Syndromic Surveillance Demonstrated as a Tool During Planned BioWatch Monitored Mass Gathering Event

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Abstract

Mass gatherings can be defined as an event, either organized or unplanned, that is held for a limited period of time and attended by 25,000 or more people.[1] These types of events can serve as a platform for increased challenges to public health, potentially putting a strain on the resources of the host community. Increase in population, close proximity of attendees with diverse immunological status', increased risk of communicable disease and the threat of a bioterrorist attack are all identified public health risks of mass gatherings.[2] Early identification and rapid investigation of a public health threat is crucial in protecting communities and their populations. ESSENCE (syndromic surveillance data) can be used in public health to monitor, detect and respond to an increase in illness, possible outbreak or suspected bioterrorist attack during a mass gathering. Here the focus will be on the 85th Annual Hyundai Sun Bowl.

Background

- The University of Texas at El Paso (UTEP) hosted the 85th Annual Sun Bowl on December 31, 2018.
  - ✓40,680 people were recorded to be in attendance.
- Capacity for the Sun Bowl is 51,500.
  - ✓History of attendance: 2017 – 39,897; 2016 – 42,166; 2015 - 41,180.
- From California, The Stanford University Cardinals defeated The University of Pittsburg ("Pitt") Panthers from Pennsylvania 14-13.
- 2018 also marked the 21st Annual Fan Fiesta, a pre-game party hosted a day prior to the Sun Bowl at the El Paso Downtown Convention Center.
  - ✓Several hundred people were in attendance.
- ESSENCE data could show a significant increase in emergency department (ED) visits due to the surge in population of visitors attending the Sun Bowl game.
  - ✓The data can potentially identify an increase of out of state illnesses.
  - ✓Partnered with the Department of Homeland Security BioWatch Monitoring Program, the data extracted from ESSENCE can potentially identify the threat of a bioterrorist attack.

Objectives

- To describe how ESSENCE can be used during a planned mass gathering event to provide health-indicator data to identify abnormal health conditions, show an increase in ED visits due to an influx of travelers or a possible bioterrorist threat.
- To describe how ESSENCE can identify the types of illnesses imported by non-native visitors of a planned mass gathering event.

Methods

- Descriptive analyses was performed on ED syndromic surveillance data from December 27, 2018 through January 3, 2019 (Sun Bowl Week-2). Comparative analyses was completed for dates December 19, 2018 through December 26, 2018 (Christmas Week-1).
- Chief complaints, syndromic classification, state of origin and dates of interest (onset date, ED visit date) were reviewed.

Results

A total of 7,664 records were reported in ESSENCE for Week 1 and 7,075 ESSENCE records were reported for Sun Bowl week 2 from six El Paso hospitals. The day after Christmas had the highest number of ED visits, with the day of the Sun Bowl accounting for approximately 1,000 reports (Figure 1). California had the highest number of non-Texas patients records in ESSENCE for both analyzed weeks (Figure 2). New Mexico and foreign countries were excluded.

Results *(cont.)*

Respiratory and gastrointestinal syndromes were forecasted to have the highest number of records as is indicated below (Figure 3). Other, non-classified syndromes represent data input not meeting criteria of predetermined syndromes (Figures 3 & 4).

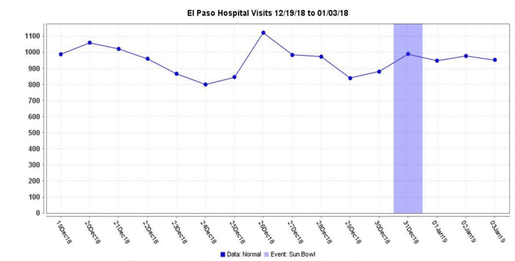

Figure 1: Daily Hospital Visit Reports

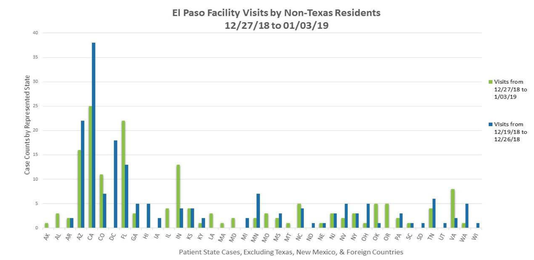

Figure 2: Non-Texas Patients

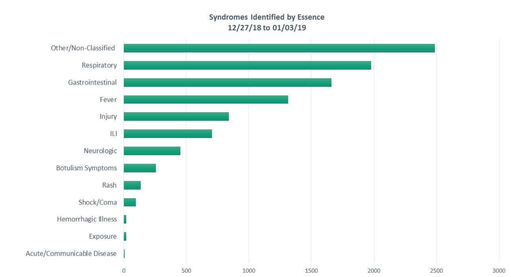

Figure 3: Syndrome Breakdown

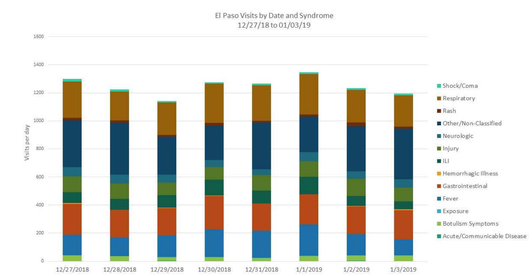

Figure 4: Visit by Syndrome

Conclusion

Summary: PHR 9/10 conducted active surveillance during the 2015 El Paso Pope Visit with area hospitals. Public Health surveillance has progressed since then and now has a syndromic surveillance system that can be utilized during similar mass gatherings, as was displayed during the Sun Bowl. The timing of this project intentionally aligned with a BioWatch Monitored event to determine if data from ESSENCE could serve as an additional resource in identifying risk factor syndromes associated with a mass gathering. Although there was not a huge increase in ED visits for the selected timeframe, the data was able to provide a clearer picture of where ill patients had traveled from and the types of syndromes experienced.

Next Steps: PHR 9/10 will continue to use ESSENCE to monitor public health risks during mass gatherings, both during planned events and exercises across far West Texas. Continued collaboration with local, state and federal partners will expand the usefulness of ESSENCE across multi-agency initiatives, such as that of with the BioWatch Program.

Acknowledgements

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References

[1] Yezli, S., & Alotaibi, B. (2016). Mass gatherings and mass gatherings health. Saudi medical journal, 37(7), 729-30.

[2] Ahmed QA, Barbeschi M, Memish ZA. The quest for public health security at the Hajj: Travel Medicine & Infectious disease 2009;7:226-230.