

SyS State of Mind

2:45PM EST | December 6th, 2022 | 2022 SyS Symposium

Trainers:

- Alexa Meinhardt, MPH, CPH – Delaware Division of Public Health
- Lowrie Ward, MPH, CPH – Alaska Native Tribal Health Consortium, AK Native Epidemiology Center
- Zachary Stein, MPH – CDC CSELS



Council of State and Territorial Epidemiologists



Alexa Meinhardt, MPH, CPH – Delaware Division of Public Health

Lowrie Ward, MPH, CPH – Alaska Native Tribal Health Consortium, AK Native Epidemiology Center

Zachary Stein, MPH – CDC CSELS



Syndromic Surveillance (SyS) State of Mind

CSTE / CDC NSSP Syndromic Surveillance Model Training Series

Faculty

Alexa Meinhardt, MPH, CPH – Delaware Division of Public Health

Lowrie Ward, MPH, CPH – Alaska Native Tribal Health Consortium, Alaska Native Epidemiology Center

Zachary Stein, MPH – ICF Contractor for CDC

National Syndromic Surveillance Program

Community of Practice

Resources that Advance the Science and Practice of Syndromic Surveillance



DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

The NSSP CoP is supported by Cooperative Agreement # 6NU38OT000297-02-01 between the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists.
Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.

SyS State of Mind



Intended Audience: An introduction for new SyS analysts and public health programs (SyS consumers)

Description: This training will introduce some foundations of Syndromic Surveillance and set the groundwork for attendees to work through the wealth of Syndromic knowledge and resources available



SyS State of Mind

Intended Audience: An introduction for new SyS analysts and public health programs (SyS consumers)

Description: This training will introduce some foundations of Syndromic Surveillance and set the groundwork for attendees to work through the wealth of Syndromic knowledge and resources available

Learning Objectives:

By the end of the training, learners will be able to...

1. Describe the general process to categorize records into syndromes
2. Apply characteristics of SyS (syndromic surveillance) data (sources, variables, quality) when describing SyS results
3. Distinguish between which public health issues are and are not well suited for SyS

Agenda

1. Agenda-setting; introduction to syndromic surveillance
2. Use cases for syndromic surveillance
3. Examples and walk-throughs



Agenda

1. Agenda-setting; introduction to syndromic surveillance
2. Use cases for syndromic surveillance
3. Examples and walk-throughs

Feel free to ask questions (raise hand, type in chat, etc.) at any point throughout the training, or wait until the end



Agenda

1. Agenda-setting; introduction to syndromic surveillance
2. Use cases for syndromic surveillance
3. Examples and walk-throughs

Feel free to ask questions (raise hand, type in chat, etc.) at any point throughout the training, or wait until the end

Training is being recorded and will be made available online/on-demand



Introductions

We'd like to learn a little more about you!

In the chat, please share:

Your name

Jurisdiction/organization

Job title

One thing you hope to take away from the training or one thing you are curious about



Activity

What's your favorite ice cream flavor? Answer in the chat!



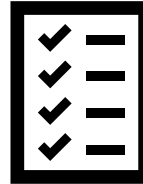
Activity

What's your favorite ice cream flavor? Answer in the chat!



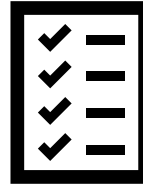
Syndromic surveillance as a recipe – even the same flavor of ice cream may taste different with small tweaks/changes

Expected Outcomes



Expected Outcomes

1. Reliably and confidently define a syndrome using typical syndromic surveillance data elements



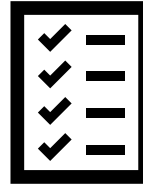
Expected Outcomes

1. Reliably and confidently define a syndrome using typical syndromic surveillance data elements
2. Reliably and confidently describe representativeness and limitations of SyS results



Expected Outcomes

1. Reliably and confidently define a syndrome using typical syndromic surveillance data elements
2. Reliably and confidently describe representativeness and limitations of SyS results
3. Accurately frame and/or describe hypotheses for SyS applications



Take-aways



Designed for new SyS analysts and data consumers to...

The NSSP CoP is supported by Cooperative Agreement # 6NU38OT000297-02-01 between the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.



NSSP Community of Practice

Take-aways

Designed for new SyS analysts and data consumers to...

1. Establish foundational concepts of SyS methodology



Take-aways

Designed for new SyS analysts and data consumers to...

1. Establish foundational concepts of SyS methodology
2. Conceptualize new SyS public health applications



Take-aways

Designed for new SyS analysts and data consumers to...

1. Establish foundational concepts of SyS methodology
2. Conceptualize new SyS public health applications
3. Confidently act on SyS analyses



Syndromic Surveillance Platform



Primarily consists of non-identifiable line-level data from hospitals, but may include additional datasets such as prescription, weather, outpatient, poison control, schools (absenteeism)



Syndromic Surveillance Platform



Primarily consists of non-identifiable line-level data from hospitals, but may include additional datasets such as prescription, weather, outpatient, poison control, schools (absenteeism)

Commonly used program – ESSENCE: Electronic Surveillance System for Early Notification of Community-Based Epidemics:

NSSP (National Syndromic Surveillance Program) hosts a national version of ESSENCE, into which jurisdictional SyS data from across the country is fed

Jurisdictions may have their own local version, as well



Syndromic Surveillance Platform



ESSENCE - NSSP
Home

Bookmark Name

Bookmark Page

[Home](#) [Alert List](#) [myAlerts](#) [myESSENCE](#) [Event List](#) [Overview Portal](#) [Query Portal](#) [Stat Table](#) [Map Portal](#) [Bookmarks](#) [Query Manager](#) [Data Quality](#) [Report Manager](#) [More](#)

Version 1.22



This Information is for Authorized use only.

Your ability to access this information is granted with the expectation and understanding that you will comply with and not violate privacy information policies. This is a private system and is only to be used by authorized users. By continuing, the user is stating that they are the indicated user.

ESSENCE PROTOTYPE DISCLAIMER

NO WARRANTY

THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY (JHU/APL) PROVIDES THIS ESSENCE PROTOTYPE SOFTWARE FREE OF CHARGE AND "AS IS" WITHOUT WARRANTY OF ANY KIND. JHU/APL DOES NOT WARRANT THAT (i) THE SOFTWARE WILL BE OR ERROR FREE, OR (ii) THE DATA PRODUCED BY THE SOFTWARE WILL BE ERROR FREE. JHU/APL DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING (BUT NOT LIMITED TO) ANY AND ALL IMPLIED WARRANTIES OF PERFORMANCE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, NON-INTERFERENCE, AND ACCURACY OF INFORMATIONAL CONTENT. YOU THE USER ASSUME THE ENTIRE RISK AND LIABILITY OF USING THIS SOFTWARE OR THE DATA PRODUCED THEREBY, INCLUDING USE IN COMPLIANCE WITH ANY THIRD PARTY RIGHTS. JHU/APL SHALL NOT BE LIABLE FOR ANY ACTUAL, INDIRECT, CONSEQUENTIAL, SPECIAL OR OTHER DAMAGES ARISING FROM THE USE OF, OR INABILITY TO USE, THIS SOFTWARE OR THE DATA PRODUCED THEREBY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES FOR LOST PROFITS, BUSINESS INTERRUPTION OR LOSS OF DATA EVEN IF JHU/APL HAS BEEN ADVISED OF THE PROBABILITY OF SUCH DAMAGES.

NOT FOR PUBLIC DISCLOSURE

[Questions or Problems?](#)

The NSSP CoP is supported by Cooperative Agreement # 6NU38OT000297-02-01 between the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.



NSSP Community of Practice

Discussion Opportunity

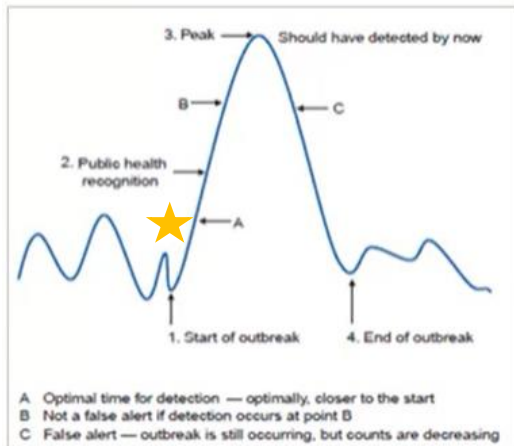
How do you or would you use Sys?

Share your thoughts in the poll!



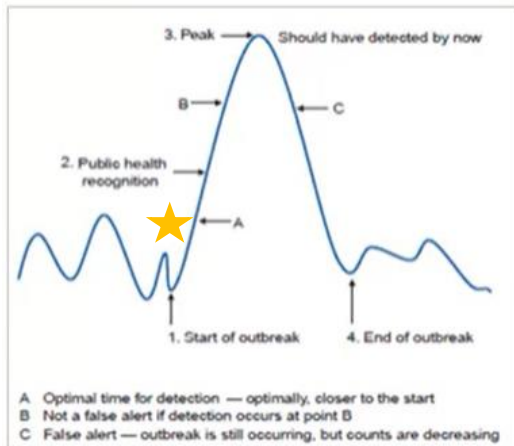
SyS in Infectious Disease

Detection of outbreaks on the epicurve



SyS in Infectious Disease

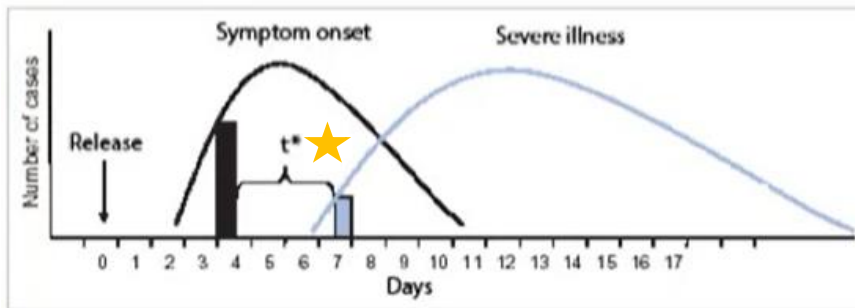
Detection of outbreaks on the epicurve



► Time “ t ” represents the difference in time detection by syndromic (pre-diagnostic) surveillance and detection

► Decreases

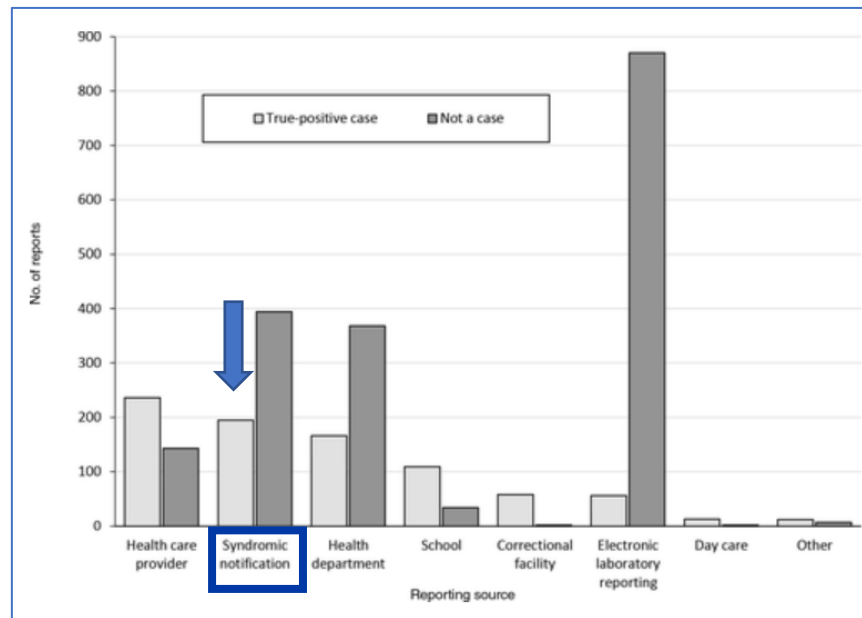
- Diagnostic delay
- Reporting delay



Syndromic Surveillance as a Tool for Case-Based Varicella Reporting in Georgia, 2016-2019

Example: Outbreak detection and response in Georgia

Using rapid electronic data to identify potential cases



Classic Sys Uses

To monitor hospital ED levels (abnormally high or low)

To detect or monitor an outbreak (ex: norovirus)

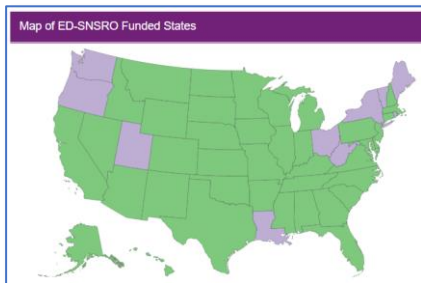
During special events, such as the Super Bowl at a local stadium

To look at patterns or aberrations



SyS In Action

Fast, flexible, and useful for almost any health condition: injury, infectious and chronic, environment, emergencies



SUICIDE-RELATED:

<https://www.cdc.gov/suicide/programs/ed-snsro/index.html>

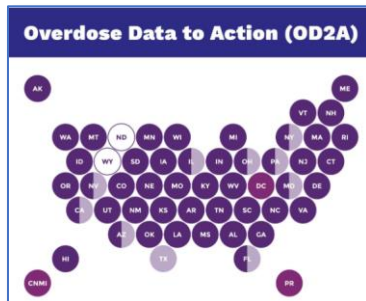
Firearm Injury Surveillance Through Emergency Rooms (FASTER)

Notice of Funding Opportunity



FIREARM:

<https://www.cdc.gov/injury/fundedprograms/faster/index.html>

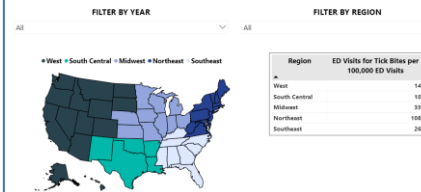


OVERDOSE:

<https://www.cdc.gov/drugoverdose/nonfatal/case.html>

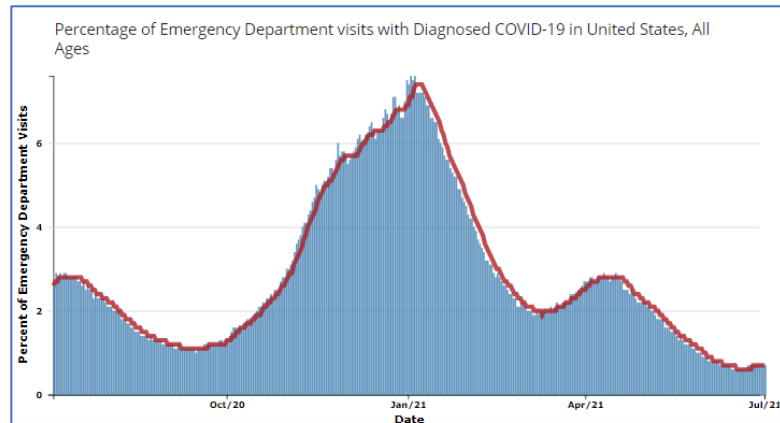
Tick Bites by Region

Emergency Department (ED) Visits for Tick Bites by Region



TICK BITE:

<https://www.cdc.gov/ticks/tickedvisits>



COVID-19:

<https://covid.cdc.gov/covid-data-tracker/#ed-visits>

Slide adapted from Syndromic Surveillance Operations Team, CDC

NSSP Community of Practice

Adverse events from cannabis products lead to CDC Health Advisory

Increases in Availability of Cannabis Products Containing Delta-8 THC and Reported Cases of Adverse Events



Distributed via the CDC Health Alert Network

September 14, 2021, 10:00 AM ET

CDCHAN-00451

<https://emergency.cdc.gov/han/2021/han00451.asp>





Which programs in your health departments do or could benefit from syndromic surveillance?

" Air quality and respiratory-related ED visits "

" Infectious de, environmental Health --several, Injury, overdose, "

" EID - monkeypox, HPAI "

" Substance use program "

" We use our EMS data for opioid overdose surveillance. "

" injuries "

" Communicable Disease, Opioid overdose "

" Chronic disease epi program "

" wild fire surveillance "

" acute communicable diseases "

" Infant formular crisis "

" Behavioral health "

" Opioids "

" emergency preparedness and response "

" Opioid use "

" Acute and communicable disease, environmental public health "

" Environmental health "

Total Results: 17

What's in a query?



What's in a query?

Syndrome definition

Discharge diagnosis codes

Keywords

Negations



What's in a query?

Syndrome definition

Discharge diagnosis codes

Keywords

Negations

Geographic region(s)



What's in a query?

Syndrome definition

Discharge diagnosis codes

Keywords

Negations



Geographic region(s)



Timeframe

Performing syndromic surveillance is like following (or developing!) a recipe



Performing syndromic surveillance is like following (or developing!) a recipe

	Recipe	Syndromic Surveillance
Input	Ingredients	Syndrome definition
Output	Delicious treat	Records of interest

Performing syndromic surveillance is like following (or developing!) a recipe

	Recipe	Syndromic Surveillance
Input	Ingredients	Syndrome definition
Output	Delicious treat	Records of interest



Changing one or more ingredients (type, quantity, consistency, etc.) will result in a different outcome



Refining the syndrome

Get to know your data!

Expect the unexpected

Learn the query language

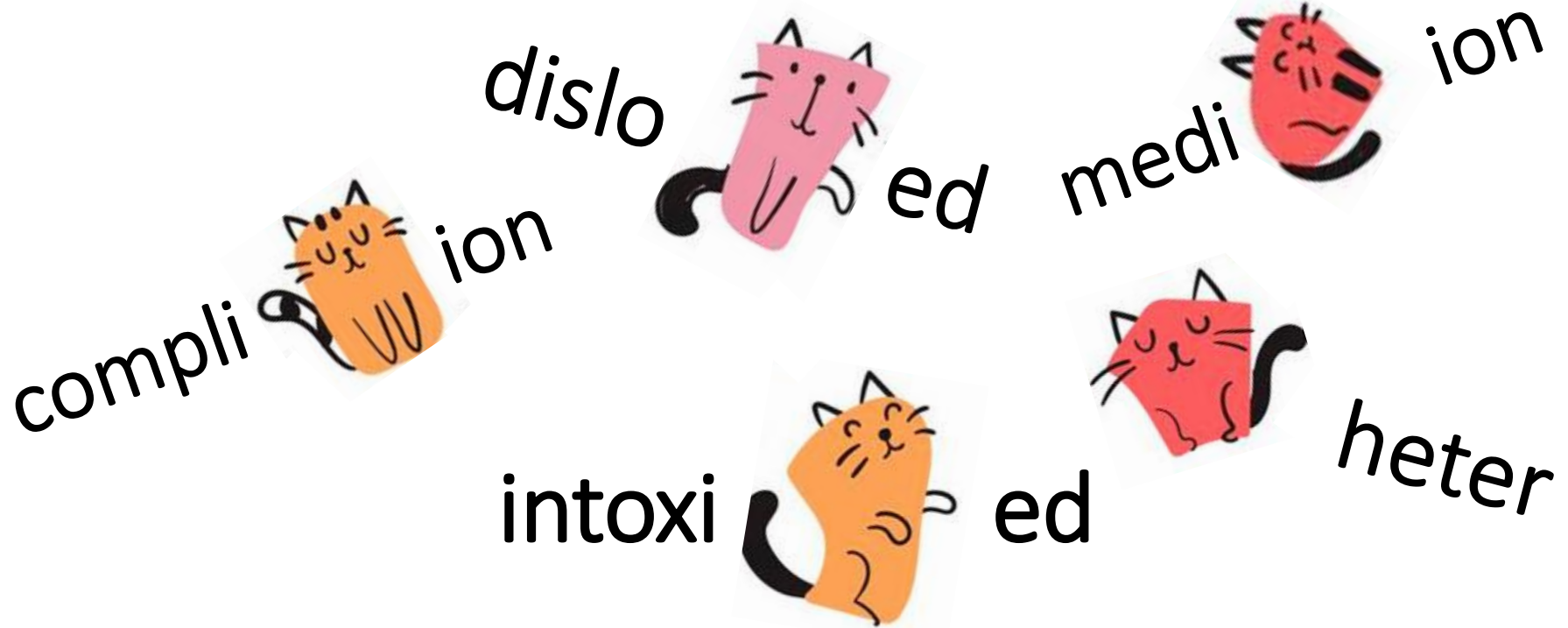


Query Examples

Follow along in your syndromic surveillance platform and share your thoughts in the chat

Exercise

compli ion
dislo ed medi ion
intoxi ed heter



Examples

Short Segments: ^cat^

Extra spaces and punctuation: ^ cat^ vs. ^cat ^

Codes in multiple forms: ^A06.0^ vs. ^A060^

What forms can a field take: ^ vs. ISBLANK vs. ISNULL

Improper Parentheses and commas:

^Fever^,AND,^Cough^,or,^Sore Throat^ vs.

^Fever^,AND,(,^Cough^,or,^Sore Throat^,)

Resources

-NSSP CoP [Knowledge Repository](#)

-NSSP CoP [Slack channel](#)

-Syndromic Surveillance Training Resources
[document](#)

-International Society of Disease Surveillance
Syndrome Definition Committee [guidance document](#)



Resources

-NSSP CoP [Knowledge Repository](#)

-NSSP CoP [Slack channel](#)



-Syndromic Surveillance Training Resources [document](#)

-International Society of Disease Surveillance Syndrome Definition Committee [guidance document](#)

Your SyS peers in jurisdictions across the country!



Thank you!

Questions or comments?

Alexa Meinhardt alexa.meinhardt@delaware.gov

Lowrie Ward laward@anthc.org

Zachary Stein oru8@cdc.gov

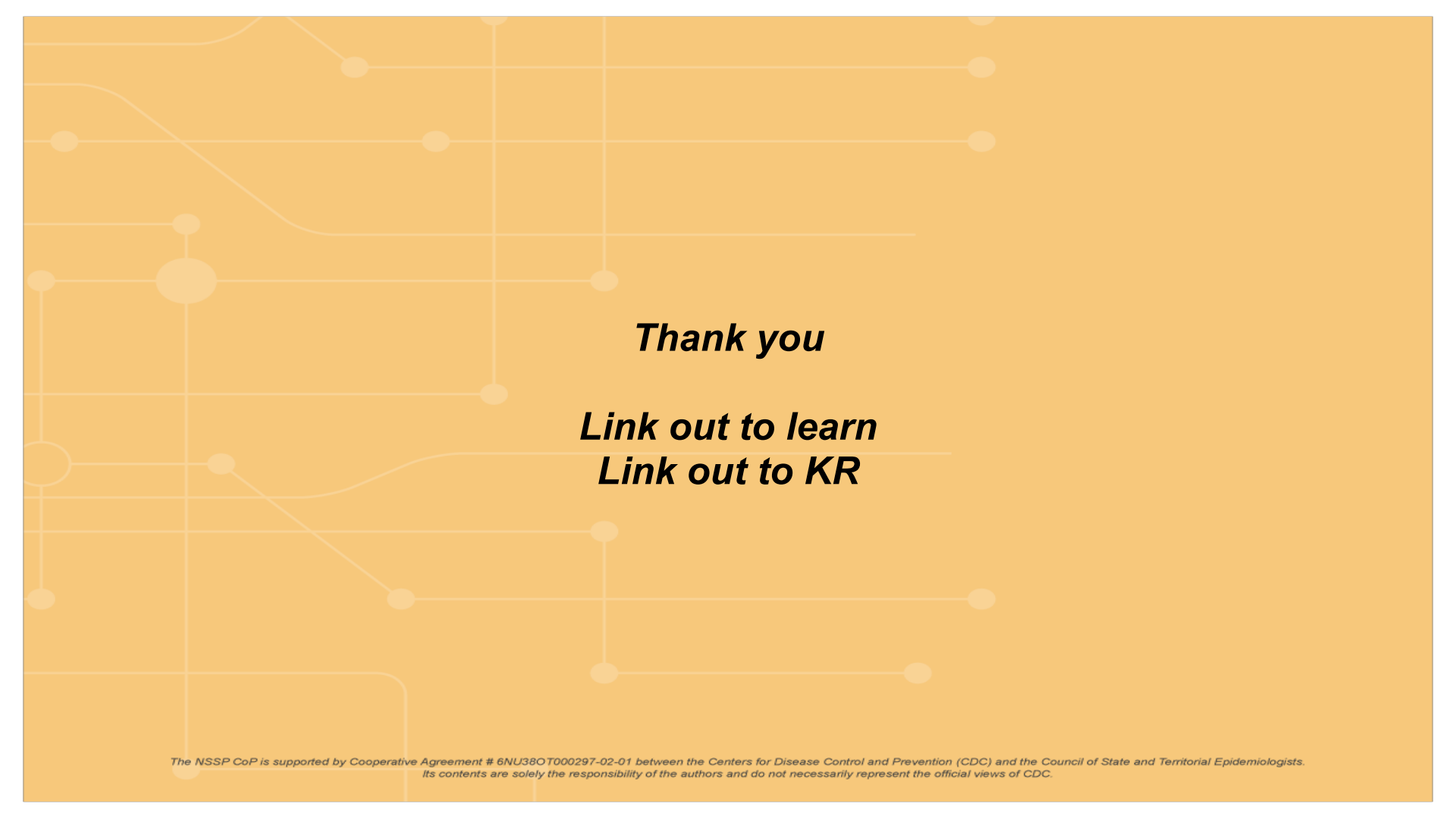


DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

The NSSP CoP is supported by Cooperative Agreement # 6NU38OT000297-02-01 between the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.



NSSP Community of Practice



Thank you

Link out to learn
Link out to KR

National Syndromic Surveillance Program

Community of Practice

Resources that Advance the Science and
Practice of Syndromic Surveillance



2022

Syndromic Surveillance Symposium

December 6–8, 2022



KAHUINA
CONSULTING