Syndromic Surveillance:

Using Near Real-Time Data to Monitor Traffic-Related Injury

Public Health Approach to Using Data

Syndromic Surveillance (SyS) provides public health professionals with a timely system to detect and monitor public health threats such as infectious disease outbreaks and environmental disasters. While traditional surveillance data requires time to be completed and finalized, SyS allows for near real-time monitoring of injuries, illness, and disease, and can provide another way to track emergency department (ED) visits. For example, public health officials can use SyS as an **early warning system** to monitor unusual levels of injuries from traffic-related crashes. SyS can be used in coordination with traditional surveillance methods to provide a comprehensive data-driven approach to inform long-term program planning and decision-making, as well as identify the immediate health needs of local communities, including injury prevention.

Traditional Surveillance	Versus	**Syndromic Surveillance**
Receive data after lag time (months/years)		Acquire data in **near real-time** (24-48 hours)
Monitor diagnoses in ED visits that are described within billing codes		Monitor "symptoms" (i.e. syndromes) initially reported in ED and urgent care visits
Finalized ED billing numbers		Physician diagnosis
No urgent care data		Can include urgent care data
Major Strengths & Uses Track and monitor **population-based** public health data over long periods of time to identify trends; data are used to guide **long-term program planning** and decision-making		***Major Strengths & Uses*** Track and monitor **emergent changes** in public health events typically at the **community level** via symptoms reported at ED and urgent care visits; data can be used to inform a **quick public health response**

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Syndromic Surveillance (SyS)

The California Department of Public Health (CDPH) defines SyS as using automated methods for detection and near real-time monitoring of early warning signals, incorporating health and health-related indicators for all public health actions, from prediction to response.

1 How is CDPH IVPB using Syndromic Surveillance (SyS)?

SyS can be used to monitor a variety of public health threats, such as infectious disease outbreaks, heat illness, and drug overdoses. CDPH's Injury and Violence Prevention Branch (IVPB) is using and promoting SyS to monitor ED and urgent care visits associated with injury and behavioral health. IVPB's Crash Medical Outcomes Data (CMOD) Project can use SyS to monitor traffic-related injuries (see examples on page 4).

2 What is the Crash Medical Outcomes Data (CMOD) Project?

IVPB's CMOD Project integrates medical and crash data on traffic injuries in order to better understand person-level risk factors and outcomes that can inform data-driven prevention of traffic crashes in California. CMOD is funded by a grant from the California Office of Traffic Safety through the National Highway Traffic Safety Administration (NHTSA).

3 How does SyS monitor Traffic-Related Injuries?

SyS can be used to monitor traffic-related injury ED visits in near real-time. Traffic-related injuries can involve pedestrians[i], bicycles[ii], and motor vehicle crashes[iii] on public streets and roads.

4 How can SyS help with Traffic-Related Injury Prevention?

SyS can help with traffic-related injury prevention by providing information to Local Health Departments (LHDs) quickly so that responses can be initiated within communities when increases in traffic-related injuries are observed. SyS can help identify vehicle and pedestrian safety issues as well as populations that could benefit from targeted injury prevention strategies. SyS can also provide information on drug involvement (alcohol, cannabis, opioid, etc.) and mental health (suicide attempt[iv], suicide related, depression, etc.). These data also help quantify health inequities and inform public health planning and decision making.

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How does SyS work?

1. Patients seek care at the emergency department (ED) and describe symptoms they are experiencing; these symptoms make up the "syndromes" that are tracked within SyS.

2. Medical facilities **send patient data** to local departments (LHDs), Health Information Exchanges (HIEs), or directly to the state's designated SyS system, which is currently the National Syndromic Surveillance Program (NSSP) BioSense Platform.

3. LHDs and HIEs **submit data** to the NSSP's BioSense Platform on behalf of the medical facilities.

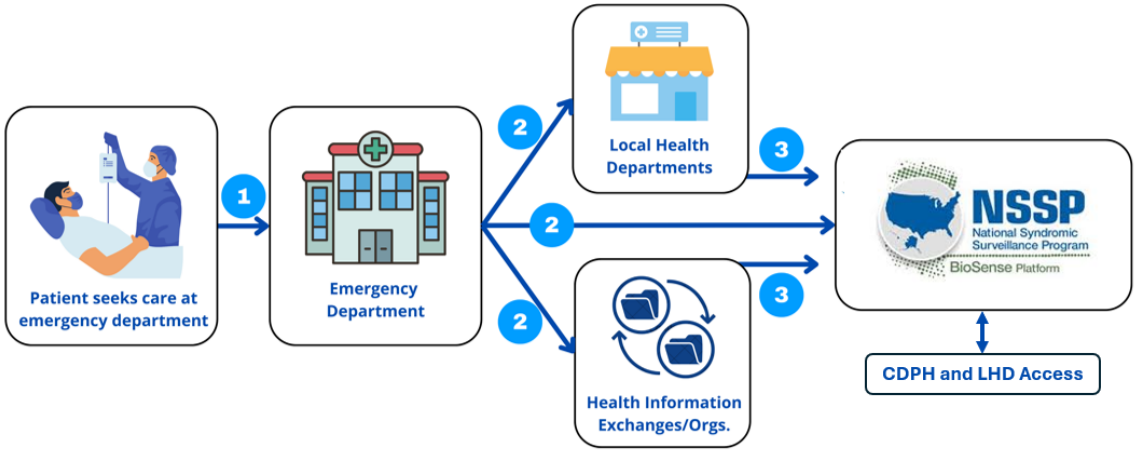

Image credit: California Department of Public Health (2025), "How Does Syndromic Surveillance Work?" Retrieved from the CDPH "What is Syndromic Surveillance?" webpage

State and local health departments can learn more about using SyS to monitor and respond to health events in the NSSP Community of Practice.

How can I access my local-level SyS data?

As of July 1, 2024, California Health and Safety Code Sections 131360-131380 authorizes the implementation of the statewide California Syndromic Surveillance (CalSyS) Program and grants CDPH legal authority to collect and require syndromic data submissions from hospitals with EDs. Local health departments can reach out to CDPH's CalSyS Program for support with accessing SyS data.

If you are interested in learning more about SyS, please reach out to CalSyS@cdph.ca.gov.

If you would like to learn more about statewide traffic-related injury prevention and opportunities to use SyS in your county to prevent these injuries, please reach out to ivpb@cdph.ca.gov.

Examples of using SyS to monitor Motor Vehicle Crashes and Pedestrian Injuries

California Department of Public Health	The California Department of Public Health is using SyS to monitor traffic-related injuries that may arise due to mass gatherings being held across the state, as mass gatherings often bring out-of-town travelers and traffic congestion that can contribute to increased traffic crashes and related injuries. For example, traffic-related injuries observed at EDs in Los Angeles, Santa Clara County, and other nearby regions (e.g., San Fracisco Bay Area) were monitored during the FIFA World Cup Games that were held in Los Angeles and Santa Clara.
Washington State Department of Health	The Washington (WA) State Department of Health's Rapid Health Information Network (RHINO) program collects near real-time health encounter data from participating hospitals and outpatient clinics throughout the state. WA State has used this data to produce several factsheets about motor vehicle crashes and pedestrian injuries from 2022 – 2024. These factsheets are intended to show the burden of traffic injuries on different populations groups in WA and to illustrate which populations are being most impacted.
NC DETECT	The North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) is North Carolina's statewide SyS system that tracks ED visits and other data sources. It has been adapted to monitor motor vehicle crash injuries and other trauma-related events and several factsheets have been produced from the data.

Funding for this program was provided by Grant #TR26031 from the California Office of Traffic Safety, through the National Highway Traffic Safety Administration.

[i] Barry V, Van Dyke ME, Nakayama JY, et al. Emergency Department Visits for Pedestrians Injured in Motor Vehicle Traffic Crashes — United States, January 2021–December 2023. MMWR Morb Mortal Wkly Rep 2024;73:387–392. DOI: dx.doi.org/10.15585/mmwr.mm7317a1.

[ii] Harmon KJ, Ising A, Sandt L, Waller AE. Evaluation of Pedestrian/Bicycle Crash Injury Case Definitions for Use with NC DETECT. Online J Public Health Inform. 2019;11(1):e434. Published 2019 May 30. doi:10.5210/ojphi.v11i1.9921 Evaluation of Pedestrian/Bicycle Crash Injury Case Definitions for Use with NC DETECT - PMC

[iii] Gonzalez S, Newmyer A, Han G, Qu M, Safranek T. Syndromic Surveillance of Motor Vehicle Crash Related Injuries in Nebraska. Online J Public Health Inform. 2015;7(1):e24. Published 2015 Feb 26. doi:10.5210/ojphi.v7i1.5689

[iv] California Department of Public Health. (April, 2025). *SyS for ACEs and suicide prevention.* https://www.kidsdata.org/~/media/1338/syndromic_surveillance.pdf