Enhancement of sentinel surveillance for influenza-like illness through electronic medical record data aggregation and GIS mapping

Virginia L. Headley, PhD¹ and Emily L. Styles, MPH²

¹Williamson County and Cities Health District, ²Lone Star Circle of Care, Georgetown, TX, USA

INTRODUCTION

Influenza is a communicable disease that is required by Texas law to be reported by providers to the local health authority. In lieu of required reporting of all cases, Williamson County and Cities Health District (WCCHD) collects voluntary information from a variety of provider sources throughout the year on both laboratory-confirmed influenza and incidences of influenza-like illness (ILI). This “sentinel” surveillance system does not intend to capture all instances of influenza or ILI, but rather seeks to have a representative picture of illness due to influenza in the community. Sentinel surveillance has a number of limitations. As the reports are voluntary, data are not necessarily provided on a consistent basis, and the number of reporters varies from week to week. There is also only a limited amount of information provided. Methods for classifying ILI vary from provider to provider depending on provider type. Demographic information such as age or gender is lacking. Trends in school absences from week to week in a given district provide a very limited assessment of ILI in that particular community, but due to the size differences in school districts, comparisons cannot be made between them. Hospitals report ILI encounters in their facilities, as well as number of laboratory-confirmed influenza cases, but again without demographic or geographic details.

Consequently, sentinel data do not provide any information regarding the populations most vulnerable to serious consequences of influenza infection such as the very young, the very old, and pregnant women, nor the specific communities affected. An important provider partner in Williamson County is the Federally Qualified Health Center, Lone Star Circle of Care (LSCC). A significant provider of care to Williamson County residents, the client base of LSCC represents a potentially data-rich source of information concerning those affected by influenza. A data enhancement project for ILI surveillance was proposed by WCCHD to LSCC in order to determine if details concerning those patients seen for ILI at LSCC clinics could be used to develop a clearer picture of the incidence of influenza in Williamson County. The intent of the project is to improve the quality and utility of information WCCHD shares with providers, communities, and member cities in Williamson County to inform local policy and planning. Specific goals for data enhancement included collecting age-specific data, determining the burden of ILI in childbearing women, and obtaining community-level data more detailed than was available from school reporting.

METHODS

LSCC provided ILI surveillance reports to WCCHD on all patients who sought care from October 1, 2012 to September 28, 2013. LSCC’s Encounter Data longitudinally tracks demographic information on patients seen at LSCC clinics. This includes patients of all ages, including those too young to consent or too old to self-report, as data are collected from the EMR by trained personnel. WCCHD’s comprehensive database includes ILI data from the 2012-2013 influenza season. This database is also populated with data from the annual 5% sample of U.S. households, including age distributions of children under 18 years old, focusing on the potential cases of influenza-like illness (ILI) in the community. The project included collecting age-specific data, determining the burden of ILI in childbearing women, and obtaining community-level data more detailed than was available from school reporting.

CONCLUSIONS

The Business Associates Agreement between WCCHD and LSCC reduced barriers to ILI data collection and reporting.

EMR technology allowed data to be extracted, summarized and submitted quickly and efficiently each week.

Clinic data accurately reflected ILI incidence as compared to other available sources of information regarding ILI.

EMR systems have the potential to improve reporting of not only disease but also other health outcomes.

Prior to the implementation of this LSCC-WCCHD partnership project, WCCHD had very limited capabilities for understanding ILI incidence in the community.

With the combination of clinical verification of ILI through the EMR data as well as the provision of key statistics such as age groups, gender, ZIP code and pregnancy status, this partnership has significantly improved WCCHD’s capacity for preparedness.