Integrating Public Health Applications with Commercial EMRs

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At HIMSS 2007, we demonstrated how three processes of public health agencies could be facilitated through use of a prototype health information exchange, satisfying the AHIC biosurveillance use case.

INTRODUCTION

Rapid detection and surveillance of notifiable conditions and emerging infections, and increased efficiency of case and outbreak management drive the increased use of information technology in public health (PH) practice. In 2005 and 2006, over $228M in federal funds was appropriated for the development of biosurveillance and PH information systems.[1]. Much of the clinical data needed for these applications is contained within electronic medical record (EMR) systems. Efficient PH practice could utilize emerging health information exchange frameworks to acquire health data to meet PH needs.

The University of Washington’s Center for Public Health Informatics (CPHI) works to develop tools and a research agenda for PH informatics. CPHI faculty have has demonstrated the development and deployment of applications for transmission, standardization and integration of heterogeneous clinical care and laboratory data for disease surveillance [2]. The Integrating the Healthcare Enterprise (IHE) Showcase (www.ihe.net) at the 2007 Health Information Management System Society (HIMSS) meeting provided an opportunity to demonstrate how PH practice could use health information exchange data.

METHODS

IHE is an initiative by professional societies and industry to improve standards-based communication between clinical information systems, traditionally to support clinical care. During the HIMSS 2007 conference, the role of PH and its needs were introduced to the vendor community. A demonstration was designed to support three business processes central to the work of PH agencies: (1) Notifiable conditions reporting; (2) Clinical/lab Biosurveillance (BSV); and (3) Healthcare resource monitoring. These functions represent the BSV use case defined by the American Health Information Community (AHIC), and demonstrate the harmonized standards identified by the Health Information Technology Standards Panel (HITSP).

PH business processes were demonstrated through two scenarios, each of which allowed HIMSS attendees to register as patients and view the interaction between these information systems: (1) Notifiable conditions reporting was demonstrated via a tuberculosis scenario where a ‘patient’ with ‘flu-like illness’ visits a practice using an Allscripts or Cerner EMR. (2) An influenza scenario was used to demonstrate clinical and lab biosurveillance. The scenario involved clinics using GE or Allscripts EMRs, where patients with flu-like illness were ‘seen’ and ‘referred’ to an emergency department. (3) Healthcare resource monitoring using EMSystem, sponsored by the American College of Emergency Physicians. IHE achieves interoperability through “profiles”: combinations of standards to identify, access, and transmit information within the framework. In the scenarios described above, CPHI developed applications using Retrieve Form for Data Capture (RFD) and Cross Document Sharing (XDS) profiles.

RESULTS

Tuberculosis Reporting: Through the RFD profile, using Xforms (www.w3.org/MarkUp/Forms/), the EMRs were able to retrieve a reporting form, pre-populate data, allow the providers to supplement the form, and transmit the result to a PH agency. We developed a system to receive Xforms and show how they would be managed in PH practice, including amending case reports and linking them with separately reported laboratory data.

Influenza Surveillance: Clinical documents from this scenario, as well as those from laboratory systems were accessed using the XDS profile, providing near real time surveillance of patients with influenza-like illness, as well as surveillance of laboratory typing and sub-typing of influenza specimens.

In the 3 ½ days of the 2007 HIMSS conference, approximately 35 Tuberculosis case reports were received. Over 1000 “influenza case” clinical documents and 36 influenza lab tests were generated by people registered for IHE showcase.

CONCLUSIONS

We were able to demonstrate three important use cases for public health, and how those processes are supported by the AHIC BSV use case, the HITSP standards harmonization process, and the health information exchange framework defined by IHE.

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