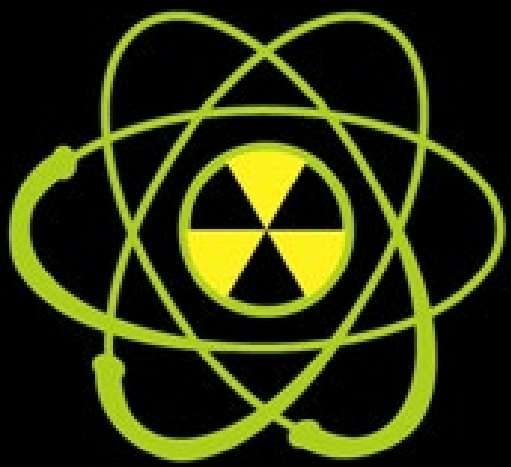
2022

Tennessee Highland Rim Healthcare Coalition Medical Response to an Improvised Nuclear Device Workshop



After Action Report/Improvement Plan
Exercise Date: November 15, 2022
Report Date: December 15, 2022

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EXERCISE OVERVIEW

Exercise Name	Tennessee Highland Rim Healthcare Coalition (TNHRHCC) Medical Response to an Improvised Nuclear Device (IND) Workshop
Exercise Date	November 15, 2022
Capabilities	HPP Capability 2: Healthcare and Medical Response Coordination HPP Capability 4: Medical Surge PHEP Capability 7: Mass Care PHEP Capability 10: Medical Surge
Objectives	1. Identify needs for alternate care and community reception centers in areas within close proximity (i.e., not within the fallout zone and outside of the physical damage areas) of the IND detonation. 2. Identify needs for laboratory testing (e.g., rapid dosimetry, CBCs) to determine early treatment needs. 3. Identify a process for identifying and differentiating medical evacuees with traumatic injuries as well as radiation-only injuries. 4. Address high demand/short supply resources (e.g., clinicians, lab testing, medical countermeasures, equipment, etc.) that need to be considered in austere environments leading to crisis standards of care.
Threat or Hazard	Nuclear (Improvised Nuclear Device)
Scenario	Medical surge due to a detonation of an Improvised Nuclear Device (IND) in a nearby urban area.
Sponsor	Radiation Injury Treatment Network® (RITN)
Points of Contact	Curt Mueller, MEP NMDP/RITN Curt.Mueller@nmdp.org Tabitha Hobson Tennessee Department of Health (TDH) Tabitha.Hobson@tn.gov Mac McCormick Metro Public Health Department | Nashville.gov mac.mccormick@nashville.gov

EXERCISE ANALYSIS OF CAPABILITIES

The workshop commenced with presentations from the Radiation Injury Treatment Network (RITN) and the U.S. Department of Health and Human Services (HHS) Administration for Strategic Preparedness and Response (ASPR). RITN provided an overview of their programs and role for this IND scenario. The ASPR briefing explained the Exposure and Symptom Triage (EAST) tool to assess radiation exposure and prioritize nuclear detonation survivors for evacuation and bone marrow cytokines.

In-person participants were seated at tables representing their hospitals or other organization types that they represented such as: emergency management and public health (state and local). Participants were also able to join the exercise remotely via the WebEx platform.

Module 1: Setting Up and Resourcing Alternate Care Site

Public health, emergency management agencies (EMAs), and response partners were tasked with developing strategies and supply lists for establishing Community Reception Centers (CRCs) and centralized Alternate Care Sites (ACS). Hospital groups were asked to identify locations in and around their hospitals to set up alternate care for radiation injuries, review available equipment and supplies for ACSs, review available blood supplies and develop a strategy for increased collection of blood supplies, determine which units could be immediately decompressed, determine medication availability and outline a strategy for obtaining more, draw out a patient flow plan for the ACS, and determine what hours the hospital would be able to staff the ACS.

Strengths

1. While there is not a designated CRC in TNHRHCC, the Tennessee Emergency Management Agency (TEMA) identified four potential locations for CRCs in different areas and counties including at least one CRC in the same city as the exercise scenario. Other CRC locations were chosen based upon factors such as their proximity to the interstate, the available floor space at the location, and hazardous materials (HAZMAT) support capabilities the area.
2. Public health/emergency management members can rely on existing mutual aid agreements as well as other local public health departments and emergency management agencies (EMAs) to provide equipment, resource support, and mass care services (e.g., transportation, sheltering).

3. RITN provided information regarding radiation training for non-clinical staff within the hospital. (https://ritn.net/training/ RITN Web Based Training and FEMA Emergency Management Institute Courses links on this webpage).

4. Hospitals have plans and capabilities to limit access to their facilities and to conduct screening on-site in external tents. Hospitals have also identified alternate care areas either within their main facilities (in other hospital units) or nearby facilities to house a surge of patients.

Areas for Improvement

1. Medication availability for radiation injuries (e.g., Neupogen and antifungals) will be limited and an understanding of what medications may already be on-hand at the hospital at any given time, and how to go about requesting or procuring more, should be obtained beyond pharmacy staff.

2. Public messaging will need to address the surge in potential misinformation as well as address the worried well who may be attempting to seek care. A Joint Information System (JIS) structure for responding to an IND incident should be developed in the same manner as the existing nuclear power station incident JIC.

3. Tennessee Department of Health (TDH) should work to identify a dedicated CRC location/facility in the region with support from TEMA and others in the Region. Local EMAs and Health Departments will also need to participate in this process and delineate roles and expectations for each organization involved in CRC operations.

Module 2: Symptom Triage and Lab Testing at Alternate Care Site(s)

This module asked public health, emergency management, and response partner groups to explore screening and decontamination procedures at the CRCs and ACS as well as review processes and policies for laboratory surge. Hospital groups were asked to apply the EAST tool or other radiological triage methods, to prioritize medications and/or evacuation as well as to determine a decontamination strategy to be used at the hospital. Hospitals were presented with five categories of exposure and asked to determine the levels of care for patients in each category.

Strengths

1. Given the size of the incident scenario, laboratory surge would be support by the Community Health Services (CHS) branches of TDH.
2. Regional HAZMAT teams with decontamination capabilities would be brought in by TEMA to provide HAZMAT support.
3. Hospitals demonstrated an understanding of and a willingness to utilize the EAST tool provided by ASPR. While most hospitals would be open to utilizing this tool, some would also implement the classic Red/Yellow/Green (START and JumpSTART) triage methodology for screening and triaging patients.
4. Hospital staff have a clear understanding of the triage and screening processes that would be implemented at the time of an IND incident including going on lockdown, establishing screening questions at hospital entrances, patient prioritization, and decon processes.

Areas for Improvement

1. Additional training is needed. Quick reference guides or Just-In-Time trainings are needed for medical and hospital support staff regarding radiation exposure incidents. RITN trainings are available at: https://ritn.net/training/. Radiation Emergency Medical Management (REMM) trainings are available at: https://remm.hhs.gov/index.html#, and https://orise.orau.gov/reacts/index.html.
2. Existing patient tracking database/processes needs to be leveraged and tailored for providers to record the patient status and track progress/treatment over time for the long-term monitoring of people exposed to high doses of radiation.

Hot Wash

- There are many considerations other than the immediate actions such as family reunification, patient tracking across state lines, and identifying housing/services for family members arriving to the area.
- Plans for what to do once hospitals have reached their capacities (and what thresholds need to be met) should be discussed and developed. These should include patient evacuation with the support of the national disaster management system (NDMS).
- Triggers need to be developed and personnel trained to determine potential resource needs during various phases of a radiation response (e.g., when and how to request medical countermeasures, additional staffing support, etc.).

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the 2022 RITN IND Workshop conducted with Tennessee Highland Rim Healthcare Coalition. The Coalition and other response partners 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	Affiliated Work Facility
Adrian McNabb	Wilson County EMA
Alex Mindel	Vanderbilt Medical Center
Amanda Hite	Humphreys County EMA
Amanda Siegel	Robertson County EMA
Amy Hester	TriStar Stonecrest Medical Center
Andrew Lysik	TVHS
Ashley Alexander	Robertson County Health Department
Ashley Green	Robertson County Health Department
Bobby Sublett	TriStar NorthCrest Medical Center
Brad Kelly	Ascension Saint Thomas
Bryant Galbreath	TriStar Skyline Medical Center
Byron Cumbie	Rutherford County Health Department
Cari Simmons	Tennessee Department of Public Health - HAI
Carrie Griede	TriStar NorthCrest Medical Center
Chad Smith	Sumner Regional Medical Center
Christopher Helstern	Vanderbilt Medical Center
Cullen Case	RITN
Curt Mueller	RITN
Dale Popp	Houston County EMA
Daniel Peavey	TriStar Division
David Carter	Trousdale Medical Center
David Meyer	Vanderbilt Medical Center
Devin Bunch	Vanderbilt Medical Center
Diane Dubinski	Tennessee Department of Public Health
Donita Woodall	Tennessee Department of Public Health - MCRO
Ed Baggett	Montgomery County EMA
Edwin Hogan	Cheatham County EMA
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Greg Boyd	Spring Hill EMA
Heidi Mariscal	Nashville OEM
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Jana Tolleson	Tennessee Department of Public Health - MCRO
Jennifer Holder	Trousdale Medical Center
Jill Burgin	Williamson County EMA
John Boone	Ascension Saint Thomas Rutherford
John Grady	Ascension Saint Thomas
Keith Evans	Vandy LifeFlight

Name	Affiliated Work Facility
Keith Stafford	TVHS
Kelly Galvin	Sumner County Health Department
Ken Weidner	Sumner County EMA
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Newreka Knight	Sumner County Health Department
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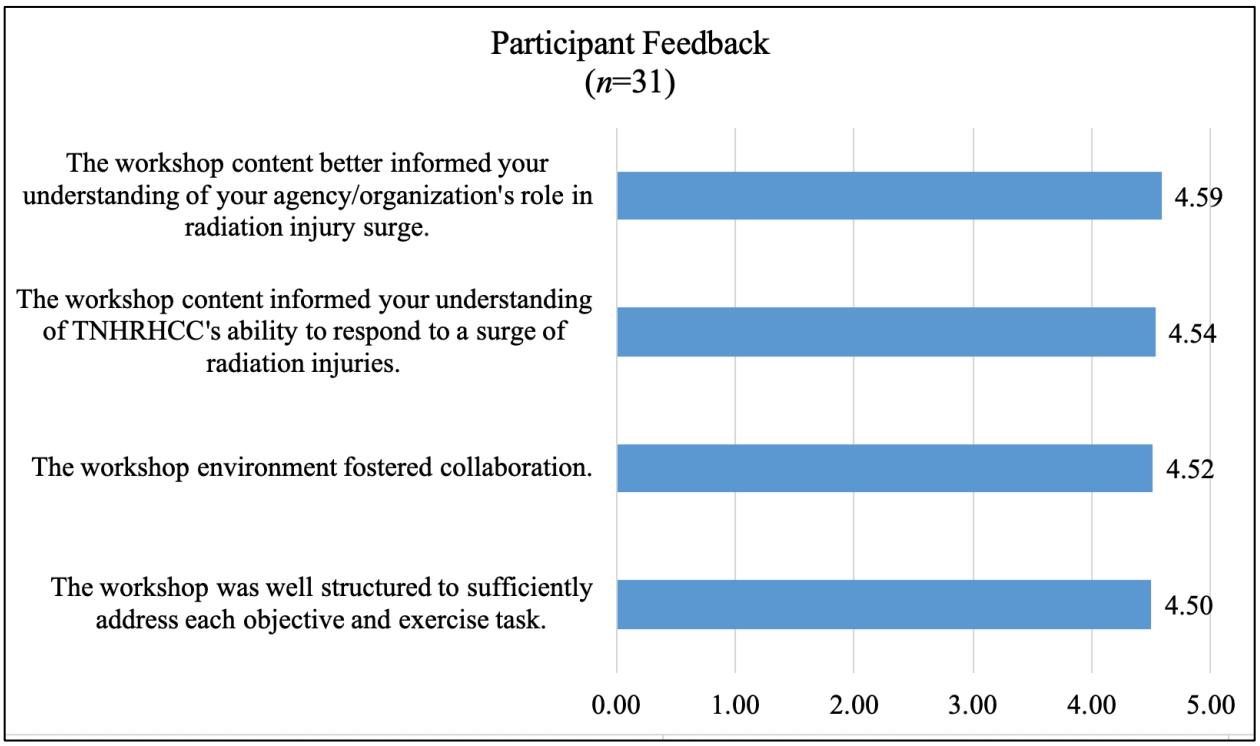
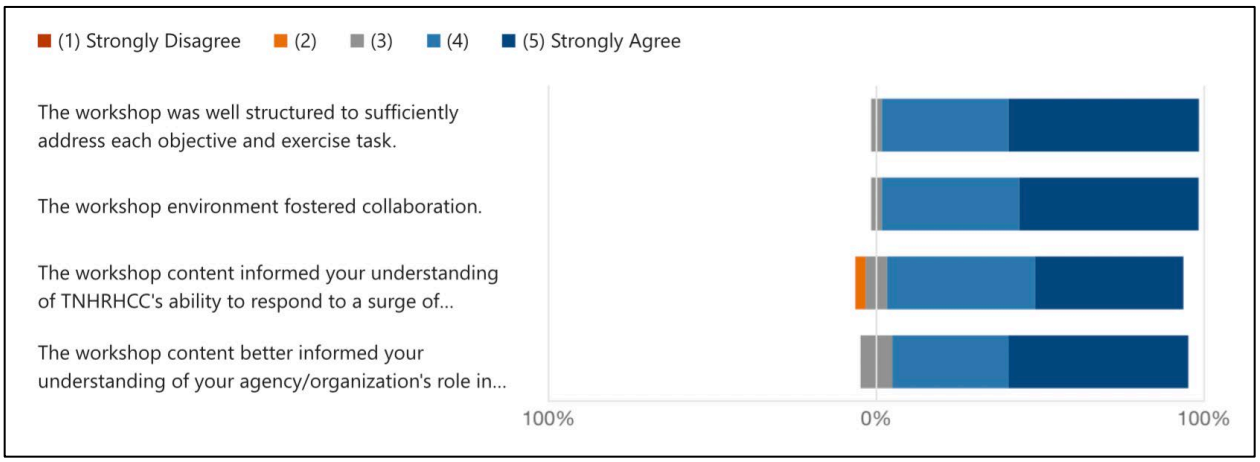
Paul Christoph	VA
Philip Carmona	TVHS
Rachel Blair	Trousdale Medical Center
Rachel Ellis	Cheatham and Robertson Health Department
Reba Spivey	High Point Regional Health
Rhonda Foster	Vanderbilt Medical Center
Richard Westgate	Williamson Medical Center
Rick Williams	TEMA
Robert Goff	Tennessee Department of Public Health - SER
Russell Peterson	City of Brentwood
Russell Ross	TriStar Stonecrest Medical Center
Scott Smith	Montgomery County EMA
Scott Williams	City of Franklin
Shannon Cooper	Wilson County EMA
Sherrie Booker	Dickson and Humphreys County Health Department
Stanley Woodall	Nashville General Hospital
Stephanie Dennis	Trousdale Medical Center
Stephanie Henry	Tennessee Department of Public Health - HAI
Tabitha Hobson	TDH - MCRO
Tara Shivers	Sumner Regional Medical Center
Tara Wilkins	Vanderbilt Medical Center
Tiffany Holder	Cheatham County EMA
Tim Farmer	Nashville General Hospital
Tim Hooker	Rutherford County EMA
Tim Hunter	Vanderbilt Medical Center
Tim Zuck	Ascension Saint Thomas

Name	Affiliated Work Facility
Todd Horton	Williamson County EMA
Wayne Browning	Robertson County Health Department
Wes Bryant	TriStar Horizon Medical Center
Willie Suggs	TriStar Centennial Medical Center
Zac Lambert	Ascension Saint Thomas Midtown

APPENDIX C: PARTICIPANT FEEDBACK

Following the exercise, a questionnaire was provided to all participants to obtain additional feedback on their thoughts on both the collective performance of the participants during the exercise and the content and structure of the exercise. Feedback was received from 31 participants. Participants were asked to rate, on a scale of "Strongly Disagree" to "Strongly Agree," their overall assessment of the exercise relative to the statements provided.





Strengths

- Incident management
- Communications
- Our capability to respond is excellent
- EOC and mutual aid
- Hazmat teams and partnerships with surrounding counties
- Setting up CRC and decontamination as well as monitoring
- Decontamination rooms and available trauma services
- Able to set up alternate care sites via tent, clinics, any available space outside the building
- The ability to utilize current strike teams/ personnel within the HD to help mobilize secure areas for decontamination/evaluation/and treatment
- The availability of decontamination facilities that can be set up quickly outside the ED
- Utilizing medical staff to triage patients and as additional support staff
- Radiation Safety Officer can assist in screening patients
- Lab capability
- Mass casualty plan already in place and is easily adaptable for this type of incident
- HAZMAT team and equipment
- SMEs available for radiation decontamination and infection control
- Post-COVID experience allows us real-world examples of how to expand care areas and reallocate personnel for staffing
- Access to supplies at sister facilities: medications, decon trailer/tent
- Radiation detection equipment and radiation staff

Areas for Improvement

- Mass decontamination plan
- Mass sheltering plan
- IND response plan
- Identify staffing requirements for multiple simultaneous operations of alternative care sites, as well as equipment and logistic requirements
- Hands on training of a CRC along with working with understanding the other partnerships are out there
- Identifying staffing for the incident
- Obtaining more monitoring equipment
- Working with hospital on their procedures
- Staffing capabilities to take on surge of walking wounded/worried

- The limited volume of the decontamination waste tank
- Limited training outside ED/first responders
- Staffing
- Radiation Decon Training for staff
- Altering MCI planning especially for routing and surveying
- Communication between area hospitals and outside counties or states with needs and expectations
- Establishing interdepartmental channels of communication for reallocation of supplies and staff
- Alternate care sites
- More education
- Amount of blood products available to include time blood would be available
- Learning more on PPE with radiation
- Better understanding of local hospital capability for RAD monitoring and decon
- Education of staff in ARS and the EAST Tool
- Actual capacity to house and deliver inpatient care. ICU/stepdown a 50-100 patient influx would be serious concern; ability to staff this surge.
- Facility lockdown for flow of influx; internal plan for surge of patients of this scale (what closes, what staff is reallocated)
- Annual drills
- Teach new staff to don/doff HAZMAT gear
- Manpower shortage immediately after an incident

What Would be Necessary to Enhance TNHRHCC's Collective Capabilities to Respond to this Scenario

- Large number of portable portal radiation monitors
- Based upon the number of fatalities in the exercise, mass fatality storage
- Event specific policy or field operating guidelines and identifying resources
- Gap analysis for staffing
- More training with multiple partnerships
- Staffing
- Monitoring
- Increased and predetermined plans of action, with guidance being given to outlier facilities from one centralized leadership source
- Create annex to response plan

- Good communication between agencies and available personnel and volunteers showing up to help
- Effective communication with the public, accurate information, instructions, and directions to appropriate healthcare facilities
- Some mechanism to counter the spread of misinformation on social media
- Designate alternate care sites for hospitals with overflow
- More frequent modules and varying scenarios
- Options for tents, restrooms, etc. stations on a very big scale?
- Lab options: large-scale blood needs
- Ability to track patient through the process
- Functional drills based on needs listed in this survey
- Access to public information
- Continued education and awareness of radiation incidents
- Contingency plan to care for more than 1000 patients
- Communication amongst Vanderbilt, Ascension, and HCA about shared resources and process
- Have tools to measure and check for radiation and medications on hand

Recommendations for Future Exercises

- Well-designed workshop! Thanks for the invitation!
- Not sure, but it got people talking and that's a good start.
- Since we do not train as much on this I would break down each area
- Enjoyed the exercise, integrate Federal resources that could be utilized such as CST's, etc. Law enforcement standpoints and utilization of all the public safety agencies.
- Live attendance only for non-state attendees
- As a virtual participant it was difficult to hear and actively engage in the breakout groups.
- Have name tags. RHCs could assist in facilitating hospital groups. Do introductions at beginning.
- More time to discuss
- Widen target audience
- Would have been helpful to have a map demonstrative of the affected area viewable to the in-person attendees.
- Adding a post-exercise after-action from a real event.
- Excellent information and sharing
- More time to work through modules

- As mentioned, more insight into regional, state, and federal level response and potential large scale
- I appreciate this scenario but planning for this scale of event is intimidating; we do have a lot of facilities in the area and better understanding what would be asked from each area/facility; we are generally full and what help do we have to alleviate some stress
- More focused groups
- Hands-on drill, if possible
- Review of national examples

APPENDIX D: ACRONYMS

Acronym	Term
AAR	After Action Report
ACS	Alternate Care Site
ASPR	Administration for Strategic Preparedness and Response
CBC	Complete Blood Count
CHS	Community Health Services
CRC	Community Reception Center
EAST	Exposure and Symptom Triage
EMA	Emergency Management Agency
HAZMAT	Hazardous Materials
HHS	Department of Health and Human Services
IND	Improvised Nuclear Device
IP	Improvement Plan
JIC	Joint Information Center
JIS	Joint Information System
NDMS	National Disaster Management System
REMM	Radiation Emergency Medical Management
RITN	Radiation Injury Treatment Network
TDH	Tennessee Department of Health
TEMA	Tennessee Emergency Management Agency
TNHRHCC	Tennessee Highland Rim Healthcare Coalition