Infectious Disease Issues Associated with Hurricane Katrina (HK)

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New Orleans

- Largest city in LA
- Almost 500,000 residents (greater NO area 1.3 million)
- 67% African American
- Median income for a family $32 K
- Almost ¼ below poverty line
- Significant portion of NO is 1-10 feet below sea level
Impact of Katrina Greater than ‘Just’ a Hurricane

- 80% of New Orleans was flooded
- 60-80% of the population was evacuated
- No power or water
- Media coverage questioned Federal response
- Public health infrastructure gone
- Think of post-tsunami Banda Ache or post-earthquake Haiti
Public Health Issues Associated With Natural Disasters

- Water Quality
- Wounds
- Solid Waste Disposal
- General Sanitation (debris removal)
- Vector Control
- Immunizations (workers and population)
- Close-quarter, densely populated living conditions
- Disruption of access to medical services
Priorities

- Surveillance
- Support re-building PH infrastructure
- Support planning for enhanced PH

Support, not supplant!
CDC Commitment

- Residual, focused assistance continued past these 129 days.
- 1,324 staff deployed; mainly to the Emergency Operations Center, but also to impacted states/cities.
Planning Challenges

- Lack of clear predictability of future (e.g., population of New Orleans = 150K? 450K?)
- Evolving mission and competing priorities
- Multiple overlapping planning processes, commissions, organizations, Agencies, etc.
- Sustainability after our departure
New Orleans population estimates

- pre-Katrina – 484,674 (2000 US Census)
- October 2005 – 127,800
- December 2005 – 134,400
- January 2006 – 181,400
Distribution of Evacuation Centers and Census by State
September 14, 2005

Label represents number of shelters

Population of Shelter
- 30 - 100 people
- 101 - 1,000 people
- 1,001 - 5,000 people
- 5,001 - 10,000 people
- 10,001 and above

* Source: American Red Cross Disaster Operations Summary Report
Surveillance Challenges

- Disruption of Public Health and Medical Infrastructure
  - Displaced personnel
  - Damaged laboratory and other facilities
  - Affected power and telephone service
- Large numbers of Evacuation Centers (EC) with need for longer operation
- Multi-state HK effects and evacuee displacement
- Lack of single registration source for evacuees
Surveillance at New Orleans Area Hospitals* for Conditions with Infectious Disease/Epidemic Potential, September 9-20, 2005

Non-infectious rash: 299
Acute Respiratory Infections*: 188
Vomiting: 142
Fever: 98
Dehydration: 87
Watery Diarrhea: 55

*represents 5 hospitals (West Jefferson, East Jefferson, Ochsner, Northshore, and St. Charles Parish); Total of 3,750 patients seen during reporting period

Source: LA DOH and Greater New Orleans Public Health Response Team
Surveillance at New Orleans Area Hospitals* for Injury/Chronic Disease/Other Conditions, September 9-20, 2005

- Injury - Unintentional: 483
- HTN* and other Cardiovascular: 118
- Medication Refill: 64
- Chronic lower respiratory disease: 37
- Injury - Intentional (self-inflicted or violent behavior): 21
- Hyperglycemia, hypoglycemia, or diabetes mellitus: 19
- CO poisoning: 12
- Heat related injury (not dehydration): 5

*5 hospitals (West Jefferson, East Jefferson, Ochsner, Northshore, and St. Charles Parish); Total of 3,750 patients seen during reporting period

Source: LA DOH and Greater New Orleans Public Health Response Team
## Top Conditions Identified in LA Shelter Needs Assessment (USPHS and ARC)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Incidence per 1,000 residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension/ Cardiovascular</td>
<td>108.2</td>
</tr>
<tr>
<td>Diabetes</td>
<td>65.3</td>
</tr>
<tr>
<td>New Psychiatric Conditions</td>
<td>59.0</td>
</tr>
<tr>
<td>Pre-existing Psychiatric Conditions</td>
<td>50.0</td>
</tr>
<tr>
<td>Rash</td>
<td>27.6</td>
</tr>
<tr>
<td>Asthma/ COPD</td>
<td>27.5</td>
</tr>
<tr>
<td>Flu-like/severe respiratory symptoms or Pneumonia</td>
<td>26.3</td>
</tr>
<tr>
<td>Toxic exposure</td>
<td>16.0</td>
</tr>
<tr>
<td>Other infections*</td>
<td>15.6</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>12.8</td>
</tr>
</tbody>
</table>

*TB, hepatitis, pertussis, varicella, rubeola, encephalitis, meningitis, other serious communicable illness of outbreak concern
Main Categories of Infectious Diseases Seen Post HK

- Gastrointestinal
- Wound infections
- Respiratory
- Skin infections
Diarrhea/Gastroenteritis

- Norovirus
- *Vibrio cholera*, non O1, non-O139
  - 3 cases, no deaths
- *Vibrio cholera* O1, nontoxigenic
  - 3 cases, no deaths
- nontyphoidal Salmonella
Wound Infections

- **Vibrio vulnificus**
  - 14 cases* (3 deaths)
- **Vibrio parahemolyticus**
  - 3 cases* (2 deaths)

*Number of cases reported as of September 14, 2005

From: CDC. *Vibrio Illnesses After Hurricane Katrina --- Multiple States, August--September 2005.* MMWR September 14, 2005 / 54(Dispatch): 1-4
**FIGURE 1.** Cases of post-Hurricane Katrina *Vibrio* illness among residents of Louisiana and Mississippi,* by date of hospital admission — United States, August 29–September 11, 2005

![Graph showing cases of post-Hurricane Katrina Vibrio illness](image)

**N = 22:** Alabama, a third state under surveillance, reported no cases.

*Nontoxigenic V. cholerae* illnesses represent infections entirely distinct from the disease cholera, which is caused by toxigenic *V. cholerae* serogroup O1 or O139.

*Date of admission was not available for one Louisiana resident. In cases that did not require hospitalization, the date represents the first contact with a health-care provider for the illness.*
Respiratory Diseases

- Upper and lower respiratory infections
  - Pertussis
  - Respiratory syncyial virus
  - Streptococcal pharyngitis

- Tuberculosis (TB)
  - ~9 evacuees evaluated as suspected TB cases
  - Only 2 confirmed to have TB (1 pulm, 1 extrapulm)
Location, by State, of TB Patients Displaced by Hurricane Katrina (as of Sept 30, 2005)

- Where began treatment
- Where now continuing treatment
- Where new case confirmed

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Skin Infections/Other

- Methicillin Resistant *Staphylococcal aureus* (MRSA)
  - 30 cases reported, 3 confirmed
- Tinea corporis
- Folliculitis
- Varicella
- Presumed viral conjunctivitis
- Others: scabies, head lice, arthropod bites, immersion foot, animal bites
Vector-borne Infections

Human West Nile virus cases by county, Mississippi, 2005*

Human West Nile virus cases by week of onset, Mississippi, 2005*

*Reported as of 10/3/2005

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Other Infectious Disease Challenges

- Continuity of HIV/AIDS Patient Care

- Recommended Responder Vaccinations
  - To address vaccine-preventable disease risks to responders
    - Tetanus if not up to date
    - Hepatitis B if patient care or exposure to bodily fluids
    - If working in large ECs, other vaccines as recommended for evacuees
Other Infectious Disease Challenges (Prevention)

- Recommended Evacuee Vaccinations
  - To ensure children, adolescents, and adults were protected by maintaining current, standard vaccine recommendations
  - To reduce likelihood of outbreaks of vaccine-preventable diseases in the large, crowded group settings
Other Infectious Disease Challenges (Prevention)

- Recommended Evacuee Vaccinations
  - For routine vaccinations, assume up-to-date and follow schedule for age
  - For crowded group settings:
    - Influenza (≥ 6m)
    - Varicella (≥ 12m unless history of chickenpox or record)
    - MMR (≥12m and borne 1957 or after, if no record of 2 shots)
    - Hepatitis A (≥ 2y, one dose, unless history or record)
Summary

- Infections consistent with those endemic to the affected regions and are predictable
- Only 1 outbreak of illness (diarrhea) resulted in a request for additional response assistance
- Longer-term displacement and medical system disruption presented treatment challenges for those on pre-hurricane treatment for infectious diseases and chronic illnesses
- Unified registration source for evacuees would assist with medical treatment/vaccine registry matching to assure continuity of care
Questions?