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Towards Estimation of Electronic Laboratory Reporting Volumes in a Meaningful Use World

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Objective

To support health department estimation of future electronic laboratory report volumes from hospitals that achieve Stage 2 meaningful use.

Introduction

The American Recovery and Reinvestment Act of 2009 authorized the Centers for Medicare and Medicaid Services (CMS) to incentivize hospitals and physicians to become meaningful users of electronic health record (EHR) systems. In a final rule issued August 2012, CMS outlined the requirements for Stage 2 meaningful use to be effective in 2014 (1). The Stage 2 criteria require eligible hospitals to submit electronic laboratory reports to health departments.

While many state health departments receive some portion of notifiable disease reports electronically, the final Stage 2 rule is likely to increase the volume of incoming electronic reports. The Centers for Disease Control and Prevention are urging health departments to prepare for the sharp increase in electronic laboratory reporting (ELR). Crucial to preparedness is estimation of how many ELR reports can be expected. However, few health departments have experience with high volume ELR, making estimation difficult.

The Indiana Network for Patient Care (INPC), a regional health information exchange, has been processing high volumes of ELR for over a decade (2). To support health departments estimate potential ELR increases, the INPC examined its current volumes from hospitals with advanced EHR capabilities.

Methods

The INPC uses an automated case-detection system called the Notifiable Condition Detector (NCD) developed by investigators at the Regenstrief Institute (3). The NCD uses a standards-based messaging and vocabulary infrastructure to process more than 350,000 clinical transactions daily, including laboratory studies, diagnoses, and transcriptions from more than 40 hospitals, national labs and local ancillary service organizations.

Data processed between January 1, 2010 and December 15, 2011 were extracted from the NCD. Validated cases of notifiable conditions of interest to the Indiana State Department of Health were filtered out for use in this analysis. We further eliminated duplicate cases of the same reportable record for the same individual. Unique notifiable disease cases were divided by the population of the Indianapolis Metropolitan Statistical Area (MSA) to obtain a ratio for estimation of future volume.

Results

We identified a total of 77,199 unique notifiable disease cases. According to 2010 census data, the population of the Indianapolis MSA is 1,834,672. This produces a ratio of 2,104 ELR cases per 100,000 population per year.

Conclusions

Roughly 2% of the population had an unique notifiable disease case reported, more than double current rates (4). Actual rates could be higher given this analysis eliminated duplicate reports for chronic diseases, such as tuberculosis, hepatitis B and C, and sickle cell disease. The impact on local and state health departments is likely to be significant given scarce resources.

Although the calculated ratio may stimulate conversations within health departments, it represents an approximate estimator. Future work will seek to refine estimation techniques by accounting for acute versus chronic notifiable disease as well as additional factors, such as the notifiable condition and/or the relative size of the hospital sending lab data to the health department. These refined estimators will enable improved planning efforts within state and local health departments.

Keywords

Electronic Laboratory Reporting; Public Health Surveillance; Public Health Informatics; Electronic Health Records

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