CASE STUDY

FIRST WATCH™
REAL-TIME EARLY WARNING SYSTEM

Early Warning of Flu Epidemic by Real-Time Monitoring of 9-1-1 Call Data, Richmond (Virginia), Oklahoma City and Tulsa (Oklahoma)

BACKGROUND *Flu, or influenza, is a contagious respiratory disease that infects 10 to 20 percent of U.S. residents. The U.S. Centers for Disease Control and Prevention estimates that an annual average of 114,000 Americans are hospitalized due to flu complications, with 36,000 deaths. The 2003-2004 "flu season" began earlier than expected, with a sudden surge in cases in November 2003; severity was also greater than normal.*

SUMMARY On November 15, 2003, the Richmond (Virginia) Ambulance Authority (RAA) received an alert from its FirstWatch system indicating an upsurge in flu symptoms concentrated north of the James River. In Oklahoma, FirstWatch software installed at the Emergency Medical Services Authority (EMSA) indicated statistically significant increases in call volume in Oklahoma City on November 16, and in Tulsa on Novemeber 20. In both states, the alerts provided public health officials with advance warning of the impending epidemic and helped to localize data for faster EMS response times.

MONITORING THE EVENT Using customer-specified settings, FirstWatch monitors the flu at its onset and alerts emergency personnel and public health officials of statistically significant increases in volume or geographic clustering patterns. The system allows users to generate a geo-spatial map of the location and spread of calls meeting the user's defined criteria.

ALERT IN RICHMOND FirstWatch reported that breathing problems were at a 47-percent increase over the previous year during the alert. Using the accumulated data from logs, graphs, and charts shown by FirstWatch, the RAA was able to alert health officials of the emerging flu epidemic. FirstWatch sends RAA officials alerts and data via e-mail and cellular phone SMS text messages. Alerts are also sent to emergency communications managers and medical directors via pager.

ALERTS IN OKLAHOMA From the time of the first alerts through the flu season in Oklahoma, FirstWatch system allowed EMSA to share important information with appropriate health officials at both the local and state levels.

COLLATERAL RESEARCH Recent studies in New York City also support the ability of using syndromic surveillance of 9-1-1 data to provide early detection of routine threats to public health such as seasonal influenza outbreaks.

EMS SYSTEM PROFILE - RAA The Richmond Ambulance Authority is located in Richmond, Virginia. It handles up to 50,000 calls annually over a geographic span of 62.5 square miles. Founded in 1991, RAA services more than 1 million people during the day, and 200,000 at night. One of the fastest emergency response services nationwide, RAA currently responds to 92 percent of its Priority 1 calls in under 9 minutes.

EMS SYSTEM PROFILE - EMSA EMSA provides emergency response services for more than 1.1 million people in Central and Northeast Oklahoma. It handles more than 110,000 calls annually, and covers a total area of 1,000 square miles. EMSA has two divisions, one based in Oklahoma City and the other in Tulsa.

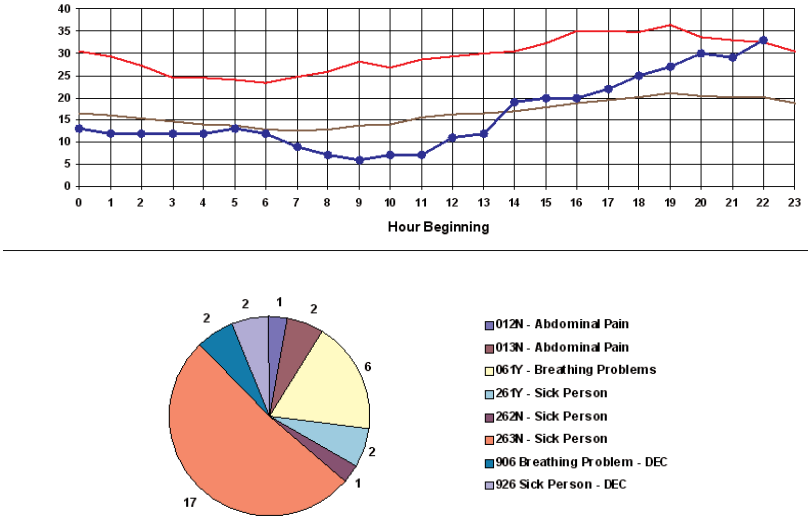

Figure 1: Line and pie chart view of RAA Flu Trigger Alert. The line chart shows the current activity vs. historical trends. The pie chart shows the breakdown of calls meeting the user-specified criteria over the 12 hours prior to the alert.

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