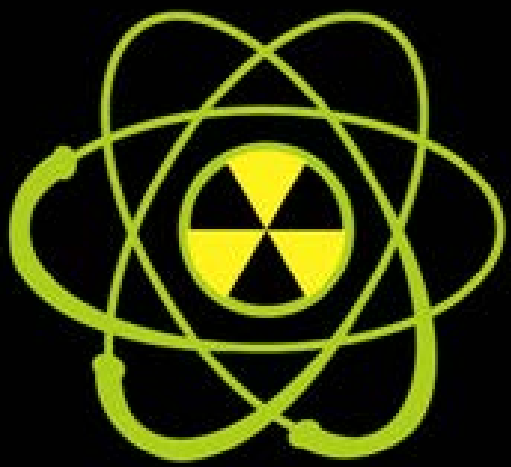
2015

# Chicago Regional RITN Tabletop Exercise After-Action Report/Improvement Plan



# EXERCISE OVERVIEW

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|---|---|
| **Exercise Name** | Chicago Regional RITN Tabletop Exercise (TTX) |
| **Exercise Date** | August 4, 2015 |
| **Capabilities** | Public Health, Medical Services & Operational Coordination |
| **Objectives** | **Objective 1:** Clarify the organizational roles and responsibilities of participating agencies in responding to a surge of casualties with radiological injuries to the Chicago region through the National Disaster Medical System (NDMS).<br>**Objective 2:** Identify the critical resources available to assist hospitals and treatment centers during the surge of radiological casualties and discuss resource gaps.<br>**Objective 3:** Anticipate guidance that non-Radiation Injury Treatment Network (RITN) hospitals will need with regard to receiving radiological casualties; of particular concern is triaging, treatment and tracking/surveillance of self-referral cases from the incident area and distribution of medical countermeasures.<br>**Objective 4:** Identify the process for casualty reception and distribution within the Federal Coordinating Center (FCC) model. |
| **Threat or Hazard** | Radiological |
| **Scenario** | Medical surge caused by a distant Improvised Nuclear Device (IND) detonation |
| **Sponsor** | Radiation Injury Treatment Network (RITN)<br>Rush University Medical Center (RUMC) |
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# EXERCISE SUMMARY

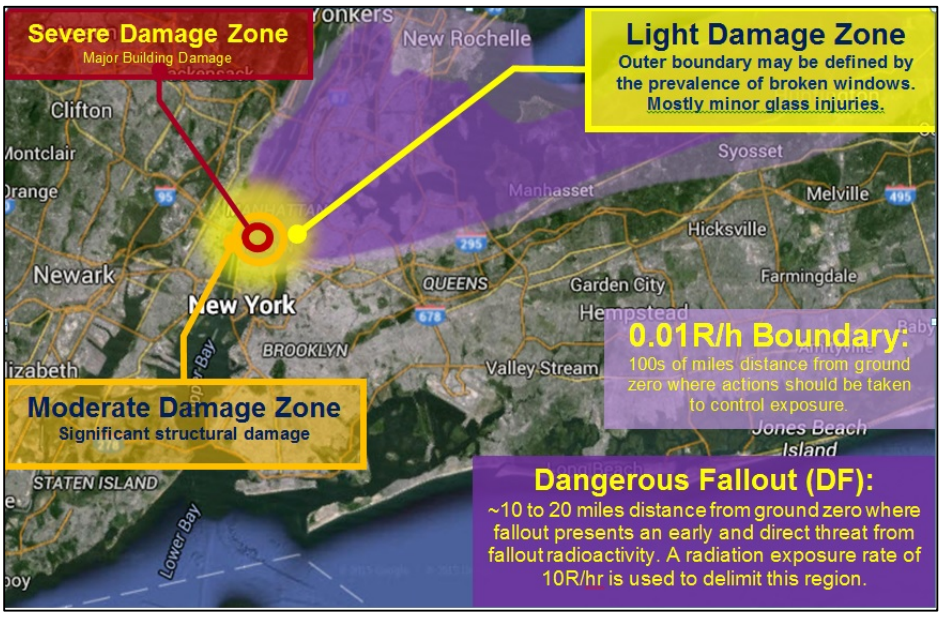
On August 4, 2015, Rush University Medical Center (RUMC), the RITN Control Cell, Northwestern Memorial Hospital (NMH), Chicago Department of Public Health (CDPH), Illinois Department of Public Health (IDPH), Chicago Office of Emergency Management and Communications (OEMC), Illinois Emergency Management Agency (IEMA), Hines Veterans Administration Medical Center (Hines VA) / Federal Coordinating Center (FCC) and the Federal Emergency Management Agency (FEMA) participated in a tabletop exercise to discuss clarify the organizational roles and responsibilities of participating agencies, identify needed resources, medical management of patients and self-referral cases, and casualty reception and receipt within the FCC model in responding to a surge of casualties with radiological injuries to the Chicago region. 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

### Initial Event

- On August 3rd, 2015 a ten-kiloton Improvised Nuclear Device (IND) was detonated in New York City.



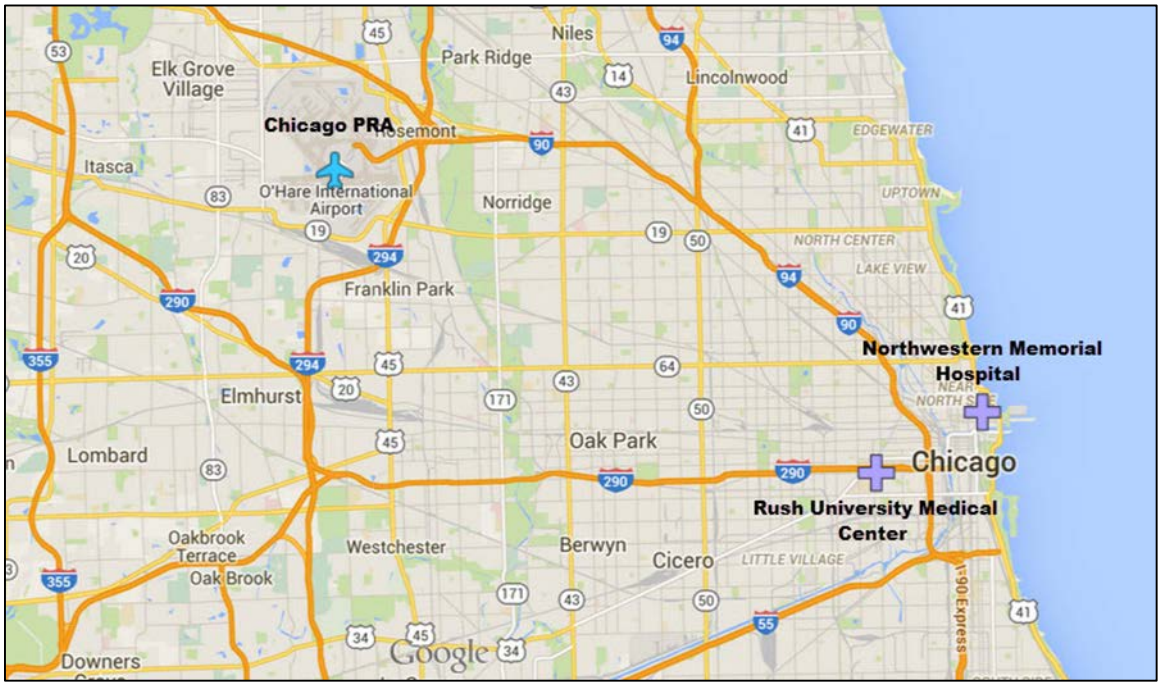
- Estimated casualties:
  - 300,000 fatalities in the Severe Damage Zone; 150,000 in Moderate Damage Zone.
  - 60,000 urgent casualties in Moderate Damage Zone; 90,000 in Light Damage Zone.
  - 40,000 non-urgent casualties in Moderate Damage Zone; 60,000 in Light Damage Zone.
  - 300,000 worried well across geographical area.
  - 16,400 radiation casualties across geographical area.
- 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 +4 Days**

- National Disaster Medical System issues activation protocol for Chicago, indicating the region will be receiving casualties from the disaster zone via NDMS.
- The Veterans Health Administration initiates actions to establish a Federal Coordinating Center (FCC) at O'Hare International Airport, where NDMS patients will be received.

**Initial Event +5 Days**

Approximately five days after the detonation patients start to arrive at the Patient Reception Area (PRA) established at O'Hare International Airport. Upon arrival patients will be screened and triaged for transportation to local RITN hospitals for treatment. Chicago RITN Centers are expected to receive a total of 60 adult patients with marrow toxic injuries. The majority of RITN patients are anticipated to be treated on an outpatient basis. Mass care services for patients, and anticipated family members, is anticipated.




**Regional RITN Centers:**
RUSH University Medical Center
Northwestern University Medical Center

## 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).

**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 Chicago region through the National Disaster Medical System. | Public Health & Medical Services | Emergency Operations Coordination |
| **Objective 2:** Identify the critical resources available to assist hospitals and treatment centers during the surge of radiological casualties and discuss resource gaps. | Public Health & Medical Services | Medical Surge |
| **Objective 3:** Anticipate guidance that non-Radiation Injury Treatment Network hospitals will need with regard to receiving | Public Health & Medical Services | Medical Countermeasures Dispensing |

| Exercise Objective | Core Capability | Healthcare Preparedness Capability |
|---|---|---|
| radiological casualties; of particular concern is triaging, treatment and tracking/surveillance of self-referral cases from the incident area and distribution of medical countermeasures. | | Responder Safety & Health |
| **Objective 4:** Identify the process for casualty reception and distribution within the Federal Coordinating Center model. | Operational Coordination | Emergency Operations Coordination |

# ANALYSIS OF CAPABILITIES

## Question Block 1: Pre-Arrival of Patients

Based on the initial actions of the Secretary of HHS, NMDP, and NDMS, as well as the VA initiating operation of the Patient Reception Area at Chicago O'Hare International Airport (ORD), OEMC, CDPH, IDPH, IEMA, RUMC, NMH, and the VAMC – Hines/FCC were asked to identify and discuss their primary concerns and/or their entity status. The following table summarizes the exercise discussion and the primary concerns for each entity, respectively, at this point in the scenario.

| Entity | Command | Initial Actions | Resources | Other |
|---|---|---|---|---|
| ***OEMC*** | • Proportional and as needed<br>• Logistics activated as resource requests made to the State and other government agencies | • Support for 911/311 call center<br>• Enhance security<br>• Monitor intelligence information | • Initiate planning and other actions to receive resources from the federal government | • Collaborate with Coalition on situational awareness |
| ***CDPH*** | • Partial activation with CDPH represented at the OEMC (dependent upon emergency operations center (EOC) activation) | • Organize external optics of the health mission (such as personal protective equipment (PPE) protocols for emergency medical services (EMS) in transport of patients)<br>• Push out information through Chicago Health Alert Network (HAN) and collaborate with IDPH<br>• Determine bed status with NDMS hospitals (via EMResource™) | • Adjudicate any resource requests for NDMS patients<br>• Work with RUMC on decompression with EMResource™ support. | • Consult with the Centers for Disease Control and Prevention (CDC)<br>• Identify hospital bed capacity in neighboring EMS regions |
| ***IDPH*** | • Minimal activation | • Support CDPH and IEMA as needed/requested | • Coordinate with CDPH on support as needed/requested | • None |
| ***IEMA*** | • Proportional at the state emergency operations center (SEOC) based on need | • Deploy representative to OEMC to enhance coordination efforts and streamline any requests to the SEOC | • Coordinate with OEMC on resources requested | • None |
| ***RUMC NMH*** | • Activation of hospital incident management team (HIMT) | • Contact RITN Control Cell<br>• Update Health Care (HC) Standard<br>• Conduct assessment of specialty beds over several days to prepare to receive victims<br>• Identify space to treat NDMS patients | • Determine the immediate inventory of resources and specialty staff | • Establish direct communication between RITN Centers (RUMC, NMH establish direct communication with each other) |

| Entity | Command | Initial Actions | Resources | Other |
|---|---|---|---|---|
| | | • Decompress current patients and identify local hospitals to receive them<br>• Partner with the emergency department (ED) and bone marrow transplant (BMT) unit to determine if patients belong in intensive care unit (ICU) or BMT unit<br>• Work with Coalition and EMS on patient transport | | |
| ***Coalition Hospitals*** | • Likely no activation | • Identify capacity to receive patients from RUMC and NMH | • Perform resource assessments if asked by the Coalition | • None |
| ***VAMC*** | • Full incident command activation | • Upon NDMS alert to the FCCs, notify Regional Hospital Coordination Center (RHCCs), IDPH, CDPH, and O'Hare<br>• Mobilize staff to operate at ORD once FCC is activated | • Identify in collaboration with the Coalition the bed counts and those beds that can be made available<br>• Looking for medical care capability beyond specialty beds | • None |

NDMS Activation Criterion and PRA Establishment: The general activation criterion is 3 days prior to patient arrival at the FCC, at which time, notification is sent to Hines VAMC for FCC activation and mobilization of assets to Chicago O'Hare International Airport. The NDMS Program would also notify RUMC and NMH. Additionally, Hines VAMC notifies OEMC, CDPH, IDPH, the RHCCs, and ORD. The service access teams along with the patient tracking system (JPATS) is activated and FCC setup is begun. The service access teams will begin to assess the following:

- Transfer of care of NDMS patients
- Future processing and management of the NDMS patients
- Disposition of patients as they move through the entire NDMS system (beyond initial care at RITN centers towards medical care associated with ARS).

RITN & NDMS Coordination: NDMS Program and the RITN Program primarily coordinate through sharing of the HC Standard information. Specifically, NDMS receives information via the central coordination cell in Washington, DC, which primarily assesses medical care availability nationally and makes patient distributions based on this information. RITN Control Cell and HHS also review this national information and distribute that information to the Coalition and RUMC

and NMH, specifically. After HHS has reviewed, analyzed, and approved information, the RITN Control Cell develops and distributes situational reports to the RITN Centers. The situational reports do not contain patient information nor does it contain any tactical considerations or information.

Notification of Facilities: The NDMS hospitals in Chicago are notified through established NDMS Program notification protocols once the federal decision has been made to activate the local FCC that ultimately result in Hines VA notifying RUMC, NMH, CDPH, IDPH, and all RHCC coordinators in Illinois. Notification redundancy will occur through the Chicago Health System Coalition for Preparedness and Response (CHSCPR, aka the "Coalition") existing notification protocols. Throughout activation and event response, Hines VA coordinates directly with all RHCC coordinators. Upon notification, hospitals will be requested to update the number of beds available and report that information through their current resource reporting mechanisms. In Chicago, the Coalition would request bed updates of hospitals using EMResource.

Hospital Bed Availability: Once activated the FCC contacts the Region XI RHCC coordinator to request bed status and availability of RITN centers and non-RITN centers. In collaboration with the Coalition, all Coalition hospitals would be requested to update their bed information using EMResource™. State hospitals would be notified by an IDPH State of Illinois Rapid Electronic Notification (SIREN) message that would instruct hospitals to provide bed availability to their RHCC coordinators, who in turn would provide the information to the FCC.

Assets to Operate FCC: Other than ambulances, city, state, and federal assets were not discussed. The National Ambulance Contract is likely to be unavailable since these EMS assets would be committed to the ongoing response efforts in New York City (as described in the scenario). Therefore, patient transport from the FCC to the RITN centers is coordinated among the Region XI RHCC, Hines VA, the Coalition, and the Private Providers Emergency Response System (PPERS). ORD Logistics would identify ingress and egress of ambulances to ORD FCC space.

Coordination with HHS: The primary command and control ASPR Emergency Coordinator provides information to HHS through the Regional Emergency Coordinator (REC). The RECs are available 24/7 and the HHS CBRNE Branch interfaces with the REC for information exchange at the state and federal level. Existing command and control at the local level is operational as well as the control between the local and state levels.

**Strengths**

The following strengths were demonstrated:

**Strength 1:** Notification: Both Chicago RITN centers (RUMC and NMH) demonstrated an understanding of the notification and communication pathway from NDMS Program to Hines VAMC to RUMC and NMH regarding FCC activation as well as immediate hospital notification protocols and procedures for a radiological event. In addition, the FCC coordinator from Hines VA is well known within the Coalition and has been an integral part of NDMS planning.

**Strength 2:** Command and control: Ability of RUMC and NMH to scale medical care to a significant event. Both of these facilities have relatively deep resources to respond to a mass casualty incident. In addition, they are able to reach back to several medical-technical specialists from their respective BMTs and Oncology Departments to provide direction in this type of event.

**Strength 3:** Bed Availability: The Chicago Coalition hospitals have a capability (via EMResource™ and established reporting protocols) to rapidly assess bed resources across the City. This capability is important for RITN Centers to be able to identify receiving hospitals for those patients that may need to be rapidly discharged to enable them to care for those radiation injury casualties received from the NDMS.

**Areas for Improvement**

The following areas are opportunities for improvement:

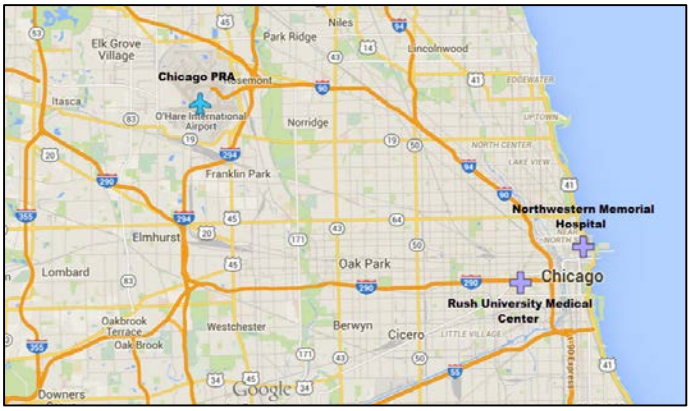
**Area for Improvement 1:** Increase programmatic familiarity at NMH: NMH recently approved the NDMS Memorandum of Agreement (MOA) to become a RITN center. NMH should continue planning efforts and engagement with RITN. It is further recommended that NMH collaborate with RUMC to develop plans that are consistent, exchange subject matter expertise, and conduct additional joint exercises.

**Area for Improvement 2:** Coordination with HHS: RITN Centers and the Chicago Coalition representatives should further explore how the HHS REC can interface in a radiation response. It is recommended that the REC role be incorporated into future RITN exercises. In addition, it would be helpful to understand how the REC is integrated in response functions for other RITN cities.

## Question Block 2: Arrival of Patients

The following inject was presented to drive discussion for the arrival of patients at RUMC and NMH:

- Five days after the detonation patients start to arrive at the PRA established at O'Hare International Airport. Upon arrival patients will be screened and triaged for transportation to local RITN hospitals for treatment.
- Chicago RITN Centers are expected to receive a total of 60 adult patients with marrow toxic injuries.




Outpatient/Inpatient Factors: The MOA between the NDMS Program and the NDMS hospitals is activated and coordination with the service access teams at the FCC begins. Ideally, determination of outpatient or inpatient treatment is coordinated at RUMC (or NMH) among the hospital care provider involved with the patients prior to and during transfer to ORD and the medical teams at RUMC and NMH. The most important medical information needed are the patient's blood counts along with any comorbidities upon arrival to RITN center as marrow toxic injuries could be underlying other conditions.

Thirty adult patients with marrow toxic injuries were determined to be manageable at RUMC and NMH for a total of 60 adult patients transported to Chicago. The medical teams discussed and determined that their intensive care units would be put on alert for any changes in status of the patients, as they would be monitored closely for neutropenic fevers. If any of the patients become septic, then they would be immediately transferred to the ICU. The medical teams determined that most would be managed on an inpatient basis with administration of the appropriate pharmaceuticals, transfusions, and growth factor therapy.

Outpatient Treatment Considerations (1-2 Gy): One of the primary treatment considerations for patients with a 1-2 Gy dose and mild ARS is whether or not the patient can tolerate oral fluids. If the patient can tolerate oral fluids with minor nausea, the medical treatment is for supportive care with monitor of blood counts for stability and improvement. If blood counts worsen, this is a potential indicator of serious marrow damage and those patients would be given intravenous (IV)

fluids in the clinic setting. The critical resources needed include: medical care providers, blood products, growth factor products, and family assistance to immediately manage the patients. Additional resources include food, clothing, beds, psychological/behavioral health services, and general hospital staff to manage fears of radiological contamination for hospital staff, patients, visitors, and family that have traveled with the patients to either RUMC or NMH.

Considerations and Challenges for Marrow Toxicity: Several considerations as well as challenges were discussed regarding management of patients with marrow toxicity. The primary challenge identified by RUMC and NMH was a potential shortage of antibiotics. Both centers agreed that patients could be administered antibiotics 10 times a day depending on severity, which would rapidly create a supply shortage and necessitate requests (through the existing Coalition request process). Also, blood and blood products were noted to likely in short supply given the scenario numbers. At such time, RUMC and NMH should submit the resource request form (213RR) via EMResource™ to the CDPH Public Health Emergency Operations Center (PHEOC) for adjudication and the PHEOC would contact the American Red Cross (ARC) to request mobilization of blood donor drives and LifeSource for blood and blood products. Lastly, both centers agreed that human leukocyte antigen (HLA) typing would likely be done as a preparatory step to initiate the donor matching process.

RITN Center Expectations: With a 35 patient transport capacity for the airplanes, RITN centers should plan and expect to receive 35 patients from the FCC at O'Hare International Airport as a 1st wave of medical surge. The planes are expected to be on the ground for a total of 20 minutes for patient offloading; plane servicing and safety inspection, and then they take off to retrieve additional patients. The scope of the event determines the number of flights received at the FCC; the expectation is for planes to arrive every 2 hours carrying 35 patients per plane. Thirty-five ambulances requiring staging at the ORD FCC, which may challenge OEMC's ability to get the resources in place to support this level of transportation expectation. It was unclear whether the ambulances would be from Chicago Fire Department (CFD) / EMS, Mutual Aid Box Alarm System (MABAS) or PPERS. Additionally, medi-cars are being investigated for use at the FCC. The service access teams at the FCC must process and triage patients quickly, identify whether they are going to RUMC or NMH, and load them into ambulances for transport. The expectation is that all 35 patients would be processed and transported from the FCC within an hour.

The RITN centers should expect that only initial triage (general condition, pain level, blood pressure, ambulatory level, and stabilization) has been completed at the FCC in preparation for patient transport. The 50-bed tent at the ORD FCC has the capacity to perform minor care with no capability to conduct more robust first aid if needed.

Non-RITN NDMS Hospital Expectations: Coordinated hospital messaging would be developed and distributed to non-RITN NDMS hospitals according to existing Coalition notification and communication plans. In consultation with the CDC, CDPH and IDPH would develop a "profile" of the worried-well as well as guidelines and recommendations to hospitals to manage the worried-well. Lastly, emergency departments would be informed to anticipate self-reporting victims and evacuees at least 5 days post-blast.

Resource Request Process: CDPH reinforced that RUMC and NMH should follow the existing Coalition resource request process (complete and submit the 213RR via EMResource™) for any event. A consideration was discussed that the RITN centers must balance between the resource needs to medically manage the NDMS patients versus the hospital anticipating what they will need at some point to manage the NDMS patients.

Behavioral Health Support: RUMC and NMH discussed the importance of behavioral health support for patients and their families as well as for their own hospital staff. As an initial step, RUMC and NMH would complete a needs assessment identifying the type and level of support needed and request this support through the existing resource request process previously discussed through the Coalition. Once the request is made, the CDPH Mental/Behavioral Health Coordinator would be contacted to coordinate and activate support resources on behalf of the Coalition and the ARC would also be contact for support.

Role of EMA and Public Health: The primary role of public health is information sharing across the Coalition via the Chicago HAN and information across the State of Illinois via the IDPH SIREN system.

Provision of Mass Care: Once patients arrived at RUMC and NMH as discussed previously, multiple levels of support would need to be provided to their families and to address their immediate needs. The mutual aid plan would be activated locally and the City of Chicago (via OEMC) would rely on multiple federal agencies to plan and support the disposition of the families, such that family management will involve multiple entities (RITN centers, OEMC, CDPH, IDPH, and other City agencies) to execute the federal level family disposition plan to include provision and distribution of funding and victim compensation.

A limited number of apartments are available for family assistance/housing, which is coordinated within the Illinois Medical District (IMD). RUMC student apartments could also be made available. RUMC is able to coordinate with the local hotels within the IMD. Both RUMC and NMH have existing housing plans to provide family assistance but coordination efforts would

involve the service access team to determine financial reimbursement prior to using hospital resources for NDMS patients.

Altered Standards of Care: The coordination of mass care for this event extends well beyond procurement of ambulances and patient receipt at the RITN centers and NDMS hospitals. Participants discussed legality considerations for transporting patients in non-ambulance vehicles (i.e. medi-cars), which was determined to be a significant issue to resolve prior to use of medi-cars for patient transportation. While there is precedence and the City of Chicago and CDPH have plans and processes well-established and documented to activate when necessary, a request for the FDA to quickly review and approve an EUA (emergency use authorization) for use of local caches in normally unintended way (e.g. reconstitution of antibiotics at the hospital level).

Decontamination: Lastly discussed, hospitals stated they would conduct some level of decontamination at their facilities if nothing more than to reinforce to staff, families, and visitors that patients have been cleared of contamination and can be treated without PPE for radiological exposure/contamination. As an added level of decontamination, the FCC can request the CDPH radiological detector assets be deployed to the FCC and the CDPH radiological detectors can also be deployed to the RITN centers and NDMS hospitals. In order for these CDPH assets to be deployed, hospitals must follow the previously discussed Coalition hospital resource request process. Finally, REAC/TS is available to support the RITN centers and NDMS hospitals to support hospital's internal radiation safety teams in response activities.

Patient Tracking: The expectation at the ORD FCC (and should be at RUMC and NMH) is that the transported NDMS patients will not have a medical record. Although minimal patient information may have been entered into the federal TRAC2ES system (it is the military system tracking patients allocated to the planes, but no further than the FCC), the primary patient tracking mechanism is going to be the HHS JPATS system. The HHS teams that arrive at the ORD FCC are responsible for the management of patients (in coordination with the Region XI RHCC Coordinator), the transfer of patients to the final receiving hospital, and the final disposition of the patients from the hospital.

RITN Center Bed Availability: RUMC and NMH discussed their current capability to manage a 1st wave of patients with existing bed availabilities. After the 1st wave, both centers would need to initiate transport of the 1st wave of NDMS patients to other Coalition hospitals to treat mild ARS as RUMC and NMH would prepare to receive a 2nd wave of NDMS patients. One challenge expressed by both centers involved transport of their current oncology patients to non-RITN centers as preservation of their current continuity of care would be compromised as these patients have

established relationships and confidence with their treatment teams and would likely resist disruption by not only physical transport but also working with a new doctor and treatment team.

Financial Management: Financial management that included housing costs of patients and their families, costs of home health care, and working with 3rd party billing companies was discussed as a significant concern for RUMC and NMH. It was discussed that the service access team would coordinate with RUMC and NMH to identify the appropriate housing reimbursement mechanism though 30 patients and their families was anticipated as being manageable at the individual facility level, but 60 patients and their families would present challenges. Tracking the costs incurred by the hospitals and City of Chicago agencies was stated to be a significant challenge requiring diligent documentation and record keeping.

**Strengths**

The following strengths were demonstrated:

**Strength 1:** RUMC and NMH have relatively deep resources to medically manage the numbers of victims in this scenario in their respective BMT and Oncological Departments.

**Strength 2:** RUMC, NMH, and City resources are ample to address the housing needs of those outpatients and their families within the constraints of this scenario.

- *It should be noted that 30 patients are a relatively manageable number for each facility in this scenario. If those numbers double or triple, the management from a medical, mass care, and financial perspective is amplified considerably.*

**Strength 3:** RUMC and NMH both possess in-house expertise to make rapid treatment decisions (i.e. inpatient or outpatient) with little to no external support.

**Areas for Improvement**

The following areas are opportunities for improvement:

**Area for Improvement 1:** Resource management: Certain types of resources (e.g. blood, antibiotics, antifungals, and neupogen) may be in short supply/high demand during this type of event. While the Chicago Coalition maintains an established process for resource requests, it is recommended that RITN Centers pre-plan with the Coalition to provide a sufficient pre-event awareness of the types of resources that may be needed to treat an influx of radiation injuries.

**Area for Improvement 2:** Tracking financial expenditures: Planning discussions among OEMC, CDPH, RUMC, and NMH are needed to identify current systems to track costs and discuss plans

(or processes) for costs to be tracked and managed centrally so that all involved entities receive reimbursement.

**Area for Improvement 3:** Transport coordination: While the Region XI RHCC would route patients to the nearest NDMS hospital, there needs to be further consideration for radiological incidents. In this scenario, NMH and RUMC should be the primary recipient of radiation injuries. As a result, they may need to decompress and send patients to other facilities. It is recommended that RUMC and NMH meet with the Region XI RHCC coordinator to plan for this coordination.

**Area for Improvement 4:** Mental-behavioral health support: Patients and families transported from another City are likely to experience psychological impacts from the event (IND) and the stress of being displaced from their home for an extended period of time. In addition, healthcare workers are likely to require assurances for personal safety, which may necessitate steps such as radiation monitoring/detection at hospitals. Radiation Emergency Medical Management (REMM) has several online resources available at the following link to reference for psychological support: http://www.remm.nlm.gov/psych.htm

**Area for Improvement 5:** Review messaging guidance resources: Resources are publicly available to assist entities effectively communicate with the pubic following the successful detonation of an IND. One such resource publicly available is "Communicating in the Intermediating Aftermath of IND," which offers guidance by FEMA intended for first responders and public information officers to address worried-well concerns and more effectively disseminate communication messages to the public.

**Area for Improvement 6:** Crisis standards of care: A national Crisis Standards of Care is needed and disseminated as an event like this will require guidance on crisis standards of care. CDPH and IDPH have been addressing this issue and will discussed inclusion of radiation injury considerations as an element for future discussion. In the meantime, there are some resources available that can be referenced including the following:

- Allocation of Scarce Resources – Final Report
  http://www.effectivehealthcare.ahrq.gov/ehc/products/400/1151/EvidenceReport207_Allocation-of-Scarce-Resources_FinalReport_20120716.pdf
- Institute of Medicine Crisis Standards of Care Reports
  http://iom.nationalacademies.org/About-IOM/Leadership-Staff/IOM-Staff-Leadership-Boards/Board-on-Health-Sciences-Policy/CrisisStandardsReports.aspx

# APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2015 RITN Regional Exercises. RUMC and NMH 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] | | | | | |
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[1] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

# APPENDIX B: EXERCISE PARTICIPANTS

| Participating Organizations | | |
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# APPENDIX C: ACRONYMS

| Acronym | Term |
|---|---|
| AAR | After Action Report |
| ARC | American Red Cross |
| ARS | Acute Radiation Syndrome |
| ASPR | Assistant Secretary for Preparedness and Response |
| BMT | Bone Marrow Transplantation |
| CBRNE | Chemical, Biological, Radiological, Nuclear and Explosives |
| CDC | Centers for Disease Control and Prevention |
| CDPH | Chicago Department of Public Health |
| CFD | Chicago Fire Department |
| CHSCPR | Chicago Health System Coalition for Preparedness and Response |
| DC | District of Columbia |
| DF | Dangerous Fallout |
| ED | Emergency Department |
| EEG | Exercise Evaluation Guide |
| EMS | Emergency Medical System |
| EOC | Emergency Operations Center |
| EUA | Emergency Use Authorization |
| FCC | Federal Coordinating Center |
| FDA | Food and Drug Administration |
| FEMA | Federal Emergency Management Agency |
| GCSF | Granulocyte Colony-Stimulating Factor |
| Gy | Gray (unit) |
| HAN | Chicago Health Alert Network |
| HC | Health Care |
| HCS | Healthcare Standard |
| HEPA | High-Efficiency Particulate Absorption |
| HHS | Health and Human Services |
| HIMT | Hospital Incident Management Team |
| HLA | Human Leukocyte Antigen |
| HPP | Hospital Preparedness Program |
| ICU | Intensive Care Unit |
| IDPH | Illinois Department of Public Health |

| Acronym | Term |
|---|---|
| IEMA | Illinois Emergency Management Agency |
| IMD | Illinois Medical District |
| IND | Improvised Nuclear Device |
| IV | Intravenous |
| JPATS | Joint Patient Assessment and Tracking System |
| MABAS | Mutual Aid Box Alarm System |
| MOA | Memoranda of Agreement |
| NMDP | National Marrow Donor Program |
| NDMS | National Disaster Medical System |
| NMH | Northwestern Memorial Hospital |
| OEMC | Chicago Office of Emergency Management & Communications |
| ORD | Chicago O'Hare International Airport |
| PHEOC | Public Health Emergency Operations Center |
| PRA | Patient Reception Area |
| PPE | Personal Protective Equipment |
| PPERS | Private Provider Emergency Response System |
| REAC/TS | Radiation Emergency Assistance Center / Training Site |
| REC | Regional Emergency Coordinator |
| RED | Radiological Exposure Device |
| REMM | Radiation Emergency Medical Management |
| RHCC | Regional Hospital Coordination Center |
| RITN | Radiation Injury Treatment Network |
| RUMC | Rush University Medical Center |
| SEOC | State Emergency Operations Center |
| SIREN | State of Illinois Rapid Electronic Notification |
| SITREP | Situation Report |
| SME | Subject Matter Expert |
| TRAC2ES | TRANSCOM Regulating and Command and Control Evacuation System |
| TRANSCOM | Transatlantic Communication |
| TTX | Tabletop Exercise |
| VA | Veterans Affairs |
| VAMC | Veterans Affairs Medical Center |