2019

Omaha Regional RITN Tabletop Exercise After-Action Report/Improvement Plan

Report Date: August 7, 2019

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EXERCISE OVERVIEW

Exercise Name	2019 Omaha Regional RITN Tabletop Exercise (TTX)
Exercise Date	July 25, 2019 (9:00 AM – 12:00 PM)
Capabilities	Public Health & Medical Services Operational Coordination, Medical Surge, Responder Safety & Health, Mass Care
Objectives	**Objective 1:** Clarify the organizational roles and responsibilities of participating agencies in responding to a surge of casualties with radiological injuries to the Omaha region. **Objective 2:** Identify the process for casualty reception and distribution within the National Disaster Medical System (NDMS) framework. **Objective 3:** Identify the critical resources available to assist hospitals and treatment centers during a surge of radiation-injured patients and discuss resource gaps. **Objective 4:** Anticipate guidance that non-Radiation Injury Treatment Network (RITN) hospitals will need with regard to receiving radiation-injured patients; of particular concern is triage, treatment, tracking and surveillance of self-referral cases from the area of radiation impact and distribution of medical countermeasures. **Objective 5:** Identify the responsibilities and resources necessary for mass care capabilities to support RITN patients and their families during ongoing treatment at Omaha RITN treatment centers.
Threat or Hazard	Radiological
Scenario	Medical surge due to a distant detonation of an Improvised Nuclear Device (IND)
Sponsor	Radiation Injury Treatment Network® (RITN)
Point of Contact	Curt Mueller Exercise Coordinator, Radiation Injury Treatment Network Curt.Mueller@nmdp.org Joel Haman Nebraska Medicine jhaman@nebraskamed.com

EXERCISE SUMMARY

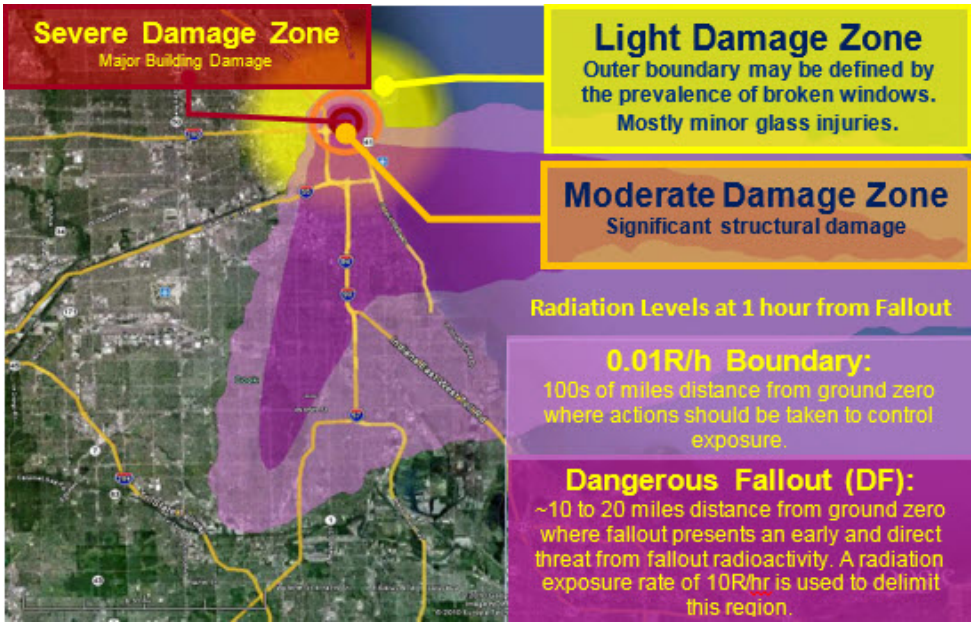
On July 25, 2019, participants representing the University of Nebraska Medical Center and Omaha Healthcare Coalition, the U.S. Department of Veterans Affairs (Emergency Management) and the Radiation Injury Treatment Network (RITN) took part in a tabletop exercise (TTX) to discuss radiation injury patient reception using the National Disaster Medical System (NDMS) framework.

Exercise participants addressed five objectives (see Table 1 below) in a scenario-driven, facilitated discussion based on a surge of casualties with radiological injuries arriving to the Omaha area.

Exercise Scenario

Initial Event

- On May 8, 2019 a ten-kiloton Improvised Nuclear Device (IND) was detonated in Chicago.



- Estimated casualties:

Estimated Casualties[1]			
Trauma (ISS)			
Mild (1-9)	**Moderate** (10-14)	**Severe** (>15)	
79,000	121,000	143,000	
Radiation Only			
Mild (.75 – 1.5 Gy)	**Moderate** (1.5 – 5.3 Gy)	**Severe** (5.3 – 8.3	**Expectant** (>8.3 Gy)
91,000	51,000	12,000	47,000
	RITN patients		

- Secretary of Health and Human Services (HHS) declares a Public Health Emergency and activates the HHS Emergency Management Group.
- The National Marrow Donor Program (NMDP) activates the RITN Control Cell. Control Cell staff begin to monitor the situation and send out Situation Reports (SITREPs) to the RITN facilities as well as notification to fill out and submit the HCS capacity survey.

Initial Event +7 Days

- National Disaster Medical System (NDMS) issues activation protocol for the Omaha Federal Coordinating Center (FCC), indicating the city will be receiving casualties from the disaster zone via NDMS.
- The Department of Veterans Affairs initiates actions to establish a Patient Reception Area (PRA) FCC at Eppley Airfield, where NDMS patients will be received.

[1] Table adapted from: Knebel AR, Coleman CN, Cliffer KD; et al. Allocation of scarce resources after a nuclear detonation: setting the context. Disaster Med Public Health Prep. 2011;5 (Suppl 1):S20-S31

Exercise Objectives and Core Capabilities

The following exercise objectives in Table 1 describe the expected outcomes for the exercise. The objectives are linked to core capabilities, which are distinct critical elements necessary to achieve the specific mission area(s). These objectives and aligned core capabilities are guided by elected and appointed officials and were selected by the Exercise Planning Team.

Table 1. Exercise Objectives and Associated Core Capabilities

Exercise Objective	Core Capability	Healthcare Preparedness Capability
Objective 1: Clarify the organizational roles and responsibilities of participating agencies in responding to a surge of casualties with radiological injuries to the Omaha region.	Public Health & Medical Services	Emergency Operations Coordination
Objective 2: Identify the process for casualty reception and distribution within the National Disaster Medical System (NDMS) framework.	Public Health & Medical Services	Emergency Operations Coordination
Objective 3: Identify the critical resources available to assist hospitals and treatment centers during a surge of radiation-injured patients and discuss resource gaps.	Public Health & Medical Services	Medical Surge
Objective 4: Anticipate guidance that non-Radiation Injury Treatment Network (RITN) hospitals will need with regard to receiving radiation-injured patients; of particular concern is triaging, treatment and tracking/surveillance of self-referral cases from the area of radiation impact and distribution of medical countermeasures.	Medical Countermeasures Dispensing	Responder Safety & Health
Objective 5: Identify the responsibilities and resources necessary for mass care capabilities to support RITN patients and their families during ongoing treatment at Omaha RITN treatment centers.	Mass Care Services	Emergency Operations Coordination

ANALYSIS OF CAPABILITIES

Question Block 1: Pre-Arrival of Patients

For the organizations present at the exercise, the following are the primary concerns at this point:

Public Health/ Healthcare Coalition	RITN Hospital (University of Nebraska Medical Center)	Omaha FCC
• Maintain situational awareness and coordination role • Healthcare Coalition monitors information, operationalizes to support public health and hospital partners • Request hospital bed availability for trauma and radiation injury patients	• Incident command on standby, convene leadership • Clear messaging of staff expectations • Prepare/mobilize SME(s) to the PRA to assist with patient triage • Reserve capacity at the Cancer Center for RITN patients • Prepare for radiation screening functions at hospital receiving location (i.e., ED)	• Establish the patient reception area at airport. • Initially prepare for receipt of the NDMS patients (traumatic injury) and notify all hospitals within 250 miles • Identify dual use vehicles and private ambulance contracts to provide patient transport from PRA to RITN hospital • Coordinate with JPATS and SAT teams if activated to area

Activation: Following the federal disaster declaration, the Omaha Federal Coordinating Center (FCC) would receive an alert for activation from the U.S. Department of Health and Human Services (HHS), which would initiate activities for opening the FCC and the Patient Reception Area (PRA). The FCC would contact all NDMS hospitals in a 250 mile radius by email initially and follow up with direct phone calls as needed. This is both regarding the more immediate trauma patients that are expected as well as the RITN patients arriving later. There is a robust medical system in the area and routine bed reporting from the FCC to Offutt Air Force Base occurs. The HHS Secretary Operations Center (SOC) determines the patient distribution strategy across all NDMS hospitals to include the RITN hospitals for radiation injury patients. It is critical to get accurate bed counts and understand where patients can be sent from the PRA for acute radiation sickness (ARS) care determinations.

RITN and NDMS/HHS Coordination: The role of RITN is to provide the specialty RITN bed data/reports to HHS. The RITN Control Cell is activated and requests an update of RITN beds in HealthCareStandard® (HCS) with current availability and that for 24 hours later. Hospitals also update information on Granulocyte-Colony Stimulating Factor (G-CSF) availability and outpatient capabilities. RITN consolidates the information for all RITN hospitals and send it to HHS/Assistant Secretary for Preparedness and Response (ASPR) who reviews and utilizes the bed information from across the country to make determinations about where to send patients. RITN requests updates every day following the incident by 2:00 PM so that they can provide a report to HHS/ASPR by 4:00 PM.

RITN will also produce and distribute a daily Situation Report (SITREP) to partners nationwide. Based on the information provided from the RITN hospitals during the initial data poll, the RITN Control Cell will provide an estimate of patient numbers to expect at each RITN location. The revised form now requests information on both inpatient and outpatient capability.

There was a discussion of how to report RITN bed availability since this is not a category included in the current HAvBED system and the FCC Coordinator has a critical role in understanding the bed types available regionally. Given that the University of Nebraska Medical Center is the only RITN hospital it was determined that the information could be sent directly to the FCC as a PDF or excel file from the HCS data. It is unlikely at this time that the bed reporting system routinely used would be modified to add categories to capture the radiation injury bed types (e.g., BMT beds, oncology beds and oncology ICU beds).

Operation of the FCC: The initial patient triage and screening at the airport would be performed by either Offutt Air Force Base or Omaha Fire Department. It was discussed that one or more (ideally a team) of subject matter experts (SMEs) from Nebraska Medicine Cancer Center should be present at the PRA triage location to advise on the care needs and transportation requirements based on the patient's condition. This team is not yet well organized as to who would comprise the SMEs and how quickly they could mobilize to the location.

There was discussion about how much information would be known about the patient condition and dose received upon arrival but the working assumption is that there will be very little information in this scenario, likely just a baseline dose estimation based on signs and symptoms and possibly a GeoEpi model. There would not likely be any laboratory results upon arrival. This again warrants the need for radiation injury experts at the PRA to best assess patient needs.

Portal monitors available at the other area hospitals could be taken to the PRA to assist with screening; the hospital already has this in place as well as handheld screening equipment. Both airports (Offutt and Eppley) have decontamination capabilities as does Nebraska Medical Center. The decontamination if necessary at the hospital would likely be performed in the emergency department and radiation health integrates with the larger hospital decontamination team.

To transport patients from the PRA to the hospital, the VA has 3 dual use vehicles (DUVs) that can be utilized to avoid depleting the local ambulance pool. There are also contracts in place with the metropolitan buses if necessary. There are contracts in place with private ambulance providers to reserve Omaha Fire/EMS for routine emergency calls.

The primary actions that would be activated at the hospital when receiving the radiation injury patients include the following and participants were able to describe how each would be addressed:

Initial Patient Receipt: Utilize the Emergency Department (ED), if there were large numbers of patients expected a separate triage location would be identified to avoid overwhelming the ED, for example a conference room. There is also a back up location identified for decontamination if needed and if the ED was going to be impacted by those operations due to patient volume. It would be necessary to balance the location selected so it is not too far away from clinical resources.

Counseling/Behavioral Health: Establish in the same location as the initial intake/triage area. Internal hospital behavioral health would engage many local resources to support this effort whether that would be requesting that they report to the hospital to augment activities there or mobilize to a hotel or other outpatient setting.

Family Assistance/Information Center: There is a plan in place for Mass Casualty Incidents but many questions arose based on the expected duration of this incident (e.g., weeks to months rather than days) as to housing of displaced patients and families and the resources typically relied upon availability to support a prolonged response. Identifying a location at the PRA (Eppley) may be optimal and utilize the American Red Cross and Salvation Army to support.

Staffing: Both hospital employees and volunteers would be utilized. Uncredentialed volunteers could support the social/non-medical needs of patients. Other NDMS hospitals would be leveraged as needed because they are already licensed/credentialed.

Strengths

Strength 1: Nebraska Medical Center has a robust ability to care for patients, including beds, staff expertise, mental health resources, and did not anticipate significant challenges caring for the initial waves of patients as described in this scenario. The broader medical system in the area is also significant so as possible those beds, staff, and resources can be leveraged to care for less acute patients.

Strength 2: The FCC understands the resources available and responsibilities associated with receiving NDMS patients. The aircraft can arrive to either Eppley Airfield or Offutt Air Force Base and drills have been conducted at both locations previously to test protocols.

Strength 3: The availability of dual purpose buses as transport resources is a strength and Nebraska Medical Center confirmed that receipt of ambulatory patients via these vehicles has worked well in past drills.

Areas for Improvement

Area for Improvement 1: The patient triage model discussed at this tabletop (where BMT specialty physicians/nurses are at the PRA) requires further development and planning; for example the structure of the team, activation process, role, and mobilization to/integration with the PRA.

Area for Improvement 2: Ensure the available ARS beds are reported to the local FCC; this step in information sharing should be documented in protocols (with a role assigned to this responsibility) and tested in future drills.

Area for Improvement 3: Nebraska Medical Center has trained staff and protocols in place to conduct radiation screening of arriving patients; however for an incident like this a process (location, staff, equipment) should be clarified at a minimum for perception and mental health reasons (since patients will have been decontaminated prior to arrival).

Area for Improvement 4: The FY 2020 NDMS exercise should incorporate this scenario to operationally test patient arrival, tracking, transport to the hospitals, sheltering aspects, and procedures at the PRA and hospital for patient triage/screening.

Question Block 2: Arrival of Patients

Approximately 8 days after the IND detonation, RITN patients would arrive to the FCC in waves of approximately 30 people per aircraft. The aircraft arriving to the FCC/PRA will contain a passenger manifest and some limited medical information, at most the estimated radiation dose based on proximity to the blast site.

Inpatient/Outpatient Triage

Efforts would be made as part of the initial triage to determine the dose the patient was exposed to; if greater than 2 Gy and possibility of needing a transplant the patient would be triaged to inpatient (i.e., 2 Gy would be the cut off to have the person come to the hospital). As mentioned previously, a radiological team of experts would perform the assessment and triage at the PRA and/or at the hospital. This team would consist of certified health physicists in radiation safety, nuclear medicine specialists, and expand beyond that depending on the situation. If unable to physically get to the PRA, telehealth was another option discussed to assist with triaging of patients.

The outpatient (i.e., 1-2 Gy dose) treatment considerations discussed during this exercise indicated that if this was a small number of patients efforts would be made to keep them all on campus for care. If it was 60 patients (per the scenario), the hospital would work with hotels in the area to ensure that they are housed in individual rooms. There is a hotel under construction on campus currently and there are partnerships with area hotels. In addition, there are dorms on campus and at the nearby Clarkson College that could be leveraged. These options would keep them more isolated than a mass (e.g., gymnasium) setting.

From the discussion and scenario patient estimates, it did not seem that Nebraska Medical Center would have difficulty accommodating the patients requiring inpatient/transplant care. Other patients that were less critical could be cared for at other hospitals in the area. Resources discussed to care for the inpatients included G-CSF and chelating agents. There is a significant amount of G-CSF at the hospital already and pharmaceutical vendors would be contacted to request more. There are also agreements with the nuclear power plants (2) and Poison Control; the healthcare coalition would assume the role of inventorying resources and moving them to the hospital as available. Blood products would be obtained from the Nebraska Community Blood Bank and also there is a relationship with Innovative Blood Resources (IBR, Minneapolis) to further support these needs.

Both adult and pediatric patients can be seen at Nebraska Medical Center. In the case of an unaccompanied minor, the FCC would assign a Service Action Team (SAT) member to stay

with the pediatric patient. The hospital would make every effort to reach the next of kin to get approval to treat, but if that information is not available there are processes in place to assign a temporary guardian and/or to move forward with treatment and address any issues later.

Behavioral/Mental Health Considerations

Nebraska Medical Center has internal resources that would be engaged to triage the patient/family mental health needs. More broadly there is a good infrastructure for behavioral health resources across the state and region. A position within Hospital Incident Command Structure is designated to coordinate behavioral health needs for the incident. With regards to behavioral/mental health of staff members, spiritual and behavioral health staff would be utilized and there are Employee Assistance Programs (EAP) available with off-site vendors.

Patient Tracking and Reimbursement

Patient tracking discussions primarily focused on the availability of a SAT team to utilize the Joint Patient Assessment and Tracking System (JPATS) for tracking patients. However, it was noted that in a national emergency of this scale that a SAT team may not be deployed to the Omaha area and there is no definitive process in place to track patients or who would lead the JPATS data entry. JPATS uses a bar code system, so an action item is for Nebraska Medical Center to determine if they can scan this information into the internal patient tracking system (Knowledge Center) in order to flag these patients as NDMS for reimbursement cost tracking. In addition, the FCC/VA coordinator will follow up to see if several coalition partners can be given training and access to use JPATS and from there explore how it can integrate with Knowledge Center patient tracking system.

Outpatient and Mass Care Considerations

As with other RITN hospitals, the mass care and social services considerations remain a key challenge to accepting both inpatients and outpatients requiring care after radiation injury. The logistics of monitoring and housing were not discussed in great detail during this exercise but warrants further discussion and planning to pre-identify locations and transportation assets that can support outpatient care.

It was suggested that home health agencies can utilize staff to travel to the outpatients to provide care and monitoring health status. This would alleviate the transportation needs of bringing the outpatients to the main hospital.

With regards to tracking outpatients, once they were initially entered in to the hospital Knowledge Center the tracking process occurs the same as for inpatients. It is necessary for both

inpatient and outpatients to sign the RITN Consent Form that facilitates data sharing to the Federal level from RITN as to the treatment of the ARS patients. This data can be gathered and shared post-event.

The ARS patients will require extended care so the financial management/tracking for these patients was discussed briefly to include the waiver for > 30 days of treatment and reimbursement. No one at the exercise was familiar with this waiver for patient care, only for lodging needs.

Communications Through Event

RITN expects to receive daily reports by 12:00 PM that includes the 4 bed categories in the HCS, outpatient capability, and pharmaceutical supplies. Conference calls with RITN will be kept to a minimum as there will be many coordination calls expected during this event. The local healthcare/hospital coalition would have conference calls regarding the incident; it is recommended that the RITN referral guidelines be shared with coalition members. This information or recommendations on Crisis Standards of Care are available from RITN (i.e., Chief Medical Officer) or ASPR.

Strengths

Strength 1: Coordination among Nebraska Medical Center, the healthcare coalition and the FCC/VA are practiced routinely and strong relationships are in place to access resources and staff.

Strength 2: Protocols for managing the receipt of unaccompanied minors at the FCC are well understood both at the FCC and receiving hospital.

Strength 3: To respond to this incident, existing Nebraska Medicine Emergency and Communications Plans are well established and can incorporate BMT expertise into those plans.

Areas for Improvement

Area for Improvement 1: Reimbursement for outpatient care is a recognized gap nationwide; federal level procedures are in development. Once final, ensure that this is incorporated into current FCC plans. In the meantime, it is expected that ASPR will have to distribute just in time guidance.

Area for Improvement 2: The local ASPR representative should help define in local plans how the waiver process works (to exceed the 30 days of care for federal reimbursement). It is not clear or documented now how to request that waiver and what exactly would be covered in this

type of disaster. This was not discussed in detail but recognized as an issue given the length of stay for ARS patients.

Area for Improvement 3: Continue discussions on the outpatient and inpatient family housing options for extended periods of time, it was recognized that this is a significant gap that requires a great deal more thought and planning. Determine the agency(s) that should lead and be involved in these planning discussions.

Area for Improvement 4: Determine how to scan JPATS information into the local/hospital patient tracking systems and ensure that these NDMS patients are appropriately flagged in the system as NDMS patients for federal reimbursement. The FCC/VA coordinator should take action to see if several coalition partners can be given training and access to use JPATS and from there explore how it can integrate with Knowledge Center patient tracking system.

Area for Improvement 5: Create messages and templates for communication (internal and external) in advance of the event; some of this already exists but also ensure that those staff that need to have the information are provided access. References to assist with messaging strategies and templates include, but are not limited to:

- U.S. HHS Radiation Emergency Medical Management (REMM) website - Information Resources for Public Information Officers. http://www.remm.nlm.gov/remm_pio.htm
- FEMA. "Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath" – June 2013. http://www.fema.gov/media-library-data/20130726-1919-25045-0618/communicating_in_the_immediate_aftermath__final_june_2013_508_ok.pdf

Area for Improvement 6: Continue to familiarize with Knowledge Center and utilize this platform to share RITN protocols, references/guidelines, and communications templates to increase staff knowledge of this program and provide resources for Just-In-Time access.

Area for Improvement 7: Offer education opportunities to both medical staff and support staff such as administrative and environmental services (as well as other relevant community members that may support mass care operations, such as Omaha Fire).

- Explore RITN sponsored Radiation Emergency Assistance Center/Training Site (REAC/TS) training for medical personnel (https://orise.orau.gov/reacts/capabilities/continuing-medical-education/default.aspx)
- Conduct and promote RITN trainings (http://ritn.net/training/) and consider downloading to have access in the event that infrastructure goes down.

HOTWASH

Strengths

- There are established relationships between the hospital, the VA, and the healthcare coalition; many of the response actions are drilled for other scenarios that can be adapted to this one.
- Scenario lends itself well to the FY20 NDMS exercise; VA will begin to incorporate the radiation scenario and elements discussed at this TTX into the planning process.
- Improved understanding of the resources available if this incident were to occur.
- Emergency

Improvement Planning

- Knowledge Center platform is new – upload RITN resources and forms there so everything is accessible in one location
- Provide education and training on this response to Omaha Fire; consider the REAC/TS course
- Further develop the concept of a radiation specialty team from Nebraska Medical Center that can deploy to the airport to support initial patient receipt and triage.
- Revisit radiological expertise and equipment resources in Omaha and greater Nebraska and engage with those partners (e.g., Omaha Fire, CTOS training in Lincoln, nuclear power plants).
- Leverage routine hospital emergency management meetings to provide more awareness of what it means to be a RITN hospital.
- Create messages and templates in advance of the incident and ensure that they are accessible to all staff who may need this information.
- Improve the communications between the FCC and the hospital as to patient transport.
- Coordinate with University Emergency Management to explore the use of dorms within the university system for housing outpatients.

APPENDIX A: IMPROVEMENT PLAN

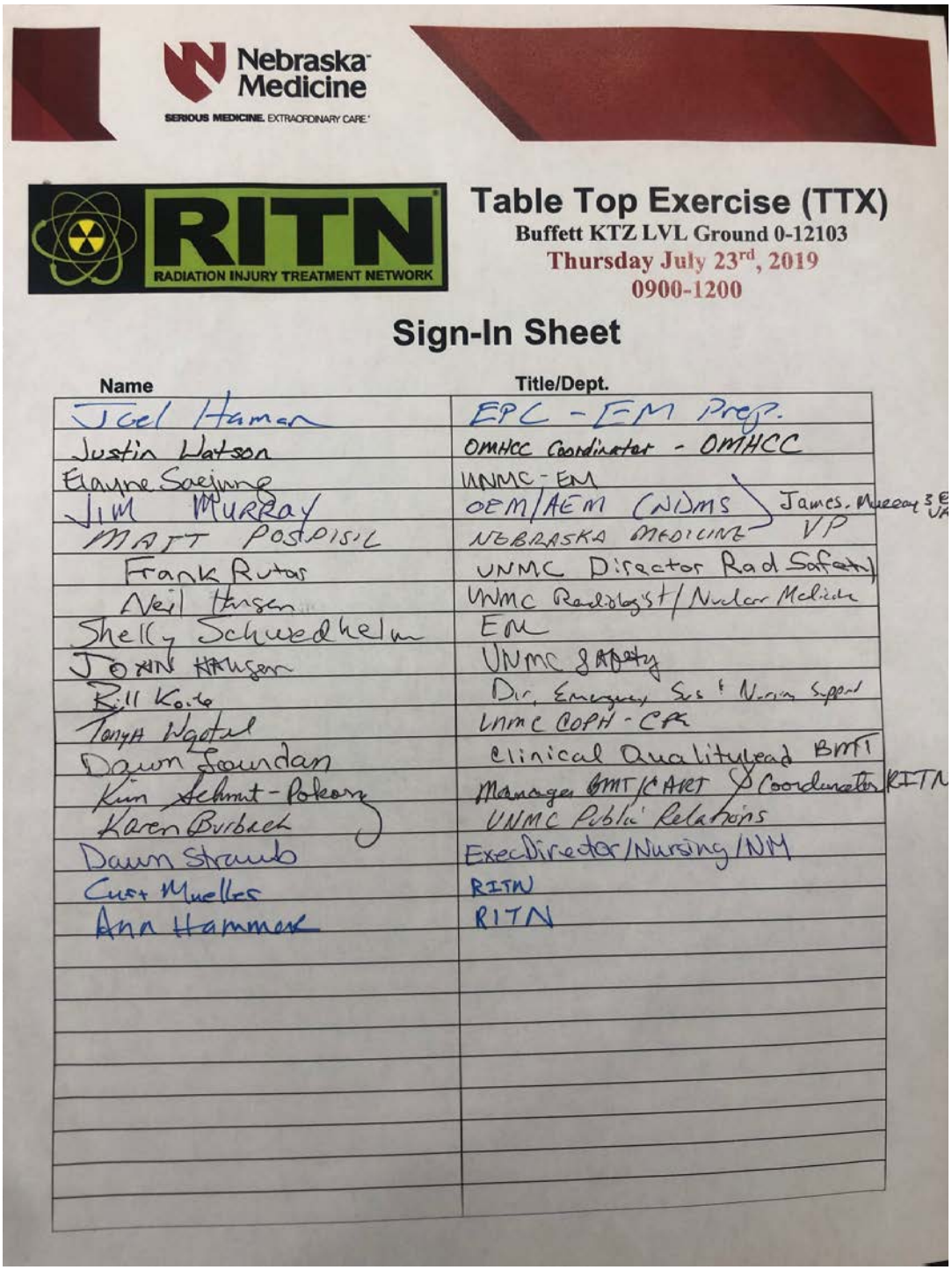
This improvement plan template has been developed specifically for the RITN centers participating in the 2019 RITN Regional Exercises. The Omaha RITN Center and partner organizations can utilize this table to organize the opportunities for improvement to augment and develop their own corrective actions.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[2]	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]					

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

APPENDIX B: EXERCISE PARTICIPANTS

See sign in sheet below.



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RITN
RADIATION INJURY TREATMENT NETWORK

Table Top Exercise (TTX)
Buffett KTZ LVL Ground 0-12103
Thursday July 23rd, 2019
0900-1200

Sign-In Sheet

Name	Title/Dept.
Joel Haman	EPC - EM Prep.
Justin Watson	OMHCC Coordinator - OMHCC
Elayne Saejung	UNMC - EM
JIM MURRAY	OEM/AEM CNDMS } James. Murray 3 @ VA
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Ann Hammer	RITN

APPENDIX C: ACRONYMS

Acronym	Term
AAR	After Action Report
ARS	Acute Radiation Sickness
ASPR	Assistant Secretary for Preparedness and Response
BMT	Bone Marrow Transplant
DUV	Dual Use Vehicle
EAP	Employee Assistance Program
ED	Emergency Department
EMS	Emergency Medical Service
FCC	Federal Coordinating Center
G-CSF	Granulocyte-Colony Stimulating Factor
HCS	Healthcare Standard (RITN data collection matrix)
HHS	Health and Human Services
ICU	Intensive Care Unit
IND	Improvised Nuclear Device
JPATS	Joint Patient Assessment and Tracking System
NDMS	National Disaster Medical System
NMDP	National Marrow Donor Program
PRA	Patient Reception Area
REAC/TS	Radiation Emergency Assistance Center/Training Site
REMM	Radiation Emergency Medical Management
RITN	Radiation Injury Treatment Network
SAT	Service Action Team
SITREP	Situation Report
SME	Subject Matter Expert
SOC	Secretary Operations Center (DHHS)
TTX	Tabletop Exercise
VA	Veterans Affairs (Medical Center)