COACTION

Monitoring and auditing the transfer of syndromic surveillance data to ensure data completeness

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Objective

To describe the application and process developed by the Maryland Department of Health and Mental Hygiene (DHMH) Office of Preparedness and Response (OP&R) and Office of Information Technology (OIT) for monitoring and auditing the transfer of syndromic surveillance data.

Introduction

The electronic surveillance system for the early notification of community-based epidemics (ESSENCE) is the web-based syndromic surveillance system utilized by DHMH. ESSENCE utilizes a secure, automated process for the transfer of data to the ESSENCE system. Data sources in the Maryland ESSENCE system include emergency department (ED) chief complaints, poison control center calls, over-the-counter (OTC) medication sales and pharmaceutical transaction data (for certain classes of antibacterial and antiviral medication). All data sources have statewide coverage and are captured daily in near real-time fashion. OIT developed a web-based application in conjunction with OP&R to allow the epidemiologists involved in the ESSENCE program to monitor and audit the transfer of this data. The application allows the user to indicate whether or not each data file has been consumed into ESSENCE for any date of the year. The user can edit these daily entries at any time to update the status of the data that have been received. The user may also query the database by data source, date and date range to generate a report. The database also contains contact information for technical and infection control staff at the hospitals that participate in the ESSENCE program. Finally, the application can also generate reports that detail which users have logged into ESSENCE, when the log-in occurred, and which pages within ESSENCE were visited.

Methods

Forty-six EDs, two major pharmacy chains, two poison control centers and the Centers for Disease Control and Prevention (CDC; through a pilot partnership), all contribute data to ESSENCE on a daily basis. Thirty-six separate SSH File Transfer Protocol (sFTP) data feeds are required to transfer and incorporate these data into ESSENCE. Beginning January 1, 2011, the web-based application developed by OIT was utilized on a daily basis to ensure that the transfer of data was monitored and recorded regularly. Each morning, an epidemiologist from OP&R logs into ESSENCE and verifies which data points have been consumed into the system. The presence or absence of each data point is then recorded in the data tracking application. An automated e-mail is generated that details which data sources are absent. This e-mail is sent to the OIT employees involved in the ESSENCE program, who then check the server to see if the data were transferred or if there was an error during the transfer and consumption process. The epidemiologists then contact each data source that failed to send the data on that particular day.

Results

Data are presented for January 1, 2011, through July 31, 2011 (212 total days). Between the ED chief complaint data, the poison control data, the OTC medication sales data and the pharmaceutical transaction data, there are a total of 50 data points on any given day in the Maryland ESSENCE system. This amounts to a total of 10,600 possible data points that can be in the ESSENCE system during this time frame. Using the data tracking application, OP&R has managed to acquire and consume 10,527 data points or 99.31% of all possible data points for this time period. The poison control data are complete for this time frame, as is the pharmaceutical transaction data, and one of the major pharmacy chain's data. The other major pharmacy chain whose data are not complete is only missing 2 data points (99.10% complete). Twenty-five of the 46 EDs have transferred 100% of the possible data points to the ESSENCE system. All other EDs contributing data to the ESSENCE system are at least 95.75% complete.

Conclusions

The data tracking application developed by OIT and utilized by OP&R to monitor and audit the transfer of syndromic surveillance data has thus far been successful in ensuring data completeness. Those involved with the program have been able to monitor and document that over 99% of all possible data are incorporated into the surveillance system. The data source with the lowest completion percentage has over 95% of its data incorporated into the system. DHMH will continue to use this system moving forward to ensure that the syndromic surveillance data transfers continue to be successful.

Keywords

Data; transfer; audit; ESSENCE

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