

## Trends in emergency department visits for influenza-like illness and antiviral medication transactions

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### Objective

To examine the trends in prescription antiviral medication transactions and emergency department (ED) visits for influenza-like illness (ILI) and the relationship between these trends.

### Introduction

The electronic surveillance system for the early notification of community-based epidemics (ESSENCE) is the web-based syndromic surveillance system utilized by the Maryland Department of Health and Mental Hygiene (DHMH). ESSENCE utilizes a secure, automated process for the transfer of data to the ESSENCE system that is consistent with federal standards for electronic disease surveillance. Data sources in the Maryland ESSENCE system include ED chief complaints, poison control center calls, over-the-counter (OTC) medication sales and pharmaceutical transaction data (specifically for antibacterial and antiviral medications). All data sources have statewide coverage and are captured daily in near real-time fashion.

### Methods

Forty-six EDs, two major pharmacy chains, two poison control centers and the Centers for Disease Control and Prevention (through a pilot partnership), all contribute data to ESSENCE on a daily basis. Data reported from June 1, 2009, through January 1, 2011, were used to examine the relationships between ED visits for ILI and antiviral (M2 inhibitors and neuraminidase inhibitors) prescription medication transactions in the state of Maryland. ArcGIS 9.2 was used to spatially evaluate these relationships. Data for the total population of Maryland by jurisdiction were obtained from the U.S. Census Bureau, Census 2010 PL94-171 release and prepared by the Maryland Department of Planning, Projections and Data Analysis/State Data Center, April 2011.

### Results

Generally, jurisdictions with the highest populations also had the highest number of ILI ED visits and the highest numbers of antiviral prescription medication transactions. These results did

not vary based on type of antiviral medication. There was one exception to the general trend: County 14 had the lowest percent of ILI ED visits (0.45%) but the highest percentage of antiviral prescription medication transactions (1.26%). Spatial analysis showed that the highest number of ILI ED visits were in the National Capital Region (NCR) and Central Maryland while the highest numbers of antiviral prescription medications were in the NCR Region.

### Conclusions

The trends seen in this analysis follow what is to be expected; the counties with the larger populations had higher numbers of ILI ED visits and higher antiviral prescriptions. These larger counties have more hospitals, which allows for greater access to EDs. County 14 has only one hospital that contributes data to the ESSENCE system; thus, residents may have traveled to an ED in another county but filled a prescription in their home county. This could account for why County 14 had the lowest number of ILI visits and the highest number of antiviral prescriptions. This county also has a very high median income; thus, it is possible that ED visits were lower because more individuals sought medical attention from primary care physicians. Other counties may follow these same trends.

The ESSENCE system has been a useful tool in the tracking and monitoring of diseases such as influenza. It is also used as an indicator to local health departments to begin preparation for flu season. DHMH will continue to use syndromic surveillance on a daily basis for early detection of seasonal and pandemic influenza.

### Keywords

Influenza; syndromic surveillance; prescription medication; ESSENCE

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