Public Health Response to the Fertilizer Plant Explosion in West, Texas

Bruce Clements, MPH
Texas Department of State Health Services
West, Texas

- Established as a railroad and farming town
- Settled by Czech and German farmers
- 20 miles north of Waco
- Population 2,800
- A popular stop along Interstate 35...famous for Kolaches
West Fertilizer Company

- Established in 1958
- 10 full time staff
- Held 27 tons of anhydrous ammonia and 270 tons of ammonium nitrate (AN)

1947
Texas City Disaster
4,600,000 lbs AN

1995
Oklahoma City Bombing
5,000 lbs AN

2013
West Fertilizer Plant
60,000 lbs AN
Plant Explosion

• Wednesday, April 17, 2013
• West Fertilizer plant fire
• 7:29 PM, local volunteer firefighters respond
  • Volunteer firefighters from West and Abbott
  • An experienced Dallas Fire Department Captain
• 7:51 PM, explosion
Plant Explosion

- EMT students evacuated nearby residents
- Nursing home patients relocated to west wing of the building
- Firefighting efforts concentrate on cooling Ammonium Nitrate and Anhydrous Ammonia storage
The Impact

7:53 PM: “There has been an explosion…..many people down...”
The Impact

• Explosion is felt more than 30 miles away and registers as a 2.1 magnitude earthquake
• Blast crater is 10 feet deep and 100 feet wide
• Flaming debris causes fires over a half mile
• Furthest piece of debris found 2.5 miles away

Source: Rod Aydelotte, Waco-Tribune Herald
Nursing Home Debris Impact
The Impact

- 350 out of 700 homes impacted
- 142 destroyed
- 51 major damage
- 27 minor damage
- 130 otherwise affected
- West Rest Haven Nursing Home destroyed - 128 residents evacuated to local and regional care facilities
Immediate response led by Dr. George Smith who had been supervising evacuation of nursing home patients

Source: Rod Aydelotte, Waco Tribune Herald
7:59 PM: “All Call” issued by 911 dispatchers
Immediate Response

• Mutual aid arrived at approximately 8:15 PM
• Limited radio and cell phone capability at the scene
• 2 different staging areas established without coordination
  • Football field (1/4 mile from blast site)
  • Community Center (1 mile)

Source: Rod Aydelotte, Waco Tribune Herald
## Patient Surge

<table>
<thead>
<tr>
<th>Receiving Hospitals</th>
<th>Treated Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillcrest Baptist Medical Center</td>
<td>123 patients treated (28 admitted, 5 ICU)</td>
</tr>
<tr>
<td>Providence Health Center</td>
<td>87 patients treated (21 admitted)</td>
</tr>
<tr>
<td>Hill Regional Hospital</td>
<td>42 patients treated</td>
</tr>
<tr>
<td>Scott &amp; White Memorial Hospital</td>
<td>3 patients treated (2 ICU)</td>
</tr>
<tr>
<td>John Peter Smith (JPS)</td>
<td>3 patients treated</td>
</tr>
<tr>
<td>Parkland</td>
<td>2 patients treated</td>
</tr>
<tr>
<td>McLane Children's</td>
<td>2 patients treated (1 PICU)</td>
</tr>
</tbody>
</table>

Every patient that made it to a staging/triage area at the scene survived.
“Both Hillcrest and Providence Hospitals kicked into gear with a response I didn’t think possible. Patients were treated in a timely manner, and medical staff did a great job of getting people into the system fast.”

Bradford Holland, MD
Waco Physician

Source: Jerry Larson, Waco Tribune Herald
Hillcrest Hospital Response

- No official notification to hospitals
- Anecdotal phone reports from EMS and DPS personnel to RAC staff and Trauma Program Manager
- “Code Alert” at 8:28 PM
- “Code Green” at 8:40 PM
- First patients arrive via DPS patrol car at 8:40 PM

Source: Jerry Larson, Waco Tribune Herald
Hillcrest Hospital Response

- Hillcrest registered and treated over 100 victims in 4 hours
- 28 admissions, 5 ICU patients, 8 emergent surgeries
- More than 50 nursing home patients

Source: Jerry Larson, Waco Tribune Herald
Hillcrest Hospital Response

Walking wounded necessitated opening of additional triage area

Source: Jerry Larson, Waco Tribune Herald
Hillcrest Hospital Response

- Over 250 additional employees and physicians at the hospital by 9:00 PM
- EMS ground transported
  - 13 red patients
  - 30 yellow patients
  - 47 green patients
- 94 CT scans and 129 x-rays in <4 hours
- 131 patients with explosion injuries seen in the ED over the next several days
Media response was “immediate, intrusive, and relentless”
Regional Response

- Heart of Texas Regional Advisory Council (HOTRAC, Our HPP Contractors) were activated to coordinate regional response resources and data collection.
- The Regional Medical Operations Center (RMOC) was stood up at 8:15pm.
- The RMOC was staffed by HOTRAC, Waco-McLennan County Public Health District, & DSHS Region 7.
State Response

- 4 AMBUSs
  - 2 demobilized upon arrival
  - One remained on-site
- One Type 2 Mobile Medical Unit (MMU) deployed with staff
- Morgue Trailers
- Disaster Portable Morgue Unit
Texas Emergency Medical Task Forces (EMTFs)
State Response

- Two mortuary trailers deployed with a mortuary team
  - Stored and transported deceased responders to Dallas for identification
  - Demobilized two days later
- Two Medical Incident Support Team (MIST) members
  - Coordination of medical transportation with hospitals and nursing home patients
West Injury Investigation

Describe characteristics of:
- Fatal injuries
- Physical injuries of survivors

Risk factors
- Location at the time of the blast
- Injury timing
- Demographic characteristics

Quantify the number who sought medical care

Describe medical care received by the injured

Source: Rod Aydelotte, Waco Tribune Herald
Local Public Health Response: Waco-McLennan County Public Health District

• West, TX is in their jurisdiction
• Regional and state public health support
• Key local partnerships
Local Public Health Responsibilities

- Family Assistance Center
- Tetanus shots
- Sanitarians
- Re-entry & Neighborhood Resource Center
Re-Entry

- Divided the city into three zones
- Re-Entry completed in phases
Family Assistance Center (FAC)

- Located in West Church of Christ
- Approx. 2 miles from blast site
- Approx. 1 mile from EOC (St. Mary’s)
Family Assistance Center (FAC)

- Waco-McLennan County Health District
- Mental health professionals
  - MHMR (local mental health authority)
  - Victim Relief Services
  - Local MRC
- Texas Funeral Directors Association
- Line of Duty Death Task Force
- The Justice of Peace
- Regional and state public health
## Disaster Behavioral Health Services

### Local Mental Health Authority (LMHA)
Mental Health and Mental Retardation (MHMR) Centers

### Populations Served

<table>
<thead>
<tr>
<th>Survivors</th>
<th>First Responders</th>
<th>LMHA Clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homeowners Business Owners School Staff Children Elderly Non-English Speakers</td>
<td>Law Enforcement Fire/EMS Public Health Professionals Volunteers</td>
<td>Formal Services</td>
</tr>
</tbody>
</table>

### Service Locations

<table>
<thead>
<tr>
<th>Family Assistance Center</th>
<th>Shelters</th>
<th>Incident Command</th>
<th>Re-Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bereaved</td>
<td>Affected Populations Shelter Workers</td>
<td>First Responders Local Officials Incident Command Leadership / Liaisons</td>
<td>Affected Populations Law Enforcement Escorts</td>
</tr>
</tbody>
</table>
Disaster Behavioral Health Services

- Mobile Crisis Outreach Team
- Crisis respite
- Triage services
- Psychiatric hospitalization
- Safety planning
- Crisis hotline
- 24/7 availability

Source: Rod Aydelotte, Waco Tribune Herald
Disaster Behavioral Health

• April 17-29, 2013 = 1,040 encounters
• Average duration = 15 to 29 minutes
• The most significant risk categories:
  • 67% vehicle or major property or other financial loss
  • 60% home damage
  • 36% witnessed death / injury or life was threatened
  • 33% evacuated quickly
  • 24% have family / friend missing / dead
Disaster Behavioral Health

- 86% responded with the **Emotional** reactions
  - sadness, tearful
  - anxious, fearful
  - irritable, angry
  - numb, disconnected

- 42% responded with the **Behavioral** reactions
  - agitated / jittery / shaky
  - on guard / hyper vigilant
  - extreme change in activity
  - isolation / withdrawal
Disaster Behavioral Health

• 32% responded with the **Cognitive** reactions
  • difficulty concentrating
  • intrusive thoughts, images
  • preoccupied with death / destruction
  • difficulty making decisions

• 31% responded with the **Physical** reactions
  • difficulty falling or staying asleep
  • fatigue, exhaustion
  • eating problems
  • worsening of health problems
# Disaster Behavioral Health

## Heart of Texas Region MHMR Encounters
- June = 50+
- July = 150
- August = 120
- September = 65-70
- Types = groups, individual, children’s camp

## Reactions
- Depression and anxiety primary concerns
- Influx of clients at the three month anniversary mark
- Numbers dropped off dramatically when school started however there has been a recent increase in numbers
Community Resilience

Source: Rod Aydelotte, Waco Tribune Herald
Source: Jerry Larson, Waco Tribune Herald
Memorial Service at the Explosion Site
First Responder Remembrance

Morris Bridges, West Volunteer Fire Department
Perry Calvin, Navarro Mills Volunteer Fire Department
Jerry Chapman, Abbott Volunteer Fire Department
Cody Dragoo, West Volunteer Fire Department
Kenny Harris, Dallas Fire-Rescue
Jimmy Matus, West business owner
Joey Pustejovksy, West City Secretary, West Volunteer Fire Department
Cyrus Reed, Abbott Volunteer Fire Department
Kevin Sanders, Bruceville-Eddy firefighter
Doug Snokhous, West Volunteer Fire Department
Robert Snokhous, West Volunteer Fire Department
William "Buck" Uptmor, Jr., businessman
Overarching Lessons

- Programs: PHEP and HPP
  Resources are a vital!
- Relationships: Planning & exercising with the right stakeholders
- Resources: Understanding agencies, key staff, and essential resources
- Recurring AAR themes: Communication, Command and Control, Managing influx of “help”
Thanks for Assistance with this Presentation

- Waco-McLennan County, Office of Emergency Management
- Waco-McLennan County Public Health District
- Hillcrest Hospital
- Department of State Health Services Central Office and Region 7 Staff
- Heart of Texas Regional Advisory Council
- Heart of Texas MHMR