



# New York State Electronic Syndromic Surveillance System (ESSS)

Statistical Unit

Division of Epidemiology

2

## ESSS Data Components

- Emergency Departments (EDs) data feeds
- Urgent Care Centers (UCCs) data feeds
  - Recruitment stage
- Medicaid over-the-counter (OTC) and prescription medications data feeds
  - Aggregated data
  - 2 weeks submission delay



## Emergency Departments (EDs) Syndromic Surveillance

- ED syndromic surveillance objectives
- Syndrome definition and categories
- ED syndromic surveillance regions and coverage
- How does it work

## ED Syndromic Surveillance Objectives

- The fundamental objective of syndromic surveillance (SS) is to identify illness clusters early, before diagnoses are confirmed and reported to public health agencies, and to mobilize a rapid response, thereby reducing morbidity and mortality.
- A nearly real-time method of categorizing visits from EDs into disease or illness syndromes, based on patient chief complaint (CC) upon admission to ED.

## NYS ED Syndromic Surveillance

- Data from the previous day are submitted daily via Electronic Clinical Laboratory Reporting System (ECLRS), which is then categorized into 13 syndromes.
- By searching the CC text upon admission to ED and/or discharge diagnosis for specific terms indicative of drug/opioid/heroin overdose, SS can be used as an early detection method for overdose outbreaks.
- SS staff review the data daily to capture overdose spikes and investigate, if needed.
- Summary, case level counts, graphs and signals are available by syndrome, hospital, county and region.



## Syndrome Definition and Categories

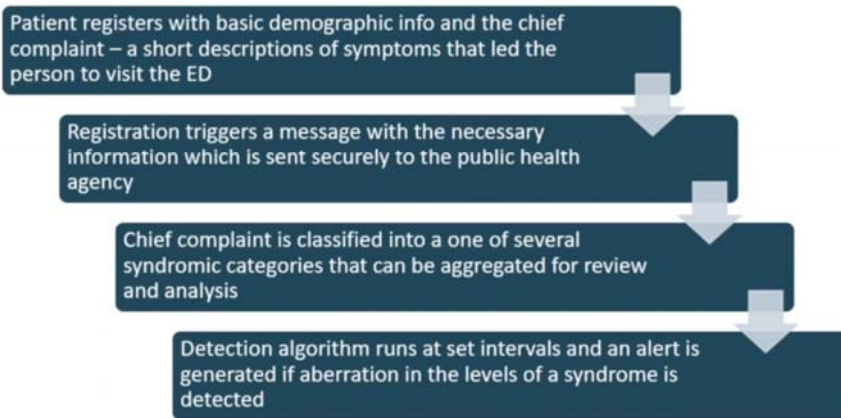
- Syndrome Definition
  - A set of signs and symptoms that appear together and characterize a disease or medical condition.
- NYS ED Syndrome Categories:
  - Asthma
  - Carbon Monoxide
  - Drug overdose
  - Fever
  - GI
  - Heat
  - Heroin overdose
  - Hypothermia
  - Neurologic
  - Opioid overdose
  - Rash
  - Respiratory
  - Synthetic drugs





Syndromic Surveillance Overview: How it works and how it is used.

## How Does It Work?

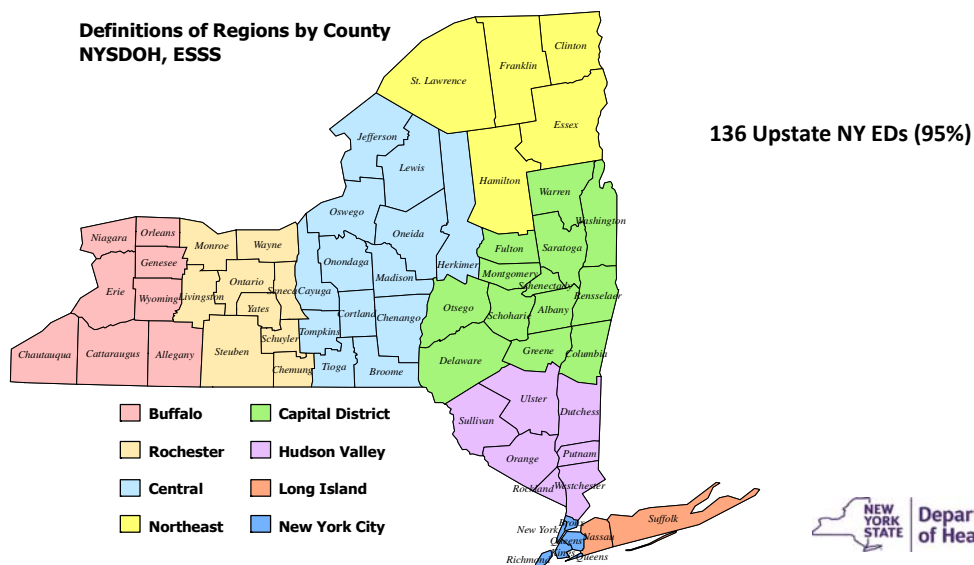


Syndromic 101: An Introductory Course in Syndromic Surveillance



## ED Surveillance Regions and Coverage

Definitions of Regions by County  
NYSDOH, ESSS



# Output/Reports

- CuSum reports
- Special reports



- To access Electronic Syndromic Surveillance System (ESSS) application:

Application Name	Acronym	Profile	Restricted	Add/Remove
EM Well Play Hard	EWPHCCS	<a href="#">i</a>		<a href="#">+</a>
ECLRS Lab Live Reporting		<a href="#">i</a>	Yes	<a href="#">+</a>
ECLRS Lab Survey 2016		<a href="#">i</a>		<a href="#">+</a>
ECLRS Lab Trial Reporting		<a href="#">i</a>	Yes	<a href="#">+</a>
EI Provider Approval & Due Process Upload	SPT 2.0	<a href="#">i</a>		<a href="#">+</a>
EFS Claims and Adjustment Data Upload	SPT 2.0	<a href="#">i</a>		<a href="#">+</a>
Electronic Clinical Laboratory Reporting System	ECLRS	<a href="#">i</a>	Yes	<a href="#">+</a>
Electronic Death Registration System	EDRS	<a href="#">i</a>		<a href="#">+</a>
Electronic Plan Of Correction System	EPOC	<a href="#">i</a>		<a href="#">+</a>
Electronic Prescribing Waivers		<a href="#">i</a>		<a href="#">+</a>
Electronic Proficiency Testing Reporting System	EPTRS	<a href="#">i</a>	Yes	<a href="#">+</a>
<b>Electronic Syndromic Surveillance System</b>	ESSS	<a href="#">i</a>	Yes	<a href="#">+</a>
eMedNYPhase 2 info		<a href="#">i</a>	Yes	<a href="#">+</a>

- User Guide:  
Log on to HCS > My Applications – Elec Syndromic Surveillance > FAQ



Home Page -- Version: v5.8


Hospital ED
  Urgent Care
  Medicaid OTC

Required Selections

Summary	<input type="radio"/> Statewide <input type="radio"/> Upstate <input type="radio"/> NYC <input checked="" type="radio"/> Select Location	
Location	Region: <input type="text" value="Please Pick One"/>	County: <input type="text" value="Please Pick One"/>
	Facility: <input type="text" value="All EDs"/>	

Statistical Reports Aggregated for Selected Location

Cusum Reports	Cusum Reports
Syndrome Graphics	Syndromes: <input type="text" value="Please Pick One"/>
Syndrome Count	Begin Date (mm/dd/ccyy): <input type="text" value=""/> End Date: 03/15/2019
Daily Disposition Count	Syndromes: <input type="text" value="Total Census"/>
	Begin Date (mm/dd/ccyy): <input type="text" value=""/> End Date: 03/15/2019
Case Listing	Please select a Facility in the Location to begin and choose from the options below:
	Syndromes: <input type="text" value="Please Pick One"/> Sort by: <input type="text" value="ZipCode"/>
	Begin Date (mm/dd/ccyy): <input type="text" value=""/> End Date: 03/15/2019
Click for Map	Statewide Fever Syndrome Maps
Frequency Reports	Frequency Report
Tabular Reports	Tabular Report
GIS	GIS



## ESSS CuSum Analysis

- CuSum statistics are used to identify daily counts higher than the 28-day baseline mean plus a measure of normal variation.
- Two types of signals generated:
  - **C1**: counts higher than average for past **1-28 days** plus normal variations (Less Sensitive, Abrupt Changes)
  - **C2**: counts higher than average for past **3-30 days** plus normal variations (More Sensitive, Gradual Changes)
- 3 types of reports generated daily for both ED data, and Medicaid OTC & Prescription Drug data for every hospital, county and region by syndrome:
  - Counts for past 10 days
  - Short-term trend graph
  - Long-term trend graph

# Example: Counts for Past 10 days

Syndrome	COUNT TABLE									
	1	2	3	4	5	6	7	8	9	10
Asthma	2	3	2	5	4	4	6	7	5	3
Carbon Monoxide	0	0	0	0	0	0	2	0	0	0
Drug Overdose	0	6 *C1C2*	3	0	0	1	2	1	1	0
Fever	7	35	31	27	25	36	43	27	37	13
GI	5	51	55	52	70	85	69	52	57	18
Heat	0	0	0	0	0	0	0	1	0	0
Heroin OD	0	4 *C1C2*	0	0	0	0	1	1	1	0
Hypothermia	0	1	0	2	0	0	0	0	1	0
Neurologic	4	32	42	37	54	50	51	44	36	26
Opioid OD	0	5 *C1C2*	2	0	0	1	1	1	1	0
Rash	0	4	3	1	0	0	4	3	3	5
Respiratory	10	55	72	57	55	55	87	56	71	25
Synthetic Drugs	0	0	0	0	0	0	0	0	0	0

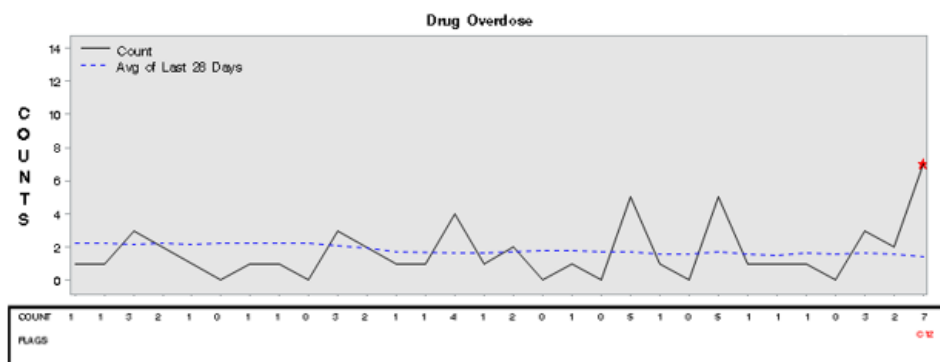
C1 -> Mild Sensitivity C2 -> Moderate Sensitivity  
N -> Data Missing, Result May Not Valid

Note: Only records with Non-Missing values for Hospital, Event, and Date are analyzed

Produced on \_\_\_\_\_ Division of Epidemiology, NYSDOH



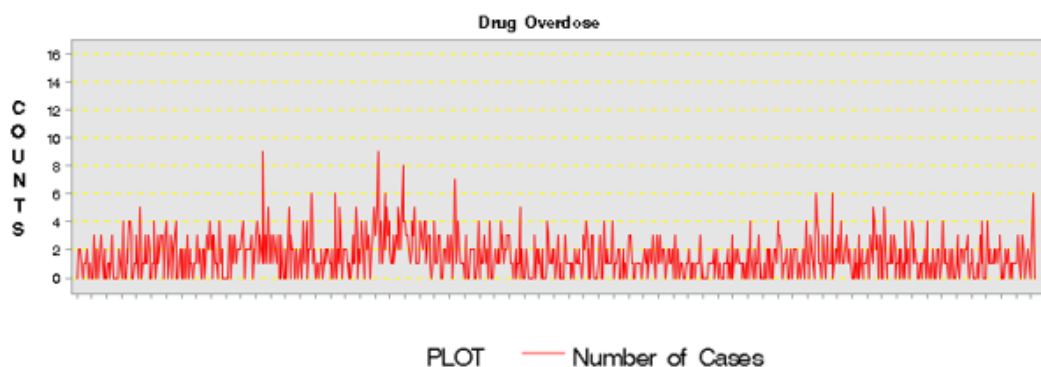
# Short-Term Trend Graph



C1=Mild Sensitivity C2=Moderate Sensitivity N=Data Missing, Result May Not Valid



## Long-Term Trend Graph



Division of Epidemiology, NYSDOH



## Special Reports

- Run weekly, shared internally
  - Number of Drug, Opioid and Heroin overdose ED visits
    - By region
    - By age groups
    - By gender
  - Cluster reports
    - Cluster is a geographic area with a high density of drug overdoses during a period of time.
    - Counts are measured by zip code, so the cluster areas can include several parts of different counties.
    - Uses specialized software and a more complex statistical algorithm (SatScan Analysis).





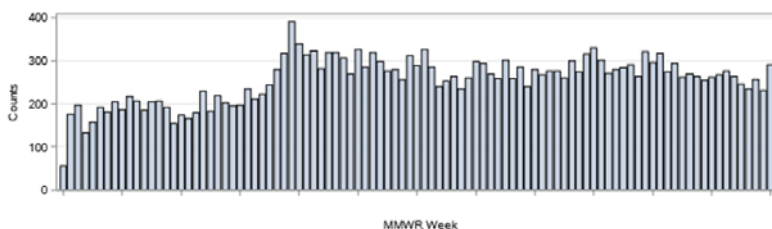
# Weekly Report - by Region

Number of Drug Overdose Related Hospital Emergency Department (ED) Visits

New York State since 1/1/2016

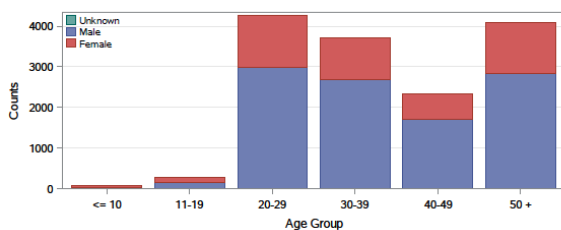
MMWR Week	Ending Date	Capital_Northeast		Buffalo_Rochester		Central		Hudson_Valley		Long_Island		NYC		Upstate Total	
		Opioid OD	Heroin OD	Opioid OD	Heroin OD	Opioid OD	Heroin OD	Opioid OD	Heroin OD	Opioid OD	Heroin OD	Opioid OD	Heroin OD	Opioid OD	Heroin OD
40		11	6	33	15	14	10	6	1	23	18	56	25	87	50
39		9	6	29	16	13	10	12	4	14	8	44	17	77	44
38		11	9	20	17	29	28	12	6	6	0	49	21	78	60
37		2	0	3	2	1	1	0	0	5	2	0	0	11	5

Number of Heroin Overdose Related ED Visits in New York State since 1/1/2016



# Weekly Report - by Age and Gender

Number of Opioid Overdose Related ED Visits in New York State by Age and Gender since 1/1/2016



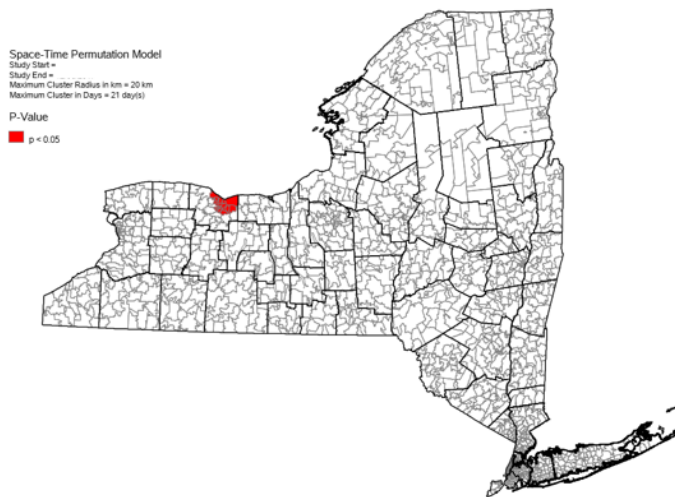
Opioid Overdose Related ED Visits in New York State by Age and Gender since 1/1/2016

GENDER	Age Group												All
	<= 10		11-19		20-29		30-39		40-49		50 +		
	Counts	%	Counts	%	Counts	%	Counts	%	Counts	%	Counts	%	
Female	37	0.8	146	3.3	1276	29.2	1022	23.4	633	14.5	1255	28.7	4369
Male	44	0.4	146	1.4	2983	28.7	2684	25.8	1704	16.4	2827	27.2	10388
Unknown	-	-	-	-	-	-	-	-	2	20.0	8	80.0	10



# Cluster (SatScan) Analysis

Map of Opioid\_OD Clusters by Patient's ZIP Code, ending



## What's Next?

- Current issues
- Action items

## Current Issues

- Non-specific chief complaint

Chief Complaint Text Received	Corresponding Diagnosis Code
Drug Overdose	F1190,S62339A
Needs to be seen	T40.1X1A
OVERDOSE	F11.10
OD	T50902A,T401X1A

- Completeness of data; e.g., for Feb 2019 we received:
  - Diagnosis Code 63.5%
  - Triage Notes 36.1%
  - Clinical Impressions 14.2%



## Action Items

- Improve the completeness of data
  - Chief complaint
  - Diagnosis
  - Triage notes
  - Clinical impressions
- Improve the quality of data
  - Use free-text chief complaint
  - Be more specific about the type/name of the drug used
- Maintain timeliness of data submission



## Need To Reach Us?

- **NYSDOH Syndromic Surveillance:**

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- Shivani Arora
- Sarah Kimball
- Charlene Weng

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**Phone:** 518-474-0548

- **Special thanks to:**

- Kitty Gelberg
- Nicole D'Anna

**Email (for Opioid specific questions):**

[opioidprevention@health.ny.gov](mailto:opioidprevention@health.ny.gov)

4/25/2019

