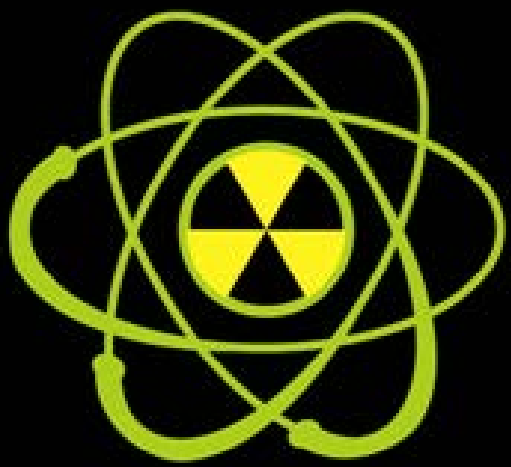
2018

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



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EXERCISE OVERVIEW

Exercise Name	2018 Birmingham Regional RITN Tabletop Exercise (TTX)
Exercise Date	July 23, 2018 (9:00 AM – 1:00 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 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 Exercise Coordinator, Radiation Injury Treatment Network Curt.Mueller@nmdp.org (612) 294-4539 Melinda Rodgers UAB Medical Center mgrodgers@uabmc.edu (205) 996-6152

EXERCISE SUMMARY

On July 23, 2018, participants representing 4 local organizations as well as the U.S. Department of Veterans Affairs and the Radiation Injury Treatment Network (RITN) took part in a tabletop exercise (TTX) to discuss radiation injury patient reception using the National Disaster Medical System (NDMS) framework. The organizations included:

- University of Alabama Birmingham Medical Center
- Birmingham Department of Public Health
- Healthcare Coalition in Birmingham
- Children's Hospital of Alabama
- U.S Department of Veterans Affairs
- Radiation Injury Treatment Network

Exercise participants addressed five objectives (see Table 1 below) in a scenario-driven, facilitated discussion based on a surge of casualties with radiological injuries arriving to the Birmingham area.

Exercise Scenario

Initial Event

- On July 14, 2018 a ten-kiloton Improvised Nuclear Device (IND) was detonated in New York.

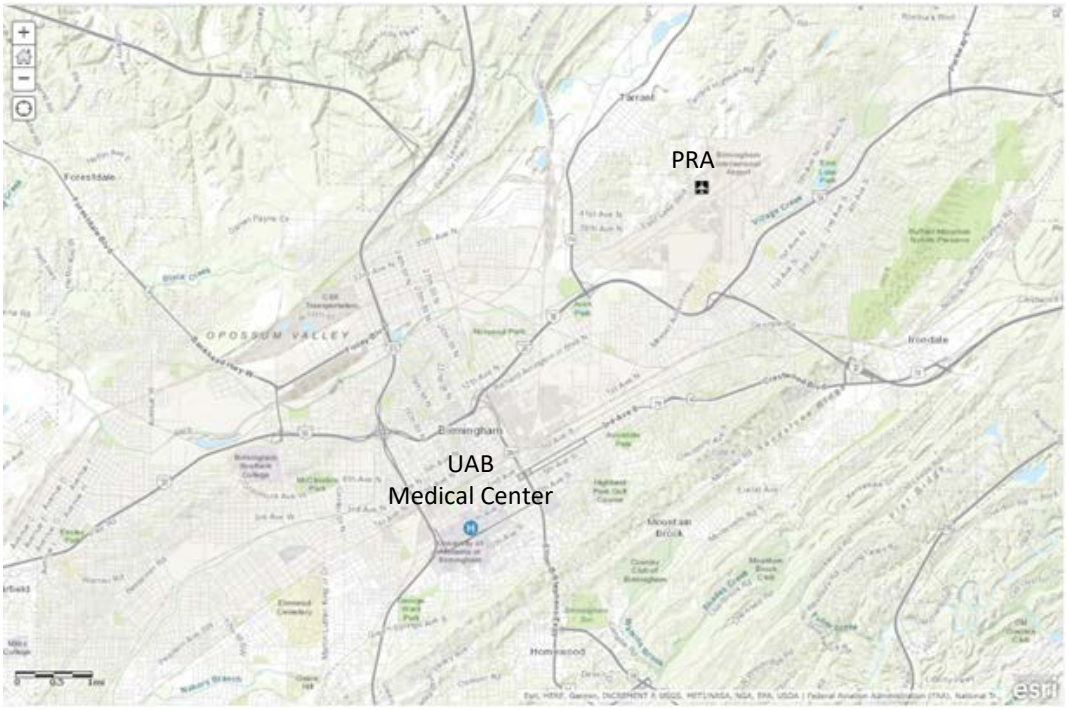
- Estimated casualties:
  - 143,000 fatalities in the Severe Damage Zone; 121,000 in Moderate Damage Zone.
  - 47,000 radiation casualties determined to have received an expectant exposure level (>8.3 Gy)
  - 12,000 radiation injury only casualties in the severe exposure range (5.3-8.3 Gy)
  - 51,000 radiation injury only casualties in the moderate exposure range (1.5-5.3 Gy)
  - 91,000 casualties with mild radiation exposure (.75-1.5 Gy)
  - 300,000 worried well across the 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 +5 Days

- National Disaster Medical System (NDMS) issues activation protocol for Birmingham, 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) FCC at the Birmingham International Airport, where NDMS patients will be received.

Initial Event +7 Days

- Detonation patients start to arrive at the PRA established at the Birmingham International Airport. Upon arrival patients will be triaged for transportation to the local RITN hospitals for treatment.
- Birmingham RITN Centers are expected to receive maximum surge capacity, plus overflow of patients with marrow toxic injuries. Patients will typically arrive in waves of 30-45 patients and may be spread out over the next 1-2 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 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

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 triaging, treatment and tracking/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

ANALYSIS OF CAPABILITIES

Question Block 1: Pre-Arrival of Patients

The following are the primary concerns at this point in the scenario for:

Emergency Management	Public Health/ Healthcare Coalition	RITN Hospitals	Non-RITN Hospitals	Birmingham FCC
• Open EOC to coordinate the response (e.g., communications, resource requests, etc.) • Coordinate set up of the FCC at BHM Airport. • Coordinate transport assets for movement of incoming RITN patients to the hospitals. • Assist with patient tracking coordination in bed availability system & JPATS. • Lead role in arranging mass care and shelter for RITN patients and their non-medical caregivers.	• Outreach to hospitals to decompress in anticipation of the patient surge. • Alert hospitals to update bed availability. • Activate MOUs for radiation resources (e.g., portals and manpower to adjudicate alarms) • Calm any community panic via messaging.	• Determine what patients can be discharged. • Update RITN bed availability to RITN network. • Establish command and incident objectives for the next few days until patients arrive. • Evaluate capacity of inpatient treatments (e.g., bone marrow transplants, laboratory typing). • Maintain communications with the Coalition. • Assess Hospital security needs. • Implement hospital MOUs to share space, stuff, and staff to support the patient surge.	• Traffic control and campus police • EMS student volunteers and ambulances • Provide portal monitors for screening. • Decompress hospital. • Prepare to accept non-RITN patients (from the incident or as decompressed by the RITN hospitals) • Respond to resource requests for beds & resources. • Assist (as possible) by providing resources and staffing support.	• Establish the patient reception area at airport. • Notify hospitals that are going to receive patients. • Determine staffing for the PRA between federal assets and local volunteers (hospital staff, MRC, etc.) • Just-In-Time training for patient unloading. • Establish patient tracking processes for reimbursement. • Assess bed availability at hospitals.

Activation: The New York State governor requests the president of the United States for the federal disaster declaration. Once the president has declared the federal disaster, all Federal Coordinating Centers (FCC), including Birmingham, would receive an activation notice from the U.S. Department of Health and Human Services (HHS), prompting all requested FCC/Patient Reception Area's (PRA) to open. The HHS Secretary Operations Center (SOC) shall determine the patient distribution strategy across all RITN hospitals for radiation injured patients. It's imperative to maintain accurate bed counts so acute radiation sickness (ARS) patients may be directly transported to a medical center best equipped for comprehensive treatment providing for the best possible medical outcome. Patients would be entered and tracked in the Joint Patient Assessment and Tracking System (JPATS) which would also be utilized for reimbursement purposes. Additional manpower and vehicles would be placed in service to support the aircraft unloading process and hospital transport operations.

RITN and NDMS/HHS Coordination:

RITN hospitals would support HHS in this complex patient allocation function by immediately updating the specialty RITN bed data/reports system in HealthCareStandard® (HCS) with current bed availability and that anticipated for 24 hours later. Hospitals shall also update information on outpatient capabilities and Granulocyte-Colony Stimulating Factor (G-CSF) availability. RITN consolidates the information from all RITN hospitals and sends it to HHS/Assistant Secretary for Preparedness and Response (ASPR) who utilizes the bed information from across the country for patient allocation. RITN requests updated reports every day following the incident by 2:00 PM so they can provide a report to HHS/ASPR by 4:00 PM.

Locally, once the Birmingham Veteran's Affairs (VA) Medical Center is notified by NDMS, they'll reach out to the University of Alabama Birmingham (UAB) and the local Health Care Coalition. The bed tracking system would be used to collect bed (and other real time) information to share across the healthcare coalition. There were concerns about double counting ARS beds with ICU beds so it may be necessary to set up a special reporting category to discern these beds and ensure that some are held beyond the trauma surge for those arriving later with radiation injury. The VA would also coordinate with the Jefferson County Office of Emergency Management (JCOEM) and the Jefferson County Public Health (JCPH) about the impending surge of radiation injured patients.

In the initial days post incident, RITN will not be able to provide Birmingham with a projected number of ARS patients, as they'll be compiling the number of patients in need of transport and nationwide bed availability, at that time. Approximately 5-10 days post incident, RITN will be able to estimate the number of potential patients to be sent to the Birmingham RITN hospitals. RITN will also produce and distribute a daily Situation Report (SITREP) to partners nationwide. The number and type of patients destined for the Birmingham area will be based on what the local area has entered into the radiation injury patient capability matrix. Based on the information provided from the RITN hospitals during that initial data poll, the RITN Control Cell will provide an estimate of patient numbers to expect at each RITN location. The revised form now requests information on both inpatient and outpatient capability.

Operation of the FCC: The Birmingham Federal Coordinating Center has a Patient Reception Area plan established for NDMS arrivals at the Birmingham International Airport via the 117th Air Refueling Wing ANGB. The Air National Guard has established a working relationship with the airport for disaster response and serves as a key partner in coordination with the airport for receipt of NDMS patients.

Birmingham Federal Coordinating Center would stand up a command post to facilitate the continual treatment, triage and transport of incoming patients utilizing Birmingham Fire, private EMS and other transportation providers from the FCC/PRA to the RITN hospitals. The FCC/PRA would augment federal staffing with VA hospital staff and MRC volunteers, both for the patient unloading and reception center at the PRA. It will take a significant amount of manpower to perform this task for each arriving aircraft of patients. The patients will also be entered into the JPATS tracking system to ensure federal reimbursement for their care. It was noted any patients not transported via NDMS, such as a self-report, will not be eligible for federal reimbursement. While representatives from JCPH, ADPH, JCOEM, and other agencies may be at the PRA – all healthcare information shall go through a single Medical Transport Officer to avoid duplication of efforts or double-booking bed availability. This model has proven a successful way to serve as a single point of contact and coordination for all health/ESF-8 aspects.

Patient tracking for NDMS uses the Joint Patient Assessment and Tracking System (JPATS); this is accessed by the FCC team. Daily entry of the NDMS patient and their care giver is required. JPATS is not interoperable with the local bed availability system so duplicate entry to track patients is necessary. The local bed availability system would track patients that arrive to the area from the incident but that are not NDMS/RITN patients (i.e., travel on their own to seek care). The FCC can view beds reported in the local bed accountability system; however, it was unclear how they would be receiving information back from HHS as to the local RITN beds available and what patients would be arriving. This area requires more exploration to ensure that the FCC has the correct bed information and can make appropriate transport decisions.

To transport patients from the PRA to the hospitals, the VA has several resources that can be utilized to avoid depleting the local ambulance pool, for example vehicles that can carry 10-11 patients provided they are all being sent to the same hospital. Additional assets include ambulances through the Birmingham Fire Department, hospital employee shuttle busses and the local public transportation busses (Jefferson County Transit Authority) as needed.

Strengths

Strength 1: The local healthcare system communications is robust and will ensure the appropriate information is requested, received and distributed from the hospitals. The communication systems in place will ensure a coordinated response for information gathering, resource requests/availability, and patient tracking throughout the system.

Strength 2: University of Alabama Birmingham Medical Center and Children's of Alabama Hospital have mechanisms in place to effectively track and ensure the safety of unaccompanied

pediatric patients within the healthcare system. This is a strength of the RITN center/region. It allows for guardian information to be included in the patient entry and can indicate gender for separation of male and female patients. These considerations are very important given the Birmingham region could expect to receive a significant number of pediatric victims displaced from their homes and possibly their family members.

Strength 3: University of Alabama Birmingham Medical Center can provide support in the areas of extra security, traffic control and space for triage and outpatient needs.

Strength 4: The working relationship between the Air National Guard, the VA OEM Emergency Manager, Jefferson County OEM, FCC and the Birmingham International Airport demonstrates a streamlined ability to establish the FCC and arrange transportation to the RITN hospitals.

Areas for Improvement

Area for Improvement 1: 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 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 2: Provide additional training opportunities for RITN hospitals (and other local NDMS response partners) to support JPATS information entry/update if a SAT team is not available. Incorporate the use of JPATS into future NDMS or RITN exercises to build and maintain proficiency with JPATS. It will be beneficial to become familiar with the TRANSCOM Regulating and Command and Control Evacuation System (TRAC2ES) if that will also be used for patient tracking in an NDMS/RITN scenario.

Area for Improvement 3: There are 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 within the local response. Future exercises should continue to explore the role of the SAT teams as their concept of operations (CONOPS) are finalized. Questions or information requests related to SAT teams should be directed to the federal NDMS program partners.

Area for Improvement 4: Blood shortages are anticipated; include this as a planning consideration when determining how many RITN patients can be accepted to the area. There will be a long term need for blood resources and the demand will be experienced around the country. Proactively consider the public messaging to increase blood donations in the Birmingham area.

Area for Improvement 5: Additional planning is needed to identify pediatric expertise that can be deployed to the Birmingham PRA to support triage decisions and coordination with local hospitals. Once identified, the notification protocol to hospitals/individuals with this expertise should be documented in PRA activation plans.

Area for Improvement 6: Conduct planning in advance to assess the ability to house outpatients and non-medical attendees. For example, potential use of University of Alabama at Birmingham Dormitories. Expand or convert for patient reception centers and appropriate staffing, housing and transport options. These activities, roles and responsibilities for each agency should be documented in local RITN plans.

Area for Improvement 7: RITN hospitals need to ensure procedures are in place for ED staff responsible for generating bed availability data. Do not double count beds and staff (i.e., hematology/oncology beds and oncologists) for this type of response.

Area for Improvement 8: Review bed type definitions for the beds included in the RITN polling. RITN bed type definitions should be included in local plans and polling platforms.

Area for Improvement 9: It was recognized pediatric expertise would be needed to support PRA activities. Emergency mass notifications should be included in current plans.

Module 2: Arrival of Patients

Approximately 8 days after the IND detonation, RITN patients would arrive to the FCC in waves of approximately 30 people per aircraft. Arriving aircrafts should contain a passenger manifest including limited medical information and possibly an estimated radiation dose based on the proximity to the blast site. It was recognized patients would arrive stabilized with limited medical records and no lab reports. PRA basic triage (red, yellow, green) would be established on patient's overall condition, vitals and chief complaint; not considering determinations as to radiological care needs which would require medical laboratory reports.

Inpatient/Outpatient Triage

University of Alabama Birmingham Medical Center would set up triage outside in the rear of the ED where patients would be triaged, rapidly registered in an abbreviated process and labs drawn. Patient history, vital signs and blood counts need be assessed as soon as possible. The patients would be kept in the identified triage area until the CBC results/medical history are reviewed and a medical action plan identified. The triage team would consist of BMT (Bone Marrow Transplant) physicians, nurse practitioners and/or advanced practitioners. Based on the estimated exposure levels, Radiation Emergency Medical Management (REMM) guidelines should be used to determine inpatient or outpatient status. In addition, an escort is assigned for every unaccompanied pediatric patient that arrives to the hospital. Unaccompanied pediatric patients must be admitted to the hospital, regardless of their condition, for security purposes.

Outpatient and Mass Care Considerations

As with other RITN hospitals, the mass care and social services considerations remain the biggest challenge to accepting both inpatients and outpatients requiring care after radiation injury. Concerns included: outpatient and family lodging, may not have cell phones after the disaster, transportation to/from the hospital, behavioral health services, clothing/food/medication needs for non-medical caregivers and reimbursement/tracking costs.

UAB exercise participants indicated they have a hotel on their campus to house outpatients but in-depth logistics were not discussed. UAB has an advantage their infrastructure includes a hotel in immediate proximity and they have an agreement to take over certain floors of the hotel in this type of disaster. This would keep patients in close proximity for continual care.

Both housing and transportation for outpatients require logistical pre-planning involving UAB, the Red Cross and County/State emergency management under ESF-6 (Mass Care, Emergency Assistance, Temporary Housing and Human Services).

In the event of a declared disaster, food/lodging/transport should be coordinated through the State Emergency Management Agency for FEMA reimbursement purposes. The Red Cross would be able to obtain limited accommodations. Lodging for larger numbers or longer duration stays would not be possible; Red Cross would only be able to support general population sheltering (not those undergoing treatment and needing sterile environments).

Outpatients that need lab work can utilize hospital circulator buses and volunteer organizations for transportation. Lab work may be drawn at community hospitals to decrease the burden on RITN hospitals.

Behavioral/Mental Health Considerations

Behavioral/mental health was discussed with regards to patients, non-medical attendees and hospital staff responding to the incident. Resources included psychological first aid teams (requested through Jefferson County Emergency Management Agency), Red Cross and behavioral health crisis teams throughout Jefferson County and the Healthcare Coalition. In addition, UAB has behavioral health/social work staff but it is anticipated that for this type of disaster they would likely be overwhelmed. The VA has behavioral/mental health resources and could attempt to reach out nationally, but it is uncertain in this large of a disaster what resources would be available to the Birmingham area. Acute and chronic behavioral mental health needs in this type of incident were identified as a challenge that requires more consideration and planning.

Spontaneous Patient Arrivals

Spontaneous arrivals from the incident who are not evacuated via NDMS and self-report for treatment would be received as any other walk in patient to the ED. The Healthcare Coalition working in unison with JCPH/ADPH should disseminate a situational awareness notification advising early identification/initiating steps to maintain first receiver safety, for spontaneous arrivals. This may include implementing screening questions at the triage desk to determine if they were arriving from the blast site. Discussion during the tabletop exercise also noted a potential need for hospital onsite decontamination, radiation screening and potentially directing hospital traffic to a single-entry point into the hospital so screening may be performed prior to entering on the hospital campus, cross-contaminating treatment areas.

Patient Tracking and Reimbursement

All NDMS tracked patients would be eligible for financial reimbursement at the federal per diem rate. Spontaneous arrival patients, also known as self-reporting patients, would need to be tracked and billed through traditional processes, similar to ED self-reporting patients.

Public Messaging

Public messaging aspects were not discussed in great detail during this exercise. However, it was recognized the importance of getting in front of the incident, both internally with hospital staff and the public, would be key to reducing anxiety, panic and the number of worried well who could potentially exacerbate an already overwhelmed healthcare system. If buses, hotels, dorms or common spaces were to be utilized throughout Birmingham community, messaging of possible risk or lack thereof should be clearly communicated to the community to reduce anxiety.

Strengths

Strength 1: The RITN hospitals have plans in place to rapidly and effectively triage patients to inpatient or outpatient status.

Strength 2: Local/state patient tracking mechanisms will be utilized if there are any time or resource delays with JPATS system entry. The FCC/VA would ensure JPATS patient entry for federal reimbursement.

Strength 3: Exercise participants identified challenges related to outpatient care and housing needs. Also identified were key partners to collaborate on further planning.

Areas for Improvement

Area for Improvement 1: Enhance and expand long-term lodging plans for outpatients and inpatient family housing. This gap poses a significant challenge requiring comprehensive planning and should include establishing MOU/MOAs (hotels, university dorms, hospice/long term care organizations, etc.) with the appropriate entities. Federal NDMS reimbursement plan details should be outlined in the plan to include reimbursement and duration of coverage. Determine the lead and supporting agency(s) to be involved in the planning discussions.

Area for Improvement 2: One (nationwide) gap identified was outpatient care federal reimbursement. Drafted procedures are currently under review. Once finalized, the procedures should be incorporated into the current FCC plans. In the interim, it is understood ASPR will have to distribute just in time guidance.

Area for Improvement 3: Seek out guidance from the local ASPR representative in defining waiver criteria in patient care that exceeds the 30 days covered by federal reimbursement. Clarification is needed on how to request that waiver and specifically what would be covered in this type of disaster. This was not discussed in detail but recognized as an issue given the length of stay for ARS patients would likely exceed the 30-day coverage period.

Area for Improvement 4: Expand the behavioral/mental health response plans identified to support the needs of displaced patients, staff and non-medical attendees following a catastrophic long term incident. This was identified as a significant challenge overwhelming the whole healthcare system. The Birmingham area may benefit by identifying additional resources and developing processes for leveraging/mobilizing local, state and federal behavioral health resources for any large-scale mass care/support setting.

Area for Improvement 5: Clarify the specific outpatient capacity and logistic needs of main and ancillary services, prior to this type of an event. Develop/enhance specific protocols to maintain continuity of patient care. Determine the lead and supporting agency(s) to collaborate on outpatient care operations planning.

Area for Improvement 6: In an effort to prevent facility contamination from potential spontaneous arrivals, family members and visitors; consider restricting campus entry to one location where radiation exposure prescreening could be conducted, prior to granting access to the campus. At a minimum, this would include predeveloped screening questions to identify persons exposed in the blast/fall out zones and/or potentially experiencing ARS symptoms. Screening questions may be developed and distributed by RITN for use at RITN centers nationwide. Consider incorporating the patient diversion flow diagram to the hospitals decontamination set up, in addition to the use of radiation portals, if available.

Area for Improvement 7: Provide and encourage additional education opportunities to medical and support staff such as administrative and environmental services. Also consider extending training to other relevant community partners that may support mass care operations. Rotate all frontline managers/supervisors through the RITN exercises to increase the knowledge base of all leadership who may be part of this type of response.

- 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 8: Public messaging for this type of incident (radiological/nuclear detonation that results in radiation injuries) was not discussed in detail during this exercise. Consider pre-scripted messages/strategies to be incorporated into existing emergency response plans. References to assist with messaging strategies and templates include:

- 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 9: Preplan how to maintain clinical operations over a long term sustained complex mass casualty surge. Utilize the Incident Command/Incident Management structure to sustain multiple operational periods. Consider twelve hour shifts and how to incorporate psychological first aid/check ins with your staff. It is anticipated that well-organized staffing plans and clear delegation of responsibilities will be needed to manage the long-term influx of patient care needs.

Area for Improvement 10: Prior to any event, expand and evaluate options for surge and backfill of the stem cell laboratory expertise pool. This specialized work and staff capability is not easily augmented, but will be in expected for this response.

HOTWASH

Strengths

- Established information sharing mechanisms are a regional strength.
- Exercise was an effective way to understand each other's roles and ideas to address planning gaps.
- Plans and processes in place for other disasters made this response easier to manage. Unique aspects include a non-local incident and the long duration of response.
- This exercise allowed for clarifications about how the number of RITN patients arriving to the area would be determined and the type of information (or lack of) that would be available.

Improvement Planning

- The multiple ways that bed information is gathered and shared could be problematic resulting in double counting bed resources.
- Collaborate with additional community partners (public and private) to provide long term housing and feeding operations beyond what the Red Cross is capable of supporting.
- Continue to engage security, the American Red Cross (ARC), fire Department, law enforcement and other NGOs in future exercises to expand capabilities and develop a common operating picture on this type of incident.
- Continue to develop plans for staff mobilization; who and how many, how and when do we communicate for this event.
- Conduct a functional exercise in the future that tests the FCC set up, patient arrival and information flow to identify gaps, interdependences and resource needs. Individually, hospitals can test options for patient intake locations (ED, field triage site).
- Long term patient management is an issue – identify additional space for outpatient care, plans to provide services for existing conditions of either the patients or their non-medical caregivers such as medications and mental health needs.
- Continue discussions about mass care to determine how public health can support these functions.
- Explore behavioral/mental health staffing needs. Consider the realities of staff availability to support a long-term patient influx and family members to the area. The logistics of how to mobilize that staff should be addressed in future exercises.
- Continue to pre-plan, train and script messages in advance for this type of incident. Identify appropriate staff to include, not only medical, but all of the other components of this type of response (laboratory, social services, behavioral/mental health, finance, administration).

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2018 RITN Regional Exercises. Birmingham RITN Center 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
Pritchett, Nelphine	University of Alabama Birmingham Medical Center
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Rorrer, Ted	University of Alabama Birmingham Medical Center
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Turner, Timothy	Birmingham VA Medical Center
Watts, Nicole	University of Alabama Birmingham Medical Center
Weeks, Tonya	University of Alabama Birmingham Medical Center
Wilkins, Valerie	University of Alabama Birmingham Medical Center
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Cobb, Julie	Jefferson County Public Health/Healthcare Coalition
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Pate, Janet	University of Alabama Birmingham Medical Center
Pewitt, Randy	University of Alabama Birmingham Medical Center
Cottrell, Carla	University of Alabama Birmingham Medical Center
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Name	Agency/Organization
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Curt Mueller	RITN
Bethanne Barbeau	MCG, Inc.

APPENDIX C: ACRONYMS

Acronym	Term
AAR	After Action Report
ARS	Acute Radiation Sickness
ASPR	Assistant Secretary for Preparedness and Response
ASTHO	Association of State and Territorial Health Officials
BMT	Bone Marrow Transplant
ED	Emergency Department
EM	Emergency Management
EOC	Emergency Operations Center
FCC	Federal Coordinating Center
G-CSF	Granulocyte-Colony Stimulating Factor
HCS	Healthcare Standard (RITN data collection matrix)
HHS	Health and Human Services
IND	Improvised Nuclear Device
JIC	Joint Information Center
JPATS	Joint Patient Assessment and Tracking System
MOU/MOA	Memorandum of Understanding/Memorandum of Agreement
MRC	Medical Reserve Corps
NDMS	National Disaster Medical System
NMDP	National Marrow Donor Program
PRA	Patient Reception Area
REMM	Radiation Emergency Medical Management
RITN	Radiation Injury Treatment Network
SAT	Service Action Team
SITREP	Situation Report
SOC	Secretary Operations Center (DHHS)
TTX	Tabletop Exercise
VA	Veterans Affairs (Medical Center)