2022

# RITN Tabletop Exercise (TTX) After-Action Report/Improvement Plan Laboratory Surge

**Exercise Date: August 25, 2022**

# EXERCISE OVERVIEW

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| **Exercise Name** | 2022 RITN Tabletop Exercise (TTX) |
| **Exercise Date** | August 25, 2022 |
| **Scope** | This exercise is a distance-based tabletop exercise planned for 1 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** | Healthcare and Medical Response Coordination<br>Medical Surge |
| **Objective** | **Objective 1:** RITN hospital staff can assess the ability of their laboratories to handle a surge in demand for complete blood counts with differential, comprehensive metabolic panels, and coagulation parameters.<br>**Objective 2:** RITN hospital staff can identify staff, equipment, and other resource needs to include supply chain disruptions.<br>**Objective 3:** RITN hospital staff can identify medical toxicology resources available and discuss coordination between the hospital and local poison center.<br>**Objective 4:** Assess the ability of the blood bank to meet the increase in demand for blood products. |
| **Hazard** | Radiological |
| **Scenario** | Medical surge from a distant radiological incident |
| **Sponsor** | Radiation Injury Treatment Network® (RITN)<br>National Marrow Donor Program (NMDP)<br>Office of Naval Research (ONR) |
| **Participating Organizations** | Avera McKennan Hospital & University Health Center (Sioux Falls, SD)<br>Dana Farber Cancer Institute (Boston, MA)<br>LDS Hospital Intermountain Healthcare (Salt Lake City, UT)<br>Mount Sinai Hospital (New York, NY)<br>Nebraska Medicine (Omaha, NE)<br>Orlando Regional Medical Center (Orlando, FL)<br>Texas Children's Hospital (Houston, TX)<br>University of California- San Francisco Benioff Children's Hospital (San Francisco, CA) |

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| | University of Iowa Hospital (Iowa City, IA)<br>University of Maryland – Greenebaum Comprehensive Cancer Center (Baltimore, MD)<br>University of Minnesota (Minneapolis, MN)<br>University of Utah Hospital (Salt Lake City, UT) |
| **Point of Contact** | RITN Control Cell<br>RITN@NMDP.ORG<br>(612) 884-8276 |

# EXERCISE SUMMARY

On August 25, 2022, RITN centers and the RITN Control Cell participated in an online tabletop exercise to describe coordination of the laboratory and outpatient surge response as well as information sharing, data systems, and supply chain disruptions following a distant radiological event. 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:

**Exercise Scenario**

- A 10-kiloton Improvised Nuclear Device (IND) was detonated in an urban area approximately 250 miles away from your facility. No threat of fallout and no utility interruptions.
- It is expected that a large number of people with mild to moderate trauma and those seeking evaluation for radiation exposure will self-evacuate to seek medical attention.
- Poison Control Centers (PCCs) throughout the country begin receiving large volumes of calls from people that were in the fallout zone.
- It is necessary to set up a receiving area for the outpatients and perform daily blood counts (i.e., CBCs collected and analyzed once per 24 hours).

**Scenario Update**

- Approximately 1,800 radiation victims have arrived in the local area, mostly self-evacuating. More expected over the next week. They require initial evaluation and blood tests; daily testing will need to occur for at least 2 weeks for many of them.
- In addition to the outpatients, approximately 500 samples are arriving daily to your laboratory for analysis from overwhelmed shelter locations closer to the blast site resulting in a total daily sample load that is nearly double the routine daily average.
- Due to the unprecedented detonation of an IND, transport of goods has been significantly slowed as inspections are increased at airports and along roadways within the U.S.
- There is a significant demand for blood products both in the immediate area and throughout the region where acute radiation injury patients are being housed. Trauma patients are also impacting total blood supplies. Volunteer donations have increased.

# ANALYSIS OF CAPABILITIES

## Exercise Discussion Module 1: Preparing for a Surge

Participants were tasked with responding to a series of questions at their individual facility then reporting out to the group on capabilities and actions. During the first module, two poll questions were asked of the group:

1. Does a laboratory surge plan exist for radiological incidents? **69% yes**
2. Is the local/state PCC included in RITN planning efforts? **50% yes** *(note: this response does not match survey data entered post-exercise)*

Laboratory and Outpatient Surge

Facilities indicated that incident command would be established and then augmented with subject matter experts (e.g., laboratory, hematology, oncology, blood bank, radiation safety) given the radiological scenario. Communications with local, state, and federal partners regarding the surge response would follow established procedures and be coordinated through incident command. The objective for an incident that occurred in another state would be to share and partner for resources.

Most hospital laboratory staff receive radiation training, often comprised of general radiation safety and does not include details specific to a RITN response (i.e., precautions for samples and patients). One facility has had laboratory staff review the RITN videos which others took as a recommended action, but there still would need to be communications and reassurance from a risk standpoint especially for staff working on the frontline. Training focused on a radiation emergency, testing expectations, specimen handling, and proper disposal would benefit most participating hospital laboratories.

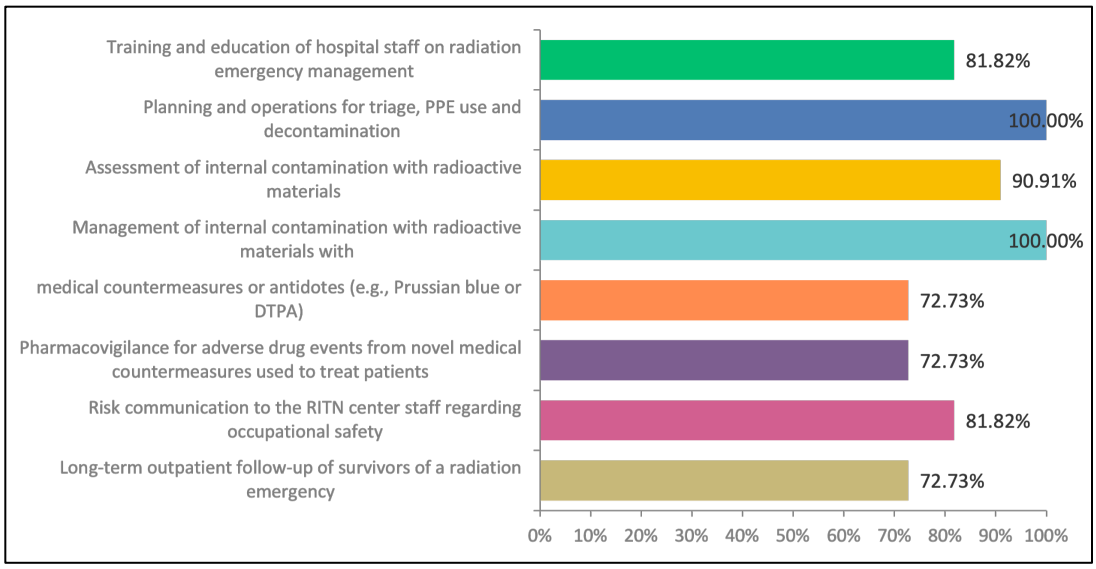
Nearly all participating RITN hospitals (85%) would offer telephonic consultation to the extent there was bandwidth to support it. It is anticipated that BMT physicians would have limited availability to respond to Acute Radiation Syndrome (ARS) questions due to the demand at the hospitals for their skills.

Medical Toxicologist and Poison Control Center Coordination

Hospitals were asked about the role of a medical toxicologist as it relates to RITN response plans. For example, to support activities such as training and education, triage plans and operations, the use of PPE, decontamination, assessment and management of internal contamination, long term follow up of outpatients, adverse drug events, and risk communication.

Less than half (47%) of participating hospitals stated that they have at least one medical toxicologist available that could support a RITN response. However, 63% of hospitals indicated that the medical toxicologist is not integrated into the RITN planning efforts. Hospitals primarily rely upon the Radiation Safety Officer (RSO) who has expertise in radiation toxicology. The functional response role that hospitals felt their medical toxicologist could take in a RITN response are outlined in Figure 1 below; most frequently mentioned were triage, PPE use, decontamination and management of internal contamination. In addition to the survey options, the medical toxicologist role would be beneficial in coordinating with public health, local coalitions, and making requests to the Strategic National Stockpile (SNS).

**Figure 1.**




Only 15% of hospitals had included the PCC in RITN planning efforts and only one facility had shared the RITN referral guidelines with the PCC. However, 75% would be willing to use the PCC as a call center to facilitate radiation injury consultations. The University of Iowa signed an MOU with the PCC to credential and support five additional medical toxicologists. While relationships with the PCCs were demonstrated, the formalized process for sharing RITN guidelines and directing patients to the appropriate level of care requires more attention.

Laboratory Staff, Supplies, and Equipment

For surge supplies and reagents, hospitals would rely on nearby or affiliated hospitals for resource needs to include from non-RITN hospitals. Blood collection supplies (tubes, needles, syringes, plastics) would be of biggest concern. It was noted that resource requests may need to be escalated to the state or federal level though still a national shortage may be anticipated.

In general, RITN hospital laboratories have planned for surge testing responses especially after the COVID-19 pandemic. Actions would include modifying or augmenting staffing plans, reducing non-vital testing to surge toward this response and determine a prioritization strategy for sample testing. In addition, hospital campus' or networks have the ability to move around both staff and/or samples to maximize the ability to process samples as well as contracts with reference laboratories.

### Strengths

The following strengths were demonstrated:

**Strength 1:** Over two-thirds (69%) of participating hospitals have a laboratory surge plan in place that includes a radiation incident.

**Strength 2:** Hospitals are familiar with emergency response plans to request staff and supply resources from affiliated organizations or to escalate the request to the healthcare coalition or state level following established protocols.

**Strength 3:** Hospitals have experience with laboratory surge including supplies and staffing following the COVID-19 pandemic and have strengthened relationships with local partners for resource sharing; with vendors for procurement.

**Strength 4:** A best practice of requiring hospital laboratory personnel to review the RITN videos was recognized. RITN hospitals should encourage laboratory leadership to require staff to review the RITN videos to augment training and prepare for this type of radiation response.

### Areas for Improvement

The following areas require improvement:

**Area for Improvement 1:** RITN hospitals should strengthen/expand their relationship with PCCs, in particular to support for a radiation incident and sharing the RITN referral guidelines to help with phone consultation. Participation in future exercises is also recommended.

**Area for Improvement 2:** More formally integrate medical toxicologists into the RITN planning efforts, for example to support PPE, triage, decontamination, and administration of medical countermeasures.

**Area for Improvement 3:** Consider contacting non-RITN hospitals for supplies or laboratory testing support as they may be less overwhelmed and/or not immediately pulled into the response for a radiation incident.

**Area for Improvement 4:** Consider augmenting laboratory radiation safety training with details specific to a RITN response, such as the estimated number of specimens, test types, and timelines. This should include a review of the RITN training videos.

**Area for Improvement 5:** Ensure response team members at the RITN hospitals are familiar with the RITN referral guidelines; an understanding will ensure it is shared with external partners (e.g., PCC) as appropriate.

## Exercise Discussion Module 2: Laboratory Testing, Result Reporting and Assessment of Blood Products

This module focused on the patient arrival and need for laboratory testing, data tracking, and blood products. As above, participating hospitals were given a set of questions to respond to.

Blood Collection and Data Tracking of Results

RITN hospitals indicated having plans in place to support outpatient blood draws and have routinely exercised these operations such as closing outpatient phlebotomy facilities and moving those staff into a tent or designated area for outpatient blood draws. Nursing resources would also be allocated to the response. Blood draws would need to be staggered throughout the day to allow time for the laboratory to process samples; time to result is expected to be impacted due to the volume of samples.

One facility stated that disaster medical record numbers would be assigned to outpatients arriving to the area for care; close collaboration with the admissions/registration department would be required to create the patient records and test orders. COVID-19 experience would be replicated to set up outpatient testing facilities to include the Information Technology (IT) department bringing computers and ensuring wi-fi access to those areas. Internal communication platforms would be used to maintain communications with staff working in the outpatient tents.

Electronic Health Record (EHR) systems such as Epic were cited by participants as to how tests would be ordered and reported, if the outpatient location was not part of the EHR then results would be phoned or faxed to the designated physician.

Increased Testing Demand Capabilities and Challenges

Hospitals would rely on other clinical labs within their organization or network to prioritize this testing with staff, supplies, and space available in addition to leveraging research laboratories to support emergencies. Partnerships amongst hospitals/coalitions that were formed or strengthened during the COVID-19 pandemic testing response are valuable but must be maintained. The use of research laboratories has barriers such as the Clinical Laboratory Improvement Amendments (CLIA) certification process required by laboratories to perform testing on humans. It would require an emergency declaration to get those laboratories operational quickly.

Most responding hospitals have a 2-4 week supply of reagents and other consumables for blood draws and laboratory testing. Laboratory equipment is capable of increasing volume for the exercise scenario testing volume estimates; the limitation would be staff and supplies.

In general, participating RITN hospitals felt confident that they would be able to handle the sample volume. The majority were able to quantify the number of surge samples that could be processed per day, ranging from several thousand to over 10,000. While it would be possible to perform the high throughput testing, it was recognized that staff retention times for a prolonged demand. Hospitals were less certain about manual processing though some indicated this was done routinely with multiple shifts trained or could describe estimated throughput in this scenario. Other hospitals would send samples to another laboratory (e.g., hospital, private diagnostic laboratory) in lieu of performing manual flow cytometry.

Samples would be prioritized for testing through decisions made by the HICS Operations Section in coordination with the laboratory leadership. Routine tests (where possible) would be deferred in order to increase capacity for hematology, clinical chemistry, and coagulation tests.

Blood Products

Hospitals would notify primary and secondary blood suppliers to obtain blood product resources from other areas. HICS would help coordinate which spaces or partner locations to use for blood donations. Staff shifts would be extended but identification of additional staff (e.g., phlebotomists) would be necessary. The American Red Cross would be a key partner to increase blood supply. RITN hospitals have the ability to irradiate blood onsite, but also can request that it be irradiated by the supplier/blood bank prior to delivery.

HLA Typing

HLA typing determinations are performed by the medical team using established criteria. In the case of one hospital where all HLA typing is outsourced, outpatient buccal swabs would be sent to private diagnostic laboratories for testing. It varied across the participating RITN hospitals as to whether the internal lab performed HLA typing or if it was sent to another laboratory.

Archiving samples for future HLA typing was not discussed in this exercise.

**Strengths**

The following strengths were demonstrated:

**Strength 1:** Hospitals would leverage models developed during the COVID-19 pandemic to respond to the surge in outpatient blood collection such as transitioning staff, drawing upon relationships with other hospitals and private diagnostic laboratories to augment sample collection, transport, and testing.

**Strength 2:** Hospitals have protocols in place to expedite priority samples for testing; these would just need to be modified for the criteria related to radiation injury patient condition. There are processes to both triage priority samples and reverse triage to deprioritize certain tests.

**Strength 3:** Participating hospitals recognized the need to stagger blood donations in order to maintain a steady supply for weeks to months.

**Strength 4:** In general, hospitals felt confident that they would be able to process the anticipated sample volume especially if staff and supplies could be identified through vendors or partner organizations.

### Areas for Improvement

The following areas require improvement:

**Area for Improvement 1:** Use this planning scenario to consider methods for how results would be reported to the hospital physician in outpatient settings that are not on an electronic health record system. This can include IT solutions or manual processes.

**Area for Improvement 2:** A better understanding or plan of what the outpatient shelters will entail will help with determining procedures for result sharing both with physicians and the patients.

**Area for Improvement 3:** Staffing to support an increase in outpatient blood collection and sample tracking is expected to be a challenge. Using this scenario, continue to evaluate how to augment staffing for this purpose.

**Area for Improvement 4:** While partnerships with independent laboratories (e.g., Labcorp) exist, it may be valuable to discuss specific attributes of a radiation emergency and outpatient testing response with these partner labs.

**Area for Improvement 5:** Hospitals did not discuss archiving patient blood samples for possible future HLA typing. If space permits, it may be valuable to do so for a certain period of time (e.g., 3 months, 6 months) in case the patient condition deteriorates, requiring transplant.

**Area for Improvement 6:** It was not clear to hospitals what resources would be available from the SNS for a radiological response that required mass testing volume, for example blood drawing supplies and laboratory reagents. This should be further evaluated and information provided back to hospitals for planning purposes.

**Area for Improvement 7:** The ability of research laboratories to pivot to support emergency surge testing is an opportunity, but further investigation into emergency declarations that can accredit laboratories more quickly for human specimen testing is needed.

# APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2022 RITN Tabletop Exercise conducted on August 25, 2022. RITN centers can utilize this table to organize the opportunities for improvement to augment and develop their own corrective actions. The improvement plan is intended to strengthen the response of RITN hospital core capabilities identified in this report.

| 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] | | | | | |
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[1] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

# APPENDIX B: EXERCISE PARTICIPANTS

| Participating Organizations | |
|---|---|
| Avera McKennan Hospital & University Health Center | Lacey Roberts |
| Avera McKennan Hospital & University Health Center | Rochelle Rentschler |
| Avera McKennan Hospital & University Health Center | Kevin Schlosser |
| Avera McKennan Hospital & University Health Center | Lori Popkes |
| Avera McKennan Hospital & University Health Center | Jill Casanova |
| Avera McKennan Hospital & University Health Center | Chad Bare |
| Avera McKennan Hospital & University Health Center | Michael Douglass |
| Avera McKennan Hospital & University Health Center | Stesha Oltmanns |
| Avera McKennan Hospital & University Health Center | Denise Haisch |
| Avera McKennan Hospital & University Health Center | Amy Boyd |
| Avera McKennan Hospital & University Health Center | Leslie Cooper |
| Avera McKennan Hospital & University Health Center | Dawn Ver Hoeven |
| Avera McKennan Hospital & University Health Center | Alexis Crisp |
| Avera McKennan Hospital & University Health Center | Kenneth Versteeg |
| Avera McKennan Hospital & University Health Center | Mary James |
| Avera McKennan Hospital & University Health Center | Ashley Van Hill |
| Avera McKennan Hospital & University Health Center | Trisha Laake |
| Avera McKennan Hospital & University Health Center | Mary Hennings Frank |
| Avera McKennan Hospital & University Health Center | Traci Hollingshead |
| Avera McKennan Hospital & University Health Center | Sheena Lewis |
| Avera McKennan Hospital & University Health Center | Sarah Kappel |
| Avera McKennan Hospital & University Health Center | Mary Thompson |
| Avera McKennan Hospital & University Health Center | Jake Iversen |
| Avera McKennan Hospital & University Health Center | Lisa Pierson |
| Avera McKennan Hospital & University Health Center | Sherrie Dietrich |
| Avera McKennan Hospital & University Health Center | Tim Auch |
| Avera McKennan Hospital & University Health Center | Sam Allen |
| Avera McKennan Hospital & University Health Center | Ryan Waybright |
| Avera McKennan Hospital & University Health Center | Kaitlin Thomas |
| Avera McKennan Hospital & University Health Center | Melanie Wilmar |
| Avera McKennan Hospital & University Health Center | Heather Fox |
| Avera McKennan Hospital & University Health Center | Carol Taylor |
| Avera McKennan Hospital & University Health Center | Steven Ellen |
| Avera McKennan Hospital & University Health Center | Brianna Nielsen |
| Avera McKennan Hospital & University Health Center | Regan Smith |

| Participating Organizations | |
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| Avera McKennan Hospital & University Health Center | Jason Gearman |
| Avera McKennan Hospital & University Health Center | Mikal Zere |
| Avera McKennan Hospital & University Health Center | Matthew Van Voorhis |
| Avera McKennan Hospital & University Health Center | Jacob Lebin |
| Avera McKennan Hospital & University Health Center | Jeff Kaufman |
| Avera McKennan Hospital & University Health Center | Josh Lomb |
| Dana Farber Cancer Institute | Abby Dunn |
| Dana Farber Cancer Institute | Jill Tierney |
| Dana Farber Cancer Institute | Nate Almeida |
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| LDS Hospital – Intermountain Healthcare | Erin Thompson |
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| LDS Hospital – Intermountain Healthcare | Brett Panhorst |
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| Mount Sinai Hospital | Rita Jakubowski |
| Mount Sinai Hospital | Yoon Choo |
| Mount Sinai Hospital | Raquel Franklin |
| Mount Sinai Hospital | Don Cardone |
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| Nebraska Medicine | Missy Kneiti |
| Nebraska Medicine | Nandi Bruns |
| Nebraska Medicine | Tom Strudl |
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| Nebraska Medicine | Kim Schmit-Pokorny |
| Nebraska Medicine | Valarie Dirsscoll |
| Nebraska Medicine | Diane Mack |
| Nebraska Medicine | Laurie Winkelbauer |
| Nebraska Medicine | Justin Watson |
| Nebraska Medicine | Brian White |
| Nebraska Medicine | Amber Johnston |
| Nebraska Medicine | Shelly Schwedhelm |

| Participating Organizations | |
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| Orlando Regional Medical Center | Eric Alberts |
| Orlando Regional Medical Center | Michael Moore |
| Orlando Regional Medical Center | Megan Smith |
| Orlando Regional Medical Center | Lourdes Miller |
| Orlando Regional Medical Center | Elizabeth Willis |
| Orlando Regional Medical Center | Miles Butler |
| Orlando Regional Medical Center | Yasser Khaled |
| Orlando Regional Medical Center | Lori Larson |
| Orlando Regional Medical Center | Yerika Quinones |
| Texas Children's Hospital | Bernadette Burttschell |
| Texas Children's Hospital | John Craddock |
| Texas Children's Hospital | Lisa Hensch |
| Texas Children's Hospital | Cristina Nordstrom |
| Texas Children's Hospital | Faheem Ali |
| Texas Children's Hospital (Baylor College of Medicine) | Stephen Harding |
| Texas Children's Hospital | Elisha Colvin |
| University of California – San Francisco Benioff Children's Hospital | Jennifer Check |
| University of California – San Francisco Benioff Children's Hospital | Brandon Holmes |
| University of California – San Francisco Benioff Children's Hospital | Francine Sneddon |
| University of California – San Francisco Benioff Children's Hospital | Michelle Heckle |
| University of California – San Francisco Benioff Children's Hospital | Sandhya Kharbanda |
| University of California – San Francisco Benioff Children's Hospital | Kevin Dugan |
| University of California – San Francisco Benioff Children's Hospital | Josh Nguyen |
| University of California – San Francisco Benioff Children's Hospital | Joanne Wong |
| University of California – San Francisco Benioff Children's Hospital | Reid Rosehill |
| University of California – San Francisco Benioff Children's Hospital | Terrina Yamamoto |
| University of California – San Francisco Benioff Children's Hospital | Matt Tooman |
| University of California – San Francisco Benioff Children's Hospital | Elizabet Lomeli |
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| Participating Organizations | |
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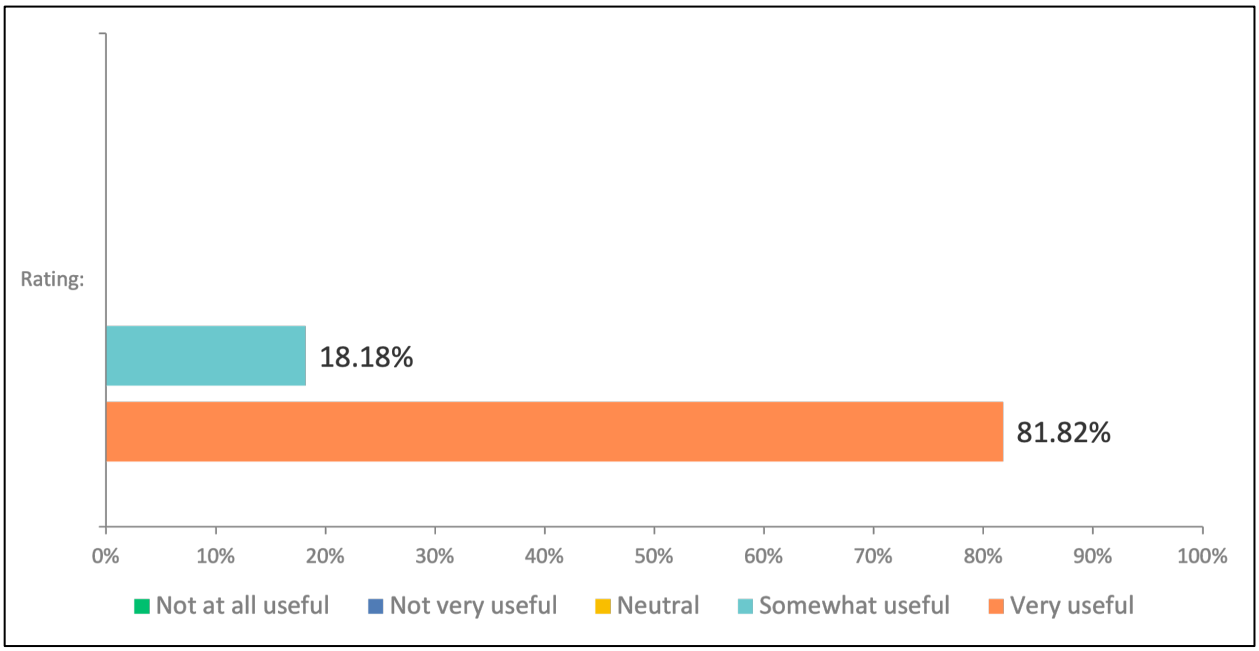
| University of Maryland – Greenebaum Cancer Center | Natali Gahrer |
| University of Maryland – Greenebaum Cancer Center | Linda Ridge |
| University of Maryland – Greenebaum Cancer Center | Syedwehdi Rizvi |
| University of Maryland – Greenebaum Cancer Center | Lauren Hearson |
| University of Maryland – Greenebaum Cancer Center | Debra Kukuruga |
| University of Maryland – Greenebaum Cancer Center | Marisol Deleon |
| University of Maryland – Greenebaum Cancer Center | Magali Fontaine |
| University of Maryland – Greenebaum Cancer Center | Kimberly Kearney |
| University of Maryland – Greenebaum Cancer Center | Justin Graves |
| University of Maryland – Greenebaum Cancer Center | Nathalie Waite |
| University of Maryland – Greenebaum Cancer Center | N. Disanthon |
| University of Maryland – Greenebaum Cancer Center | Joshua King |
| University of Maryland – Greenebaum Cancer Center | Guang Li |
| University of Maryland – Greenebaum Cancer Center | Pauleni Shi |
| University of Maryland – Greenebaum Cancer Center | Jean Yared |
| University of Maryland – Greenebaum Cancer Center | R.. Christenson |
| University of Maryland – Greenebaum Cancer Center | Tracy Douglas |
| University of Maryland – Greenebaum Cancer Center | Aaron Rapoput |
| University of Maryland – Greenebaum Cancer Center | Adrianne Webb |
| University of Maryland – Greenebaum Cancer Center | Kim Hankey |
| University of Maryland – Greenebaum Cancer Center | Jini Chang |
| University of Maryland – Greenebaum Cancer Center | Mark Smith |
| University of Maryland – Greenebaum Cancer Center | Rebecca Stecher |
| University of Maryland – Greenebaum Cancer Center | Tracy Douglas |
| University of Maryland – Greenebaum Cancer Center | Joseph Musialek |
| University of Minnesota | Ainy Saeed |
| University of Minnesota | Laura Fangel |
| University of Minnesota | Nathan Mohammed |
| University of Minnesota | Helen Brenny |
| University of Minnesota | Susan Barnett |
| University of Minnesota | Audrey Harrison |
| University of Utah Hospital | Kevin Windsor |
| University of Utah Hospital | Saad Rezai |
| University of Utah Hospital | Francesca Paglione |
| University of Utah Hospital | Cassidy Kotobalavu |
| University of Utah Hospital | LeAdelle Maez |

# APPENDIX C: PARTICIPANT FEEDBACK

RITN Centers were asked to provide feedback via an online questionnaire following the exercise. 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 regarding the usefulness of this exercise was 5.0 (out of 5.0). Number of responses = 11.**



# APPENDIX D: ACRONYMS

| Acronym | Term |
|---|---|
| AAR | After Action Report |
| ARC | American Red Cross |
| CBC | Complete Blood Count |
| CLIA | Clinical Laboratory Improvement Amendments |
| HLA | Human Leukocyte Antigens |
| ICS | Incident Command System |
| IND | Improvised Nuclear Device |
| NMDP | National Marrow Donor Program |
| NDMS | National Disaster Medical System |
| ONR | Office of Naval Research |
| PCC | Poison Control Center |
| RITN | Radiation Injury Treatment Network |
| RSO | Radiation Safety Officer |
| SNS | Strategic National Stockpile |
| TTX | Tabletop Exercise |