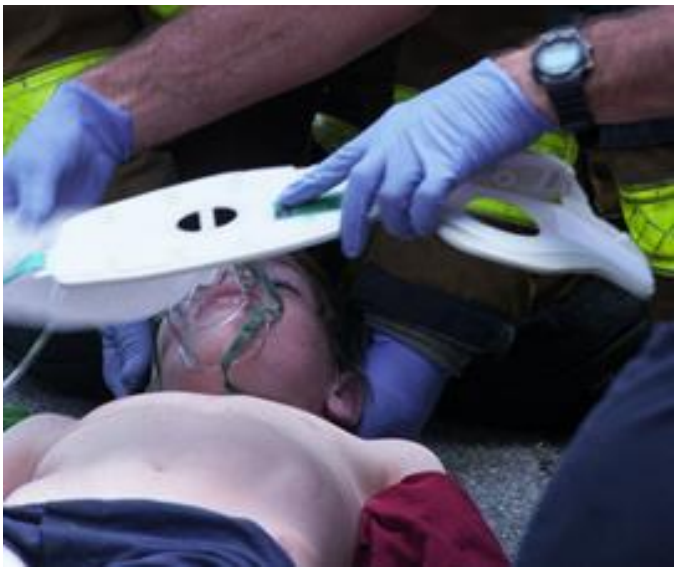
REGIONAL
PEDIATRIC EVACUATION AND MASS SURGE (PEMS)
TABLETOP EXERCISE (TTX)



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	Regional Pediatric Evacuation and Mass Surge (PEMS) Tabletop Exercise (TTX) 2020
Exercise Date	Thursday, February 6, 2020
Scope	This discussion-based exercise is scheduled for 6 hours at the Southeast Texas Regional Advisory Council (SETRAC) Conference Center, 1111 North Loop West, Houston, TX 77008. Exercise discussion is limited to socializing and testing the Regional PEMS Plan, which includes identifying recommended equipment and coordination strategies for the safe evacuation and mass surge of pediatric, neonate and responsible guardian services before, during, and after potential natural disasters and no-notice incidents across the SETRAC/Catastrophic Medical Operation Center (CMOC) 25-county region.
Mission Area	Health Care Preparedness and Response
Capabilities	1. Foundation for Health Care and Medical Readiness 2. Health Care and Medical Response Coordination 3. Continuity of Health Care Service Delivery 4. Medical Surge
Objectives	For the list of objectives associated with each capability, refer to the table on page 4.
Overarching Goals	1. Socialize the new PEMS Plan and region-wide collaboration expectations. 2. Discuss pediatric, neonate, and related maternal service coordination strategies. 3. Discuss bed capacity, alternate care sites, transportation methods, equipment, and personnel for the care of pediatrics, neonates, and related maternal services.
Hazard	All-Hazards: Natural Disasters (e.g. Hurricane, Novel Infectious Disease) and Human-Caused Incidents (e.g. Cyber-Attack with infrastructure damage, Mass Casualty Incident)
Scenario	Four scenarios are outlined on pages 4-6 to facilitate discussion for the different types of equipment, minimum personnel training requirements, and coordination strategies between the CMOC and regional stakeholders for evacuation and mass surge.
Sponsor	Regional Catastrophic Preparedness Initiative (RCPI), State Homeland Security Program, the Regional Healthcare Preparedness Coalition (RHPC), and SETRAC
Participating Organizations	SETRAC, EMS, Air Medical, Healthcare Facility Management, Free Standing Emergency Room Management, ER Departments, City & County EMCs, Public Health, and Regional, State, and Federal Partners (See Appendix B: Participating Organizations).
Point of Contact	Adam Lee Regional Exercise and Training Coordinator SouthEast Texas Regional Advisory Council Adam.Lee@setrac.org 832-297-1355

EXERCISE SCENARIOS

This section summarizes the three modules and four scenarios with specific key issues, exercise assumptions and artificialities that participants considered and factored into discussions during the TTX.

Module 1: Regional PEMS Plan Overview

The first module was a presentation on the new Regional PEMS Plan. This included the plan purpose, scope and assumptions, a pediatric and neonatal overview, evacuation and mass surge information, and considerations for transportation, equipment, and reunification of these populations.

Module 2: Evacuation

Scenario 1: Category 5 Hurricane

Hurricane Charlie is in the Gulf of Mexico and has increased in wind speed as it moves toward the Texas Coastline. In less than 4 days, a Category 5 Hurricane (i.e. 160 MPH winds) is expected to make landfall between Port Arthur and Freeport, Texas with 20-foot storm surge. Post-hurricane tropical storm rains, flooding, and/or tornadoes are expected.
Estimated Landfall is 96-72 hours (H-96 to H-72) = within 3-4 days

Scenario 2: Cyber Attack (Infrastructure Damage)

Your institution was hit by a Spear Phishing attack this morning and your network has been encrypted in a malicious Ryuk Ransomware. No one has received a ransom request from hackers. Everyone is being told to evacuate due to the key issues identified.

Module 3: Mass Surge

Scenario 3: Mass Casualty Incident (MCI)

A Mass Casualty Incident (MCI) has occurred at a local Children's Festival and/or your County Fair. Good Samaritan's are transporting kids to local hospitals. Pediatric patients of all ages are arriving, by any means available, including unaccompanied minors, most without pre-hospital triage or EMS care.

Scenario 4: Novel Infectious Disease Outbreak

A Novel Coronavirus outbreak is affecting our region with the following profile:

- Human to Human Transmission
- Airborne Pathogen
- Labeled a Highly Contagious Infectious Disease (HCID)
- Zoonotic Component (Birds, Bats, possibly Pigs)
- High Pediatric Mortality Rate

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 included Operational Coordination, Critical Transportation, Public Health and Medical Services, and Public and Private Services and Resources; 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
1. Foundation for Health Care and Medical Readiness	1.1 Discuss the newly developed Regional PEMS Plan and identify preparedness and response planning gaps for the pediatric, neonatal, and related maternal care service populations.	**P**
2. Healthcare and Medical Response Coordination	2.1 Discuss response strategies between stakeholders to identify considerations that will enhance resource (e.g. equipment, personnel) and response coordination for pediatric, neonatal, and related maternal services.	**S**
3. Continuity of Healthcare Service Delivery	3.1 Discuss the coordinated evacuation, tracking, and reunification of pediatric, neonatal, and related maternal patients across city and state lines. 3.2 Identify acuity-based resources (e.g. personnel, equipment) and transportation asset considerations to safely evacuate pediatric, neonatal, and related maternal patients.	**S** **S**
4. Medical Surge	4.1 Discuss medical surge strategies and reunification practices for pediatric, neonatal, and related maternal patients after mass casualty incidents and infectious disease outbreaks. 4.2 Identify considerations for adult facilities without pediatric, neonatal, and related maternal programs to assist with patient care during ass surge.	**S** **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 1: Foundation for Health Care and Medical Readiness

The foundation for health care and medical readiness enables the health care delivery system and other organizations that contribute to responses to coordinate efforts before, during, and after emergencies; continue operations; and appropriately surge, as necessary. Health Care Coalition (HHC) collaborates with stakeholders to ensure the community has necessary medical equipment and supplies, real-time information, communication systems, and response personnel.

Objective 1.1: Discuss the newly developed Regional PEMS Plan and identify preparedness and response gaps for the pediatric, neonatal, and related maternal care service populations.

Strengths that should be sustained:

- A strong Regional Healthcare Preparedness Coalition (RHPC) relationship with multi-disciplinary agencies and experts collaborating in the region to discuss the Regional PEMS plan and specific pediatric, neonatal, and related maternal care services and resource requirements/recommendations.
- Local and regional stakeholders with a full understanding of the hospital context and medical infrastructure needs commented on a wide array of concerns and free flow ideas with solutions coupled with a strong commitment for region-wide preparedness and response for these populations.

Analysis:

Participants discussed a variety of medical references that could be utilized in planning, then recommended some 'quick fix' additions to the Regional PEMS Plan (reference document) outlined below.

Recommendation:

1.1.1. Add specific tools, charts, tables and four example forms identified by participants as attachments to the Regional PEMS Plan.

1. Add pediatric normal vital signs and weight conversion table (pounds to kilograms and grams).
2. Add Pediatric Glasgow Coma Scoring tool utilized in infant/children triage.
3. Add four examples of reunification-related forms (e.g. Pediatric Safe Area Checklist, Guardian Verification for Child Reunification Form, Unidentified/Unaccompanied Patient Form, Emergency Information Form for Children with Special Needs).
4. Add the maternal levels of care (I-IV) and the acuity transport triage recommendations for maternal OBTRAIN (i.e. Ante-Partum (AP), Labor and Deliver (LD) and Post-Partum Triage for transportation assets).

Capability 2: Health Care and Medical Response Coordination

Private health care organizations and government agencies, including those serving as ESF-8 lead agencies, have shared authority and accountability for health care delivery system readiness, along with specific roles. HCC serves in a communication and coordination role that ensures the integration of health care delivery, strategy development, and resource needs and manage ESF 8. HCC connects the elements of medical response and provide the coordination mechanism among health care organizations – including hospitals and emergency medical services (EMS) – emergency management organizations, and public health agencies

Objective 2.1: Discuss response strategies between stakeholders to identify considerations that will enhance resource (e.g. equipment, personnel) and response coordination for pediatric, neonatal, and related maternal services.

Strengths to Sustain:

- Collaboration, coordination, and communication between RHPC, SETRAC, healthcare facilities, home health agencies, nursing homes, EMS and other medical personnel by sharing evidence-based recommendations for resource (e.g. equipment, personnel) identification and sharing needs.
- Having the Catastrophic Medical Operation Center (CMOC) activation and staffing capabilities to coordinate information and resources (e.g. EMTF, AMBUS, DME) across the 25-county region.

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

Area to Improve:

- Some facility personnel do not know what SETRAC/CMOC is and don't know how when or who to contact (e.g. SETRAC) to activate the CMOC, nor do they understand how the CMOC can help before, during, or after an emergency.
- Facilities may have plans to move patients within their system or locally but may not have mutual aid agreements outside of their systems, cities or the state for receiving patients.

Analysis:

Greater internal communication throughout the healthcare facilities is needed to ensure all personnel are aware of regional resources and coordination provided by SETRAC/CMOC.

Recommendations:

2.1.1. Re-enforce with facility EMC the need to share regional plans and support entities throughout their healthcare facilities.

Capability 3: Continuity of Health Care Service Delivery

Optimal emergency medical care relies on intact infrastructure, functioning communications and information systems, and support services. The ability to deliver health care services is likely to be interrupted when internal or external systems such as utilities, electronic health records (EHRs), and supply chains are compromised. Disruptions may occur during a sudden or slow-on-set emergency… [that is] isolated…to a long-term, widespread infrastructure disruption impacting the entire community and all its health care organizations.

Objective 3.1: Discuss the coordinated evacuation, tracking, and reunification of pediatric, neonatal, and related maternal patients across city and state lines.

Objective 3.2: Identify acuity-based resources (e.g. personnel, equipment) and transportation asset considerations to safely evacuate pediatric, neonatal, and related maternal patients.

Strengths to Sustain:

- Having SETRAC/RHPC/CMOC with strong cross-facility regional coordination and cooperation resource sharing and patient tracking via interoperable systems (e.g. WebEOC, EMResource, EMTrack).
- Home Health agencies educate home-based patients on personal preparedness and evacuation with medical needs recommendations.
- Hospitals provide 5 days of supplies with patient discharges and transfers during an evacuation.

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

Areas to Improve:

- Some facility personnel are unaware of the regional technology platforms (WebEOC, EMResource, EMTrack)
- Not enough pediatric specific transport assets available

Analysis

Not all agencies were aware of the regional technologies and Best Practices identified by their peers. Expanding this knowledge and usage throughout the region will strengthen the collective response.

Recommendations:

3.1.1. Expand utilization of Best Practices identified related to education, preparation and supplies in face of evacuation/shelter-in-place.

3.1.2. Encourage more pediatric transport providers to join regional EMTF MOA.

Capability 4: Medical Surge

Health care organizations - including hospitals, emergency medical services (EMS), and out-of-hospital providers – deliver timely and efficient care to their patients even when the demand for health care services exceeds available supply. The HCC, in collaboration with the ESF-8 lead agency, coordinates information and available resources for its members to maintain conventional surge response. When an emergency overwhelms the HCC's collective resources, the HCC supports the health care delivery system's transition to contingency and crisis surge response and promotes a timely return to conventional standards of car as soon as possible.

Objective 4.1: Discuss medical surge strategies and reunification practices for pediatric, neonatal, and related maternal patients after mass casualty incidents and infectious disease outbreaks.

Objective 4.2: Identify considerations for adult facilities without pediatric, neonatal, or related maternal patient population programs to assist with patient care during mass surge.

The partial capability can be attribute to the following strengths that should be sustained:

Strengths to Sustain:

- SETRAC/RHPC/CMOC collaboration, communication with focus on evidence-based recommendations for pediatrics, neonates, and related maternal services.
- The wide variety of scenarios gave global ideas that have not been fully discussed and thought through in other settings. This allowing for a deeper look into emergency operations for hospital NICUs.

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

Areas to Improve: 4.1 Med Surge Strategies and Reunification

- Some facility personnel are unaware of the regional technology platforms (WebEOC, EMResource, EMTrack). EMTrack can facilitate reunification.

Analysis

- Not all agencies were aware of the regional technologies and Best Practices identified by their peers. Expanding this knowledge and usage throughout the region will strengthen the collective response.

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

Areas to Improve: 4.2 Adult Facilities w/o pedi programs

- Expand and share pediatric specific care and treatment modalities with non-pediatric dedicated healthcare facilities.
- Expand and utilize provider outreach programs (ie: telemedicine)
- Provide pediatric specific disaster training to more healthcare providers in the region

Analysis

Due to the benefit of dedicated pediatric facilities in our region, some general hospitals rely and depend on quick transfers to these centers. Additional education and training in the care of the pediatric patient is needed.

Recommendations:

4.1.1 Expand training on regional technologies

4.1.2 Provide regional training on pediatric disaster care and management

4.1.3 Coordinate Neonatal Resuscitation Program to EMS providers

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 Regional Pediatric Evacuation and Mass Surge (PEMS) tabletop exercise (TTX) conducted on February 6, 2020.

Capability	Recommendations	Corrective Actions	Capability Element[1]	Responsible Party	Projected Completion Date
1. Foundation for Healthcare and Medical Readiness	Add specific tools, charts, tables and 4 example forms identified by participants as additional attachments to the Regional PEMS Plan.	1. Add pediatric normal vital signs and weight conversion table (pounds to kilograms and grams). 2. Add Pediatric Glasgow Coma Score utilized in infant/children triage tool. 3. Add 4 examples of reunification-related forms (e.g. pediatric safe area checklist, Guardian Verification for Child Reunification Form, Unidentified/Unaccompanied Patient Form, Emergency Information Form for Children with Special Needs). 4. Add acuity transport triage recommendations for maternal OBTRAIN (i.e. Ante-Partum (AP), Labor and Deliver (LD) and Post-Partum Triage for transportation assets.	Planning	Tina Rose on behalf of RHPC and SETRAC	May 2020

[1] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise (POETE).

Capability	Recommendations	Corrective Actions	Capability Element[1]	Responsible Party	Projected Completion Date
2. Healthcare and Medical Response Coordination	Greater internal communication throughout the healthcare facilities is needed to ensure all personnel are aware of regional resources and coordination provided by SETRAC/CMOC.	Express the importance with facility EMC, the need to share regional plans and support entities throughout their healthcare facilities.	Training/ Planning	Perinatal Workgroup/ SETRAC/ RHPC	December 2020
3. Continuity of Healthcare Service Delivery	Not all agencies were aware of the regional technologies and Best Practices identified by their peers. Expanding this knowledge and usage throughout the region will strengthen the collective response.	Expand utilization of Best Practices identified related to education, preparation and supplies in face of evacuation/shelter-in-place.	SETRAC	Perinatal Workgroup	February 2021
		Encourage more pediatric transport providers to join regional EMTF MOA.	Planning	SETRAC EMTF	Ongoing
4. Medical Surge	Due to the benefit of dedicated pediatric facilities in our region, some general hospitals rely and depend on quick transfers to these centers. Additional education and training in the care of the pediatric patient is needed.	Expand training on regional technologies~~?~~	Planning	SETRAC	Ongoing
		Provide regional training on pediatric disaster care and management	Organization Equipment	SETRAC	3 months (postponed due to covid)
		Coordinate Neonatal Resuscitation Program to EMS providers	Training Exercise	SETRAC	December 2020

Authorizing Signature: Lori Upton, SETRAC **Date:** June 19, 2020

APPENDIX B: PARTICIPATING ORGANIZATIONS

Participating Organizations	#	Participating Organizations	
Federal Total:	***1***	**Hospitals Total**	***53***
U.S. Coast Guard	1	LBJ – Harris Health	9
State / Regional Total:	***19***	HCA Woman's Hospital of Texas	4
Southeast Texas Regional Advisory Council	10	HCA Houston Conroe	2
Texas Department of State Health Services	5	HCA - Houston Northwest	1
Coastal Bend Regional Advisory Council	2	HCA - Tomball	1
Border Regional Advisory Council	1	HCA Houston HC - Mainland	1
Regional Catastrophic Preparedness Initiative -HS	1	HCA HealthTrust	1
Office of Emergency Management Total:	***4***	Texas Children's Hospital TMC	5
City of Houston OEM	1	Texas Children's Hospital - Woodlands	1
Harris County OEM	2	Medical Center of SE Texas	2
Fort bend County OEM	1	Memorial Hermann Health System	2
Public Health Total:	***2***	Memorial Hermann – Children's TMC	3
City of Houston Health Department	1	Memorial Hermann - Memorial City	3
Harris County Public Health Department	1	Memorial Hermann - Greater Heights	2
Emergency Medical Service (EMS) Total:	9	Memorial Hermann - Katy	1
Fort Bend County EMS	1	Memorial Hermann/UTHealth	1
Southeast Texas Air Rescue	1	UT Health HCPC	1
Acadian Ambulance	4	Houston Methodist - Willowbrook	1
City of LaPorte EMS/Fire	1	Houston Methodist - Baytown	1
American Medical Response (AMR)	2	Sweeney Community Hospital	1
Hospitals		Altus Baytown Hospital	2
Montgomery County Hospital District	2	OakBend Medical Center	1
MD Anderson	1	CHI St. Luke's Medical Center	1
UT Medical Branch	1	CHI St. Lukes - Woodlands	2
Total Number of Participants:		**88**	

APPENDIX C: PARTICIPANT FEEDBACK

Assessment of Exercise Design and Conduct

Fifty-three out of eighty-eight participants (60%) rated questions (1-5 points) with the following averages:

After this exercise, I believe that…	Strongly Disagree / Strongly Agree
… the Regional Healthcare Preparedness Coalition (RHPC) and stakeholders have a better understanding of the Regional PEMS Plan and Catastrophic Medical Operation Center (CMOC) coordination for disaster preparedness and response across the SETRAC 25-County Region.	4.6
… RHPC and stakeholders are better prepared to coordinate transportation equipment and medical services for pediatric, neonatal, and related maternal patient care during **evacuation**.	4.4
… RHPC and stakeholders are better prepared for **mass surge** of pediatric, neonates, and related maternal services after a MCI or infectious disease outbreak in the SETRAC Region.	4.4
… my agency is better prepared to coordinate with SETRAC/CMOC and RHPC stakeholders to **evacuate** pediatrics, neonates, and related maternal patients from our region.	4.3
… my agency is better prepared to coordinate with SETRAC/CMOC and RHPC stakeholders to care for pediatrics, neonates, and related maternal patients in our region during **mass surge.**	4.3
… partners and stakeholders have realistic expectations and a better understanding of their roles, the CMOC, and RHPC stakeholders during regional PEMS plan activation.	4.5
… I learned something new to change my practice or take back to my facility/organization.	4.9

Participant Feedback

Feedback from participants provided the following list of partner agencies/disciplines to invite for future exercises, along with a few general comments for consideration.

Partners to include in the future:

- Pedi/Neo Respiratory Therapists
- Neonatal Pharmacists
- Hospital Security
- Hospital Chaplin & Social Workers
- Case Workers, Childcare Workers
- Child Protective Services (CPS)
- Telemedicine Experts
- Warehouse Leads
- Medical Equipment Suppliers
- Emergency Department Directors
- Pedi critical care transport teams
- Smaller healthcare facilities
- National Guard/Air Guard
- Dept. of Homeland Security/FEMA, FAA
- City/County Fire/EMS reps
- Law Enforcement
- Elected Officials

General Comments:

- Great scenarios to talk through coordination, supplies, patient stabilization, transport, and reunification. Great communication.
- For a first-time pedi/neo TTX this was well-organized with thought-provoking questions.
- The format encouraged participation.
- I didn't realize how few pediatric resources were available in the region.
- Create/Share multi-disciplinary organization chart to show how they relate to each other.
- Enjoyed the constant discussion/collaboration of everyone present. I learned a lot.
- It seems that more personnel need pediatric cross-training in adult healthcare facilities.
- It was informative to learn capabilities and current gaps that our office can accommodate in future emergency response plans.