Emergency Department Surveillance for Opioid Overdoses in Pennsylvania

Carrie Thomas Goetz, PhD
Pennsylvania Department of Health
• Centers for Disease Control and Prevention – Enhanced State Opioid Overdose Surveillance Grant

• Syndromic Surveillance
  - Pennsylvania Opioid-Related Overdose Classifiers
  - Enhanced Data Project

• How Pennsylvania Uses Syndromic Surveillance Data
  - Public Reporting
  - Alerts
Enhanced State Opioid Overdose Surveillance

Fatal Overdose Surveillance
- Death Certificate Data
- Coroner/Medical Examiner Data

Non-fatal Overdose Surveillance
- Emergency Medical Service (EMS) Data
- Emergency Department (ED) Data
Syndromic Surveillance

- Investigational approach for monitoring disease indicators in real-time or near real-time to detect outbreaks of disease earlier than would otherwise be possible with traditional public health methods\(^1\)

- Originally started as mechanism for threat preparedness; early detection of a large-scale release of a biologic agent\(^2\)

- Expanded to include
  - Disease outbreak detection
  - Monitoring of illness/injury trends, including during mass gatherings
  - Identification of sentinel cases

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\(^1\) CDC. Framework for evaluating public health surveillance systems for early detection of outbreaks: recommendations from the CDC working group. MMWR 2004;53(No.RR-5).

\(^2\) Henning, KJ. Overview of Syndromic Surveillance What is syndromic surveillance? MMWR 2004;53(Suppl);5-11.
In Pennsylvania, syndromic surveillance via vendor-hosted EpiCenter

- Direct connections to 167/170 (98%) emergency departments in the state

Data points collected include, but are not limited to

- Facility Identification and Location
- Date and Time of the Visit
- Patient Age, Gender, ZIP Code of Residence
- Chief Complaint
- Admit/Encounter Reason
- Diagnosis Codes, including Discharge Diagnosis Codes
- Medical Notes
Pennsylvania’s Opioid-Related Overdose Classifiers

- Any Drug Overdose
  - Overdose of any drug, including over-the-counter, prescription and illicit drugs, and may include alcohol

- Any Opioid Overdose
  - Overdose of any illicit or prescription opioid medication

- Heroin Overdose

- Inclusion/exclusion based on keywords and ICD-9/ICD-10 codes
Pennsylvania’s Opioid-Related Overdose Classifiers

• Deficiencies included:

  ▫ Non-specific Chief Complaints (e.g. state “overdose” with no indication of the substances involved)
    ▫ Sensitivity Analysis of Chief Complaint text to identify
      ▪ Any Drug Overdose – 0.69
      ▪ Any Opioid Overdose – 0.31
      ▪ Heroin Overdose – 0.37

  ▫ Lack of diagnosis codes/discharge diagnosis data from some facilities
Enhanced Data Collection Project

- Initial outreach by Department of Health
- Handoff to vendor to work with facility staff to improve data submission
  - Diagnosis codes
  - Medical Notes
- Facilities submitting Discharge Diagnosis Codes for more than 90% of visits
  - 2017 – 36%
  - 2019 – 51%
- Facilities submitting Medical Notes
  - 2017 – 16%
  - 2019 – 34%
- Facilities submitting no enhanced data
  - 2017 – 30%
  - 2019 – 14%
Pennsylvania Prescription Drug Monitoring Program (PDMP)

Interactive Data Report

https://www.health.pa.gov/topics/programs/PDMP/Pages/Data.aspx
Weekly Reporting to Incident Command

- Commonwealth year-to-date totals by Facility Location
- County-level weekly totals by Patient Residence Location
  - Highlight any significant increase over the previous week or changes in trends
- Graphs of weekly totals by Health District
Weekly Reporting to Incident Command

Overdose ED Visits

Sums of all suspected drug (Any drug, Any opioid and/or cocaine) overdose ED visits by Pennsylvania Community Health Districts, through time periods 1-45.

Time Periods are defined as:
EpiCenter Alerts

- Began sending in August 2018
  - As of June 2019
    - 31 alerts have been sent out

- Began asking those receiving alerts for feedback in December 2018
  - As of May 2019
    - 36 responses have been received
Generating EpiCenter Alerts

- Used to use an older DRUGS classifier for alert notification
  - Variety of methods used to look at moving averages and thresholds for rolling 24 hour period
  - Deficiencies included
    - Captures visits for detox/withdrawal
    - Captures unrelated visits (e.g. mention of drugs taken correctly)
- Moved to static thresholds for new classifiers in May 2019
  - Analyzed data from 1/1/2017 – 12/31/2018
- EpiCenter monitors at the following levels
  - Facility County
  - Patient Residence County

# EpiCenter Alert Notification Details

<table>
<thead>
<tr>
<th>State-level Stakeholder</th>
<th>Local-level Stakeholder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Health (DOH) Leadership / Incident Command</td>
<td></td>
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<tr>
<td>Department of Drug and Alcohol Programs</td>
<td>Single County Authority</td>
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<tr>
<td>Department of Human Services</td>
<td>Centers of Excellence</td>
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<tr>
<td>DOH – Bureau of Emergency Medical Services</td>
<td>Regional Council</td>
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<tr>
<td>DOH – Bureau of Public Health Preparedness</td>
<td>Hospital Association → local hospitals</td>
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<tr>
<td>Pennsylvania Emergency Management Agency Watch Desk</td>
<td>County 911 Centers → local police, fire, EMS, and local Overdose Taskforce (if applicable)</td>
</tr>
<tr>
<td>Pennsylvania State Police</td>
<td>Troops and local law enforcement</td>
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</tbody>
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Actions taken include forwarding to local partners, including drug court teams, coroners, overdose task forces, medical directors and ER physicians, 911 county supervisors and all key players in the warm handoff process.
How could alerts be more useful? Responses included suggestions for notification for additional stakeholders and requests for more information.
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Questions?

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