



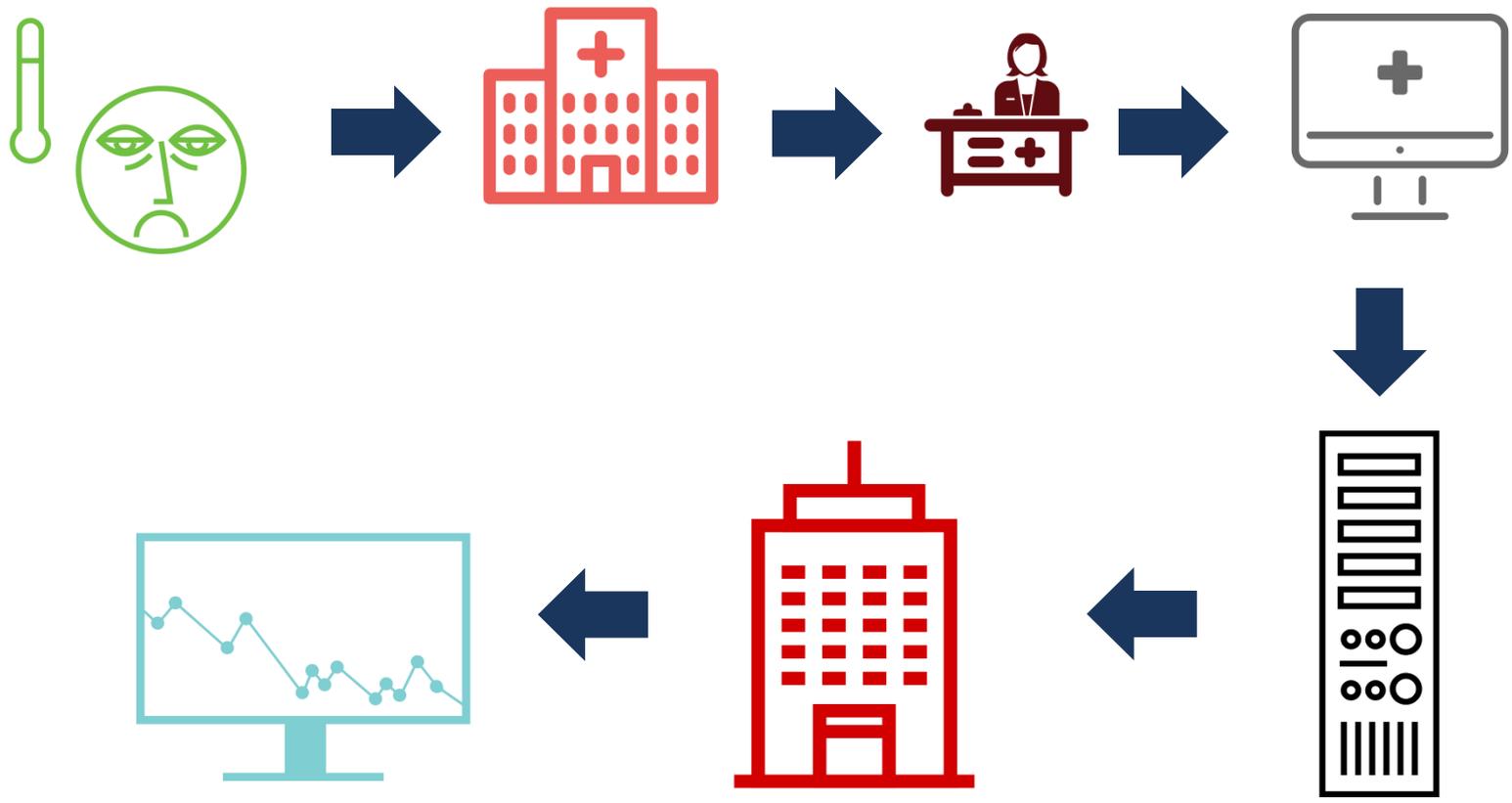
# Using Syndromic Surveillance Data to Aid Public Health Actions in Tennessee

# Syndromic Surveillance

- Monitoring symptom combinations
  - Emergency department (ED) data
  - Data contain basic patient demographics
    - Discharge diagnoses
    - Chief complaint at registration
    - MRNs
    - Patient zip code, county
    - Age, sex, race, ethnicity, etc.
  - More than 80 hospitals in TN participating
  - Fast!

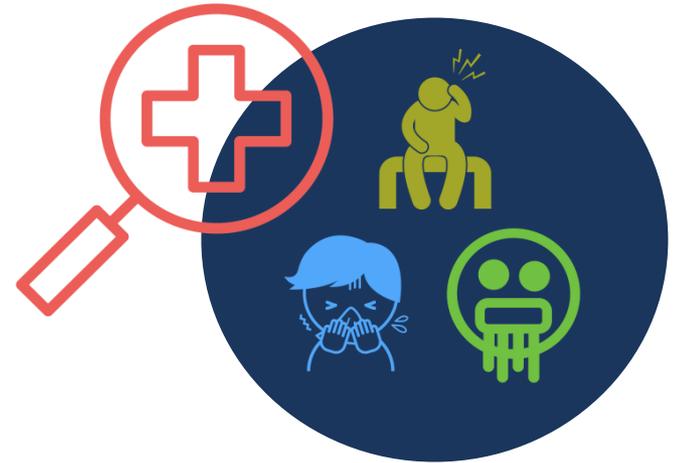


# Syndromic Surveillance



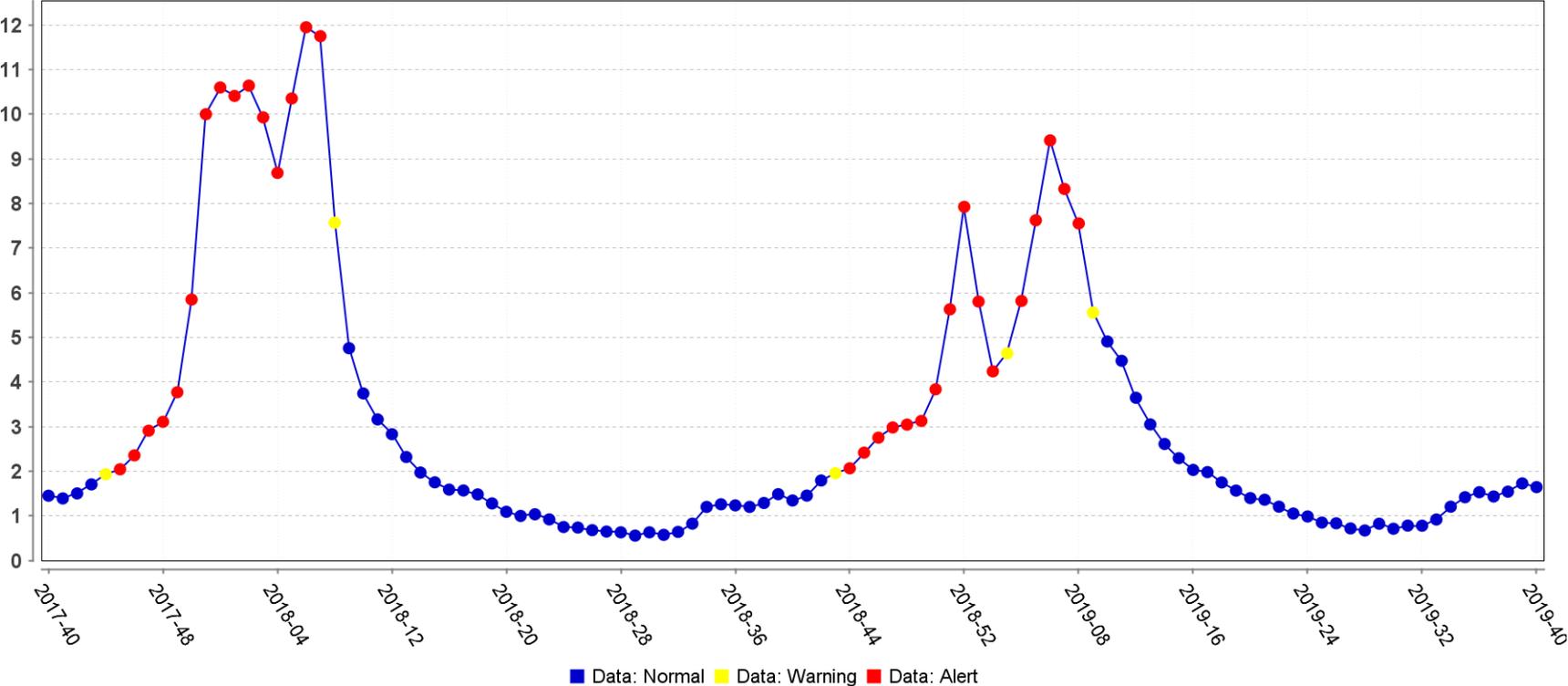
# Syndromic Surveillance

- Syndromic Surveillance is a flexible tool
  - Detects changes in emergency department population patterns
  - Only limited by who shows up in the ED
  - Fast data, not final data
    - Provides estimates and preliminary information
    - Supplements existing surveillance tools

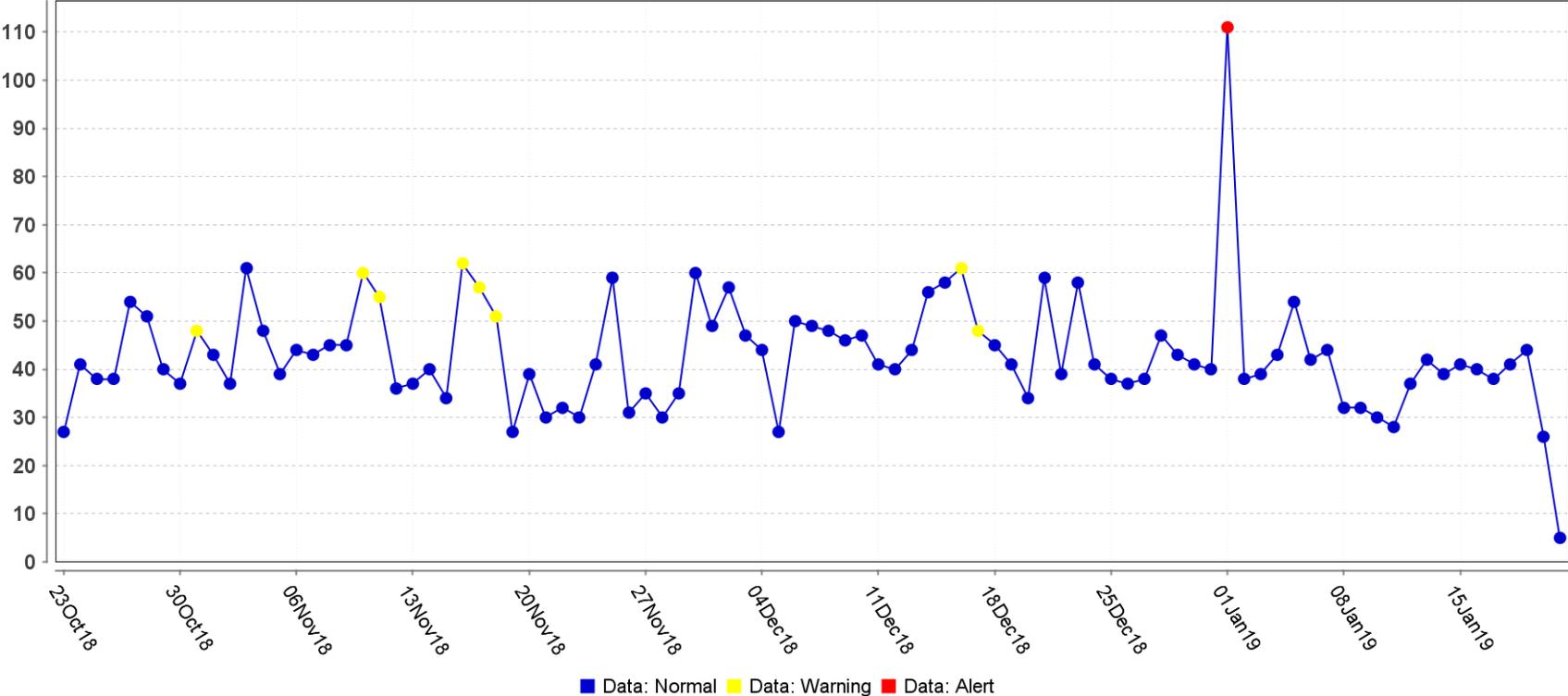


# Syndromic Surveillance Works!

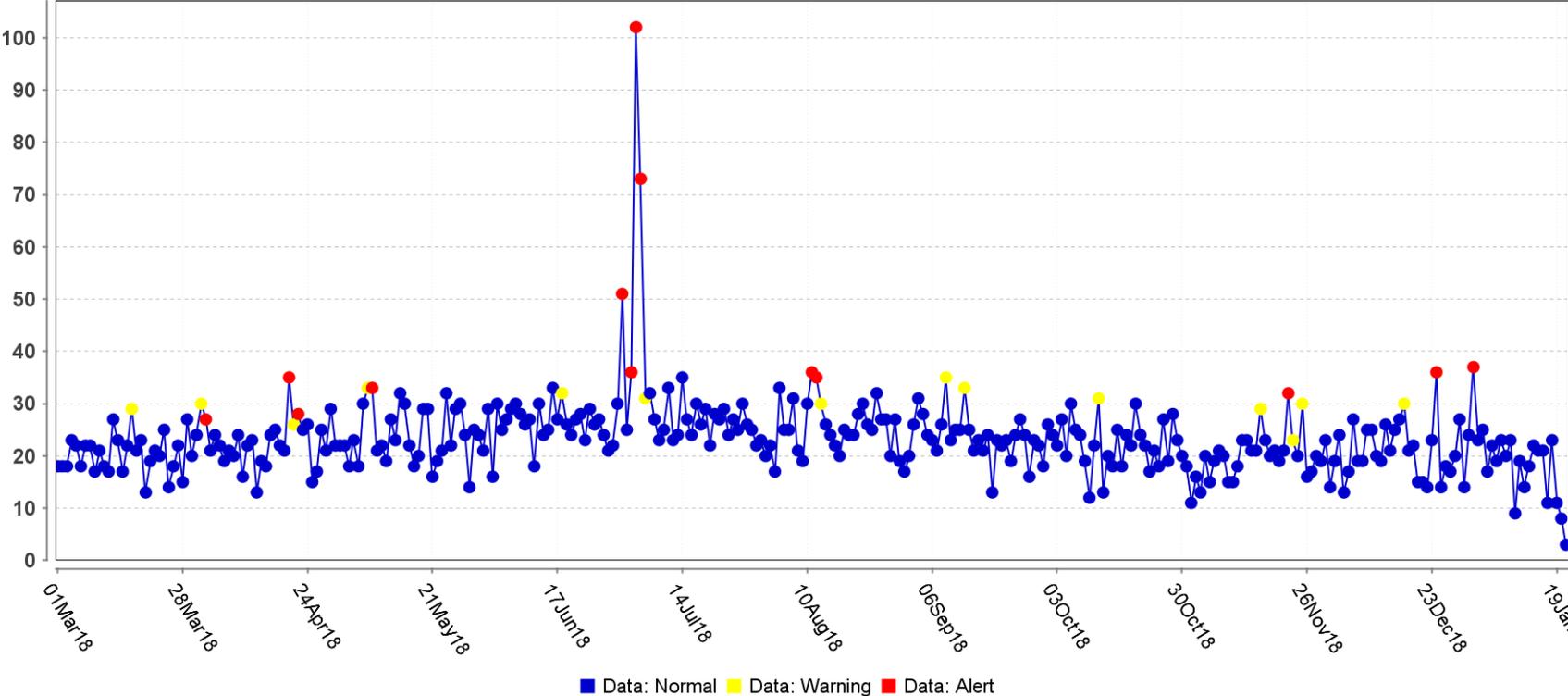
Weekly Percentage



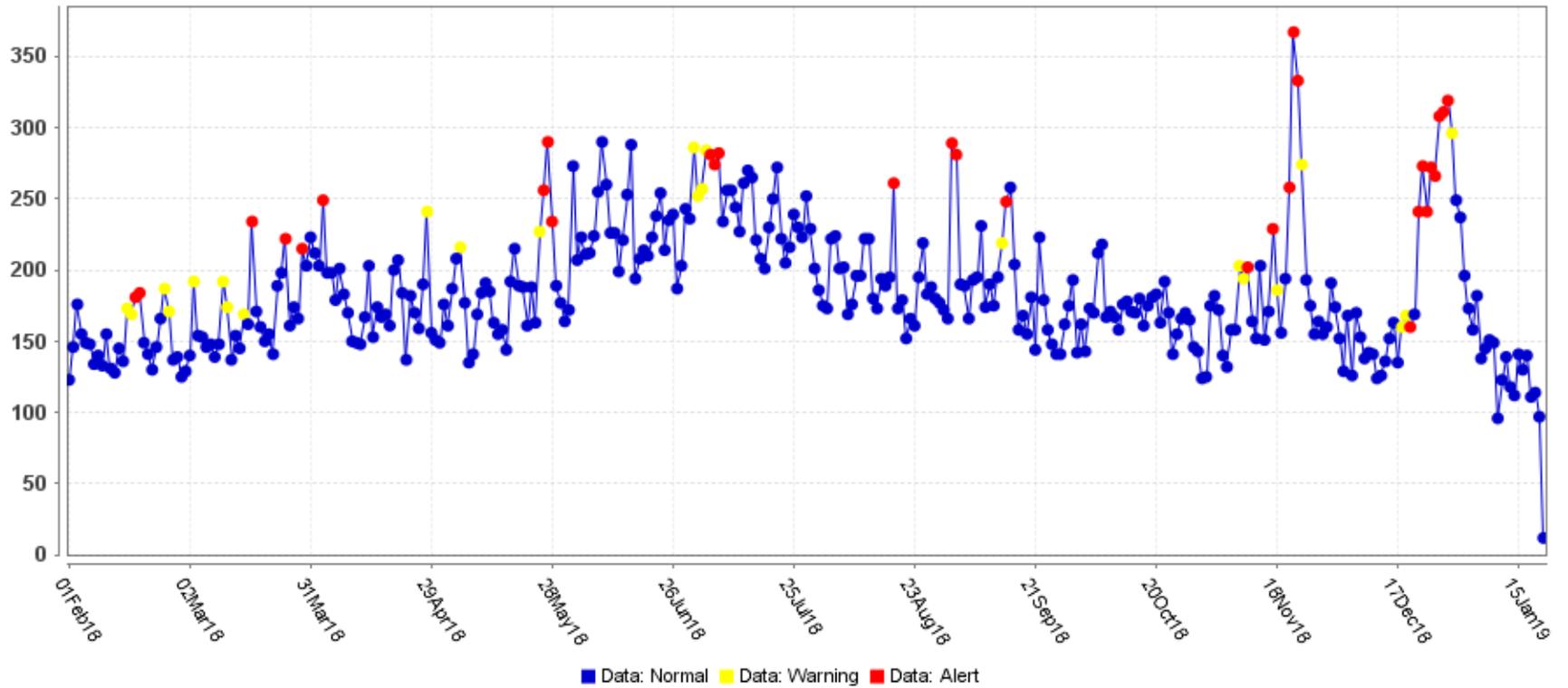
### Daily Data Counts



### Daily Data Counts



Daily Data Counts



# Syndromic Surveillance Activities in TN

- Traditional Syndrome Monitoring 
- Monitoring key ICD10 codes 
- Records of Interest monitoring 
- Specialized queries for outbreaks/ events 

# Scenario 1: Undiagnosed mumps case

- Mumps
  - Viral illness
  - Respiratory spread
  - Vaccine preventable
  - TN requires telephonic notification by the next business day
- Public Health case definition requires laboratory confirmation or epidemiologic linkage
- ED visit picked up during routine monitoring of ICD10 codes (discharged with an ICD10 code of B26.9 – mumps, uncomplicated). Chief complaint of “R TESTICLE SWOLLEN X 2 DAYS WITH R JAW SWELLING X 1 DAY. )”



# Public Health Actions

- Local Epidemiologist notified of visit
- Hospital Infection Preventionist contacted
  - Patient seen in ED and clinically diagnosed with mumps by physician
  - No labs ordered
  - IP not notified
  - Case had parotitis and orchitis, probability of mumps seemed high.
  - Public Health mobilized to contact patient (involved some cross jurisdictional coordination)
  - Patient was still staying in the area near the hospital, Public Health went out to do testing, get history, travel, etc. the same day as notification.

# Public Health Resolution

- Patient had PCR positive for mumps at State Public Health Lab
- Interstate travel was identified (cheerleader involved in a traveling camp)
  - Potentially affected jurisdictions notified
- Close contacts identified and assessed for vaccination status
- No secondary cases identified

## Scenario 2: Not a mumps case (probably)...

- Chief complaint seen during routine local review of syndromic surveillance data
  - “Diagnosed Monday with mumps”
    - Local follow up with IP identified the young pediatric patient was fully vaccinated (2 MMRs)
    - Diagnosed at affiliated clinic (chance for education)
    - No known exposure to mumps
    - No testing done, but symptoms began more than a week prior to detection in syndromic data.
    - Patient seen at ED with concerns from parent that he was misdiagnosed

## Later that day...

- Local public health received a call from the public regarding a sign at a YMCA stating that a mumps exposure had occurred.
  - No known mumps cases in TN at that time
  - Only active investigation at the time was the ED visit that was most likely not mumps
- Rapid follow up with the parent of the patient confirmed that the current investigation and the exposure announcement involved the same patient
- Local public health able to contact YMCA for education and removal of exposure signs.
- Syndromic surveillance data and follow up allowed local public health to rapidly “connect the dots” between the two incidents.

# Conclusions

- Regular review and follow up of syndromic surveillance data is important!
  - Provides opportunities for timely public health intervention that would not otherwise be possible
    - Information gaps filled
    - Conversations with hospitals initiated
    - Provides another timely safety net for unreported illnesses seen at emergency departments
- Conditions with post-exposure prophylactic interventions are good targets for routine, enhanced surveillance using syndromic data
  - Significant public health benefit for increased lead time
  - Review and follow up should be targeted to avoid overwhelming public health resources

# Questions?

Caleb Wiedeman

Epidemiologist

Tennessee Department of Health  
Emergency Preparedness Program

[Caleb.Wiedeman@TN.gov](mailto:Caleb.Wiedeman@TN.gov)