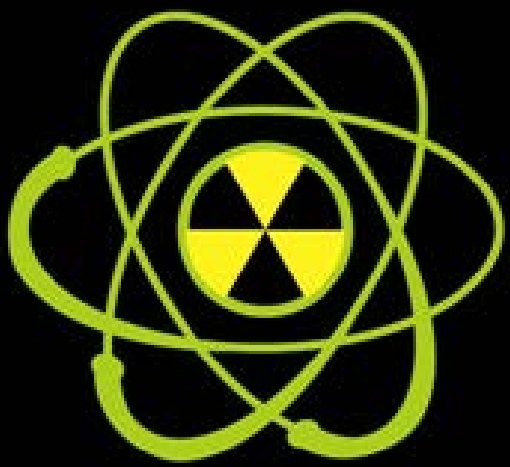
2018

Birmingham Regional RITN Tabletop Exercise (TTX)



EXERCISE OVERVIEW

Exercise Name	Birmingham Regional RITN Tabletop Exercise (TTX)
Exercise Date	July 23, 2018
Core 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 Birmingham region. **Objective 2:** Identify the process for casualty reception and distribution within the National Disaster Medical System (NDMS) 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 Birmingham 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)
Point of Contact	Curt Mueller Radiation Injury Treatment Network curt.mueller@nmdp.org Melinda Rodgers UAB Medical Center mgrodgers@uabmc.edu

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.

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 Birmingham region.	Public Health & Medical Services	Emergency Operations Coordination
Objective 2: Identify the process for casualty reception and distribution within the National Disaster Medical System (NDMS) framework.	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
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 Birmingham RITN treatment centers.	Mass Care Services	Emergency Operations Coordination

Participant Roles and Responsibilities

The term *participant* encompasses many groups of people, not just those playing in the exercise. Groups of participants involved in the exercise, and their respective roles and responsibilities, are as follows:

- **Players.** Players are personnel who have an active role in discussing or performing their regular roles and responsibilities during the exercise. Players discuss or initiate actions in response to the simulated emergency.
- **Observers.** Observers do not directly participate in the exercise. However, they may support the development of player responses to the situation during the discussion by asking relevant questions or providing subject matter expertise.
- **Facilitators.** Facilitators provide situation updates and moderate discussions. They also provide additional information or resolve questions as required. Key Exercise Planning Team members also serve as subject matter experts (SMEs) during the exercise.
- **Evaluators.** Evaluators are assigned to observe and document certain objectives during the exercise. Their primary role is to document player discussions, including how and if those discussions conform to plans, polices, and procedures.

Exercise Structure

This exercise will be a multimedia, facilitated exercise. Players will participate in the following two modules:

- Module 1: Pre-Arrival of Patients
- Module 2: Arrival of Patients

Each module begins with a multimedia update that summarizes key events occurring within that time period. After the updates, participants review the situation and engage in group discussions of appropriate response issues.

Exercise Guidelines

- This exercise will be held in an open, low-stress, no-fault environment. Varying viewpoints, even disagreements, are expected.
- Respond to the scenario using your knowledge of current plans and capabilities (i.e., you may use only existing assets) and insights derived from your training.
- Decisions are not precedent setting and may not reflect your organization's final position on a given issue. This exercise is an opportunity to discuss and present multiple options and possible solutions.
- Issue identification is not as valuable as suggestions and recommended actions that could improve response efforts. Problem-solving efforts should be the focus.

Exercise Assumptions and Artificialities

In any exercise, assumptions and artificialities may be necessary to complete play in the time allotted and/or account for logistical limitations. Exercise participants should accept that

assumptions and artificialities are inherent in any exercise, and should not allow these considerations to negatively impact their participation. During this exercise, the following apply:

- The exercise is conducted in a no-fault learning environment wherein capabilities, plans, systems, and processes will be evaluated.
- The exercise scenario is plausible and events occur as they are presented.
- The scenario may not have all the information that you feel is necessary to provide a fully informed response. Please attempt to formulate your responses based on the information provided.

Exercise Evaluation

Evaluation of the exercise is based on the exercise objectives and aligned capabilities, capability targets, and critical tasks, which are documented in Exercise Evaluation Guides (EEGs). Evaluators have EEGs for each of their assigned areas. Additionally, players will be asked to complete participant feedback forms. These documents, coupled with facilitator observations and notes, will be used to evaluate the exercise and compile the After-Action Report (AAR).

Supplemental Information

10 Kiloton Nuclear Explosion Incident – Likely Impacts

A mass casualty incident that results in marrow toxic injuries most likely would result from a terrorist detonation of an improvised nuclear device or a catastrophic industrial accident.

It is extremely difficult to confidently predict how the national response to an improvised nuclear device would evolve. Based on established plans, the Assistant Secretary for Preparedness and Response in the Department of Health and Human Services will be in charge of the provision of medical care (known as Emergency Support Function #8).

If an improvised nuclear device is detonated in a major metropolitan city, the destruction within a 1-2 mile radius will be severe (roads most likely will be un-drivable in this area due to debris). There will be associated vehicular accidents due to flash blindness and there will be a plume of debris that will cause fallout downwind of the detonation.

It is imperative to keep in mind that the response to all disasters begins at the local level. Thus, local fire departments, ambulances, hospitals and law enforcement will be the first people on scene to provide aid. State, regional and national response assets will not immediately be available to assist. Within minutes to hours after the detonation, victims will begin to collect at ad hoc sites surrounding the area of significant damage. Hospitals and other medical care sites will be rapidly overwhelmed, first close to the detonation and then over increasing distances from the site.

Patients that are stabilized and identified as requiring specialized care will be triaged for transportation and distribution to healthcare facilities around the country. This transportation can be by air or ground depending on the distance, urgency and availability of transportation assets. Injured casualties who have radioactive dust on their clothing and body will possibly be

decontaminated prior to transfer to other centers. However, it is highly possible that some transferred casualties will have measurable levels of contamination through ingestion, inhalation, imbedding of radioactive material, incomplete decontamination, or persistent external contamination.

Over 80 different isotopes can be present in radioactive fallout from an IND. The isotopes of greatest concern and also significant concentration include iodine-131 (beta and gamma emitter), strontium-90 (beta emitter) and 89, and cesium-137 (beta and gamma emitter).

Likelihood of an Improvised Nuclear Explosion Event

The most likely scenario for an Improvised Nuclear Device would be a "gun-type" device. According to SAGA (Safety and Security for Generations) Foundation, "While the threat of a nuclear war may appear to have diminished with the end of the Cold War, the likelihood of a catastrophic event involving nuclear weaponry has greatly increased… A terrorist group's choice for an IND [improvised nuclear device] would most likely be a gun-type nuclear device made with highly enriched uranium (HEU) in a casing about 9 feet long and about 28 inches in diameter. It could be transported in a truck, SUV or a shipment container. The explosion yield of such a terrorist bomb could be in the range from 10 to 20 kilotons... In 2001, CNN found drawings of a crude nuclear bomb in homes in Kabul (Afghanistan), including the home of an al-Qaeda leader... A terrorist group could build a nuclear bomb or IND within a year. This includes (sic) time to acquire basic materials, develop an explosion scenario, and build a bomb. Since a terrorist group is most likely to use stolen nuclear materials and technologies, the time frame to build a small nuclear bomb can be shorter for a terrorist group than for a national government."

It has been determined that the making of a military style "atomic bomb" is not feasible without resources equal to that of a government. For this reason the gun-type IND is much more likely.

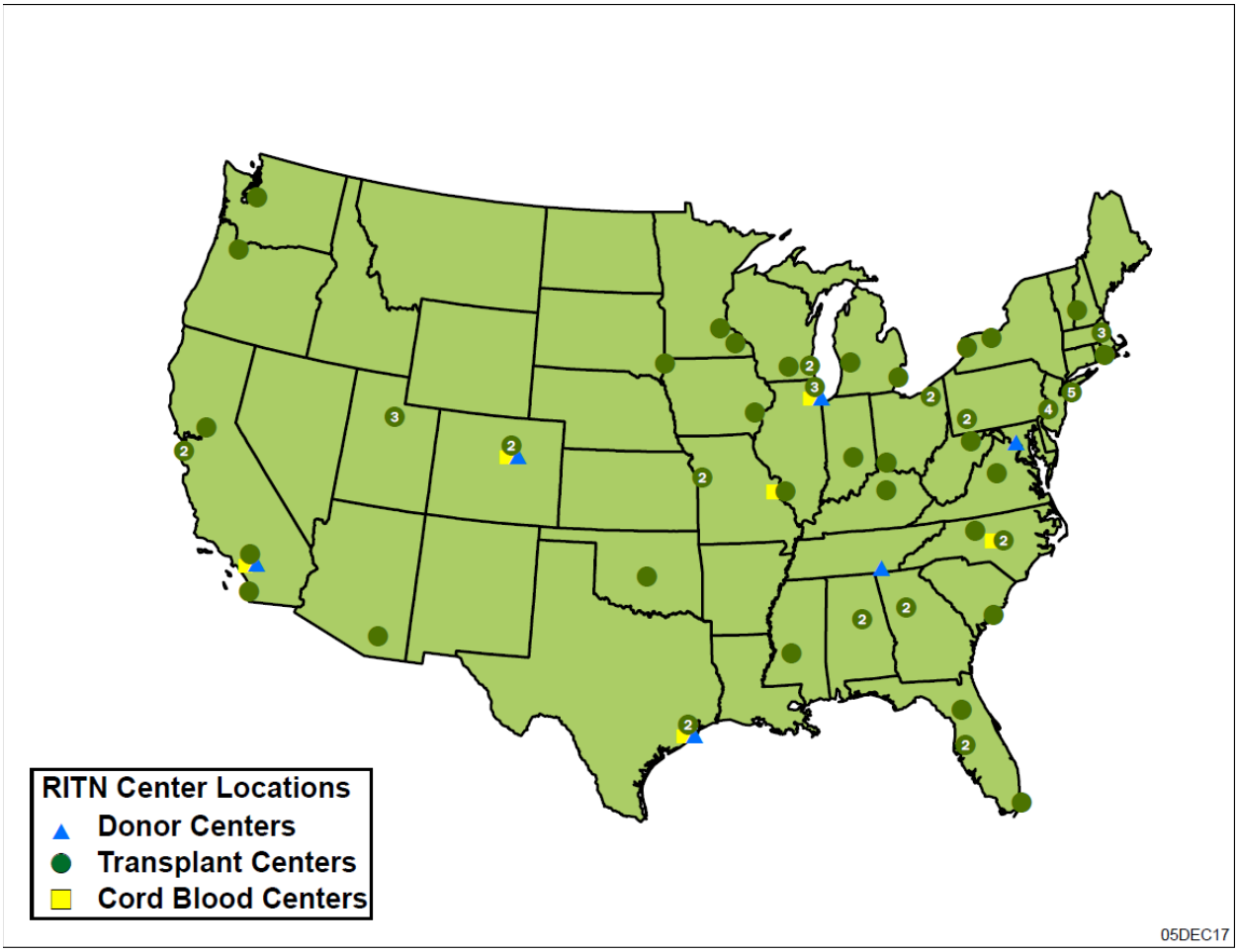
Likelihood and Possible Impacts of a Ground burst Detonation

A nuclear detonation due to terrorism is most likely to be a ground level detonation and not an air burst similar to what was seen in Nagasaki and Hiroshima in 1945. Weapons detonated close to the ground generate the greatest quantities of fallout. This is a result of soil, cement, and other structural elements that are destroyed are irradiated by the ground detonation and lifted into the sky. This creates much greater levels of contamination and likelihood of long term effects from radiation than if the bomb was detonated in the air. The areas of dangerous levels of contamination will recede over time but they will greatly hamper rescue and evacuation efforts.

Radiation Injury Treatment Network (RITN)

The Radiation Injury Treatment Network® (RITN) provides comprehensive evaluation and treatment for victims of radiation exposure or other marrow toxic injuries. RITN develops treatment guidelines, educates health care professionals, works to expand the network, and coordinates situation response. RITN is a cooperative effort of the National Marrow Donor

Program® (NMDP) and The American Society for Blood and Marrow Transplantation (ASBMT). RITN centers are affiliated with the National Marrow Donor Program network of voluntarily participating care providers; including transplant centers, donor centers, and cord blood banks.

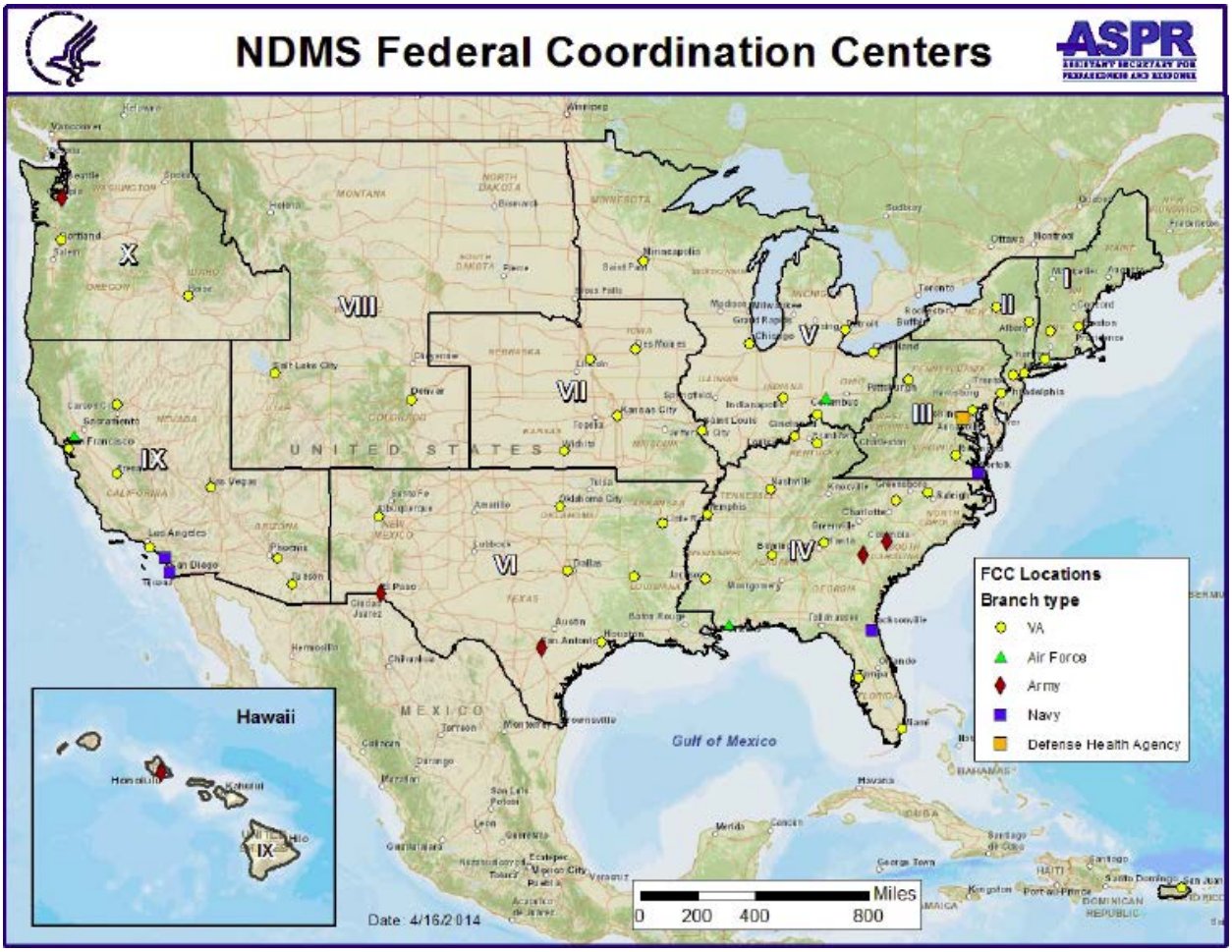


Patients distributed to RITN centers will likely have been exposed to whole-body doses of 2-8 Gy and be experiencing signs and symptoms of Acute Radiation Syndrome (ARS) such as:

- Nausea
- Vomiting
- Anorexia
- Reduced number of white blood cells (lymphocytes & granulocytes)
- Reduced number of platelets
- Erythema of the skin
- Itching or altered sensation in the skin
- Swelling and edema
- Diarrhea
- Fatigue

National Disaster Medical System (NDMS)

The NDMS is a nationwide medical response system that supplements state and local emergency resources during disasters or major emergencies. NDMS also provides backup medical support to the military / VA medical care systems during an overseas conventional conflict. Circumstances for which NDMS may be activated include 1) a military contingency or overseas conventional armed conflict involving US forces, 2) a presidential declaration of a disaster; 3) a request for major medical assistance. As a whole, the system has over 100,000 committed beds available to support disaster response needs. The Birmingham Federal Coordinating Center has a Patient Reception Center plan established for NDMS arrivals at the Birmingham International Airport via the 117th Air Refueling Wing ANGB.



Patient Tracking and Evacuation Systems

TRAC2ES

The TRANSCOM Regulating and Command & Control Evaluation System (TRAC2ES) was developed to combine transportation, logistics, and clinical decision elements into a seamless patient movement automated information system (AIS). The system assembles, assesses, and prioritizes patient movement requirements, assigns proper resources, and distributes relevant

data to deliver patients efficiently … TRAC2ES fuses information, logistics, and transportation technologies to provide rapid medical regulation and patient evacuation during crisis situations. It enables a deployed force to be more efficient in protecting lives. TRAC2ES is behind secure firewall and access is limited to those with a documented need for access. TRAC2ES includes a secure Patient Medical Record (PMR) that can have detailed information about patients being moved and is HIPPA compliant.

JPATS

The Joint Patient Assessment and Tracking System (JPATS) is a national patient-tracking system developed by the National Disaster Medical System. The Department of Defense and the Department of Health and Human Services are responsible for operating JPATS. This system gives information about disaster victims -- including their names, social security numbers, date of birth and the kind of medical treatment they received or will need. Specific information about patient diagnosis and treatments may not be in JPATS, as it is not a HIPPA compliant system, but has the most complete tracking of the patient from the time of entry into the NDMS until the time the patient is discharge from the system, such as being returned home (either as a live patient or deceased remains).

MODULE 1: PRE-ARRIVAL OF PATIENTS

Initial Event

- On July 14th a ten-kiloton improvised nuclear device was detonated in New York.

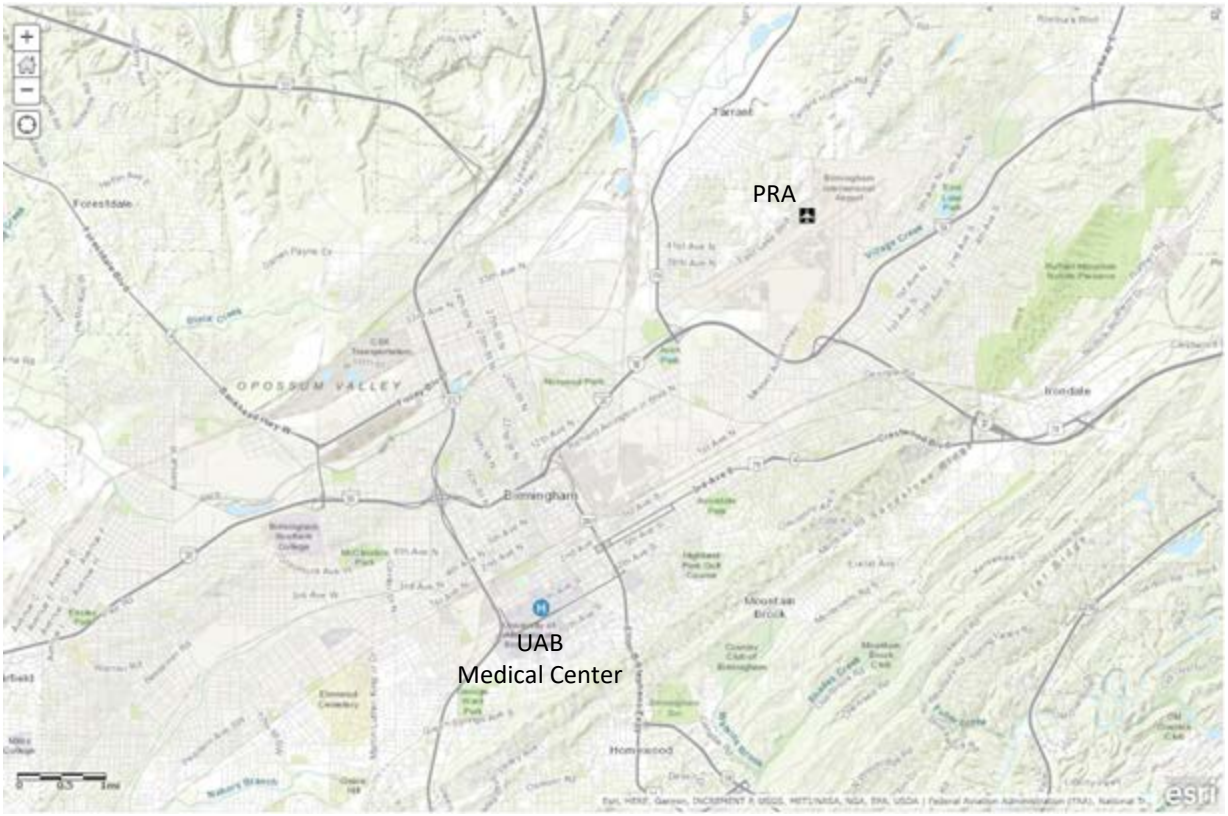
Estimated Casualties[1]			
Trauma (ISS)			
Mild (1-9)	**Moderate** (10-14)	**Severe** (>15)	
79,000	121,000	143,000	
Radiation Only			
Mild (.75 – 1.5 Gy)	**Moderate** (1.5 – 5.3 Gy)	**Severe** (5.3 – 8.3 Gy)	**Expectant** (>8.3 Gy)
91,000	51,000	12,000	47,000
	RITN patients		

- Secretary of Health and Human Services (HHS) declares a Public Health Emergency.
- 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 capabilities matrix.

[1] Table adapted from: Knebel AR, Coleman CN, Cliffer KD; et al. Allocation of scarce resources after a nuclear detonation: setting the context. Disaster Med Public Health Prep. 2011;5 (Suppl 1):S20-S31

Initial Event +7 Days

- National Disaster Medical System (NDMS) issues activation protocol for the Birmingham FCC, indicating the region will be receiving casualties from the disaster via the NDMS.
- The Department of Veterans Affairs initiates actions to establish a Patient Reception Area (PRA) at Birmingham International Airport via the 177th Air Refueling Wing ANGB, where NDMS patients will be received.



Discussion Questions

Based on the information provided, participate in the discussion concerning the issues raised in Module 1. Identify any critical issues, decisions, requirements, or questions that should be addressed at this time.

1. What is expected from RITN hospitals upon activation by the RITN Control Cell?
2. What is the process to notify hospitals in the region that they may be asked to receive patients via the NDMS?
3. Upon receiving notification that a Patient Reception Area (PRA) will be established at Birmingham International Airport via the 117th Air Refueling Wing ANGB, what are the primary concerns at this point for:
    a. Local/state Emergency Management? Emergency Operations Center (EOC) status?
    b. local/state Public Health? EOC status?
    c. Healthcare coalition? How do they integrate with local/state EOCs?

   d. RITN hospitals?
   e. Non-RITN hospitals?
4. What are the primary concerns for the Birmingham FCC at this point?
5. How do RITN centers interface with the PRA?
6. How would bed availability at RITN centers or supporting hospitals be reported to the PRA? And who or what agency is responsible for maintaining this data?
7. What city, state and federal assets are needed to support operations at the PRA?
8. How will NDMS transport pediatric patients from New York to Birmingham? Will they still be processed through the PRA?
9. How will patient (ambulatory and non-ambulatory) transport from the PRA to hospitals be coordinated? Is it the same for adult and pediatric patients?

MODULE 2: ARRIVAL OF PATIENTS

Initial Event +9 Days

Approximately eight days after the detonation patients start to arrive at the Patient Reception Area (PRA) established at the Birmingham International Airport via the 117th Air Refueling Wing ANGB . Upon arrival patients will be screened and triaged for transportation to local RITN hospitals for treatment.

Birmingham area 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 anticipated family members, is anticipated.

Discussion Questions

Based on the information provided, participate in the discussion concerning the issues raised in Module 2. Identify any critical issues, decisions, requirements, or questions that should be addressed at this time.

1. What are the factors for determining outpatient or inpatient treatment? Who will make that determination?
2. What are the outpatient treatment considerations for patients with 1-2 Gy dose and mild ARS? What resources are critical to support outpatient treatment?
3. How will unaccompanied pediatric patients be managed?
4. What are the inpatient marrow toxic injury surge considerations and challenges? What resources are critical to support inpatient treatment?
5. What are the considerations for triaging, treatment and tracking/surveillance of self-referral cases from the New York area and distribution of medical countermeasures?
6. How will hospitals request additional resources (staff, medications, blood, supplies, food)? What hospitals will be given priority for supplies, especially blood and other countermeasures?
7. What type of behavioral health support needs would be anticipated for this type of incident? What behavioral health resources are available?
8. What expectations are on hospitals receiving NMDS patients as it relates to patient tracking? What patient tracking system will be used?
9. Considering the large number of outpatients and non-medical attendants (family members) needing lodging and other support services in the community, how is mass care provided? And who is leading the coordination of these activities?
    - Lodging
    - Feeding
    - Travel to and from treatment sites

10. What are the challenges associated with financial management for patients requiring long term care (i.e. exceeding the standard 30 day NDMS treatment)?
11. How will tracking for financial management be managed? (Specifically tracking, which system will be used by the hospital, state, NDMS etc.)
12. What is the role of emergency management/public health/federal assets for an incident that does not directly impact the infrastructure of the community, but results in large numbers of patients being transferred into the community via the NDMS?

APPENDIX A: ACRONYMS

Acronym	Term
AAR	After Action Report
ASBMT	American Society for Blood and Marrow Transplantation
ARS	Acute Radiation Syndrome
ASPR	Assistant Secretary for Preparedness and Response
BMT	Bone Marrow Transplantation
EEG	Exercise Evaluation Guide
EMA	Emergency Management Agency
EOC	Emergency Operations Center
ESF	Emergency Support Function
FCC	Federal Coordinating Center
FEMA	Federal Emergency Management Agency
Gy	Gray
HCS	Healthcare Standard
HHS	Health and Human Services
HICS	Hospital Incident Command System
HPP	Hospital Preparedness Program
IND	Improvised Nuclear Device
ISS	Injury Severity Score
JPATS	Joint Patient Assessment & Tracking System
NMDP	National Marrow Donor Program
NDMS	National Disaster Medical System
PRA	Patient Reception Area
RITN	Radiation Injury Treatment Network
RTR	Radiological TRiage, TReatment and TRansport
SITREP	Situation Report
TRAC2ES	TRANSCOM Regulating and Command & Control Evaluation System
TRANSCOM	Transportation Command
TTX	Tabletop Exercise
UAB	University of Alabama Birmingham
VA	Veterans Administration

APPENDIX B: REFERENCES

Encourage exercise participants to review the following before the exercise:

RITN Training Materials:
http://ritn.net/Training/

Radiation Injury Treatment Network Concept of Operations:
http://ritn.net/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=2147483905

RITN ARS Treatment Guidelines:
http://ritn.net/WorkArea/DownloadAsset.aspx?id=2147483696