



The Office of the National Coordinator for
Health Information Technology



Special Series Presentation

**Syndromic Surveillance:
Adding Value in Colorado**

October 16, 2018

Putting the **I** in Health **IT** 
www.HealthIT.gov

<https://www.cdc.gov/ehrmeaningfuluse/public-health-ehr-vendors-collaboration-initiative.html>



Meaningful Use

Meaningful Use
Introduction
Calendar
Connect with Others -
CDC Meaningful Use ListServ
Meaningful Use Community -
Public Health - EHR Vendors Collaboration Initiative
Joint Public Health Forum & CDC Nationwide
Meaningful Use (MU) Public Health (PH) Reporting Requirements Task Force
Community of Practice (CoP)
ELR Task Force +
Jurisdiction Meaningful Use Websites
S & I Framework
Reportable Conditions Knowledge Management System
External Links



[CDC](#) > [Meaningful Use](#) > [Connect with Others](#) > [Meaningful Use Community](#)

Public Health - EHR Vendors Collaboration Initiative



In Focus

Special Session # 7- Zika Virus Disease Update

Coming Up! Special Session # 7: Zika Virus Disease Update for Electronic Health Record (EHR) Vendors, Health Information Technology Developers, Public Health, and Clinical Healthcare Partners on Nov 2, 2016 1:00 PM- 2:00 PM EDT

Please pre-register for the webinar by clicking the link below.

<https://attendee.gotowebinar.com/register/3504905897385264131>

Abstract

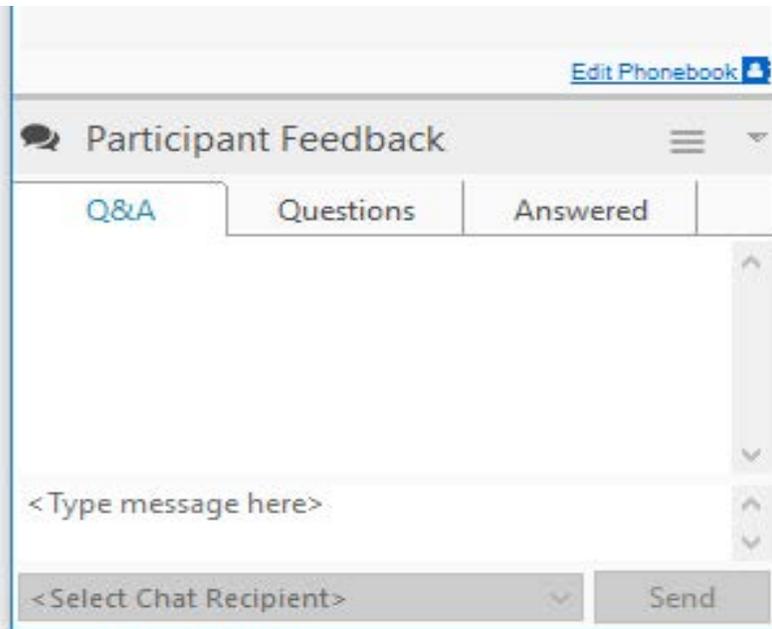
This webinar will be focused on the recommendations around Ask at Order Entry (AOE)* for pregnancy status in Zika virus (ZIKV) laboratory test orders with the possibility of a broader discussion on the capture of pregnancy status in electronic health records, per the clinical workflow and an update on the algorithm for ZIKV risk assessment in pregnant women, based on the latest Centers for Disease Control and Prevention (CDC) guidelines.

Terms explained-

* Ask at Order Entry (AOE)-Some tests, such as microbiology cultures and those that determine heavy metal ion concentration, require additional

Question and Answer Session

How to submit or ask questions in Ready Talk for the panel members?



Submit or Ask Questions

Submit your text question and comments using the Question Panel

Please raise your hand to be unmuted for verbal questions.

Special Announcement

Expert Panelist

Michael A. Coletta, MPH

National Syndromic Surveillance Program Manager

Division of Health Informatics and Surveillance

Center for Surveillance, Epidemiology, and Laboratory Services

Centers for Disease Control and Prevention



Public Health – EHR Vendors Collaboration Initiative National Webcast
October 16, 2018

Syndromic Surveillance: Adding Value in Colorado

Seth Foldy Yushiuan Chen Greg Budney Talia Brown

CO North Central Region Partnership
National Syndromic Surveillance Program





Not so long ago...

- A quarter of a city's population could have diarrhea at the same time and the health department wouldn't know (1993).
- Manual reporting and paper record reviews were the basis of most public health surveillance activities

Then...

- A national HL7 standard for syndromic surveillance was developed and matured
- EHR standardization and adoption blossomed.
- EHR syndromic reporting from hospitals was incentivized.

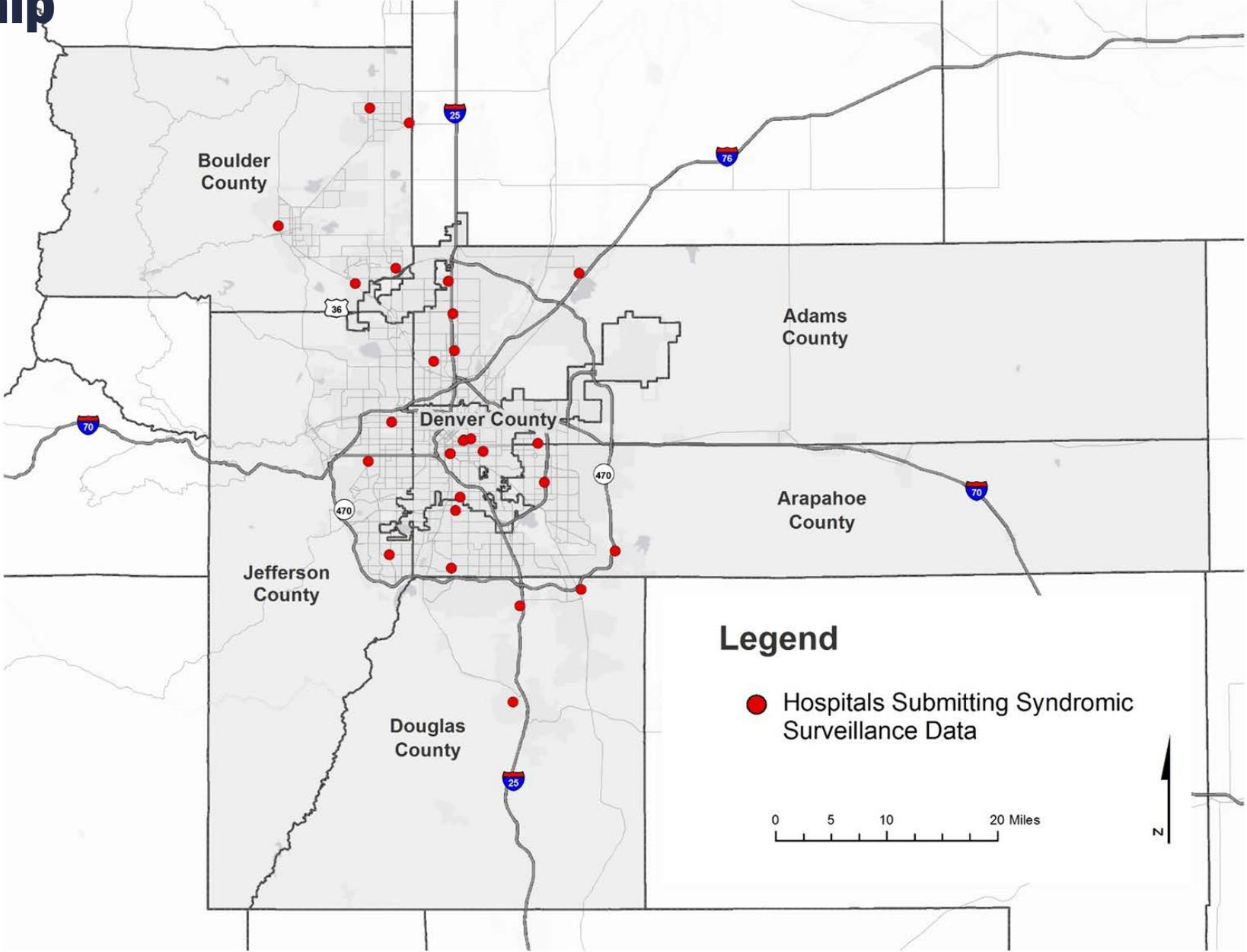
National Syndromic Surveillance Program (NSSP)

- **Why:**
 - Syndromic surveillance data is a **core objective of Meaningful Use Stage 2 and 3 (MU2, MU3)**
 - Enhanced public health surveillance and improve early outbreak detection and response
- **Where:**
 - Colorado Local Syndromic Surveillance Efforts
 - Denver Public Health and Tri-County Health Department (Adams, Arapahoe and Douglas Counties) (beginning in 2013)
 - Boulder County and Jefferson County Public Health (beginning in 2016)
- **Who:**
 - Emergency departments at eligible hospitals
- **What:**
 - Syndromic surveillance required elements
- **How:**
 - Direct HL7 data submission to the federal secure site/local health department
 - Through health information exchange (HIE) vendor (Colorado: CORHIO)
 - Hourly automated electronic data feeds into local syndromic surveillance system



NSSP CO-NCR* Partnership

<p>Adams County</p> <p>Platte Valley Medical Center North Suburban Medical Center University Of Colorado Hospital St. Anthony North Parent Hospital St. Anthony Neighborhood Health Center Parent Hospital SCL Health Community Hospital - Northglenn</p>	<p>Arapahoe County</p> <p>Swedish Medical Center The Medical Center Of Aurora Littleton Parent Hospital SCL Health Community Hospital - Aurora</p>
<p>Boulder County</p> <p>Avista Parent Hospital Good Samaritan Medical Center Longmont United Parent Hospital Boulder Community Hospital Longs Peak Hospital</p>	<p>Denver County</p> <p>Rose Medical Center Presbyterian/St. Luke's Medical Center Porter Parent Hospital Denver Health And Hospital Authority Saint Joseph Hospital</p>
<p>Douglas County</p> <p>Parker Parent Hospital Sky Ridge Medical Center Castle Rock Parent Hospital</p>	<p>Jefferson County</p> <p>St Anthony Parent Hospital Lutheran Medical Center SCL Health Community Hospital - South West</p>



- Notes:
- 1) Children’s Hospital Colorado is considering joining NSSP in the future
 - 2) *CO-NCR: Colorado North Central Region

Hospitals Onboarding and Information Sharing

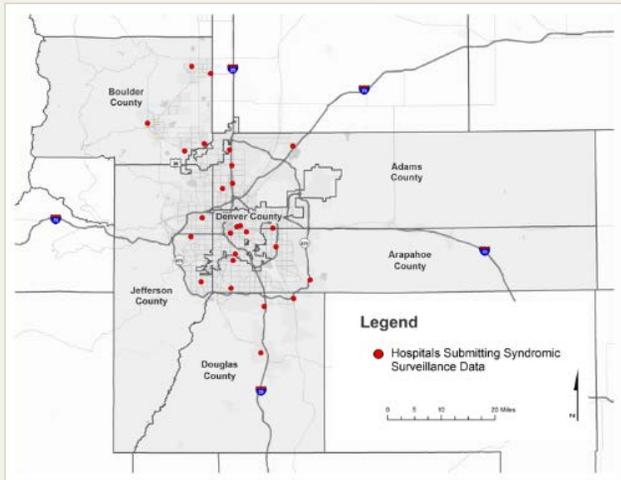
Syndromic Surveillance Web Page



- CONTACT US
- REPORT A PROBLEM
- NOTIFY ME®

- Syndromic Surveillance Newsletters & Reports
- Syndromic Surveillance Informational Documents
- NSSP CO-NCR ESSENCE Login

Syndromic Surveillance & Meaningful Use



Colorado North Central Region (CO-NCR) Hospitals Contributing data for Syndromic Surveillance, 2017

Adams County	Arapahoe County
Platte Valley Medical Center	Swedish Medical Center
North Suburban Medical Center	The Medical Center of Aurora
University of Colorado Hospital	Littleton Parent Hospital
St. Anthony North Parent Hospital	SCL Health Community Hospital

Brochure

Syndromic Surveillance

In Adams, Arapahoe, Boulder, Denver, Douglas and Jefferson counties, we invite eligible facilities to submit syndromic surveillance data which is a core objective of Meaningful Use (MU) Stage2 and add to your hospital's readiness for MU incentive funds. Your participation in syndromic surveillance reporting will allow early outbreak detection and response by local, state, and federal public health authorities.

Health Information Exchange (HIE)

- Value of participating in the HIE**
- HIE allows health care providers and patients to securely access and share a patient's vital medical information electronically
 - Improved patient record completeness; speed of access to information; improved quality and safety and decreased cost of patient care; better decision making at the point of care



Colorado Regional Health Information Organization (CORHIO)

- CORHIO is a nonprofit, public-private partnership that is improving health care for all Coloradans through health information technology and the implementation of HIE.
- CORHIO manages and maintains the technology infrastructure that supports secure and efficient clinical information sharing among health care providers across Colorado.

National Syndromic Surveillance Program (NSSP)

Providing Data to NSSP

NSSP is a shared environment to advance public health surveillance practice and activities. This distributed environment allows agencies, providers, and stakeholders to secure, store and analyze data.

Data Sources Nationwide:

- Emergency Department visits
- Department of Veterans Affairs
- Department of Defense
- Weather

What can be done in NSSP?

- Interchange of timely information
- Detect and characterize early events
- Information or reports exchange
- Statistical tools
- Mapping tools

NSSP Users in the US



Meaningful Use

Stage I

- Syndromic surveillance test submission where applicable by jurisdiction
- Electronically capture health information in a standardized format and use information to track key clinical conditions
- Communicate information for care coordination processes
- Report clinical quality measures and public health information
- Use information to engage patients and their families for care

Stage II:

- More rigorous health information exchange
- Increased requirements for e-prescribing and incorporating lab results
- Electronic transmission of patient care summaries across multiple settings
- Ongoing syndromic surveillance reporting by all eligible hospitals (Please see the table below)

Minimum Required Submission Elements

Identifying Information	Demographic	Visit Information
Facility ID	Age	Visit Date/Time
Unique Patient ID	Age Unit Days/Months/Years	Visit Date/Time
*Medical Record Number	Gender	Diagnosis Type
*Date of Birth	Race/Ethnicity	Chief Complaint
	Zip Code	Discharge Disposition
	County	Diagnosis/Triage Notes/Clinical Impression

Hospitals Onboarding and Information Sharing

DUA, MU Declaration, Invitations

11/2017

Meaningful Use Stage 3 (MU3) Readiness for Syndromic Surveillance

In 2013, [Tri-County Health Department](#) and [Denver Public Health](#) co-jointly began participating in the National Syndromic Surveillance Program (NSSP) in 2013 and since 2016, an expanded effort includes [Boulder County Public Health](#) and [Jefferson County Public Health](#). This Colorado North Central Region partnership (NSSP CO-NCR) includes local public health agencies and meaningful use eligible hospital facilities from Adams, Arapahoe, Boulder, Denver, Douglas and Jefferson Counties. Colorado does not have statewide syndromic surveillance reporting to meet this objective at this point.

Declaration of Readiness to Receive Syndromic Surveillance Data for MU3

Currently, all local public health agencies (LPHAs) in the NSSP CO-NCR receive electronic syndromic surveillance data from eligible hospitals, and their associated emergency departments, in Adams, Arapahoe, Boulder, Denver, Douglas and Jefferson Counties, seeking MU3 incentive payments.

NSSP CO-NCR area hospitals intending to meet MU3 public health syndromic surveillance data transmission objective must register their intent to do so with their LPHA within 60 days of their MU3 reporting period. Based on MU3 requirements, the objective is to ensure that the eligible hospitals (EH) or critical access hospitals (CAH) are in active engagement with a public health agency to submit electronic public health data in a meaningful way using Certified Electronic Health Record Technology (CEHRT). If EH or CAH facilities choose syndromic surveillance as one of the core requirements for MU3, [the measure for syndromic surveillance](#) data reporting is that the EH or CAH is in active engagement with a public health agency to submit syndromic surveillance data. In addition, EH or CAH should engage with the designated public health agency to explore the possibility of submitting urgent care data. . Please find objectives, measures, final rules, and other information about MU3 on [the Centers for Medicare and Medicaid Services \(CMS\)](#) website.

Newsletter and Notifications

Syndromic Surveillance Notification Report

September 24th, 2018 (9:00 AM)

Notification: Increase in Emergency Department (ED) Visits Related to Influenza Like Illness (ILI)

For Information Only

Updates Provided by: *Tri-County Health Department (TCHD)*

• Purpose

- ◊ To notify partners regarding an increase in the rate of ED visits via our Syndromic Surveillance system meeting surveillance criteria of ILI during late August and early September 2018.

• Definitions used for ILI Syndromic Surveillance

- ◊ Rate of ILI-related ED visits is calculated by using counts of visits meeting the CDC's ILI case definition, which is based on searching visits with influenza-specific discharge diagnosis ICD-10 codes (J09, J10, J11) or text terms in the ED chief complaint and triage note (fever and either cough, sore throat, strep throat, or upper respiratory).
- ◊ Rate of influenza-related ED visits is based on counts of visits with influenza-specific discharge diagnosis ICD10 codes (J09, J10, J11).

• ILI and Influenza-Related ED Visit Rates in TCHD's jurisdiction (Adams, Arapahoe, Douglas Counties) (Figure)

- ◊ A slight increase in the rate of ILI-related ED visits was identified in TCHD's jurisdiction during late August and early September.
- ◊ Ancillary laboratory data indicates community circulation of respiratory rhinoviruses and enteroviruses rather than influenza viruses during this period.

• Reminders Regarding ILI Prevention and Control Measures Prior to Influenza Season

- ◊ Review your agency's employee health policy and procedure for the upcoming influenza season, particularly illness exclusion policies.
- ◊ Promote influenza vaccination for all employees and monitor vaccination rates.

Figure. Rates of ILI and Influenza-Related ED Visits in Syndromic Surveillance, by Week (05/01/2018-09/24/2018)
Adams, Arapahoe, and Douglas Counties, Colorado

Hospitals Onboarding and Information Sharing

Data Validation Guide

Completeness: TCHD ESSENCE-Data Quality Check

- Step 1: ESSENCE-Tool Bar- Select "Data Quality"

Overview Portal Query Portal Stat Table Map Portal Bookmarks Query Manager Data Quality

Data Quality: Data Quality Frequ Data Quality Alerts Data Quality Data Data Quality Hosp Status

Select Data Source: Facility Location (Full Details) Quality

Time Resolution: Daily

Submit

- Step 2: Select "ER Data by Hospital Location" as the data source
 Select "Percent Completeness" to understand the completeness Rate (%)
 Select "Daily" as the time resolution. You can see daily completeness rate by selecting "Daily".

Data Quality: Quality Factor: Percent Compl

Select Data Source: ER Data by Patient Location
 ER Data by Patient Location
 ER Data by Hospital Location
 CEDRS Data
 TrIC Hospital Discharge Data

Time Resolution: Daily

Submit

- Step 3: Select "Hospital Names" to define hospitals and press Ctrl to make multiple selections
 Select "Parameter": press Ctrl to make multiple selections
 Insert start and end dates for your search

Data Quality Datasources: ER Data by Hospital Location & Factor: Percent Complete

Select Hospital: Avista Adventist Hospital
 Castle Rock Adventist Hospital
 Denver Health Medical Center
 Litchton Adventist Hospital

Parameter: EOU Sex
 EOU Medical Record Number
 EOU Age
 EOU Time

Select Start Date: 30Nov16 Select End Date: 14

Submit

- Step 4: Interpret your data quality report

- Many hospitals are sending data through CORHIO. If we saw data drop-off from all of those hospitals, we need to contact CORHIO to find out where the issues are.
- If we found hospitals from the same system had drop-off, we should contact hospitals system before calling CORHIO.
- When the completeness of parameters are low, please continue following steps 5-x

Legend (Percent %)

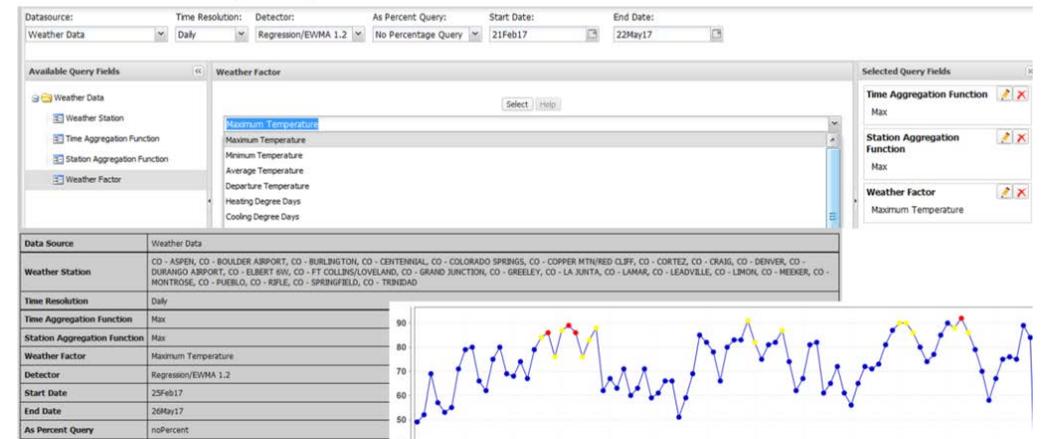
96 - 100	91 - 95	81 - 90	51 - 80
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Data Quality

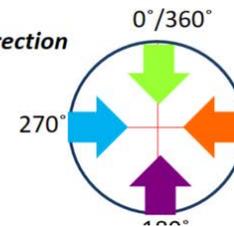
Geography	Variable	30Nov16	01Dec16	02Dec16	03Dec16	04Dec16	05Dec
University of Colorado Hospital	EOU Sex	100	100	N/A	N/A	N/A	100
University of Colorado Hospital	EOU Medical Record Number	100	100	N/A	N/A	N/A	100
University of Colorado Hospital	EOU Age	100	100	N/A	N/A	N/A	99
University of Colorado Hospital	EOU Time	100	100	N/A	N/A	N/A	100

ESSENCE User Trainings

Query Portal-Weather Station Data

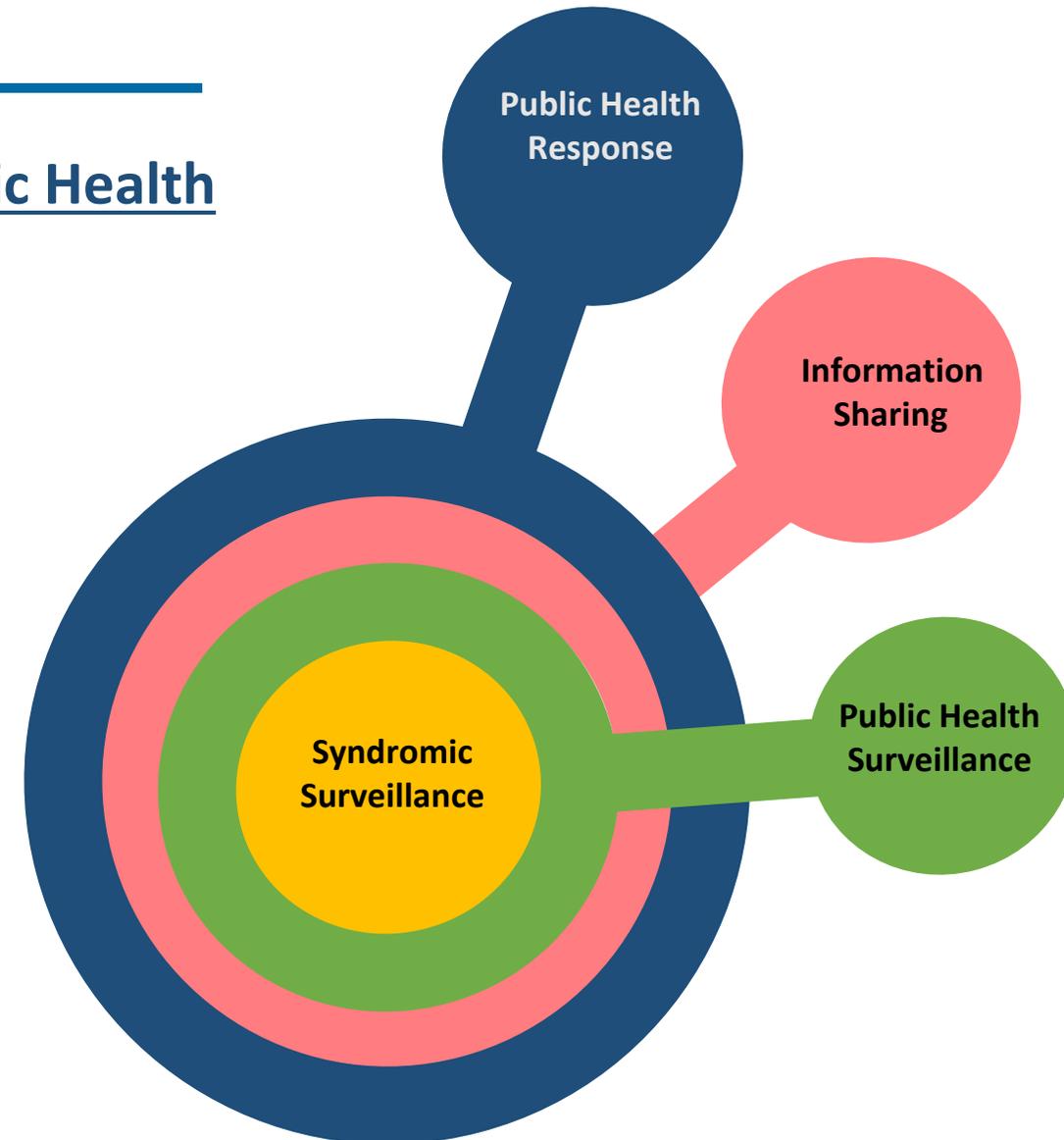


Wind Direction



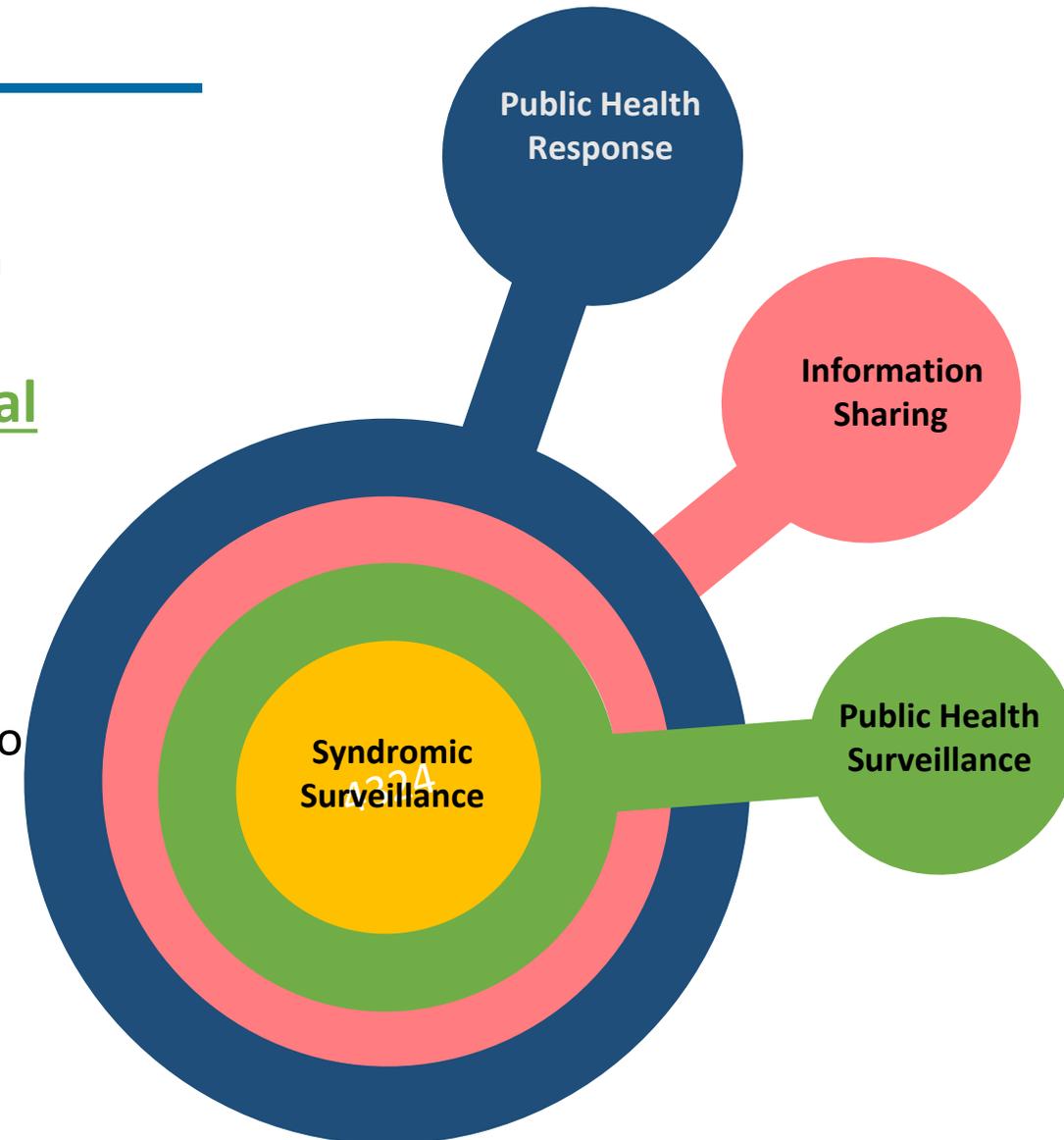
Examples of CO-NCR Use Cases

- Mass Gathering, Information Sharing and Public Health Response
 - 2014 Enterovirus D68
 - 2017 Total Solar Eclipse
 - 2017 Gas Leak at an Elementary School
 - 2018 Synthetic Marijuana and Coagulopathy
 - 2018 Water World Incident – Recreational
 - 2018 Recycle Plant Fire
 - 2018 Chlorine Gas Leak
 - 2018 Influenza-Like Illness



Examples of CO-NCR Use

- **Newsletters and Notification Reports**
 - NSSP CO-NCR Syndromic Surveillance Communication Workgroup (Local Public Health)
- **Enhance Public Health Surveillance with Hospital Partners**
 - Shared case definitions
 - Flu, carbon monoxide poisoning, asthma, diarrhea, West Nile Virus, etc.
 - Complementary with other surveillance information to improve interventions and data quality control
 - Rabies
 - Flu
 - Opioids



National Collaborations on Opioid Overdose Surveillance

- **Collaborations**

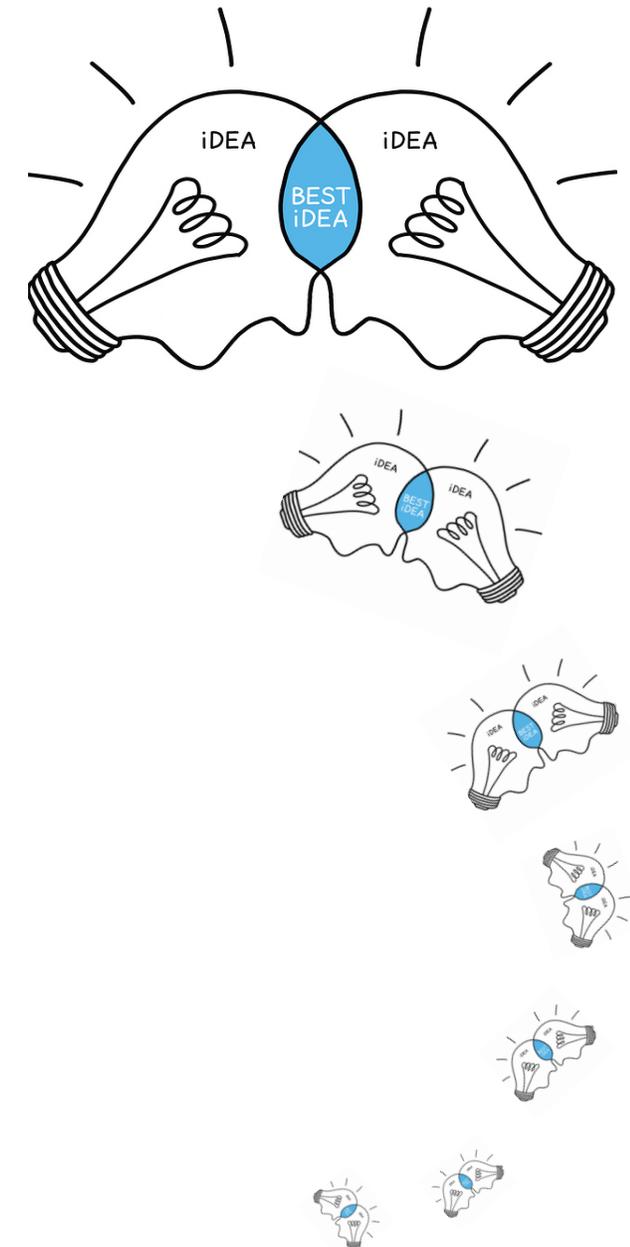
- Colorado North Central Region (CO-NCR), State of Nebraska, and Marion County, Indiana
- International Society of Disease Surveillance: Overdose Surveillance Committee

- **Goals**

- Coordinate efforts and leverage resources
- Enhance information sharing
- Enhance opioid overdose surveillance

- **Situational Awareness**

- Ongoing monitoring
- Bi-directional communication with hospital partners
- Timely notifications



Enhanced Public Health Surveillance

- Substance overdose
- Infectious diseases
- Non-Infectious diseases
- Public events
- Other public health threats

Alerts and Case Investigations

- Descriptive epidemiology
- Line level case investigations
- Investigation and follow-up
- Information sharing with hospital partners and public health partners via email or other systems

Public Health Responses

- Gather additional information from hospitals and other public health agencies
- Gather additional information from other information sources
- Inform colleagues and follow other protocols of public health responses

Keep Monitoring Queries. Continue to Communicate and Share Information



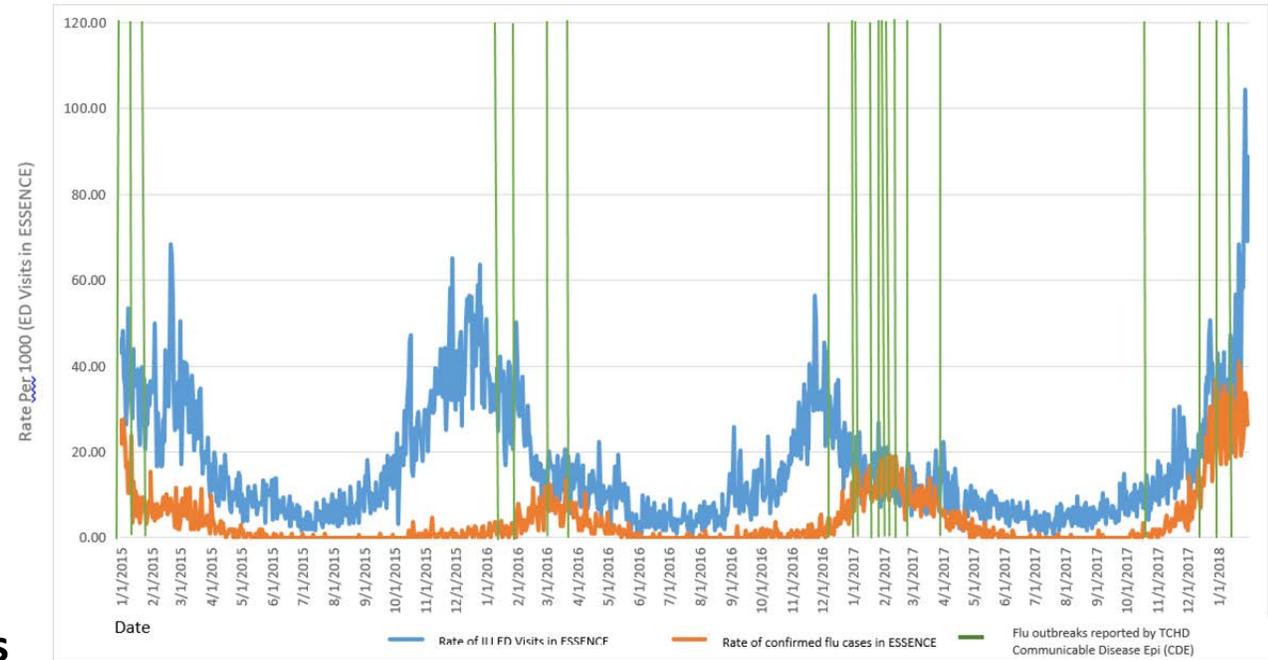
Closely Monitoring



Action Required

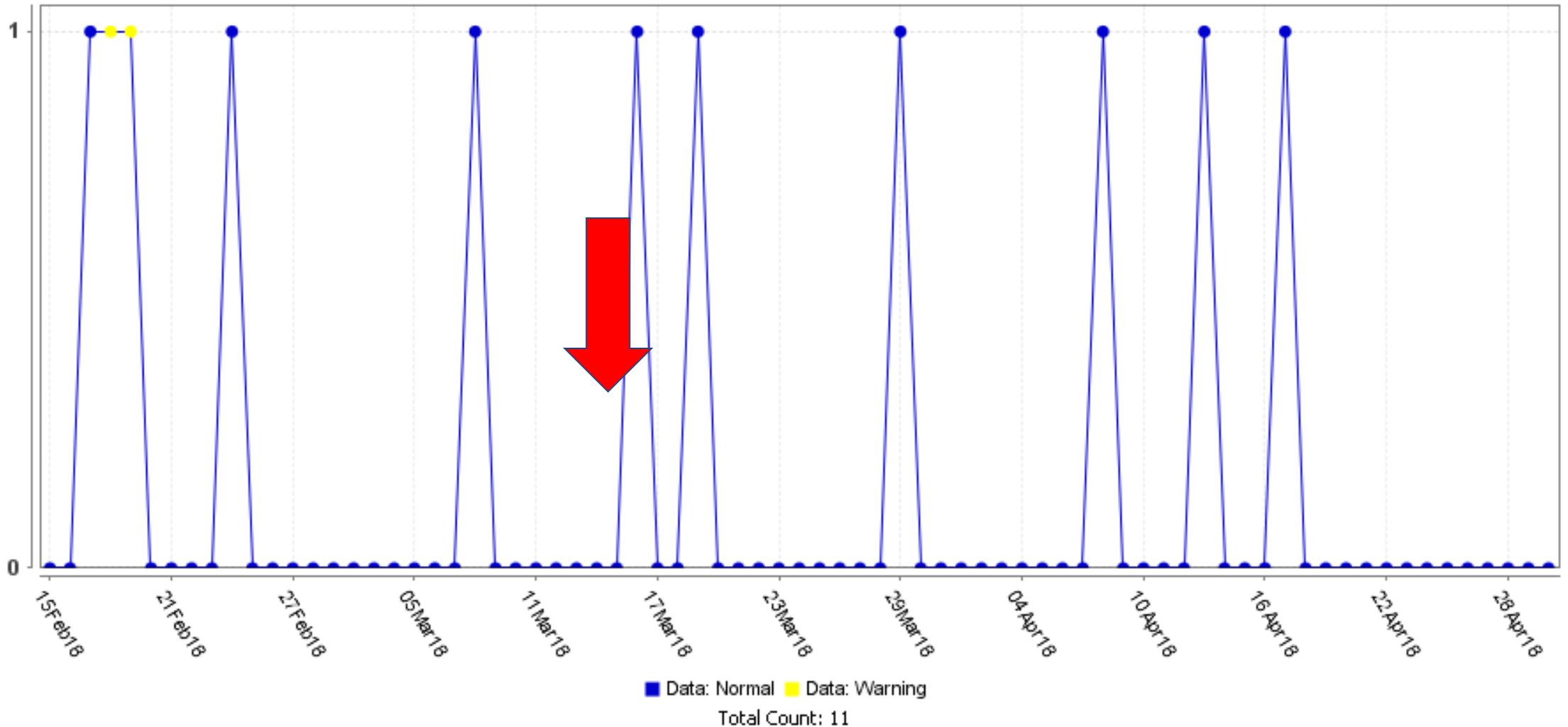
Collaborations and Investigations for Public Health Surveillance

- Data Quality Assurance
- Develop Descriptive Epidemiology Questions
- Case Investigations
- Partnership
 - ✓ Facility Infection Preventionists
 - ✓ ED Physicians and Nurses
 - ✓ Facility Emergency Management
 - ✓ Public Health Syndromic Surveillance Epidemiologists
 - ✓ Public Health Communicable Disease Epidemiologists
 - ✓ Public Health Emergency Preparedness and Response
- Continuous Collaborations and Future Opportunities
 - Syndromic Surveillance (SyS) provides timely situational awareness
 - SyS information can be used to prepare staff for incidents and outbreaks at hospitals, schools, long term care facilities, etc.
 - SyS provides helpful information for hospital administrations to review policies
 - Meaningful Use incentives help maintain good quality of data and improve the system for all hospital partners and health care providers

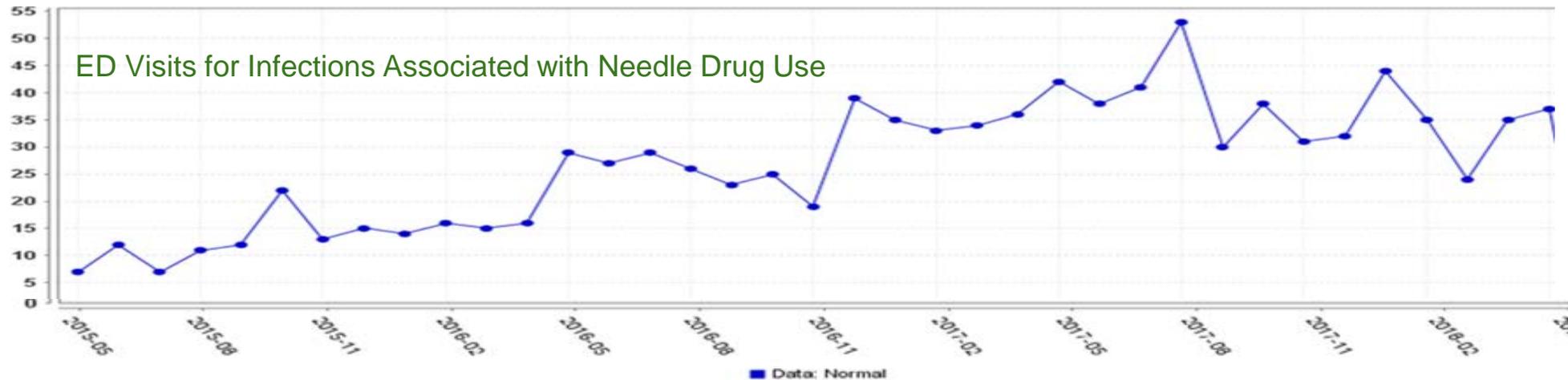
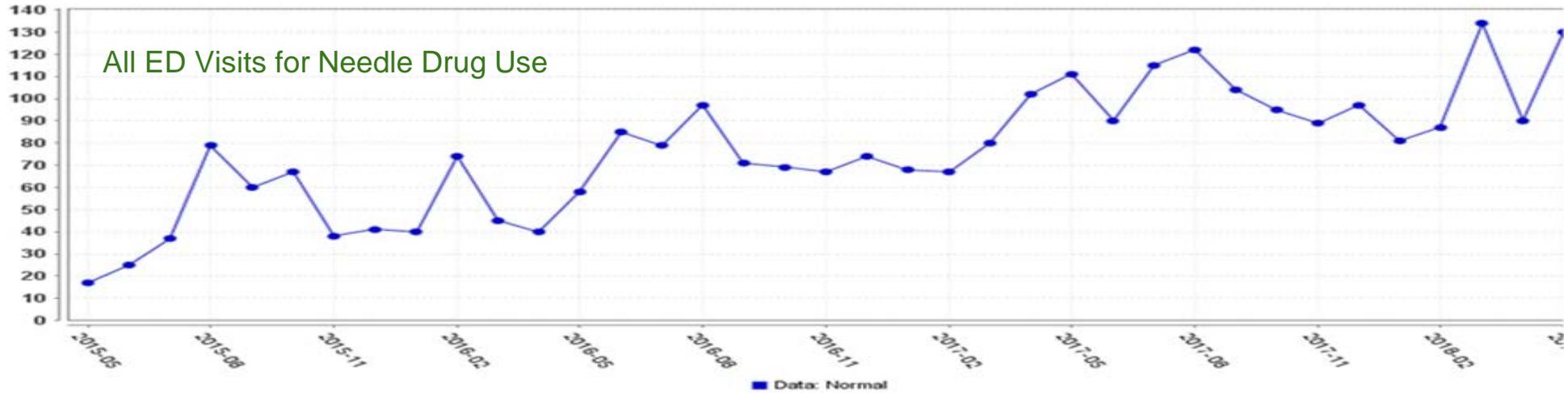


Situation: Hepatitis A

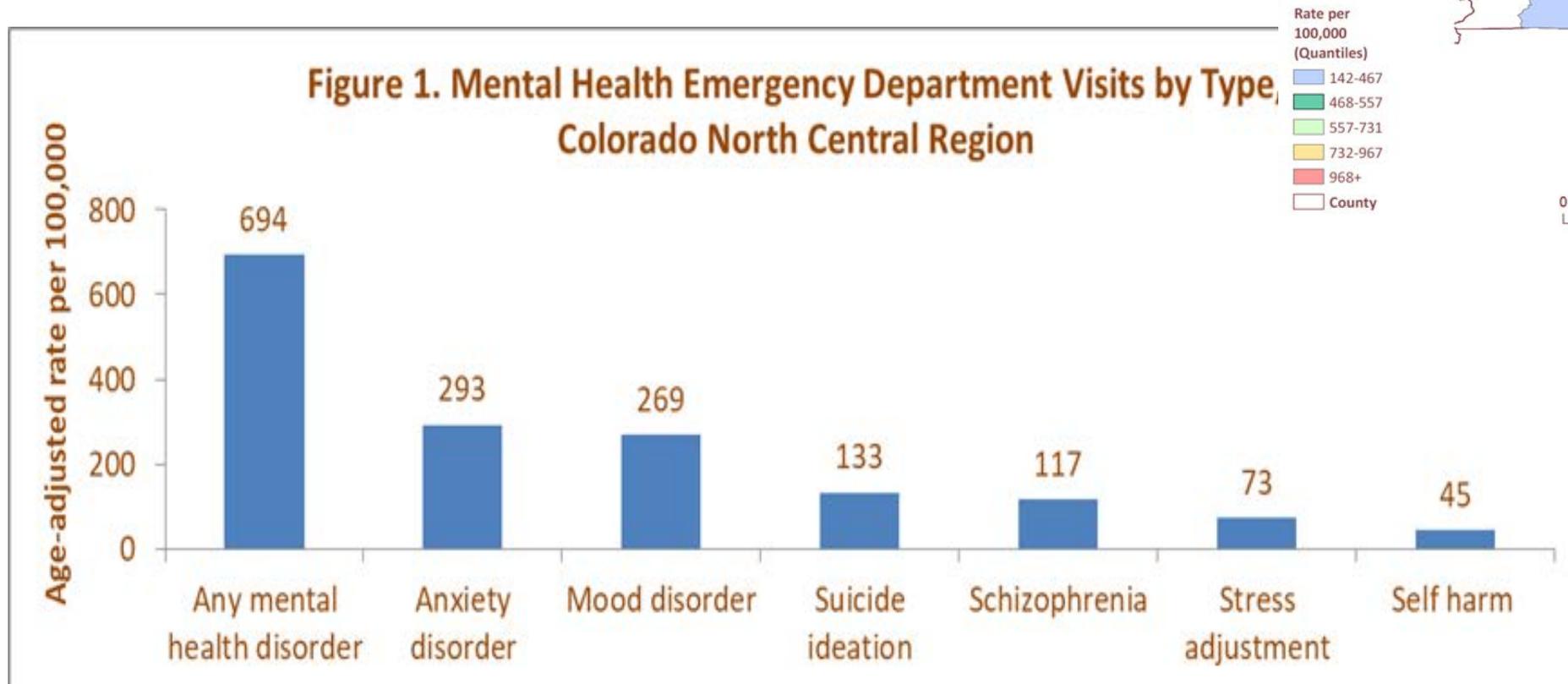
Daily Data Counts



Situation: Injection Drug Use and Associated Infections

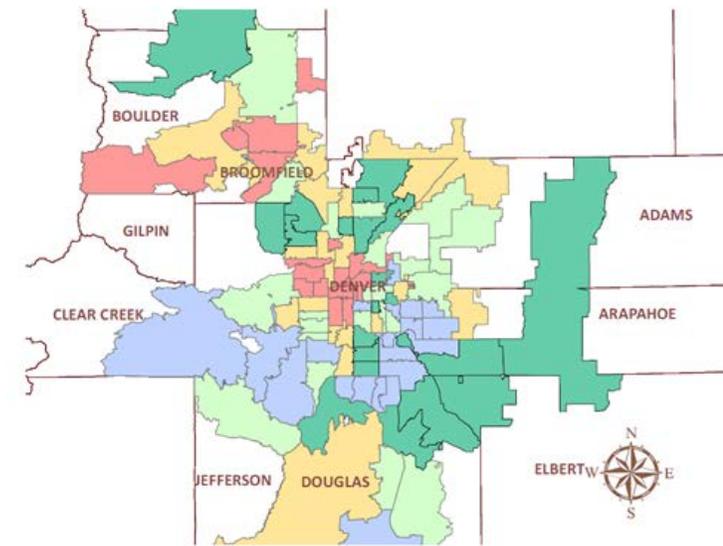


Emergency Department Mental Health Visits



Rate per 100,000 (Quantiles)

- 142-467
- 468-557
- 557-731
- 732-967
- 968+
- County



0 5 10 20 Miles

Patients are coded according to zip code of reported residence. Zip codes do not align with county boundaries. Only 6 counties in Colorado have hospitals participating in SyS.

Sussman, L. Brown, T. Harnessing the Power of Syndromic Surveillance; Mental Health Emergency Department Trends Across 6 Counties. Presented at Public Health in the Rockies, 9/2018.

Conclusion: Value for Public Health & Preparedness

- Complements traditional public health surveillance systems
 - No other source offers such timeliness and flexible range of health problems
 - Data from multiple providers with little effort
- Near-real-time information sharing between public health, hospitals and emergency departments
- Supports rapid, data-driven decisions in emergencies and outbreaks
 - Helps guide response by emergency managers, health care facilities, first responders, schools, employers and the public

Conclusion: Value for Health Care and Vendors

- National, uniform, stable and well-validated HL7 standards
- Many hospitals in most states have been submitting data for years
- Health information exchanges (HIEs, RHIOs) facilitate submission in many jurisdictions
- Data supports health care preparedness and response
 - Public health alerts enable better health care planning and decisions
- Public health queries require no hospital effort
 - Reduces manual data requests from infection preventionists and medical records
 - Data can be used to allow providers to identify cases when necessary

Conclusion: Implications for Policy

- Syndromic surveillance has provided a practical, stable, high-value way for many hospitals to demonstrate Meaningful Use and Promote Interoperability
- Public health agencies, vendors and health care providers should consider this track record when considering proposed CMS regulations (e.g., Promoting Interoperability rules)

Acknowledgements

- The Colorado North Central Region Partnership is supported by a grant to Denver Public Health/Tri-County Health Department by the Centers for Disease Control and Prevention National Syndromic Surveillance Program, CDC-RFA-OE15-1502
- Other participants in investigations and program administration include:
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THANK YOU

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