Spike, Alert, GO!

2:15PM EST | November 17th, 2020 | 2020 SyS Symposium

Moderated by Anna Frick, MPH – Alaska Department of Health and Human Services

Speakers:
Tim Collins, MPH, MS, MA – Alaska Native Tribal Health Consortium (ANTHC)
Kara Manchester, MS – Ohio Department of Health
Sindu Shamasunder, MPH + Hailey Hartman, MPH – North Carolina Department of Health and Human Services
Howard Burkom, PhD – Johns Hopkins University Applied Physics Laboratory

National Syndromic Surveillance Program
Community of Practice
Advancing the Science and Practice of Syndromic Surveillance

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Council of State and Territorial Epidemiologists

Tim Collins, MPH, MS, MA

Alaska Native Tribal Health Consortium

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Kara Manchester, MS

Ohio Department of Health

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“Spike, Alert, GO!”

Syndromic Surveillance and Community Response For Suspected Drug Overdose

Ohio | Department of Health

Kara Manchester
Violence and Injury Prevention Section
Ohio Department of Health

Ohio Syndromic Surveillance

- Voluntary participation
- Estimated 95% coverage rate of all emergency departments in Ohio
- Data transmission in near real-time or batched

Suspected Drug Overdose Case Definition

Identifies visits related to acute unintentional drug overdose using information from:

- **Chief Complaint**
  - Overdose Poisoning – Poisoning noted in chief complaint
  - Overdose Stated – Overdose noted in chief complaint
  - Overdose Treatment – Naloxone noted in chief complaint
- **Diagnosis**
  - ICD-9-CM and ICD-10-CM initial encounter unintentional drug related overdose codes
- **Medical Note**
  - Heroin Overdose
  - Opioid Overdose

Syndromic Surveillance for Suspected Drug Overdose

1. Anomaly detection
2. Monitor and identify trends

Anomaly Detection

Ohio Drug Anomaly Detection Methods

- Group 1: Constant Threshold of 5. If 5 or more suspected drug overdose encounters are detected in a 24-hour period, an anomaly will be triggered.
- Group 2: Constant Threshold of 8. If 8 or more suspected drug overdose encounters are detected in a 24-hour period, an anomaly will be triggered.
- Group 3: Analysis Methods – Exponential Moving Average (EMA), CuSum EMA, Recursive Least Squares (RLS), Moving Average (MA), Poisson; and must have a minimum of 8 encounters.

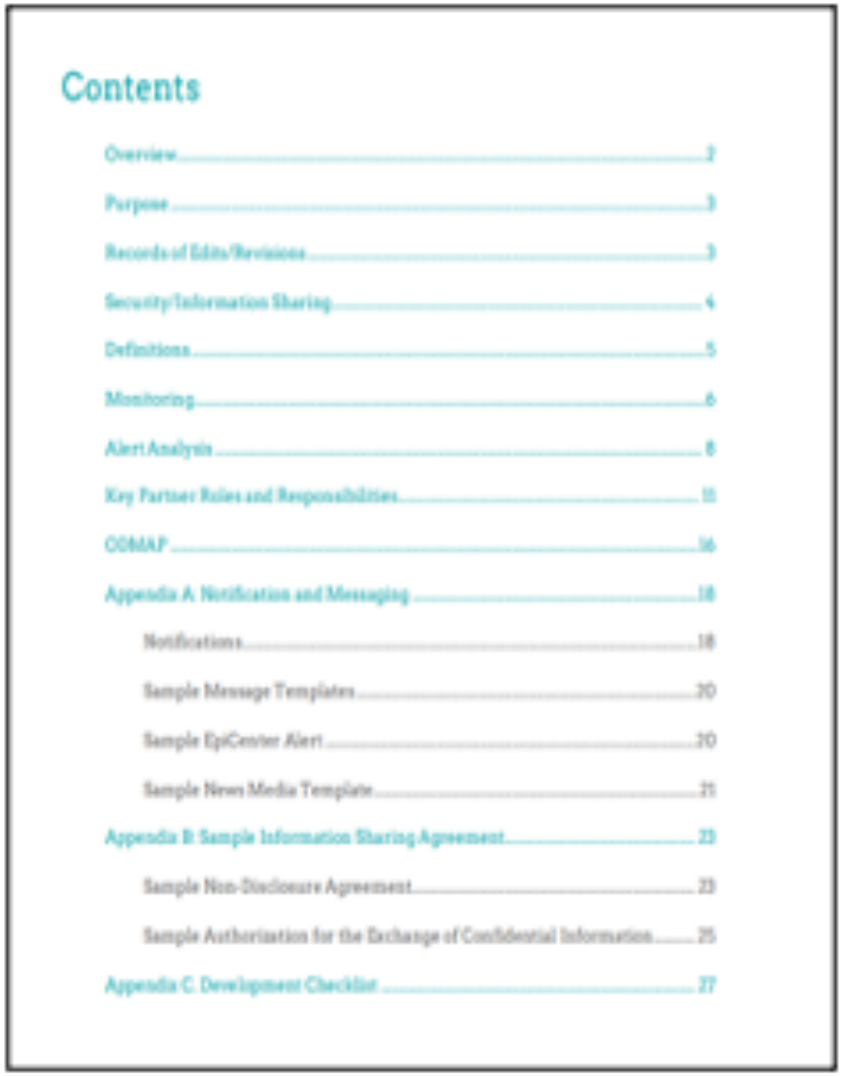
Group	Counties	Threshold
Group 1	Adams, Ashland, Athens, Auglaize, Belmont, Brown, Carroll, Champaign, Clinton, Coshocton, Crawford, Darke, Defiance, Delaware, Fayette, Fulton, Gallia, Geauga, Guernsey, Hancock, Hardin, Harrison, Henry, Highland, Hocking, Holmes, Jackson, Jefferson, Knox, Lawrence, Logan, Madison, Meigs, Mercer, Monroe, Morgan, Morrow, Noble, Ottawa, Paulding, Perry, Pickaway, Pike, Preble, Putnam, Sandusky, Seneca, Shelby, Tuscarawas, Union, Van Wert, Vinton, Washington, Williams, Wood, Wyandot	5
Group 2	Allen, Ashtabula, Clermont, Columbiana, Erie, Fairfield, Greene, Huron, Licking, Marion, Medina, Miami, Muskingum, Portage, Ross, Scioto, Warren, Wayne	8
Group 3	Clark, Lake, Lorain, Lucas, Mahoning, Richland, Stark, Trumbull, Butler, Franklin, Summit, Cuyahoga, Hamilton, Montgomery	Analysis Methods with a minimum of 8 encounters CuSum, EMA, RLS, MA, Poisson

Anomaly Detection for Suspected Drug Overdose

When an anomaly is detected:

- Email notification is automatically sent to local and state public health syndromic surveillance users
- Local Health Department (LHD)
  - investigates and verifies the alert
  - initiates a response, if appropriate
- Ohio Department of Health
  - sends a survey to the impacted LHD to capture the local verification and response to the alert
  - sends an email to state partners notifying them of the alert and summarizes the response conducted by the LHD and their partners (e.g. coroners, EMS, law enforcement)

Community Response Plan Template for Rapid Increase in Drug Overdoses



Contents

https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/violence-injury-prevention-program/media/communityresponseplantemplate

Community Response Plan Template for Rapid Increase in Drug Overdoses

Alert Analysis

Guidance:

This section outlines the process for investigating and verifying an increase in suspected drug overdose activity. Communities developing a response plan should meet with the key partners listed in the previous section to define thresholds for each of the data sources that could indicate an increase in overdose activity. Outline the process to verify the validity of a surge for each of the data sources including the timeliness of the investigation process. Examples are included below. This template covers EpiCenter and ODMAP as the primary data sources. Many jurisdictions use additional data, including 911 call data, coroner data, or large narcotics seizures, to monitor for increases in suspected overdose. Some jurisdictions also take proactive approaches to patterns. One example is a local jurisdiction that provides additional naloxone education and distribution near the first of the month, when spikes tend to happen.

- When an initiating agency recognizes a potential or actual increase in surge activity or activity that would indicate a public health emergency related to opiate overdoses, the responsible agency will make an initial assessment of the situation to verify the alert based on the data it monitors and collects. Each agency is responsible for the monitoring and verification of its data.
    - Each county and agency would insert a trigger level here that would result in "unusual circumstances" that would identify a surge.

https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/violence-injury-prevention-program/media/communityresponseplantemplate

Community Response Plan Template for Rapid Increase in Drug Overdoses

Key Partner Roles and Responsibilities

Guidance:

Partner agencies and organizations are an essential component of a strong Community Response Plan. The below section outlines the recommended roles that partners would play in the event of a spike in overdoses in a county. Please note the list is not exhaustive, rather it outlines recommended partners and actions they would take. The partners and actions should be modified to best fit your county. Recruit key stakeholders from your coalition and your Overdose Fatality Review as well as from the wider community. We recommend that you plan a meeting with key stakeholders identified to play a role in the response efforts; discuss roles and responsibilities they feel need to be addressed during an alert or are within their scope of practice. Once everyone has decided which roles/responsibilities they are comfortable with, get formal or informal commitments from agencies to fulfill those roles during an alert. Partner buy-in is a key component to ensuring that the plan can be effectively enacted in the event of a spike.

- Local health department
- Mental Health and Recovery Board
- Local government leadership
- Local law enforcement
- Emergency medical services (EMS)
- Project DAWN (if applicable)
- Hospital EDs
- Hospital infection control professionals (ICPs)
- Coroner's office
- Local media
- Dispatch centers
- Emergency management agencies (EMAs)
- Certified peer recovery supporters
- Federally Qualified Health Centers (FQHC)
- Medical society alliance
- Blood-borne infectious disease prevention programs
  Contact ODH for additional naloxone kits
- Poison control

https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/violence-injury-prevention-program/media/communityresponseplantemplate

Suspected Drug Overdose Anomaly Alert Survey

- Local verification of anomaly
- Communication with other local agencies and community partners
- Novel or emerging concerns related to anomaly
- Need for naloxone and other state assistance
- Community response activation

Example Table Sent to State Partners following Anomalies

Anomalies for Suspected Drug Overdose ED Visits from 10/17/2020 - 10/23/2020

Status	Date of Anomaly	County	# of ED Visits	Predicted # of Visits[1]	Alert Threshold[2]	Community Response[3]
New						
Updated						
Previously Reported						

1. N/A: Predicted number of visits is not calculated when the alert detection method is a constant threshold.
2. CT = Constant Threshold. For most counties, a detection method with a constant threshold of 5 or 8 is used. When the number of suspected drug overdose encoun or above the threshold in a 24-hour period, an anomaly is triggered.
3. Local Health Departments will submit their community responses to individual anomalies via a survey. This table will be updated as response

Monitor and Identify Trends

Ohio Suspected Drug Overdose Weekly Summary Report


Ohio Emergency Department Suspected Drug Overdose Summary

Reporting Period Ending: September 7, 2019

Created Date: September 9, 2019

- An automated report is generated every Monday capturing ED visits for suspected drug overdoses that occurred through the previous Saturday
- The report contains trends, geographic and demographic information and summary statistics
- The weekly report is sent to state partners and they can share it with their partners

Interactive Dashboard

- Publicly Available
  - Statewide and county of residence data for ED visits for suspected drug overdose

https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/violence-injury-prevention-program/suspected-od-dashboard2

Ohio | Department of Health

Contact Information

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Syndromic Surveillance Overdose Data to Action in North Carolina

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Overdose Surveillance Coordinator
Sindhu Shamasunder, MPH
Substance Use Epidemiologist

2020 Syndromic Surveillance Symposium

November 17, 2020

Opioid Overdose (OOD) Deaths Have Nearly Tripled from 648 in 2010 to 1,808 in 2019.

- All counties do not have equal resources to monitor and respond to changes in overdose trend in their county.

- Syndromic surveillance allows the state to share overdose data in a timely manner with all 100 counties.

Syndromic Surveillance Tool: NC DETECT

- North Carolina Disease Event Tracking Epidemiologic Collection Tool

- Maintained by University of North Carolina in partnership with the Division of Public Health

Data and Case Definitions

- **Emergency Department Visits**
  - *Overdose: Unintentional/Undetermined Medication or Drug Overdose (>14/<66) (ICD-10-CM or Keyword)*
    - Keyword search of overdose-related terms (overdose, od, etc.)
    - OR ICD-10-CM Codes T36-T50 unintentional or undetermined poisoning codes
    - AND age 15-65
- **Emergency Medical Services Encounters**
  - *Opioid Overdose*
    - Age 11+
    - AND opioid-related primary/secondary impression AND documented EMS administration of naloxone OR naloxone/unresponsive key terms in narrative
    - OR improved status after EMS-administered naloxone
    - OR null response after EMS-administered naloxone and mention of naloxone/unresponsive key terms in narrative

Signal Review Process

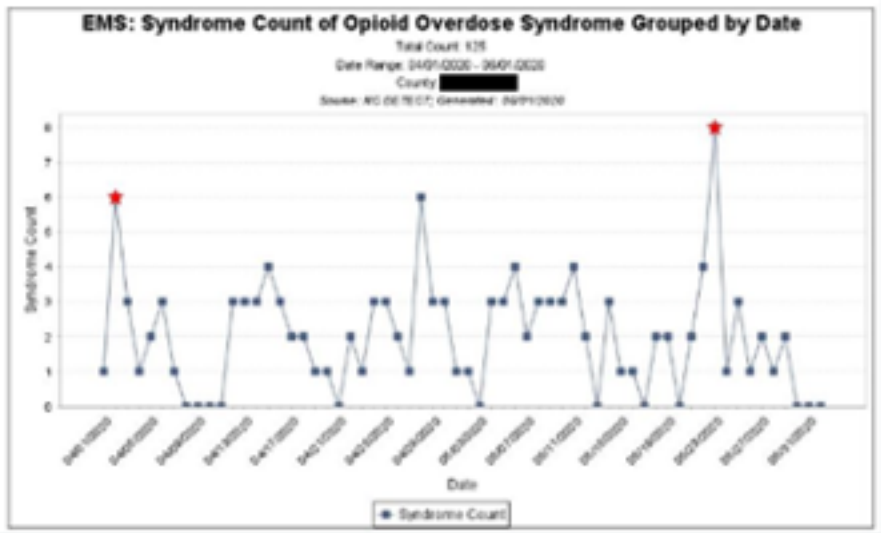
Programmatic Response

- Determine which suggestions for response and which harm reduction resources are included on the alert template
- Obtain permission from local health departments to share general details of the alert with county (or nearby) partners
  - Syringe Service Programs, Harm Reduction Coalition, etc.
- Facilitate partnership between county health department and local partners in response to alert

Alerts: Data

On **Saturday, May 23rd** there were **8 overdoses that EMS responded to:**

- Substances: Unknown
- All responded to naloxone
- All from [redacted]
- Both male and females, predominately White, between 21-50 years of age
- [redacted] were treated and released per protocol
- [redacted] were transported to [redacted] Medical Center, [redacted] to [redacted] Hospital



Notes: As you know, syndromic surveillance is not very specific, and these numbers are subject to change as more data are received. NC DETECT uses CUSUM-based algorithms from the CDC's Early Aberration Reporting System, and the Time of Arrival algorithm, developed by the John Hopkins University Applied Physics Laboratory. Using a 30-day baseline to account for possible fluctuations in the expected case counts in that 30-day period. EMS: Syndrome Count of Opioid Overdose.

To learn more about these cases, we recommend:

- Reaching out to your local hospital to ask if they feel that they are seeing increases, and obtain more information about circumstances around these visits.
- Reviewing county specific trends of overdose ED visits over the past 12 months:
  - [redacted] Opioid Overdose ED Visits April Update
  - [redacted] Med/Drug ED Visits April Update

Alerts: Resources and Recommended Action

To respond to this increase in overdoses, we recommend:

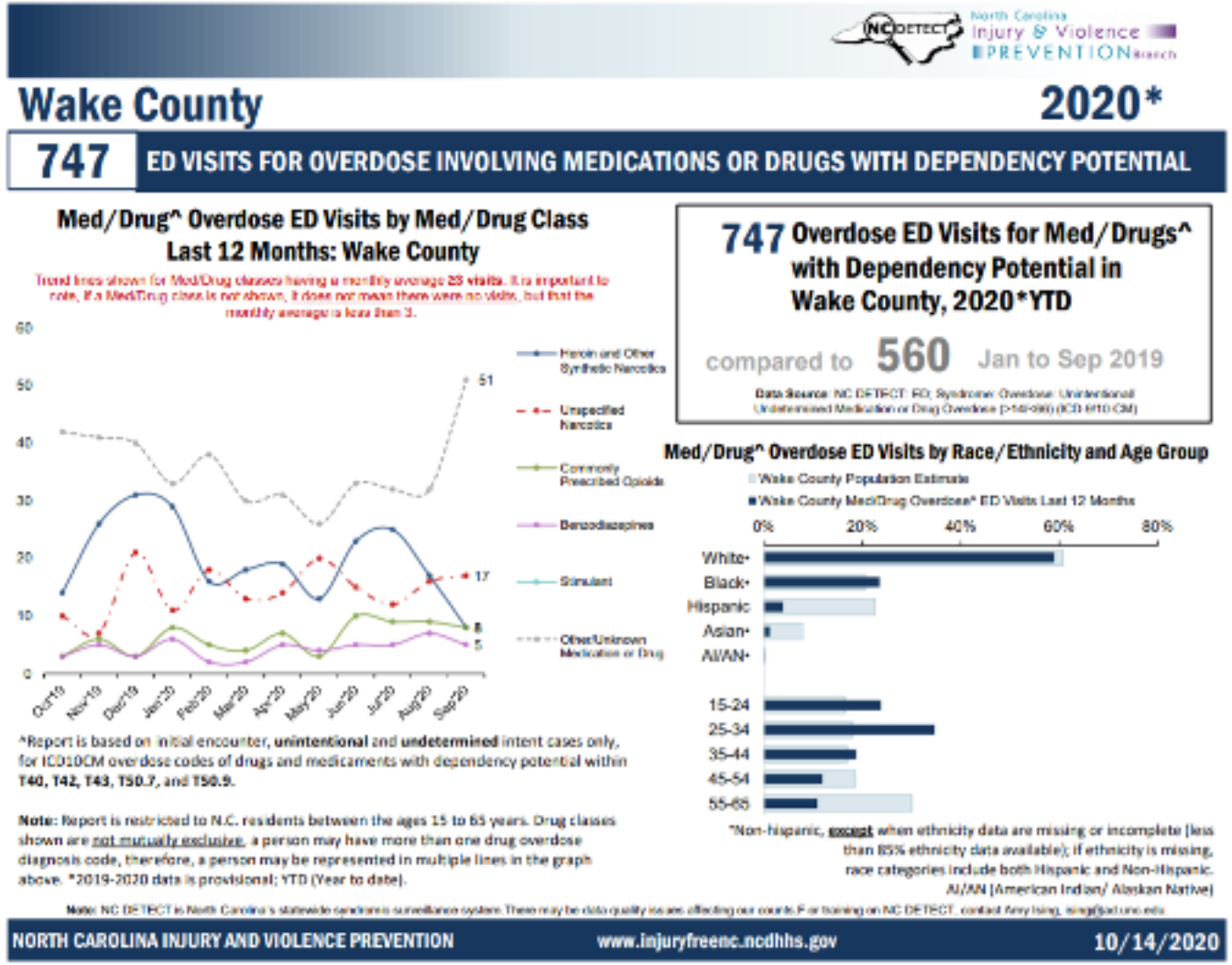
- Increasing naloxone distribution in your county.
  - A toolkit on community naloxone distribution is available at https://www.naloxonesaves.org/community-distribution-of-naloxone/.
  - **Update**: The shelf life of NARCAN (naloxone HCl nasal spray) has been extended for an additional 12 months beyond the currently listed expiration date, which now gives it a total shelf life of 36 months. For more information, visit: https://files.constantcontact.com/023aa8ab001/13a757c4-9d9c-4986-a29e-075ac3bf1903.pdf.

- Partnering with a harm reduction or syringe services programs to connect people who use drugs to care.
  - For guidance, https://www.ncdhhs.gov/about/department-initiatives/opioid-epidemic/syringe-and-naloxone-access.

- Developing outreach messaging with the following key points:
  - Test substances with drug checking equipment like fentanyl test strips if possible. https://www.rti.org/infographic/infographic-fentanyl-test-strips
  - Have naloxone on hand. https://www.naloxonesaves.org/where-can-i-get-naloxone/
  - Ensure you have someone available in case of an overdose. Provide information about resources such as *Never Use Alone*, a telephone service that people can call if they are going to use alone to prevent their risk of an overdose: https://neverusealone.com/ and **1-800-484-3731** (chat also available through Facebook messenger).

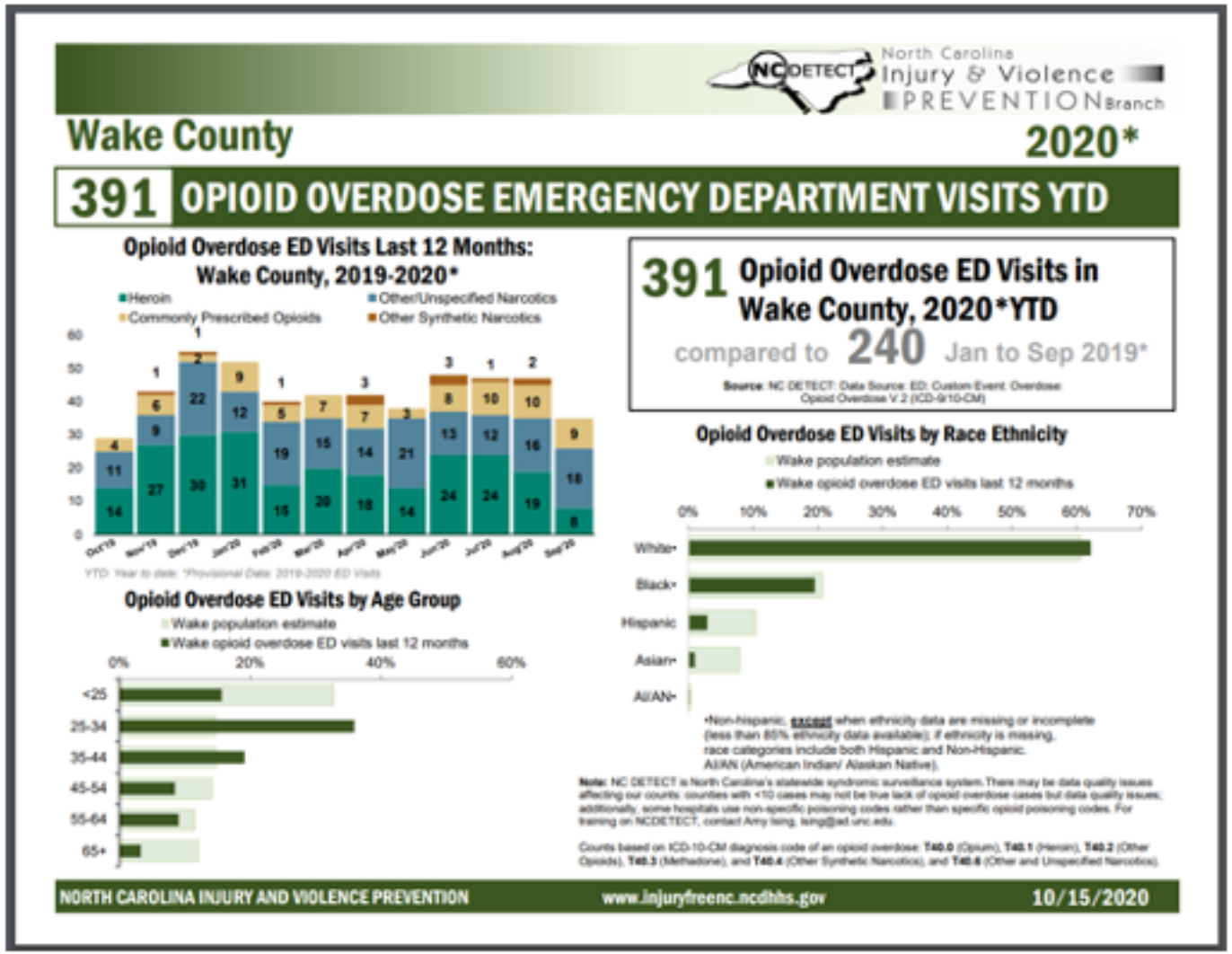
For questions about the data, programs and interventions, or if you'd like to provide us feedback, contact SubstanceUseData@dhhs.nc.gov

Monthly Med/Drug ED Report, by County



IVPB Poisoning Data: https://www.injuryfreenc.ncdhhs.gov/DataSurveillance/Poisoning.htm

Monthly Opioid ED Report, by County



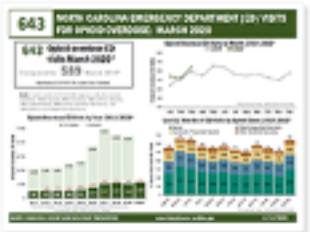
IVPB Poisoning Data: https://www.injuryfreenc.ncdhhs.gov/DataSurveillance/Poisoning.htm

State Monthly Syndromic ED Data Report

Home | About Us | Data Surveillance | Prevention Resources | Resources and Reports | Contacts

NC DETECT Overdose ED Visits Reports - Updated Monthly

Opioid Overdose ED Visits



NC Emergency Department Visits (ED) Visits for Opioid Overdose: March 2020

Heat Map: All Opioid Overdose ED Visits: March 2020

- County Opioid Overdose Emergency Department Visit Reports (For counties with average monthly visits ≥ 5)+

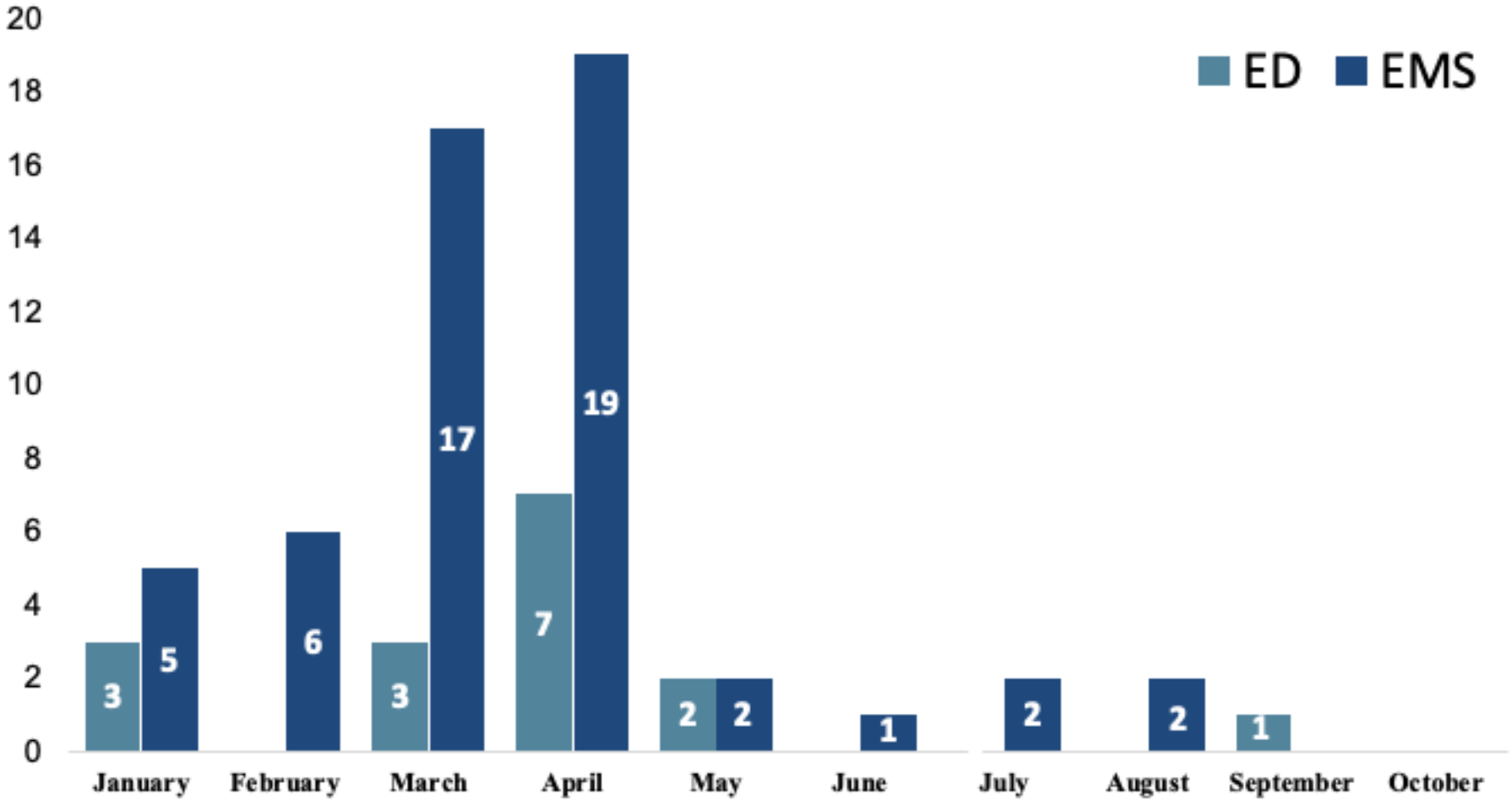
Overdose ED Visits Involving Medication or Drug with Potential for Dependency

ED Visits Involving Medication or Drug with Potential for Dependency: March 2020

- County Medication or Drug with Potential for Dependency Overdose ED Visit Reports (For counties with average monthly visits ≥5)+

IVPB Poisoning Data: https://www.injuryfreenc.ncdhhs.gov/DataSurveillance/Poisoning.htm

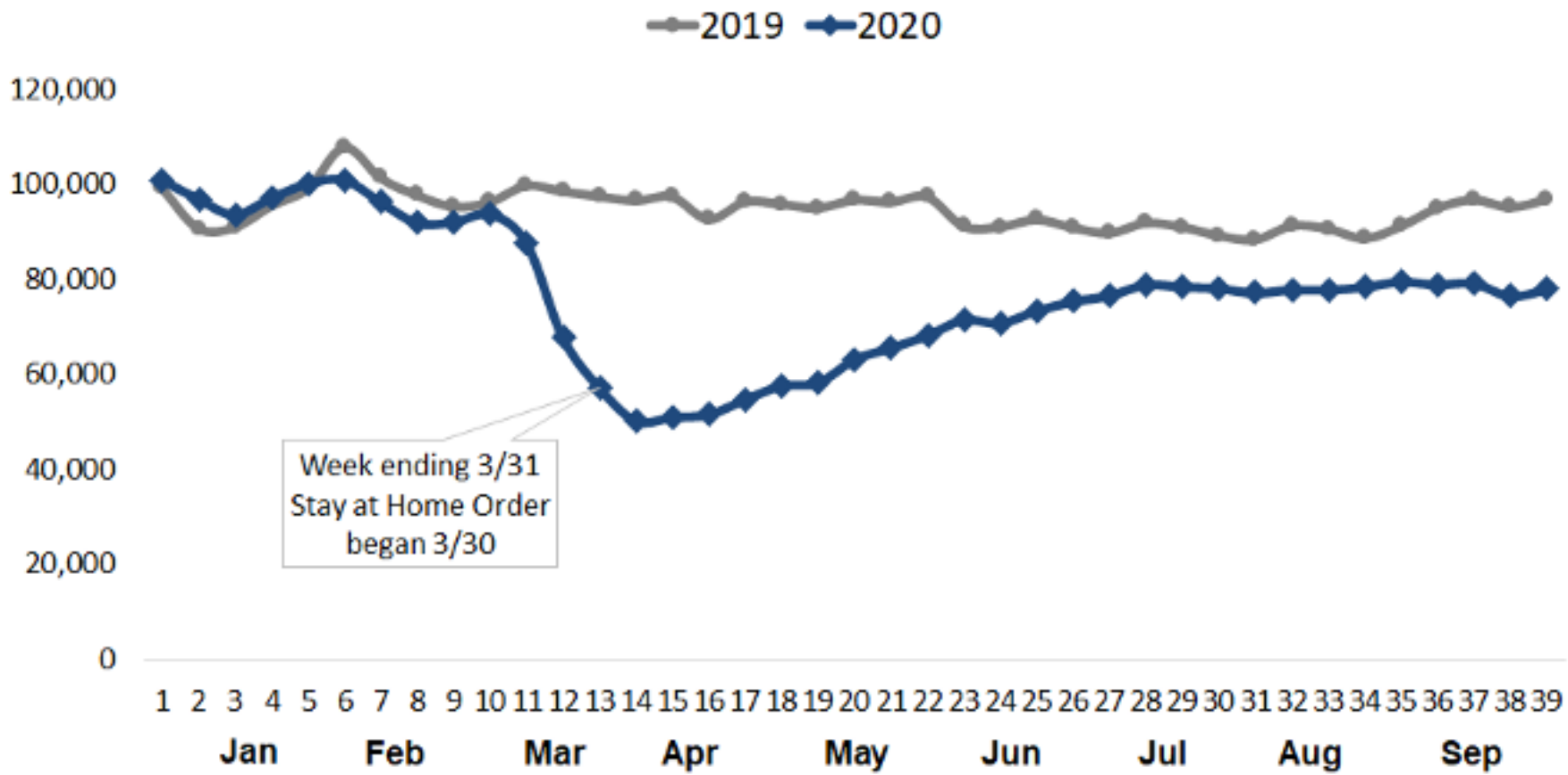
High number of alerts for EMS response to overdoses in March and April 2020



Note: Signal notification protocol modified in May 2020 to reduce county notification fatigue.

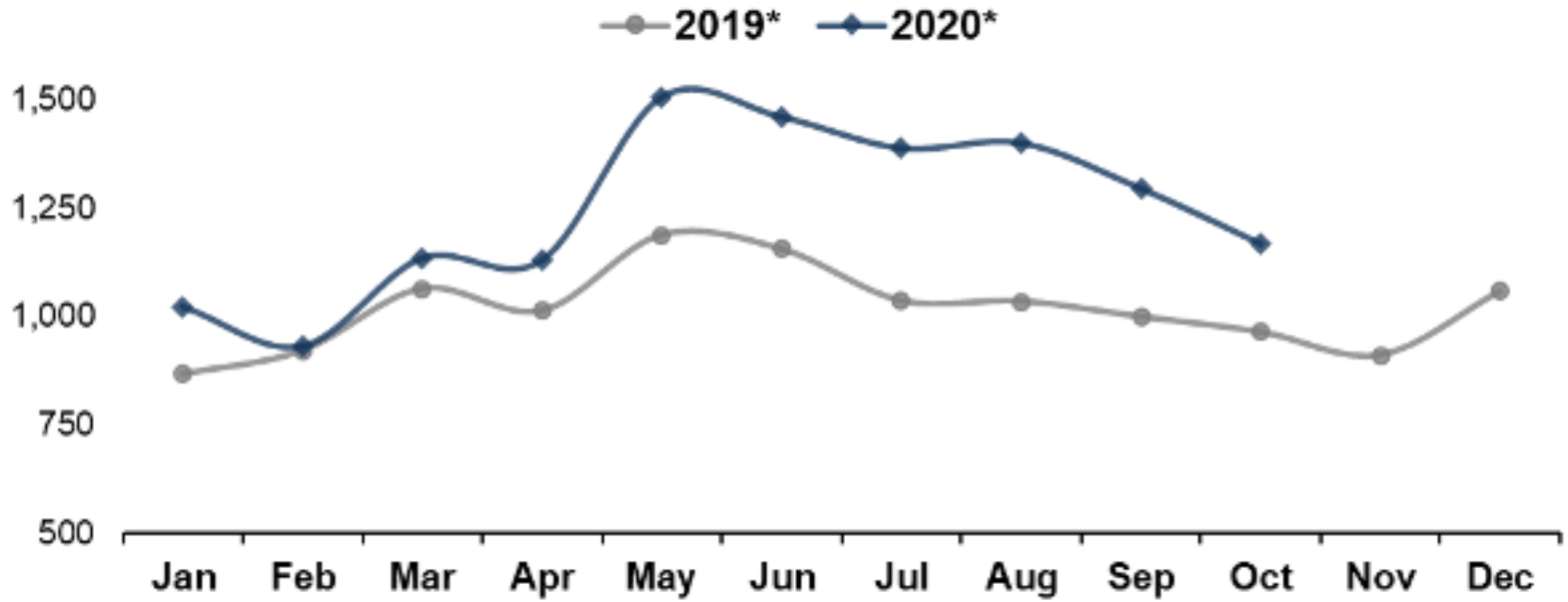
Slide updated November 12, 2020.

This year, NC has experienced a 19% decrease in overall ED visits



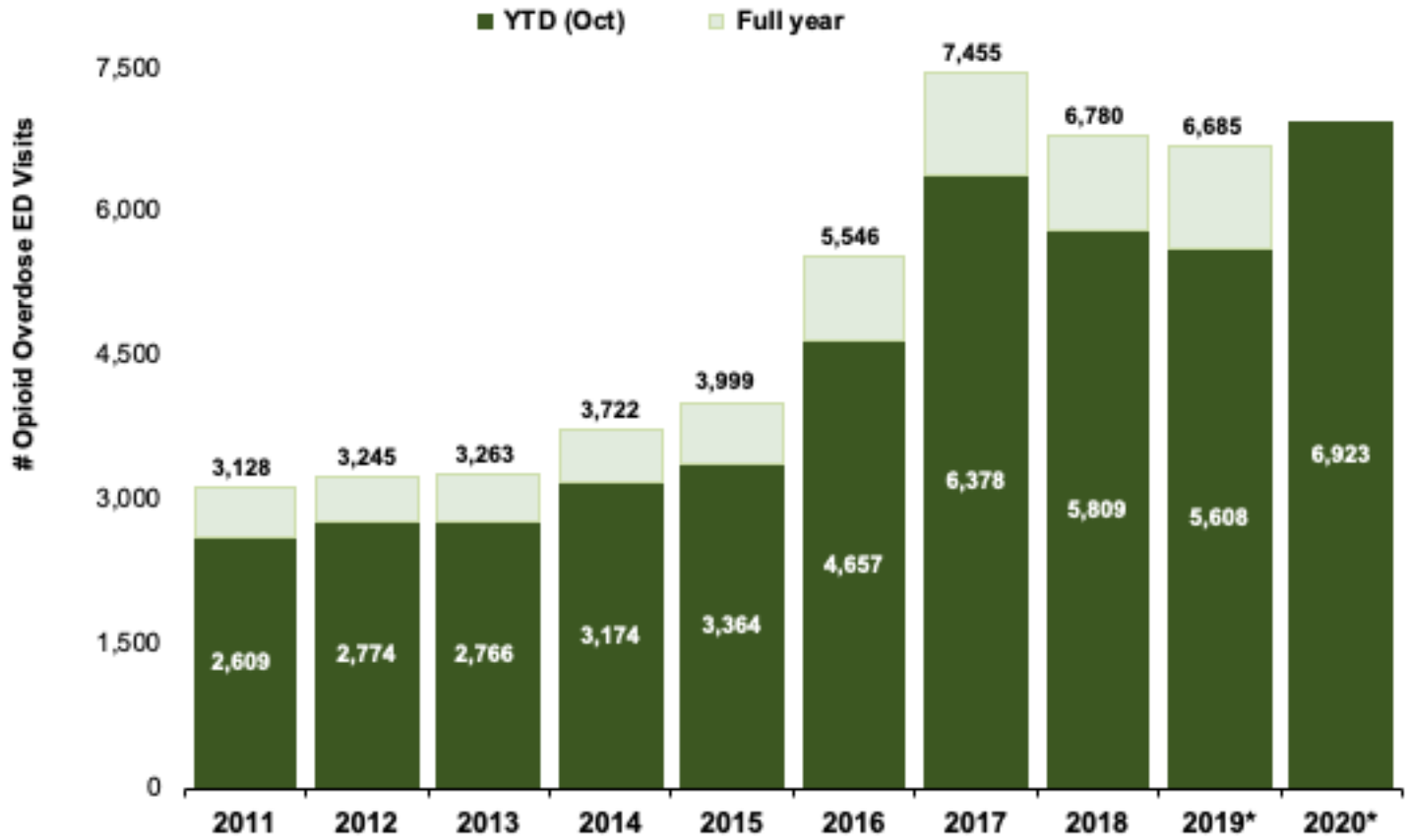
Note: Provisional 2020 data as of 10/15/2020, limited to NC residents
Weeks begin at 01/01
Source: NC DETECT ED Visits, 2019-2020

Yet, NC has seen a 22% increase in Med/Drug Overdose ED visits in 2020



Note: ^Unintentional/undetermined intent cases of drugs and medicaments with dependency potential within ICD10CM overdose codes (T40, T42, T43, T50.7, and T50.9). Restricted to N.C. residents between ages 15-65 years. **Source:** NC DETECT ED Visits, provisional data 2019-2020.

This trend is largely driven by a 23% increase in opioid overdose ED visits



Note: All intents opioid overdose cases within ICD10CM codes (T40.0-4, T40.6, T40.69), initial encounters only.
Source: NC DETECT ED Visits, provisional data 2019-2020.

Conclusion

- Syndromic surveillance allows for:
  - Timely monitoring of changes in overdose trends across **all 100 counties** in NC
  - Regular communication with programming and prevention partners
  - **Data sharing** between the state- and county-level agencies yielding action to prevent overdose death
  - Observing the **emergence of trends** in conjunction with major events in the community

Acknowledgements

- Injury and Violence Prevention Team at NC DPH
- Partners at NC DETECT

THANK YOU!

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Statistical Alerting in Biosurveillance Through the Lens of COVID-19

Howard Burkom, Luke Mullany, Raghav Ramachandran, Susama Agarwala,

Jane Valentine, Daniel Wernig, Wayne Loschen:

Johns Hopkins Applied Physics Laboratory

Michael Sheppard: Center for Surveillance, Epidemiology, and Laboratory Services, US CDC

Virtual 2020 Syndromic Surveillance Symposium

Session : "Found a Signal in the Noise? Tell Someone."

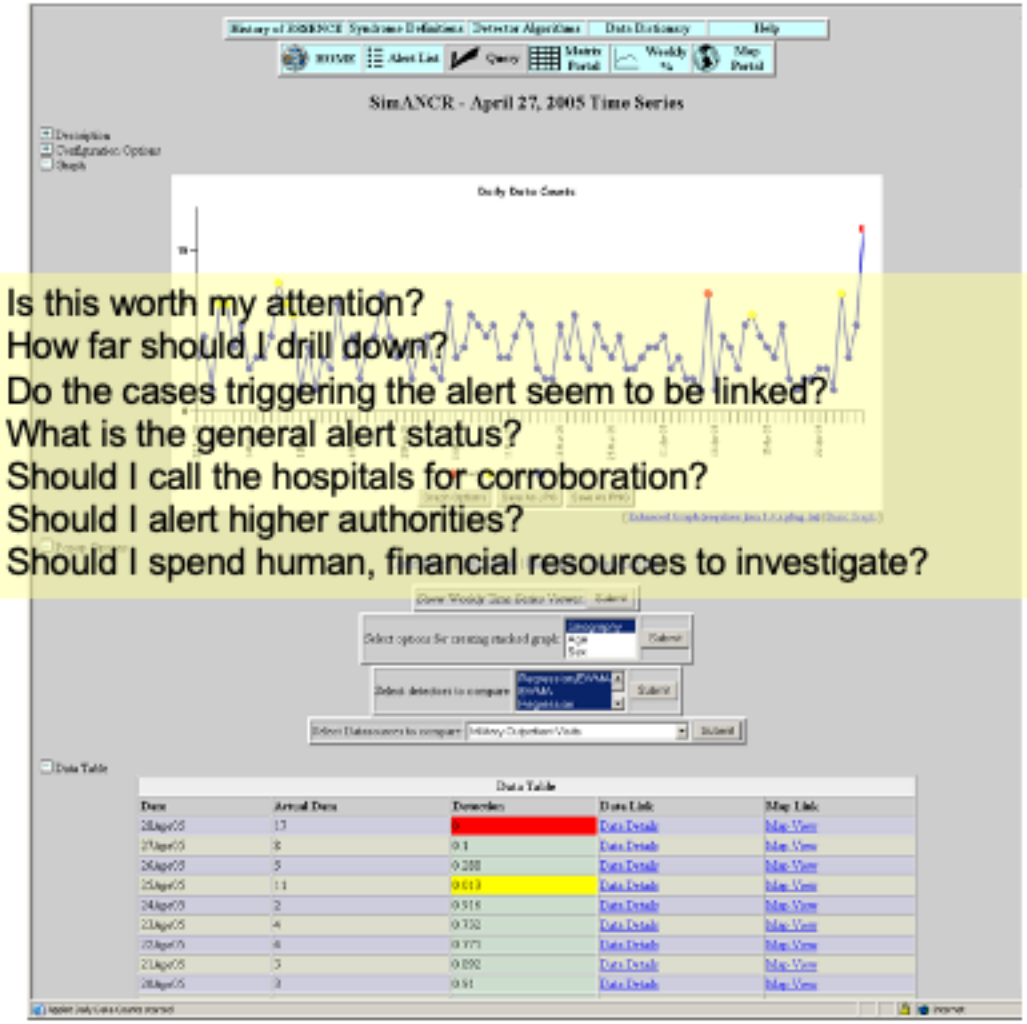
November 17, 2020

Outline

JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

- Alerting algorithms -- Overview
- Alerting Challenges Specific to COVID-19
- Analytic Fusion of Multiple Data Sources for Routine Surveillance
- Initial and Subsequent Findings
- Conclusions

Alerting Algorithms -- Overview
The Monitor's Routine Dilemma



Is this worth my attention?
How far should I drill down?
Do the cases triggering the alert seem to be linked?
What is the general alert status?
Should I call the hospitals for corroboration?
Should I alert higher authorities?
Should I spend human, financial resources to investigate?

Role of Alerting Algorithms in Biosurveillance

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- Not to identify disease outbreaks
- Not to predict counts of diagnoses, chief complaints, or product sales
- To direct the attention of health monitors to anomalies for potential outbreak investigation
  - With minimal false alarm rate (epidemiological, not statistical)
- This task grows more challenging as
  - Number & richness of electronic data sources increase,
  - Health monitors require adjustable case definitions, prompt recalculation

Alerting Challenges Specific to COVID-19

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- It's here: mainly a tracking problem, not a detection problem
- Immediacy of threat requires alerting that can inform mitigating public health measures
  - At appropriate spatial scale
- Persistent, evolving threat of unknown duration
- Many new data sources available: clinical testing, social distancing behavior, social distancing policy
  - Which ones to use, and how?
  - Need to determine alerting utility beyond correlations
  - Complementarity/redundancy of new data sources?

Analytic fusion of multiple data sources

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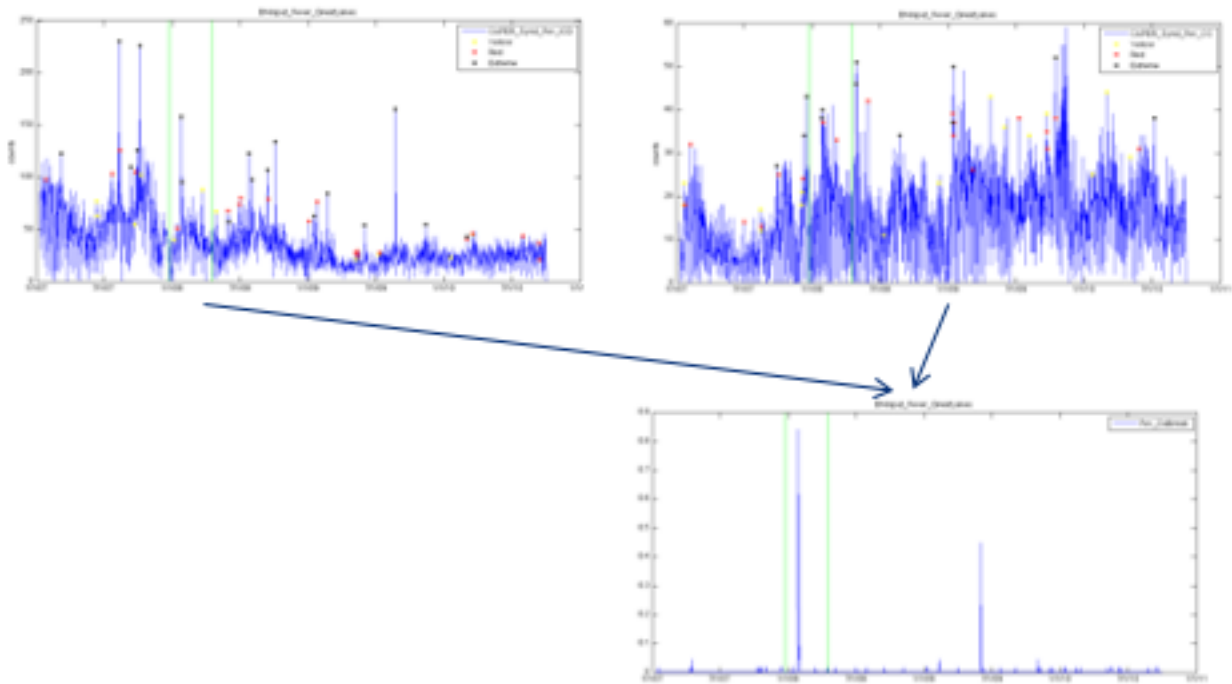
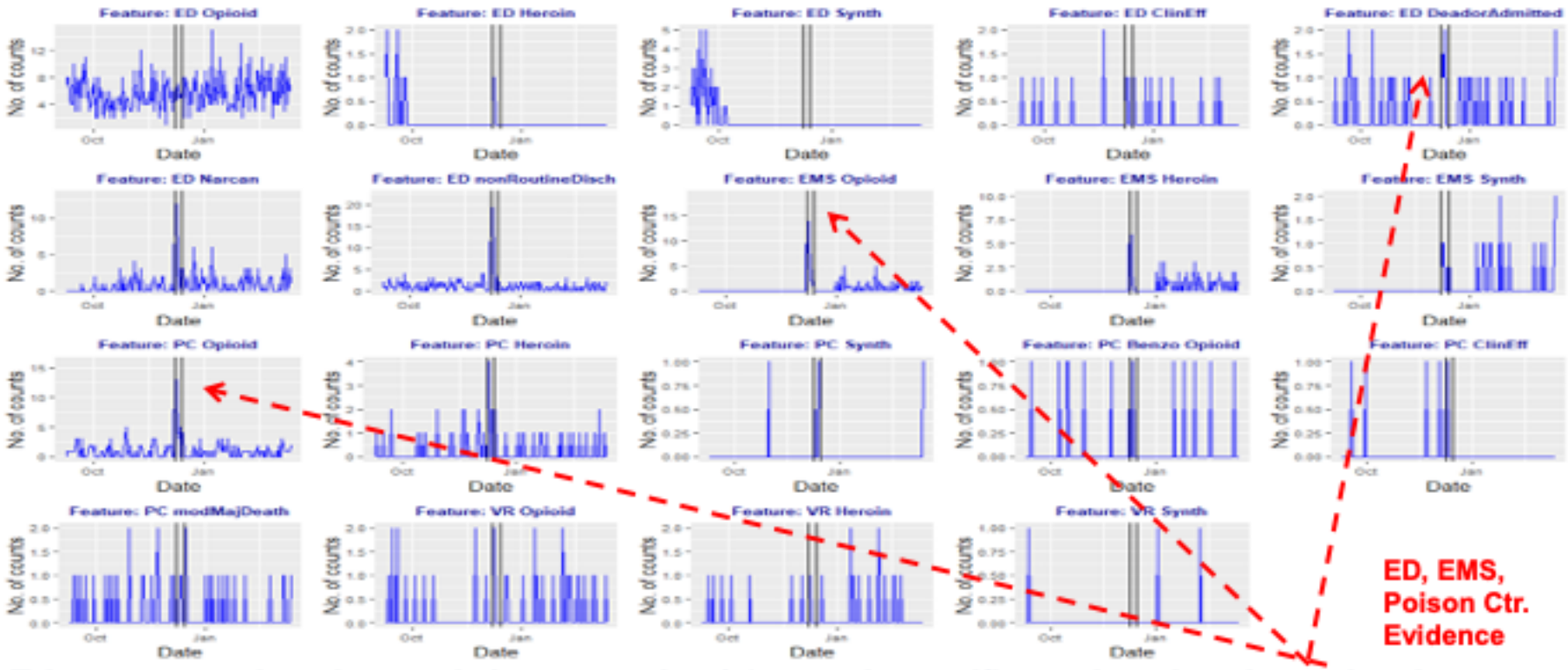
- Detection algorithms run on individual data sources can generate a large number of alerts.
- By combining evidence from multiple data sources, it is possible to reduce alerts and more easily identify outbreaks.
- Weighted combinations of syndromic and diagnostic evidence



Example: Capturing Localized Overdose Clusters



Takeaway: corroboration needed to respond to 1-2 cases in specific queries, alerts in syndromic ones ["we (public health) can't routinely investigate single cases, and these will become more common"]

Technical Fusion Model Project Overview

Initial Objective: Situational Awareness of County-Level COVID-19 Hotspots

Data quality, calibration, correlation analyses

6-month Feature Frame: 3/1/2020 – 8/31/2020; ED, Lab, Census, Mobility Features,

date	fips	ED_ddPneum_Rate	ED_ddCovid_Rate	ED_CLI_Rate	ED_ddCOVID.pvalue_counts	ED_dPneum.pvalue_counts	ED_CLI.pvalue_counts	ED_ddCOVID.pvalue_percent	ED_dPneum.pvalue_percents	ED_CLI.pvalue_percents	ED_COVID.trend2Stat	ED_Pneum.trendStat	ED_CLI.trendStat	pctInformativeDD	Lab_PctPos	Lab_PosRes	Lab_Orders	Cen_Dens_SqMi	Cen_RatioPublicAssist	Cen_MedianAge_All	Mob_Google_retail	Mob_Google_grocery	hotspot_CSSE	hotspot_Lab	trainTestFlag
8/19/2020	42027	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0.73	73.1	0	0	9	146.6	0.017	31.7	-29	-3	FALSE	FALSE	train
8/20/2020	42027	0	0	1.23	0.5	0.5	0.41	0.5	0.5	0.52	0	0	0.29	75.5	0	0	39	146.6	0.017	31.7	-21	2	FALSE	FALSE	train
8/21/2020	42027	0	0	0.62	0.5	0.5	0.54	0.5	0.5	0.6	0	0	-0.1	80.2	0	0	11	146.6	0.017	31.7	-24	9	FALSE	FALSE	train
8/22/2020	42027	0.62	0	1.85	0.5	0.36	0.16	0.5	0.4	0.21	0	0	-0.5	76.4	0.12	2	17	146.6	0.017	31.7	-23	2	FALSE	FALSE	train
8/23/2020	42027	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0	0	-0.4	84.2	0.08	1	12	146.6	0.017	31.7	-23	3	FALSE	FALSE	train
8/24/2020	42027	0.62	0.62	1.23	0.24	0.34	0.4	0.26	0.35	0.4	0	0	-0.4	77	0.12	2	17	146.6	0.017	31.7	-27	2	FALSE	FALSE	train
8/25/2020	42027	1.85	1.85	3.08	0	0	0.02	0.01	0.01	0.02	0	0	-0	81.2	0	0	21	146.6	0.017	31.7	-32	0	FALSE	FALSE	train
8/26/2020	42027	0	0	0.62	0.5	0.5	0.16	0.5	0.5	0.21	0	0	-0.5	78.7	0.03	2	71	146.6	0.017	31.7	-28	-3	FALSE	FALSE	train
8/27/2020	42027	0	0	0.62	0.5	0.5	0.37	0.5	0.5	0.39	0	0	-0.8	85.7	0.08	1	12	146.6	0.017	31.7	-19	6	FALSE	FALSE	train
8/28/2020	42027	0	0.62	1.23	0.32	0.5	0.4	0.39	0.5	0.49	0	0	-0.4	71.1	0	0	19	146.6	0.017	31.7	-25	7	FALSE	TRUE	train
8/29/2020	42027	0	0	0.62	0.5	0.5	0.56	0.5	0.5	0.62	0	0	-0	85.8	0	0	23	146.6	0.017	31.7	-24	6	FALSE	TRUE	train
8/30/2020	42027	0	0	0.62	0.5	0.5	0.67	0.5	0.5	0.7	0	0	-0.8	79.7	0	0	8	146.6	0.017	31.7	-23	5	FALSE	TRUE	train
8/31/2020	42027	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0	0	-0.8	72	0.09	2	22	146.6	0.017	31.7	-31	0	FALSE	TRUE	train

Candidate Fusion Models

- Random Forest
- Bayesian Network
- Logistic Regression

Alert Performance Testing

Model Performance Metrics Relevant to Trend Recognition for large- & small-jurisdiction ESSENCE users:
Sensitivity, Specificity, Timeliness, Volatility

ESSENCE User Visualization Concepts

Fusion Capability Designed to Answer:

JOHNS HOPKINS
APPLIED PHYSICS LABORATORY

- How would an experienced health monitor make investigation decisions given the luxury of examining all data sources every day?
- How can the principal information supporting these decisions be presented most conveniently?
- What follow-up data details would this monitor find most helpful in deciding whether and how to investigate?

Technical Approaches to Analytic Fusion

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Many statistical and machine learning approaches and hybrids to consider

Constraints:

- Explainability: Need to engender trust, routine usage, acceptance of results
- Speed of calculation manageable ESSENCE system, users' workflow
- Practical given quality, reliability, amount of history in available data

Candidate methods adopted for current project

- Bayesian Network
- Random Forest
- Logistic Regression

Algorithm Performance Metrics

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Essential tradeoff of Sensitivity vs Positive Predictive Value

Sensitivity:

- "If a target event occurs, how likely is it that my algorithm will alert?
- What percentage of desired target events are alerted
- (True Positives) / (True Positives + False Negatives)
  Where "Positive" = alerted, and "True" = desired event

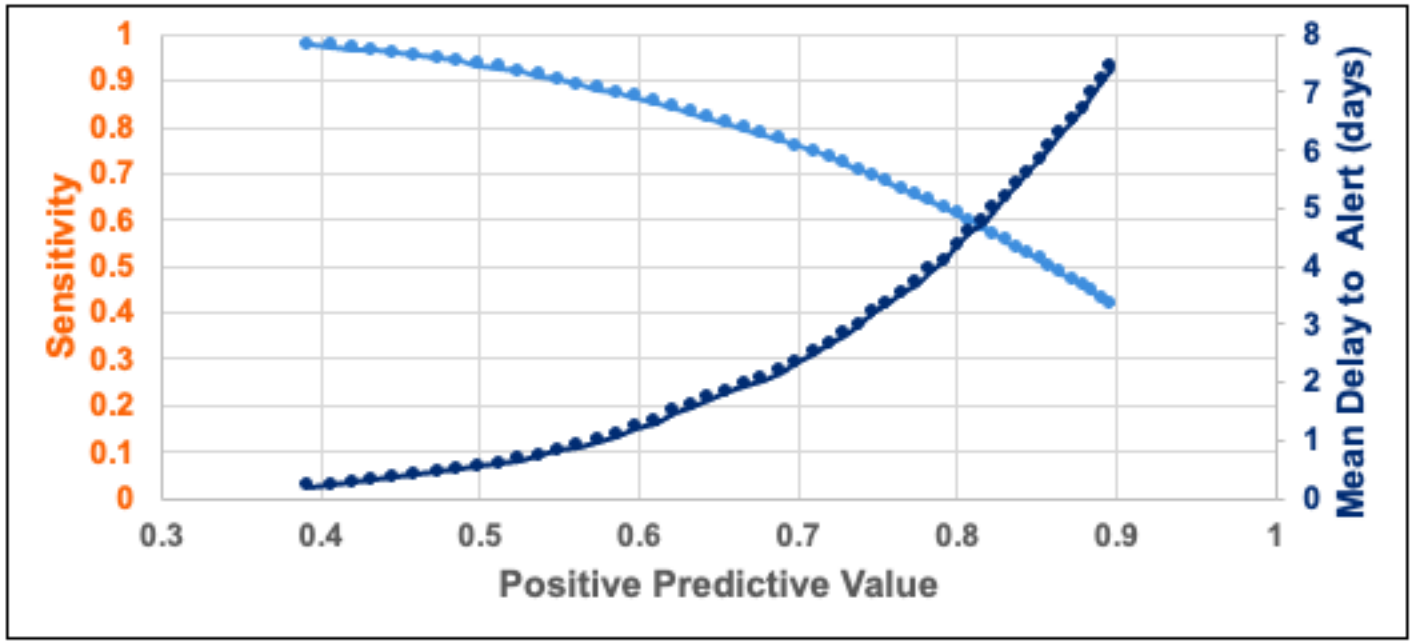
Positive Predictive Value:

- "How many alerts do I expect to investigate to find one target event?"
- What percentage of all alerted events are desired target events
- (True Positives) / (True Positives + False Negatives)

Correct balance dictated by prevalence of target events, number of event types, and capacity to investigate

Early Results: Fusion Performance Metrics Relevant to User Alerting

Sensitivity, Positive Predictive Value, Timeliness for Random Forest Model

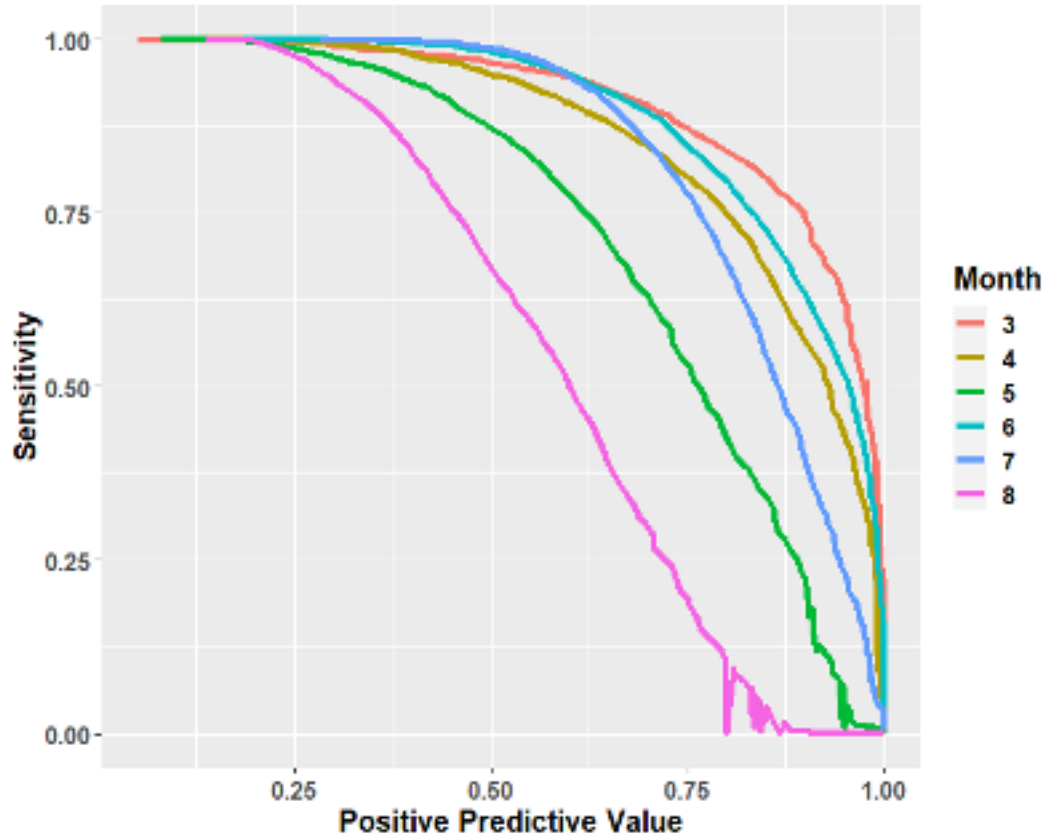


Daily alert burden and timeliness corresponding to hotspot sensitivity?

PPV of 50% → nearly same-day alerting, sensitivity > 92%

60% → mean delay ~1.5 days, sensitivity > 85%

Seeking Robustness in a Changing Pandemic
Changes in Model Performance over Time



Fusion Model Performance Trends by Threshold:

Effect of Prevalence on PPV
Drop in Sensitivity after July 4

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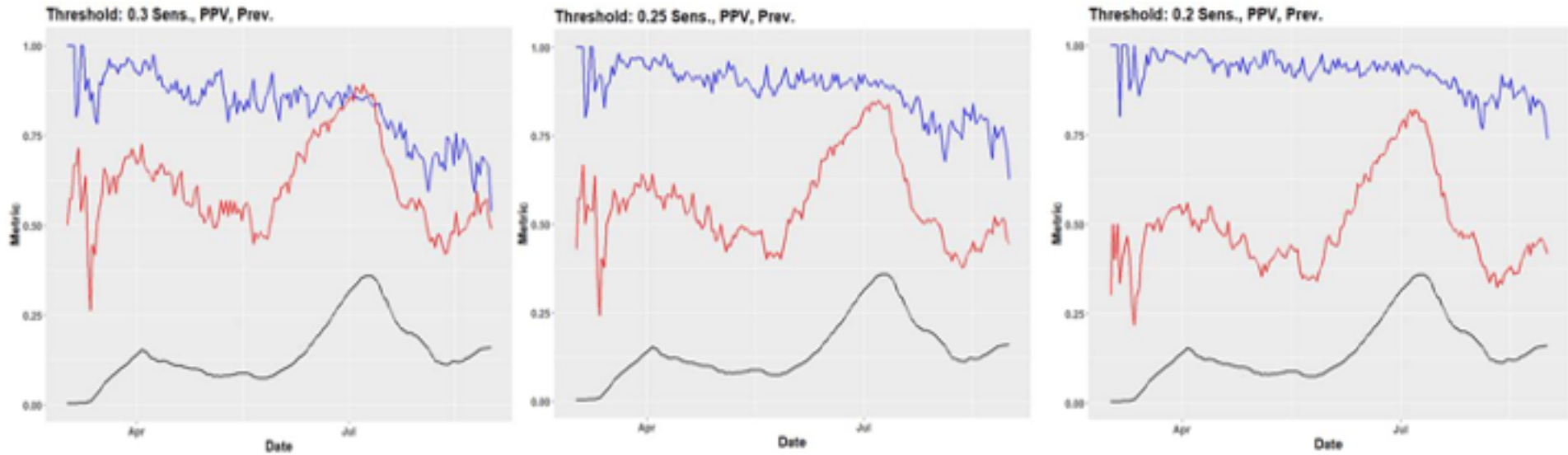
Surrogate for Prevalence: Percentage of Regions/Counties labelled as Hotspot by Day
(1514 regions with both Lab A & ED data)



Sensitivity increases, PPV decreases as alert threshold drops

Examining Single Feature Effects on Hotspots

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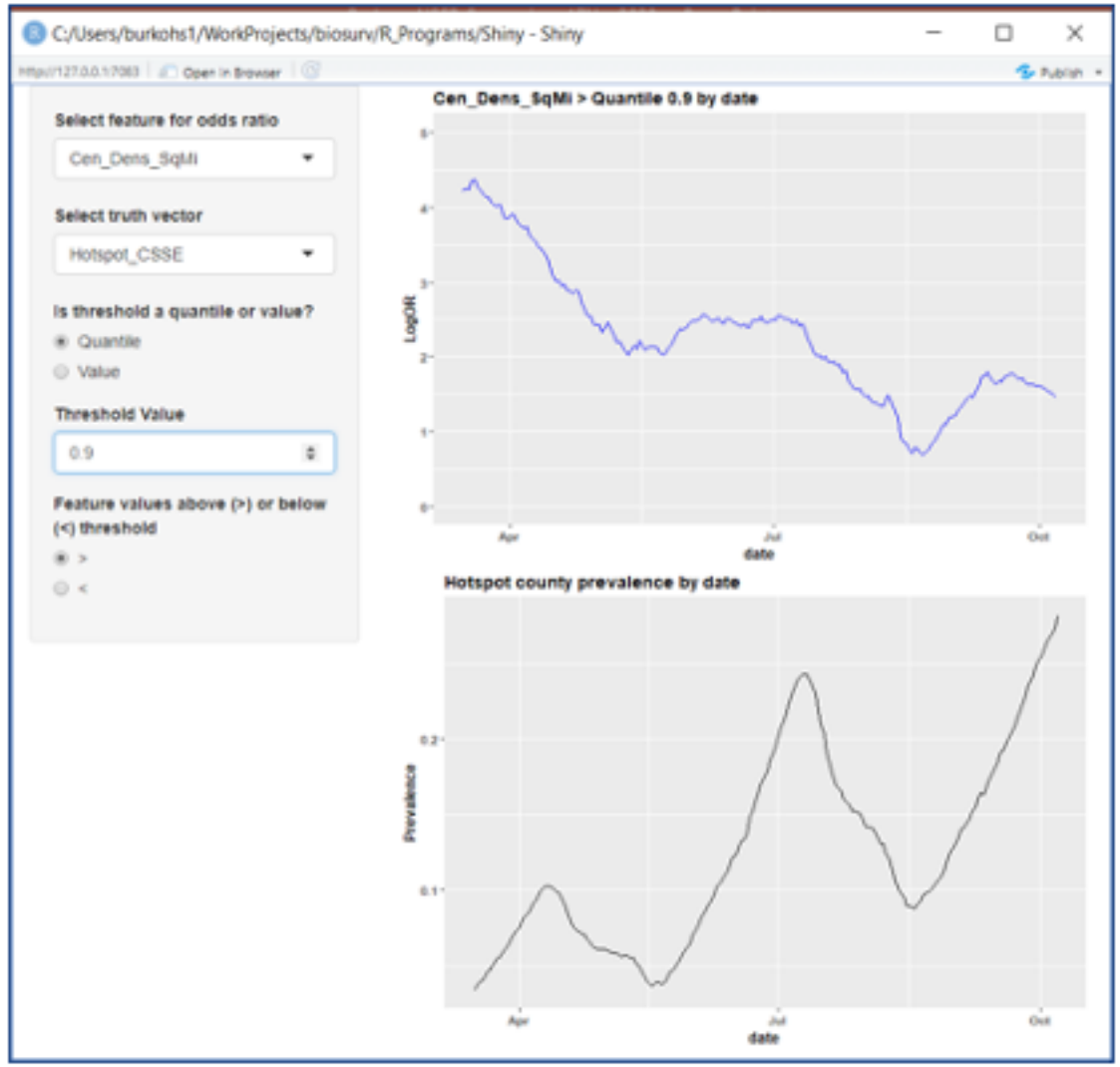
Hotspot truth data
- Based on Covid-19 case data

Examining individual effects of
- ED CCDD features,
- Lab orders, positives, % pos.
- Census variables
- Lagged mobility data

Effect of features changes with stage of pandemic
- Models require updating

Key issues for robust modeling at practical spatial scale:
- How often to update
- Baseline length for updating



Conclusions

Essential to create algorithms that alert at the spatial levels and time resolution required for public health investigation and response

- COVID-19 containment: need to ascertain those levels (state, county, census tract…), dependent on the goals of communication and response

All surveillance alerting algorithms need periodic examination as pathogen threats, care-seeking behaviors, coding practices change

- COVID-19 containment: model refitting and determining at-risk population especially important as pandemic evolves

Multiple data sources important for increased sensitivity, corroborating evidence for alerts

- COVID-19 containment: multiple new data sources on social distancing behavior available – need to determine utility for modeling effect on incidence

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Block Schedule

Training | Methods | Innovation | Data Sharing

1:30-2PM EST	Keynote Address			
	...BREAK...			
2:15 - 3PM EST	Training: NSSP ESSENCE 101	Breakout: Spike, Alert, GO!	Breakout: Data Access and Integration	Breakout: Successful State-led Data Sharing Collaborations
		...BREAK...		
3:15-4PM EST		Lightning: Significant Findings	Roundtable: Bringing New Partners to the Table	Breakout: Can I Do That? Ask a Lawyer.
	...BREAK...			
4:15-5PM EST	Training: Custom Syndrome Definition in NSSP ESSENCE	Breakout: Match Point - Data Matching Across Sources		Roundtable: Establishing a Public Use Shared Data Set
	...BREAK...			
5:15-6PM EST	Virtual Happy Hour			

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Community of Practice

Advancing the Science and Practice of Syndromic Surveillance

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