

National Syndromic Surveillance Program

The National Syndromic Surveillance Program (NSSP) promotes and advances development of a syndromic surveillance (SyS) system for the timely exchange of syndromic data. SyS data is used to improve situational awareness and enhance responsiveness to hazardous events and disease outbreaks to protect community's health, safety, and security. Mandated in the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, the NSSP was launched in 2003 to establish an integrated national public health surveillance system for early detection and rapid assessment of potential bioterrorism-related illness. NSSP includes collaboration among local, state, and federal public health partners (including the Centers for Disease Control and Prevention); other federal agencies including the U.S. Department of Defense and the U.S. Department of Veterans Affairs; hospitals and health professionals; and other key stakeholders.



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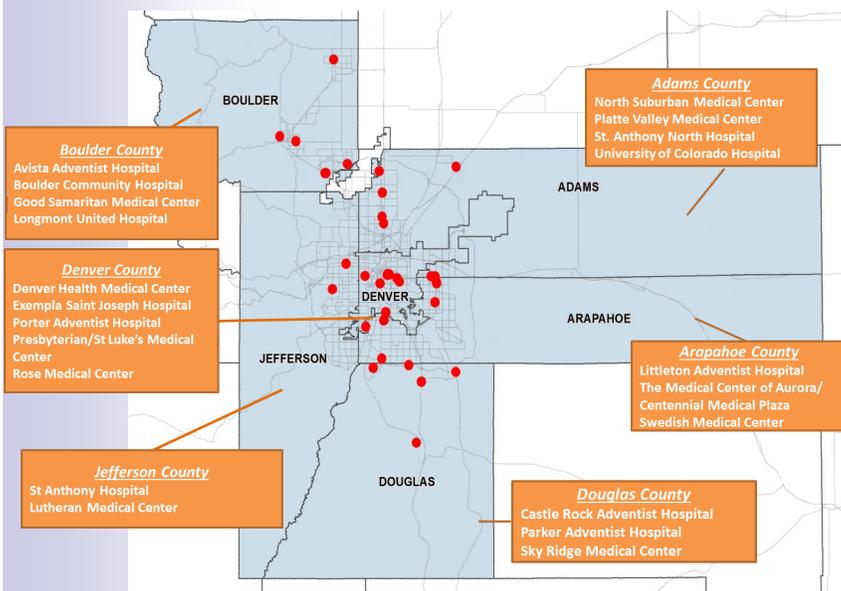
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In 2016, the Electronic Syndromic System for the Early Notification of Community-Based Epidemics (ESSENCE), developed by Johns Hopkins University (JHU), became the NSSP's primary syndromic surveillance tool. NSSP's version of ESSENCE allows epidemiologists to collaborate with others across geopolitical boundaries to share data, which provides a broader surveillance view.

The Key Values of NSSP

- Enhancing health monitoring infrastructure and workforce capacity at the state, local, tribal, and territorial levels
- Expanding the utility of NSSP data to use in all-hazards incidents and to contribute information for public health situational awareness, routine public health practice and improved health outcomes
- Improving the ability to detect emergency health-related threats by supporting the enhancement of systems to signal alerts for potential problems and improving the ability to understand the severity of health issues
- Increasing local and state jurisdictions participation in NSSP

Figure 1. Syndromic Surveillance Partnership in the NSSP CO-NCR



Colorado Syndromic Surveillance Partnership Enhances Public Health Response

Tri-County Health Department (TCHD) and Denver Public Health (DPH) co-jointly began participating in NSSP in 2013 collecting the timely syndromic data for situational awareness and enhanced response to hazardous events and disease outbreaks. In the summer 2016, the NSSP effort expanded to include Boulder and Jefferson Counties. The syndromic surveillance partnership in the NSSP Colorado North Central Region (NSSP CO-NCR) includes public health agencies and facilities from Adams, Arapahoe, Boulder, Denver, Douglas, and Jefferson Counties.

In December 2016, an ESSENCE user training was provided to a total of 14 users in the NSSP CO-NCR by TCHD. All data users have access to a comprehensive dataset across the region. The training provided information on how data are presented and accessed in ESSENCE.

In February 2017, the second NSSP Grantee Meeting was held by CDC at Atlanta. The theme focused on increasing data usage and collaboration. TCHD presented on a project to develop an opioid case definition by using syndromic surveillance data.

Community Practice and Syndromic Surveillance Use Case Highlight

Syndromic Surveillance Case Definition for Monitoring Opioid Related ED visits in the NSSP CO-NCR

The concern of opioid overdoses has been rising nationally. Syndromic surveillance (SyS) data are collected by the National Syndromic Surveillance Program (NSSP) and the data provide rapid Chief Complaint information from Emergency Department (ED) visits. A recent collaboration across 3 states allowed for information sharing with SyS partners across jurisdictions, such as sharing and utilizing a standard SyS query and case definition. The goal of this ongoing collaboration is to work together to develop a standard case definition for opioid abuse/poisoning, which would then be applicable nationally. The pilot study evaluated the opioid abuse/poisoning case definition by determining the consistency of the reported Chief Complaint and Discharge Diagnosis (CC and DD) in SyS ED data. In addition, the consistency of DD corresponding to the opioid case definition was assessed by comparing the weekly counts of opioid abuse/poisoning cases in SyS ED data to those obtained in Hospital Discharge Data (HDD).

In the NSSP CO-NCR (March 2016-April 2016), of 963 possible cases detected by the CC definition, 99.4% (957/963) identified opioid abuse/poisoning diagnosis codes. Of 1,445 possible cases detected by the DD, 66.2% (957/1,445) identified associated opioid abuse/poisoning chief complaint. Comparing the DD in SyS and HDD, the consistency of DD codes corresponding to the opioid definition was assessed between 2015 HDD and 2015 SyS. The mean percent of completeness of DD codes for NSSP CO-NCR 2015 ED SyS data was 85%. Results of the Pearson Correlation analysis indicated statistically significant correlations between 2015 SyS and HDD data for the DD code based opioid definition ($r = 0.92, p < 0.0001$).

The case definition (Table1) for opioid abuse/poisoning based on this study included both search terms of Narcan and Naloxone for opioid overdose cases specifically. Although Narcan and Naloxone were used as an antidote to prevent deaths due to opioid overdoses, these terms helped identify patients admitted in EDs. While reviewing cases, we found many CCs included indicators of opioid abuse/poisoning signs and symptoms. Therefore, the final case definition can be applied by different states and help states monitor the burden of opioid abuse/poisoning related hospital ED visits, underlying factors and consequences of opioid abuse/poisoning. Additionally, the results of the Pearson Correlation suggest the discharge diagnosis reporting is significantly consistent between HDD and SyS which indicated SyS is a reliable data source for monitoring opioid abuse/poisoning related ED visits.

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Table1. Final Query Inclusions and Exclusions

Chief Complaint, Triage Notes, and Clinical Impression

- 1) Inclusion: heroi, dope, speedball, china white, methadone, fentanyl, opioid, oxycodone, oxy, hydrocodone, narcan, naloxone, Percocet, Lortab,
- 2) Exclusion: withdraw, w/d, wd, oxygen, denies heroi, possible heroi, underdosing, r/o, quit using, stopped using, denies any heroi

Discharge Diagnosis (ICD-9)

- 1) Inclusion: 965.0, E850.0-E850.2, E935.0
- 2) Exclusion: No exclusion for ICD-9

Discharge Diagnosis (ICD-10)

- 1) Inclusion: T40.0X1-T40.0X4 (Extension: Only include A and D), T40.1X1-T40.1X4 (Extension: Only include A and D), T40.2X1-T40.2X4 (Extension: Only include A and D), T40.3X1-T40.3X4 (Extension: Only include A and D), T40.4X1-T40.4X4 (Extension: Only include A and D), F11
- 2) Exclusion: F11.21, F11.23, F11.93

Upcoming Training and Conference

- May 31, 2017: NSSP CO-NCR ESSENCE Training Part II (Location: TCHD, 10am-3pm. Please contact Yushuan Chen for more information.)
- June 4-8: 2017 CSTE Annual Conference (Location: Boise, Idaho)

Other Information

- Local Syndromic Surveillance Information: <http://www.tchd.org/syndromicsurveillance>
- Data Submission Guide: <http://www.cdc.gov/phin/resources/phinguides.html>
- BioSense and the National Syndromic Surveillance Program (NSSP): <http://www.cdc.gov/nssp/overview.html>
- Council of State and Territorial Epidemiologists (CSTE): <http://www.cste.org/group/biosense>
- International Society for Disease Surveillance (ISDS): <http://www.healthsurveillance.org/>

For questions or more information, please contact:

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