Hurricane Harvey: From ED Surveillance to Staffing, Austin, Texas 2017

What Happened

The City of Austin serves as a hurricane reception center, providing shelter for evacuees in the event of threats to the coastal region of Texas. In 2017, Austin opened 3 shelters, and eventually a megashelter, in response to a request from the state of Texas. During the initial days of the response the counts of evacuees from the coast drastically changed and a large number of those seeking shelter (over 800) self-evacuated and sought shelter with friends and family, through Airbnb locations and FEMA sponsored hotels. This led to an uncertainty of evacuees in the area. To study the effects of the influx of evacuees from the coast, Austin Public Health (APH) implemented syndromic surveillance procedures and reporting utilizing a keyword request to local hospitals.

What We Did

A keyword request for "Hurricane Harvey" or "Evacuee" was sent to Austin metropolitan area hospitals. Staff at 15 area hospitals entered a requested keyword of "Hurricane Harvey" into the Chief Complaint at the Emergency Department (ED). Data was collected using a keyword search within the RODS syndromic surveillance system utilizing the following: "evacuee", "hurricane", "Harvey", "hurr", "H.H.", "evac", "har", "storm", and "flood". This keyword was entered into the Chief Complaint at the Emergency Department (ED). A search was also conducted based on patient home zip code and post office name. Data was analyzed daily and released in a special report.

Daily reports were created and shared via email and WebEOC with:

- Local hospitals
- Capital Area Public Health and Medical Preparedness Coalition
- Emergency Management Coordinators
- Neighboring public health departments
- Public Health Region 7

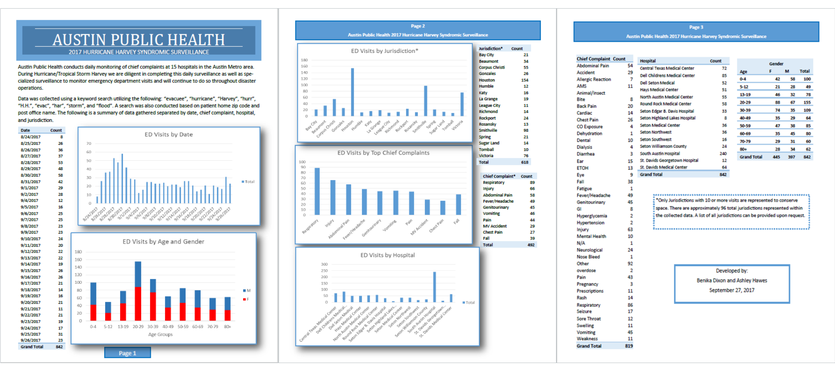

Figure 1: An example of the daily Hurricane Harvey Syndromic Surveillance report disseminated by Austin Public Health

What did Syndromic Surveillance show us?

842 ED Visits Identified

Hospitals Most Affected

South Austin Hospital – 240 ED Visits (28.5%)
Dell Children's Medical Center – 85 ED Visits (10%)
Central Texas Medical Center – 72 ED Visits (8.6%)
Seton Medical Center – 36 ED Visits (4.3%)

Top Chief Complaints

Respiratory – 89 ED Visits (18%)
Injury – 66 ED Visits (13%)
Abdominal Pain – 58 ED Visits (11.7%)
Genitourinary (i.e. UTI) – 45 ED Visits (9%)
Vomiting – 46 ED Visits (9%)

Top Evacuee Home Jurisdictions

Houston – 154 ED Visits (18%)
Smithville – 98 ED Visits (11.6%)
Victoria – 76 ED Visits (9%)
Corpus Christi – 55 ED Visits (6.5%)
Beaumont – 34 ED Visits (4%)

What We Learned

Effects on Hospitals

All hospitals received an increase in patients. Hospitals closest to the shelters received the largest influx of non-emergent transport patients.

Floodwaters led to an unexpected increase in dermatology ED visits.

ED visits decreased by half when medical operations ramped up at the shelter.

Patient Needs

A large number of patients were in need of durable medical equipment and pharmaceutical supplies. Needs also included:

- Dialysis
- ESRD
- Ventricular Assistance Devices
- Optometry/Ophthalmology Services
- Mail Order Medications

Patient Location

Due to flooding, patients came from as close as 50 miles to the Austin area.

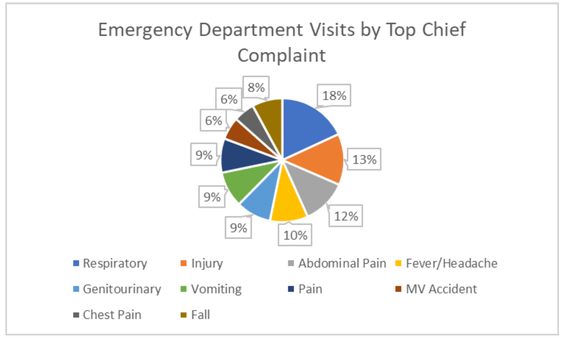

Figure 2: Pie chart of Top 10 Chief Complaints from patients during Hurricane Harvey Response

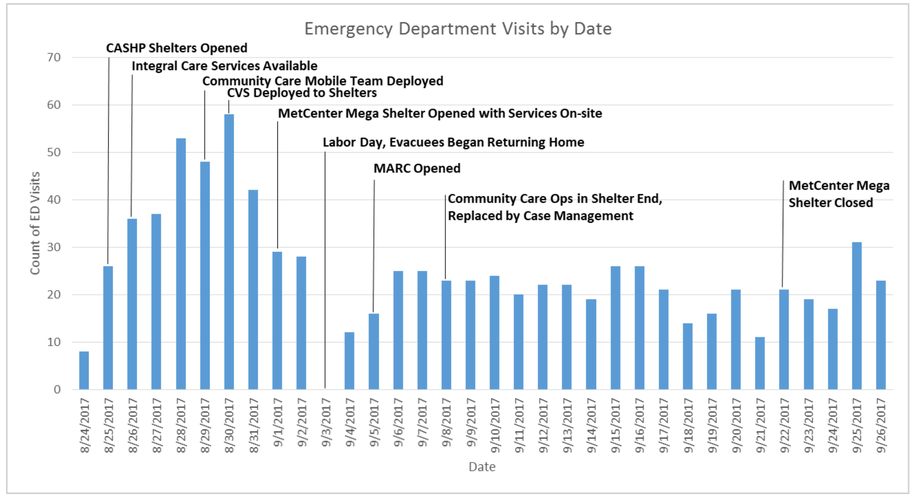

Figure 3: Timeline of evacuee visits with important decisions related to the shelter and response in Austin, Texas.

What We Can Apply for the Future

By knowing patient demographics, visit types, when they occurred in relationship to the event, how long they continued to occur, and other data points, Emergency Management Planners can prepare for the next event of this type.

Sharing data in almost real-time allowed for hospitals to adjust staffing to remove burden on the ED.

Hospital staffing and specialties are based on organ system, separating ED visit analysis by this will assist for hospital decision making.

Data like this was not available for previous responses. This data and reporting allows for the ability to adjust planning including utilizing new technology (like telehealth) or other partners and stakeholders in the community.

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