



**Knox/East Tennessee Healthcare Coalition  
2019 Full Scale Exercise and Evacuation Drill:  
The Great Quake of 2019 (Earthquake)  
*University of Tennessee Medical Center  
Evacuation***

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**After-Action Report/Improvement Plan**  
19June2019

## EXERCISE OVERVIEW

<b>Exercise Name</b>	Knox/ East Tennessee Healthcare Coalition 2019 Full Scale Exercise and Evacuation Drill: The Great Quake of 2019 (Earthquake): <i>University of Tennessee Medical Center Evacuation</i>
<b>Exercise Dates</b>	May 10, 2019
<b>Scope</b>	This exercise is a full-scale exercise planned for healthcare facilities and community partners/organizations within the Knox/East Tennessee Healthcare Coalition’s jurisdiction. Exercise play is limited to the parameters set forth within each participating organization.
<b>Mission Area(s)</b>	Response and Recovery
<b>Core Capabilities</b>	HPP 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)
<b>Objectives</b>	<p>Evacuation Objectives:</p> <ol style="list-style-type: none"> <li>1. Evaluate the ability of the Healthcare Coalition to provide appropriate placement within 90 minutes of evacuation notification.</li> <li>2. Evaluate the ability of the Coalition to enhance situational awareness during an event and effectively communicate through appropriate channels.</li> <li>3. Evaluate the ability of the coalition to demonstrate resource support and coordination among members under time urgency, uncertainty, and logistical constraints of an emergency.</li> <li>4. Evaluate all the participating agencies ability to identify availability of specific type of beds, resources, and staff using Incident Command System in a timely manner.</li> <li>5. Evaluate the ability of the Coalition to identify appropriate modes of transport for all evacuated patients.</li> <li>6. Demonstrate the capability of redundant means of communication for achieving and sustaining situational awareness.</li> </ol>
<b>Threat or Hazard</b>	Natural Disaster – Earthquake along the East Tennessee Seismic Zone requiring evacuation of region level 1 Trauma Center, University of Tennessee Medical Center.

<b>Exercise Name</b>	Knox/ East Tennessee Healthcare Coalition 2019 Full Scale Exercise and Evacuation Drill: The Great Quake of 2019 (Earthquake): <i>University of Tennessee Medical Center Evacuation</i>	
<b>Scenario</b>	<p>On May 10, 2019, approximately 8:45 a.m., an earthquake occurs along the East Tennessee Seismic Zone. Modified Mercalli intensity scale (MM Scale) VIII or greater intensity ground shaking extends throughout large sections of the area East Tennessee, greatly impacting the region. The area within 25 miles of the fault is subjected to shaking of MM intensity VIII or greater, strong enough to cause considerable damage to ordinary buildings and great damage to poorly built structures. Soil liquefaction occurs in some areas and adds to the destruction, since even earthquake resistant structures may fail when liquefaction occurs.</p> <p>At 9:00 a.m., Peninsula Psychiatric Hospital issues notification of forced evacuation due to extensive structural damage.</p> <p>At 10:15 a.m., the initial shock is followed by a 3.2 magnitude earthquake that causes further damage, forcing the evacuation of University of Tennessee Medical Center, the EMS Region II Level 1 trauma center.</p>	
<b>Sponsor</b>	Knox/East Tennessee Healthcare Coalition	
<b>Participating Organizations</b>	Region-wide hospitals, long term care, dialysis clinics, healthcare clinics, public health, RMCC (Regional Medical Communication Center), EMS, EMA, Forensic Center, Blood Bank and other appropriate partners	
<b>Point of Contact</b>	<p>John Brinkley Knox County Health Department 140 Dameron Avenue Knoxville, TN 37917 (865) 215-5456 John.brinkley@knoxcounty.org</p>	<p>Wanda Roberts East TN Regional Health Office 2101 Medical Center Way Knoxville, TN 37920 (865) 549-5294 Etrhc.health@tn.gov</p>

## GENERAL INFORMATION

### Exercise Objectives and Core Capabilities

The following exercise objectives in Table 1 describe the expected outcomes for the exercise. The objectives are linked to core capabilities, which are distinct critical elements necessary to achieve the specific mission area(s). The objectives and aligned core capabilities are guided by elected and appointed officials and selected by the Exercise Planning Team.

Exercise Objective	HPP Core Capability	Objective	Activity (If Applicable)	Perform without Challenges (P)	Perform with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Evaluate the ability of the Coalition to provide appropriate placement within 90 minutes of evacuation notification.	<b>3</b> Continuity of Health Care Service Delivery	<b>6</b> Plan for and Coordinate Health Care Evacuation and Relocation	<b>1</b> Develop and Implement Evacuation and Relocation Plans	<b>P</b>			
	<b>4</b> Medical Surge	<b>2</b> Respond to a Medical Surge	<b>3</b> Develop an Alternate Care System	<b>P</b>			

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Evaluate the ability of the Coalition to enhance situational awareness during an event and effectively communicate through appropriate channels.	<b>1</b> Foundation for Health Care and Medical Readiness	<b>1</b> Establish and Operationalize the Health Care Coalition		P			
	<b>2</b> Health Care and Medical Response Coordination	<b>2</b> Utilize Information Sharing Procedures and Platforms		P			
Evaluate the ability of the Coalition to demonstrate resource support and coordination among members under time urgency, uncertainty, and logistical constraints of an emergency.	<b>1</b> Foundation for Health Care and Medical Readiness	<b>2</b> Identify Risk and Needs	<b>4</b> Assess Community Planning for Children, Pregnant Women, Seniors, Individuals with Access and Functional Needs, Including People with Disabilities, and Others with Unique Needs	P			

Exercise Objective	HPP Core Capability	Objective	Activity (If Applicable)	Perform without Challenges (P)	Perform with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
		<b>4</b> Train and Prepare the Healthcare and Medical Workforce	<b>2</b> Educate and Train on Identified Preparedness and Response Gaps  <b>3</b> Plan and Conduct Coordinated Exercise with Healthcare Coalition Members and Other Response Organizations		<b>S</b>		
	<b>3</b> Continuity of Healthcare Service Delivery	<b>1</b> Identify Essential Functions for Health Care Delivery		<b>P</b>			
	<b>4</b> Medical Surge	<b>2</b> Respond to a Medical Surge	<b>8</b> Respond to Behavioral Health Needs During a Medical Surge Response	<b>P</b>			

Exercise Objective	HPP Core Capability	Objective	Activity (If Applicable)	Perform without Challenges (P)	Perform with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Evaluate the ability of the Coalition to identify appropriate modes of transport for all evacuated patients.	<b>3</b> Continuity of Healthcare Service Delivery	<b>6</b> Plan and Coordinate Health Care Evacuation and Relocation	<b>1</b> Develop and Implement Evacuation and Relocation Plans  <b>2</b> Develop and Implement Evacuation Transportation Plans		S		
Demonstrate the capability of redundant means of communication for achieving and sustaining situational awareness for Coalition and participating organizations	<b>2</b> Health Care and Medical Response Coordination	<b>2</b> Utilize Information Sharing Procedures and Platforms			S		

Exercise Objective	HPP Core Capability	Objective	Activity (If Applicable)	Perform without Challenges (P)	Perform with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Evaluate participating organizations ability to identify availability of specific type of beds, resources, and staff using Incident Command System in a timely manner.	1 Foundation for Health Care and Medical Readiness	4 Train and Prepare the Healthcare and Medical Workforce	1 Promote Role Appropriate National Incident Management System Implementation	P			
	4 Medical Surge	2 Respond to a Medical Surge					
Demonstrate participating organizations ability to coordinate with outside agencies.	1 Foundation for Health Care and Medical Readiness	4 Train and Prepare the Healthcare and Medical Workforce	3 Plan and Conduct Coordinated Exercise with Healthcare Coalition Members and Other Response Organizations		S		



Exercise Objective	HPP Core Capability	Objective	Activity (If Applicable)	Perform without Challenges (P)	Perform with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
<p><b>Ratings Definitions:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.</li> <li>• Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).</li> </ul>							
<p><b>Table 1. Summary of Core Capability Performance</b></p>							

**EXERCISE OBJECTIVE**

1. Evaluate the ability of the Coalition to provide appropriate placement within 90 minutes of evacuation notification.
2. Evaluate the ability of the Coalition to enhance situational awareness during an event and effectively communicate through appropriate channels.
3. Evaluate the ability of the Coalition to demonstrate resource support and coordination among members under time urgency, uncertainty, and logistical constraints of an emergency.
4. Evaluate the ability of the Coalition to identify appropriate modes of transport for all evacuated patients.
5. Demonstrate the capability of redundant means of communication for achieving and sustaining situational awareness for Coalition and participating organizations
6. Evaluate participating organizations ability to identify availability of specific type of beds, resources, and staff using Incident Command System in a timely manner.
7. Demonstrate participating organizations ability to coordinate with outside agencies.

**Strengths:**

1. Strong working relations with local EMS agency in coordinating patient movement.
2. Great communications between EMS, RMCC and RHC.
3. Collaboration among coalition partners with regular updates and effective communications with regional healthcare coordinator.
4. Coordinated decision making with EMS on acuity level of patients in choosing appropriate transportation.
5. Ability to “dump” daily census into patient tracking system
6. Excellent patient count on board with hospital and EMS.
7. Identified most critical patients for transfer first.
8. Staff adaptive to needs, developed spreadsheet to give out to floors to place patient sticker for improved accountability.
9. Use of GIS survey to identify additional resources in community from CMS 17 group. (see attachment A)
10. Staffing the RHOC with RHC, EMS, RMCC and other staff members made communications smoother.

**Areas for Improvement**

1. Education and practice on patient tracking system for all participating facilities in the region.
  - a. Possible Solution – A Patient Tracking administrator for the KETHC has been identified and is working with KETHC members on processes for utilizing the patient tracking system. This process needs to be formalized, adopted, and included in administrative plan. Additional training is needed and an implementation of regular use such as a monthly patient tracking day for hospitals to practice using actual patients into their ER.

2. Redundant means of communications. The amateur radio system and WinLink system as a back-up mean of communications proves to be a concern due to limited qualified amateur radio operators and no guidelines for use.
  - a. Possible Solution – Work with local amateur radio groups to provide additional education on systems. Convene a workgroup of hospital and amateur radio members to develop guidelines and procedures.
3. Review of Hospital and EMS evacuation policy and procedure and incorporation of HICs forms 254 and 255.
  - a. Possible Solution – Hospital and EMS representatives develop a workgroup to review and develop an efficient means of identifying appropriate level of transport based on patients' disposition.
4. Development of procedures to utilize and share GIS system in real world events.
  - a. Although the GIS system proved to be a valued means of communications between Regional Hospital Coordinator Center and CMS 17 groups, a mean of conveying the initial survey and sharing the information amount coalition members needs to be developed.

## APPENDIX A: IMPROVEMENT PLAN

Issue/Area for Improvement	Corrective Action	Capability Element <sup>1</sup>	Start Date	Completion Date
1. Education and practice on patient tracking system for all participating facilities in the region.	Develop guidelines for users and administrators. Conduct training on Patient Tracking system. Create a patient tracking day for users to practice once a month.	Planning, Training and Exercise	July 2019	June 2020
2. Redundant means of communications.	Work with local amateur radio groups to provide additional education on systems. Convene a workgroup of hospital and amateur radio members to develop guidelines and procedures	Planning and Training	Current	December 2019
3. Hospital and EMS evacuation policy and procedure	Hospital and EMS representatives develop a workgroup to review and develop an efficient means of identifying appropriate level of transport based on patients' disposition.	Planning	July 2019	June 2020
4. Utilize and sharing of GIS system in real world events	A mean of conveying the initial survey and sharing the information amount coalition members needs to be developed.	Plannng		June 2020

*This IP has been developed specifically for Knox/East Tennessee Healthcare Coalition as a result of the Coalition Surge Test conducted on 05/10/19.*

<sup>1</sup> Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

## **ATTACHMENT A: GIS REPORT AND STATS**

### **KETHC Full-Scale Earthquake Evacuation and Surge Exercise,**

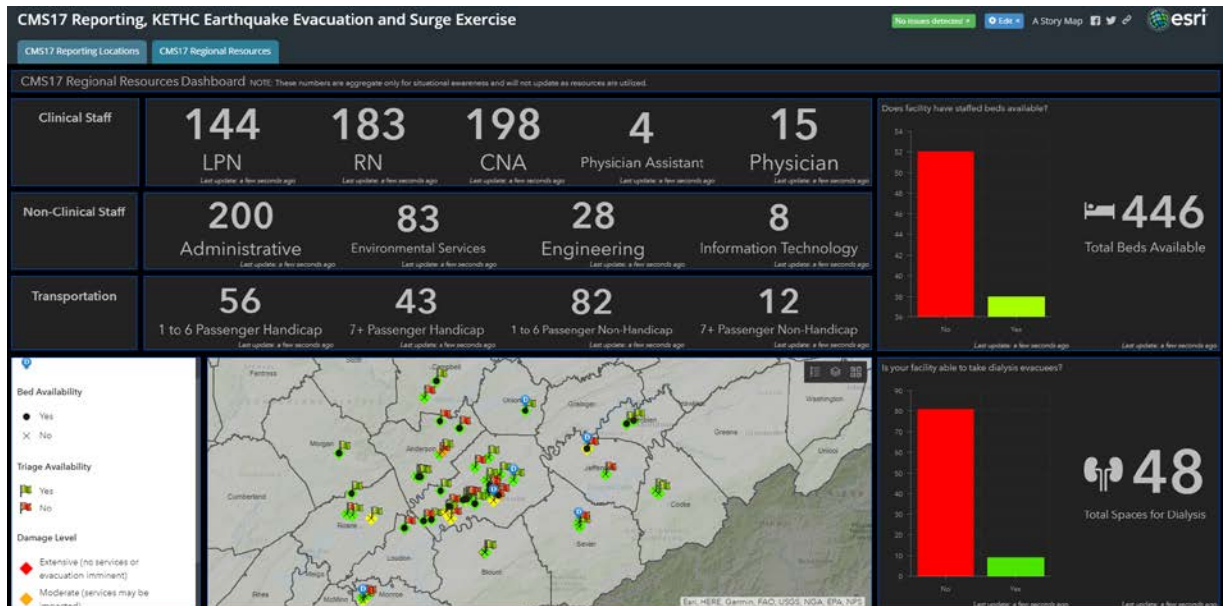
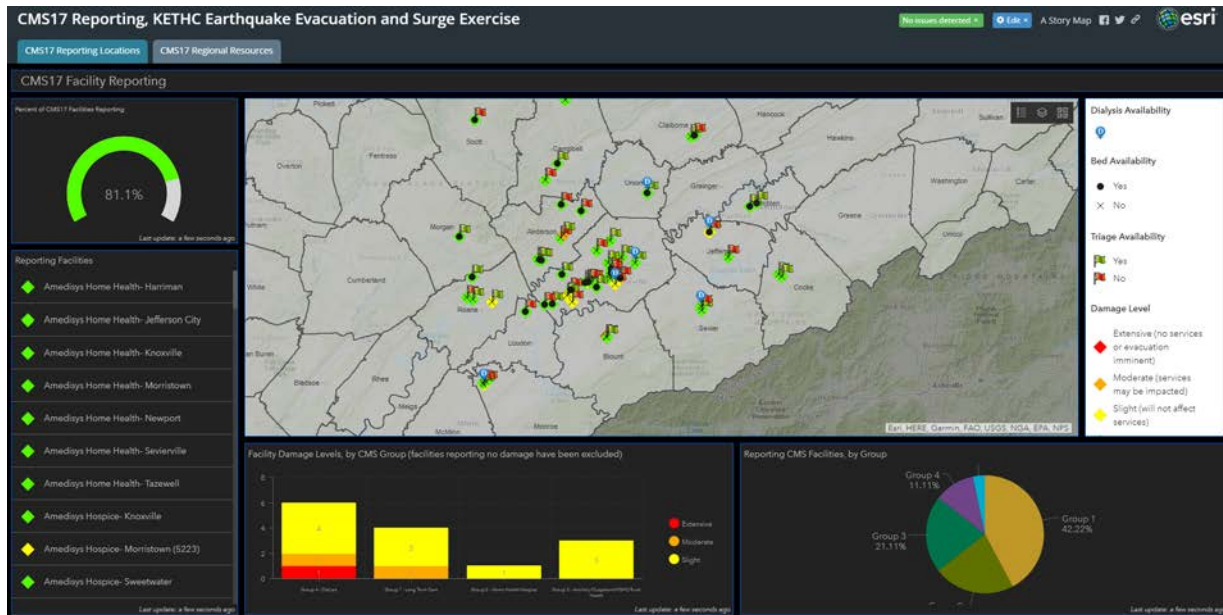
#### **May 10, 2019: CMS Resource Tracking Component**

The exercise tested real-time identification of CMS resources available during a response. Data was collected and mapped using Survey123; information was aggregated and displayed in real-time through construction of an Operations Dashboard and Story Map (Figure 1).

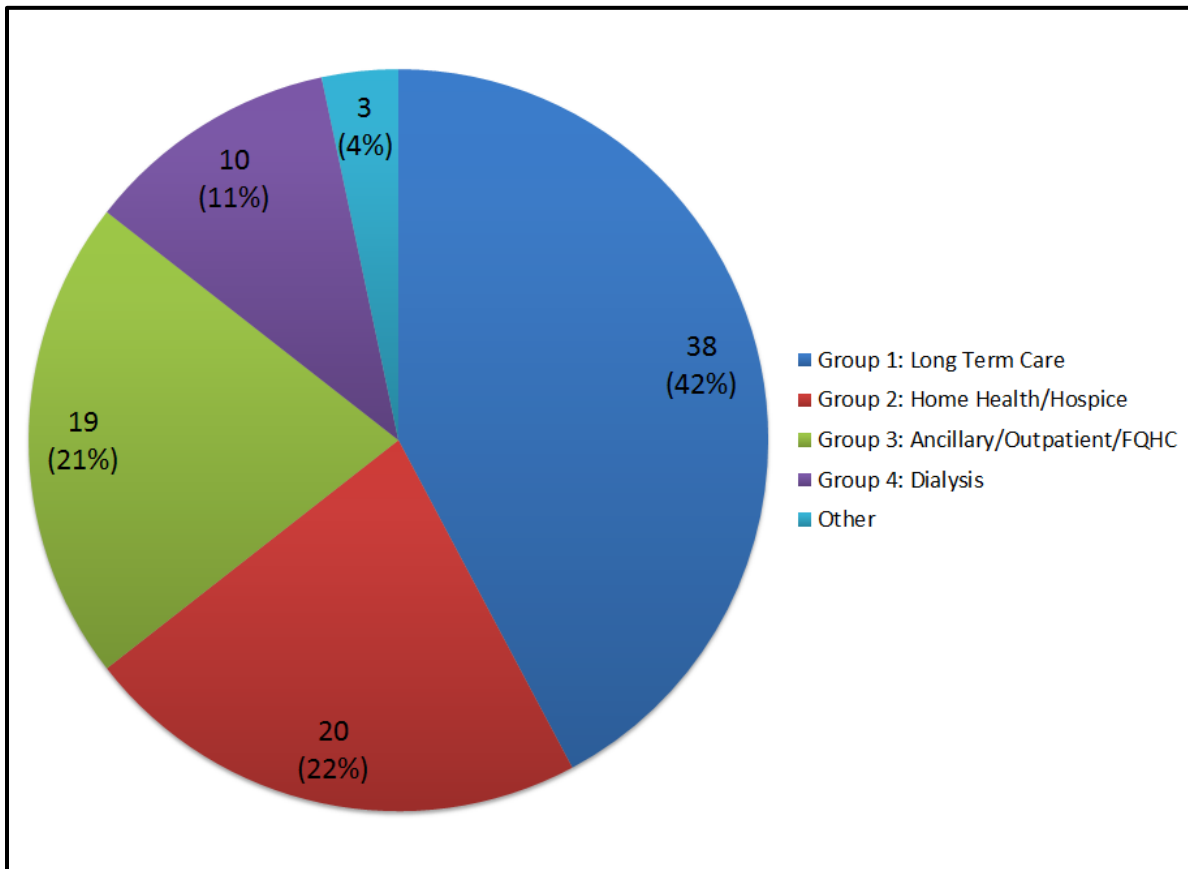
Upon notification of hospital evacuation, KETHC emailed a web-based survey to 111 participating CMS facilities to gather information related to bed, transport, staffing, and dialysis availability. Within 15 minutes of survey deployment, 53% of participating CMS facilities responded, and by 90 minutes, 81% of facilities had shared data. In total, the survey elicited response from 90 unique facilities representing all CMS groups (Figure 2). This information resulted in facility-specific and location-specific resources that identified 446 beds, 193 multi-passenger transport vehicles, 544 clinical staff, 319 non-clinical staff, and 48 dialysis spaces. During the exercise, survey information was extracted by facility and/or resource type as requested by stakeholders to assist in timely movement of patients. See Table 1 for a breakdown of resources identified from each reporting group.

The survey also provided a general comments section for respondents to share any additional information they thought might be relevant. Review of this information highlights areas of information that KETHC may consider collecting for future exercises or events. These include: specific medical supplies the facility can donate, space the facility has for storage and/or distribution of donated supplies (medical or non-medical); space to be utilized for reunification or blood-drive; and availability to treat minor injuries.

Figure 1: CMS Resource Tracking Dashboard



**Figure 2:** CMS Resource Tracking Survey Responses by CMS Group (N=90)



**Table 1:** Number of Reported Resources Identified during FSE by CMS Group and Resource Type\*

Resource Type	CMS Group					Resource Totals
	Group 1	Group 2	Group 3	Group 4	Other	
<b>Clinical Staff</b>	343	121	59	18	3	<b>544</b>
<b>Non-Clinical Staff</b>	227	50	28	6	8	<b>319</b>
<b>Transport Vehicles</b>	117	46	26	0	4	<b>193</b>
<b>Beds</b>	407	0	16	0	23	<b>446</b>
<b>Dialysis Spaces</b>	7	0	0	41	0	<b>48</b>

**\*Note:**

- Group 1: Long Term Care; Group 2: Home Health/Hospice; Group 3: Ancillary/Outpatient/FQHC; Group 4: Dialysis
- Clinical Staff includes CNAs, LPNs, RNs, physician assistants, and physicians
- Non-clinical Staff includes administrative staff, environmental services, engineers, and IT
- Transport vehicles include (small 1-6 passengers) and large (7+) in both handicap and non-handicap options



## Appendix B - Exercise Participants

Participating Organizations	
<b>Coalition Member Type</b>	
<b>Federal</b>	
Oak Ridge National Laboratory EMS	
<b>State</b>	
Tennessee Department of Health- Central Office	
Tennessee Department of Health- East Region	
<b>County</b>	
Knox County Health Department	
Knox County Emergency Management Agency	
<b>Healthcare Facility- Hospital</b>	
Big South Fork Medical Center	
Blount Memorial Hospital	
Claiborne County Hospital	
East Tennessee Children's Hospital	
Fort Loudoun Medical Center	
Fort Sanders Regional Medical Center	
Jefferson Memorial Hospital	
LaFollette Medical Center	
LeConte Medical Center	
Methodist Medical Center	
Morristown Hamblen Healthcare	
Newport Medical Center	
North Knoxville Medical Center	
Parkwest Medical Center	
Peninsula Psychiatric Hospital	
Roane Medical Center	
Sweetwater Hospital Association	
Turkey Creek Medical Center	

University of Tennessee Medical Center
<b>Healthcare Facility- Long Term Care</b>
Asbury Place
Ben Atchley State Veterans Home
Beverly Park Place Health and Rehab
Concordia Transitional Care and Rehabilitation-Maryville
Cumberland Village Center
Diversicare of Claiborne
Diversicare of Oak Ridge
Fort Sanders Sevier Nursing Home
Fort Sanders Transitional Care Unit
Harriman Care & Rehabilitation Center
Heritage Center
Holston Health Care
Huntsville Manor
Island Home Park Health and Rehabilitation
Jefferson City Health and Rehabilitation Center
Life Care Center of Jefferson City
Life Care Center of Morristown
NHC HealthCare Knoxville
NHC HealthCare Oak Ridge
NHC Place Farragut
Norris Health and Rehabilitation Center
Oneida Nursing and Rehab Center
Raintree Terrace senior living
Serene Manor Medical Center
Shannondale of Knoxville
Signature HealthCARE of Rockwood Rehab & Wellness Center
Summit View of Rocky Top
Summitview of Farragut
Tri State Health & Rehabilitation Center
Trinity Health and Rehabilitation Center
West Hills Health and Rehab
Westmoreland Health & Rehab
Asbury Place

Ben Atchley State Veterans Home
Beverly Park Place Health and Rehab
<b>Healthcare Facility- Home Health/Hospice</b>
Amedisys Home Health
Amedisys Home Health- Harriman
Amedisys Home Health Newport
Amedisys Home Health of Jefferson City
Amedisys Home Health Sevierville
Amedisys Home Health/Knoxville
Amedisys Hospice Knoxville
Amedisys Hospice Sweetwater
Avalon Hospice
Clinch River Home Health
Covenant HomeCare
Interim Home Health of East TN
Intrepid Home Health
Morristown Amedisys Home Health
NHC Home Care Knoxville
Smoky Mountain Home Health and Hospice
SunCrest Home Health
The University of Tennessee Medical Center Hospice Services
University of Tennessee Home Care
UT Hospice Knoxville
<b>Healthcare Facility- Ancillary/Outpatient/FQHC/Rural Health Clinics</b>
Community Health of East Tennessee, Inc.
Kingston Family Practice,CMG
Knoxville Orthopedic Surgery Center
Pain Consultants of East Tennessee Surgery Center
Parkwest Surgery Center
PHYSICIANS SURGERY CENTER OF KNOXVILLE
RURAL MEDICAL SERVICES INC.
Smoky Mountain Ambulatory Surgery Center, LLC
Tennessee Endoscopy Center
Tennessee Valley Eye Center
The Endoscopy Center Main

The Endoscopy Center North
The Endoscopy Center West
The Eye Surgery Center of East Tennessee
The Eye Surgery Center of Knoxville
The Eye Surgery Center of Oak Ridge, LLC
Wartburg Surgery Center
<b>Healthcare Facility- Dialysis</b>
Davita Appalachian Dialysis
Davita Clinch River Dialysis
DaVita Knoxville Dialysis
Davita Morristown Dialysis
Davita Rocky Top Dialysis
Dialysis Clinic Inc - Holston River
Dialysis Clinic Inc - Maryville
Dialysis Clinic Inc. Knoxville
Dialysis Clinic Inc--Caryville
FKC Powell Dialysis
Fresenius Dialysis West
Fresenius Kidney Care Caryville
Fresenius Kidney Care Fort Sanders
Fresenius Kidney Care Morristown
Fresenius Kidney Care- New Market
Fresenius Kidney Care Oak Ridge
Fresenius Kidney Care Roane County
Fresenius Kidney Care Sevierville
Fresenius Kidney Care Skyway
Fresenius Kidney Care-Newport
Fresenius Kidney Care- Loudon
Fresenius Medical Care East Knoxville
Fresenius Medical Care Lafollette
Fresenius Parkwest Home Therapy
North Knoxville Fresenius
<b>EMS/Medical Transport</b>
Region II EMS

<b>Other Coalition Partners</b>
Regional Medical Communications Center
Ballplay Volunteer Fire Department
<b>Other Partners</b>
Remote Area Medical
Wonder Works “Earthquake Café”

## Appendix C: Acronyms

Acronym	Term
AAR	After Action Report
ALT	Assisted Living Facility
ASC	Ambulatory Surgical Center
ASPR	Assistant Secretary for Preparedness and Response
DHS	U.S. Department of Homeland Security
EMA	Emergency Management Agency
EMS	Emergency Medical Services
ETRO	East TN Regional Office (Tennessee Department of Health)
FQHC	Federally Qualified Health Center
FSE	Full Scale Exercise
HHA	Home Health
HICS	Hospital Incident Command System
HPP	Hospital Preparedness Program
HSEEP	Homeland Security Exercise and Evaluation Program
IAP	Incident Action Plan
ICF/IID	Intermediate Care Facilities for Individuals with Intellectual Disability
ICS	Incident Command System
IP	Improvement Plan
KCHD	Knox County Health Department
KETHC	Knox/East TN Healthcare Coalition
LTC	Long Term Care
OPT-SLP	Rehabilitation Agencies, Clinics and Public Health Agencies as Providers of Outpatient Physical Therapy and Speech-Language Pathology Services
PHEP	Public Health Emergency Preparedness
POC	Point of Contact
SIMCELL	Simulation Cell
SME	Subject Matter Expert
SNF	Skilled Nursing Facility
SNF/LTC	Skilled Nursing Facility/Long Term Care
UTMC	University of Tennessee Medical Center