data
- Ongoing demonstration programs based on P.H. use cases to support quality improvement and broader recognition and acceptance of new business processes in a digital environment
- Broadband expansion to support public health – both P.H. digitization in rural/frontier areas and its use to expand communication and digital access to information by patients/the public.

**Funding Estimate: ~ \$60 mil**

**GRAND TOTAL FUNDING ESTIMATE FOR CORE INVESTMENTS TO MODERNIZE  
AND INTEROPERATE FEDERAL, STATE, LOCAL, AND TRIBAL PUBLIC HEALTH  
SYSTEMS: ~\$30 Billion**