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:

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 into 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 includes 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

<table>
<thead>
<tr>
<th>Capability</th>
<th>Exercise Objectives</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Healthcare and Medical Response Coordination</td>
<td>Define patient triage and transportation methodology (Phase I) and identify burn surge capacity within the region (Phase I &amp; II).</td>
<td>$S$</td>
</tr>
<tr>
<td>3. Continuity of Healthcare Service Delivery</td>
<td>Ensure continuity of care while coordinating transport to specialty care facilities and load balancing (Phase II).</td>
<td>$S$</td>
</tr>
<tr>
<td>4. Medical Surge</td>
<td>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 &amp; II).</td>
<td>$S$</td>
</tr>
</tbody>
</table>

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.
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.

<table>
<thead>
<tr>
<th>Capability</th>
<th>Recommendations</th>
<th>Corrective Actions</th>
<th>Capability Element</th>
<th>Responsible Party</th>
<th>Projected Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare and Medical Response Coordination</td>
<td>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.</td>
<td>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.</td>
<td>Training &amp; Planning</td>
<td>Individual facilities, SETRAC Planning</td>
<td>On-going</td>
</tr>
<tr>
<td>Continuity of Healthcare Service Delivery</td>
<td>Provide regular opportunities to exercise CMOC operations.</td>
<td>Develop a schedule for CMOC exercises and individualized training for CMOC staff. Develop plans for rapid deployment to secondary location if needed.</td>
<td>Training</td>
<td>SETRAC</td>
<td>On-going</td>
</tr>
<tr>
<td>Medical Surge</td>
<td>Continued training and practice in EMTrack, EMResource, and WebEOC for healthcare staff</td>
<td>Ensure staff are up to date on platform knowledge by participating in regularly offered trainings and monthly drills.</td>
<td>Training</td>
<td>SETRAC &amp; individual facilities</td>
<td>On-going</td>
</tr>
</tbody>
</table>

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 |