


**Indiana Healthcare
Emergency Preparedness Symposium**

**In the Eye of the Storm:
Evacuating an Acute Care Facility**

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Baptist
Hospitals of Southeast Texas
Performing Sacred Work Every Day



Who We Are...



Baptist Hospitals is a 500-bed Acute Care Facility encompassing an off-campus Acute Psychiatric Hospital, an off-campus Outpatient Facility (Orange, TX), 3 off-campus Cancer Centers and 4 off-campus Sleep Centers, under one provider license/NPI. The service area includes 9 counties and a patient population of 600,000.

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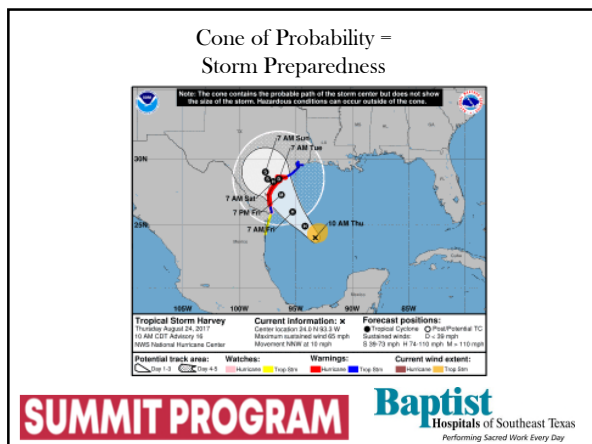
HARVEY
The Storm
Atlantic

Photo by: NOAA

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Storm Preparedness


- Open Command Center
- Immediate Inventory of Pharmaceuticals
 - Distribute List to Medical Staff (items < 96 hrs)
 - Order High Consumables and all < 96 hrs
- Immediate Inventory of Supplies / Implants
 - Order High Consumables and all <96 hrs
 - Inform Medical Staff of Low-Level Implants / supplies and Vendor-supplied Implants
- "Sound the Ship"
 - Facilities:
 - Protect Vulnerable Roofs
 - Drop Storm Shutters
 - Order Diesel on Stand-by
 - Assemble Contractor Ride-out Team
 - HVAC/Electricians
- Staffing Plan
 - All Department Heads
 - Patient Manifest / Acuity / Case Mgmt (Discharge Eval)
 - OP Operations
 - Ride-out Team per Guidelines (A,B,C)
- Consider Disaster Declaration
 - Possible Lock-down




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Always Be Prepared

- IT Infrastructure
 - Double-Redundancy
 - Servers are Imaged Each Evening at Midnight: Plano, TX and Nashville
- Facility Vendor Contracts
 - HVAC / Electrical / Plumbing / KW Generators / Diesel
- Full-Facility Diesel Generator (Main Campus)
- Non-Potable Water Well to Support Plant Ops: HVAC, Laundry
- 1,000 Cases of Bottled Water
- 96-hour Par-Level on High Consumable Meds, Supplies, Dietary
- GPO Emergency Supply Agreement (Healthtrust / HPG)
 - Cardinal / McKesson / Medline / Partner Facilities (Mem Hermann / Baylor-SW)
- Vendor Agreements: Sodexo (Biomedical / Dietary)
- "Healthy" Vendor Relationships: GE / Philips / Siemens
- Clinical Affiliate of UTMB Medical School
- Standing Transfer Agreement: HCA Gulfcoast
- Trauma / Neurotrauma / Stroke Agreement: UT Houston Med School / Mem Hermann
- Disaster Drills: Southeast Texas RAC / EMTF (Emergency Medical Task Force)





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Impact on Houston










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Interstate 10 West (“East Freeway” Between Houston and Beaumont)



Harvey’s Second Landfall High-Pressure Shifted Winds West to East

Top 10 Point Rainfall Amounts in Inches

Harvey produced record breaking rainfall totals of 40 to over 50 inches

SITE	RAINFALL
Cedar Bayou	51.88
Mary’s Creek	50.04
Clear Creek	48.20
Beaumont	47.52
Santa Fe	46.70
Berry Bayou	44.88
Galveston	43.91
Goose Creek	43.87
League City	43.32
Cheek Canal	43.11

Post-Landfall

- Facility Spared Major Damage
 - Immediate Surrounding Roads to BHSET Passable to EMS
- High-Water Rescues On-going in Surrounding Counties
 - On-going Unannounced Black Hawk Landings
- Pharmaceutical Supplies Stranded in Orange County
- Nursing Home in South Jefferson County Completely Underwater
 - 30 Residents Rescued and Brought to BHSET
- ED hit with influx of Dialysis Patients
- Neighboring Level II Trauma Center Unreachable by Low-lying Ambulances
 - ED Saturated with Trauma
- Facility on Full-Power / Utilities
- BHSET Box Trucks Picking-up Replacement Staff
- Major Security Breach at Orange Outpatient Campus





Facility Damage

This scene from Outpatient Day Surgery was common throughout the facility. Most damage was limited to breaches in the roof.



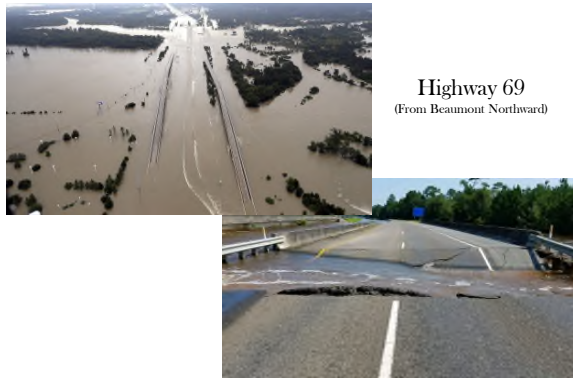
In-Bound: Black Hawk / Coast Guard Air Traffic



Nursing Home Rescue



Deteriorating Road Conditions



24-Hours Post-Landfall

- Main Campus Structurally Stable
 - Majority of Leaks Isolated and Controlled
- Immediate Surrounding Roads Still Passable to EMS
- High-Water Rescues Still On-going in Surrounding Counties
 - On-going Unannounced Black Hawk Landings
- Pharmaceutical Supplies Arrived on Main Campus
- Census at 299, Plus Approximately 50 Stranded Individuals
 - This includes 30 "Unregistered" Nursing Home Evacuees
- Neighboring Level II Trauma Center Unreachable by Low-lying Ambulances
 - ED Saturated with Trauma and Dialysis
- Facility Continues on Full-Power / Utilities
- BHSET Transitioned to Amphibious Vehicle ("Duck Boat") for Staff P/U
- Orange Outpatient Campus Stable with State Police
 - SETRAC Field Hospital Operational
- Targeting T+3 (Monday) to Re-Start OP/Elective Procedures/Depts



24-Hours Post-Landfall + 2 Hours (1 AM CDT 9/1/17)

- Notified by City of Beaumont: Failure of Water Pump; Reserve Pump and Emergency Well Already Off-line
 - Expected Water Loss in 30-min
- Disaster Declaration Internal and External
 - All Senior Officers Recalled
 - All Medical Directors Notified
- Issued Facility-wide Order for Immediate Water Conservation
- Case Management / Med Dir Sweep for D/C Status
- Notification to County Emergency Operations / State Catastrophic Med Ops
- City States All Water Utilities Off-line Indefinitely
- Contact CMOC: Request Emergency Potable Water Supply / Pumps
 - Request Denied - Unable to Reach Facility
- Facilities Team Placing Calls to Local / Regional Contractors
- No Resolution Within 2 Hours
- Contact CMOC / EOC: Declare Intent to Evacuate Facility



City of Beaumont Water Pumping Station



Facility Evacuation

- Informed by CMOC to Secure Receiving Hospitals for Each Pt / CMOC Would Arrange Transportation
- Updated Patient Manifest with Current Acuity
- Obtained Detailed Roster of All Individuals in Facility
- Patient Information Not Received by CMOC / STAR System
 - Receiving Facility Emailed to CMOC / Called with Air Transport
 - Reverted to CMOC Securing Facility / Transport
- Special Populations
 - ICU
 - NICU
 - Rehabilitation
 - Psychiatric Facility
- Change in Acuity
- Flight Control
 - At One Point: 10 Helos on Ground 1 Hovering
- Fixed Wing
- Ambus



Patient Flow and Tracking

- We initially placed patients with HCA, per existing agreement
- We opened a separate transfer center to track patient location, with a 1-800 number for families
- Flight operations were arranged by CMOC and became chaotic
 - Flight Crews were arriving for patients who had already left with another crew
 - Management of this process was inconsistent
- Some patients were double-booked at more than one receiving facility
- Manifest was turned over to CMOC to arrange facility and flight/ambus
- Several Critical Patients
 - 3 Full-Arrests; 1 on an aircraft (X2)
 - 4 Criticals pulled from Manifest and flown to UTMB by local medivac
- Emergency Transfer Center remained staffed until facility re-opened, then consolidated with Facility Transfer Center
- Logistical challenge with patients discharged to FEMA Shelters, who were subsequently relocated.



Air Medical Operations



Fixed-Wing Air Medical Operations



Critical Air Medical Operations



Ambus



CHALLENGES



As anticipated, Hurricane Harvey brought many challenges during its period of influence in Southeast Texas. Among those identified as impacting operations at BHSET during this time are the following:

- Inconsistent information regarding storm track and expected regional impact
- Atypical storm path and behavior made it difficult to pinpoint appropriate time to designate facility emergency response and implement team designations.
- No clear plan for decision of continuation or discontinuation of outpatient services when facility is operational but transportation routes are compromised
- Lack of communication from City of Beaumont officials regarding status of water treatment facilities
- City of Beaumont relied on one treatment facility, even though "reserve" systems were already compromised
- Potable water was interrupted within minutes of notification of water pump failure, preventing implementation of an effective plan to secure potable water resources





CHALLENGES

- All major transportation corridors were impassable, cutting off supplies and routes for emergency potable water into the facility
- Impassable roadways made it difficult for essential staff, members of medical staff, and "on-call" physicians to reach the facility
- Lack of a regional plan to support medical facilities in the event of potable water disruption
- Information on coordination of facility evacuation through CMOC was inconsistent
- Lack of coordination between CMOC, EOC, military and local governmental entities
- Lack of an effective means for tracking availability of on-call physician coverage to ensure all services were covered or had an available designee for emergency coverage
- Need for communication of process for declaration of emergency privileges
- Need for decision tree in determining appropriateness of facility evacuation (when situations fall outside of definitive storm guidelines)



CHALLENGES

- Need to establish clear guidelines on when to halt evacuations, the process for a partial evacuation and the process for resuming operations post evacuation
- Need for separate command centers for facility infrastructure and regulatory communication versus clinical operations and facility evacuation. An integrated command center is chaotic and leads to errors in patient placement and potential for misidentification
- Need for clearly delineated process for identifying and communicating patient destination during an evacuation
- Need for clearly delineated process for tracking mode of transportation and ensuring correct patient identification by transporting personnel and clear articulation of correct receiving facility... this is a Stop the Line moment, with a documented time-out for verification
- Need mechanism for triage and tracking of patient acuity: 1) while requesting evacuation and 2) while awaiting transportation. There must be a clear mechanism for re-prioritizing evacuation to accommodate patients whose clinical status has declined while awaiting transportation

CHALLENGES

- Lack of a direct liaison between emergency shelters and healthcare facilities for tracking movement and relocation of patients who have been discharged from the hospital (communication with families)
- Need for direct liaison from CMOC / FEMA to communicate with families of patients who expire during, or following, evacuation to arrange for post-mortem care and transportation of family and/or the deceased
- Develop a regional approach for management of hemodialysis patients in the absence of an approved water source impacting both facility operations and operations of outpatient dialysis centers in the affected area.
- Clearly identified process for managing those who are not registered as a patient and are not seeking care, and the facility becomes a medical shelter when they are deemed too high risk for an evacuation shelter.
- Develop coordinated process for managing patients and/or family who are discharged but are unable to leave the facility, due to lack of transportation, no safe route of travel, or no safe location to return

Evacuation and Recovery

- Facility Evacuated on Friday, 9/1/17
- Re-opened Facility Tuesday at 7 AM (9/5/17), Including Surgery on "Auxiliary Water"
 - No Hemodialysis
 - Bottled Water for Food / Hygiene
- City Water Pumps on Generator Power
 - Pulling Water from Neches River
- Hospital Made a Strategic Decision to Remain on Reservoir Tanks until City Water Supply no Longer Supported by Generator Power
- City Certified on Temp Pumps on Friday 9/8/17
- Power Restored to Water Treatment Facility on Monday, 9/11/17
- City Water Restored to Main on Thursday, 9/14/17
- TCEQ Permitted Use of Water
- Negative Cultures Reported on Monday, 9/18/17
- Restriction Lifted on Dialysis, Facility Fully Operational





Contact Information

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Dropbox:
<https://www.dropbox.com/s/4f309q5em925s1h/Plenary%20Eye%20of%20the%20Storm.pptx?dl=0>