2017

Houston Regional RITN Tabletop Exercise After-Action Report/Improvement Plan

Report Date: July 22, 2017

Table of Contents

EXERCISE OVERVIEW

Exercise Name	2017 Houston Regional RITN Tabletop Exercise (TTX)
Exercise Date	July 10, 2017 (1:30 PM – 4:30 Pm)
Capabilities	Public Health & Medical Services Operational Coordination, Medical Surge, Responder Safety & Health, Mass Care
Objectives	**Objective 1:** Clarify the organizational roles and responsibilities of participating agencies in responding to a surge of casualties with radiological injuries to the Houston region. **Objective 2:** Identify the process for casualty reception and distribution within the Federal Coordinating Center (FCC) framework. **Objective 3:** Identify the critical resources available to assist hospitals and treatment centers during a surge of radiation-injured patients and discuss resource gaps. **Objective 4:** Anticipate guidance that non-Radiation Injury Treatment Network (RITN) hospitals will need with regard to receiving radiation-injured patients; of particular concern is triage, treatment, tracking and surveillance of self-referral cases from the area of radiation impact and distribution of medical countermeasures. **Objective 5:** Identify the responsibilities and resources necessary for mass care capabilities to support RITN patients and their families during ongoing treatment at Houston RITN treatment centers.
Threat or Hazard	Radiological
Scenario	Medical surge due to a distant detonation of an Improvised Nuclear Device (IND)
Sponsor	Radiation Injury Treatment Network® (RITN)
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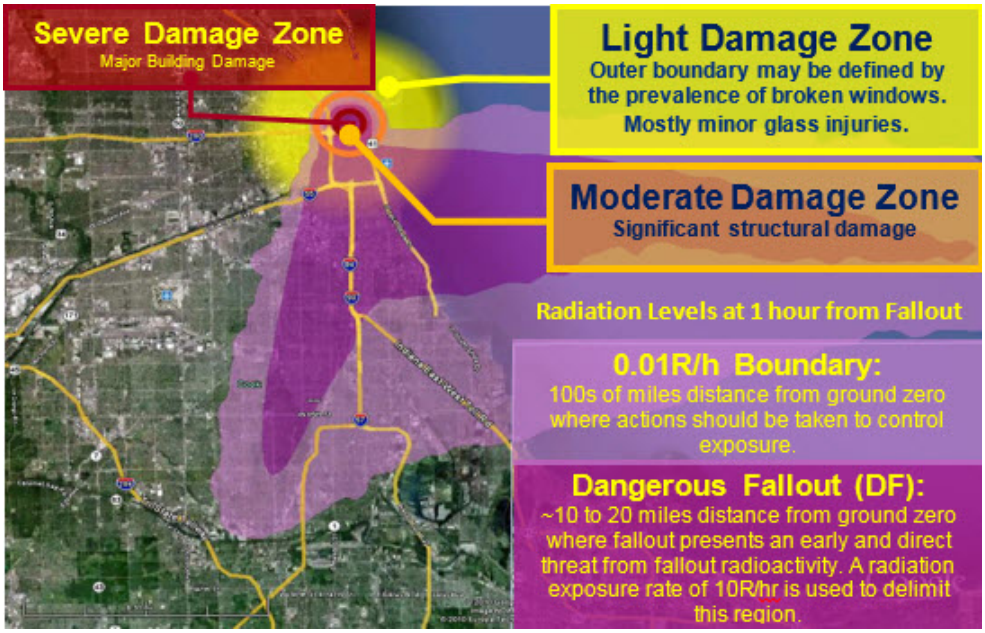
EXERCISE SUMMARY

On July 10, 2017, Texas Children's Hospital (TCH), M.D. Anderson Cancer Center, Southeast Texas Regional Advisory Council (SETRAC), St. Luke's Hospital, Harris County Public Health, Houston Fire Department, Houston Airport System, Houston Veterans Affairs (VA) National Disaster Medical System (NDMS) Federal Coordinating Center (FCC), the U.S. Department of Health and Human Services (HHS) Assistant Secretary for Preparedness and Response (ASPR) Region 6, and the RITN Control Cell participated in a tabletop exercise to discuss the organizational roles and responsibilities of key agencies, identify resources required to provide treatment for a surge of radiation injury patients, describe medical management of patients (to include inpatient, outpatient and self-referral), discuss casualty reception and receipt within the FCC model, and identify resource needs for mass care/shelter operations. Exercise participants addressed these objectives in a scenario-driven, facilitated discussion based on a surge of casualties with radiological injuries arriving to the Houston area.

Exercise Scenario

Initial Event

- On July 2, 2017 a ten-kiloton Improvised Nuclear Device (IND) was detonated in Chicago.



- Estimated casualties:
  - 300,000 fatalities in the Severe Damage Zone; 150,000 in Moderate Damage Zone.

- 60,000 urgent casualties in Moderate Damage Zone; 90,000 in Light Damage Zone.
- 40,000 non-urgent casualties in Moderate Damage Zone; 60,000 in Light Damage Zone.
- 300,000 worried well across geographical area.
- **16,400 radiation casualties** across geographical area.

- Secretary of Health and Human Services (HHS) declares a Public Health Emergency and activates the HHS Emergency Management Group.
- The National Marrow Donor Program (NMDP) activates the RITN Control Cell. Control Cell staff begin to monitor the situation and send out Situation Reports (SITREPs) to the RITN facilities as well as notification to fill out and submit the HCS capacity survey.

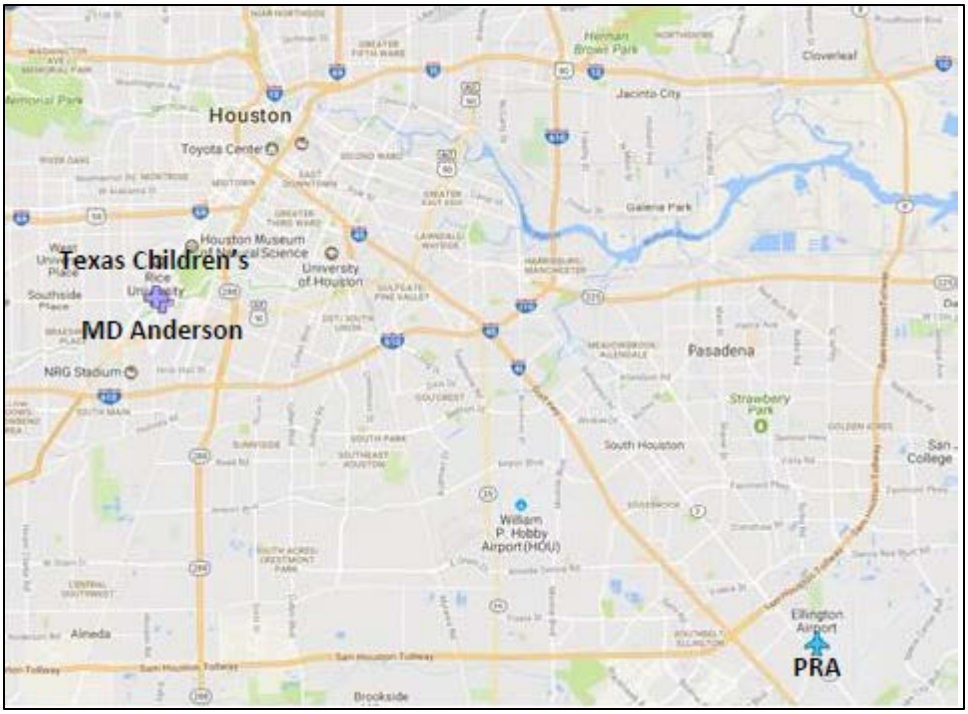
Initial Event +6 Days

- National Disaster Medical System (NDMS) issues activation protocol for Houston, indicating the city will be receiving casualties from the disaster zone via NDMS.
- The Department of Veterans Affairs initiates actions to establish a Patient Reception Area (PRA) at Ellington Field at NASA, where NDMS patients will be received.

Initial Event +8 Days

Approximately eight days after the detonation patients start to arrive at the FCC established at Ellington Field. Upon arrival patients will be screened and triaged for transportation to the local RITN hospitals for treatment. Houston hospitals are expected to receive both pediatric and adult patients with marrow toxic injuries. These patients typically will arrive in waves of 30-45 patients and may be spread out over multiple days.

Some RITN patients are anticipated to be treated on an outpatient basis. Mass care services for patients and family members are also anticipated.



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). These objectives and aligned core capabilities are guided by elected and appointed officials and were selected by the Exercise Planning Team.

Table 1. Exercise Objectives and Associated Core Capabilities

Exercise Objective	Core Capability	Healthcare Preparedness Capability
Objective 1: Clarify the organizational roles and responsibilities of participating agencies in responding to a surge of casualties with radiological injuries to the Houston region**.**	Public Health & Medical Services	Emergency Operations Coordination
Objective 2: Identify the process for casualty reception and distribution within the Federal Coordinating Center (FCC) model**.**	Public Health & Medical Services	Emergency Operations Coordination
Objective 3: Identify the critical resources available to assist hospitals and treatment centers during a surge of radiation-injured patients and discuss resource gaps.	Public Health & Medical Services	Medical Surge

Exercise Objective	Core Capability	Healthcare Preparedness Capability
Objective 4: Anticipate guidance that non-Radiation Injury Treatment Network (RITN) hospitals will need with regard to receiving radiation-injured patients; of particular concern is triage, treatment, tracking and surveillance of self-referral cases from the area of radiation impact and distribution of medical countermeasures.	Medical Countermeasures Dispensing	Responder Safety & Health
Objective 5: Identify the responsibilities and resources necessary for mass care capabilities to support RITN patients and their families during ongoing treatment at Houston RITN treatment centers.	Mass Care Services	Emergency Operations Coordination

ANALYSIS OF CAPABILITIES

Question Block 1: Pre-Arrival of Patients

Activation: The Control Cell would notify the Houston RITN Centers. They would request that they complete the capabilities matrix through HCStandard. They would push the data to ASPR who would send it back to NDMS.

Notification: The FCC would notify SETRAC (on-call duty officer) who would standup the Catastrophic Medical Operations Center (CMOC).

Coordination between Houston RITN Centers, Public Health, RITN, and the FCC:

The HHS Regional Emergency Coordinator (REC) would report to Austin and coordinate with Texas State Emergency Operations Center (EOC) and FCC. Harris County Public Health would operate out of the CMOC. The primary concern for SETRAC would be having an understanding of the numbers of patients. The FCC would coordinate through the Global Patient Movement Center who would let them know there is a plane on the way, the estimated time of arrival, and how many patients are on the way. The REC will work with the State Health Officer to receive and adjudicate resource requests from Houston/SETRAC.

Operation of the FCC/PRA: The FCC would have an incident management team (IMT) and would activate an emergency operations center EOC. The FCC would coordinate with SETRAC (a request would be necessary) via the CMOC for distribution of patients to hospitals. The number of acute radiation syndrome (ARS) patients to be sent to Houston RITN Centers are based on the number of how many patients those Centers reported in the capabilities matrix that they can absorb. However, the sheer number of evacuees sent through NDMS (all patient types) will be determined through ASPR. It could take 6-10 days for ARS patients to be received through NDMS to RITN facilities. Distribution between Texas Children's Hospital (TCH) and MD Anderson would be determined at Triage at the PRA. Questionnaires and established algorithms would be developed and utilized at the PRA to estimate dose and determine appropriate distribution.

Many patients will be ambulatory and it is assumed that patients will have been technically decontaminated once they arrive at the PRA. The Am-buses can send 32 patients. However, there may not be a need to tie up an Am-bus for this need and they could therefore utilize City buses (Metro). SETRAC can also activate ambulance strike teams if necessary.

Strengths

Strength 1: The Houston FCC can standup operations within two hours of notification (as evidenced in Hurricane Katrina).

Strength 2: The Houston FCC has an established working relationship with SETRAC and the CMOC to coordinate patient distribution.

Strength 3: The working relationship between TCH, MD Anderson and the FCC demonstrate a streamlined ability to establish the FCC and arrange transportation to the RITN hospitals.

Strength 4: While the VA does not see pediatric patients, they are able to recruit and deploy pediatricians from their NDMS agreement hospitals to support the PRA.

Strength 5: TCH can provide a strong SME capability to other non-RITN hospitals.

Areas for Improvement

Area for Improvement 1: While the receipt of transferred patients was discussed, there needs to be definitive plans in place at both TCH and MD Anderson on where patients will be received and triage at each of their facilities to minimize impacts on the ED and streamline patient evaluation and placement of admitted patients.

Area for Improvement 2: There is a need to examine potential for someone at one of the Houston RITN facilities to liaison with the PRA to assist with determinations for ARS patient distribution to TCH or MD Anderson.

Area for Improvement 3: Public messaging strategies for this type of incident (i.e., radiological/nuclear detonation that results in radiation injuries) should be developed in advance and incorporated into existing emergency response plans. References to assist with messaging strategies and templates include, but are not limited to:

- U.S. HHS Radiation Emergency Medical Management (REMM) website - Information Resources for Public Information Officers. http://www.remm.nlm.gov/remm_pio.htm
- FEMA. "Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath" – June 2013. http://www.fema.gov/media-library-data/20130726-1919-25045-0618/communicating_in_the_immediate_aftermath__final_june_2013_508_ok.pdf

Area for Improvement 4: There are still a lot of unanswered questions about the SAT teams both at the local and federal level, for example how and when they are deployed, priority of

receiving a SAT team when multiple jurisdictions are responding, and how they integrate with the local response. Future exercises should continue to explore the role of the SAT teams as their concept of operations (CONOPS) is finalized. Questions or information requests related to SAT teams should be directed to the federal NDMS program partners.

Question Block 2: Arrival of Patients

Inpatient and Outpatient Treatment: TCH could decompress to other facilities and campuses to open up 34 oncology beds. MD Anderson is currently not a NDMS facility. TCH could provide RITN subject matter expertise (SME) to non-RITN facilities in Houston to manage outpatients and other supportive care needs. An ARS patient that requires a transplant could require at least 60-90 days of inpatient care.

Clinicians in Bone Marrow Transplant (BMT) or Oncology would be making decisions (outpatient or outpatient) at TCH and MD Anderson; they do this on a routine basis. If patients have traumatic injuries, they will go to the ED. They could have someone from Hematology/Oncology at the ED to rapidly triage patients to send them directly to the unit if they don't require any trauma or burn care. MD Anderson discussed bringing them through the ED, but they also considered setting up a transfer center to rapidly assign them to a room. They could also integrate admissions and intake in this transfer center.

Mass Care:

They could reach out to the American Red Cross to setup a shelter until they can establish other housing resources. It was noted that local emergency management could coordinate housing support. NDMS reimbursement can only be provided for those that can through the PRA. A Service Access Team (SAT) member will track each patient until they are returned to their home. They will be responsible for the patient's care, housing, feeding, and transportation. They would require several additional SAT members for this type of event. There are some agreements between TCH and hotels if necessary.

If hospitals are running low on supplies, they should access their own internal plans or pass up through the CMOC. The SNS does have limited supplies of cytokines and G-CSF, but will be in high demand during this type of scenario.

Patients that Self-Report: Someone from radiation safety or health physics could meter patients to measure for contamination. If they show up at a hospital, the Emergency Medical Treatment and Labor Act (EMTALA) rules would kick in and they would be required to treat them. Those that self-report would be communicated to SETRAC, who would pass that information to the State and then to ASPR/HHS. It was communicated that at some point the federal government would need to consider some type of method for reimbursement of these types of patients.

Family Reunification: TCH has a family reunification plan in place. A family reception center (FRC) would be established. The social workers and child life teams would also be at the FRC. Connections with intake are integrated to ensure appropriate access to areas where children are housed. It is also assume that staff would be impacted, and they would work through the employee assistance program (EAP).

Patient Tracking: SETRAC would issue an alert for hospitals to enter patients received through the NDMS into EMTrack. SATs will track all patients through JPATS. The SAT will be at the PRA in Houston, but it was not discussed how patient tracking will be done at the hospital (i.e., how they will be entered as "received" in the system).

Strengths

Strength 1: Houston RITN hospital have expertise to rapidly and effectively triage patients to inpatient or outpatient status given basic lab/cell count information.

Strength 2: TCH does have a family reunification plan in place. This would be critically important in a surge of pediatric radiation injuries.

Strength 3: The FCC has mental and behavioral health support staff available.

Strength 4: TCH has agreements in place with hotels for the housing of outpatients and families of inpatients.

Areas for Improvement

Area for Improvement 1: Staff education on RITN and radiation response needs to be increased both at TCH and MD Anderson. It is recommended that someone from BMT conduct a grand rounds series on this topic.

Area for Improvement 2: There is a need to ensure non-RITN facilities have access to patient treatment guidelines in the event the condition of a radiation-injury evacuee escalates. It is recommended that the RITN facilities actively liaison with other hospitals to interpret the treatment guidelines and determine if there is any need for transfer to a higher level of care facility.

Area for Improvement 3: While the entry of patients into JPATS was discussed at the PRA, received patients at RITN hospitals in Houston needs to be entered into JPATS as well. It is recommended that Houston RITN facilities ensure that procedures are in place with trained and capable staff to enter patients into JPATS when received at their hospital.

Area for Improvement 4: Self-reported patients will not be reimbursed through NDMS. Houston RITN facilities need to closely track costs associated with those patients in the event another federal reimbursement vehicle is identified (as assumed).

Area for Improvement 5: Offer REAC/TS education opportunities to both medical staff and support staff such as administrative and environmental services (as well as other relevant community members that may support mass care operations).

- Explore RITN sponsored Radiation Emergency Assistance Center/Training Site (REAC/TS) training for medical personnel (https://orise.orau.gov/reacts/capabilities/continuing-medical-education/default.aspx)
- Conduct and promote RITN trainings (http://ritn.net/training/) and consider downloading to have access in the event that infrastructure goes down.

Area for Improvement 6: While TCH has a RITN standard operating procedure, there is a need to collectively validate and identify any gaps. This can be accomplished in part, through additional exercises related to radiation-injury surge.

HOTWASH

- From a communications standpoint a joint information center (JIC) would be established to ensure consistency of messaging between RITN centers and others. This would be most important to address worried well populations and to educate staff at hospitals.
- Public Health does have resources for a radiological reception center. The City and County would need to jointly coordinate this.
- TCH should activate the transfer center early
- Social work could help to get a list of hotels (look at free shuttle services); provide this information to the SATs
- Provide additional REAC/TS training to EMS, medical directors, and other hospitals
- Conduct a grand rounds training with BMT physicians and emergency management team
- Need to ensure messaging is appropriate to minimize impacts of worried well populations
- Finalize FRC plans and consider application within a surge of radiation injuries
- Further discussion of the use of EMTrack in this type of scenario
- Review any RITN templated messages for use in Houston
- Ensure there are established triage areas at each of the RITN centers
- Need to review some of the assumptions in RITN plans; there are some missing pieces in response at the federal level
- There is a need to minimize impact on ED operations
- It was helpful to determine application of EMTrack in this scenario
- There has been a lot of thought into RITN response
- There are a lot of local capabilities for this type of response; need to have further discussion around those capabilities
- Would like to have a communication SOP
- Need to plan more with the SATs to better understand their role
- Better understand coordination between SETRAC and the FCC

- Need to ensure chaplain services are included at the hospitals and at the FCC
- We need to further understand the documentation elements for reimbursement
- Should consider the important role of child life specialists, especially for unaccompanied minors.
- There is interest in an operations-based exercise within the next 12 months

PARTICIPANT FEEDBACK

There were 12 participant feedback forms received for this exercise. The following information was collected.

Part 1: Recommendations and Corrective Actions

Top three strengths

- Good participation from regional partners
- Open discussion of issues facing region
- Generated interest in regional planning and education
- Extensive regional resources, experience, and expertise
- Excellent turnout of key RITN partners
- Triage/hospital receiving process
- Clear and concise modules
- Experience from Katrina
- Well organized and great venue
- Strong partnerships among agencies
- Good name recognition among participants
- Open communications
- Plenty of real world experience

Top three areas for improvement

- Education of coalition hospitals to RITN issues
- Collaboration in planning for treatment of patients needing acute care
- Work with SAT to identify local lodging
- Prepare for appropriate internal/external messaging to calm fears
- Arrange areas and appropriate individuals to screen incoming patients
- Verify ASPR involvement and reimbursement
- More detail on hospital plan on receiving and dispositioning patients
- Training needs to be more frequent
- Family reunification

- Need more NDMS participation
- Need additional RITN participants
- FEMA representation
- Some assumptions regarding NDMS beds may not be correct
- ASPR plans are not available (for patient movement)
- Remember to keep the local perspective
- Be flexible with the plan
- Need more RITN exercises
- There are still gray areas regarding flow of patients through the system

Procedures that should be reviewed, revised, or developed to improve response.

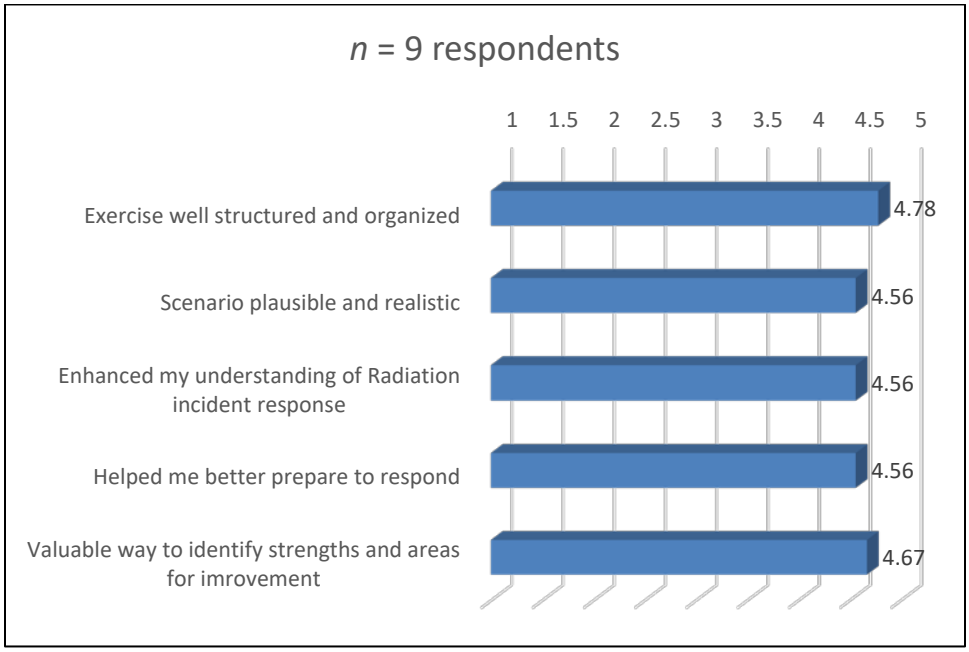
- Complete family reception center plans
- Work with admission to create direct admission process
- Child life into SOP
- Family reception center
- Patient tracking
- Communication plan with RITN patients
- Unaccompanied minors
- Federal clarification on NDMS procedures
- More details on initial triage of patients
- Public information/dissemination of SOPs
- Inter facility transport plan
- Local-state-federal plans for patient tracking
- Federal plan for patient return
- Review how and when local government gets involved in this incident
- Do not overlook the health department's ability to respond
- MDACC has many areas that need revisions

Additional departments or organizations that should be included in radiation incident response planning

- Harris County Public Health and Environmental

- West Campus
- Woodlands Campus
- Transfer Center
- Chaplaincy
- City of Houston OEM
- Children's Memorial Herman
- Harris County OEM
- American Red Cross
- Other area health departments
- Texas Department of Health

The participant feedback forms also queried regarding the exercise structure and value. There were nine respondents that yielded an average of ratings of greater than 4.5 for all categories (1 being the lowest, and 5 being the highest).



APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2017 RITN Regional Exercises. Houston RITN Centers and partner organizations can utilize this table to organize the opportunities for improvement to augment and develop their own corrective actions.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[1]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: [Capability Name]	1. [Area for Improvement]	[Corrective Action 1]					
		[Corrective Action 2]					
		[Corrective Action 3]					
	2. [Area for Improvement]	[Corrective Action 1]					
		[Corrective Action 2]					

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

APPENDIX B: EXERCISE PARTICIPANTS

Name	Agency/Organization
Hilal Salami	SETRAC
Lisa Spivey	SETRAC
Bernadette Buttschell	TCH
Barry Berner	St. Luke's Health
Bahadir Ozus	St. Luke's Health
Lars Thestrup	Houston Fire Department
Mary Tietjens	TCH
Norma Schreck	TCH
Joseph Bravenec	VAMC
Lori Griffin	MD Anderson
Kathie Niemeth	MD Anderson
Christy Bruntu	TCH
Fidel Calvillo	SETRAC
Sheila Jones	TCH
Priti Tewari	TCH
Sarah Featherston	MD Anderson
Joey Escamilla	Houston Airport System
Margaret Lampe	TCH
Angela Smith	TCH
Aaron Freedkin	TCH
Amy Taylor	HHS
Dan Christopher	TCH
Nathan Vessey	Harris Co. Public Health
Elisha Calvin	TCH
Jennifer Venero	RITN
Curt Mueller	RITN
Steve Mier	MCG

APPENDIX C: ACRONYMS

Acronym	Term
AAR	After Action Report
ARC	American Red Cross
ASPR	Assistant Secretary for Preparedness and Response
BARDA	Biomedical Advanced Research and Development Authority
BMT	Bone Marrow Transplant
CONOPS	Concept of Operations
DoD	U.S. Department of Defense
ED	Emergency Department
EMTALA	Emergency Medical Treatment and Labor Act
FCC	Federal Coordinating Center
FEMA	Federal Emergency Management Agency
FRC	Family Reception Center
G-CSF	Granulocyte-Colony Stimulating Factor
HAvBED	Hospital Available Beds for Emergencies and Disasters
HHS	Health and Human Services
HICS	Hospital Incident Command System
ICS	Incident Command System
IND	Improvised Nuclear Device
JPATS	Joint Patient Assessment and Tracking System
MRC	Medical Reserve Corps
NDMS	National Disaster Medical System
NGO	Non-Governmental Organization
NMDP	National Marrow Donor Program
PICU	Pediatric Intensive Care Unit
PRA	Patient Reception Area
REAC/TS	Radiation Emergency Assistance Center/Training Site
REMM	Radiation Emergency Medical Management
RHCC	Regional Hospital Coordinating Center
RITN	Radiation Injury Treatment Network
SAT	Service Action Team
SETRAC	Southeast Texas Regional Advisory Council
SITREP	Situation Report
SNS	Strategic National Stockpile
TCH	Texas Children's Hospital
TRAC2ES	TRANSCOM Regulating and Command and Control Evacuation System
TTX	Tabletop Exercise
VA	Veterans Affairs (Medical Center)