Hurricane Katrina

The Houston Experience: Views from the Field

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Hot Topics in Preparedness
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Objectives

- Discuss the Center’s role and activities in pre-Katrina/Rita (K/R) and post-K/R preparation and response
- Compare pre- and post-K/R expectations with on-the-ground realities
- Discuss challenges/successes experienced and how they were addressed
- Offer observations and recommendations to improve Public Health Disaster preparedness and response
Considerations

- Disasters are “local”; Response is “global”
- Bi-directional preparedness (send/receive staff and resources)
- Impact of another community’s disaster on your community: Are you prepared?
- Responder skills/experiences and commonalities in training (All hazard preparedness)
- Communication—preceding relationships; planning, training and responding together
Katrina Strikes

The Houston Experience

Katrina Strikes

improving our nation’s health security
Katrina Impacts

Federal disaster declarations
  – covered more than 90,000 square miles

Loss of life
  – 1,577 deaths (potentially more)

Flooding
  – Levees separating N.O. from surrounding lakes breached
  – At least 80% of city underwater by 8/31
  – Some areas under as much as 20 ft. of water
  – More than 1 million people displaced

Source: White House photo by Paul Morse
Katrina Impacts

Power Outages
- Over 1.7 million people lost power
- Drinking water also unavailable

Cost
- $70 – 130 billion
- Topped Hurricane Andrew as most expensive natural disaster in US history

Travel
- Both N.O. Airports were flooded and closed 8/30
- Bridges of Interstate 10 destroyed
- Most costal highways impassable
Houston Shelters

RELARIANT COMPLEX:

Houston Astrodome
- On August 31, Harris County agreed to allow at least 25,000 evacuees from N.O., especially from Superdome
- Evacuation began September 1
- Astrodome declared full as of September 2

Reliant Center and Reliant Arena
- All events cancelled through December in order to open buildings to an additional 11,000 evacuees
Houston Shelters

Busses headed to Houston

George R. Brown Convention Center

Houston Astrodome

Image Source: FEMA
Houston Shelters

Katrina
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Reliant Center Shelter
Feedback Poll

How many residents of New Orleans now live in the Houston area?

A. 30,000 – 40,000
B. 150,000 – 175,000
C. 200,000 – 250,000
D. 350,000 – 400,000
Number of Evacuees

- 27,400 residents in AstroArena (at peak census)
- 6,400 residents in George R. Brown (at peak census)
- 20,000 residents in small shelters
- 57,000 rented hotel rooms
- Private homes
Roles & Activities of Center

Houston and Harris County Health Depts. requested UT-SPH expertise to develop tools & methods to rapidly assess symptoms circulating in evacuees; assist with PH and surge capacity needs

- Faculty and staff deployed to shelters
- Rapid Assessment Tally form developed
Expectations/Realities 1

- Rapid Assessment Tally form developed
- Initial assessments collected using paper tally forms
- Simplified format (tick marks) to "rapidly" collect data
- Data analyzed; entered into computer and emailed to LHDs
Expectations/Realities 1

Daily paper collection of large numbers of data at multiple shelter sites precluded rapid analysis (including trend analysis) and transmittal electronically to LHDs.

Move to electronic data collection reduced project time from approximately 6 hours to 3.5 hours for training, data collection, data analysis and reporting.
RHA Paper Form

Plusses

- Inexpensive
- No mechanical parts
- No training required
- Low chance of data loss

Minuses

- Bad handwriting
- Broad data only
- End of day tallying
  - Time consuming
  - Interpretations
  - Human error
PDAs

Plusses
– One form per person
– “Force” fields
– Quick tallies
– Reliability

Minuses
– Reliability?
– Small screen
– Fear of technology
– Some training needed
– Keyboard
– EXPENSIVE!
PDAs Versus Paper Form

The Houston Experience

GEORGE R BROWN CONVENTION CENTER
HURRICANE KATRINA TRIAGE

Date: ________________
Start time: ________ AM PM
End time: ________ AM PM

Your Name:
COLOR:
SECTION #:
BLOCK:

DENOMINATOR

AGE → → →<1 1-5 6-15

NO PROBS
FEVER
NAUSEA
VOMITING
DIARRHEA
BLOODY DIARRHEA
Rapid Health Assessments

George R. Brown
- Total of 5,448 interviews (9/5-9/16/05)
- Average 447 per night
- Range 836 to 176

Reliant Complex (Astrodome, Arena, Center)
- Total of 29,478 interviews (9/2-9/19/05)
- Average 1,734 per night
- Range 3,203 to 487
- GI outbreak identified 9/5/05 (Assessments: critical in monitoring course of the outbreak)
Reliant Complex

Total Number of Interviews per Night

September 3 – 19, 2005
Feedback Poll

As you prepare for flood evacuees, what kind of problems do you anticipate and need to capture surveillance data for?

A. Upper respiratory infections
B. Gastrointestinal symptoms—vomiting, diarrhea
C. Chronic diseases
D. All of the above
GI outbreak on 9/5

Norovirus identified within 36 hours (TCH)*

*Texas Children’s Hospital
Summary: Health Problems Encountered

• Diarrhea/vomiting

• Respiratory disease (cough/sore throat)

• Skin infections/invasive soft tissue disease

• Exacerbation of chronic illness in patients who have no medication
  – Diabetes
  – Asthma
  – Heart disease…
Expectations/Realities 2

• Expected crowded conditions; infectious diseases (GI, URI, Skin…) due to exposure to contaminated floodwater, etc.

• Anticipated PH sanitation/environmental measures to be implemented
Expectations/Realities 2

Sanitation Realities

• Signs/announcements regarding hygiene (hand gels, etc.)

• Shower/Toilet areas – constant cleaning

• Limiting food/drink in cot areas

• Dispensing of bottled cold drinks

• Volunteers/Staff – JIT training (multiple reporters of health issues, esp. diarrhea)
Sanitation Issues

Hygiene Area

Toilets
Isolation Begins

Saturday, Sept. 3rd

Can house >400 evacuees and their families

Sunday Sept. 4th
Challenges/Successes

“Rapid” health assessments
- Emphasis on “rapid”
- PDA—data/analyses/graphs electronically to LHDs

Link data to action
- Infectious disease containment—rapid analysis of information
- link to individual (s) and location within shelter
Challenges/Successes

Immunization Registries

- Louisiana Immunization Network for Kids Statewide (LINKS)
- Houston-Harris County Immunization Registry (HHCIR)
  - Queries: 46,358 (4/19/06)
  - Matches: 16,019
  - Prevented duplicate immunizations
  - Savings: >$1.5M
Observations/Recommendations 1

• **Plan for immediate needs** under given circumstances (shelter, sanitation, food, water, security, health care…)

• **Plan for next tier of needs** (psychological effect, school needs of children, medical, home…)

• **Expect misinformation**—plan regular internal/external communication as often as 2,3,4x/day (NIMS)
Observations/Recommendations 2

- Rotate staff
- Manage influx of helpers
- **Know players**—solid relationships with response partners
- Strengthen relationships
- Create new partners
• Involve mental health community early and in all planning and response

• **Utilize strengths of helpers**: clergy, universities, community based organizations, barbers, beauticians...

• **Aggressive medical/PH care** at shelters can impact and protect EDs

• **Be flexible**—find win-win outcomes
Observations/Recommendations 4

- Remember the human element—stressful for victims, staff, volunteers; Grief; Missed events; Birthdays, Anniversaries

- Remember:
  We are fortunate when we can return to our own homes and family

- Have a sound exit strategy
Katrina—The Human Component
Katrina
The Houston Experience

Hurricane Rita
The Houston Experience