Geographical Analysis of Heat-Related Illnesses Detected by RODS in Houston, Texas

Houston Department of Health and Human Services
Patricia Sinawe, MPH, Riju Stephen, MS, Mary Carvalho, MPH,
Adebowale Awosika-Olumo, MD, MS, MPH

OBJECTIVE

The purpose of this investigation is to determine the value of using the Real-time Outbreak Disease Surveillance (RODS) system to track heat-related morbidity in Houston, Texas.

BACKGROUND

Heat surveillance in Houston is currently limited to mortality reports from the medical examiners office. A possible source of heat related morbidity is the Houston RODS system. The RODS system was put into practice in the Houston Department of Health and Human services (HDHHS) in 2004 and now encompasses 37 hospitals. While initially designed for early detection of bioterrorism events, using syndromic data to detect other medical complaints, such as heat related morbidity, could prove to be beneficial and cost-effective for large cities, such as Houston [1].

Designated cooling centers and heat emergency plans have been implemented in the city of Houston [2,3]. This pilot study will identify if the RODS system data is a useful tool for assessing city-wide heat morbidity and for determining additional locations for cooling centers.

METHODS

Data were extracted from the RODS system using specific SQL coding. Variation on the phrases, "heat" and "sun", were searched and included all entries from January 1, 2005 until June 22, 2008. The term "dehydration" was excluded from the search; while a primary indicator of heat related morbidity, this term had low specificity and resulted in complaints with unknown or non-heat related etiology. ArcGIS software was used to map the complaints by Health Service Regions (HSR). Designated cooling centers were geocoded by address.

RESULTS

Data extraction from the RODS system resulted in 93 heat-related complaints over the designated time period. Relatively higher counts of heat related illnesses were identified in the central west and southwest Houston HSR as shown in Figure 1. Furthermore, designated cooling centers were mainly concentrated in eastern Houston. Further results are pending.

CONCLUSIONS

During the 4 year period, minimal reports of heat-related morbidity were extracted from RODS. This limited number may be due to highly specific terms and the exclusion of non heat- or sun-related dehydration complaints, reducing the systems sensitivity. Mapping of cooling centers throughout the Houston area identified services clustered in eastern Houston. Future analyses will examine other demographic characteristics including age and gender from the RODS system and average annual household income by zip code from the US Census Bureau. These findings will contribute to future heat planning and preparedness efforts.

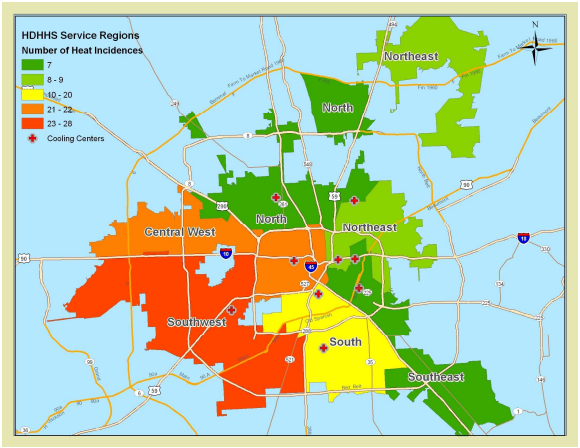

Figure 1- Spatial relationships between heat-related illnesses and the distribution of cooling centers within Houston, TX from January 1, 2005 until June 22, 2008.

REFERENCES

[1] Greenberg JH, Bromberg J, Reed CM, Gustafson TL, Beauchamp RA, The Epidemiology of Heat-Related Deaths, Texas-1950, 1970-79, and 1980, AJPH. 1983 July; 73(7): 805-807.

[2] Barton K, Villarreal P. HDHHS: Houston activates heat emergency plan. 2005 Sept. Available from:http://www.houstontx.gov/health/NewsReleases/heat%20emergency%20928.pdf.

[3] Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety. 2006 Aug. Available from: http://emergency.cdc.gov/disasters/extremeheat/heat_guide.asp.

Further Information:
http://www.houstontx.gov/health/