BURN SURGE
TABLETOP &
FUNCTIONAL EXERCISE

After Action Report and Improvement Plan (AAR-IP)

The After-Action Report and Improvement Plan (AAR/IP) summarizes exercise information required for preparedness reporting and trend analysis by aligning exercise objectives with preparedness doctrine, related frameworks, and national guidance. This information is compiled into recommendations and corrective actions in the improvement plan to improve local and regional preparedness, response, and recovery activities.

EXERCISE OVERVIEW

Exercise Name	Burn Surge Tabletop Exercise (TTX) and Functional Exercise (FE) 2022
Exercise Date	Tuesday, April 12, 2022
Scope	The first phase (Phase I) of the exercise was a tabletop discussion that lasted 2 hours at the Southeast Texas Regional Advisory Council (SETRAC) Conference Center, 1111 North Loop West, Houston, TX 77008. Tabletop discussion focused on the Regional Burn Surge Plan, which includes identifying recommended triage, transport, equipment, and coordination strategies for the mass surge of burn patients after a catastrophic, no-notice burn mass casualty incident (BMCI) in a SETRAC Corridor. The second phase (Phase II), focused on CMOC operations 4 hours from the initial incident when healthcare facilities are taxed, and the coordination of efforts is required.
Mission Area	Preparedness, Response, and Recovery
Capabilities	• Capability 2: Health Care and Medical Response Coordination • Capability 3: Continuity of Healthcare Service Delivery • Capability 4: Medical Surge
Objectives	• Define patient triage and transportation methodology. • Identify procedures for assessing hospitals' burn surge capacity.
Hazard	Hazardous materials – Anhydrous Ammonia
Scenario	A major accident at I-610 and US-225 has resulted in a tractor trailer overturning and rupturing its contents, releasing anhydrous ammonia into an area of high-volume traffic. The accident caused the tractor trailer to catch fire, engulfing several vehicles in the immediate vicinity.
Sponsor	Hospital Preparedness Program (HPP) Regional Healthcare Preparedness Coalition (RHPC) Southeast Texas Regional Advisory Council (SETRAC)
Participating Organizations	SETRAC, EMS, TDEM, DSHS, City & County EMCs, Public Health, Healthcare Management, Free Standing Emergency Room Management, ER, EM and other Healthcare Organizations/Departments, Regional, State, & Federal Partners.
Point of Contact	Carrie Cox & John Wingate Regional Exercise and Training Coordinators SouthEast Texas Regional Advisory Council Carrie.Cox@setrac.org / John.Wingate@setrac.org 281-822-4445

EXERCISE SCENARIOS

This section summarizes the two modules with specific issues, exercise assumptions, and artificialities that participants considered and factored into discussions and actions during the TTX and FE.

Phase I: Burn MCI – First 4 Hours

Inject 1: Anhydrous Ammonia Breach

A major accident near I-610 and US-225, just east of Houston city limits–near Pasadena–has resulted in a tractor trailer overturning and rupturing its contents into an area of high-volume traffic. The accident caused the tractor trailer to catch fire, engulfing several vehicles in the immediate vicinity. There are roughly 110 victims with severe chemical and thermal burns. Patients are being transported to nearby hospitals, who are already inundated with patients.

Inject 2: Anhydrous Ammonia Spreads to Nearby Businesses

Several calls start coming in from the small businesses located just northwest of the incident site. Approximately 60 individuals reporting difficulty breathing and burning eyes. Multiple victims are already arriving at nearby hospitals via POV.

Phase 2: Hospital Load Balancing and Resource Management

CMOC Briefing:

There are approximately 165 patients needing care from this incident. Hospitals are reeling from the surge and need to transfer stable patients in order to receive critical burn patients. Patients are still trickling in to EDs, but are mostly worried-well or have only minor injuries. CMOC must now focus on resource allocation, finding information for hospitals, gathering data, continuity of care and facilitating transports.

CAPABILITY PERFORMANCE RATINGS

Aligning exercise objectives and preparedness capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis nationwide. The core capabilities include Operational Coordination, Critical Transportation, Public Health and Medical Services, and Mass Care Services; however, the table below include performance ratings for each Health Care Preparedness and Response capability objective written by the planning team and observed with average ratings based on the evaluator notes during the exercise.

Table 1: Summary of Health Care Preparedness & Response Capability Performance Ratings

Capability	Exercise Objectives	Rating
2. Healthcare and Medical Response Coordination	Define patient triage and transportation methodology (Phase I) and identify burn surge capacity within the region (Phase I & II).	S
3. Continuity of Healthcare Service Delivery	Ensure continuity of care while coordinating transport to specialty care facilities and load balancing (Phase II).	S
4. Medical Surge	Identify procedures for conducting an assessment of partner hospitals' burn surge capacity (Phase I) and assess hospitals' resource caches for burn surge response (Phase I & II).	S

Ratings Definitions:

- Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
- Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.

ANALYSIS OF CAPABILITY OBJECTIVES

This section provides a summary of observations for each objective evaluated with its corresponding capability. The observations are compiled below as either strengths or areas for improvement with an analysis of factors identified and discussed by participants, then recorded by exercise evaluators.

Capability 2: Health Care and Medical Response Coordination

Objective:
Define patient triage and transportation methodology (Phase I) and identify burn surge capacity within the region (Phase I & II).

Strengths:

- Having both hospital and pre-hospital responders engaging in the discussion together
- Burn care expertise within the region
- CMOC/SETRAC coordinating and providing support to EMS and healthcare facilities
- The institution of a Back Row Deputy Position in the CMOC to relay and guide information

The following areas of improvement are required to achieve the full capability level:

Areas for Improvement:

- More training in burn care and treatment is needed for facilities
- Common terminology must be established between EMS and hospitals for triage methods
- EMResource, EMTrack, WebEOC training needed.
- Communication when CMOC staff are physically distanced
- Technological issues at Harris County Emergency Operations Center (CMOC venue).
- More frequent practice operating in the CMOC
- More robust incident briefing from controllers to CMOC Chief prior to exercise play

Analysis:
Participants expressed the need for more frequent and extensive training regarding the care of burn patients. An understanding among all facilities is needed, that in a major burn mass casualty incident, specialty burn hospitals will not have the capacity to care for a massive group of victims. Some burn victims must remain in a given facility for several days before transfer may be possible. CMOC staff expressed an appreciation for the implementation of the Back Row Deputy position, but noted that the physical distance, coupled with the inability of some to utilize computer workstations resulted in some shortcomings. Repeated issues arising from technological failures severely impeded the CMOC's ability to operate at full capacity. CMOC staff agreed that more frequent exposure to the CMOC and training might serve to alleviate some of these issues.

Capability 3: Continuity of Health Care Service Delivery

Objective:
Ensure continuity of care while coordinating transport to specialty care facilities and load balancing (Phase II).

Strengths:
- Collaboration among CMOC staff
- The use of traditional materials (such as paper and pen) to communicate critical information

The following areas of improvement are required to achieve the full capability level:

Areas for Improvement:
- Priority setting and competing goals
- Communication across the rows in the CMOC
- Inability for some to access WebEOC, EMResource, and EMTrack to coordinate patient transport due to technology issues

Analysis:
Despite some difficulty at the beginning, CMOC staff quickly found their rhythm despite start-up issues. Priority setting remains a challenge, however, when the tasks and critical information were displayed on the wall, staff were able to see upcoming goals and unify their efforts more clearly. Further, it is likely that CMOC staff would have had a better exercise experience, had the technology (phones, computers, etc.) been operating at its full capacity.

Analysis of Capability Objectives

Capability 4: Medical Surge

Objective:

Identify procedures for conducting an assessment of partner hospitals' burn surge capacity (Phase I) and assess hospitals' resource caches for burn surge response (Phase I & II).

Strengths:
- Collaboration among healthcare facilities to understand one another's surge plans and modi operandi
- The presence of a WebEOC administrator in the CMOC
- Nonstop phone calls from the SimCell to the CMOC provided staff with experience in managing a major influx of information

The following areas of improvement are required to achieve the full capability level:

Areas for Improvement:
- Limited burn bed capacity in the region
- Resource rationing
- Methodology for "turning beds" and notifying state when it occurs
- STAR request protocols
- Delegating responsibilities in the CMOC

Analysis:

Collaboration and a general understanding of outside facilities' procedures and capabilities provides a tremendous amount of value in hospitals' planning and operations for responding to a burn mass casualty incident. As mentioned in the Capability 2 analysis, it is vital that *all* facilities are positioned to provide burn care in the event that burn centers are at capacity. Not only does this state of readiness include bed availability, but it also encompasses staff education and training, as well as having an adequate cache of resources to treat patients. Additionally, the CMOC staff must continue to maintain familiarity with their duties through training and exercises.

Additional Considerations

Strengths:
- Several participants expressed appreciation for the diversity of contributors to the discussion (i.e., FSED, EMS, Fire, Burn Centers, Hospitals, etc.)
- Many participants indicated that they were able to take away useful information that can be applied to their own surge plans.

Areas for Improvement:
- Due to the lack of burn beds in the region (noted by several in after-action feedback), training in converting med-surg beds into burn beds will be beneficial.
- Providing emergency departments with a quick reference guide on burn care and treatment may be advantageous.
- Incorporating free standing emergency departments (FSEDs) into burn plans has the potential to provide relief to full-service hospitals by receiving less severe patients.

APPENDIX A: REGIONAL IMPROVEMENT PLAN

This Improvement Plan (IP) was developed with the following recommendations and corrective actions for the Regional Healthcare Preparedness Coalition (RHPC) based on the Burn Surge Tabletop and Functional Exercises conducted on April 12, 2022.

Capability	Recommendations	Corrective Actions	Capability Element	Responsible Party	Projected Completion Date
Healthcare and Medical Response Coordination	More training and education for burn patient care and hospital burn plans, as well as training in preferred triage method within region. Remediation of technology issues at the Harris County EOC.	Empower hospitals to provide more training to emergency staff through provision of resources and educational opportunities. Coordinate with HCOHSEM to resolve technology issues and establish standby facility.	Training & Planning	Individual facilities, SETRAC Planning	On-going
Continuity of Healthcare Service Delivery	Provide regular opportunities to exercise CMOC operations.	Develop a schedule for CMOC exercises and individualized training for CMOC staff. Develop plans for rapid deployment to secondary location if needed.	Training	SETRAC	On-going
Medical Surge	Continued training and practice in EMTrack, EMResource, and WebEOC for healthcare staff	Ensure staff are up to date on platform knowledge by participating in regularly offered trainings and monthly drills.	Training	SETRAC & individual facilities	On-going

Authorizing Signature: _____ **Date:** _____

PARTICIPATING ORGANIZATIONS

Angelina County & Cities Health District	Houston Methodist West
Baptist Hospitals of Southeast Texas	Houston Methodist Willowbrook
Beaumont Emergency Center	Houston OEM
Behavioral Hospital of Bellaire	Houston Physicians Hospital
Ben Taub Hospital	Huntsville Memorial
Christus Jasper Memorial Hospital	Kindred Hospital Sugar Land
Christus St. Mary's Outpatient Center	Kingwood Emergency Hospital
City of Port Arthur	Kingwood Endoscopy
Clear Lake Emergency Medical Corps	LBJ Hospital
Department of State Health Services	Liberty Dayton RMC
Encompass Health Rehab of Pearland	M.D. Anderson
Encompass Health Rehab the Woodlands	Matagorda Regional
Encompass Health Rehab Vision Park	Memorial Hermann Children's
First Surgical Hospital	Memorial Hermann Cypress
Galveston Co OEM	Memorial Hermann Greater Heights
Harris County OHSEM	Memorial Hermann Kingwood Specialty Hospital
Harris County Psychiatric Center	Memorial Hermann Northeast
Harris County Public Health	Memorial Hermann Pearland
Harris Health System	Memorial Hermann Southeast
HCA HH Clear Lake	Memorial Hermann Southwest
HCA HH Conroe	Memorial Hermann the Woodlands
HCA HH West	Memorial Hermann TMC
HCA Houston Healthcare	Oak Bend Medical Center
HCA North Cypress	Rice Medical Center
HCA Tomball	Riceland Healthcare
HCA Women's Hospital of Texas	SignatureCare the Heights
Houston Behavioral Healthcare Hospital	Southeast Texas Regional Advisory Council
Houston Fire Department	St. Joseph Medical Center
Houston Methodist Baytown	St. Michael's Elite Hospital
Houston Methodist Continuing Care	Surgery Specialty Hospitals of America
Houston Methodist Sugar Land	Texas Children's Hospital

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