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The major challenges facing the U.S. healthcare systems are escalating costs, lack of access to almost 40 million residents, and inconsistent quality. It is hypothesized that the use of electronic health records systems and the implementation of interoperable health information exchanges (HIE) will result in significant cost savings, outcomes and quality improvement, reduction in medical errors and redundancies, and the enhancement of public health and disease surveillance. HIEs are organizations that facilitate secure health data exchanges among consenting and authorized stakeholders.

The ultimate result of the current unprecedented increase in the investment in health information technology is the transformation of the U.S. Healthcare system. In order to achieve such a transformation and the attendant benefits the Health Information Technology for Economic and Clinical Health Act (HITECH) of the American Recovery and Reinvestment Act of 2009 allocated over 30 billion dollars to the states to encourage the use of electronic health records and develop interoperable health information exchanges.

What is the public health case for participating in the implementation of the health information exchanges? The occurrences of major public health threats in recent years have highlighted the need for integrating public health data sources and surveillance systems into the emerging health information exchanges. Such an integrated system will facilitate the timely distribution and sharing of relevant health data across the various stakeholders such as public health practitioners, clinicians, and policy makers, and payers. Data sharing will improve the situational awareness operations of the stakeholders and lead to improved decision making regarding the control of emergencies, treatment of individual cases, and efficient resource allocation. If public health practitioners are aware of the critical events in a region but the information is not available to clinicians at a place and time when it could be utilized, then the information is of limited value.

To encourage the adoption of HIE-supported situational awareness among healthcare stakeholders the Centers for Disease Control and Prevention (CDC) awarded three HIE grants to recipients from Indiana, New York, and Washington State-Idaho. The awardees were charged with investigating and developing methods for sharing information between public health and clinical practitioners to support situational awareness and case reporting. This special issue of the journal is dedicated to disseminating the achievements of the awardees in terms of articles published, conferences attended, technologies implemented, and lessons learned.

THE Indiana coalition (made up of University of Indiana, Marion County Health Department (MCHD), and Regenstrief Institute), among other achievements, demonstrated a novel approach for sending public health alerts to providers by leveraging an electronic clinical messaging system within a health information exchange. HIEs, in their current formats, assure that clinical information is sent to the intended providers in a timely manner at the appropriate location, with the capability to provide feedbacks to the senders. This later feedback capability is quite important because receipt and utilization of the health data can be verified. By delivering public health alerts using the existing health information exchanges the process of introducing the alerts

into the workflows of the clinicians is optimized, thereby improving the chances that the information will be utilized for clinical decision making.

The Washington-Idaho partnership (the Northwest Public Health Information Exchange: NW-PHIE), developed an algorithm for sending syndromic surveillance feeds from hospitals to public health in Washington State. The partnership also developed an automated process for performing Electronic Laboratory Reporting (ELR) for notifiable disease conditions in Washington State. The automated ELR system and the syndromic surveillance data feeds will be very essential in the management of disease outbreaks in the future. The emergency preparedness of public health officials in Indiana and Washington State will be greatly improved with the implementation of the technologies developed from the grants.

By facilitating communication between public health and clinical stakeholders the projects have the potential to improve process efficiency, reduce costs, and provide quality data on notifiable disease conditions to public health for the development of surveillance systems. The bi-directional communication has the added benefit of creating trust among the stakeholders, a very important factor for successful adoption of health information systems.

The projects presented in this issue demonstrate the value to public health agencies, clinicians, individuals, and the general community, of using health information exchanges to deliver targeted health messages to stakeholders. As more states receive funding from HHS and prepare to develop HIEs, it is important for the public health stakeholders to study the novel technologies developed by the awardees of the Situational Awareness grant in order to improve the value of their participation in the HIE development process.

A major issue unaddressed in the Situational Awareness projects is how the integrated public health-HIEs will be sustained after the start-up money runs out. To address the sustainability question it is important to estimate the value of HIEs to the different stakeholders and institute cost-recovery charges in proportion to the accrued benefits. While this will be a difficult exercise for the public health sector, due to the externalities involved, the private benefits to the clinicians and hospitals could be estimated. For example, the ability to electronically access important test results at the point of care without relying on the postal services or faxes results in time savings, reduced errors rates, and improvements in quality of care. These benefits are quantifiable. To develop a sustainable and integrated system these and other benefits should be estimated, at least for the clinical health sector, and cost-recovery charges implemented.

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