

2023

**Maryland Healthcare Coalition Radiation
Surge Tabletop Exercise**



**Maryland
Hospital Association**

After Action Report/Improvement Plan

Exercise Date: April 20, 2023

Report Date: May 3, 2023



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EXERCISE OVERVIEW

Exercise Name	Maryland Healthcare Coalition Radiation Surge Tabletop Exercise
Exercise Date	April 20, 2023
Scope	This exercise was a tabletop exercise, planned for four hours across the five Maryland healthcare coalitions (HCCs). Exercise play was limited to the medical surge aspects following a radiological incident.
Mission Area(s)	Response
HPP Capabilities	Health Care and Medical Response Coordination Medical Surge
Objectives	<ol style="list-style-type: none">1. Review existing radiation emergency care assets and identify gaps that may occur during a radiological mass casualty incident.2. Review agency/facility role during a radiological emergency incident.3. Identify changes that need to be made in the HCC Radiation Emergency Surge Annex based on the roles and capabilities of the involved partners.
Threat or Hazard	Radiological release
Scenario	Train derailment causing a radiological release over a major metropolitan area resulting in patient surges at healthcare facilities across the state.
Sponsor	Maryland Hospital Association (MHA) Radiation Injury Treatment Network® (RITN)
Participating Organizations	See Appendix B for a complete list of participants.

**Point of
Contact**

Curt Mueller, MEP
NMDP/RITN
Curt.Mueller@nmdp.org

Samantha Emminizer
Maryland Hospital Association
semminizer@mhaonline.org

EXERCISE ANALYSIS OF CAPABILITIES

The tabletop exercise was structured so that each healthcare coalition (HCC) participated together at a designated location and collectively debriefed on discussion items via Zoom meeting. The exercise was delivered in three modules. The first module included the initial incident where a freight train containing hazardous radioactive material derailed and tasked participants to discuss initial information exchange and available resources. The second module focused on patient surge and misinformation, and the third module emphasized patient treatment considerations and staffing issues.

Module 1: Initial Incident

Participants discussed how information and messaging would be communicated to the HCC members across the state and responsible entity(s) for communications. It was generally agreed that, while information would be passed via formal messaging and communication pathways such as Everbridge, it is most likely that word-of-mouth communication would be the quickest and most common method of information dissemination. Coalition members would be in constant contact with each other and the Regional Health Care Coordinator (RHCC) via text messages, emails, and phone calls.



Another key topic discussed in this module was available resources both in the regions and from outside the HCC. Local fire and health departments have radiation detection resources available such as portal monitors, personal dosimeters, vehicle-mounted radiation detectors, personal radiation detectors (e.g., RadEye™, Radiation Isotope Identifier Devices [RIID], Rad-IDs, and MiniRads). Local health departments (LHDs) could utilize local medical reserve corps (MRCs) and other volunteers to support radiation screening and response. Hospitals have decontamination resources such as decon showers and/or decon trailers that would be established outside the hospitals. Existing isolation rooms inside the hospitals were also identified for decontamination. Additionally, the HCCs have warehouses that house a cache of resources available to the coalition members. Outside the regions, support and resources could be requested from Forts Detrick and Meade as well as through the Maryland Department of

Emergency Management (MDEM). Mutual aid agreements are in place to request resources and manpower from other jurisdictions and the state level.

Finally, this module asked participants to discuss existing trainings as well as gaps around staff training and knowledge. It was agreed that, while trainings do exist, the high level of staff turnover as a result of the COVID-19 pandemic has resulted in staff who are not familiar with radiation safety procedures, radiation screening/detection, decontamination, and associated patient care and surge operations.

Strengths

1. At a high level, messaging coordination was understood. Local emergency management and public health function out of the local emergency operations center (EOC) and collaborate with MDEM to produce and control messages in a consistent manner.
2. Strong working relationships among coalition members would provide rapid and consistent, but less formal, communication throughout the state via text messages, emails, and phone calls.
3. The RHCC understands their key role in facilitating the initial information exchanges throughout the state as well as ensuring regular situational awareness updates throughout the duration of the incident.
4. Crisis and incident-specific guidance will be provided to 911 centers to assist with incoming calls from the public.
5. Local fire departments have radiation detection and decon equipment available and have been adequately trained to utilize the equipment.
6. Additional resources could be requested from a number of sources outside the HCC including Forts Detrick and Meade, as well as from the state (MDEM).

Areas for Improvement

1. Broadly, the scope of the Hospital Preparedness Program (HPP) Healthcare Coalition as an operational response capability requires definition (support beyond preparedness and planning).
2. A comprehensive list of radiation screening equipment and countermeasures is not available across the regions or state as a whole; this should go beyond equipment purchased through the HCCs. Documenting and maintaining this list and augmenting as needed will streamline the asset request process. In addition, trained personnel to operate

the equipment across multiple agencies should be documented for reachback support in a response.

3. Reinvigorate the public information officers (PIO) groups with the goal to re-establish (or establish new) relationships, create joint templates that can be utilized in a radiation response, understand tactics to control mis-information, and review coordinated messaging procedures to include who the lead agency is for a specific response as well as the appropriate subject matter experts for incident-specific guidance.
4. Identify additional methods for formal redundant communications across the coalitions.
5. Review notification protocols for a radiological incident to include lead agency for message development, responsible agency for disseminating messages, and entities who receive the notification.
6. Investigate what resources, outside the HCC, exist, where they are located, and how to request those resources.
7. Training on the use of radiological detection equipment and decontamination procedures should be re-established on a regular basis for all staff.



Module 2: Patient Surge

In this module, participants discussed the importance of coordinated public messaging at all levels to provide guidance and communicate to the public the levels of care based on symptoms, reserving the hospitals for acutely ill people. A Joint Information Center (JIC) would be established between emergency management agencies (EMAs) and LHDs both at the county level and the state level to ensure consistent messaging. The public would be instructed to self-monitor for symptoms and provided with guidance about when to seek hospital care. Messaging would be facilitated through social media, regular news outlets, and reverse 911 text messages. Message coordination among the PIOs would leverage Zoom, Share Point, and coalition websites.

Community Reception Centers (CRC) were another key discussion topic in this module. Draft plans exist but tend to lack detail on staffing and resource plans, having memoranda of understanding (MOUs) in place with designated locations, and timeframes to stand up the CRC.

Finally, in response to patient surge, discussions were held around staffing challenges, laboratory surge capability, alternate care locations, decontamination throughput, and medical countermeasures requests. All participants anticipated staffing challenges as it is currently a day-to-day issue post COVID-19 pandemic. Alternate care spaces are identified in most plans along with decompression methods to increase open hospital beds. There was not much clarity on how a prolonged increase in laboratory testing would be addressed, such as who would coordinate the testing, where it would be conducted, and available laboratories to provide surge support.

Strengths

1. Hospitals had a strong understanding and existing plans on how to decompress, such as early discharge of patients and providing home health care, as well as establishing alternate care locations on the hospital campus or nearby. Models implemented during COVID-19 would be leveraged.
2. The need for coordinated messaging led by public health and other subject matter experts (SMEs) (e.g., Maryland Department of Environment [MDE], university experts) was clear as it pertained to managing patient surge to hospitals.
3. The Maryland Department of Health (MDH) leads healthcare coordination and relies upon larger hospital systems to manage patient surge and distribution.
4. Existing mechanisms would be used to establish and communicate the CRCs, for example sites utilized for COVID-19 to include campus set ups for patient arrival and information pushed through social media, reverse 911, and EOC channels.
5. Some hospitals have signed agreements with the HCC to share resources to include laboratory functions in order to maintain continuity of operations and scale up staffing.
6. Behavioral health support was recognized as a critical need not only for staff responding to the patient surge but also to the affected population.

Areas for Improvement

1. MOUs are lacking for numerous response attributes such as contaminant management and waste disposal, transport for supplies (e.g., buses), equipment, laboratory capability, CRC locations, and emergency staff utilization (e.g., urgent care centers, intercoalition).

2. More planning is required to address the expected surge in laboratory sample collection and analysis following a radiological incident. It was not clear who would lead the coordination of this effort, if the CRCs had a role in lab draws, or what entities existed to support the surge. Some suggestions included the county or state level public health laboratories as well as commercial laboratories. Laboratory surge must also consider significant staffing requirements.
3. Ongoing staffing challenges are anticipated and will be exacerbated in a radiological response. Robust staffing plans and options to expand are needed to include methods to support behavioral health needs, reimbursement for childcare costs, and triggers/processes to declare a state of emergency to activate other staffing expansion methods (e.g., retired staff, licensure changes).
4. Training is needed on radiological response and patient receipt (e.g., HazMat First Responder Operations [FRO]), particularly due to the significant staff turnover that has been experienced. Include volunteers from public health and emergency management.
5. Staff require additional education on radiation patient receipt and care, both in advance of an incident and during, through effective messaging.
6. Draft CRC plans require further development and should leverage existing nuclear power plant plans such as the Calvert Cliffs plant and associated experience in Calvert and St. Mary's Counties as well as recent experience with fires and weather events. CRC plans should include MOUs with designated facilities and robust staffing plans – not just public health expertise but also security, traffic control, and hazmat for screening.
7. Ensure plans include elements of self-decontamination and monitoring symptoms at home to keep worried well out of the hospitals.



Module 3: Patient Treatment

This module focused on hospital capacity, patient transfers, requests for medical countermeasures (MCMs) through the SNS, treatment guidance, and family reunification

centers. There are tools and processes in place to manage day-to-day hospital system patient strategies but questions as to details and funding remain in order to build the capability to respond to an incident of this scale. The SNS procedure was also well understood due to recent experience with the COVID-19 pandemic; however, healthcare providers would seek treatment guidance to know what medications to request and how to prioritize their use.

Strengths:

1. The CRISP regional health information exchange (HIE) portal is valuable at the coalition level to understand hospital capacity, patient transports, and updated treatment guidance.
2. Radiological waste disposal following decontamination would be handled through existing private contracts. Expertise from the MDE would be called upon to control contamination (e.g., damming and diking protocols).
3. Hospitals and HCC partners demonstrated understanding of procedures to request and receive medical countermeasures from the SNS.
4. Patient transfers would be completed using existing transfer protocols and when capacity is exceeded there are process in place to utilize Maryland Emergency Medical Services (MEMS) for more extensive patient transfer coordination around the state or out of the state.

Areas for Improvement

1. MOUs are lacking for numerous response attributes such as contaminant management and waste disposal, transport for supplies (e.g., buses), equipment, laboratory capability, CRC locations, and emergency staff utilization (e.g., urgent care centers, intercoalition).
2. Decontamination throughput for a radiological incident is not well characterized (as opposed to chemical decontamination). More study is required on this that includes radiation surveying and different decontamination methodologies.
3. Strategic National Stockpile (SNS) refresher training would benefit newly hired staff.
4. Additional training is needed on the use of the CRISP HIE system, to include command centers and reunification centers.
5. Re-evaluate resource and staff sharing agreements beginning with the coalition or regional level (e.g., county level emergency management agreements). These were not

well executed during COVID-19 but by incorporating lessons learned these can be improved and strengthened.

6. Additional guidance from RITN or MEMS is needed on patient transfers and long term patient tracking to include types of support that can be provided to local health departments. In addition to understanding when transfer is needed, further guidance on the recommended treatment options (e.g., most effective), how to prioritize limited resources, triggers for patient transfer to specialty care, and care expectations for non-specialty hospitals need to be codified in plans. This should be sought through RITN resources (<https://ritn.net/treatment>) and MDH. The Radiation Emergency Assistance Center (REAC/TS, <https://orise.orau.gov/reacts/index.html>) also has robust guidance on radiation response attributes and are supported by robust radiation response teams at Veterans Administration (VA) hospitals.
7. In previous public health emergencies, a gap has been identified in the feedback loop following resource requests to the state and federal level. It is important that this be documented and tested in future exercises to ensure that resource fulfillment (or not) and expected timeframes are communicated to the local healthcare coalition level.
8. Additional funding is needed to make the current MEMS C4 system more robust. The capability exists but being able to extend patient transfers with different resources (e.g., commercial services, hospitals outside the region) requires further development and funds to do so.
9. It is not clear how to request the Prussian Blue medical countermeasure; the SNS has limited capacity but it is recommended to procure through a vendor. Identify suppliers that can provide this resource and understand quantities that already exist in the regions.

Hot Wash

Strengths

- There is an ample amount of radiation equipment on hand to include at hospitals, local health departments, and local fire department hazardous materials response teams.
- Communications amongst the healthcare coalition members is strong.
- Participation and level of engagement in this exercise was notable; the correct organizations were in attendance to address the identified planning gaps.

Opportunities for Improvement

- Training was an identified issue to include patient decontamination, use of radiological monitoring equipment, SNS process, and general radiation awareness. Most facilities/organizations felt they had the necessary equipment and resources but lacked trained personnel due to high employee turnover in recent years.
- There is no centralized list of radiation response equipment; the MDEM stated they would be willing to assemble a list of supplies from around the region and across the state.
- Refinement is needed to clarify the agency that will lead communications to stakeholders and the public as well as the process for emergency communications.
- The feedback loop is lacking when communications and resource requests are made up the chain; more effort is needed to close the communication loop as to what resources can be provided and the associated timeframe.
- The role of the CRC to decompress emergency departments and hospitals around the state was not well understood; the roles and capabilities of the CRC should be clarified.
- Laboratory analysis surge capacity has not been included in plans. Further evaluation of the role of CRCs in drawing laboratory blood work is needed to include supplies and manpower in addition to designated laboratories and personnel available to support a prolonged surge in laboratory sample analysis.

APPENDIX A: IMPROVEMENT PLAN

This improvement plan template has been developed specifically for the 2023 Radiation Tabletop Exercise conducted with the Maryland Hospital Association. The Association and other response partners 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

Last Name	First Name	Organization	Email
Aquino	Conrad	Optimal Health	
Arsenault	Mark	MC DHHS PHEPR	
Ball	Paula	CCHD	
Barefoot	Jeff	Springfield	
Bonaparte	Melissa	Frederick Health	
Bowling	Paul	UMMS-CRH	
Brown	Nicole	MDH-OPTR	
Burkhart	Steven	Sinai/Northwest	
Butler	Jordan	Springfield	
Bycoffe	David	Baltimore Co. OEM	
Carr	Brooks	Garrett Regional MC	
Catlett	Marci	MDEM	
Cole	Mike	Frederick Fire & Rescue	
Contreras	Nicole	MCG/RITN	
Copeland	Mike	UMSRH	
Copp	Beth	Queen Anne Co. DOH	
Cuetnick	Eric	Garrett CHD	
Daggett	Monica	Carroll Hospital	
Dankwa	Evans	Holy Cross Health	
Dennison	Sharon	Frederick County HD	
DiPalma	Nicholas	Suburban	
Dulina	John	MDEM	
Ebling	Bryan	MIEMSS Region IV	
Emminizer	Samantha	MHA	
Eshleman	Kim	Baltimore City HD	
Fernandez	Jose	Potomac Valley HC	
Franklin	Thomas	HCHD	
Frenchy	Emily	UMMS	
Glenn	Andy	Kent County HD	
Goldstein	Marcia	Springfield	
Gordon	Kim	GRMC	
Graham	Scott	Holy Cross Health	
Granlun	Carl	Johns Hopkins Univ.	
Green	Jon-Paul	Frederick Health Hospital	
Greenwalt	Rachel	MC DHHS PHEPR	
Hammer	Ann	MCG/RITN	
Hansen	Ryan	GRMC	
Harvey	Ranston	Charles County DOH	
Hill	Denise	Cecil City HD	
Hughes	Christina	MedStar	
Johnson	Todd	Frederick County HD	
Kintop	M. Tina	Caroline HD	
Kwafo-Baidoo	Augustina	MHA	

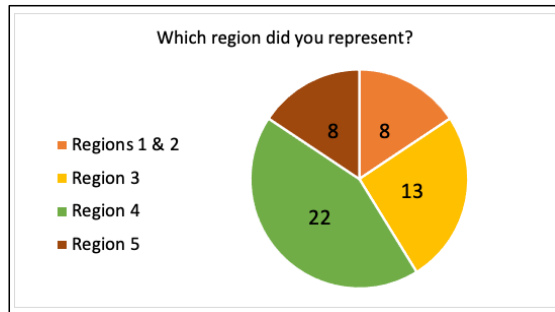
Last Name	First Name	Organization	Email
Layman	Jason	UPMC ED	
Lewis	Ron	UMSRH	
Livingston	Tess	PGMD PHEP	
Lloyd	Michelle	MC OEMHS	
Lochte	Raquel	SHC	
Long	Kathleen	Baltimore County HHS	
Maher	Michael	Springfield Hospital	
Massey	John	Atlantis General	
McCarrey	William	BCFD	
McDonald	Lindsay	Queen Anne Co. DOH	
McGowan	Tishawna	Baltimore Co. HSEM	
Mensingher	Abby	Thomas B. Fineman	
Mier	Steven	Mier Consulting Group, Inc./RITN	
Mock	Kevin	Holy Cross Health	
Moore	Lakeesha	Springfield	
Moretz	Lynn	HCHD	
Mueller	Curt	RITN	
Muhitch	John	Annapolis Fire	
Myers	Ralph	Springfield Hospital	
O'Connell	Michael	MIEMSS	
Osment	Chris	Somerset County HD	
Paintu	Lenora	HCHD	
Parsons	Michael	MIEMSS Region IV	
Payne	Kelly	AACO DOH	
Perdue	Cory	Holly Center	
Pierre	Nyema	Springfield	
Pinet-Peralta	Luis	MIEMSS	
Poach	Eric	MHA Region V	
Powers	John	Mercy	
Rohrbaugh	Katie	Merit Health	
Sapp	Terry	Baltimore Co. HHS	
Sarioyl	Yianni	Mercy	
Sasemich	Donna	Suburban	
Saylor	Debbie	AACO HD	
Schaffle	Geneva	Talbot DES	
Schamber	John	SHC	
Schuyler	Thomas	Eastern Shore Hospital	
Schweikert	Steve	Tidal Health	
Selt	Keith	Springfield	
Sidik	Mustafa	MIEMSS	
Skaggs	Amy	Howard County HD	
Smith	Donna	Wicomico County DES	
Stoddard	Jim	Adventist	
Stolberg	Leanne	Frederick County Fire	
Taylor	Andra	Somerset County HD	

Last Name	First Name	Organization	Email
Toms	Shelly	Frederick Co City Serv.	
Treber	Meghan	UMMS	
Trice	Holly	Caroline County HD	
Tytomi-Dalton	Robyn	Worcester Co. HD	
Usher	Meg	Adventist	
Valentine	Erin	UMMC Midtown	
Walch	Wendy	MDEM	
Walker	Sarah	Holy Cross Health	
Webb	Cheryl	Carroll Health	
Webster	Kay	Baltimore City HD	
Weems	Caitlin	Washington Co. HD	
Wellnitz	Nick	UMMS	
Wilby	Matt	Frederick Fire & Rescue	
Zeitler	Charles	Springfield	

APPENDIX C: PARTICIPANT FEEDBACK

Following the exercise, forty-one (41) organizations provided feedback through post-exercise forms. The data is summarized below.

Of the 41 organizations, the following regions were represented in the data:



Strengths

- *Sharing of community information*
- *Discussion of barriers*
- *Variety of resources spread across multiple counties*
- *Cross-jurisdictional collaboration*
- *Existing processes are in place for emergencies*
- *Well-equipped with radiation detection devices*
- *Good working relationships across regions*
- *Knowledge of local resources and assets*
- *Decontamination capabilities*
- *Communication*
- *Excellent detection, monitoring, and metering devices within Fire/Rescue*
- *Strong knowledge base across Fire/Rescue*
- *Multiple paths available to escalate and make resource requests*
- *HCC members were knowledgeable and different agencies were on the same page*
- *Coalition internal communications*
- *Tracking and management of HPP-funded and HCC-provided resources*
- *Logistics and knowledge of resources from coalition CRCs*
- *Coalition logistics capabilities and support warehouse*
- *Existing locations for CRCs*
- *Lessons learned from COVID are being applied to radiological plans*

Areas for Improvement

- *Use WebEOC for consistent communications*
- *Establish clear roles and responsibilities for the HCC*
- *Creation of gap analysis could help highlight areas for improvement*

- *Creation and training on a patient tracking platform*
- *Faster and clearer pathways for communicating to the public*
- *Better contaminated water runoff management*
- *Additional drills and training on radiological response as well as decontamination*
- *Strengthen relationships amongst organizations: HCC, hospitals, health departments, and fire/rescue.*
- *Awareness of resources available locally, on the state level, and federally*
- *Development of non-hospital radiological training*
- *CRISP health information portal (HIE) training*
- *Clear and more defined CRC plans for each region with focus on logistics and resource management/availability.*
- *Training on various radiological detection equipment*

Needs to Enhance the HCC's Collective Capabilities to Coordinate a Response to a Surge of Radiation Injuries

- *Identify clear roles and responsibilities among HCC entities and members.*
- *Significant planning between the various state and local EM and HD partners with hospitals to address gaps.*
- *Effective and timely communication (i.e., development of a communication portal)*
- *Additional training resources*
- *Better understanding and communication of available assets (i.e., development of a centralized inventory of assets) including better tracking of non-HPP assets.*
- *Additional education and training resources and opportunities.*
- *Bring local government representation to the table.*
- *Additional drills and exercises for training for a radiation incident.*
- *Ensure policies, procedures, and plans are updated based on lessons learned from this exercise.*
- *Training beyond JIT training provided at the start of an incident.*
- *Clarifying availability and access to SMEs outside of MDE and MDH.*
- *Addressing continuity issues with staffing levels.*

Elements to Address Organizational Training Needs for Radiation Surge Response

- *Resource and equipment identification and procurement*
- *Additional and more frequent exercises of all types (TTX, FE, FSE)*
- *Staff education:*
 - *Safety precautions*
 - *Staff re-training*
 - *Training for volunteers*
- *Clarity around State-level roles and responsibilities*
- *Consistent periodic refresher training on decontamination of self and others*
- *Additional First Receiver training*
- *Additional development of CRC plans and logistics*
- *Continued and consistent communication among healthcare partners*
- *FRO training*

- *CRISP training*
- *Additional staff training on use of detection equipment*
- *Training for organizations outside the dispersal zone*

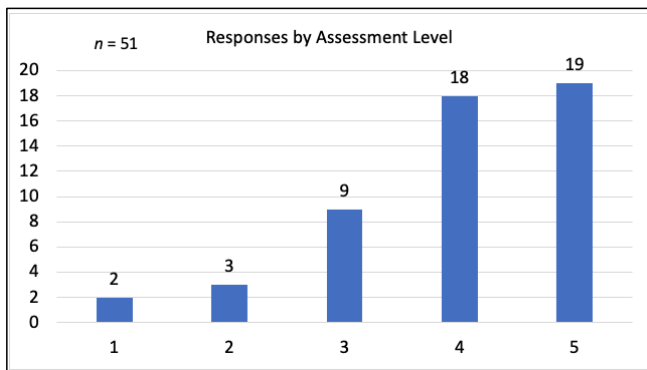
Feedback on the Exercise

- *Breakout groups experienced difficulties making the experience less informative*
- *Time management difficulty in respect to facilitating discussion to answer questions*
- *A smaller emergency that tests the capabilities at the local or regional level might be helpful in the future.*
- *Great exercise*
- *Great experience*
- *Additional time for the exercise overall*
- *It may be interesting to have small work groups of hospitals within each region to brainstorm and look at opportunities to partner with each other.*
- *Need one person leading/facilitating and another person to scribe.*
- *Would be an excellent exercise with a different facilitator.*
- *Facilitator seemed lost; not aware of the SOPs, plans, and resources already available.*
- *Technology issues: I would recommend no virtual option for coalition participants.*
- *Need to further facilitate discussion of the HCC's role in this response.*
- *Well organized and executed.*
- *Comments in chat by online participants not noticed during breakouts.*
- *Great exercise. Would like to see more future exercises.*
- *Well organized and executed.*

The exercise was rated on the following statements (1 being lowest, 5 being highest):

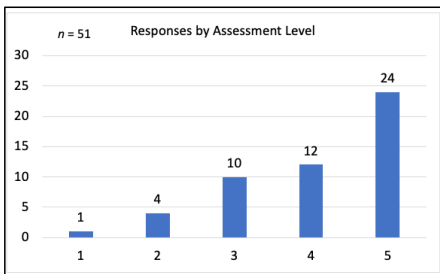
1. ***The tabletop exercise was well structured to sufficient address each objective and task.***

Average Rating: 3.96



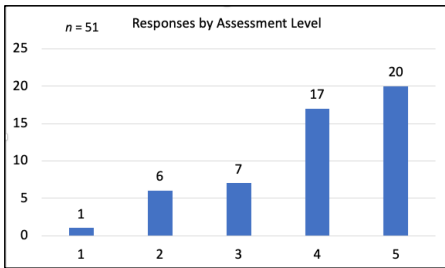
2. *The tabletop exercise environment fostered collaboration.*

Average Rating: 4.06



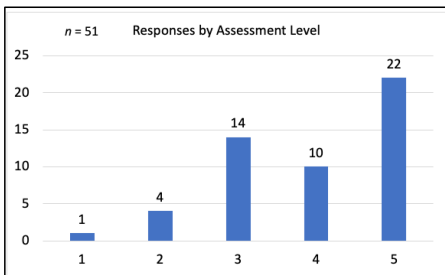
3. *The tabletop exercise content informed your understanding of the HCC's ability to respond to a surge of radiation injuries.*

Average Rating: 3.96



4. *The tabletop exercise content better informed your understanding of your agency/organization's role in a radiation injury surge.*

Average Rating: 3.94



APPENDIX D: ACRONYMS

Commented [AH1]: update

Acronym	Term
AAR	After Action Report
CRC	Community Reception Center
EMA	Emergency Management Agency
EOC	Emergency Operations Center
FRO	First Responder Operations
HCC	Healthcare Coalition
HIE	Health Information Exchange
HPP	Hospital Preparedness Program
JIC	Joint Information Center
LHD	Local health department
MCM	Medical Countermeasure
MDE	Maryland Department of Environment
MDEM	Maryland Department of Emergency Management
MDH	Maryland Department of Health
MEMS	Maryland Emergency Medical Services
MHA	Maryland Hospital Association
MOU	Memorandum of Understanding
MRC	Medical Reserve Corps
PIO	Public Information Officer
REAC/TS	Radiation Emergency Assistance Center/Training Site
RHCC	Regional Health Care Coordinator
RITN	Radiation Injury Treatment Network
SME	Subject Matter Expert
SNS	Strategic National Stockpile
VA	Veterans Affairs