

**DUKE
UNIVERSITY
HOSPITAL**



**EMERGENCY
ROOM
FLOODS**

Lessons from the Duke University Hospital Flood

Prepared for the NC Disaster Symposium

Shawn L. Rosalez

Emergency Management Coordinator for Duke University Hospital Health System

David Marsee

Healthcare Preparedness Coordinator for the Central Carolina Healthcare Preparedness Coalition

Duke



Duke



Overview

- Duke University Health System
- Central Carolina Healthcare Preparedness Coalition
- Summary of events/timeline
- Immediate Impacts On Duke University Hospital
- Regional Impacts
- Recovery Continuum
- Lessons Learned
- Moving Forward
- Questions

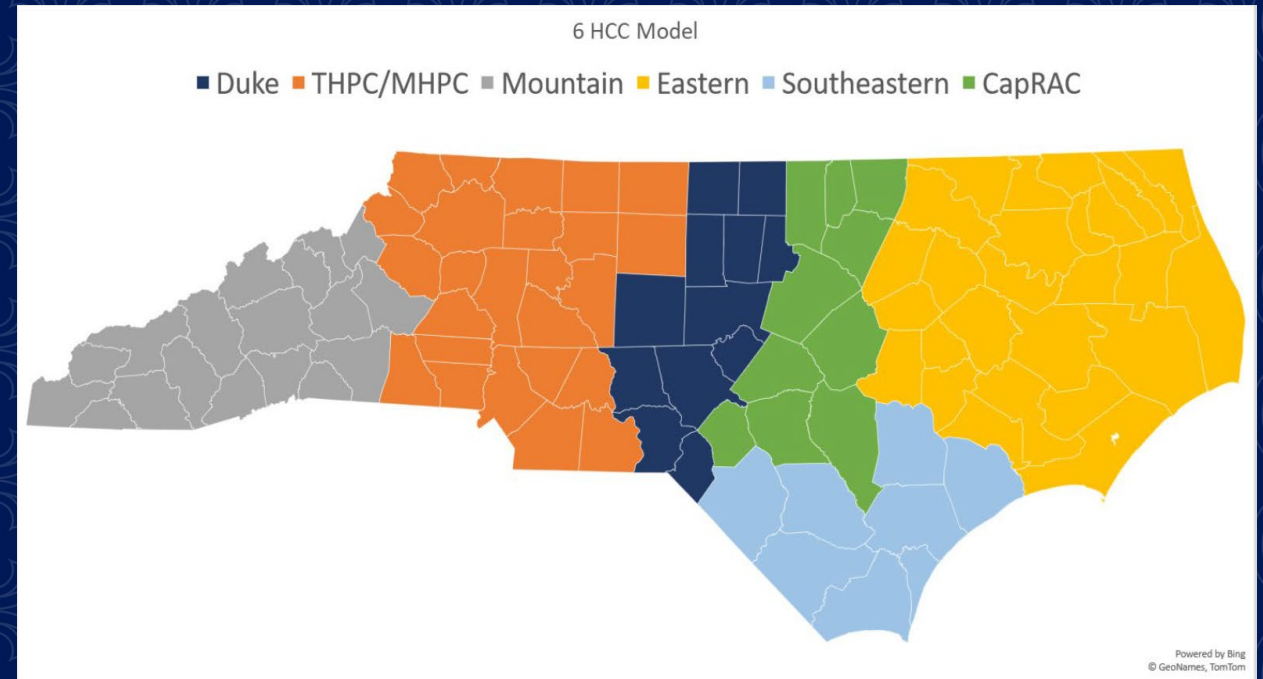
Duke University Hospital

- 1,062 bed facility
- ED 77 actual rooms
- 120 total ED beds/locations
- 134 ED patients during the actual flood (includes waiting room)
- Average 240 – 270 people a day
- Level 1 Trauma



Central Carolina Healthcare Preparedness Coalition

- Support 12 counties in central NC
- Support 15 hospitals, and 12 county functions such as EMS, EM and Public Health
- Support multiple skill nursing facilities within those counties.



Summary of Events

At approximately 11:40 AM on December 26, a 10–12-inch chilled water pipe ruptured, resulting in significant flooding within the Emergency Department (ED). The incident necessitated the immediate evacuation of the entire ED to ensure the safety of patients, staff, and visitors. It is estimated that approximately 200,000 gallons of water dispersed throughout the affected area, causing extensive disruption to operations and requiring rapid response measures.





Duke

Duke





Duke



Duke

Duke



Quick Summary Timeline

DUKE UNIVERSITY HOSPITAL OPERATIONAL LOG				
HICS 214 – OPERATIONAL LOG				
1. INCIDENT NAME	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME		
DUH FLOOD	1/3/2025	12/26/2024 1140 pm to 12/28/2024 1200 am		
4. SECTION /BRANCH	5. POSITION			
Command Staff	Emergency Management Coordinator			
6. ACTIVITY LOG				
Time	Major Events, Decisions Made, and Notifications Given			
11:40 am	10/12-inch chilled water pip bursts in DUH Emergency Department		3:00 am	Official request made to state NCOEMS for the deployment and set-up of their mobile medical unit. Request to Central Carolina Healthcare coalition for the decedent care trailer.
12:09 am	Hospital wide page sent out by Operations Administrator's alerting leaders of flooding & stating that units need to be prepared to accept all PTs from the ED.		4:00 am	Official request to Durham County Emergency Management for a mobile refrigerator unit to be on standby in case pharmacy's refrigerator fails and medications need to be moved.
1:09 am	Virtual health system incident call established with Duke University, Regional, and Raleigh hospital on-site leaders. Discussed that the DUH ED has been evacuated and PT placement to alternate sites are in progress. Water was beginning to impact other departments located below the ED. <ul style="list-style-type: none"> - First focus on PT placement and safety including alternate ED triage - Second, internal units' status on accepting <u>PTs</u>. - Third, request for an assessment from DRAH and DRH of how many PTs they may be able to accept, including who needed to be sent to outside hospitals and to work centrally through CARE HUB/Transfer CENTER. - Fourth, discuss additional areas located under the ED and the impact the water had on those areas. Need to identify mitigation steps. - Fifth, discuss the need for establishing a physical EOC and a Command Structure 		4:45 am	State mobile medical unit on-site.
1:30 am	Additional notifications completed primarily to leaders of impacted areas as well as Duke news and media relations team.		5:00 am	In-person/Virtual DUH Incident Command Meeting (Assessments) <ul style="list-style-type: none"> - Sterile Processing: Need Infection Prevention (IP) to assess supplies & need a place to put instruments, need positive pressure, see if 54 is an option for location. - ED: Need laptops & mobile workstations, lots of damaged equipment in the ED, 1A treat kids for ED inpatient. <u>State</u> medical unit should arrive around 7:30 am - Pharmacy: Need IP to assess what is damaged, may need a state fridge 15x15. At 5:30 request given to Durham County for mobile fridge. - Decedent Care: David Marsee is going to get the morgue trailer will need to find a location. - Lab, Blood Bank, Phlebotomy: N/A - Imaging: Inpatients covered through DMP, outpatient being covered in cancer center & Duke South, clinical engineering is on-site, 4 high priority resources, need electricians to clear spaces, questions about stroke at this time, need vascular leadership unless we can lean on the <u>cath</u> lab reach out to heart to see what they can cover - DUKE N. Dock/Supply chain: One space in DCT being held for supply deliveries, need to move construction dumpsters to clear more space, dock is LOCKED DOWN
1:45 am	Emergency Operations Center officially opened in DMP 2W93		6:00 am	Early reports of Duke Hospital ED issues hit local media (rough estimate).
2:30 am	Hybrid in -person/virtual command center briefing and operational meeting. All Pts have been evacuated from the ED and initial damage assessments of other departments have been completed.		6:48 am	Hospital wide internal comm. About the incident, <u>sent</u> out via email to all staff members.
			7:30 am	In person/Virtual DUH Incident Command Meeting <ul style="list-style-type: none"> - Sterile Processing: Trying to remove & save as much equipment as possible, going through supplies 1 by 1 to assess damage, and standing water & debris in SPD area. - ED: Receiving PT surgical short stay & 2200. Drywall needs to be pulled out. D pod is the <u>currently</u> the best pod. Trying to get D pod running by <u>end</u> of day. PT will be <u>diverted</u> to back. May make a call to shut Panera down. Continue to work on fixing <u>issue</u>. Will assume that all supplies are a complete loss and are adding additional workforce to expedite repairs. Focus on SPD and shipping some materials to BMP

Immediate Impact on DUHS

- ED shut down to ambulance traffic
- Pharmacy
- Decedent Care
- Sterile Processing
- Clinical Labs, Phlebotomy, & Blood Bank
- Radiology/Imaging
- Clinical Engineering/Equipment Distribution
- Duke N. Dock/Supply Chain

Regional Impacts

- Duke Raleigh Hospital
- Duke Regional
- UNC
- Wake Med
- VA
- Increased Patient Loads
 - ER crowding
- Extended Response Times
- Impact on Specialized Care
 - Trauma
- Operational Challenges
 - Staffing shortages to deal with surge
- Financial Impact

Regional Impacts

Durham County EMS

	Duke 50-60 a day	Regional 28-35	Briercreek 19 over the week	UNC <10	Hillsborough <10
Week Before					
27-Dec	0	42	22	18	<10
28-Dec	0	56	23	16	<10

Duke Hospital	~80 patients a day by Ambulance
Regional	~54 patients a day by Ambulance
UNC	~72 patients a day by Ambulance
Wake North	~37 patients a day by Ambulance
Hillsboro	~16 patients a day by Ambulance

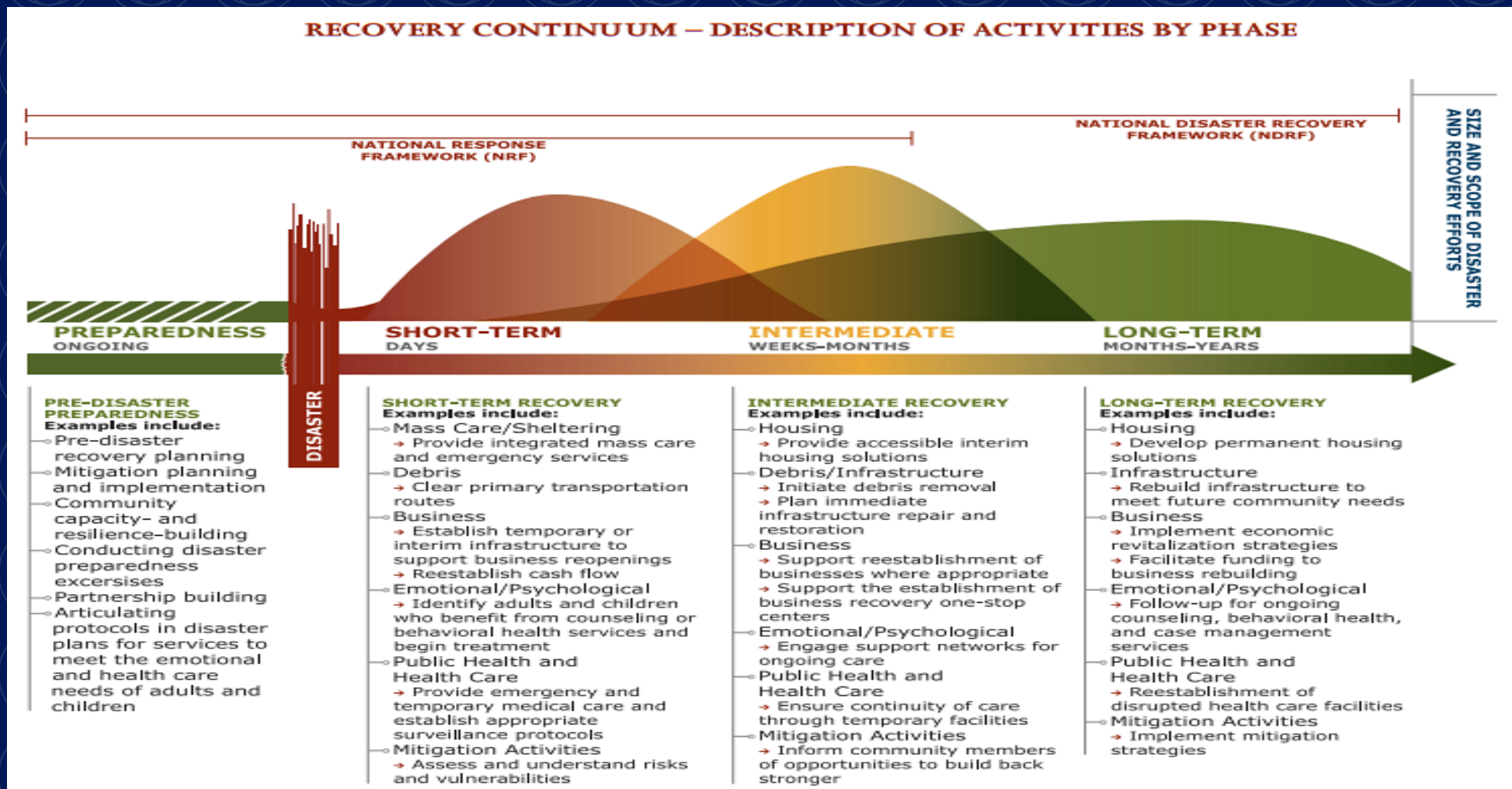
Includes ED to ED
63 yesterday for 15% increase
90 yesterday for 22% increase
47 yesterday for 24% increase
23 yesterday for 36% increase

Coalition's Response

- Notifying surrounding hospitals, EMS, emergency management, city & county officials and other coalitions on Duke Hospital status.
- Held conference calls in conjunction with OEMS, CapRAC, Mid Carolina, Wake Med, UNC Health and Duke to discuss patient flow during the event.
- Rumor control (All of Duke Hospital was not shut down)



Recovery Continuum

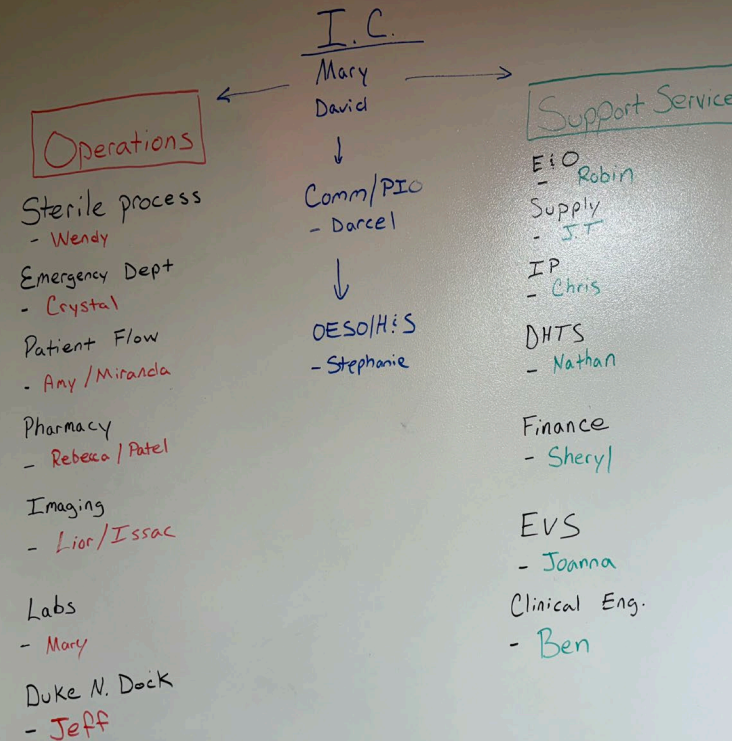
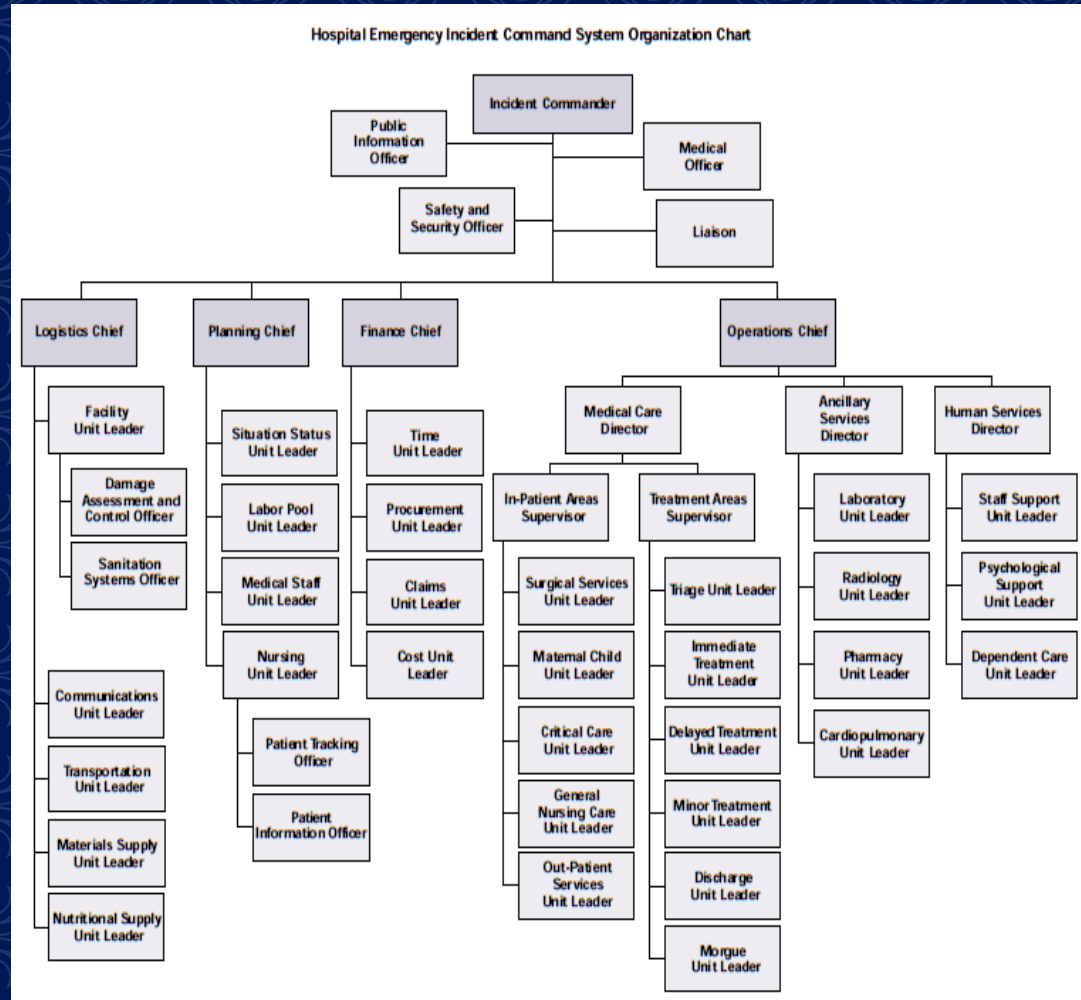


Lessons Learned

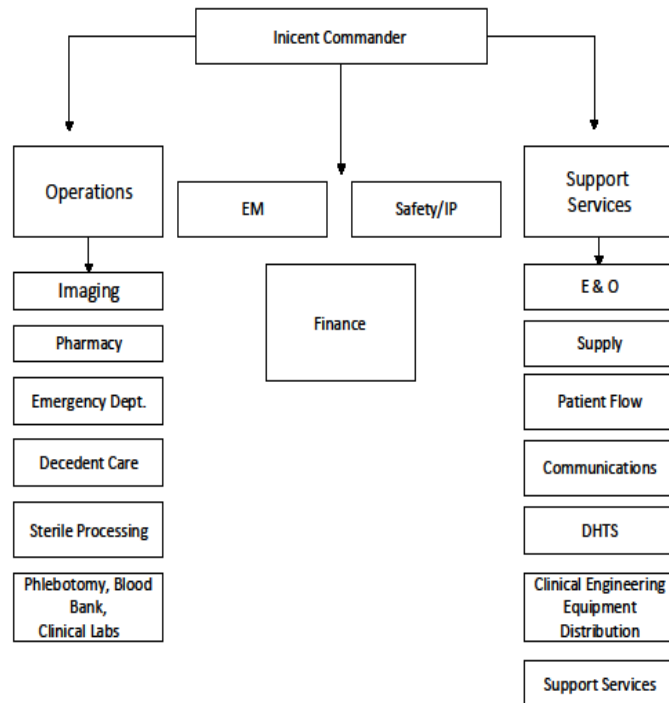
- HICS Structure
- Command Center
- Communication
- Relationships
- Contacts
 - Updated list
 - Having contacts other than leadership
- Reach of the impact



HICS Command Sys. Org. Chart



HICS Sys. Org. Chart



Command & Control

- Incident Command
 - Establish Command & Control
 - Stabilization of incident
- Identify Unit Leaders
 - Clear chain of command
 - Accountability
 - Improve communication
 - Rapid decision making
 - Strike force & Task force



Leadership Roles

- Incident Commanders
 - Command & Control
 - Stabilization - goals, objectives and tasks
- Unit Leaders
 - Identified based on their individual department
 - Must assess the situation quickly and report needs
- Task Force
 - support recovery operations by identifying needs
- Strike Force
 - Usually created based on an identified need

Emergency Operations Center/Command Center

- Centralized Coordination & Command
- Resource Allocation
- Incident Monitoring & Situational Awareness
- **Integration with External Agencies**
- Patient Flow and Surge Capacity Management
- Continuity of Operations

Crisis Communication

4 TYPES

1. Internal Communication
 - Employees
2. External Communication
 - Vendors
 - Partners
3. Media
 - News Outlets
4. Social Media
 - TikTok | Instagram | FB | X

PLAN, DO, CHECK, ADJUST!!

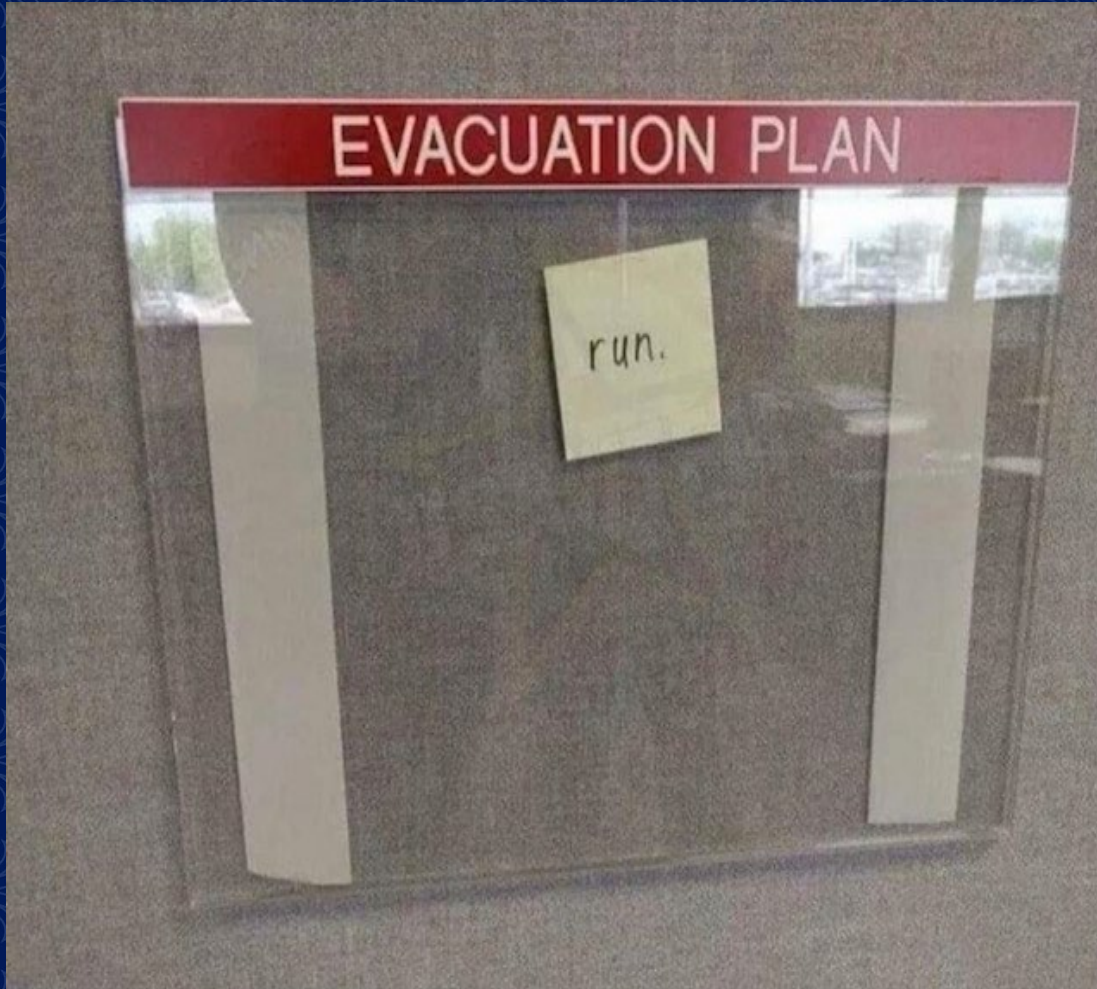


Whole Community Approach (Relationships)

- Internal Partners
- External Partners
 - Vendors
 - Other Hospitals
- Public Safety
- Local Government
- State Government



Moving Forward



- Every situation is political, recognize it & deal with it.
- It wasn't raining when Noah built the ark – Hope is not a plan!
- No plan survives first contact intact.
- You can't buy engagement; **YOU MUST BUILD IT – Networking.**
- Be a student of your profession.

Questions?

Shawn Rosalez

Shawn.Rosalez@duke.edu

David Marsee

David.Marsee@duke.edu