GEORGIA DEPARTMENT OF PUBLIC HEALTH

Firearm Related Injury Syndromic Surveillance

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What is Syndromic Surveillance?

Syndromic surveillance (SS) is a nearly real-time method of categorizing visits to Emergency Departments (EDs) and Urgent Care Facilities (UCFs) across Georgia into disease or illness syndromes, based on the patient chief complaint (CC) upon admission and/or discharge diagnosis (DD). At a minimum, EDs/UCFs across Georgia automatically send data about chief complaints, date, and time of visit to the Georgia Department of Public Health (DPH) daily. Many facilities also send patient demographics such as age, sex, race, and residential zip code, as well as discharge diagnosis in some cases. Because most SS data are based on chief complaint upon admission to EDs/UCFs, it does not always reflect the patients' final diagnosis, and can have limited ability to understand the true nature of the visit. Additionally, variability in data documentation across health care facilities can make it difficult to interpret the reason for a patient visit.

Syndromic Surveillance Appropriate Data Use/Importance for firearm injury

By searching the chief complaint and/or discharge diagnosis for text indicative of a firearm injury, these data can be used as an early detection method for a rise in firearm related injuries, or potential firearm related injuries clusters and to alert DPH and partners of events that require immediate public health action. It is important to note that SS relies heavily on the chief complaint field, 81% of the visits reported to the DPH SS system include the ICD-10 discharge diagnosis codes. DPH monitors SS data daily for unusual firearm related injuries.

Representation

SS is conducted statewide and captures over 85% of all annual visits to Georgia ED with 145 hospitals currently reporting. However, it is important to note that SS does not obtain data from all facilities where a patient may seek care, thus SS data underestimates the occurrence of firearm related injury(ies). Additionally, the actual number of facilities reporting to the SS system may vary from day to day and from week to week, therefore the data quality may also vary between facilities. While DPH continues to onboard new facilities to report SS data and to refine SS data quality, there are still several facilities in Georgia that do not participate.

There are also seasonal variations in SS data caused by increases and decreases in the number of visits due to occurrences like holidays and seasonal population changes (e.g. school, vacation) that could affect visit numbers. Under and over estimating may occur because of the availability of ICD-10 diagnostic codes and the quality of chief complaint data. Completeness of ICD-10 codes have increased over time, which requires additional analysis. These data gaps and outages cause fluctuations in visit numbers and are important to consider when interpreting SS data. Finally, SS data reflect the number of visits rather than the number of cases; patients with repeat visits are potentially counted multiple times.

Additionally, firearm injury trends from SS data are calculated as a proportion of all ED injury visits and can be affected by fluctuations in other injuries. Therefore, SS should not replace prevalence estimates generated from other data sources. Instead, they should be used in conjunction with other data to verify trends.

SS data are not meant to characterize the true burden of firearm related injuries in Georgia. There are many events that are not represented in the system, including those who die before reaching an emergency department, firearm related injuries cases who are treated by non-EDs/UCFs entities, or individuals who did not seek medical care in Georgia. Additionally, Georgia has large population centers which border other states, so Georgia's SS does not capture Georgia residents who had their firearm related injuries in Georgia and seek care out of state. On the other hand, Georgia's SS data include out-of-state residents who had a firearm related injury in another state and seek care at Georgia facility. For this reason, SS may not be entirely accurate even for patients who live and seek care in Georgia.

Data Reliability

Due to the above limitations, firearm related injury SS data are often reported in proportions and percent change, rather than visit counts. We can better account for these limitations by putting these data in the context of population size and/or showing trends. Counties with fewer than 5 visits are suppressed are excluded from the analysis, as these small proportions are unreliable due to random variation, and result in the appearance of extreme fluctuation. For example, a county with 2 visits one month and 4 visits the next month would appear to have had a dramatic increase, when there were only 2 more visits. Finally, when using this data to perform prevention and interventions activities at the population level, the results should be interpreted cautiously.