



2022

Medical Response to an Improvised Nuclear Device Workshop Situation Manual

Tennessee Highland Rim
Healthcare Coalition
(TNHRHCC)
November 15, 2022

WORKSHOP OVERVIEW

Exercise Name	Tennessee Highland Rim Healthcare Coalition (TNHRHCC) Response to an Improvised Nuclear Device (IND) Workshop
Exercise Date	November 15, 2022
Core Capabilities	Public Health & Medical Services and Operational Coordination
Objectives	<ol style="list-style-type: none"> 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	<p>Curt Mueller, MEP NMDP/RITN cmuelle2@NMDP.ORG</p> <p>Tabitha Hobson Tennessee Department of Health (TDH) Tabitha.Hobson@tn.gov</p> <p>Mac McCormick Metro Public Health Department mac.mccormick@nashville.gov</p>

EXERCISE AGENDA

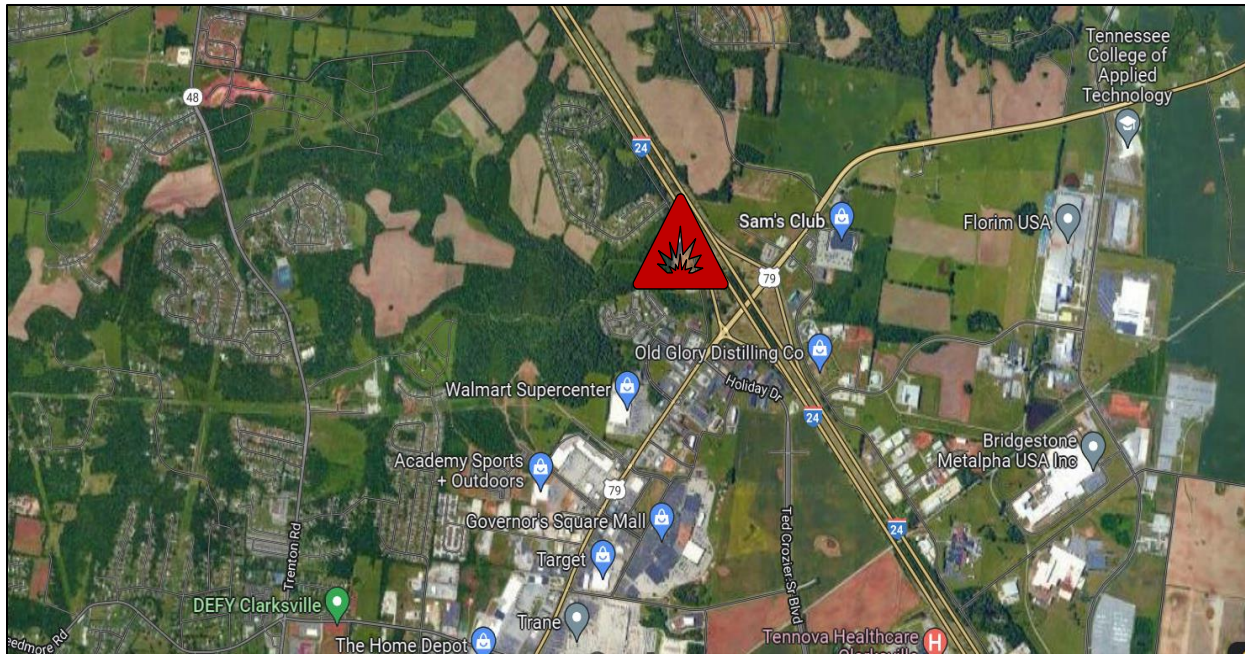
Exercise Agenda (November 15, 2022)

Time	Item
8:00 AM	Registration
8:30 AM	Opening Remarks and Introductions
8:45 AM	RITN Overview (RITN)
9:15 AM	ASPR (Radiation Triage, Treat and Transport System [RTR] and Exposure and Symptom Triage [EAST] Tool)
9:45 AM	Improvised Nuclear Device (IND) Scenario
10:00 AM	Break
10:15 AM	Module 1: Setting up, and resourcing alternate care site (e.g., staff, equipment, medications)
11:00 AM	Module 2: Decontamination, symptom triage, and lab testing at alternate care site
11:30 AM	Brief-outs and Way Forward
12:00 PM	Adjourn

EXERCISE SCENARIO

November 15, 2022 at 7:45 AM - 10kT Improvised Nuclear Device (IND) is detonated in Clarksville, TN – I-24 at rush hour – truck with IND detonates on crowded interstate near large populated residential and commercial area.

General Area



General Scenario Assumptions

- It is assumed that the Clarksville resources will be immediately depleted and that neighboring jurisdictions will be overwhelmed with demands for medical care (i.e., those fleeing the impacted city).
- It is further assumed that neighboring jurisdictions will need to activate alternate care sites.
- It is expected that neighboring jurisdictions will need to resource (i.e., staff, equipment, and supplies) for alternate care sites within 48 hours.
- It is expected that neighboring jurisdictions will need to immediately implement alternate care plans (sites and resources) in and around the hospitals to manage the expected surge.
- Assessments for housing needs will need to be made for those who present at medical facilities.

Casualty Breakdown

Category	Definition	Number
Dead	Immediate fatalities	6,000
Expectant	>95% mortality even with medical care	4,500
At Risk	5% to 95% mortality with or without medical care	9,500
Recover	<5% mortality	20,000
Uninjured	No injuries	116,000

Injury Types

- Primary blast injury — direct effects result from barotrauma (e.g., over pressurization and under pressurization) commonly affecting air-filled organs and air-fluid interfaces
 - Rupture of tympanic membranes: Injury to ear drum: 5 psi
 - Pulmonary damage: Injury to lung: 15 psi
 - Rupture of hollow viscera: Injury fatal (LD50): 50 psi
- Secondary blast injury
 - Penetrating trauma
 - Fragmentation injuries
- Tertiary blast injury — effects of structural collapse and of persons being thrown by the blast wind
 - Crush injuries and blunt trauma
 - Penetrating or blunt trauma
 - Fractures and traumatic amputations
 - Open or closed brain injuries

MODULE 1: SETTING UP, AND RESOURCING ALTERNATE CARE SITE (E.G. STAFF, EQUIPMENT, MEDICATIONS)

Public Health, EMAs, and Response Partners

- Identify sites within your jurisdiction for Community Reception Centers (CRCs) and centralized alternate care sites
- Sketch out how these sites will be utilized
- Develop checklists for equipment and supply needs at CRCs and alternate care sites.
- How can CRCs be staffed?
- Do you have a location in mind? Is there an MOU with that location/facility?
- What would be the strategy to divert people from hospitals and to these sites? Develop a public information statement to this effect.
- What can be done to increase blood collections across the HCC Region?.

Hospitals

- Identify locations in and around YOUR hospital to setup alternate care for radiation injuries
- Review available equipment and supplies for alternate care sites (e.g., space/tents, equipment and supply caches).
 - Develop a listing of supplies
 - Develop a staffing/shift plan for alternate care sites
 - Identify sources for rapid deployment of staff (e.g., volunteer pools, deployment from in-system hospitals).
- Review available blood supplies and develop strategy for increased collection centers. What capabilities does your hospital have to ensure blood is irradiated?
- What units could/would be immediately decompressed to accommodate those with higher acuity?
- Medication availability for radiation injuries (G-CSF; rapid acquisition within 48 hours); outline a strategy for rapid acquisition
- What is the patient flow for sites? Draw it out
- What hours would you be able to staff this site?

MODULE 2: SYMPTOM TRIAGE AND LAB TESTING AT ALTERNATE CARE SITE(S)

Public Health, EMAs, FCC and RHCCs

- How will incoming patients to the CRCs be screened for radiation?
- Determine a strategy for decon at the CRCs and Alternate Care Sites
 - Who will perform it? Be specific
- Laboratory Surge:
 - Identify staff to provide phlebotomy
 - Integrate into alternate care concept
 - Identify locations to rapidly acquire blood collection supplies
 - Identify laboratories (fixed and mobile) to conduct initial CBC analysis
 - Address processes to perform rapid diagnostic testing to determine radiation exposure levels (e.g., ALCs, radiation biodosimetry, microRNA signature rapid/handheld tests)
 - Address processes to report patient results into a database/portal that allows access to providers

Hospitals

- Utilize the Exposure Assessment and Symptom Triage (EAST) tool or other radiation triage methods for triage categories on the following slide
- Utilize triage findings to make decisions related to administration of G-CSF / cytokines prioritizations or on priorities for evacuation.
- How will patients at your hospital be screened for radiation (i.e., prior to decon)?
- Document your decon strategy:
 - Who performs? Where will it be staged?
 - Plans for decon of personnel and management of waste?
 - What is decon throughput estimate at your facility?
- Determine the levels of care for patients in each of the following categories:
 - <2 Gy
 - 2-4 Gy
 - 4-6 Gy
 - 6-8 Gy
 - >8 Gy
- What other information would be necessary to support your decisions for the above?

ACRONYMS

Acronym	Term
AAR	After Action Report
ALC	Acute Lymphocyte Count
ARS	Acute Radiation Syndrome
ASPR	Assistant Secretary for Preparedness and Response
BMT	Bone Marrow Transplantation
CBC	Complete Blood Count
CRC	Community Reception Center
EAST	Exposure Assessment and Symptom Triage
EMA	Emergency Management Agency
EOC	Emergency Operations Center
FCC	Federal Coordinating Center
G-CSF	Granulocyte-Colony Stimulating Factor
Gy	Gray
HLA	Human Leukocyte Antigen
IND	Improvised Nuclear Device
kT	Kiloton
NMDP	National Marrow Donor Program
NDMS	National Disaster Medical System
RITN	Radiation Injury Treatment Network
RTR	Radiological Triage, Transport, and Treatment
SITMAN	Situation Manual
TDH	Tennessee Department of Health
TNHRHCC	Tennessee Highland Rim Healthcare Coalition

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