2024

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

Exercise Date: August 28, 2024
Report Date: September 17, 2024

EXERCISE OVERVIEW

Exercise Name	2024 RITN Tabletop Exercise (TTX)
Exercise Date	August 28, 2024
Scope	The exercise was a distance-based tabletop exercise scheduled for 2.5 hours. Exercise play was limited to RITN facilities to examine the response by RITN hospitals to accommodate patient surge and care to include identifying alternate care sites, and address crisis standards of care.
Mission Area(s)	Response
Capabilities	Medical Surge
Objective	**Objective 1:** RITN hospital staff can determine their hospital's capacity to accept a patient surge from a distant Improvised Nuclear Device (IND) detonation to include staff, space, and supplies. **Objective 2:** RITN hospitals identify alternate care sites that can be used for patient triage, screening, and treatment. **Objective 3:** RITN hospitals discuss the procedures for implementing Crisis Standards of Care (CSC) to include citing plans and expertise that would be leveraged and key decisions.
Hazard	Radiological
Scenario	Medical surge from a distant radiological incident
Sponsor	Radiation Injury Treatment Network® (RITN) Office of Naval Research (ONR)
Participating Organization	The Children's Mercy Hospital (Missouri) Boston Children's Cancer Center (Massachusetts) NYU Langone Medical Center (New York) Oklahoma University Medical Center & Children's Hospital (Oklahoma) Texas Children's Hospital (Texas) Medical University of South Carolina (South Carolina) University of Virginia Health System (Virginia) Dana Farber (Massachusetts) Primary Children's Medical Center (Utah) Dartmouth-Hitchcock Medical Center (New Hampshire)

	USCF Medical Center (California) Northwestern Memorial Hospital (Illinois)
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EXERCISE SUMMARY

On August 28, 2024, twelve Radiation Injury Treatment Network (RITN) centers participated in an online tabletop exercise (TTX) to determine their hospitals' capacity (e.g., staff, equipment, supplies) to receive inpatient and outpatient causalities through the National Medical Disaster System (NDMS) following a mass casualty 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 points illustrate the scenario events considered for participant discussion:

Exercise Scenario

- A 10-kiloton Improvised Nuclear Device (IND) was detonated in a major metropolitan area.
- The blast occurred at least 500 miles from your hospital and there is no concern of fallout affecting your location.
- RITN Control Cell staff begin to monitor the situation and start sending out daily Situation Reports (SitReps).
- Expect many people to arrive in the next week.
    - Those with mild to moderate trauma and those seeking evaluation for radiation exposure will self-evacuate to other metro areas.
    - Other patients experiencing radiation exposure will be evacuated in the coming days through the NDMS.

ANALYSIS OF CAPABILITIES

Module 1: Patient Surge Capacity

Exercise participants were tasked to complete the RITN Exercise Survey to compile their individual facility responses to exercise questions and capture any challenges experienced. Twelve (12) participating hospitals submitted their responses via the RITN Exercise Survey. Hospitals provided the following list of key initial actions they would undertake to prepare for patient surge:

- Activate Incident Command and Command Center;
- Assess supplies, staff, and available bed space;
- Brief staff and leadership, and conduct just-in-time training;
- Assess current census and cancel non-urgent procedures;
- Begin coordination with off-site alternate care sites (ACSs) and other hospital partners.

The majority of responding hospitals reported the ability to immediately receive an average of anywhere from 30-60 inpatients with the ability to accept more over time. The lowest reported number of inpatients that could be accepted by a hospital was zero and the highest reported number of inpatients that could be accepted by a hospital was 793. Hospitals would begin implementing changes immediately with full implementation of surge protocols anywhere from 12 hours to seven days with possible sustainment for several weeks, if needed, depending upon staffing, space, and supply limitations. Patients seeking elective surgery, ambulatory patients, and generally lower-acuity patients could be transferred or referred out to either facilities with existing agreements or to other facilities within hospitals' systems. Several hospitals also indicated that they would coordinate with other external partners to help direct patients to other healthcare locations. These partners included local health care coalitions (HCCs), state hospital associations, state scarce resource committee, and state surge group.

Hospitals reported the ability to monitor from 50 to more than 1,000 outpatients for radiation poisoning. Most hospitals indicated that an accurate estimate would be difficult to provide without first knowing the number of patients that could be transferred or discharged but generally would be able to support "quite a few" outpatients. Factors that would affect these numbers included available staffing, supplies, capacity, housing, and general census. Ten (10) of the 12 responding hospitals reported having a plan for large-scale, long-term complete blood count (CBC) collection from patients arriving from the area surrounding the scene.

The mental health of staff and patients would primarily be supported by internal resources such as Employee Assistance Programs (EAPs) for staff, peer support for staff, psychologists on staff, and social workers. The primary form of support that hospitals would provide to their healthcare coalitions would be subject matter expertise, especially regarding patient care, radiation in general, and information about psychological support/counseling.

Strengths

The following strengths were demonstrated:

Strength 1: All responding hospitals were able to identify either system-level facilities or facilities with existing agreements to direct patients/procedures to help facilitate decompression.

Strength 2: Ten (10) out of 12 responding hospitals reported having a plan for large-scale, long-term CBC collection from patients arriving from the area surrounding the scene.

Strength 3: All 12 responding hospitals outlined clear resources available to support staff and patient mental health.

Areas for Improvement

There were no identified improvement areas for this module.

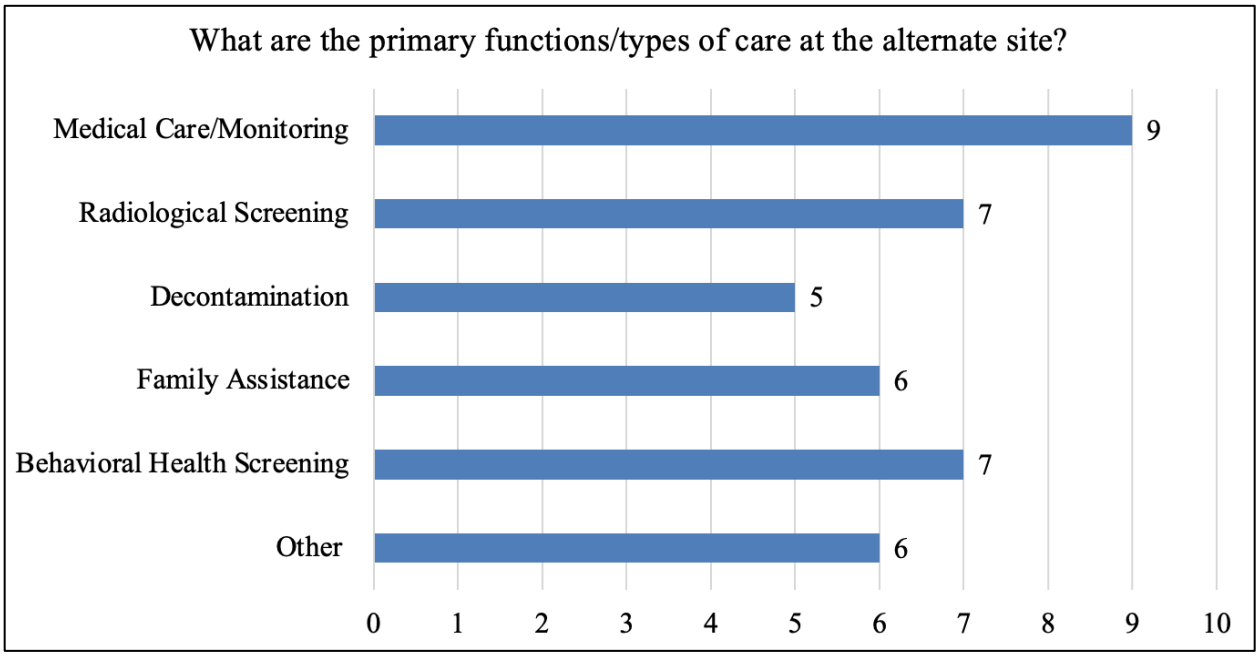
Module 2: Alternate Care Sites

This module focused on alternate care and the resources required to maintain alternate care sites including staff, physical space, and training.

Hospitals identified spaces either within or outside their facilities that could serve as ACS including internal spaces such as conference rooms, clinic spaces, and auditoriums, as well as external spaces including other system-level locations and even mobile field hospital tents set up outside the facility.

Adverse weather that is not considered extreme or severe would not greatly impact decisions. Some facilities indicated that their ACS are already located completely indoors, under cover, or that existing severe weather policies provide for extreme weather scenarios. The primary impact the weather could have would be on staff and patient transport/travel.

Below is a graphic illustrating the functions/types of care hospitals reported to be offered at ACSs:



"Other" functions that could be supported at ACSs include lab processing requests, transfusions, and outpatient care.

ACSs will be staffed by a combination of both internal staff such as from the resource/float pool, Emergency Department (ED) staff, and staff from all other clinical departments, if available.

Seven (7) hospitals would require the use of volunteers to staff an ACS while the other five hospitals either would not or were unsure if volunteers were required. Volunteers would be obtained from internal volunteer resources, medical school students, Medical Reserve Corps (MRC) members, or even state Health Departments. Just-in-time (JIT) training would primarily include education on radiation safety and orientation/introduction to the ACS space but would be dependent on the roles needed at an ACS. The majority of hospitals indicated that staffing ratios would be increased based on patient acuity and volume but would attempt to keep ratios within the safest ranges possible. The majority of hospitals also indicated that waivers would either be needed or would be requested. Waivers such as a Health Information Portability and Accountability Act (HIPAA) waiver, state licensing waivers, and 1135 waivers are examples of what may be needed. With adequate staffing, resources, and state support, ACSs could be sustained for more than two weeks with re-evaluations taking place regularly and with the understanding that patient care would most likely be impacted immediately.

Strengths

The following strengths were demonstrated:

Strength 1: Plans and procedures already exist for standing up ACSs; hospitals are also able to draw on previous experience with patient surge and ACS operations from the COVID-19 pandemic.

Strength 2: Numerous resources exist for staffing ACSs including volunteers, reallocation of existing staff, and other external agencies such as local MRCs.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: The average amount of time an ACS can be sustained was reported to be around two weeks. It is recommended that hospitals attempt to increase this timeframe as long as possible by increasing supply caches and identifying backup resources and vendors.

Module 3: Crisis Standards of Care

Two (2) hospitals indicated that a national or federal declaration/mandate would trigger implementation of Crisis Standards of Care (CSC), while two hospitals reported not having CSC plans or a defined trigger for implementation of CSC. An additional two hospitals indicated that state guidance would be followed while the remaining six hospitals would rely on a decision from key internal leadership or command staff to implement CSC after evaluation of a number of factors such as resources used, surge capacity, and ability to continue to effectively treat patients. Strategies that exist to prolong care capacity given a shortage of resources include rationing and reallocation of supplies. At least one facility reported that they would be able to implement strategies that were used during the COVID-19 pandemic.

Four (4) out of 12 hospitals reported that a national disaster declaration would be sufficient to implement CSC while the other 8 facilities responded that it would either not be sufficient or were unsure. Additionally, three of the responding hospitals have an internal CSC plan, seven would rely on overarching guidance from the state, and two were unsure. Eleven (11) out of 12 responding hospitals reported having a committee that makes decisions regarding the implementation of CSC while the remaining facility was unsure. Similarly, 11 out of 12 responding hospitals indicated that there are ethical codes/guidance in place at the state/city/county level regarding the implementation and use of CSC. The remaining facility responded that there are not ethical codes or guidance in place at the state/city/county level.

When integrating CSC guidance into public messaging, information provided to the public should be as clear and concise as possible. Facilities were divided as to how much information would be provided regarding CSC. Three (3) facilities would rely on the city or state agencies to take the lead in messaging and align with that guidance.

Strengths

The following strengths were demonstrated:

Strength 1: Hospitals are aware of and understand the triggers or factors that exist especially within their own facilities for implementing CSC.

Strength 2: Ethical codes, policies, or other priority determining factors exist across all hospitals regarding decision-making on the use of resources.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: One (1) facility was uncertain whether there was an internal committee or specific authority person to make CSC determinations. It is recommended that facilities ensure familiarity with the entity(s) having the authority to make determinations regarding implementation of CSC.

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2024 RITN Tabletop Exercise conducted on August 28, 2024. 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]					

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

APPENDIX B: EXERCISE PARTICIPANTS

Participating Organizations		
Organization	Name	Email Address
Boston Children's Hospital	Ann Marie Riley	
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Boston Children's Hospital	Emily Bakinowski	
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Boston Children's Hospital	Kierrah Leger	
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Participating Organizations		
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Texas Children's Hospital	Chelsia Elmore	
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Texas Children's Hospital	John Craddock, MD	
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USCF Benioff Children's Hospital	Christine Andaya	
USCF Benioff Children's Hospital	Jack Tyndall	
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USCF Benioff Children's Hospital	Sandhya Kharbanda	

Participating Organizations		
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UVA Health	Dana Racette	
UVA Health	Elizabeth Longley	
UVA Health	Jay Kenyon	
UVA Health	Judy Kauffman	
UVA Health	Kathy DeGregory	
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UVA Health	Nick Dorrell	
UVA Health	Shane Anderson	
UVA Health	Shawn Lewis	
UVA Health	Stephanie Gregoria	

APPENDIX C: PARTICIPANT FEEDBACK

RITN Centers were asked to provide feedback via an online questionnaire following the exercise. The comments below are organized by observed strengths, challenges, and recommendations for future exercises.

Participating hospitals in the August 15, 2024, exercise were asked to rank the usefulness of the tabletop exercise; **66.67% rated it as "Very Useful" and 8.33% rated it as "Somewhat Useful," and 25% were "Neutral."**

Strengths

- *Presence of understanding for the potential risk and awareness for the need to revise some educational materials.*
- *Boston Children's Hospital (BCH) and Dana Farber Cancer Institute (DFCI) are prepared to respond to a radiation mass casualty, with strengths emphasized in our ability to mobilize staff, manage patient flow and capacity concerns and deliver high-quality pediatric-specific care. Activation of internal plans for Code Orange (Decontamination) and Code Help (Capacity) and with our internal blood bank and laboratory testing services, we will be able to accommodate high volumes sustainably with well-trained staff.*
- *Many questions/issues for an incident of this scale have been addressed in some way during the COVID response. Our Leadership and our Comprehensive Transfer Center have created a detailed Surge Flex Playbook that would be extremely valuable to help guide our response. The makeup of our enterprise would allow us to utilize our additional sites to ensure that we could address the needs of the incoming population while still remaining committed to caring for our current patients.*
- *We have multiple SMEs that will be able to provide guidance for patient care. We have infusion areas that can hold over 20 patients at a time and areas that we can dedicate within the campus for a response of this magnitude.*
- *The ability to coordinate and support the consistent triage and treatment of patients arriving at the Patient Reception Area by utilizing local resources in conjunction with RITN SOPs. The development of our Patient Reception Center (PRC) which was created and simulated during our RITN Functional Exercise in 2018 and again in 2023. Since then we have tested and revised this plan with functional exercises.*

- *Strengths include multiple decontamination spaces are available. Partnerships between hospitals (regional health networks, and Mutual Aid Agreement (MAA).*
- *Space planning, with the use of the Wellness Center and volume of outpatient space available.*
- *Strong team within the system to support emergency management and radiation safety as well as the ability to stand up command center quickly and deploy resources.*
- *Our ability to flex into surge ambulatory operations and willingness to do whatever it takes to better serve this patient population.*
- *Due to extensive community and health system preparations in the past and Covid, we are organized and continually putting efforts into being prepared for incidences (natural and human-caused).*
- *Diverse group of expertise in our RITN group and ability to rapidly respond to an incident of this magnitude due to our established Incident Command Team.*
- *Ability to leverage system resources and bed capacity to provide care during a mass casualty incident.*
- *Clearly stated crisis standards of care and effective HICS structure.*
- *Being able to implement lessons learned, policies, and procedures that we utilized during COVID that were are able to apply to this exercise.*

Challenges

- *Maintaining updated education and training with the current rate for staff turnover.*
- *While not distinctly challenging, we have determined several action items from this exercise to deploy within BCH and DCFI. Having prepared statements crafted from our enterprise communications team for messaging towards staff and the public would save time, as well as taking additional measures to ensure the mental health and safety of our staff. Our institutions have not identified any larger challenges to the ability to provide high-quality care during a large-scale radiation event.*
- *One of the takeaways from this exercise is that we will look into developing specific courses and videos that could be utilized in this type of event. There are protocols and SOPs in place that we would look to as the basis for the training modules. Additionally, Supply Chain identified that they would like to work with the BMT Team, Radiation*

Safety, and Clinical Engineering to determine what equipment would be needed in an event of this scale. This way, if additional equipment specific to this type of incident is needed, there will already be relationships in place with vendors to ensure this can be sources.

- *There were conversations about logistics and staging of assets and patients. There is a significant opportunity to shore up logistics within the response plan and establish MOUs with a major hotel that sits on campus.*
- *The Operation's Section discussed staffing, supplies and pharmaceutical needs as well as the need to have more information on the number of critical and lower acuity patients to adequately plan. The importance of obtaining the patient manifest early on was also discussed and it was determined that there are some associated challenges that need to be overcome. The need for just-in-time training on radiation injuries for staff would be needed and they needed to know what level of burn patient can be treated at TCH and when to transfer out as TCH is not a burn center.*
- *Anticipated challenges could be the weather and time of year (i.e. response during the hurricane season could dictate a different response than outside of that emergency threat).*
- *Large-scale, long-term CBC collection for patients is a gap we identified. We could partner with the state. Another thing to consider is Federal govt. pays for X amount of time. If patients stay beyond that, our Hospital and State would have to absorb that cost. Defer to leadership on volumes we could absorb.*
- *Need to partner with the UVA academic partners to utilize spaces at the university during an event*
- *External support for patients and State Support for waivers, CSC, etc.*
- *Ensuring that we have enough mental health professionals available to serve all those in need. Community education and distribution of correct information is vital.*
- *Space, staffing, rural location of our hospital which stands alone, limiting our ability to close our OR and sustain this level of support for a long period of time.*

Future Exercises

- *Advocating and integrating RITN with emergency preparedness teams.*
- *Future discussions to be included for next year's RITN exercise might seek to emphasize on supply chain disruptions, mental health and institutional readiness with small-scale training frequency.*
- *Test the process for notification of an RITN activation and explore the lab piece further.*
- *It would be beneficial for future exercises (based on the conversation heard) that other hospitals engage in questions with their healthcare coalition. How will the HCC support decompression for your facility? What policies and procedures are currently in place for rapid discharge of patients from care areas? How do you plan to manage the worried-well? What are the city/county/state shelter plans? Thresholds? Consider pushing the exercise outside the walls of the RITN facility, to gain an understanding that this will require additional support to be successful.*
- *Our hospital has identified the need for help with public messaging.*
- *Discussing population management (Adults vs Peds) and challenges with each.*
- *Impacts that current operational struggles would have on center's ability to respond to events.*
- *State participation in future exercises would be helpful.*
- *Discussion of communication plans would be beneficial.*
- *Provide real-time escalating counts of patients that hospitals need to account for in their census. How will NMDP handle these types of situations to support an incident of this magnitude?*
- *Interaction of state and federal disaster departments and local hospital systems, communication and authorial hierarchy between federal, state, local, and hospital systems.*
- *More in-depth discussions around outpatient services and management of those patients. More targeted questions about long-term treatment plans.*

APPENDIX D: ACRONYMS

Acronym	Term
AAR	After Action Report
ACS	Alternate Care Site
ARS	Acute Radiation Syndrome
BMT	Bone Marrow Transplant
CBC	Complete Blood Count
COOP	Continuity of Operations Plan
CSC	Crisis Standards of Care
EAP	Employee Assistance Program
EMA	Emergency Management Agency
IND	Improvised Nuclear Device
JIT	Just-in-Time
HCC	Health Care Coalition
MRC	Medical Reserve Corps
NDMS	National Medical Disaster System
ONR	Office of Naval Research
PIO	Public Information Officer
RITN	Radiation Injury Treatment Network
SitReps	Situation Reports
SME	Subject Matter Expert
TTX	Tabletop Exercise