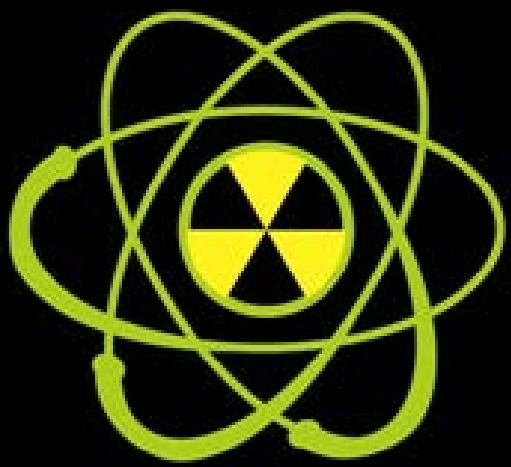
2015

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



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EXERCISE OVERVIEW

Exercise Name	Seattle Regional RITN Tabletop Exercise (TTX)
Exercise Date	August 10, 2015
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 Seattle metropolitan region. **Objective 2:** Identify the process for casualty reception and distribution within the Federal Coordinating Center model. **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 radiological casualties; of particular concern is triage, treatment, tracking and surveillance of self-referral cases from the incident area 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 Seattle RITN treatment centers.
Threat or Hazard	Radiological
Scenario	Improvised Nuclear Device (IND) detonation
Sponsor	Radiation Injury Treatment Network (RITN) Office of Naval Research (ONR)
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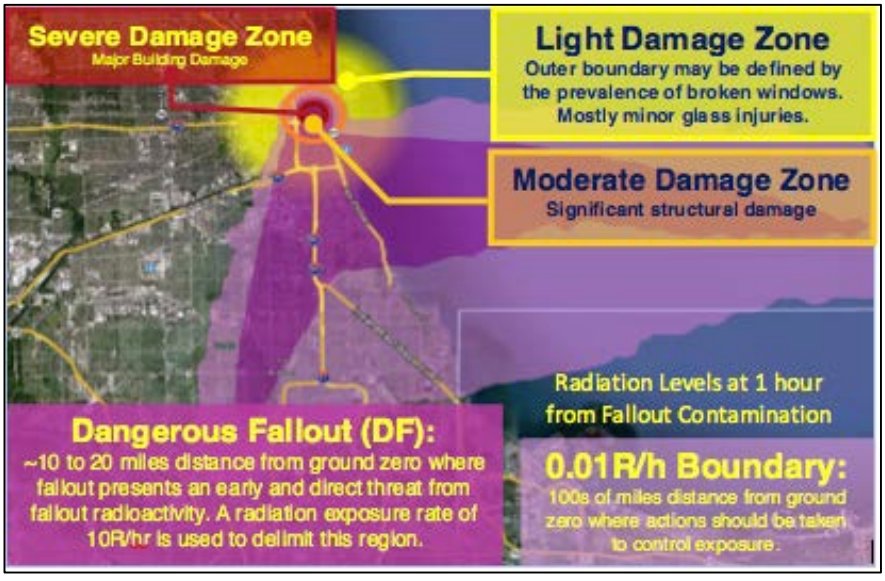
EXERCISE SUMMARY

On August 10, 2015, the Seattle Cancer Care Alliance (SCCA), State of Washington Department of Health (WA DOH), Public Health – Seattle King County (PHSKC), the University of Washington Medical Center, Seattle Children's Hospital, Harborview Medical Center, the Northwest Healthcare Response Network, Seattle Fire Department, Seattle Medic One Emergency Medical Services (EMS), the National Disaster Medical System (NDMS) Federal Coordinating Center (FCC), the U.S. Department of Health and Human Services (HHS) Assistant Secretary for Preparedness and Response (ASPR), and the RITN Control Cell participated in a tabletop exercise to discuss the organizational roles and responsibilities of key agencies, identify resources required to provided treatment for a surge of radiation injury patients, describe medical management of patients (to include inpatient, outpatient and self-referral), discuss casualty reception and receipt within the FCC model, and identify resource needs for mass care/shelter operations. Exercise participants addressed these objectives in a scenario-driven, facilitated discussion based on a surge of casualties with radiological injuries arriving to the Seattle metropolitan area.

Exercise Scenario

Initial Event

- On August 4th, 2015 a ten-kiloton Improvised Nuclear Device (IND) was detonated in the City of Chicago.



- 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

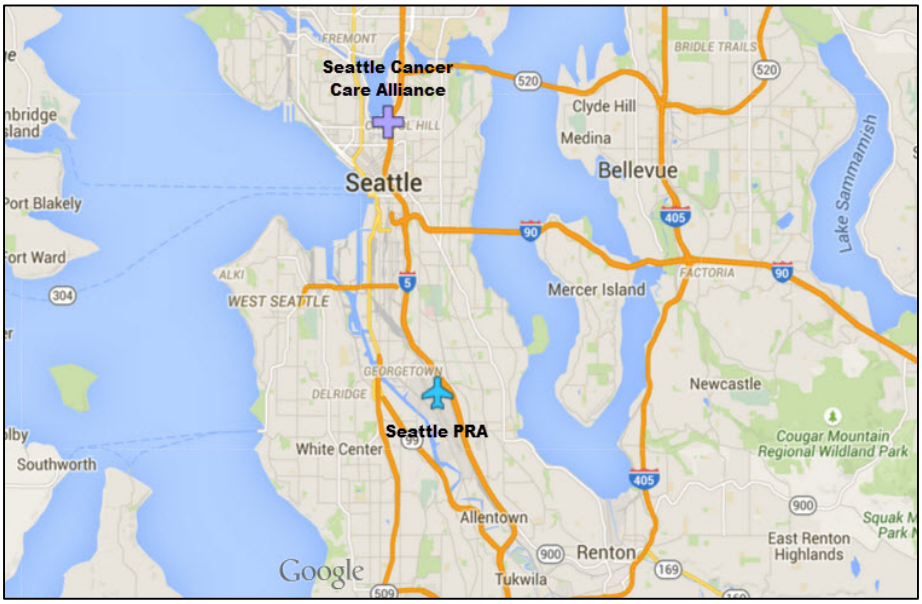
- National Disaster Medical System (NDMS) issues activation protocol for Seattle, indicating the region will be receiving casualties from the disaster zone via NDMS.

- The Department of Defense initiates actions to establish a FCC at King County International Airport, where NDMS patients will be received.

Initial Event +5 Days

Approximately five days after the detonation patients start to arrive at the FCC established at King County International Airport. Upon arrival patients will be screened and triaged for transportation to local RITN hospitals for treatment. Seattle Cancer Care Alliance is the only RITN center in the region and is expected to receive 80 adult and 20 pediatric patients with marrow toxic injuries. These patients will be arriving over the next 1-2 days.

Patients arriving to RITN centers will likely have been exposed to whole-body doses of 2-8 Gy and be experiencing signs and symptoms of Acute Radiation Syndrome (ARS). It is anticipated that some RITN patients will be treated on an outpatient basis. Mass care services for patients and family members are also anticipated.



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 Seattle metropolitan area.	Public Health & Medical Services	Emergency Operations Coordination
Objective 2: Identify the process for casualty reception and distribution within the Federal Coordinating Center model.	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 radiological casualties; of particular concern is triaging, treatment and tracking/surveillance of	Medical Countermeasures Dispensing	Responder Safety & Health

Exercise Objective	Core Capability	Healthcare Preparedness Capability
self-referral cases from the incident area 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 Seattle RITN treatment centers.	Mass Care Services	Emergency Operations Coordination

ANALYSIS OF CAPABILITIES

Question Block 1: Pre-Arrival of Patients

The following are the primary concerns at this point in the scenario for:

Seattle Office of Emergency Management (SOEM) and Seattle EOC	Public Health Seattle King County (PHSKC)	State of Washington Department of Health	RITN Facilities (Seattle Cancer Care Alliance)	Non-RITN Hospitals	Puget Sound FCC
• Communicating and scheduling conference calls to share situational awareness (city partners and other emergency management agencies) • EOCs may be activated to support security operations or may not be activated and only be monitoring the situation	• Establishing the Health and Medical Area Command (HMAC) • Coordinating public information • Leaning forward to support the needs of healthcare facilities in the region • Serving as a link between the healthcare system and local Emergency Management Agencies (EMAs) to meet non-medical needs of the patients and their families (e.g., housing and schools) • Developing guidance on standards of care if needed	• Looking outside King and Pierce Counties to see what the statewide capacity is to help decompress census (if needed) • Coordinating the overall healthcare system statewide	• Planning for victim triage (e.g., inpatient, outpatient) • Assessing pharmacy cache, anticipating needs for potential request of the national stockpile • Assessing blood supply • Providing expert guidance to facilities without experience as to the care of patients with radiation sickness/injury	• Assessing patients to help off load the University and SCCA transplant center patients • Developing messaging to help with worried well and staff concerns about potential exposure • Assessing resources to support the patient surge within the region	• Entering available beds in WATrac upon notification from HHS • Identifying King County International Airport as the patient reception area • Establishing communications with King County partners and hospital facilities to ensure that patients can be received • Facilitating information sharing on patient arrival time and status between the air force and the RITN hospital (SCCA)

NDMS Activation Criterion & FCC Establishment: The Puget Sound (Joint Base Lewis-McChord, Madigan Army Medical 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 identifying an appropriate Patient Reception Area (PRA). In this scenario, the PRA would be established at the King County International Airport. Following notification, internal protocols for opening the FCC would be activated. By this time it is assumed that the HMAC and other local agencies would have been notified and be activating resources as well to support the response.

NDMS activation occurs approximately 3 days prior to patient arrival at the FCC (for this scenario patients are 5-7 days post incident when they arrive to the FCC). There are a number of factors that play into the federal-level decision-making process as it relates to patient placement into the FCCs across the country. For example, the patient movement strategy weighs the assets available in the designated cities so as not to stress the FCC system and matching patients with the right level of care. The United States Air Force Aeormedical Evacuation (USAF A/E) can move 600 patients per day to FCCs; typically 40 patients per military aircraft can be expected to arrive at a time to receiving (inbound) FCCs.

RITN & NDMS Coordination: Specialty bed (i.e., hematology/oncology) availability at the RITN hospital (SCCA) is uploaded into WATrac, which is communicated to ASPR. ASPR/HHS Secretary Operations Center (SOC) determines the patient distribution strategy across all NDMS hospitals and communicates with NDMS to ensure patients are being directed to the RITN hospitals in order to receive the appropriate level of care. Once it is determined that patients will be sent to the Seattle FCC, the medical officers at the FCC will coordinate locally both with the facilities directly as well as to arrange for patient transport to the facilities.

Notification of Hospitals: All NDMS hospitals would be notified of the event and potential for receipt of patients. The Disaster Medical Control Cell (DMCC) is the local entity responsible for ensuring that hospital bed information is uploaded into WATrac and for coordinating with public health to support matching clinical patient needs with available medical/hospital resources.

SCCA would activate the plans for rapid decompression, to include a review of current inpatient lists to determine which must stay at the hospital for care and which could be moved to other locations to continue care. Teams of physicians and nurses would review the current case load in the command center and make determinations on which transplant patients could be decompressed while trying to minimize the impact on care.

Assets to Operate FCC: Madigan Army Medical Center has a 5 person team that would receive the incoming patients from the Air Force and then coordinate with local transport assets and hospital facilities to get the patients to the hospitals for treatment. The Seattle Fire Department provides patient transport from the FCC PRA to the hospitals. The transport resources include 7 on-duty medic units and 5 other available units. Beyond the resources directly operated by the Seattle Fire Department, the department's role is to organize other ambulances and fire department assets available in the county for transport. To balance normal duty calls against supporting incoming patients at the FCC, the fire department would coordinate with the DMCC, local response network, and the hospitals to assess where transport resources were and determine how to manage incoming 9-1-1 calls. Transport for patient decompression operations would also be factored into the

available transport resources. The coordination of transportation assets occurs within the Incident Command System (ICS) structure to include assistance from the State-level EMS Strike Team (e.g., looking at private ambulance providers and determining how to mobilize).

Command & Control (Fed, State, and Local): At the federal level, the Federal Emergency Management Agency (FEMA) is in charge of the overall response to a nuclear detonation. HHS ASPR manages the Emergency Support Function (ESF) – 8 component (Public Health and Medical Services) to include establishing the Federal and Regional Coordination Centers. ASPR would also be in contact with the Washington State Emergency Operations Center (EOC) to facilitate sharing of guidance and mobilization of resources. PHSKC would establish the HMAC in order to serve as the primary link between the healthcare system and local Emergency Management Agencies (EMAs), support the resource needs of the healthcare facilities in the immediately impacted (by the incoming NDMS patients) facilities, and to coordinate with state and federal partners on public information strategies.

Public Messaging: A Joint Information Center (JIC) would be established to coordinate the State response to the incident and patient reception to the local area. Messages would primarily be developed at the local level (i.e., Seattle King County Public Health) and daily conference calls would be arranged by PHSKC to provide situational awareness and facilitate development of consistent messages. The State of Washington Department of Health (WA DOH) would support local public health in public messaging efforts. Also at the PIO for Madigan Army Medical Center would coordinate with PHSKC using protocols that were established during the 2009 H1N1 influenza outbreak. In addition, PHSKC would open a call center to answer questions from the public.

It was noted during the discussion that additional work should be done to ensure that hospitals and the FCC are sufficiently looped into the joint messaging efforts. Also, for an event of this nature, there are federal level documents and guidance that exists to help with creating messaging strategies and templates in advance. Two of the references mentioned were:

- 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

Strengths

The following strengths were demonstrated:

Strength 1: Command and control of the incident described in this scenario was well understood at all levels; partners were familiar with existing Incident Command System (ICS) structures and emergency response plans and were able to discuss how this type of incident response would be managed and identified potential nuances given the type of patient surge that would be expected.

Strength 2: Bed availability information sharing through WATrac to the NDMS is effective and streamlined. The role of the FCC and DMCC in ensuring that this information is communicated in a timely manner to facilitate appropriate patient placement within the jurisdiction was a recognized strength.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: Given the large number of agencies involved, it is critical to activate the EOC at all levels (local, county, state) to most effectively share information, move critical resources, and develop consistent messages (for the latter this also includes establishing a JIS/JIC for message coordination).

Area for Improvement 2: DMCC/WATrac currently does not track Long Term Care Facility (LTCF) bed availability; this should be a future goal. Developing an understanding of the regional LTCF capability and capacity to support a medical surge response and developing relationships with LTCF partners in advance is recommended for any type of incident resulting in a large patient surge.

Area for Improvement 3: Public messaging strategies for this type of incident (i.e., radiological/nuclear detonation that results in radiation injuries) should be developed in advance and incorporated into existing emergency response plans. References to assist with messaging strategies and templates include, but are not limited to, those mentioned above. It may be of value to convene a local working group to address the public information gaps.

Area for Improvement 4: It may be valuable for SCCA to conduct an internal command center exercise for this type of scenario, particularly because there may be a need to involve different subject matter experts in the decision making for decompression and determination about inpatient and outpatient status for incoming NDMS patients.

Area for Improvement 5: A future drill that furthers the discussion of SCCA capacity and ability to take in a surge of radiation injury patients is recommended. A more in depth discussion and characterization of the potential limitations to receiving patients (e.g., trained staff, beds, resources) and the number that could be decompressed on any given day (i.e., current patient census) to

include follow on questions such as: *How many can be decompressed? What are the criteria for that determination? Where do the patients go? How are they moved? How long does it take? What information must go with them? What type of care is required and how will this be supported? How is both specialty and non-specialty staff augmented at SCCA to care for the incoming radiation injury patients?*

Question Block 2: Arrival of Patients

Outpatient/Inpatient Treatment Determination: Patients that would require admission to the hospital would include those that are neutropenic (absolute neutrophil count [ANC] less than 500) and have a fever. Others that may be determined for inpatient status are those requiring platelet transfusions more than twice per day; under normal circumstances this would be difficult to do as an outpatient but in this situation there may be operational changes (e.g., longer hours) that would allow this care to be performed as an outpatient.

Because of the lead time with arriving NDMS patients, the DMCC would have established communication with the hospitals to determine bed availability and type of care/expertise available in order to make decisions once patients arrive to the local FCC so that they can be moved out of the airport as quickly as possible. It was not clear what type of information would be coming with the patients, but if sufficient information was available (communicated from the Air Force to the local FCC to DMCC), patient placement decisions could be made in advance of their arrival. SCCA would be a key partner in the decision making process; that is, a subject matter expert would be coordinating with the DMCC via phone to help make determinations on outpatient or inpatient status as well as the designated facility for appropriate care.

It was a recognized strength from a tabletop exercise held earlier this year (June 2015) that when clinicians were presented with radiation injury patient profiles, they were able to rapidly triage the patients based on the little amount of information available. In a real world NDMS event, it is likely that patient demographics and basic clinic information would be received. Neutrophil and lymphocyte numbers would be provided but it is possible that less experienced [with radiation injury] clinicians may make a mistake in who they are sending, so serial triage is important to include serial neutrophil and lymphocyte assessments in order to appropriately place patients.

A key consideration that was mentioned during the exercise is that for this type of patient surge, care/services go on for an extended period of time (e.g., transplant patients stay at the hospital for 100 days post transplant). Models that work for surging staff and resources for MCI/blast injuries

will need to be modified to support an extended (and specialty) surge. It was likened to the lengthy care required by burn victims.

It was noted that training proficient staff into transplant care requires approximately 3 months.

Outpatient Treatment Considerations (1-2 Gy): Resources that may be needed to treat mild cases of Acute Radiation Sickness (ARS) include medication (granulocyte colony stimulating factor [G-CSF] or Neupogen®) and infusion treatments. Staffing would also be a major consideration; for example performing laboratory draws is already a recognized bottleneck for the institution so would quickly become overwhelmed in this scenario without external support to augment staffing resources.

A clinical command center, represented by an attending physician, mid-level nurse, and administrative assistant) would be available to answer questions and provide guidance to other hospitals that are less familiar with radiation injury. This group would offer extended hours for consultation at least initially and then ramp up or down depending on the need (i.e., number of patients in the system).

Considerations & Challenges for Marrow Toxicity (Inpatient Surge): All of the needs described with the outpatient care considerations and resources would still apply, but in addition all inpatients would require central lines to facilitate administration of the medications and fluids for care. This requires a certain skill set that may be in short supply. Resources would need to be balanced and coordinated across both inpatient and outpatient care needs, underscoring the need for careful patient tracking and placement decisions.

Some questions remained on the timing of activation and/or how hospital surge plans would be implemented for this scenario, both at SCCA but also at supporting hospitals in the region that would be able to provide beds, staff, and other resources to the RITN hospital.

Triage, Treatment, and Tracking/Surveillance Considerations: EMS triage at the IND detonation scene would initially screen the people and determine that they were sick enough to require transport to a specialty center; the baseline dosimitry reading would serve as an initial assessment with 12-hour and 24-hour follow on measurements. Patients are screened (and decontaminated, if necessary) prior transport by the U.S. Air Force; the Air Force will not move contaminated patients. Local concerns were expressed during the exercise that screening at the PRA in Seattle was necessary for two reasons: 1) to prevent contamination of hospitals or ambulances and 2) to have a local record that the patient is showing zero contamination upon receipt. However, current patient reception plans at the FCC do not include any asset (or request for local assets such as the Medical Reserve Corps [MRC]) to conduct on site patient screening prior to transport to a

hospital. There may be a second local screening point at the hospitals to again ensure protection of their staff and facility as well as to continue the documentation of the patient status. Further development of these aspects of the patient reception plan for this type of emergency is needed. However, it was recognized that these serial opportunities for screening and decontamination will provide reassurance and a more complete patient record by the time of arrival at the hospital.

Patient tracking for NDMS is done using the DHHS Joint Patient Assessment and Tracking System (JPATS); this is accessed by either the Service Action Team (SAT) or the FCC team. If a SAT is not available, it may be more effective to rely on a local tracking system as the primary means of knowing where the patients are placed and if they are discharged. Hospitals do not use JPATS, so ensuring that WATrac has this functionality and that hospitals (to include SCCA) are familiar with the tracking process is an important next step. There will be redundancy between JPATS data and WATrac, but the locals will rely upon the WATrac system and the FCC (or SAT) will be responsible for updating JPATS as the patients move through the local system and back to their home location.

The standard NDMS plan is focused on inpatients; however in this scenario there will also be outpatients. The current tracking systems are not built for outpatient care. This is a recognized gap at the federal level and models are being developed for how to effectively track these patients. The likelihood for NDMS patients is that they will be admitted as inpatients first and then may be discharged to outpatient status for ongoing care. There will also be people who arrive on non-military aircraft but become sick and require care. Determining patient reception and tracking procedures for the latter is outside the scope of this exercise but does require attention at both the federal and local planning level. For those patients that do arrive as part of NDMS (the former example), patient tracking procedures for the outpatients need to be developed and exercised.

Resource Request Process and Prioritization of Limited Resources: Hospitals would make resource requests to the State EOC; the Health Branch (WA DOH) would work through existing networks in attempt to fulfill the requests. If necessary, the State EOC would facilitate tapping into federal resources to support the response. The type of resources needed for a radiation injury response could be better characterized and socialized in advance to help public health anticipate and streamline the process for fulfilling requests.

Role of EMA & Public Health:

Public Health:

- Facilitate information sharing to non-RITN facilities in the area to include situational awareness as to the number of patients and expectations for how the other hospitals can

support the response. During Fukushima proactive situation reports that were disseminated by the State went a long way to keeping a large number of people informed and able to answer questions that arose.

- Develop guidance for patient care, in particular related to the prioritization of scarce resources and the determination of those patients most likely to survive while others may receive palliative care. State level guidance on the strategy/decision process will be important to back decisions made at the facility level. There may be federal level support to tie into for guidance development at the State level, but having some preliminary guidance around these issues developed in advance may be beneficial.

Emergency Management:

- Assist with community volunteer surge (i.e., direct people to non-medical roles as those would be filled by the trained volunteer population at SCCA and other hospitals)
- Coordinate the ESF-6 function with the Red Cross
- Coordinate outpatient and family member sheltering needs

Behavioral Health Resources: SCCA has a full social work team as well as chaplains so would look to internal resources first to support the behavioral and mental health needs of patients and their families/caregivers. This would likely be sufficient to meet the inpatient and outpatient needs; however for the larger community behavioral and mental health care would be an issue. It would be important to coordinate with King County assets to support community needs. This may include establishing hot lines, mobilizing counselors, conducting outreach to the hospital facilities and shelters (to identify those in need of a mental health intervention). Use of the PSY-START psychological triage tool (being piloted within the region now) was discussed to identify individuals who may need behavioral health resources based on their risk factors rather than their outward behaviors following an event of this magnitude.

This opened up a further discussion on the fact that family members arriving with the sick patients may have existing conditions/co-morbidities, mental health being just one of those potential factors. It will be important in the planning process for any event where incoming patients are accompanied by family members to think through how to continue care for these people in addition to the patient's needs.

Provision of Mass Care: NDMS attempts to move family units so incoming patients will have caregivers; however this creates the issue of housing. Typically the facilities that are currently designated for family/outpatient housing (affiliated with the hospital) are preferred because all of

the systems are in place (e.g., nutritional requirements, transportation). In order to move to another location these types of things would need to be communicated and coordinated.

For transplant outpatients, it is important to house them within 30 minutes of the center because the follow up visits and ongoing care is so important to their outcome. The assumption is that for care of the radiation injury patients this would be the same rule of thumb as much as it could be accommodated. The dorms at the University of Washington are a promising option because of the close proximity. Parking nearby is another reality that must be considered in both housing and getting outpatients to the hospital for care.

Early identification of the number of outpatients would help in coordinating the housing needs. The hospital has 2 apartment buildings (80 units and 70 units) but during certain times of the year it is at capacity. Area hotels may be an option but the first question that will need to be addressed is payment for the hotel rooms (and then availability, summertime will likely have little vacancy). For inpatients, families will stay with them in the hospital as much as possible.

Coordination of Mass Care: SCCA would contact Seattle Emergency Management Agency to help identify and coordinate housing. At the federal level ESF-6 (Mass Care) would coordinate the costs and reimbursement for housing. It was noted that in this scenario it would be unlikely that a federal SAT would be available for dispatch to the area, so the FCC would coordinate with regional ESF-6 coordinators (e.g., County level) in arranging mass care and shelter.

RITN Center Bed Availability: WATrac is the system that all hospitals, including SCCA, use to report bed availability; this is communicated to RITN through existing communication channels. As mentioned previously, the Disaster Medical Control Cell (DMCC) is the local entity responsible for ensuring that hospital bed information is uploaded into WATrac and communicating this information outward as needed.

Financial Management: This was not discussed in detail during the exercise, but it was recognized that it would be very important from the start of the incident for all responding organizations to track their resources to ensure that reimbursement can be efficiently processed. An incident of this magnitude would result in a Presidential Disaster declaration, which would open funding and reimbursement channels for the response. It was again recognized that streamlined tracking of the patient data and understanding of the systems used (and how information is communicated between systems) will be important, in particular as it relates to the outpatient and long-term care in this type of response.

Strengths

The following strengths were demonstrated:

Strength 1: RITN facility (SCCA) clinicians are able to rapidly and effectively triage patients to inpatient or outpatient status given basic lab/cell count information.

Strength 2: SCCA has a robust pool of mental and behavioral health resources that would be sufficient to provide care for the patients and their family members/caregivers. In addition, use of the PSY-START triage tool to identify patients, family members, and staff that may benefit from mental health services was recognized as a best practice.

Strength 3: SCCA has resources and processes in place to support outpatient housing under normal circumstances, much of this could be leveraged for this surge scenario either using the facilities that are already affiliated with the hospital or applying those protocols to another location.

Areas for Improvement

The following areas require improvement:

Area for Improvement 1: Develop patient screening protocols that can be implemented at the PRA in order to verify level of contamination for all arriving patients, both for safety as well as to send a message to the public that it is under control. Consider convening a multi-discipline working group to identify the issues and develop a plan that can integrate into current FCC protocols.

Area for Improvement 2: Develop (as possible) an understanding in advance of the type of information that can be expected to arrive the patient and create processes to keep all of the screening/health information with the patient as they are moved into the local RITN and non RITN-hospitals.

Area for Improvement 3: Review options for sustaining the level of staffing, expertise and resources for a long-term medical surge of radiation injury patients.

- Create resource lists in advance and provide to public health to help streamline the request process.
- Identify staffing strategies to continue to support a prolonged surge; this may include training additional specialty (transplant) staff, looking across part time staff that could be ramped up to full time, and augmenting other types of duties (e.g., public information call lines, laboratory draws, blood drives, behavioral health) with the Public Health Reserve Corps or similar organization to relieve the burden on specialty staff.
- Consider characterizing the skill sets that would be needed in this type of disaster and mapping to potential solutions for how to meet those needs in both the short- and long-term.

Area for Improvement 4: National Crisis Standards of Care is needed to direct scarce resource prioritization decisions and guide patient care decisions. Locally, in lieu of federal level guidance, the State needs to develop a plan for allocation of scarce resources to support individual facility decisions. Leverage the Disaster Medical Advisory Committee (DMAC) to explore guidance that should be developed and socialized with policy makers in advance of a radiation emergency. Collaboration between medical and legal experts to work through some of the possible scenarios in

advance will provide a framework for decision making should this type of event occur. Several resources include:

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

Area for Improvement 5: Continue to integrate private providers to support mental/behavioral health needs following a large-scale disaster to augment the public and medical assets.

Area for Improvement 6: Look at mechanisms to establish alternate care locations for family members who have existing conditions but have been relocated with the sick patient to a new environment. The objective is for them to continue receive the medical care they require but not to overwhelm the clinics and hospitals with basic care needs (e.g., prescriptions, dialysis). Conduct a brainstorming session or convene a working group to address placement of family members and considerations for their healthcare needs. One novel suggestion during the exercise was the utilization of cruise ships to house family members and set up basic medical clinics within that shelter location.

Area for Improvement 7: Develop a protocol and contact list for partners that should be included in situational awareness conference calls for this type of event. Drill conference calls for incoming NDMS patients in this type of scenario to build familiarity with the type of information that will be available and response expectations.

Area for Improvement 8: Offer staff education opportunities on radiation to reduce anxiety and ensure that people come to work during a disaster. There should be training modules that can be delivered in advance as well as just-in-time; these should be offered both to medical staff as well as support staff such as administrative and environmental services.

Area for Improvement 9: RITN should consider coordinating conference calls for all RITN centers to encourage clinical/professional conversations about patient care, to share best practices, to discuss resource availability and scarce resource prioritization strategies. Information shared on these calls can also facilitate consistent information sharing for RITN center subject matter expert consultation for non-RITN hospitals.

Area for Improvement 10: Develop a policy/plan for quickly sharing data and information on the arriving patients with an associated timeline. This could also be accomplished through the working group suggested in Area for Improvement 1.

Area for Improvement 11: Ensure that hospitals are familiar and proficient with the patient tracking function in WATrac. Conduct training and subsequent exercises of this feature as needed.

Area for Improvement 12: Conduct a follow on exercise to explore how the SCCA routine operations would be modified to support response to a radiation emergency; e.g., how many patients could be handled, what are the critical limitations, and identify tangible next steps to address gaps.

HOTWASH

Strengths

- "Pre-planning" support and identifying partners in advance to share information and resources during an event
- Working towards clear lines of authority/command for remote patient reception locations
- It was valuable to integrate planning and execution of the exercise with the local NDMS patient reception planning aspects
- Supportive services available for patients/families/caregivers

Improvement Planning

- More clarity on how to handle outpatients and destination for not severely ill patients
- Need to find a balance between local and state and/or federal emergency management recommendations as it pertains to management of an incident such as this (e.g., population level screening, mass sheltering).
- Additional planning around coordination of mass transit assets to support patient movement (non-NDMS assets)
- Review Mutual Aid policies and deployment of resources state-wide
- State level plans must include how DOH works in a radiation injury response
- Revisit patient tracking through WATrac; additional training on WATrac
- Continued coordination between RITN hospital and PHSKC
- Drill the activation of the SCCA command center (functionally), to include information sharing components (e.g., with the public and health care community)
- Continue to explore the capacity/capability strengths and limitations of SCCA for this type of incident, obtain actual numbers of staff needed, patients that could be accepted, and how day-to-day procedures would be modified to support an extended patient surge.

Exercise Feedback

- Correct stakeholder representation, clear objectives and reinforced flexibility of response/decisions
- Facilitated great networking within the region
- Effective bounding of information and control of discussions to avoid "rabbit hole" discussions far off topic from RITN

- Exercise could have been longer
- Strongly recommend ongoing engagement of partners represented during the exercise to continue active planning and training efforts related to RITN
- Future exercises that look closely at donor matching, decontamination, or other topic areas in more depth

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the RITN centers participating in the 2015 RITN Regional Exercises. The Seattle Cancer Center Alliance can utilize this table to organize the opportunities for improvement to augment and develop their own corrective actions.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[1]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: [Capability Name]	1. [Area for Improvement]	[Corrective Action 1]					
		[Corrective Action 2]					
		[Corrective Action 3]					
	2. [Area for Improvement]	[Corrective Action 1]					
		[Corrective Action 2]					

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

APPENDIX B: EXERCISE PARTICIPANTS

	Participating Organizations		
Diane Burton	Seattle Cancer Care Alliance	Observer	dburton@seattlecca.org
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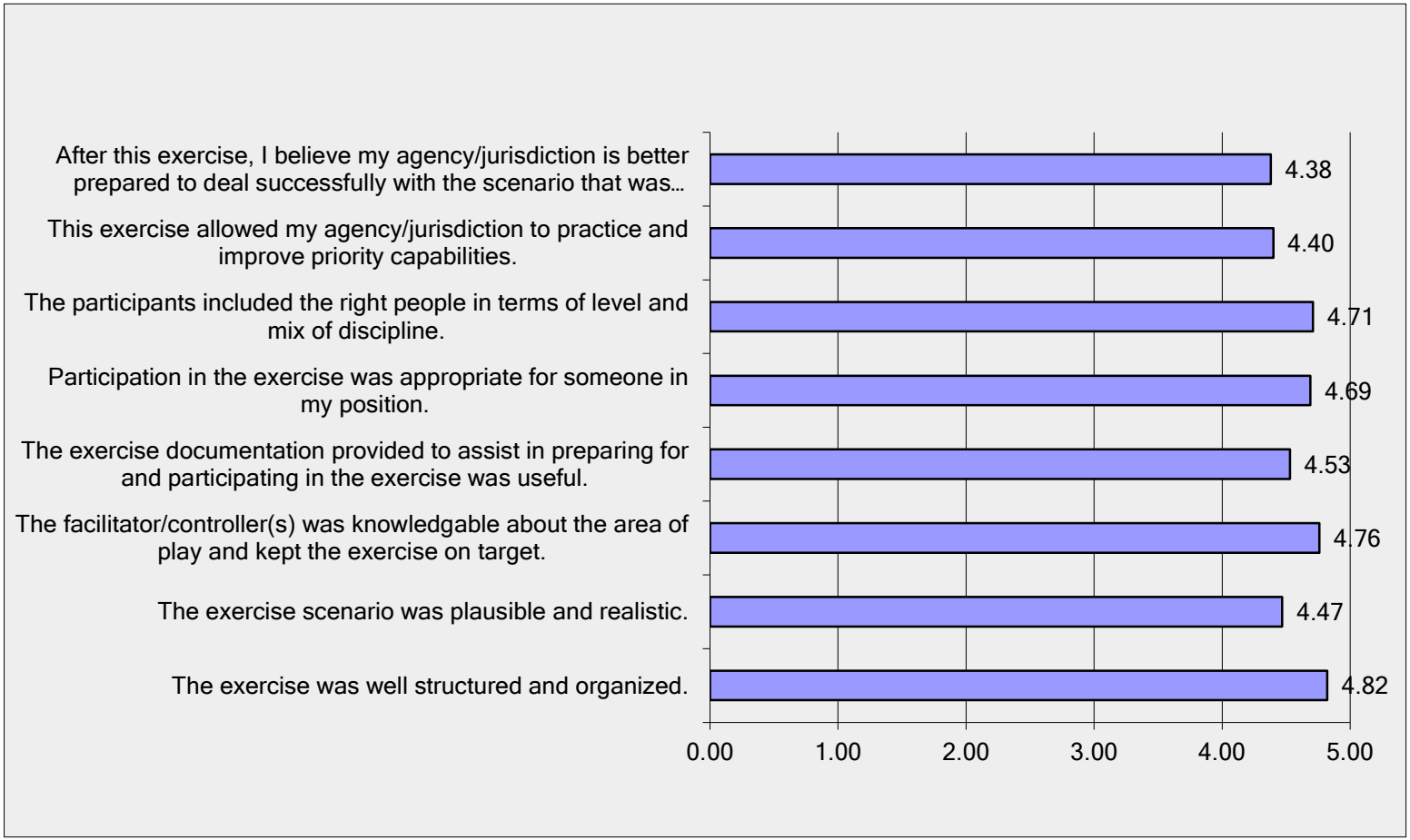
APPENDIX C: PARTICIPANT FEEDBACK

The participant feedback collected following the exercise was positive. The figure below summarizes the respondent feedback (N = 17) on the 2015 Seattle Regional RITN Exercise. The scale below ranges from 1-5, with 5 indicating strong agreement with the statement and ranking of a 1 indicating Strong Disagreement with the statement.



APPENDIX D: ACRONYMS

Acronym	Term
AAR	After Action Report
ANC	Absolute Neutrophil Count
ARS	Acute Radiation Syndrome
ASPR	Assistant Secretary for Preparedness and Response
DMCC	Disaster Medical Control Cell
EMA	Emergency Management Agency
EMS	Emergency Medical System
EOC	Emergency Operations Center
ESF	Emergency Support Function
FCC	Federal Coordinating Center
FEMA	Federal Emergency Management Agency
GCSF	Granulocyte Colony-Stimulating Factor
HMAC	Health and Medical Area Command
HHS	Health and Human Services
ICS	Incident Command System
IND	Improvised Nuclear Device
JIC	Joint Information Center
JIS	Joint Information System
JPATS	Joint Patient Assessment and Tracking System
LTCF	Long Term Care Facility
MCI	Mass Casualty Incident
MRC	Medical Reserve Corps
NDMS	National Disaster Medical System
NMDP	National Marrow Donor Program
PHSKC	Public Health Seattle King County
PRA	Patient Reception Area
REMM	Radiation Emergency Medical Management
RITN	Radiation Injury Treatment Network
SAT	Service Action Team
SCCA	Seattle Cancer Care Alliance
SITREP	Situation Report
SME	Subject Matter Expert
SOC	Secretary Operations Center (DHHS)
TTX	Tabletop Exercise
USAF	United States Air Force
WA DOH	State of Washington Department of Health