

# Nominees for Best Current Health Threat – Using SyS for Monkeypox and Hepatitis Investigations

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

## Facilitators:

- Dylan E Johns, MS – ICF (CDC Contractor)
- Andzelika Rzucidlo, MPH – InductiveHealth Informatics
- Meredith Davis, MPH – Virginia Department of Health
- Jessica Shultz, MPH – Tennessee Department of Health



Council of State and Territorial Epidemiologists



Dylan E Johns, MS – ICF (CDC Contractor)  
Andzelika Rzucidlo, MPH – InductiveHealth Informatics  
Meredith Davis, MPH – Virginia Department of Health  
Jessica Shultz, MPH – Tennessee Department of Health



# USING SYNDROMIC SURVEILLANCE FOR MPOX AND PEDIATRIC HEPATITIS

Andzelika Rzucidlo, Dylan Johns, Meredith Davis,  
Jessica Schultz, Kali Turner, Girum Ejigu, Anna Bratcher

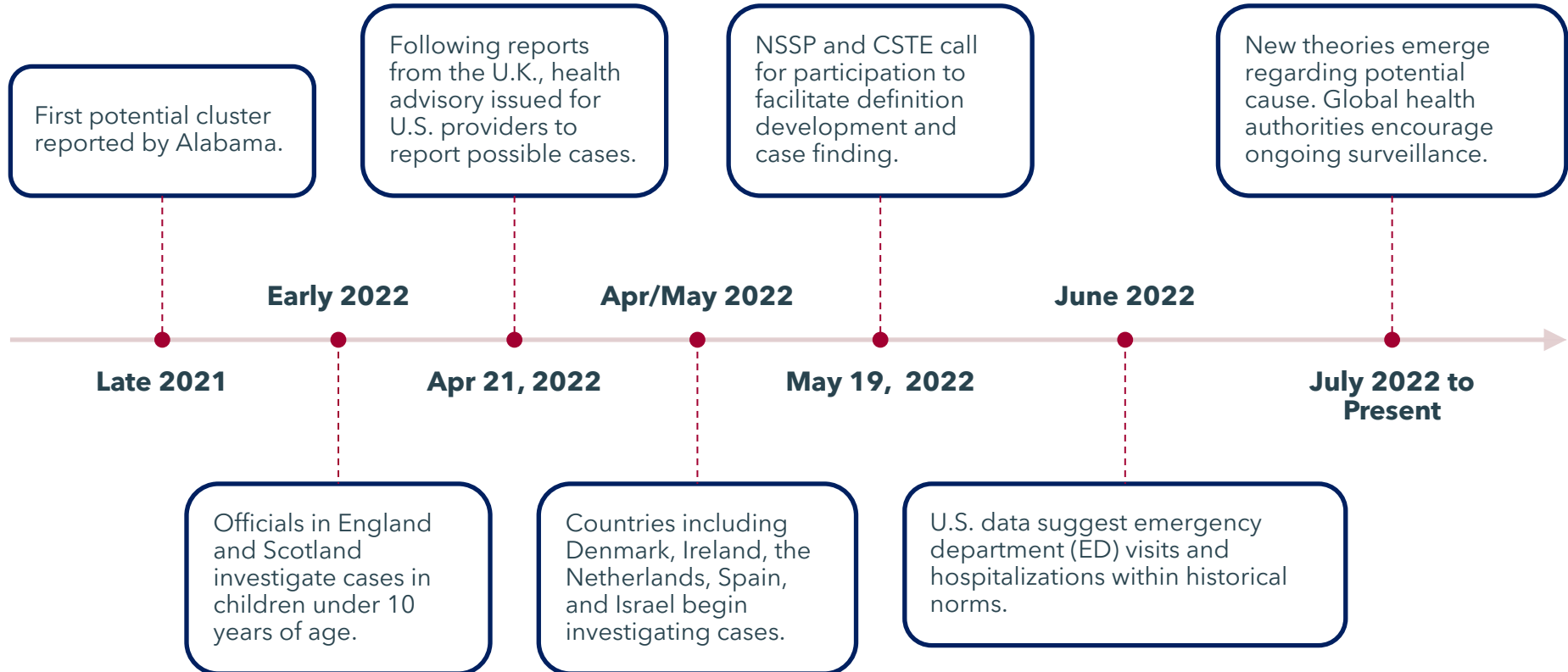
December 6, 2022



# Pediatric Hepatitis

- November 2021 to April 2022, agencies investigate pediatric hepatitis of unknown etiology
- Question: which pediatric age group(s) to focus on
- Usual viral causes (Hepatitis A-E) and non-viral causes (e.g., medications, toxins) ruled out
- Clinical findings question role of Adenovirus 41 (Ad41) and SARS-CoV-2, but no strong evidence

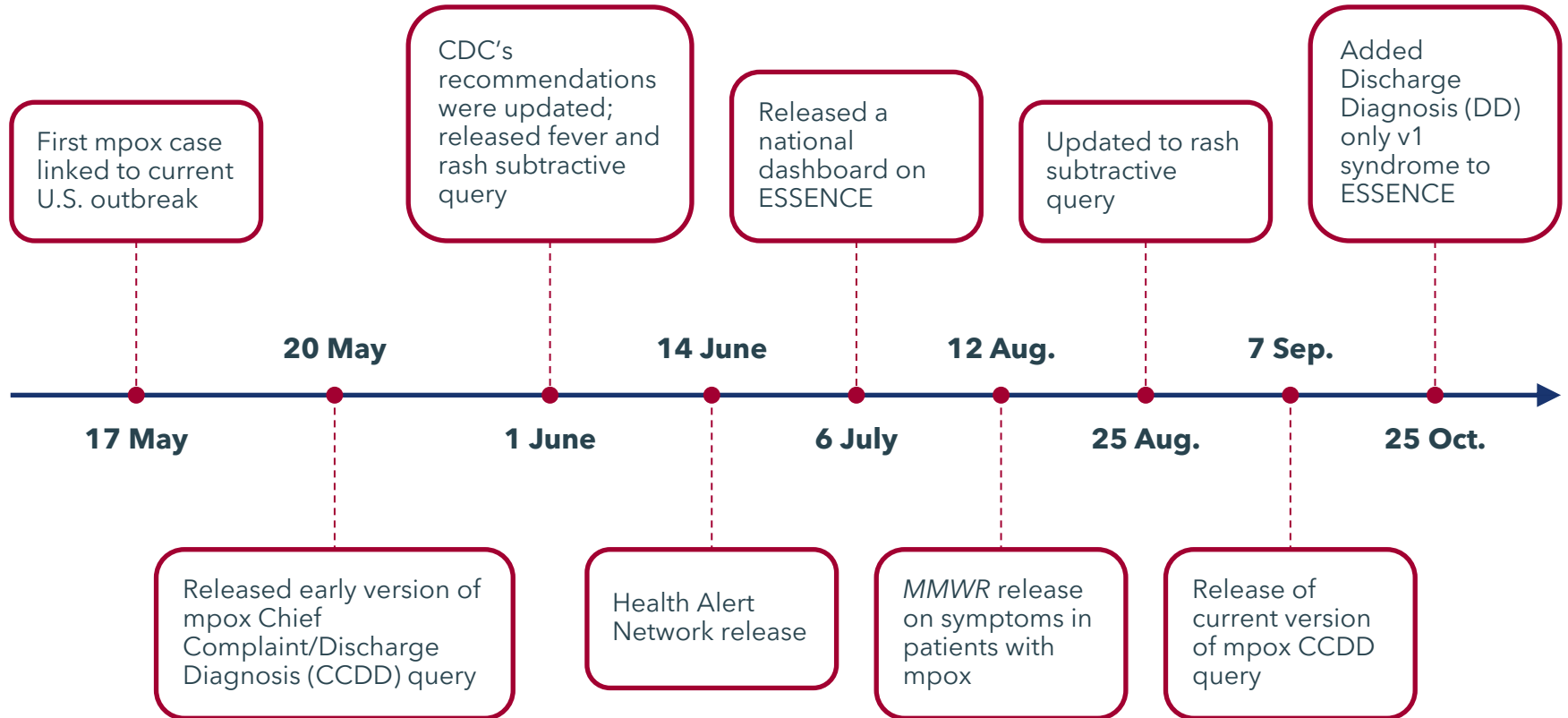
# Timeline – Pediatric Hepatitis



# Mpox

- Caused by infection with an *Orthopoxvirus*
- 28,709 U.S. confirmed cases (May 17–Nov. 7, 2022)
- Patients were reported to have a rash
  - Other commonly reported symptoms include fever, chills, fatigue, respiratory symptoms, and lymphadenopathy
- Presentation varies; Mpox symptoms may mimic other illnesses

# Timeline - Mpox



# Federal Perspective on Query Development

Create queries and syndrome definitions containing keywords and DDs on:

- Mpox or pediatric hepatitis
- Symptoms of mpox or pediatric hepatitis

Queries and syndromes developed:

## Mpox

- Syndromes {
- Mpox DD only v1
  - Mpox CCDD
- Symptom-based Queries {
- Fever and Rash subtractive
  - Rash subtractive
  - Genital lesions

## Pediatric Hepatitis

- Unspecified Hepatitis DD (Adopted from UK)
- Unspecified Hepatitis-Like DD
- Transaminase Abnormalities
- Jaundice and Liver Failure
- Liver Transplant or Necrosis

# Federal Perspective on Query Development

Update queries as new information emerges

Monitor trends of ED visits using:

- Weekly count and percent of total visits
- Stratification by sex, age, or race
- Established baselines using data quality filters
- Baseline of current year and comparing it with previous year(s)

Use trend analyses to create weekly ED data reports, text mining reports, and a standardized national dashboard

# Tennessee's Perspective on Case-Finding

## Pediatric Hepatitis

- Daily review and clinician follow-up where necessary.
- Partners proactive in reporting cases. No cases identified solely via syndromic surveillance (SyS).
- As response progressed, TN used Nssp Community of Practice (CoP) Dashboard.
- Queries allowed TN to understand trends and establish baselines.

## Mpox

- Monitored a general pox and rash query.
- Early cases identified via Local Health Departments (LHDs) based on test availability.
- As commercial testing became available, more patients seen in EDs mentioning mpox.
- Evolved from mentions of mpox exposure to confirmed diagnosis.
- Positive findings shared with LHDs for follow-up.

# Virginia's Perspective on Case-Finding

## Pediatric Hepatitis

- SyS for retrospective data (Oct 2021–April 2022)
- Use of SQL tables to pull visits for children 4–11 months
- Manual review of visits before sending to LHDs
- Few confirmed cases overall

## Mpox

- Daily monitoring
- Manual review of visits before sending to LHDs for possible follow-up
- Matching of ESSENCE visits to reported cases

# Developed Queries

## Tennessee

### Pediatric Hepatitis

- Initial use of NYC CCDD query, limited to ages 1-10 years
- Use of NSSP CoP unspecified hepatitis and jaundice query, limited to ages 1-10 years
- NSSP CoP Dashboard, including unspecified hepatitis and jaundice query

### Mpox

- TN monitored a general pox and rash query that excluded children
- As response progressed, TN created free text query for mpox terms and ICD10 code (B04)
- TN monitored query daily and shared with LHDs

## Virginia

### Pediatric Hepatitis

- Began with existing VA hepatitis query, limited to hospitalized visits
- Modified query following input from field: Expanded age range, added adenoviral enteritis

### Mpox

- Modified version of mpox Direct Mentions query using free-text fields and CCDD

# Learning Objectives

1. Discuss rapid development of new query and syndrome definitions for emerging public health threats
2. Share efforts, successes, and challenges in creating query and syndrome definitions for real-time analysis and retrospective case-finding
3. Describe key considerations in surveillance of emerging public health threats, including how approaches vary across the community, and highlight use cases
4. Distinguish the differences between utilizing syndromic surveillance for case-finding versus trend analysis
5. Gather input on how NSSP community can better foster cross-jurisdictional collaboration for addressing emerging public health threats

# **Roundtable Discussion – Objective 1**

1. Discuss rapid development of new query and syndrome definitions for emerging public health threats.

## **Roundtable Discussion – Objective 2**

2. Share efforts, successes, and challenges in creating query and syndrome definitions for real-time analysis and retrospective case-finding.

# **Roundtable Discussion – Objective 3**

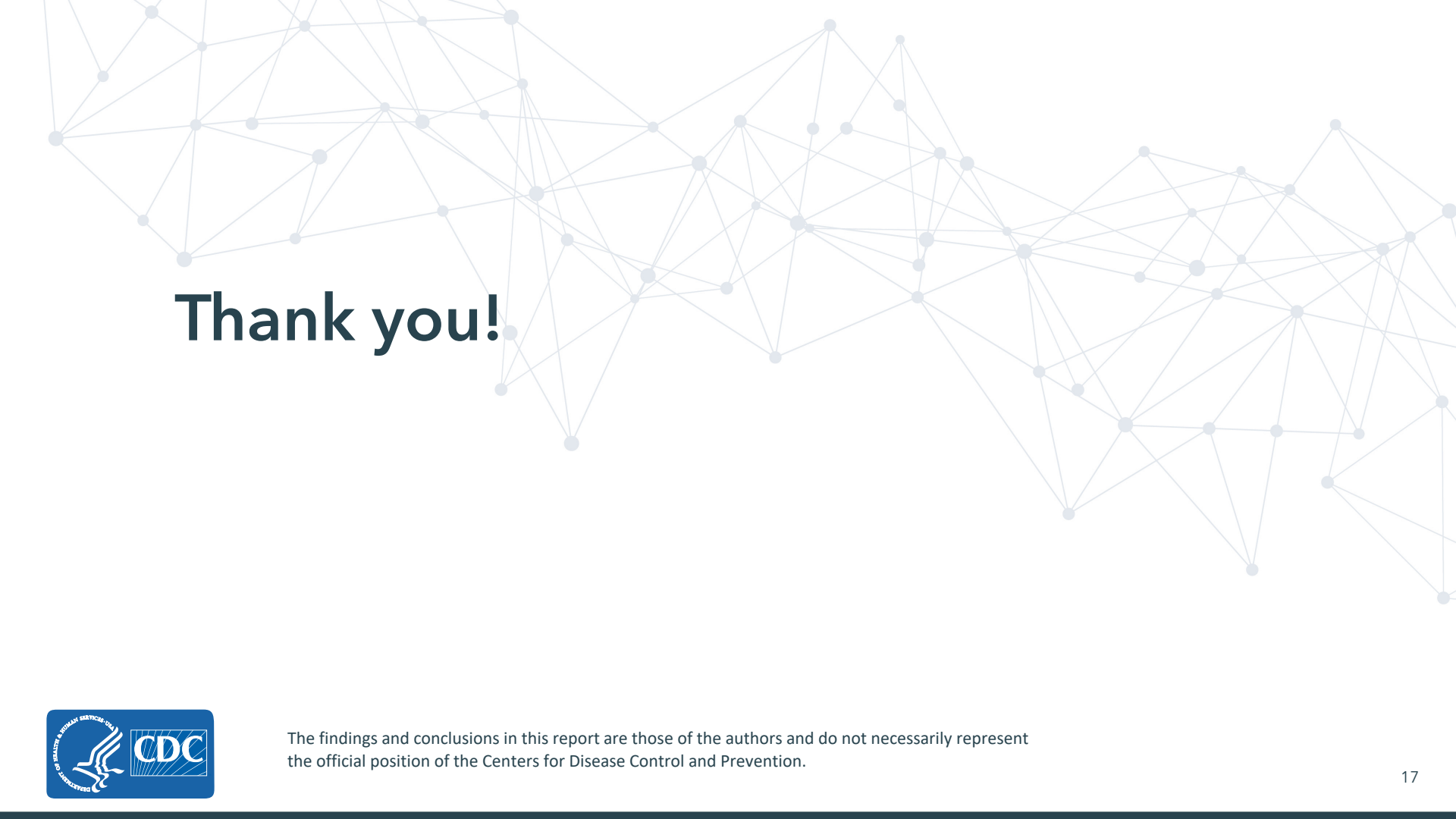
3. Describe key considerations in surveillance of emerging public health threats, including how approaches vary across the community and highlight use cases.

# Roundtable Discussion – Objective 4

4. Distinguish the differences between utilizing syndromic surveillance for case-finding versus trend analysis.

## **Roundtable Discussion – Objective 5**

5. Gather input on how NSSP community can better foster cross-jurisdictional collaboration for addressing emerging public health threats.



# Thank you!



The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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