RITN
RADIATION INJURY TREATMENT NETWORK

RITN Improvised Nuclear Device (IND) Tabletop Exercise

After-Action Report/Improvement Plan

May 29, 2014

EXERCISE OVERVIEW

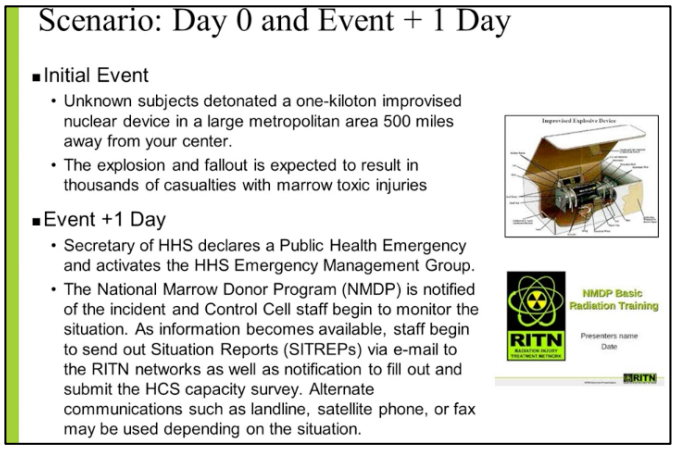
Exercise Name	RITN Improvised Nuclear Device Tabletop Exercise
Exercise Dates	May 29, 2014
Scope	This exercise is a distance-based tabletop exercise planned for 3 ½ hours. Exercise play is limited to RITN facilities and their response partners' collective challenges and considerations fro improved and effective response
Mission Area(s)	Response
Capabilities	Medical Surge Healthcare System Preparedness Information Sharing
Objectives	**Objective 1 (Medical Surge):** RITN facilities are able to address the initial actions necessary to prepare for a receipt of victims to include: mobilization of internal radiation response teams; and development of incident objectives. **Objective 2 (Medical Surge):** RITN facilities are able to communicate the procedures necessary to prepare for and perform triage of casualties. **Objective 3 (Healthcare System Preparedness):** RITN facilities are able to describe their involvement and/or awareness of local and regional hospital coalitions as is relates to the coordinated response to a radiation incident. **Objective 4 (Information Sharing):** Facilities are able to conduct internal and external communications to include staff, patients, and visitors as well as the media and other response partners).
Threat or Hazard	Intentional detonation of an improvised nuclear device.
Scenario	Intentional detonation of an improvised nuclear device approximately 500 miles from each participating facility's metropolitan area (or metropolitan statistical area).
Sponsor	Radiation Injury Treatment Network (RITN) U.S. National Marrow Donor Program (NMDP) Office of Naval Research (ONR)

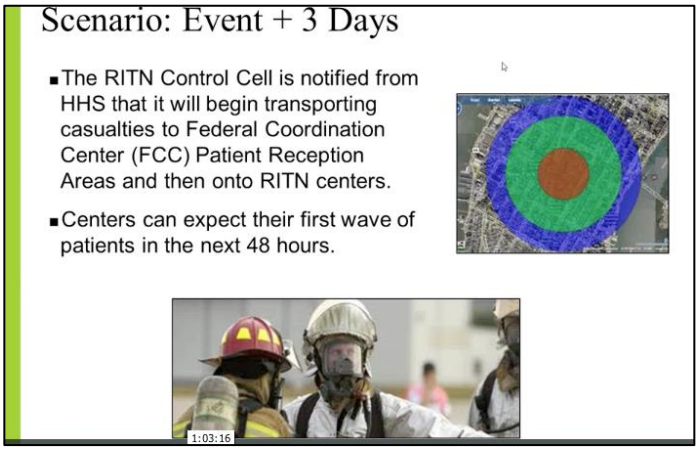
Participating Organizations	The Children's Hospital of Philadelphia – Philadelphia, PA Duke University Medical Center – Durham, NC The Hospital of the University of Pennsylvania – Philadelphia, PA The University of Arizona Medical Center – Tucson, AZ UCSF Benioff Children's Hospital – San Francisco, CA University of Minnesota – Minneapolis, MN Western Pennsylvania Cancer Institute – Pittsburgh, PA RITN Control Center – Minneapolis, MN
Point of Contact	Cullen Case, Jr., CEM Radiation Injury Treatment Network Jennifer Venero Radiation Injury Treatment Network Curt Mueller, MEP Radiation Injury Treatment Network RITN@NMDP.ORG

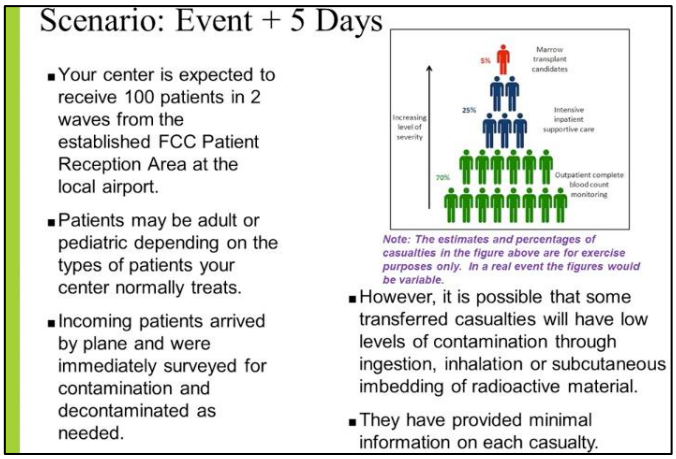
EXERCISE SUMMARY

On May 29, 2014, seven RITN centers and the RITN Control Cell participated in a tabletop exercise to discuss medical surge, resource coordination, public messaging, and healthcare coalition coordination in the receipt of victims following an IND detonation 500 miles from the RITN facility metropolitan area. 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

Task Set 1 Observations: Notifications and Communications

Poll: What are the greatest communications challenges for your facility at this stage? (n=6 facilities). Results of the poll indicated communications with other response agencies are the most significant communication challenge faced by the participating RITN facilities (5 facilities) followed by internal – cross-departmental communications (1 facility). None of the participating facilities indicated communication challenges with their BMT or command group or external communications with their Coalition as their greatest challenge.

Immediate preparatory actions: After receipt of the RITN Control Cell's initial SitRep, participating facilities, in general, indicated that a core group within their incident command would be activated (one facility indicated a full command activation) or that their hospital incident management team would be activated. Mainly facilities indicated notification and the initial coordination efforts with external partners, such as public health (local or state) and emergency management agency would also occur. Additionally, communication and information sharing were extremely important elements of the immediate response and several indicated activation of a joint information center with its joint information system capabilities. Several facilities stated the BMT would be notified or would have a BMT subject matter expert activated and included in the core incident command group.

Staff notifications: The limited incident command team (or hospital incident management team) would be activated along with any needed SMEs such as a BMT representative and coordination with Poison Control. In general, notifications were not described to extend beyond this limited group of staff and partner agencies.

Coordination with partner agencies: In general, partner agency coordination would begin with an initial notification based on the current level of awareness and coordination would include most local and state agencies, such as the department of health and emergency management agency. Several facilities anticipated activation of intelligence/fusion centers, which would immediately coordinate information and communication regionally with input from federal sources. Hospitals indicated the Liaison Officer would be the primary coordinator of information sharing with external agencies, fusion centers, and across their respective healthcare coalitions. At least one RITN facility indicated international border concerns with an IND event within 500 miles of their metro area and the local EMA would begin discussions regarding any international issues.

Public Information: All participating facilities stated PIOs and Liaison Officers would coordinate information via joint information centers (JIC). As stated above, all participating facilities underscored the importance of information sharing and a common communication strategy/messaging. The initial public message (as well as staffing messaging) would address basic information on radiation, contamination, description of RITN and a RITN facility (i.e. RITN facility is part of a national network that provides care to victims of this kind of an event and that further information would be provided, as it became available), and victims being treated at the RITN facility and community impacts.

RITN Control Cell - Communications: RITN Control Cell's expectation following an IND event is to disseminate information as it becomes available to them. The Control Cell would develop and distribute SitReps much like protocol during the Fukushima Nuclear Crisis in 2012. In terms of the information provide to ASPR, The RITN Control Cell would provide as much information on RITN centers capabilities to ASPR.

Strengths

The following strengths were demonstrated:

Strength 1: Recognition by RITN facilities that incremental/scaled activation of a command group was necessitated by the events in the scenario. Additionally, RITN Centers included their BMT as subject matter experts as part of the initial notification.

Strength 2: Immediate identification that joint information center is the most effective manner to ensure the coordination of public messaging. Hospitals utilized Liaison Officers and PIOs to coordinate the messaging.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: RITN should consider the development of messaging templates/frequently asked questions that describe what a RITN center is and how they can be utilized in various radiation emergencies (e.g. industrial, RDD, or IND). These templates could be made available to the RITN centers and shared within their respective Coalitions.

Task Set 2 Observations: Preparations for Victim Receipt.

Command Group Decisions: The following are the main decisions considered by the activated command group based on the expectation of patient arrival within 48 hours across the seven participating RITN facilities:

- Activation of the full incident command group and place staff on 12-hour shifts and send staff home to sleep.
- Consideration of the current inpatient census given unknown casualty numbers.
- Activation of the continuity plans that include: cancelation of elective procedures, identification of current patients for discharge, and consideration of patient placement to increase total available capacity for triage and medical management.
- Initiation of secondary decontamination of arriving victims.
- Initiation of staff call back protocols.
- Assessment of current resource levels and needs over 48 hours, which include blood supplies, pharmaceuticals, and decontamination supplies and contact vendors for resupply.
- Operation of a family assistance center to address concerns of family members whose members have been transported via NDMS to a RITN facility.
- Initiate coordination with FCC for patient numbers for receipt along with the patient acuity.
- Augmentation of security in preparation for the receipt of these victims along with any accompanying family members.

Inpatient Accommodations: RITN facilities were mainly focused on creating space within their facilities to prepare for the medical surge. Most facilities indicated some level of assessments of their inpatient population to identify those for cohort (i.e. doubling up patients in rooms).

Coordination Efforts: The Liaison Officer would primarily be responsible for RITN facility coordination with local and state partners as well as the RITN Control Cell via the joint information center (JIC). Though an IND event, existing coordination protocols as part of emergency operations plans would be followed.

Messaging Content: The main components of staff messaging would be general situational awareness, the number of patients expected, and just in time training. Coordination of staff messaging with that of public messaging was stated to be equally important as provision of basic information on differentiating between radiation poisoning versus radiation contamination and staff handling/safety measures that would be taken. Videos and other RITN materials would heavily be relied upon. The main message conveyed to the inpatient population would focus largely on their safety and the quality of care would not be impacted by receipt of these victims. More specialized training required and developed by members of the BMT staff for those non-oncology staff.

RITN Control Cell – HCS Capacity Survey Summary: (n=6). In review of the HCS Matrix, participating facilities provided the following staffed bed count information for the following:

- Adult Hematology / Oncology
- Pediatric Hematology / Oncology

- Adult PACU – type
- Pediatrics PACU - type

The RITN Control Cell reported an increase in bed capacity likely attributed to emergency department decompression and possible transport (or discharge) of a percentage of the inpatient population. One of the main concerns is the availability of Filgrastim (dose is greater than or equal to 300 mcg). Following this event, the strategic national stockpile (SNS) would be in lock down and Filgrastim is not part of the push packs distributed. Filgrastim is a vendor-managed controlled substance and would be distributed based on guidance received by HHS. A final draft of victim referral guidelines has been developed and is under review, which provides guidance on the specific patient indicators necessitating referral to a RITN Center. Once approved, the guidance will establish a consistent level of referral guidelines across all RITN Centers.

Strengths

The following strengths were demonstrated:

Strength 1: RITN facilities provided a comprehensive listing of the primary decisions faced by their command group in preparation for victim receipt.

Strength 2: RITN facilities stressed the importance of providing staff and the patient population (in-patient and outpatient) the basic information and training to alleviate concerns and reinforcing the realistic aspects of radiation poisoning.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: Incorporate the victim referral guidelines into future RITN exercises. Consider the use of various patient indicators necessitating referral in exercise play.

Area for Improvement 2: Develop basic level radiation and medical surge education and training for non-oncology staff regarding a RITN Center and its role following a radiological event with an anticipated medical surge of victims to RITN Centers. For an immediate resource, much of this information can be found on the RITN web portal.

Task Set 3 Observations: 1st Wave of Medical Surge

Poll: Which statement best describes the level of awareness and training for your healthcare coalition on what's expected to respond to a RITN event? 80% of responding facilities indicated that awareness and training for the coalition is extremely high while 20% indicated that training is somewhat at a high level of awareness/training within your healthcare coalition to respond to a RITN event.

Following this second poll, an inject was presented for participant consideration regarding specific information of patients in the first wave of medical surge:

Inject: 1st Wave of Patients Arriving

- The following victims within these 3 categories have arrived at your facility within the last 8 hours.
- Pediatric hospitals assume all victims are pediatric.
- Facilities should assume 6 of the 15 victims requiring intensive inpatient supportive care will become marrow transplant candidates within 3 weeks.

Victims	Outpatient CBC monitoring	Intensive Inpatient Supportive Care	Marrow Transplant Candidates	Totals
0600 – 1000 hours	30	10	1	**41**
1000 – 1400 hours	13	5	3	**21**
Totals	43	15	4	**62**

- **Each RITN facility should expect a second wave of victims over the next 16 hours.**

Command and Control: For those participating facilities that did not fully activate their incident command groups, they would do so at this point and add BMT subject matter expert.

Initial Medical Management: Given the scenario events, RITN centers would be relying on their healthcare coalitions – not in the management of the victims, but to receive patients identified for transport during facility decompression as well as to augment needed resources and staffing. All lower acuity patients would be sent to local (or regional) healthcare partners based on symptoms, white blood cell count and other laboratory testing. Patients' radiation dose levels will be estimated based on gastrointestinal symptoms and lymphocyte count. All patients will initially be stabilized with supportive care implementation including hydration, transfusions with irradiated blood products, GCSF, and antibiotics. Further, victims estimated to have received > 7Gy will be eligible for allogeneic transplant. Victims who received > 4Gy will be eligible for myeloid progenitor cell infusions. Patients with ANC < 500 will be administered antifungal prophylaxis.

RITN facilities stated activation of their decontamination teams and would conduct tertiary surveys for embedded radiation. Alternate care sites would be quickly identified and set-up in order to separate the 43 outpatient victims from the emergency department. The main challenges discussed were resources (additional equipment and materials for HLA typing) and care and management for the pediatric victims.

Victims Requiring Transplant: For those victims requiring transplant, all facilities stated existing capability to accommodate these numbers of transplantation patients. Facilities indicated that current standards of care would be followed for CBC monitoring and treatment along with HLA typing all transplant candidates and all eligible siblings. Subsequently, a NMDP search would be conducted along with a resource and pharmaceutical assessment to determine shortages and plans to initiate re-supply. The American Red Cross would be contacted to support identification of siblings in the disaster area for blood typing and crossing and all donors would be bought to the RITN facility; though no discussion on transporting donors occurred.

BMT: For the four participating RITN facilities, all members of their BMT are currently internal and their time to respond was stated as being brief (no specific time was provided).

Patient Tracking: With the exception of one RITN Center, all other facilities would use their existing patient tracking systems. One of the RITN Centers currently trains on JPATS and can seamlessly incorporate its use for patient tracking of the NDMS victims.

Strengths

The following strengths demonstrated:

Strength 1: RITN facilities demonstrated the coordination necessary as well as the planning needed to medically manage the first wave of victims including those requiring transplantation.

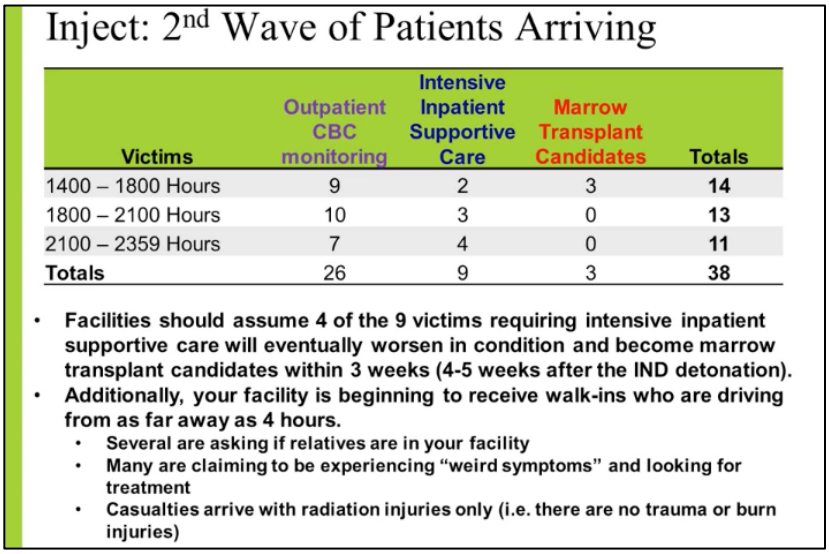
Areas for Improvement

The following areas require improvement:

Area for Improvement 1: None.

Task Set 4 Observations: 2nd Wave Medical Surge.

An inject was presented for participant consideration regarding specific information of patients in the second wave of medical surge:



Inject: 2nd Wave of Patients Arriving

Victims	Outpatient CBC monitoring	Intensive Inpatient Supportive Care	Marrow Transplant Candidates	Totals
1400 – 1800 Hours	9	2	3	**14**
1800 – 2100 Hours	10	3	0	**13**
2100 – 2359 Hours	7	4	0	**11**
Totals	26	9	3	**38**

- **Facilities should assume 4 of the 9 victims requiring intensive inpatient supportive care will eventually worsen in condition and become marrow transplant candidates within 3 weeks (4-5 weeks after the IND detonation).**
- **Additionally, your facility is beginning to receive walk-ins who are driving from as far away as 4 hours.**
  - **Several are asking if relatives are in your facility**
  - **Many are claiming to be experiencing "weird symptoms" and looking for treatment**
  - **Casualties arrive with radiation injuries only (i.e. there are no trauma or burn injuries)**

Resource Shortages: With the second wave of victims arriving within hours of the first wave, RITN facilities discussed the following resources (medical and non-medical) as being in short supply or those that will become in short supply:

- Blood and blood products and blood testing supplies. Expanding collaboration with the ARC to begin regional blood drives.
- Pharmaceuticals. GCSF, GMCSF, cytokines, and antibiotics would quickly be needed. Additionally, IV supplies (tubing, saline) across all regional hospitals would become in short supply as healthcare coalition hospitals in addition to the RITN facilities are impacted by the victim surge – directly (RITN Center) and indirectly (receiving patients from RITN Center decompression and 'Yellow' and 'Green' tag victims).
- Transportation assets. Regional movement of patients and/or victims may require a large number of vehicles. Coordination with fire departments, private ambulance companies, para-transit companies, and other transportation assets through local EMA and healthcare coalitions was discussed as the mechanism by which these assets would be requested.

Staffing was not discussed as part of the resource shortages likely experienced by these RITN Centers given the scenario at this point in time.

Role of Healthcare Coalitions in Patient Discharge: As stated above, the healthcare coalitions would be contacted to provide assistance for patient and/or victim transport to regional facilities. Overall, RITN Center would coordinate emergency department decompression and subsequent patient discharges to local facilities according to existing plans and protocols of the healthcare coalitions.

Cancer Centers and Pediatric Hospitals: Cancer centers and pediatric hospital roles would be as subject matter experts and follow up care in support of the RITN facility response. Specifically,

cancer centers would have an integral involvement in performing and managing blood transfusions as well as ongoing patient monitoring.

Several of the participating RITN Centers are part of larger health systems, such academic medical centers. As such, these larger health systems have affiliations, ownership, or other operating agreements with a pediatric hospital, which in turn, have a complete, staffed pediatric oncology unit. RITN Centers would coordinate medical management as needed with their local pediatric hospital.

Messaging for Relatives: Facilities that are Level 1 trauma centers routinely develop and disseminate worried-well messaging as they are one of the first entities contact by families searching for their loved ones. Additionally, the ARC would be coordinating with the RITN Center regarding family reunification.

Worried-Well Messaging: Many RITN Centers indicated a responsibility to provide some level of basic screening (even if it is a verbal screening) for the worried-well that do present at the Center. Generally, the PIO and Liaison Officer would be coordinating with healthcare coalitions and local emergency management agencies to quickly disseminate a cohesive message stressing that the public does not present to the emergency department as well as basic radiation versus contamination information.

Strengths

The following strengths demonstrated:

Strength 1: RITN facilities demonstrated a realistic assessment of the resource shortages they would face as the second wave of victims arrives at their facility.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: RITN centers and centers representing a variety of U.S. regions should collectively address and strategize for acquisition and allotment of additional pharmaceutical resources expected in an IND incident. While some of these pharmaceuticals could potentially exist in the SNS, distribution to multiple cities receiving NDMS patients could prove problematic. Private sources for these medications may be a good place to start.

CONCLUSION

This report augments existing planning/training/exercising programs related to hospital response to two waves of medical surge of victims exposed to harmful levels of radiation following an IND detonation. The strengths validate well-established aspects of the plans while the opportunities for improvement provide information to enhance, refine, or improve existing plans and systems. The exercise planning team developed detailed objectives and evaluation criteria to ensure that the most critical needs to medically manage 100 victims with radiological poisoning across their region. It is anticipated that the improvement plan will be incorporated into the efforts of each participating hospital 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. These are not in any particular order and are provided unedited to avoid intent changes.

During the participant hot wash and online feedback (See Appendix C), several strengths were identified, including:

- *RITN Centers demonstrated consistent response actions based on the scenario information and medical surge information regarding incident command, triage, treatment, and placement of victims, and coordination of resources.*
- *Participating centers demonstrated good working relationships with their Coalition partners.*
- *Participating centers demonstrated the importance of educating their communities as well as sharing information with them on radiation safety and impacts, the RITN Program, safety and security of both hospital patients as well as the community at-large.*

Some immediate recommendations for improvement were identified, including:

- *Vendor co-dependency and the strain on the pharmaceutical supply chain is a significant challenge given the specialty medical care and management needed of victims following an IND detonation.*
- *Regarding medical surge, more emphasis on the clinical aspects of the victims/patients is needed to more fully stress the incident command decision-making on the triage, treatment, and placement of victims.*

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN facilities participating in the RITN Improvised Nuclear Device Tabletop Exercise conducted on May 29, 2014. RITN facilities 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

Participating Organizations	
Children's Hospital of Philadelphia	Donna Artis
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Department of Health and Human Services	Stephen Formanski
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University of Minnesota Health	Cindy Christen
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University of Minnesota Health	Catherine Watts
University of Minnesota Health	Molly Delaney
University of Minnesota Health	John Rogosheske
University of Minnesota Health	Diane Nalezny
University of Minnesota Health	Jessica Freitag
University of Minnesota Health	Dan Mathieu
University of Minnesota Health	Marcia Thibodo
University of Minnesota Health	Michelle Ray
University of Minnesota Health	Crystal Peck

Positions Activated for the Exercise

Position	CHOP/HUP (PA)	Duke (NC)	UAMC	UCSF - Benioff	Univ. MN - Fairview	Western PA Cancer Inst.
RITN Medical Director	X	X	X	X	X	
RITN Primary Coordinator	X	X	X	X	X	X
RITN Alternate Coordinator	X	X	X	X	X	X
Additional physician(s)	X		X			X
Nursing staff	X	X			X	X
Admission process representative	X					X
Administrator/hospital executive		X	X			X
Emergency management staff	X	X	X	X	X	X
Pharmacy staff member	X	X			X	X
Radiation safety officer/Health physicist	X	X		X		X
Social services representative	X		X			
Psychiatry/psychology representative	X				X	
Blood center representative	X				X	
Emergency department representative	X					X
Quality representative	X				X	X
Regulatory representative	X				X	X
Infectious disease specialist						
Cell processing lab representative					X	X
Environmental health and safety representative		X		X	X	
Ethicist						
Burn center representative						X
Public information representative	X				X	
VA/NDMS representative		X	X			
Public Health representative	X		X			
County/city/state emergency manager	X	X	X			
Poison control center representative			X			
Healthcare coalition representative	X		X			

APPENDIX C: PARTICIPANT FEEDBACK

RITN Centers were asked to provide some brief feedback on an online questionnaire following the exercise. There were four questions asked with related responses are included below.

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.	
CHOP/HUP	*Systems are in place to handle the mass emergency.*
Duke	*Very good coordination with FCC staff and well defined process for receiving generic mass casualty patients from receiving center to ED and processing them into the system. There were not major alterations to this planning anticipated with the caveat that primary and secondary radiation surveys and decontamination would have already been performed.*
UAMC	*Numerous external partners participated including our County EOC, the FCC coordinator, the Health Department, Poison Control Center, among others. This exercise allowed these others that would be involved in a radiation response to have a much clearer picture of how we will coordinate a "community" response to this influx of patients. Everyone generated ideas for how to improve follow up lab testing and care of the outpatients without having to overburden the Cancer Center Clinic, lose patients that may be triaged to other hospitals at the NDMS Reception site initially and then released to outpatient care from those hospitals and coordinate with the NDMS SAT Team.*
UCSF – Benioff	*Staff knowledge of disaster preparedness training; ability to collaborate with other centers.*
Univ. MN - Fairview	*Ability to communicate and coordinate. High level of medical expertise, including experience with cord blood transplant as a more readily available donor source.*
Western PA Cancer Institute	*We are a part of the health care coalition. Our system has many affiliated hospital. We would be able to absorb many victims.*

Based on discussions today, please briefly describe 1 or 2 challenges to respond to a radiation mass casualty incident as described in this scenario.	
CHOP/HUP	*What we didn't get from the conference is actually the medical issues surrounding triage, treatment, sorting/classifying patients – etc. we think it would be very important for the medical members (MD, NP, RN, pharmacist, etc) - to spend time doing exercises (may be a review for some) like: how to figure out a patient's radiation exposure, how to decide who needs supportive care and monitoring, and who needs transplants. If our team were called in, not sure we could uniformly agree who needs what.*
Duke	*It is anticipated that managing communications to the public will be extremely difficult given the multitude of news outlets and social media channels. Getting the "official message" heard and understood will be a challenge. As always, there are many concerns about support staff refusing to show up for work in this sort of situation.*
UAMC	*Coordinating and disseminating the staff, patient and public messaging at the right time under this type of a patient movement into our community. Finding beds for all the patients and attendants that may be arriving with them will be a challenge. It may vary from community to community whether the Red Cross will coordinate family reunification and communication anymore. Most communities are now developing Reunification Plans and all the hospitals in AZ are putting in place Family Centers for MCIs now.*
UCSF – Benioff	*Supplies and bed space.*
Univ. MN - Fairview	*No pre-scripted public information or patient information around radiation, RITN Divided campus (pediatrics and adult hospital) and how to support separating patient-families, communication with other hospitals to support patient triage and when to send back to our center*
Western PA Cancer Institute	*The biggest challenge will be public fear, and response to it. We need to revise our emergency preparedness SOP and our RITN SOP to include topics not previously covered.*

What are some of the unique considerations that should be considered for further planning between your RITN facility and Healthcare Coalitions to collectively respond to a radiation mass casualty incident?	
CHOP/HUP	*While psychosocial considerations are certainly not primary in the case of such an event but we can make processes work more smoothly and reduce the risk for developing post-traumatic stress for patients and staff. Yet, the issues are marginalized at times. (For example, the idea was put out there that staff may be challenged to function in their roles because they fear for their families at home but this was addressed by stating that staff would get announcements through the CDC OR we were told that patients would come without ID but then later told a parent would accompany every child—the issue of unaccompanied children is significant. And no one addressed how to manage the FBI in terms of children being evidence.) Thus, it was considered how to address in future exercises. One thought is to start discussion by giving each discipline (or group responsible for various aspects of the response) a chance to confer about what we need to consider/address at each point in the process and then report out to the larger group about our role/considerations. This would allow us to share our ideas/expertise with each other and then with the larger group. Also, if they take comments from 3 groups, it would be helpful to have the other ideas scrolling on the presentation. Finally, is there a debrief where the team collates all the information from the various sites and creates a framework or blueprint for appropriate response?*
Duke	*In our case, it may be useful to plan a joint exercise with the two other RITN centers in the area (UNC and WFU). At a minimum we should probably try to do a tabletop together.*
UAMC	*Tucson's tier 1 hospitals have all been members of NDMS for at least 30+ years but only UAMC has been a member of RITN so expanding both the hospitals' and the rest of the Healthcare Coalition's membership and the regional Communities' and Counties' EOC members is our*

	challenge.
Univ. MN - Fairview	*EPIC electronic communication of patient information between hospitals in the area of education and awareness.*
Western PA Cancer Institute	*More transparency between our facility and coalitions are needed, however in-services have been done in the past to educate coalitions.*

List and briefly describe elements to address for future RITN exercises.	
CHOP/HUP	*Clinical team felt like the tone of part of the discussion was "You'll handle that, because that's what you do well.", but I don't think we are at all prepared to handle it in an organized way. We imagine there would also be the need to fairly quickly ascertain whether our plans are in alignment with other organizations that are taking care of a similar victim population.*
Duke	*The web format was generally well received by the attendees at our center. If there was a way to keep the chat window open on the side or at the bottom of the screen at all times so we could see more of the back and forth and answers from the other centers, that would be nice. That may have been a possibility and we just didn't have our screen set up properly, but it could probably set up to display that way automatically.*
UAMC	*We thought it would be a good idea to have a series of exercises that cover the reception aspect then go on to cover the documentation for both NDMS and RITN that will need to be completed and then how we return these patients through NDMS to their home locations if that would even be possible. Also coordination of supplies and pharmaceuticals through the PCCs, local stockpiles, supply chains and SNS.*
UCSF – Benioff	*Shorten the exercise to allow more staff to participate. It is too long of a time for most staff to commit to and we would like to involve more people.*

Univ. MN - Fairview	*Behavioral patient surge are also impacted by radiation incident. Security issues. Suggest broader sharing of plans across RITN centers such as public announcements, guidelines, basic patient and staff education.*
Western PA Cancer Institute	*This exercise was helpful, however due to time constraints and involving all of the required departments we would suggest making the exercise of shorter duration. Possibly have the RITN centers have a "pre-drill" meeting to answer questions, then have the actual drill occur in a shorter time period.*

Lastly, the centers were asked to rate the usefulness of the exercise.

On a scale of 1-5 (1 ranking not useful and all and 5 ranking very useful), the responses rated an average of **4.6** (very useful).

APPENDIX D: ACRONYMS

Acronym	Meaning
AAR	After Action Report
ARC	American Red Cross
BMT	Bone Marrow Transplant
CDC	U.S. Centers for Disease Control
ED	Emergency Department
EMA	Emergency Management Agency
FCC	Federal Coordinating Center
GCSF	Granulite Colony-Stimulating Factor
GMCSF	Granulite Macrophage Colony-Stimulating Factor
HHS	U.S. Department of Health and Human Services
HLA	Human Leukocyte Antigen
ICS	Incident Command System
IND	Improvised Nuclear Device
JIC	Joint Information Center
JIS	Joint Information System
JPAT	Joint Patient Assessment and Tracking
mcg	Microgram
NDMS	National Disaster Medical System
NMDP	U.S. National Marrow Donor Program
PCC	Poison Control Center
PPE	Personal Protective Equipment
PIO	Public Information Officer
RITN	Radiation Injury Treatment Network
SNS	Strategic National Stockpile
SitRep	Situational Report
USN	United States Navy
VA	Veterans Administration