

## Editorial

# Health Informatics in the Public Health 3.0 Era: Intelligence for the Chief Health Strategists

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While just 10 years ago the health system largely relied on paper, today nearly all hospitals and three-fourths of office-based physicians are using certified electronic health records (EHRs), in part, as a result of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009.<sup>1</sup> Moreover, thanks to the Affordable Care Act, more than 90% of Americans now have health insurance, meaning we now have the opportunity to have a clinical record of our care experience that can support longitudinal follow-up and improved population-level surveillance.<sup>2</sup> Looking forward, we can clearly envision a health care landscape where data are abundant and flowing and used to guide care delivery decisions—a learning health system described in our Nationwide Interoperability Roadmap.<sup>3</sup>

Data and analytics have historically been the backbone of public health—used to identify and track epidemics, make causal inferences, and direct resources to protect the health of the most vulnerable members of our communities. But this new and quickly evolving digitally supported learning health system provides local health departments (LHDs) with an exciting opportunity to harness the power of data and technology in ways previously thought to be impossible. Electronically accessible health care information can help empower local public health officers and their teams to serve as chief health strategists for their communities. In this role, they can leverage data and form strategic partnerships to address the factors that influence the public's health, including the broader social determinants.

Yet, the work of the researchers in this issue of the *Journal of Public Health Management & Practice* has shown that while LHDs are increasing their capacities in receiving and storing primary health data electronically,<sup>4</sup> many gaps remain in order for LHDs to make the most of digitized health data. For

example: Williams and Shah<sup>4</sup> found that just 42% of LHDs currently use EHRs in their own clinics and only 68% had systems that were somewhat, or not at all, interoperable. While Massoudi et al<sup>5</sup> noted that just 27% of LHDs had conducted informatics training in the past year.

These articles highlight the fact that public health lags in the health information technology (IT) revolution that has swept the country, largely as a result of HITECH funding. They also highlight the challenges that arose with the rapid adoption of health IT—challenges the Office of the National Coordinator for Health Information Technology has been working systematically for the past 2 years to address. We focused broadly on moving the health IT infrastructure to a set of common standards while also advancing a culture of data sharing, liquidity, and building the business case for data flow. Key strategies have included requiring publication of application program interfaces for certified health IT to create doorways to the data, continuing to promote public health as a recipient of data, and addressing health information blocking.

This lag should concern us all. While opportunities are unprecedented to improve access to quality, affordable care—particularly by leveraging health care data—achieving *health* will require more than health

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care. If public health is the provision of the public good of disease prevention by public institutions,<sup>6</sup> we need a model of leadership and a strategic vision that bring people together to make that provision a reality. At a time when inequalities in health based on income, race, and geographical location threaten to grow wider every day, we need a new model in which LHDs can lead the charge in using technology and data to enhance health equity and address the social determinants of health.

We call this emerging model Public Health 3.0. The pioneering communities that are organizing, evolving, and modernizing to better address public health threats have adopted it—working collectively in a multisectorial fashion to create the conditions in which everyone can be healthy.<sup>7</sup> They are enabled by a robust use of data, often from unconventional sources such as EHRs or other big data sources. Those with the most timely, actionable data are able to not only clearly define community health challenges but also understand in a more rapid cycle the impact of their actions on the public's health.

To make Public Health 3.0 truly manifest, we will need a data system that is timely, locally relevant, and actionable in every community so that we can use data layered with local contexts to guide actions and track progress. We will also need to advance multisectorial strategic thinking in adopting federally recognized, common standards for data sharing across jurisdictions while protecting privacy and security.

That will start with improving the seamless and secure exchange and integration of health data among different systems. The strong connection between LHDs, local Health Information Exchanges, and provider networks is a step in the right direction, but LHDs' role in curating "community vital signs" data at the neighborhood level and connecting health and human services is more critical than ever.<sup>8</sup> We must make further investments in data exchanges that extend

beyond health care providers to other entities that exert influence on nonmedical determinants of health—from housing, transportation, and environmental quality to education, criminal justice, and commerce.

Ultimately, a successful public health IT system is a means to our larger, collective goal: building healthy communities where *everyone* thrives. Because when communities leverage data and analytic tools to drive action, *big* data can become *smart* data—creating a foundation for healthier, stronger communities.

## REFERENCES

1. Office of the National Coordinator for Health Information Technology. Health IT Dashboard. Quick Stats. <http://dashboard.healthit.gov/quickstats/quickstats.php>. Accessed July 15, 2016.
2. Obama B. United States health care reform: progress to date and next steps. *JAMA*. 2016;316(5):525-532.
3. Office of the National Coordinator for Health Information Technology. Connecting health and care for the nation: a shared Nationwide Interoperability Roadmap. <https://www.healthit.gov/sites/default/files/hie-interoperability/nationwide-interoperability-roadmap-final-version-1.0.pdf>. Accessed July 22, 2016.
4. Williams KS, Shah GH. Electronic health records and meaningful use in local health departments: updates from the 2015 NACCHO Informatics Assessment Survey. *J Public Health Manag Pract*. 2016;22(suppl 6):S27-S33.
5. Massoudi B, Chester K, Shah G. Public health staff development needs in informatics: findings from a national survey of local health departments. *J Public Health Manag Pract*. 2016;22(suppl 6):S58-S62.
6. El-Sayed AM. What is "public" about public health: lessons from Michigan. *Am J Public Health*. 2016;106(7):1171-1172.
7. DeSalvo KB, O'Carroll PW, Koo D, Auerbach JM, Monroe JA. Public Health 3.0: time for an upgrade. *Am J Public Health*. 2016;106(4):621-622.
8. Hughes LS, Phillips RL Jr, DeVoe JE, Bazemore AW. Community vital signs: taking the pulse of the community while caring for patients. *J Am Board Fam Med*. 2016;29(3):419-422.