

Surveillance Zones: Geographic Aggregation of Syndromic Data for Improved Response

Melissa Halm, MPH.¹, Mary Carvalho, MPH.¹, Anthony Eshofonie, MD, MPH.¹, Debo Awosika-Olumo, MD, MS, MPH.¹, Raouf Arafat, MD, MPH.². ¹*Bureau of Epidemiology,* ²*Office of Surveillance and Public Health Preparedness, Houston Department of Health and Human Services*

OBJECTIVE

This paper discusses the development of zones within the City of Houston in order to more quickly and accurately reference surveillance data in the case of chemical or biological events.

BACKGROUND

When a chemical or biological agent with public health implications is detected in the City of Houston, analysis of syndromic surveillance data is an important tool for investigating the authenticity of the alert, as well as providing information regarding the extent of contamination.

Syndromic surveillance data in Houston is currently provided by the Real-Time Outbreak Disease Surveillance (RODS), which collects and synthesizes real-time chief complaint data from 34 area hospitals, representing approximately 70% coverage of licensed ER beds in Harris County. Data collected for each complaint includes patient home and work zip codes, allowing for geographic analysis of the data in the case of a localized environmental contamination.

Historically, when alerted to a contaminant in the Houston area, the Houston Department of Health and Human Services (HDHHS) has analyzed health data for each zip code in the geographic area of interest separately, a time-intensive process.

Recognizing the need for a more accurate and timely response to an environmental alert, HDHHS proposes aggregating zip codes into zones, based on coverage of population and areas of high risk. These "Surveillance Zones" will be used to quickly reference syndromic data in the event of a chemical or biological event.

METHODS

ArcGIS 9.1 was used to aggregate the city into zones. Zip codes were aggregated into both small zones for finite analysis and large zones for complete surveillance coverage of the city. The zones were incorporated into the RODS syndromic surveillance system, for utilization in an environmental event.

RESULTS

The zones are expected to enhance the ability of HDHHS to accurately analyze, interpret and disseminate syndromic data in response to an environmental event with a biological or chemical contaminant. The ability of this process to reduce response time and increase accuracy of the epidemiologic analysis will be evaluated during the next event or drill.

CONCLUSIONS

Early event detection systems depend on accurate and timely data access and presentation. The development of "Surveillance Zones" in Houston will improve HDHHS' ability to respond to events of public health significance.