

## Evaluation of Firearm Injury Syndromic Surveillance in Utah

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**Abstract :** Objective: This study aimed to evaluate the validity of a firearm injury query in the Early Notification of Community-based Epidemics syndromic surveillance system. Syndromic surveillance data are used at the Utah Department of Health for early detection of and rapid response to unusually high rates of violence and injury, among other health outcomes. The query of interest was defined by the Centers for Disease Control and Prevention and used chief complaint and discharge diagnosis codes to capture initial emergency department encounters for firearm injury of all intents. Design: Two epidemiologists manually reviewed electronic health records of emergency department visits captured by the query from April-May 2020, compared results, and sent conflicting determinations to two arbiters. Results: Of the 85 unique records captured, 67 were deemed probable, 19 were ruled out, and two were undetermined, resulting in a positive predictive value of 75.3%. Common reasons for false positives included non-initial encounters and misleading keywords. Conclusion: Improving the validity of syndromic surveillance data would better inform outbreak response decisions made by state and local health departments. The firearm injury definition could be refined to exclude non-initial encounters by negating words such as "last month," "last week," and "aftercare"; and to exclude non-firearm injury by negating words such as "pellet gun," "air gun," "nail gun," "bullet bike," and "exit wound" when a firearm is not mentioned.

**Keywords :** evaluation, health information system, firearm injury, syndromic surveillance

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