



# Evaluation Challenges for Syndromic Surveillance

National Syndromic Surveillance Conference

New York, NY

October 23-24, 2003

# Evaluation Update

- Working group of national experts
- Expanded scope: early detection of outbreaks
- System Description: maximal detail; with flow charts, process models, and a check list
- Outbreak Detection: timely capture and processing, data validity, aberration detection
- System Experience: usefulness, flexibility, acceptability, portability, stability, costs

# Evaluation Framework: Expert Working Group

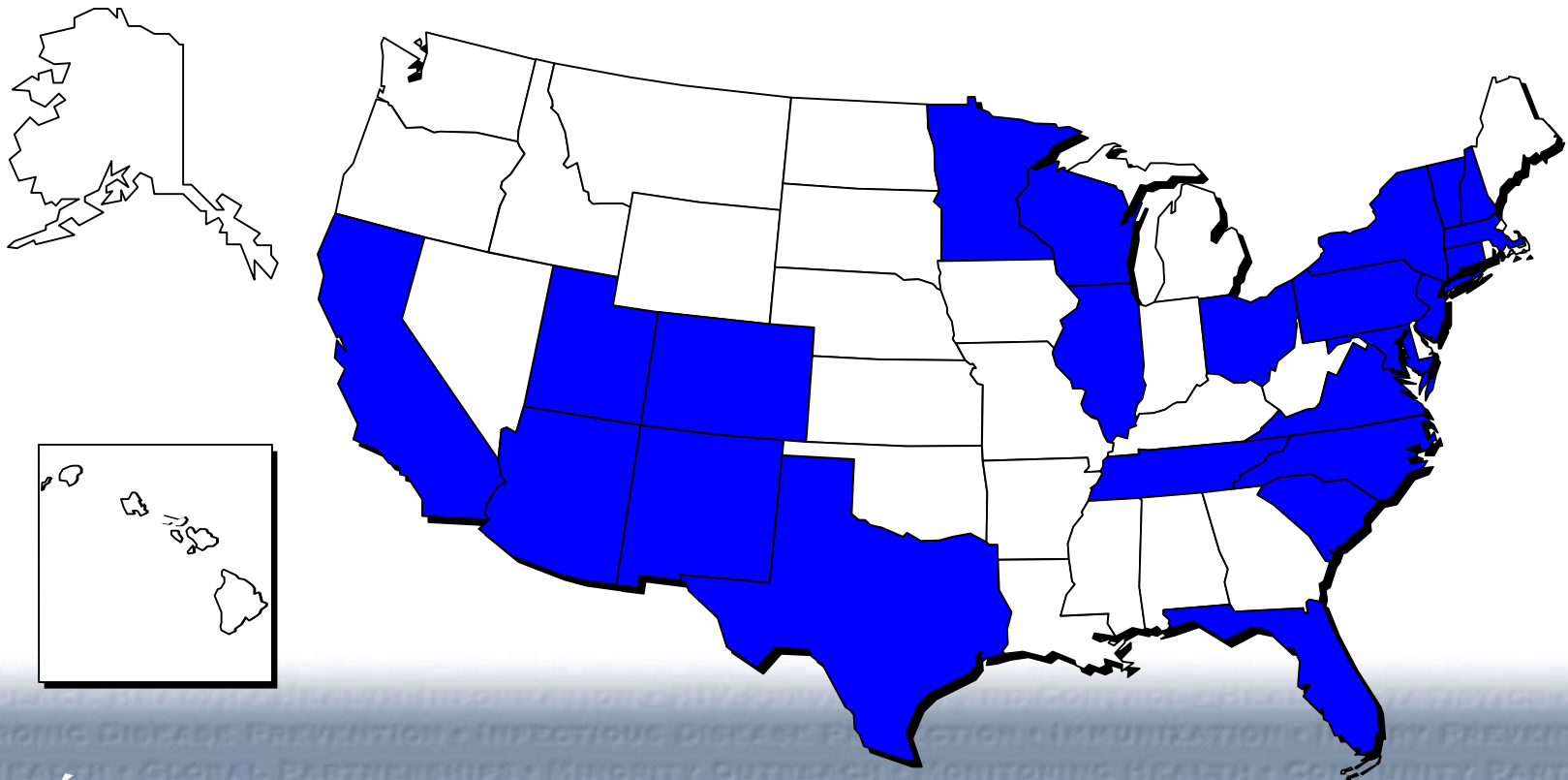
- Claire Broome, MD
- James W. Buehler, MD, MPH
- Louise Gresham, PhD, MPH
- Richard Hopkins, MD, MSPH
- Ken Kleinman, ScD
- Farzad Mostashari, MD, MSPH
- J. Marc Overhage, MD, PhD
- Julie Pavlin MD, MPH
- Robert Rolfs, MD, MPH
- Henry Rolka, RN, MPS, MS
- David Siegrist, MS, MA
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Van Tong, MPH

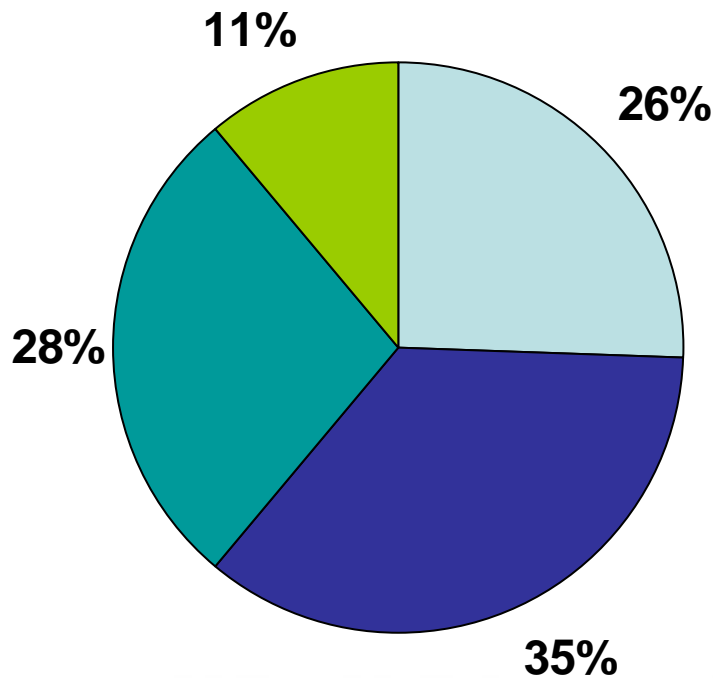
[www.cdc.gov/epo/dphsi/syndromic.htm](http://www.cdc.gov/epo/dphsi/syndromic.htm)

# Abstracts to the National Syndromic Surveillance Conference 2003

23 states and DC represented



# Abstracts to the National Syndromic Surveillance Conference 2003



## Abstract Focus

- System Description or Implementation
- System Evaluation
- Detection Algorithm or Model
- Case Definitions

# Abstracts to the National Syndromic Surveillance Conference 2003

- 60 abstracts on systems
  - 30% of systems included manual data collection
  - 5% of systems used for case detection
- 35 abstracts evaluating systems
  - 34% lacked data in the abstract
  - 63% collected data prospectively

# Abstracts to the National Syndromic Surveillance Conference 2003

## Data sources for 60 abstracts on systems

Emergency Departments	48%	(29)
Office/Clinic Visits	22%	(13)
Hospital Diagnosis	12%	(7)
School Absences	12%	(7)
911 Calls/EMS Runs	10%	(6)
OTC Purchases	8%	(5)
Poison Control Centers	8%	(5)
Nurse Advice Lines	7%	(4)

# Abstracts to the National Syndromic Surveillance Conference 2003

## 35 abstracts on system evaluation

- 37% referenced system alerts
- 20% referenced  $\geq 1$  investigation
- 57% referenced outbreak detection (including 9% missing outbreaks)
- 20% addressed any aspect of timeliness

# Evaluation Challenge: Is Syndromic Surveillance Worth It?

- Impact: What can it do?
  - Completeness of outbreak detection
  - Timeliness of outbreak detection
  - Value of early detection
- Cost
  - System implementation and management
  - False alarms

# Evaluation Framework: Abridged

1. How often does the system signal an event?
2. How is the signal responded to?
3. How often is an outbreak detected through the system? How often missed?
4. What was the impact of early detection?



# Resources

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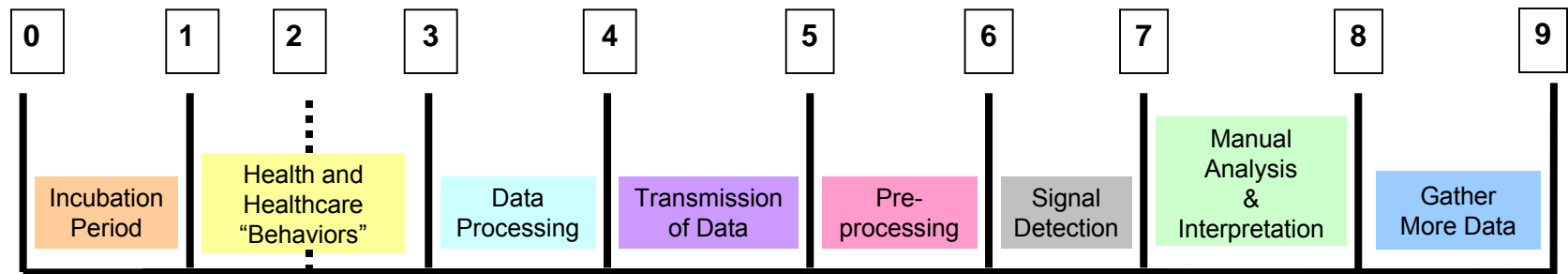
[www.cdc.gov/epo/dphsi/syndromic.htm](http://www.cdc.gov/epo/dphsi/syndromic.htm)

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# Evaluation Framework: Timeliness



0. Point Source Exposure

1. Symptom Onset

2. Behavior

3. Capture Behavior in Record

4. Data Source Ready to Share

5. Capture in Surveillance System

6. Apply Algorithms

7. Automated Alerts

8. Initiate Public Health Investigation

9. Initiate Public Health Intervention

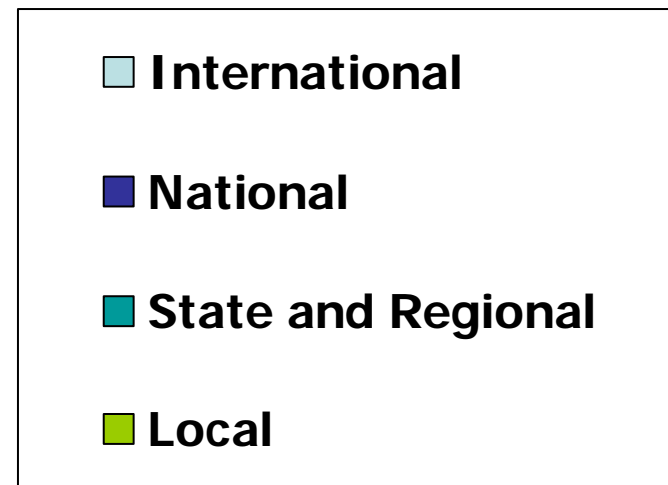
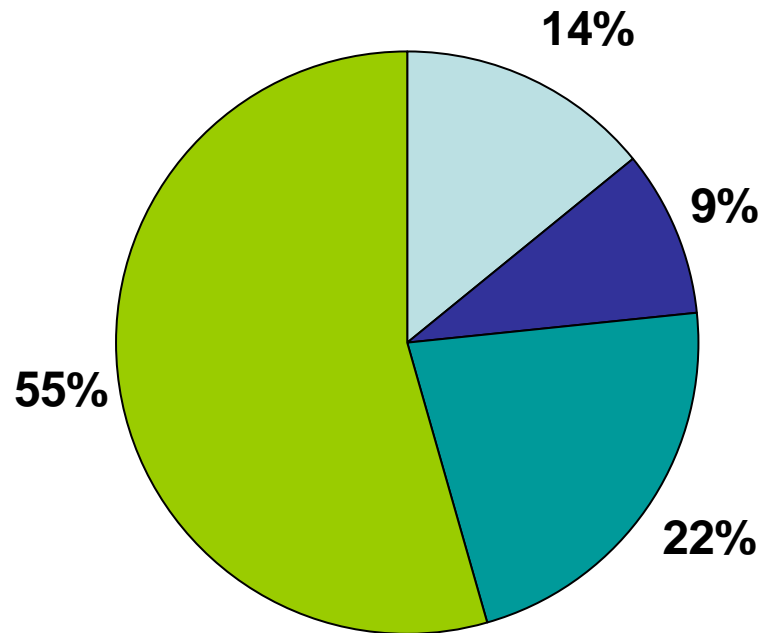
# Evaluation Framework: Validity for Outbreak Detection

- System factors
  - Case definitions
  - Baseline occurrence and underlying patterns
  - Reporting delays
  - Statistical and epidemiological analysis
- Outbreak factors
  - Exposure
  - Agent, host, and environmental conditions



# Abstracts to the National Syndromic Surveillance Conference 2003

## Location of System or Author



# Abstracts to the National Syndromic Surveillance Conference 2003

