

# Emergency Department- based Syndromic Surveillance: Outbreak Detection

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## Background

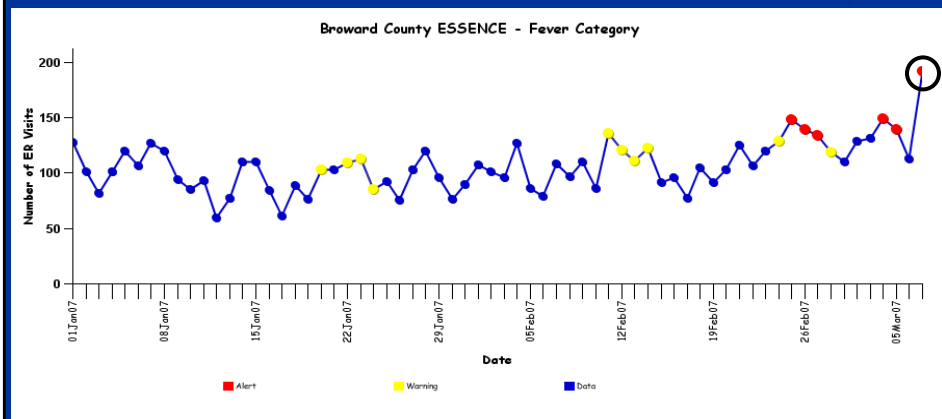
- **Florida Department of Health**
  - Central offices located in Tallahassee
    - Bureau of Epidemiology
  - **67 County Health Departments (CHDs)**
    - 67 epidemiology sections/departments
    - Reportable disease/conditions follow-up
    - Syndromic surveillance
  - **Bureau of Epidemiology**
    - Advisory role to CHDs
    - Manage data systems
    - Routine analysis of data/Reporting findings

# Routine Monitoring

- **Statewide monitoring**
  - As of 11/2009-132 reporting hospitals
  - 15,000-20,000 ER visits per day (represents >50% of ED visits in Florida)
  - CHD trainings → improve data analysis at local level
- **County-level monitoring**
  - 33 counties with reporting hospitals
  - No. of hospitals reporting per county ranges from 1-17
  - County-level monitoring process varies widely
    - Level of training
    - Perceived value of the data
    - Resources, hospital relationships, and local protocols

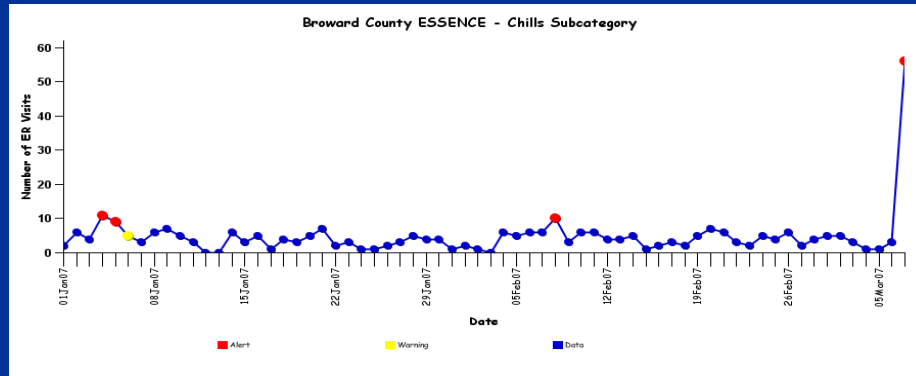
## Example 1: Large Outbreak (exercise)

- **South Florida Mass Migration Exercise: Broward County**
  - Fever syndrome category



# Example 1: Large Outbreak (exercise)

- South Florida Mass Migration Exercise: Broward County:
  - Chills sub-syndrome



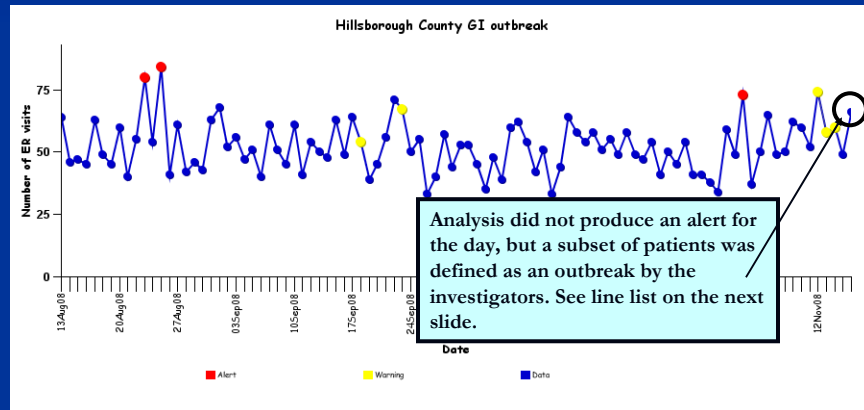
# Example 1: Large Outbreak (exercise)

- South Florida Mass Migration Exercise: Broward County:
  - Time of ED visit clustering



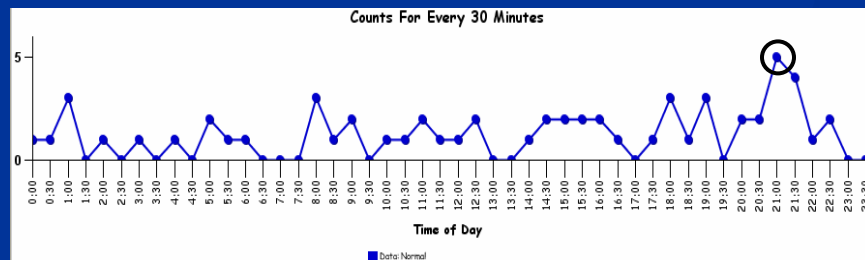
## Example 2: Small Outbreak

### ■ Hillsborough County GI outbreak



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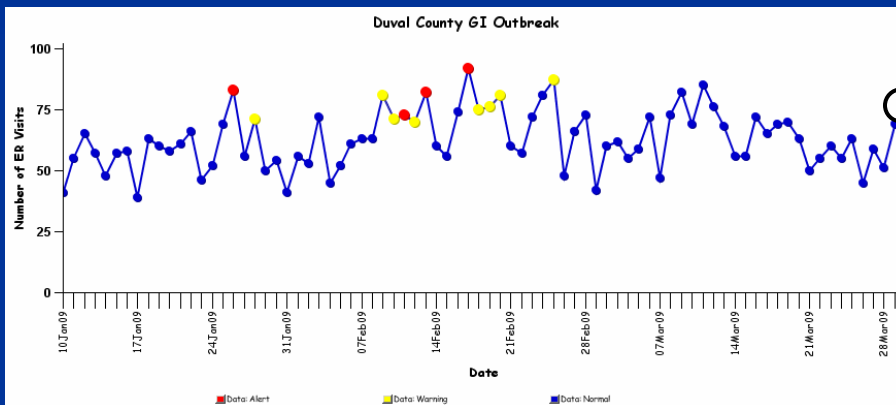
## Example 2: Small Outbreak

### ■ Hillsborough County GI outbreak

Date	Time	Location	County	Age	Sex	Diagnosis
11/16/2008	7:05 PM	Hospital E	Hillsborough	05-19	F	FEVER/V
11/16/2008	7:18 PM	Hospital C	Hillsborough	35-54	F	MID ABD PAIN STARTED FRIDAY.N/V.
11/16/2008	7:25 PM	Hospital F	Hillsborough	00-04	M	VOMITTING/ABD DISTENTION
11/16/2008	8:05 PM	Hospital F	Hillsborough	00-04	M	FEVER/VOMITING/NOT EATING
11/16/2008	8:11 PM	Hospital D	Hillsborough	00-04	F	VOMITING X 2DAYS/FEVERFU
11/16/2008	8:36 PM	Hospital E	Hillsborough	00-04	M	VOMITING COUGH
11/16/2008	8:38 PM	Hospital D	Hillsborough	35-54	F	VOMITING/ABD PN.
11/16/2008	9:06 PM	Hospital C	Zip A Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:09 PM	Hospital I	Hillsborough	20-34	F	N/V
11/16/2008	9:16 PM	Hospital C	Zip A Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:27 PM	Hospital C	Zip A Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:27 PM	Hospital C	Zip B Hillsborough	05-19	F	VOMITING AND DIARRHEA
11/16/2008	9:30 PM	Hospital C	Zip B Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:32 PM	Hospital I	Hillsborough	35-54	F	N/V/ABD PAIN
11/16/2008	9:35 PM	Hospital C	Zip B Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:38 PM	Hospital I	Hillsborough	55-74	M	N/V/D
11/16/2008	10:10 PM	Hospital I	Hillsborough	00-04	F	V/FEVER X 1 DAY
11/16/2008	10:42 PM	Hospital E	Hillsborough	05-19	F	VOMITING ABD PAIN
11/16/2008	10:47 PM	Hospital I	Hillsborough	05-19	F	MIGRAINE/VOMITING/EARAC HE
11/16/2008		Hospital A	Hillsborough	20-34	F	VOMITING DIZZY
11/16/2008		Hospital A	Hillsborough	55-74	M	WEAKNESS DIARRHEA
11/16/2008		Hospital G	Hillsborough	05-19	M	CHEST PAIN FEVER/VOMITTING

## Example 3: Small Outbreak

### ■ Duval County GI Outbreak



## Example 3: Small Outbreak

### ■ Duval County GI Outbreak



## Example 3: Small Outbreak

### ■ Duval County GI Outbreak

3/1/2009	4:05 PM	Hospital G	32244	County A	35-54	45	Female	NAUSEA,LIGHT HEADED,DIZZY
3/1/2009	4:26 PM	Hospital A	32220	County A	35-54	39	Female	NAUSEA,VOMITING SINCE THURS
3/1/2009	4:52 PM	Hospital A	32210	County A	00-04	2	Male	VOMIT/DIAR/ONT
3/1/2009	4:57 PM	Hospital A	32257	County A	00-04	1	Male	VOMIT,FEVER
3/1/2009	5:49 PM	Hospital C	32206	County A	55-74	65	Female	ABD PN,NV,COUGH
3/1/2009	6:00 PM	Hospital G	32244	County A	5-19	18	Female	GASTROENTERITIS, INTRACTABLE NAUSEA AND VOMITING
3/1/2009	6:25 PM	Hospital E	32211	County A	75+	83	Male	GEN WEAKNESS N/V
3/1/2009	6:30 PM	Hospital D	32222	County A	5-19	19	Male	VOMITING STOMACHACHE
3/1/2009	7:10 PM	Hospital E	32218	County A	00-04	1	Male	DIARRHEA X 4 DAYS
3/1/2009	7:16 PM	Hospital C	32226	County A	35-54	44	Female	ABD PAIN, N/V/D
3/1/2009	7:18 PM	Hospital C	32226	County A	5-19	9	Female	ABD PAIN, N/V/D
3/1/2009	7:20 PM	Hospital C	32276	County A	00-04	3	Female	ABD PAIN, N/V/D
3/1/2009	7:21 PM	Hospital C	32276	County A	20-34	32	Female	ABD. PAIN, N/V/D, FOOD POISONING
3/1/2009	7:22 PM	Hospital B	32216	County A	20-34	20	Female	n/w d since a.m.
3/1/2009	7:25 PM	Hospital F	32216	County A	35-54	48	Male	TERMINAL ILEITIS,LEUKOCYTOSIS,VOMITING/DIARRHEA
3/1/2009	7:28 PM	Hospital G	32208	County A	20-34	22	Female	HA,NAUSEA,STOMACH CRAMPS
3/1/2009	7:30 PM	Hospital C	32246	County A	35-54	49	Female	DIARRHEA, WEAKNESS

## Expectations of ED-based Syndromic Surveillance

- What do we expect from ED-based syndromic surveillance?
  - Situational awareness
  - Detect outbreaks
    - Large seasonal outbreaks (ILI, norovirus)?
    - Smaller clusters of potentially related patients?
- How can we better use existing variables in ED data to improve outbreak detection?

## Opportunity

- Develop additional analyses that:
  - Look for clustering by the time the patients arrive at the ED.
    - By hospital
    - By patient zip code
- End result could include:
  - Detection of smaller outbreaks
  - Quantification of the “epi-eyeball..”
- Brief update – ongoing work with JHU/APL

## Questions?

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