Using Syndromic Surveillance Data to Aid Public Health Actions in Tennessee

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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!
Daily Data Counts

Data: Normal  Data: Warning  Data: Alert
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.
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?

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