

# Physician-Epidemiologists in USPHS

**CDR David Kim**  
**COA Professional Conference**  
**May 2, 2006**





**Epi??**



20  
06

MAY 1-4



**20  
06**

**MAY 1-4**

## Denver

- Founded 1858
- Population 550,000 (25<sup>th</sup>)
- Elevation 5280'
- Annual snowfall 55"
- Hotel rooms downtown 5329
- Golf courses 15

## Maroon Bells

- 30 million years-old
- In Snowmass Wilderness Area
- Most photographed peak in North America
- Maroon Lake sculpted by glaciers

## Red Rocks Amphitheater

- Seats 9450
- Nested between sandstone outcrops taller than Niagara Falls
- Site of my high school graduation
- U2 recorded "Sunday Bloody Sunday"

## City Park

- Denver's largest park 370 acres
- Denver Zoo
- Museum of Nature and Science
- 5 baseball, 6 soccer, 1 lacrosse fields
- 3 manufactured lakes



# Epidemiology: Definition

- ***Merriam-Webster Collegiate Dictionary: **Epi-** (on, upon, over); **demos-** (people) = process affecting large number of individuals***
- ***A Dictionary of Epidemiology (Last J 2001): Study of distribution and determinants of health-related events in populations, and application of disciplines to control health problems***
- **Study of... state of health... in populations**

# Epidemiology: History

- **Hippocrates: Environment is an important source of disease agents**
- **Louis: No therapeutic effect from bloodletting**
- **Snow: Waterborne transmission of cholera**
- **Goldberger: Dietary etiology of pellagra**
- **Doll and Hill: Causal link between cigarette smoking and lung cancer**

# **Epidemiology: Principles**

- **Driven by reason, logic, data**
- **Focuses on populations**
- **Encompasses all health issues**
- **Emphasizes control and prevention**

# **Katrina Epidemiological Activities**

- **Shelter needs assessment**
- **Public health surveillance**
- **Outbreak investigation and control**
- **Prevention services**
  - **Infection control**
  - **Immunization**
- **Health education, risk communication**
  - **Occupational health**
  - **Personal hygiene**
  - **Clinical practice guidelines**

# Needs Assessment

- **General and Special Needs Shelters**
- **Evaluate clinical, environmental, pharmaceutical, mental health needs for short- and intermediate-term**
- **Collaborate with American Red Cross, LA Department of Health and Hospitals (State Epidemiologist)**

# Shelter Needs Assessment Instrument

- **Shelter data**
  - Contact information
  - Capacity, census, demographics
  - Information management
- **Healthcare capacity**
  - Available hospitals, clinics, providers
  - Staff planning and scheduling
  - Isolation procedures
- **Surveillance**
  - Syndromic
- **Specific needs**
  - **Clinical:** Durable medical equipment, supplies, pharmaceuticals, staff
  - **Environmental:** Facility safety, sanitation, chemical hazards, vector control, injury prevention

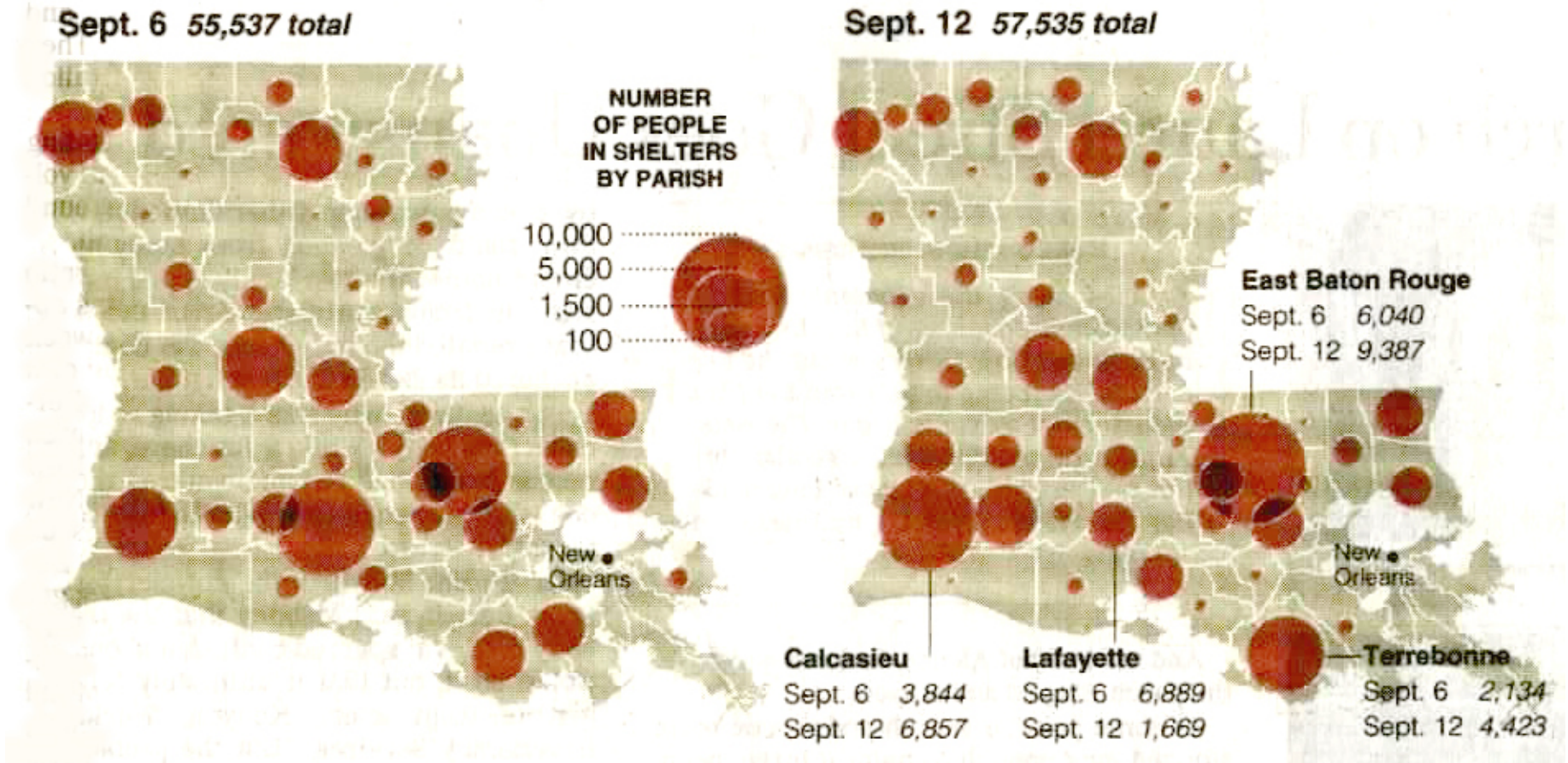
# Shelter Needs Assessment Implementation

- **24 field teams made of USPHS and ARC staff**
  - **Physician-Epidemiologist**
  - **Nurse**
  - **Pharmacist**
  - **Environmental Health Officer**
  - **Mental Health Officer**
- **Standardized information collection**
  - **Shelter Needs Assessment Instrument**
- **Conducted September 8-12**
- **Analysis of shelter needs assessment conducted by**
  - **CDR Steve Auerbach**
  - **CAPT Kelly Aston**
  - **CDR Laurence Grummer-Strawn**

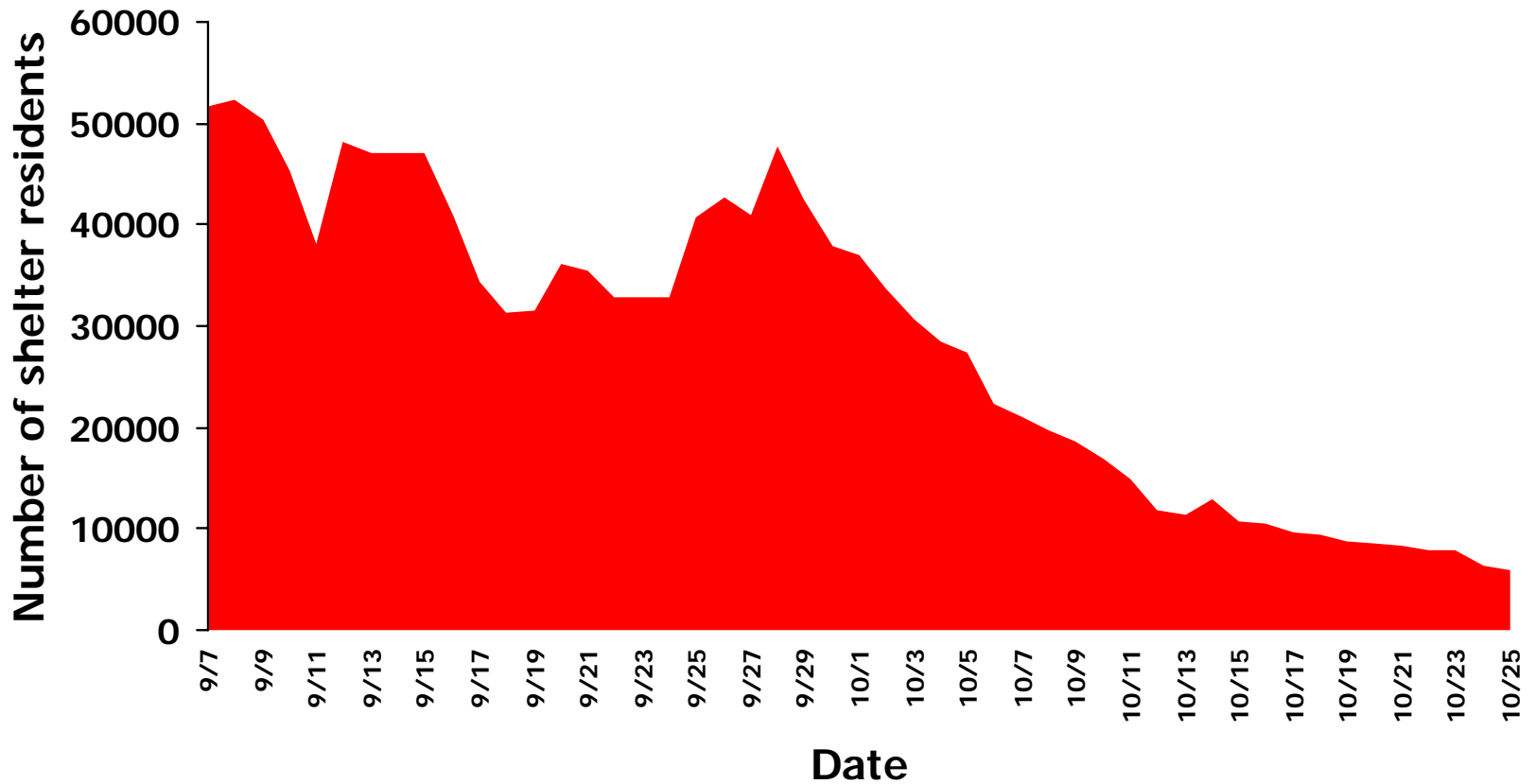
# Shelter Needs Assessment Findings

- **267 general shelters assessed**
  - 176 (64%) in operation
  - 63 (36%) of 176 had on-site medical clinic
  - 76 (43%) actively screened arriving residents for illnesses
- **8 special needs shelters**

# Number of Evacuees in Shelters, by Parish, Louisiana, September 2005

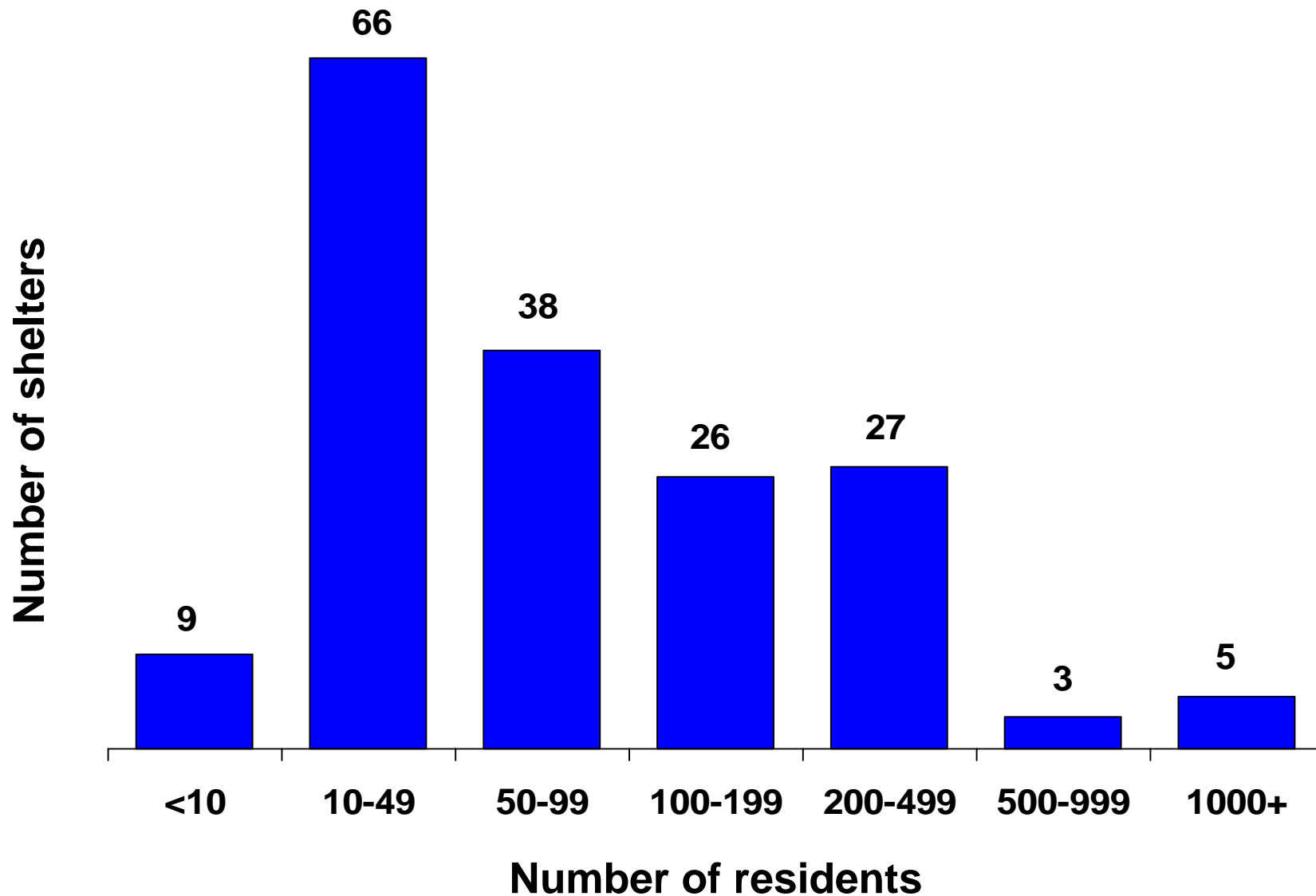


# Resident census in shelters Louisiana, September-October 2005



# Census of Assessed Shelters, Louisiana, September 2005

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# Shelter Needs Priorities

## Louisiana, September 2005

**Prioritizing shelters based on overall condition and needs:**

**Needs Immediate Action = 18 shelters**

**Needs Action Soon = 48 shelters**

**No action Needed = 98 shelters**

# Surveillance

- **Anticipation of worst case scenario**
  - Breakdown of environmental control
  - Widespread injuries and exposure illnesses
  - Outbreaks of acute infectious diseases
- **Disease surveillance at field hospitals**
- **Syndromic surveillance at shelters**



# Syndromic Surveillance Instrument



STATE OF LOUISIANA  
DEPARTMENT OF HEALTH AND HOSPITALS



Kathleen Babineaux Blanco  
GOVERNOR

Frederick P. Cense, M.D., M.P.H.  
SECRETARY

## Hurricane Katrina Emergency Disease Surveillance

Shelter Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Current Shelter Census: \_\_\_\_\_ FAX: \_\_\_\_\_  
Point of Contact: \_\_\_\_\_ EMail: \_\_\_\_\_

For the past 24 hour period from 12:00 am to 11:59 pm: \_\_\_\_\_ date (mm/dd/yy) Number of patients treated in past 24 hour period: \_\_\_\_\_

Count each person receiving medical attention only once, according to their most severe symptom (chief complaint):

Symptom category	Total # patients evaluated or treated	# Patients referred to another facility for care
<b>Epidemic Disease Potential</b>		
Fever >100.4° F (38° C) ALONE without localizing symptoms / signs		
Bloody diarrhea		
Watery diarrhea (3 or more watery bowel movements per day) with or without vomiting		
Vomiting only (One episode or more)		
Flu-like or other severe respiratory infection (e.g., fever and either cough or sore throat)		
Rash (circle: measles, rubella, chickenpox / varicella, skin infections, other)		
Scabies, lice, or other infestation		
Wound infection		
Conjunctivitis (pink eye)		
Other (suspected tuberculosis or hemoptysis, whooping cough, meningitis / encephalitis, jaundice/ hepatitis, etc)		
Please specify: _____		
<b>Mental Health / Psychological Problems</b>		
Any pre-existing psychiatric disorder (major depression, anxiety, depression, bipolar disorder, schizophrenia)		
New psychiatric disorder since hurricane (post traumatic stress disorder, disorientation, dementia, confusion, out of control behavior, threats to self or others, loss of touch with reality)		
Drug / alcohol substance abuse or withdrawal		
<b>Injury / Chronic Disease / Other</b>		
Self inflicted injury		
Injury – Intentional (circle: violence, sexual assault)		
Injury – Unintentional (accidents)		
Dehydration		
Heat related injury (not dehydration)		
Diabetes Mellitus		
Asthma / COPD		
High blood pressure and other cardiovascular diseases		
Sexually Transmitted Diseases / HIV		

Number of deaths within the past 24 hours \_\_\_\_\_

Do you need assistance with or additional resources for:

Physician staffing	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Nurse staffing	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Pharmacist staffing	<input type="checkbox"/>	<input type="checkbox"/>	Mental Health staffing	<input type="checkbox"/>	<input type="checkbox"/>
Sanitation/Environmental Health	<input type="checkbox"/>	<input type="checkbox"/>	Medications/Drugs/Medical supplies	<input type="checkbox"/>	<input type="checkbox"/>

Additional Comments/Concerns: \_\_\_\_\_  
\_\_\_\_\_

**THE FORM MUST BE TRANSMITTED DAILY. (FAX 225-216-2337)**  
Call 225-216-2313 / 225-216-0362 for any questions or concerns.

Epidemic disease potential

Mental health

Injury

Chronic diseases

# **Field Hospital Surveillance**

## **Pete Maravich Assembly Center**

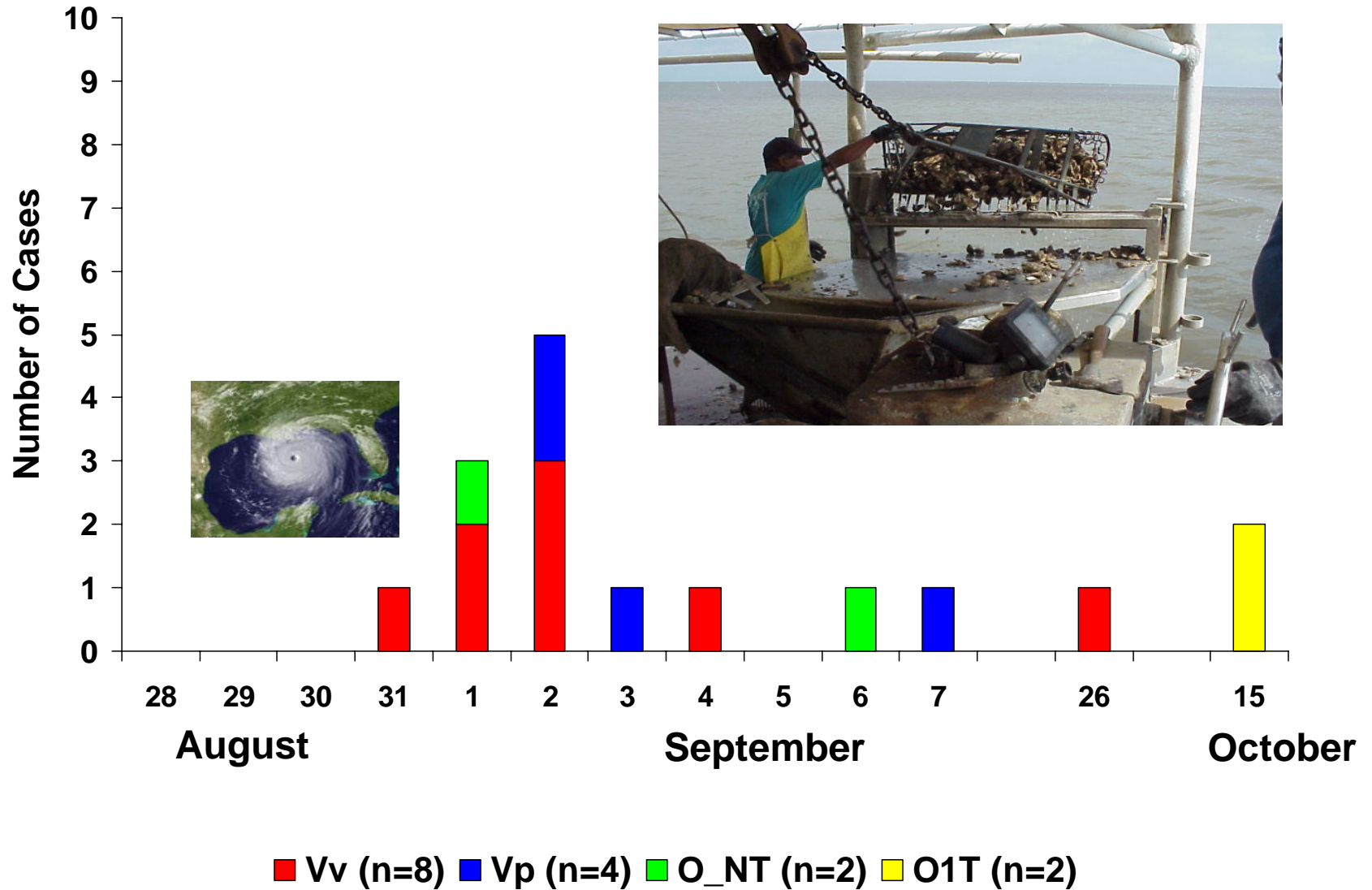
- **Clinical**
  - Rash, gastrointestinal, respiratory illnesses
  - Inpatients, volunteers
- **Laboratory**
  - Gastroenteritis pathogens
- **Field**
  - DMATs

# Hepatitis A

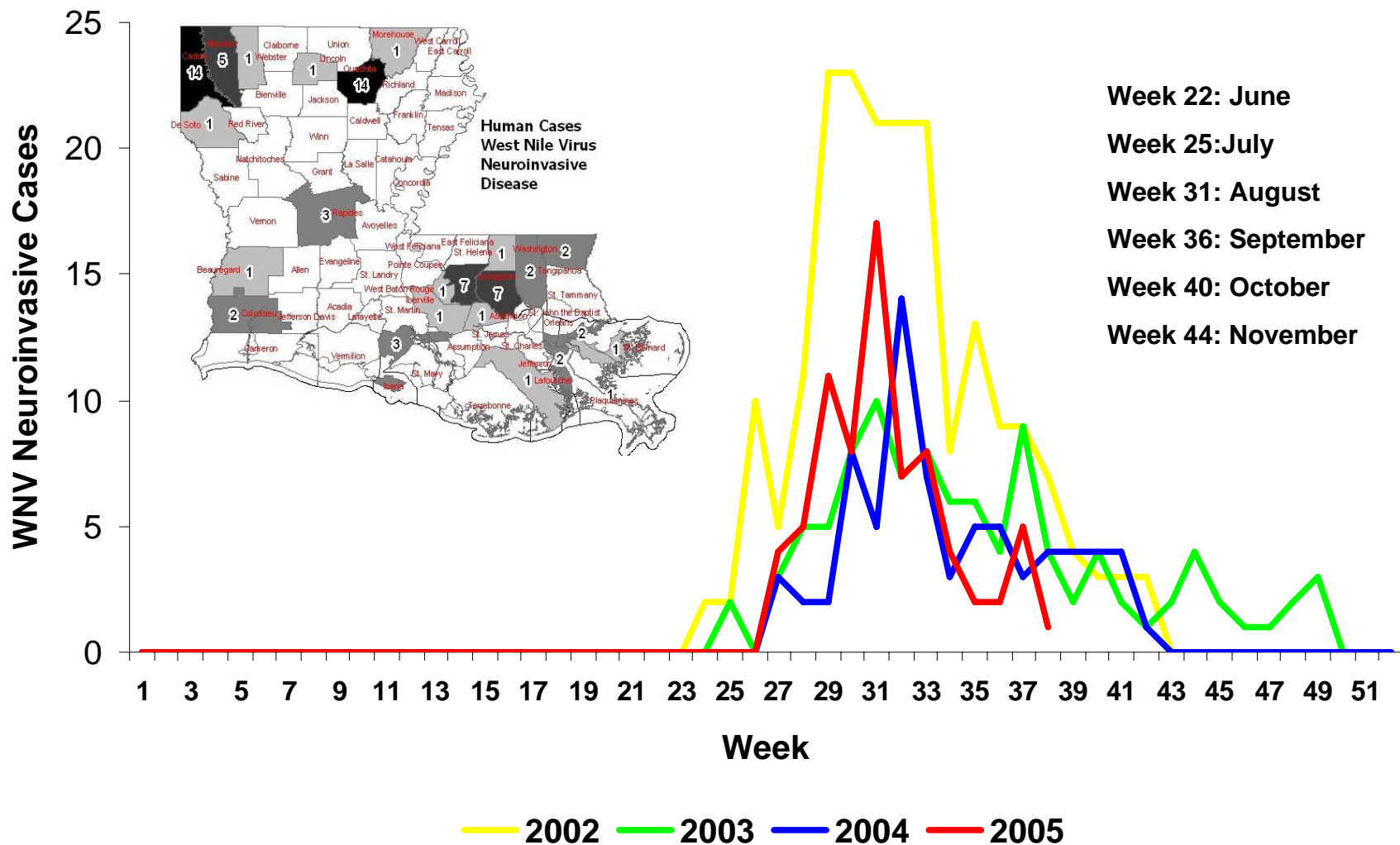
- **Reported rate: 2 cases/100,000/year**
- **Estimating 5% are reported: 40/100,000/year**
- **For a population of 1,000,000: 400 cases/year**
- **For any 2 week period in greater New Orleans:  
~20 cases**
- **Number of reported cases of hepatitis A after  
Hurricane Katrina did not exceed usual  
expectation**

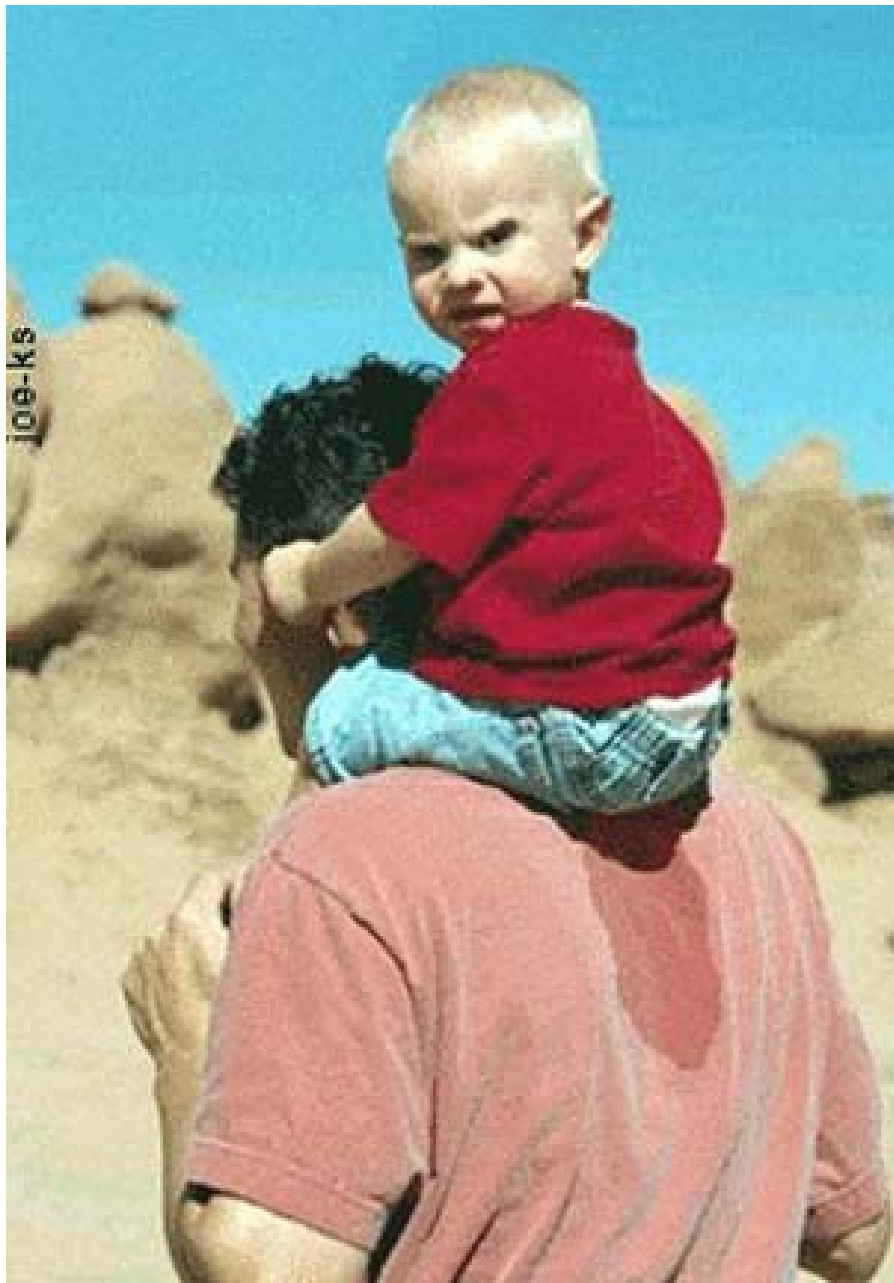
Source: Dr. Raoult Ratard  
State Epidemiologist, Louisiana

# Number of reported cases of *Vibrio* (N=16), Louisiana, Aug 28 - Oct 15



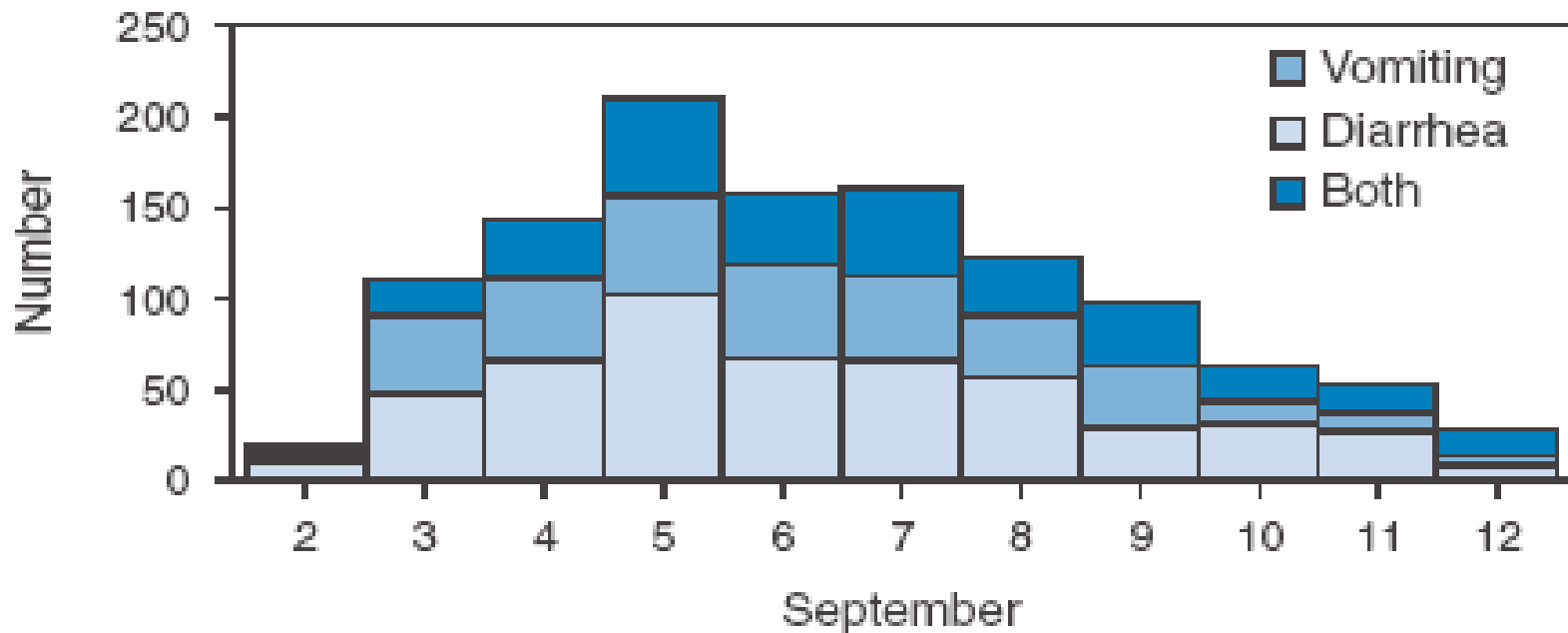
# Number of Human Cases of West Nile Virus Neuroinvasive Disease Louisiana, 2002-05





# Disease Surveillance at Reliant Park Houston, Sept. 2-12

- 8/31: 24,000 evacuees sheltered at Reliant Park
- 9/2-12: 6,500 (27%) evacuees seen at Reliant Park medical clinic; 1,169 (18%) had acute gastroenteritis
- Norovirus confirmed in 22 (50%) stool specimens from 44 patients by RT-PCR; no other enteropathogen identified





# Outbreak Investigation and Control

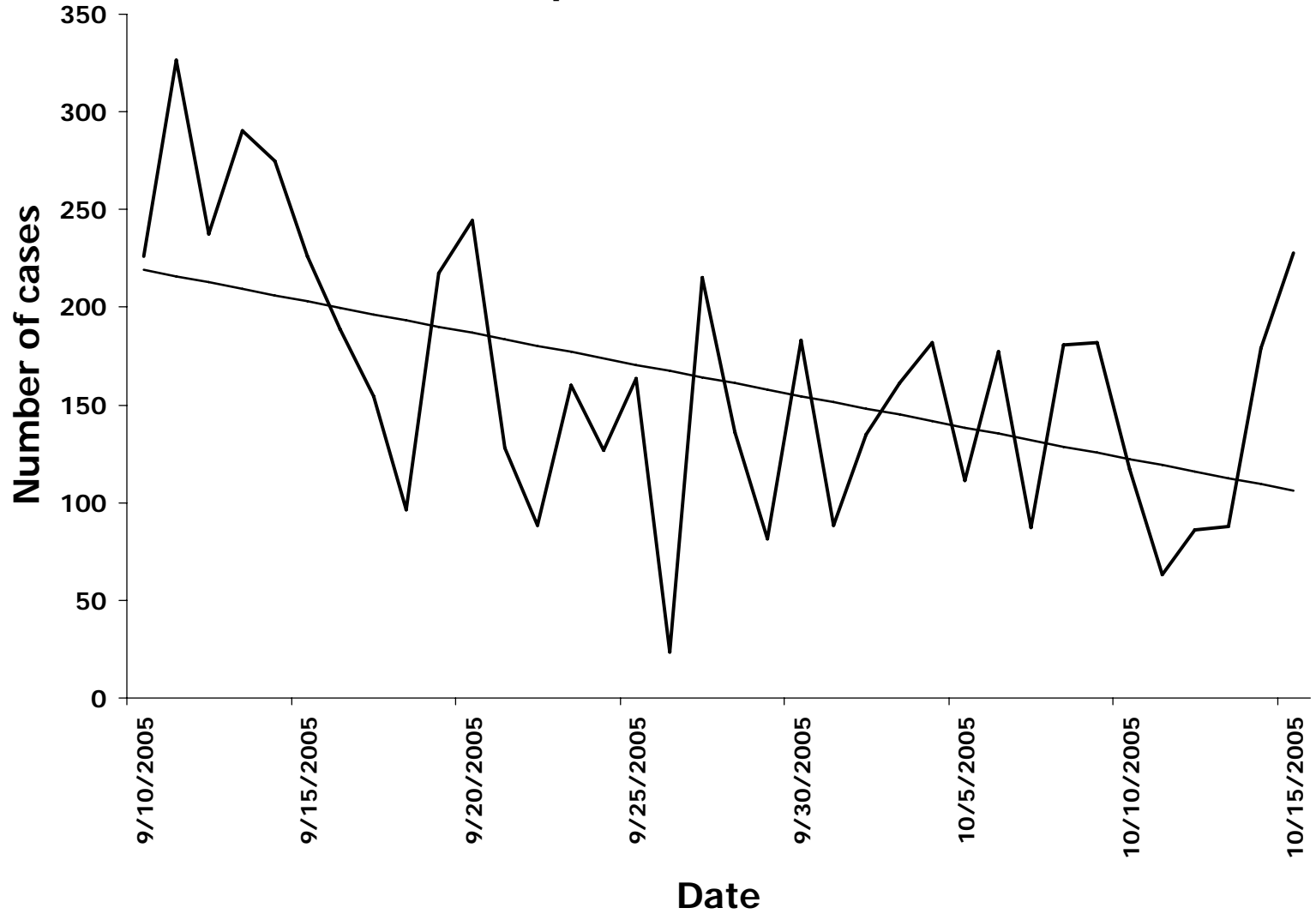
- **A product of effective surveillance**
  - Confirm reports
  - Determine trends and etiology
  - Apply control measures
  - Implement strategies to prevent future outbreaks
- **Multidisciplinary**
  - Epidemiological
  - Environmental
  - Laboratory
- **Monitor clinical care burden and capacity at shelters**

# Medical Conditions of Shelter Residents Louisiana, September 2005

Condition	Incidence per 1000 residents	% shelters with unmet need for drugs and supplies to treat this condition
Hypertension/Cardiovascular	108.2	43 - 71
Diabetes	65.3	14 - 25
New psychiatric conditions	59.0	50 - 70
Pre-existing psychiatric conditions	50.0	60 - 70
Rash	27.6	
Asthma/COPD	27.5	70
Flu-like/severe respiratory symptoms or pneumonia	26.3	50
Toxic exposure	16.0	
Other infections*	15.6	
Diarrhea	12.8	20

\* TB, hepatitis, pertussis, varicella, rubeola, encephalitis, meningitis, other serious communicable illness of outbreak potential

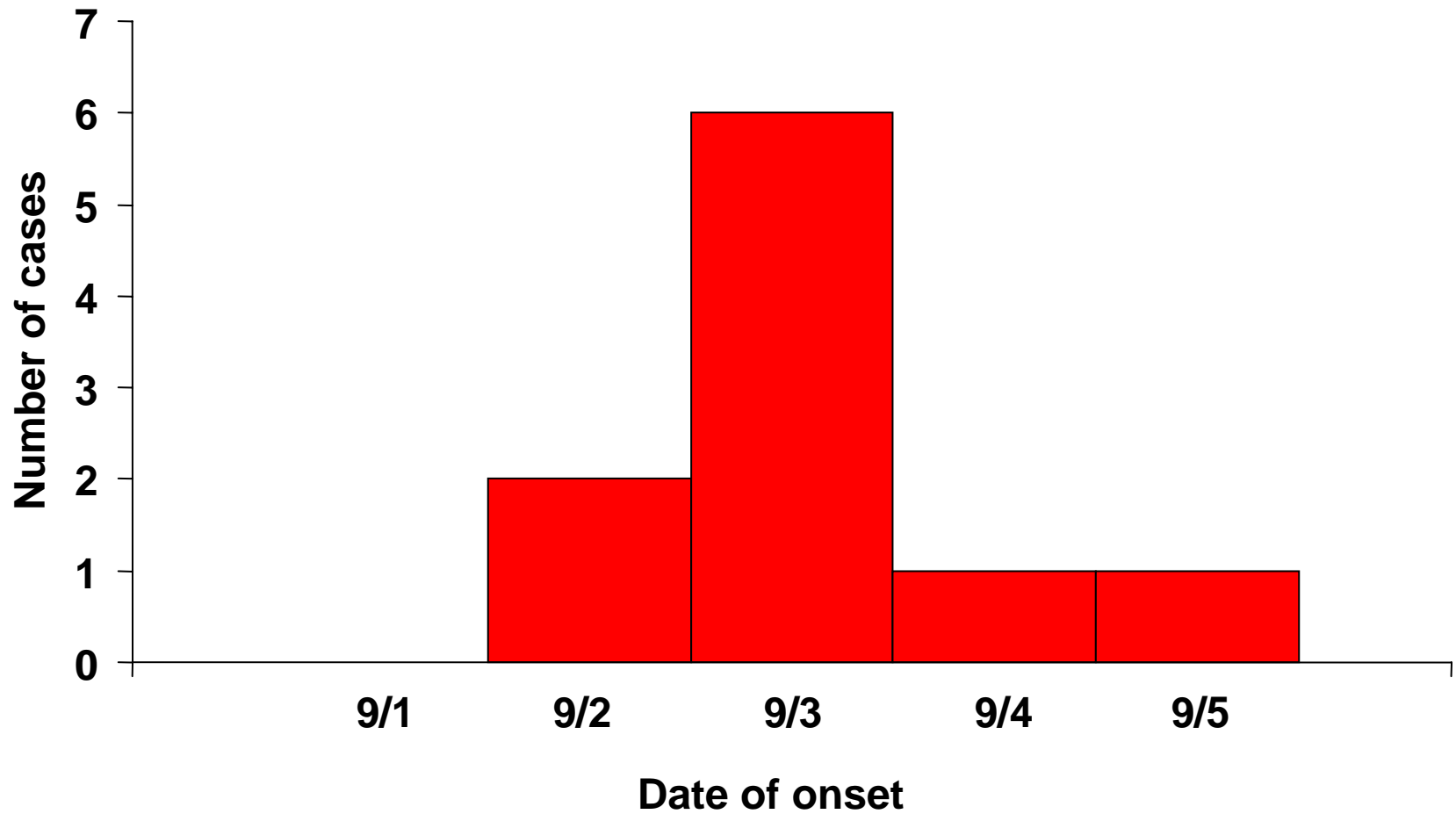
# Number of reported cases of diarrhea in shelters Louisiana, September-October 2005



## Line Listing of Gastroenteritis Cases at Lamar Dixon Shelter, Gonzales, LA, September 2005

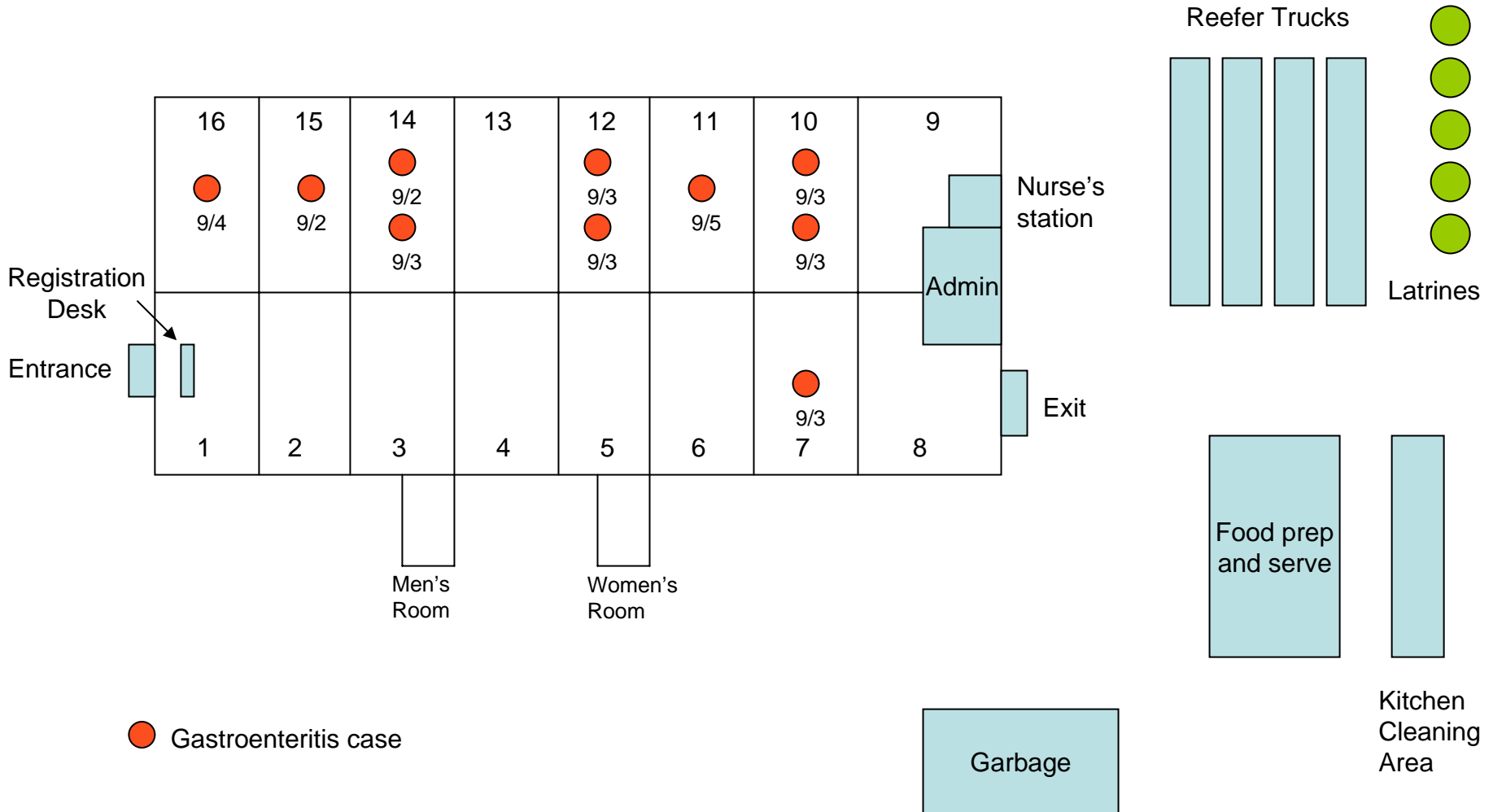
<b>Pt</b>	<b>Section</b>	<b>Sx</b>	<b>Sex</b>	<b>Age</b>	<b>Onset</b>	<b>Arrival</b>	<b>Onset-Arrival</b>
<b>1</b>	<b>15</b>	<b>D</b>	<b>F</b>	<b>75</b>	<b>9/2</b>	<b>--</b>	<b>--</b>
<b>2</b>	<b>14</b>	<b>D</b>	<b>F</b>	<b>55</b>	<b>9/2</b>	<b>--</b>	<b>--</b>
<b>3</b>	<b>7</b>	<b>V</b>	<b>F</b>	<b>--</b>	<b>9/3</b>	<b>8/30</b>	<b>5 days</b>
<b>4</b>	<b>12</b>	<b>D</b>	<b>M</b>	<b>--</b>	<b>9/3</b>	<b>8/30</b>	<b>5 days</b>
<b>5</b>	<b>14</b>	<b>D/V</b>	<b>F</b>	<b>49</b>	<b>9/3</b>	<b>--</b>	<b>--</b>
<b>6</b>	<b>12</b>	<b>D/V</b>	<b>F</b>	<b>18</b>	<b>9/3</b>	<b>8/27</b>	<b>8 days</b>
<b>7</b>	<b>10</b>	<b>V</b>	<b>F</b>	<b>--</b>	<b>9/3</b>	<b>--</b>	<b>--</b>
<b>8</b>	<b>10</b>	<b>V</b>	<b>F</b>	<b>--</b>	<b>9/3</b>	<b>8/30</b>	<b>5 days</b>
<b>9</b>	<b>16</b>	<b>V</b>	<b>M</b>	<b>7</b>	<b>9/4</b>	<b>--</b>	<b>--</b>
<b>10</b>	<b>11</b>	<b>V</b>	<b>F</b>	<b>--</b>	<b>9/5</b>	<b>--</b>	<b>--</b>

# Epidemic Curve of Lamar Dixon Convention Center Shelter Gastroenteritis Outbreak, Gonzales, LA, September 2005



# Spot Map of Gastroenteritis Cases

Lamar Dixon Convention Shelter, Gonzales, LA, September 2005





# Summary

- **Epidemiology as a discipline**
- **Epidemiology ~ public health practice**
- **Epidemiological activities at Hurricane Katrina response**
  - **Shelter needs assessment**
  - **Public health surveillance**
  - **Outbreak investigation and control**

# Recommendations

- **Create a panel of epidemiologists to define their roles and responsibilities in OFRD deployments**
- **Add epidemiologists to OFRD deployment teams as a separate discipline**
- **Plan and Prepare epidemiological activities before deployment**
- **Develop training curricula for epidemiologists appropriate for OFRD deployments**

# Hurricane Katrina Epidemiology Team

## August - September, 2005

**CAPT David Sniadack**  
**CDR David Kim**  
**CDR William Greim**  
**LCDR Carma Ayala**

**CDR Francisco Averhoff**  
**CDR Steven Auerbach**  
**CDR Jeff Brady**  
**LCDR David Staten**  
**LCDR John Iskander**  
**LT Matt Sullivan**

