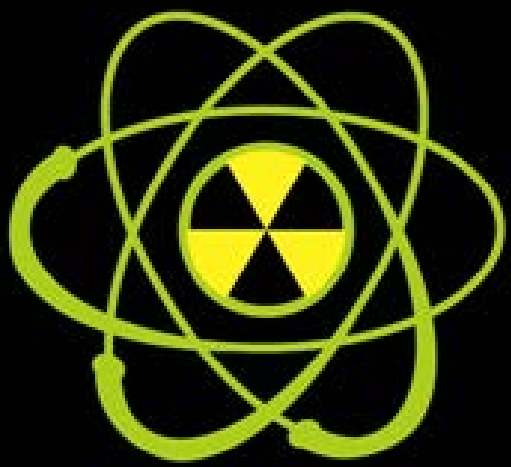
2015

Salt Lake City Regional RITN Tabletop Exercise After-Action Report/Improvement Plan



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EXERCISE OVERVIEW

Exercise Name	Salt Lake City Regional RITN Tabletop Exercise (TTX)
Exercise Date	September 2, 2015
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 Salt Lake City region. **Objective 2:** Identify the process for casualty reception and distribution within the Federal Coordinating Center model. **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 radiological casualties; of particular concern is triage, treatment, tracking and surveillance of self-referral cases from the incident area 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 Salt Lake City RITN treatment centers.
Threat or Hazard	Radiological
Scenario	Improvised Nuclear Device (IND) detonation
Sponsor	Radiation Injury Treatment Network (RITN) Office of Naval Research (ONR)
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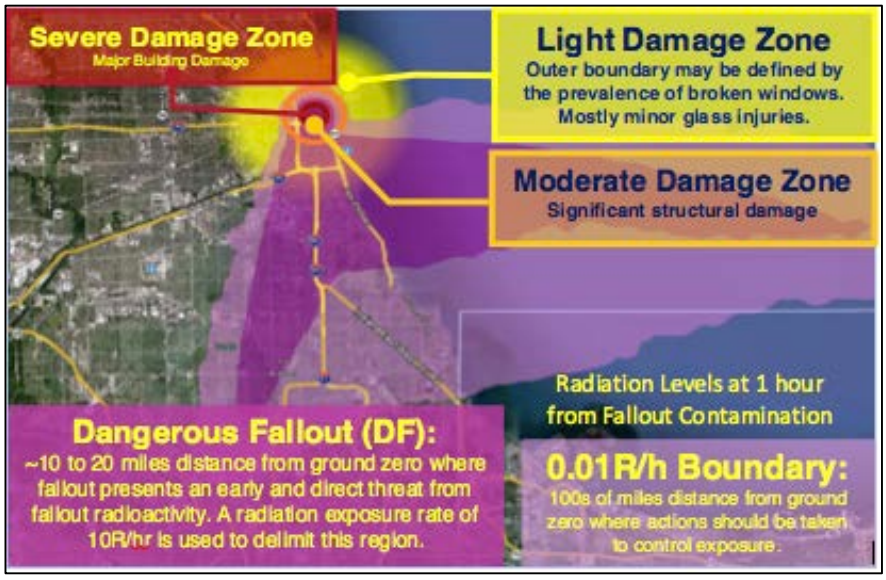
EXERCISE SUMMARY

On September 2, 2015, the Radiation Injury Treatment Network (RITN) conducted a tabletop exercise to discuss the organizational roles and responsibilities of key agencies, identify resources required to provided 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 Salt Lake City region.

Exercise Scenario

Initial Event

- On August 27th, 2015 a ten-kiloton Improvised Nuclear Device (IND) was detonated in the City of 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.

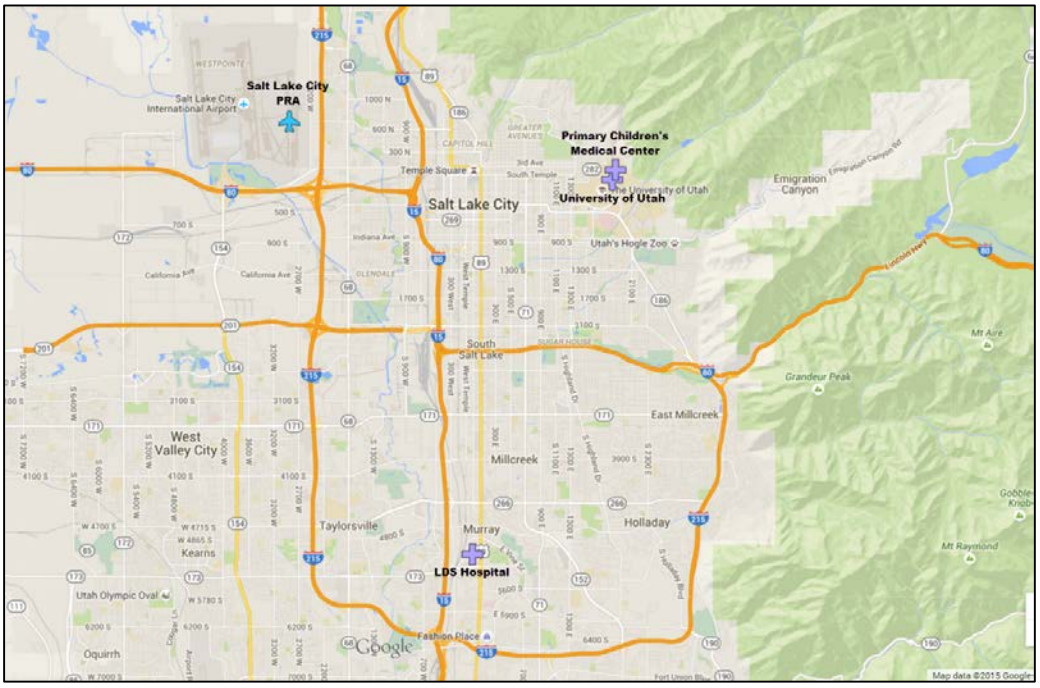
Initial Event +4 Days

- National Disaster Medical System (NDMS) issues activation protocol for Salt Lake City, indicating the region will be receiving casualties from the disaster zone via NDMS.
- The Veteran's Administration initiates actions to establish a Federal Coordinating Center (FCC) at Salt Lake City International Airport, where NDMS patients will be received.

Initial Event +5 Days

Approximately five days after the detonation patients start to arrive at the FCC established at Salt Lake City International Airport. Upon arrival patients will be screened and triaged for transportation to local RITN hospitals for treatment. There are 3 RITN centers in the region (LDS Hospital, Primary Children's Medical Center, and University of Utah) and the region is expected to receive 150 adult and 20 pediatric patients with marrow toxic injuries. These patients will be arriving over the next 1-2 days.

Patients arriving 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). It is anticipated that some RITN patients will 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).

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 Salt Lake City region.	Public Health & Medical Services	Emergency Operations Coordination
Objective 2: Identify the process for casualty reception and distribution within the Federal Coordinating Center 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
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 Salt Lake City 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 the key participating agencies/organizations:

Organization	Concerns
Salt Lake County Health Department	The County Emergency Operations Center (EOC), Emergency Support Function (ESF-8; Health and Medical), and the Health Department Operations Center (DOC) will be activated. The health officer will be at the county EOC in the policy group.
State of Utah Health Department	The State Health Department is a branch of the EOC. Once declaration is approved, the executive director of the State Health Department will be in constant contact with local Health Department directors. There will be competition on "who owns this disaster" to include local, state, and federal. Social media will drive media messaging. There is a concern that hospitals have just in time (JIT) resupply which could create a problem in a disaster.
State of Utah EOC	The State EOC (located at the Capital) will go to the Governor to get an emergency declaration. The primary focus would be in support of the lower jurisdictions to handle resource requests. Leads would come from "bottom up". A state emergency response team (SERT) for ESF-8 will be activated. Information sharing platforms will be established at the EOC to include a Joint Information Center / Joint Information System (JIC/JIS).
RITN Facilities	At this point, RITN facilities are in search of information to help them prepare to include the following. UUMC: How many patients are they getting? What information comes with the patients? Are they still being monitored or are they coming alone? Who does the public education of exposure vs. contamination? Need to know how to avoid mass panic. PCMC: Bed availability, medications (G-CSF). Would like someone on the ground at the FCC to help with triage. LDS: Point of arrival triage – can they be brought in as required, or is there any ability to moderate them upon point of arrival. This should take place at the point of triage.
Non-RITN Hospitals	The State EOC / Health Department would help with the notifications through the County and the Coalition. Would need to receive decompressed patients from other hospitals. They may need to take some of the lower acute patients and would begin those preparations.
Salt Lake City FCC	Utah 1 is the DMAT team. VA is part of the healthcare coalition. They would utilize an alert and activation checklist that includes the American Red Cross (ARC), Baptist Association, and others. They

Organization	Concerns
	start getting bed counts, finding out how many patients they are getting. The Bureau of Emergency Medicine and other strike teams help to receive. When receiving patients it is assumed they have been decontaminated and stabilized to the point where they can fly. The focus when "de-planing" is doing a quick triage, see if they need immediate care and put into a Gold Cross ambulance to get to hospital. The FCC provides a role in helping with finance of care and getting patients back to their home. The assumption is that patients will have some need for hospitalization. There is currently nothing in the plan where they receive a patient from an aircraft and they don't need to go to a hospital. The FCC will want to work with the Coalition to determine if someone needs hospitalization and determine where they can go (e.g. to a long term care facility). Probably would not be a 24/7 operation at the FCC. The density of patient types is a concern (aircraft will intermix levels of acuity). Can't expect that everyone coming off the plane is RITN patient. Would highly recommend that people from RITN hospitals be out there to triage and determine transport points. Would assume that C130 would have survey instruments to ensure safety of crew.

NDMS Activation Criterion & FCC Establishment: The FCC will notify the VA leadership, followed state DEM, which will notify the National Guard, and the State Health Department. The notification will be sent by NDMS partner hospitals by the Utah Notification and Information System (UNIS). Subsequent activations will include strike teams, the airport, global patient movement and transportation command, Hill AFB, and ESF-6 partners. Once these notifications occur, they will schedule a meeting to bring players together to formulate a plan.

RITN & NDMS Coordination: Interface between RITN and NDMS occurs via the Health and Human Services (HHS) Assistant Secretary for Preparedness and Response (ASPR) EOC. It should be noted that RITN's focus is more on pre-planning for incidents/events involving NDMS. However, they will provide situational awareness through frequent SitReps and initial bed capacity surveys. Once patients arrive, HHS is in charge.

Notification of Hospitals: All hospitals in the Salt Lake City region will be notified (including NDMS hospitals). UNIS is used as the notification mechanism to communicate with hospitals regarding an event such as this (i.e. one that occurs somewhere else in the U.S., where it might affect the region).

Assets to Operate FCC: On the C130 there is a coordinator who can start to categorize patients. Gold Cross ambulance has the contract for NDMS transport and they can also use jurisdictional ambulances (e.g. Unified Fire). Coordination would be with the State EOC. The VA has some dual-use vehicles such as buses for ambulatory patients and they can also access Life Flight and Air Med for those more critical patients that might require flight transport. HHS can also mobilize a Joint Patient Assessment and Tracking System (JPATS) team, service access team members from HHS that can help with case management along with the Regional Emergency Coordinators (RECs).

Bed Availability: There are bimonthly NDMS bed reports. Utah Hospital Resource Management System (UHRMS) has a bed reporting capability. There are several categories burn, med-surge, ICU, pediatric ICU, OR, psych. TRACES is what is used day to day for Department of Defense (DOD) and can be activated for the FCC. RITN takes bed report from HCS (Healthcare Standard), sends to ASPR, which will send back down to regional representatives to inform FCCs what are the best available hospitals to receive casualties. There is a need in this scenario to have info from Chicago to ascertain how many of these patients are RITN specific.

UHRMS reports can be accessed from the FCC. Need to make sure this is a "real time" capability. Currently, hospitals only update UHRMS once monthly. A UNIS alert can be sent to have them provide real time updates.

Command & Control (Fed, State, and Local): Coordination has been delegated from the Medical Center to the FCC. The City is not in complete agreement on this process. The City's perspective is that there should be a Unified Command in place. According the the FCC, they will take direction from the VA. According to SLC fire this is now local and it becomes their responsibility (e.g. they now have a mass casualty in their city).

Strengths

The following strengths were demonstrated:

Strength 1: Command and control of the incident described in this scenario was well understood at all levels; partners were familiar with existing Incident Command System (ICS) structures and emergency response plans and were able to discuss how this type of incident response would be managed and identified potential nuances given the type of patient surge that would be expected.

Strength 2: Bed availability information sharing through UHRMS to the NDMS is effective and streamlined. The role of the FCC and health departments in ensuring that this information is communicated in a timely manner to facilitate appropriate patient placement within the jurisdiction was acknowledged early in the discussion.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: The 3 RITN facilities in Salt Lake should designate a point person from help with triage at the FCC. If identification of a person from each facility is not feasible, consider having one represent all 3 centers. This designee would serve as an interface between the FCC and facilities to assist in routing transports and providing communications to hospitals regarding patient loads, levels of acuity and any other concerns.

Area for Improvement 2: Ensure process for education of staff and the public. Include PIOs in future RITN planning and exercises. FEMA Region 8 can support messaging development with the Joint Field Offices (JFOs). RITN centers and partners should familiarize themselves with the Public Information annex in the FCC plan. Consider the development of pre-event messaging that can be disseminated to hospitals in coalition meetings. Some additional potential sources included the following:

- 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 3: There is a need to ensure that only those patients with radiation injuries are sent to RITN centers in this type of incident. As a component of pre-planning determine the patient types that don't need to go to a RITN center, but can be received by other facilities (i.e., non-RITN centers) in the Salt Lake City region.

Area for Improvement 4: There is a need to make sure that there is an ability to communicate staffed beds vs. available beds prior to patients being sent from the FCC to RITN centers. Some potential solutions include making direct calls to the hospitals from the FCC and tiering of patients (e.g. BMT, isolation, monitoring) to ensure they are sent to hospitals that have appropriate capabilities for treatment.

Area for Improvement 5: There is a need to clarify authorities between City agencies and others as it relates to bringing NDMS/RITN patients into the centers in Salt Lake City. It is recommended that the FCC, County, State, and City meet to collectively agree on a process and delegation of authorities. This could be further addressed in future (e.g. command-level) exercises to refine the coordination among all agencies.

Area for Improvement 6: While the coordination of bed availability of UHRMS and the FCC is cited as a strength, there may be a need to increase the frequency of bed reporting from monthly to a daily reporting process to provide a more "real time" snapshot of bed availability.

Question Block 2: Arrival of Patients

Outpatient/Inpatient Treatment Determination: Delegating someone at the airhead to coordinate from the FCC with the RITN centers will expedite this process. There was some discussion as to whether or not diagnostic testing could be done at the FCC to make rapid determinations prior to transport. It was agreed IStats (rapid laboratory testing) should be done at the hospital. The IStat will support triage to a particular hospital (it is not definitive for care; it can determine which patients go first).

Patients that would require admission to the hospital would include those that are neutropenic (absolute neutrophil count [ANC] less than 500) and have a fever. Others that may be determined for inpatient status are those requiring platelet transfusions more than twice per day; under normal circumstances this would be difficult to do as an outpatient but in this situation there may be operational changes (e.g., longer hours) that would allow this care to be performed as an outpatient.

Outpatient Treatment Considerations (1-2 Gy): There was consensus that the majority of the 170 patients would be outpatients. One of the biggest needs would be to organize and setup a system for tracking (to facilitate having outpatients return frequently for monitoring). Resources that may be needed to treat mild cases of Acute Radiation Sickness (ARS) include medication (granulocyte colony stimulating factor [G-CSF] or Neupogen®), Pic lines, IV lines, blood (blood products would need to be irradiated), and infusion treatments. Staffing would also be a major consideration; for example performing laboratory draws is already a recognized bottleneck for the institution so would quickly become overwhelmed in this scenario without external support to augment staffing resources.

The Medical Reserve Corps (MRC) can provide a very limited level of medical monitoring. If outpatients are housed outside of the hospital and need to come daily for a CBC, one of the biggest needs would be to determine means of transportation. Another option that was discussed was having a strike team that could go to where they were housed. Some elements relative to this would be the use of mobile teams of physicians and/or telemedicine.

Another key logistical consideration discussed was the care and shelter for family members. ESF-6 partners in the Valley and volunteer organizations could be used. Need to consider outpatients and University Healthcare may have a capability to displace students in hotels and place families in dorms, but this requires additional exploration. The University does have an agreement with a hotel by the airport for $10/night that could be used. Ronald McDonald Houses were cited as a limited option. The State Public Health Department could put together a Family Assistance Center to include transportation.

Considerations & Challenges for Marrow Toxicity (Inpatient Surge): All ns.

Will need G-CSF, blood, platelets, antibiotics, IV fluid, staff. On any given day if they get two unexpected admits, it can overwhelm staff. 50-60 patients with marrow-toxic injuries per facility (as in this scenario) would represent a huge challenge. Inpatients would require central lines to facilitate administration of the medications and fluids for care. This requires a certain skill set that may be in short supply. Resources would need to be balanced and coordinated across both inpatient and outpatient care needs, underscoring the need for careful patient tracking and placement decisions.

Triage, Treatment, and Tracking/Surveillance Considerations: EMS

EMS triage at the IND detonation scene would initially screen the people and determine that they were sick enough to require transport to a specialty center; the baseline dosimetry reading would serve as an initial assessment with 12-hour and 24-hour follow on measurements.

Resource Request Process and Prioritization of Limited Resources: In general, RITN centers have adequate supplies of medication to treat a modest surge of patients. A surge of over 50 patients per center as in this scenario would create resource strains. As a result Public Health was asked regarding the use of the Strategic National Stockpile (SNS) as a source. While there is Neupogen in the SNS, there is only enough to treat 15,000 people for 5 days. It was assumed that most (if not all) of that resource would be used by the affected area.

RITN Centers work through the Coalition for resource requests and needs. The guidelines for resources should be followed just like in any emergency. Southern Baptist, ARC, and Salvation Army, can all help with food.

Behavioral Health Resources: There aren't enough mental and behavioral health resources in the region to handle current populations and their needs. In a scenario such as this it will be a big problem. The State has trained crisis counselors that would be activated. They could focus more on outpatient and mass care activities. The MRC does have some capabilities (e.g. social workers). Staff at hospitals receive critical incident training that could also be used.

Financial Management: This was not discussed in detail during the exercise, but it was recognized that it would be very important from the start of the incident for all responding organizations to track their resources to ensure that reimbursement can be efficiently processed. An incident of this magnitude would result in a Presidential Disaster declaration, which would open funding and reimbursement channels for the response. It should be noted that the reimbursement rate through the NMDS is 110% of medicare rates and if centers choose to seek funding through the

Stafford Act, it was stated that they would only receive 75% of costs. It was again recognized that streamlined tracking of the patient data and understanding of the systems used (and how information is communicated between systems) will be important, in particular as it relates to the outpatient and long-term care in this type of response.

Strengths

The following strengths were demonstrated:

Strength 1: RITN facility clinicians are able to rapidly and effectively triage patients to inpatient or outpatient status given basic lab/cell count information.

Strength 2: The Salt Lake City Healthcare Coalition has a well-established process in place for the request of resources.

Strength 3: The RITN centers have some resources and processes in place to support outpatient housing under normal circumstances, much of this could be leveraged for this surge scenario either using the facilities that are already affiliated with the hospital or applying those protocols to another location.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: Explore potential for the establishment of medical strike teams to care for outpatients. This could reduce the logistical burden of transportation to/from facilities for monitoring.

Area for Improvement 2: Conduct a thorough assessment of the inpatient capabilities of RITN facilities in the Salt Lake region. Determine what your thresholds for volume of inpatients are for each facility and include those in plans.

Area for Improvement 3: Conduct planning among RITN Centers, Public Health and the Coalition to address the care and shelter of those patients transported by NDMS. Consider collective use of agreements with hotels, Ronald McDonald Houses, and support through a Family Assistance Center.

Area for Improvement 4: Address considerations that may come up regarding allocation of scarce resources. Continue to address this issue in local and state crisis standards of care planning. In addition, the following can be referenced:

Allocation of Scarce Resources – Final Report
http://www.effectivehealthcare.ahrq.gov/ehc/products/400/1151/EvidenceReport207_Allocation-of-Scarce-Resources_FinalReport_20120716.pdf

Institute of Medicine Crisis Standards of Care Reports
http://iom.nationalacademies.org/About-IOM/Leadership-Staff/IOM-Staff-Leadership-Boards/Board-on-Health-Sciences-Policy/CrisisStandardsReports.aspx

Area for Improvement 5: Conduct additional planning and coordination to address potential mental and behavioral support needs for a radiation injury incident. Consider integration of private providers to support mental/behavioral health needs following a large-scale disaster to augment the public and medical assets.

HOTWASH

Strengths and Opportunities for Improvement

- Sheltering issue is same in each community.
- Patient tracking is an area that needs to be addressed nationally along with the reimbursement issues.
- Behavioral health needs to be addressed. There are people from the county and city that need to be represented more.
- RITN centers need to better understand organizations and resources within Utah. Also need to know how to contact them.
- Participation in more exercises is a great way to understand what your resources are and what the various roles and responsibilities are.
- Utah hospital association is a good source with listing of emergency managers
- It was valuable to integrate planning and execution of the exercise with the local NDMS patient reception planning aspects
- Need to be able to identify and access radiological subject matter experts quickly to assist with public information

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2015 RITN Regional Exercises. The Salt Lake City RITN Centers 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	Organization
Marilyn Watts	UCHD/MRC Coordinator
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APPENDIX C: ACRONYMS

Acronym	Term
AAR	After Action Report
ANC	Absolute Neutrophil Count
ARC	American Red Cross
ARS	Acute Radiation Syndrome
ASPR	Assistant Secretary for Preparedness and Response
DOD	Department of Defense
EMA	Emergency Management Agency
EMS	Emergency Medical System
EOC	Emergency Operations Center
ESF	Emergency Support Function
FCC	Federal Coordinating Center
FEMA	Federal Emergency Management Agency
GCSF	Granulocyte Colony-Stimulating Factor
HCS	Healthcare Standard
HHS	Health and Human Services
ICS	Incident Command System
IND	Improvised Nuclear Device
JFO	Joint Field Office
JIC	Joint Information Center
JIS	Joint Information System
JPATS	Joint Patient Assessment and Tracking System
LDS	Latter Day Saints
LTCF	Long Term Care Facility
MRC	Medical Reserve Corps
NDMS	National Disaster Medical System
NMDP	National Marrow Donor Program
PCMC	Primary Children's Medical Center
REC	Regional Emergency Coordinator
REMM	Radiation Emergency Medical Management
RITN	Radiation Injury Treatment Network
SERT	State Emergency Response Team
SITREP	Situation Report

Acronym	Term
SME	Subject Matter Expert
SNS	Strategic National Stockpile
TTX	Tabletop Exercise
UHRMS	Utah Healthcare Resource Management System
UNIS	Utah Notification and Information System
UUMC	University of Utah Medical Center