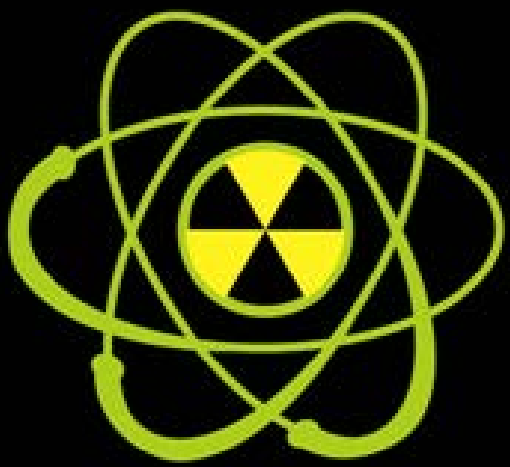
2016

After-Action Report/Improvement Plan
August 15, 2016



EXERCISE OVERVIEW

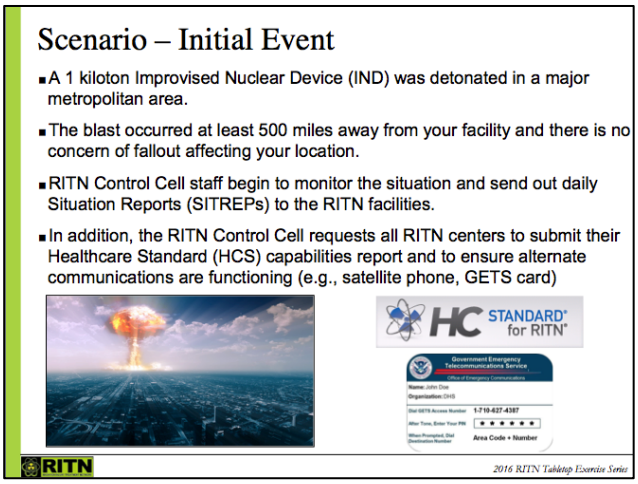
Exercise Name	2016 RITN Tabletop Exercise (TTX)
Exercise Date	August 15, 2016
Scope	This exercise is a distance-based tabletop exercise planned for 2 ½ hours. Exercise play is limited to RITN facilities and their response partners' collective challenges and considerations for improved and effective response
Mission Area(s)	Response
Capabilities	Public Health & Medical Services
Objectives	**Objective 1:** Conduct internal and external communications that include staff, patients, and visitors as well as the media and other response partners. **Objective 2:** Describe the procedures for establishing a Family Information Center and how information will be shared with family members both on-site and at distant locations. **Objective 3:** Identify just in time training requirements and the resources needed to meet those needs. **Objective 4:** Describe their approaches used for hematopoietic cell transplantation (HCT) in casualties who appear to have received myeloablative doses of radiation.
Threat or Hazard	Radiological
Scenario	Medical surge from a distant radiological incident
Sponsor	Radiation Injury Treatment Network® (RITN) National Marrow Donor Program (NMDP) Office of Naval Research (ONR)
Participating Organizations	Children's Hospital of Alabama – Birmingham, AL North Shore University Hospital – Manhasset, NY Northwestern Memorial Hospital – Chicago, IL

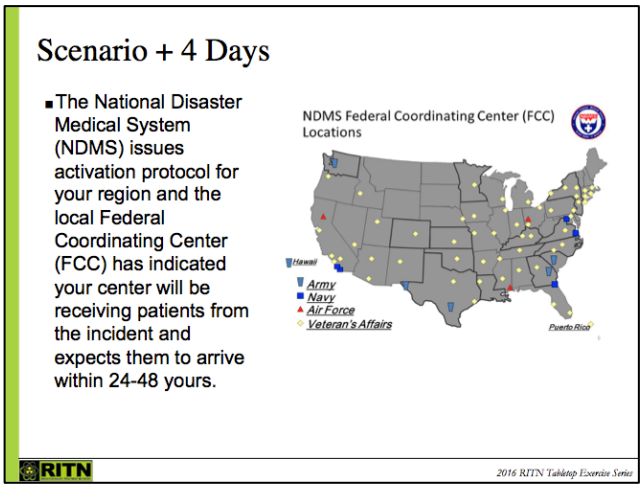
	Rush University Medical Center – Chicago, IL Scripps Cancer Institute – La Jolla, CA Seidman Cancer Center – University Hospitals St. Francis Hospital & Health Centers – Indianapolis, IN Wake Forest Baptist Medical Center – Wake Forest, NC
Point of Contact	RITN Control Cell RITN@NMDP.ORG (612) 884-8276

EXERCISE SUMMARY

On August 15, 2016, RITN centers and the RITN Control Cell participated in a tabletop exercise to discuss initial triage and treatment of transported patients who were exposed to a radiological exposure device. A facilitated series of exercise tasks were provided to participants for their consideration, response, and group discussion organized by the exercise scenario summary below.

Scenario Summary: The following illustrate the scenario events considered for participant discussion:





ANALYSIS OF CAPABILITIES

Module 1: Planning for Patient Arrival

Staff Training: Participating centers indicated that their incident command/hospital management team would be activated immediately with a 24-48 hour advance notice of patients' arrival. All staff (clinical and non-clinical) would be required to attend refresher training (or just in time training). Multiple centers indicated that ARS as well as RITN training was provided this calendar year during hospital grand rounds and refresher training would be built from those training materials. The training would be based on staff role in receiving, medical treatment, and patient management and all staff would review the hospital's emergency preparedness plans, hospital emergency operations plan, radiation safety/exposure, triage, and disaster protocols. Training and informational content discussed by all centers was generally led by Radiation Safety and/or Nuclear Medicine and would include:

- Hospital incident command structure
- Radiation awareness and safety (i.e. radiation dose, exposure, survival information)
- Decontamination protocols/procedures
- Radiation detection equipment (for appropriate staff)
- RITN® ARS Treatment Guidelines
- Staff roles and responsibilities
- Risk to caregivers, current patients and families, and the community
- Signs and symptoms
- Screening patients for contamination
- Staff PPE

Lastly, participating centers stated that all staff would be provided general information to prepare them for the arrival of potentially contaminated patients in an effort to manage misinformation and temper exposure/contamination concerns. Other centers stated specific staff would receive either clinical or non-clinical training to include:

- Emergency Department
- BMT staff
- Nursing (to include Nursing Coordinators)
- Security
- Maintenance
- Registration
- Environmental Services

- Transport
- Pharmacy
- Blood Center/Bank
- Laboratory
- Hospital Administration
- Chaplains
- Social Work/Services

Information Provided to Current Patients/Families/Others: All of the participating centers would communicate/provide information about the incident to staff prior to patients arriving. Information content would include type of patients expected, numbers of patients, expected location where patients will be placed, and the hospital's role as a RITN facility. Additionally, staff would receive information regarding the center's plan for outpatient management of patients

All information communicated would be developed/reviewed by a combination of the following prior to dissemination:

- BMT Medical Director (and other team members)
- RITN Medical Director
- Radiation Safety
- Security Director
- Senior Leadership (Administration and Medical)
- Hospital Incident Commander
- Public Affairs/Public Information Office-Officer/Public Relations/Government Relations

Hospital website, social media, radio, and local media outlets were discussed as being the most readily available manner in which information would be disseminated to those in the hospital as well as the general public.

External Message Coordination: Outside agency coordination would occur among the RITN center, hospital coalition, local emergency management agency, local VA hospital, FCC, and the hospital's EOC as the regional coordinating entities to manage and distribute external messaging. All RITN centers indicated their hospital liaison officer working in collaboration with local public health, and FCC through a JIC would jointly develop and disseminate all messaging with outside agencies. Finally, participating RITN centers stated the 24-48 hours prior to patient arrival would allow them sufficient time to coordinate messaging.

Strengths

The following strengths were demonstrated:

Strength 1: All RITN centers demonstrated a depth and breadth of training immediately available for their staff to prepare for receipt of NDMS patients. Additionally, participating centers discussed multiple examples of annual training (e.g. radiation awareness and safety, hospital EOP, staff PPE related to contaminated patients) required by their staff to maintain awareness and capability to respond quickly.

Strength 2: All RITN centers demonstrated the ability to rapidly train their staff (especially with as much as 48 hour notice) and augment their existing training materials quickly.

Strength 2: RITN centers indicated immediate use of a JIC to establish and maintain consistency in managing public messaging and as a means of rumor and min-information control.

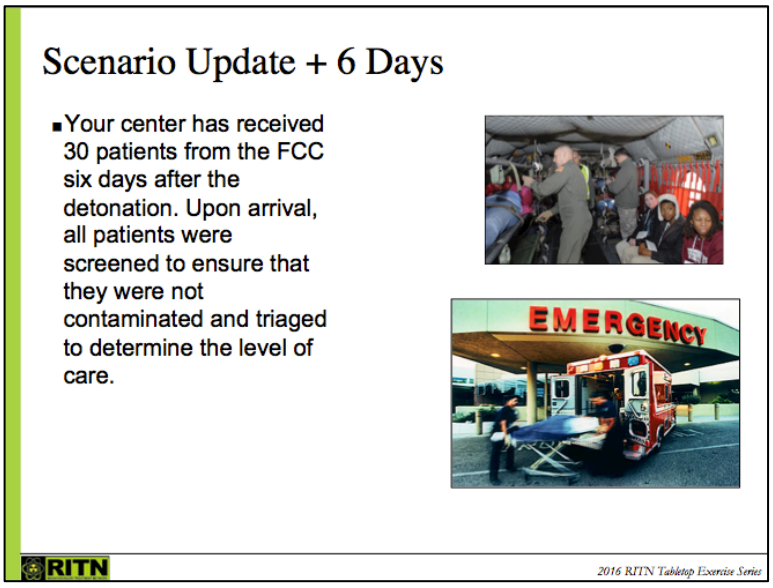
Areas for Improvement

The following areas require improvement:

Area for Improvement 1: All RITN centers should actively coordinate with their local FCC to update their EOPs as well as their radiation training materials.

Module 2: Family Information Center

Participants were provided the following update to the scenario to further facilitate discussion.



Plan for Family Information Center: All centers stated their Emergency Operations Plan would be activated, as would family assistance services annex of the EOP, which includes the FIC.

Activation & Demobilization of FIC: Activation of a family information center would occur either upon notification that patients would be received or as soon as the hospital incident management team was activate. Family assistance services would be included as one of the objectives of the HIMT in their first operational period. FIC operations would be assessed with each operational period and/or as the incident commander reviews the operational needs of the FIC. Overall, centers stated the FIC would remain operational until all family members and patients have a plan established to meet and address their needs. Once this has happened, the FIC would begin demobilization.

Staffing FIC: The FIC would be staffed from a variety of hospital departments, such as:

- Hospital Administration
- Social Services (Psychologists, Child Life Specialists, Social Work, Guest Services, Chaplains, Hospital Volunteers)
- Pastoral Care
- Patient Representatives
- Nursing

Only 1 of the participating centers indicated that the FIC would be operational 24-hours a day.

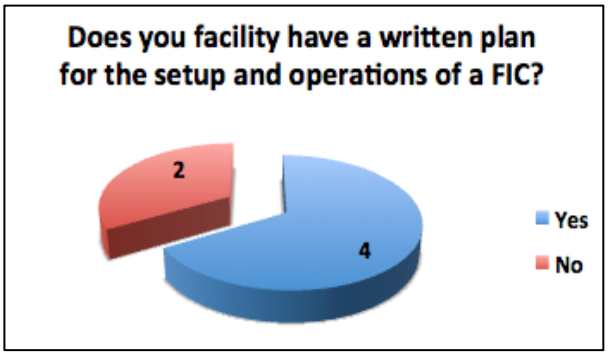
HIPAA Policy: Centers discussed currently having an emergency incident health insurance portability and accountability act (HIPAA) policy, although all centers stated following their current HIPAA policies for the events described in this scenario and consultation with their Legal Departments or Regulatory Compliance Departments for any explanations or modifications needed. Once center indicated having their Compliance Officer prepare a briefing on HIPAA privacy in emergency situations for their incident command team and their hospital emergency preparedness staff.

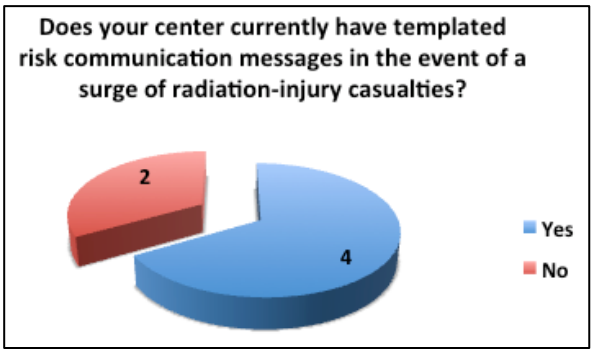
Minors at the FIC: Centers indicated social services/social work and child life specialists would assist with the placement and handling of minors. One participating center indicated not having a plan in place currently to address minors accompanying patients but stated that their social services staff would address the situation. All centers indicated continued involvement of their FIC in the support of care of any unaccompanied minors, especially since all of the centers indicated use of their social services and behavioral health staff to operate the FIC.

Polls:

Participating facilities were asked if they had a written plan for the setup and operations of a family information center.

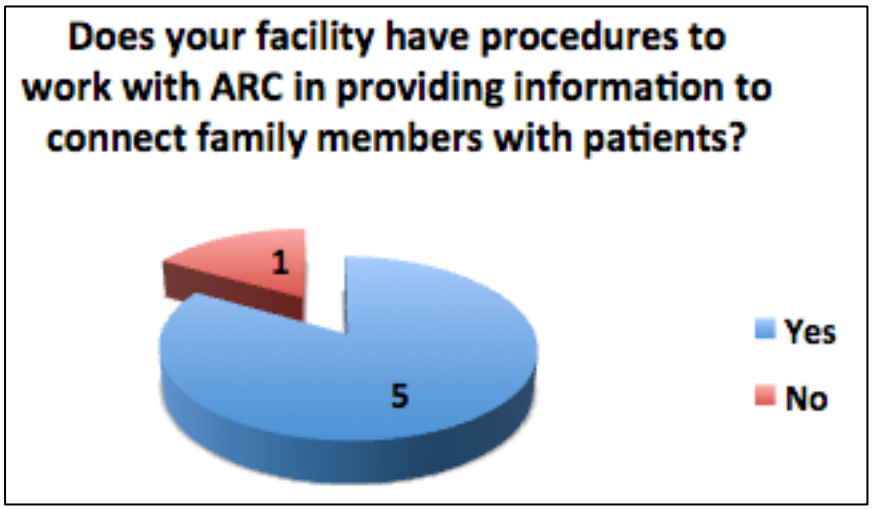
Of the 6 participating facilities responding to the poll question, 4 centers indicated having a family information center (FIC) plan while 2 of the centers currently did not have a FIC plan.





Facilities were also polled regarding risk communication messaging templates. Of the 6 participating facilities responding to the poll question, the same 4 centers with a written FIC plan also have template risk communication messages in the event of a surge of radiation-injury casualties, while the same 2 center without a FIC plan also do not have template risk communication messages.

Participating RITN facilities were polled regarding existing procedures to work with an external organization such as the American Red Cross (ARC) for family reunification.



Five of the 6 participating centers (83%) that responded to the poll question stated they have current procedures to contact the American Red Cross to lead efforts to connect family members with patients, while 1 center indicated not having currently procedures to work with ARC.

Strengths

The following strengths were demonstrated:

Strength 1: Once incident command activated the Family Information Center, all participating RITN centers discussed plans and procedures to staff the FIC across various departments including staff and plans to provide behavioral and mental health services to those in need.

Strength 2: A majority of the participating RITN centers currently have plans and procedures to request support services from organizations such as the American Red Cross to assist the center with family reunification.

Strength 3: RITN centers demonstrated protocols and involvement of their legal resources (e.g. compliance officer) to adequately accommodate any needed HIPAA interpretation or requirements for an emergency response event.

Areas for Improvement

The following areas require improvement:

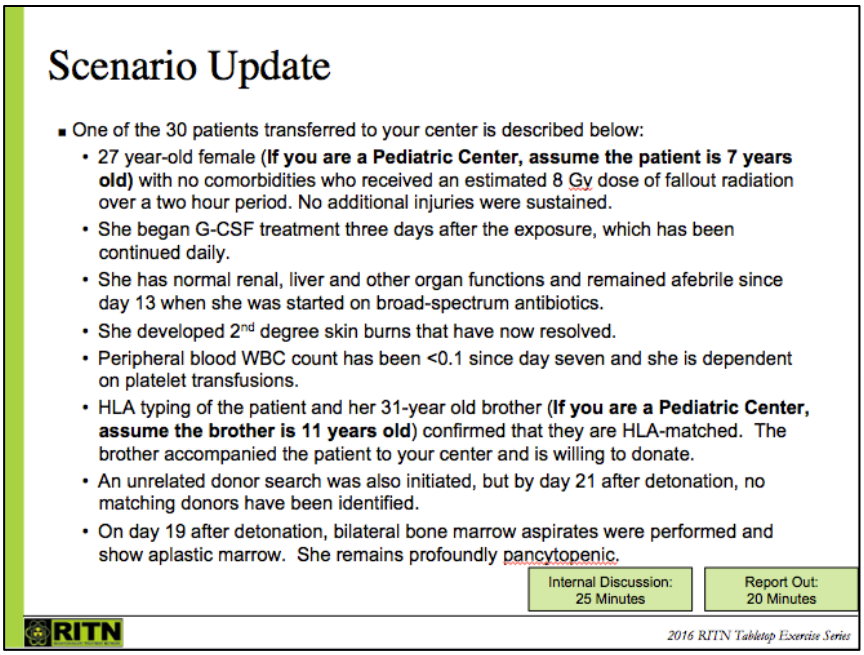
Area for Improvement 1: RITN centers should include plans to manage minors that accompany a patient whose care changes from outpatient to inpatient. As part of improvement planning efforts, RITN centers should consider outreach through their social services department

along with the hospital liaison officer to nearby children's hospitals and/or community organizations to assist in support of minor care and management in the event an NDMS patient being treated on an outpatient basis requires inpatient stay.

Area for Improvement 2: All RITN centers should develop internal and external risk communication messaging related to the receipt of NDMS patients. As with radiological training materials, the general messaging content can be developed as part of the annual emergency operations plan (EOP) review and updating process. Messaging templates can be developed for current patients/families/those receiving care at your facility as well as messaging templates and FAQs intended for use by local media). Readily available resources include: RITN, NMDP, CDC, and REACTS.

Module 3: Patient Treatment

Participants were provided the following update to the scenario to further facilitate discussion.



Patient Treatment (27 year old): All but one of the participating RITN Centers would proceed with HCT, as the patient remains profoundly pancytopenic as well as aplastic at day 21 since detonation. The center that would not proceed with HCT would do the following: 1) Collect stem cells from brother immediately and plan on proceeding to a SCT, 2) Administer IVIG followed by a viral workup to rule out other causes of delayed recovery, and 3) Consult with the oncology fertility service.

Centers differed on the preparative regimen that would be administered once the decision was made to proceed with HCT. One of the participating centers stated their physicians recommended only ATG as the preparative regimen. Another center indicated the decision would be made during their HSCT consensus conference, but given the scenario information, the team would strongly consider the recommended Flu/Cy/ATG based on BMT CTN study 03-01, but would also depend on stem cell source (sibling versus umbilical cords). Another of the participating centers would administer high dose cyclophosphamide as the preparative regimen (no information was provided if ATG plus Cy would be used). Lastly, centers indicated they would follow the RITN HSCT approach for ARS.

A majority of the participating centers indicated use of peripheral blood stems cells, while several other centers stated they would use bone marrow. All centers would not repeat the

marrow assessment if the patient remained pancytopenia. Participating centers were consistent in their preparative regimen: All centers preferred a related match and would administer Cytoxan-ATG regimen. If the donor were unrelated, a Flu/Cytoxan/ATG regimen would be used. If the brother matched only for 1 haplotype, Centers indicated there would be no change in their regimen as this would still be best option, but not all centers would proceed with bone marrow as the graft source (1 center that would use peripheral blood). Most of the participating centers would utilize *in vitro* T-cell depletion; while 2 centers stated they would not use *in vitro* or *in vivo* T-cell depletion.

All centers indicated the course of action would not be impacted if the patient was 67 years old and the brother was 64 years old provided there is confirmation of no comorbidities. If comorbidities were present, centers would consider using a different donor.

If patient was 1 year old and brother was 3 years old, all adult and pediatric RITN centers participating would proceed with transplantation and would not repeat a marrow assessment. If available, the parent's marrow would be used. The preparative regimen remained unchanged.

Polls:

Participating RITN facilities were asked to indicate the types of just-in-time training that can be conducted. The following table illustrates their responses.

Training Type	Number of Facilities
HLA Typing	6
Medical Countermeasures	6
Patient Triage	6
PPE for Staff	6
Risk Communication	6
TOTAL Participating RITN Centers	**7**

All of the participating RITN centers responding to the poll (6 of 7 participating centers) indicated the ability to provide all of the following as just-in-time training: HLA Typing, Medical Countermeasures, Patient Triage, PPE for Staff, and Risk Communication.

Strengths

The following strengths demonstrated:

Strength 1: Each participating RITN center demonstrated capability to medically manage a patient in need of a transplant 21 days following detonation/significant radiation exposure including discussing altering medical care (if appropriate) for an elderly patient and pediatric patient as stated in the exercise scenario.

Strength 2: All RITN centers indicated plans and procedures to conduct just-in-time training for HLA Typing, Medical Countermeasures, Patient Triage, PPE for Staff, and Risk Communication in preparation to receive NDMS patients.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: RITN centers treating adult only patients should confirm their plans and procedures to prepare and transport a pediatric patient receiving radioactive fallout dosage to a pediatric facility that can provide transplantation services and a continuum of medical and social services care. The adult RITN centers stated they would arrange transport of a pediatric patient, but did not discuss details such as: receiving pediatric hospital/medical, existing contract with an ambulance provider that will transport patients exposed/received radiological material, air transport vendor that would transport this type of patient, and medical team (if needed) to accompany the patient.

CONCLUSION

This report augments existing planning/training/exercising programs related to RITN center triage and medical management of radiologically exposed patients transported to their center and their capabilities to communicate internally and externally. The strengths validate well-established aspects of the plans while the opportunities for improvement provide information to enhance, refine, or improve existing plans, protocols, procedures, and systems. It is anticipated that the improvement plan will be incorporated into the efforts of each participating RITN center to strengthen the response of the radiation injury treatment network of hospitals and healthcare systems as it relates to the core capabilities identified in this report.

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2016 RITN Tabletop Exercise conducted on August 15, 2016. 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

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University of Mississippi Medical Center	Jennifer Rouse	Not provided
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Members of the Incident Response Team Activated for the Exercise

Position	Children's Hospital of AL	St. Francis Hospital & Health Centers	North Shore University	Northwestern Memorial Hospital	Rush University Med Center	Wake Forest Univ. Baptist Med Center
RITN Medical Director	☐		☐	☐	☐	☐
RITN Primary Coordinator	☐	☐	☐		☐	☐
RITN Alternate Coordinator	☐					
Additional physician(s)	☐		☐	☐	☐	
Nursing staff	☐		☐		☐	☐
Admission process rep						
Admin / hospital executive	☐		☐	☐	☐	
Emergency mgt staff		☐		☐	☐	☐
Pharmacy staff member	☐			☐	☐	☐
Radiation safety officer / Health physicist			☐	☐	☐	☐
Social services rep			☐	☐	☐	☐
Psychiatry/psychology rep					☐	☐
Blood center rep				☐	☐	☐
Emergency department rep				☐	☐	☐
Quality rep			☐		☐	
Regulatory rep					☐	
Infectious disease specialist						
Cell processing lab rep			☐	☐	☐	
Environ health and safety rep				☐	☐	
Ethicist						
Burn center rep						
Public information rep				☐		

Position	Children's Hospital of AL	St. Francis Hospital & Health Centers	North Shore University	Northwestern Memorial Hospital	Rush University Med Center	Wake Forest Univ. Baptist Med Center
VA/NDMS rep						
Public Health rep						
County/city/state emergency manager						
Poison control center rep						
Healthcare coalition rep						
Other	Nursing Educator Advanced Practice Nurses Nursing Dept. Director		Data Manager			

APPENDIX C: PARTICIPANT FEEDBACK

RITN Centers were asked to provide some brief feedback on an online questionnaire following the exercise. There were three questions asked with related responses are included below. The comments below are not in any particular order and are provided unedited to avoid intent changes.

Note: The average rating provided by the participating RITN centers for this exercise was 4.83 (out of 5.0).

Based on discussions today, please briefly describe the 1 or 2 strengths demonstrated by your organization's ability to respond to a radiation mass casualty incident as described in this exercise scenario.	
Children's Hospital of Alabama	*We have many staff who have a basic understanding of our role in RITN as well as our response to a radiation emergency. We also have many staff who have a good basic understanding of radiation and its effects on the human body. Based on previous experiences with patient surges and external disasters, we feel our hospital maintains a readiness to handle a patient surge that may be experienced after a radiation emergency.*
St. Francis Hospital & Health Centers	*Our safety officer and Emergency manager were very knowledgeable - great assets to have in this situation.*
North Shore University	*The ability of our hospital to mobilize the necessary resources to respond to an external disaster quickly and efficiently. The operationalization of the Command Center is a key component to this timely efficient response.*
Northwestern Memorial Hospital	*Professionalism and skill of clinical staff to address the medical, nursing and psychosocial needs of the patients and families Ability to manage an event of this type utilizing the existing Emergency Operations Plan and annexes.*
Rush University Medical Center	*1. Communication 2. Incident Management*
Wake Forest Medical Center	*We have awesome resources for FCI and pediatric issues.*

Based on discussions today, please briefly describe the 1 or 2 challenges demonstrated by your organization's ability to respond to a radiation mass casualty incident as described in this exercise scenario.	
Children's Hospital of Alabama	*We determined that we need to make a few minor changes to our RITN SOP. We also determined that we are not fully aware of our HIPAA waiver plan for emergency situations. We also identified a few additional staff members that should be included in our next exercise.*
St. Francis Hospital & Health Centers	*No written plan for FIC We have a fairly small hospital/ BMT service.....not sure that we could handle an influx of patients that would require treatment and potential transplant.*
North Shore University	*The limitations imposed by the number of Transplant MDs available to care for the patients.*
Northwestern Memorial Hospital	*Management of families if transported at the same time as patients*
Rush University Medical Center	*Staffing limitations and Just in time training*
Wake Forest Medical Center	*Communication and Expedited Education*

List and briefly discuss elements to address for future RITN exercises.	
Children's Hospital of Alabama	*We like alternating or combining clinical exercises with exercises that involve more of the logistical evaluation for handling a surge.*
St. Francis Hospital & Health Centers	*More clinical questions related to treatment and transplant.*
North Shore University	*1. Perhaps discussions around lessons learned from actual nuclear accidents. 2. Speakers from Red Cross to describe what type of services they provide during such events. 3. Other resources that may be available to transplant programs to provide care during a nuclear disaster. 4. What to do if our center was directly involved in a disaster?*
Northwestern Memorial Hospital	*Exercise entry of HC Standard information in the system. Work with NDMS on communications with hospitals.*
Rush University Medical Center	*Clinical scenarios to address surge capabilities of existing BMT programs beyond the hospital care aspect (e.g. HLA typing, apheresis, outpatient management of pancytopenic patients).*

List and briefly discuss elements to address for future RITN exercises.	
Wake Forest Medical Center	*Triage algorithm*

APPENDIX D: ACRONYMS

Acronym	Term
AAR	After Action Report
ARC	American Red Cross
ARS	Acute Radiation Syndrome
ASPR	Assistant Secretary for Preparedness and Response
ATG	Anti-Thymocyte Globulin
BMT	Bone Marrow Transplantation
Cy	Cyclophosphamide
EOP	Emergency Operations Plan
FCC	Federal Coordinating Center
FIC	Family Information Center
FluBu2	Fludarabine, intravenous Busulfan
GCSF	Granulocyte Colony-Stimulating Factor
GETS	Government Emergency Telecommunications Service
GVHD	Graft Versus Host Disease
Gy	Gray
HCT	Hematopoietic Cell Transplantation
HHS	Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
HLA	Human Leukocyte Antigen
HSCT	Hemetopoietic Stem Cell Transplantation
IND	Improvised Nuclear Device
JITT	Just In Time Training
NMDP	National Marrow Donor Program
NDMS	National Disaster Medical System
ONR	Office of Naval Research
PB	Peripheral Blood
PPE	Personal Protective Equipment
REACTS	Radiation Emergency Assistance Center/Training Site
RITN	Radiation Injury Treatment Network
SITREP	Situation Report
SNS	Strategic National Stockpile
TBI	Total Body Irradiation

Acronym	Term
TTX	Tabletop Exercise
WBC	White Blood Count