Healthcare Coalition Radiation Emergency Surge Annex Template

The 2019-2023 HPP Funding Opportunity Announcement (FOA) requires Healthcare Coalitions (HCCs) to develop a complementary coalition-level radiation emergency surge annex to their base medical surge/trauma mass casualty response plan. This annex aims to improve capacity and capabilities to manage exposed or potentially exposed patients during a radiation emergency. According to the 2017-2022 Health Care Preparedness and Response Capabilities, "Communities should be prepared to manage exposed or potentially exposed patients during a chemical or radiation emergency. During such events, individuals may go to various health care facilities, police and fire stations, and other locations for assistance..." (Capability 4, Objective 2, Activity 5).

This radiation emergency-focused operational annex complements the HCC's Response Plan. It is intended to be a high-level, incident-specific response plan, identifying the experts and specialized resources that exist within the HCC or external to the HCC that are available. Each facility is encouraged to develop more detailed policies/procedures that support their individual operations, but that level of detail is not necessary in this annex.

This template provides general headers and descriptions for a sample HCC radiation emergency surge annex. The resources used to develop this template include sample HCC plans and the 2017-2022 Health Care Preparedness and Response Capabilities. This document is organized as such:

- Sample plan headings/sub-headings.
- Description and considerations (where appropriate, language from the FOA and Health Care Preparedness and Response Capabilities are used; refer to the full text of the capabilities for additional detail/information); and
- Sample resources/plans that may provide guidance or a template for HCCs to assist in their planning efforts. There is no guarantee the resource(s) listed will fully comply with the capability. A sample annex outline is provided in Appendix A of this document. Appendix B includes relevant resources.

According to the 2019-2023 FOA, HCCs must develop a series of specialty surge annexes to address pediatric, burn, infectious disease, radiation, and chemical emergencies. It is important to consider trauma, illness, surgical, and behavioral health topics inclusively since those caring for patients will likely be working on these situations simultaneously.

The FOA states, on page 70, "In addition to the usual information management and resource coordination functions, each specialty surge annex framework should be similarly formatted and emphasize the following **core elements**:

- Indicators/triggers and alerting/notifications of a specialty event
- Initial coordination mechanism and information gathering to determine impact and specialty needs
- Documentation of available local, state, and interstate resources that can support the specialty response and key resource gaps that may require external support (including inpatient and outpatient resources)
- Access to subject matter experts (SMEs) – local, regional, and national
- Prioritization method for specialty patient transfers (e.g., which patients are most suited for transfer to a specialty facility)
- Relevant baseline or just-in-time training to support specialty care
- Evaluation and exercise plan for the specialty function."

Additionally, the FOA states that the radiation emergency surge annex *may also consider*:

- "Local risks for radiation mass casualty events (e.g., power plant, industrial/research, radiological dispersal device, nuclear detonation)
- Detection and dosimetry equipment for EMS/hospitals
- Decontamination protocols
- On-scene triage/screening, assembly center, and community reception center activities
- Treatment protocols/information
- Coordination mechanisms with hematology/oncology centers and the Radiation Injury Treatment Network (RITN)

Prior to developing any emergency operations plan, HCCs should work with jurisdictional emergency management to conduct or participate in a risk assessment/hazard vulnerability assessment and a resource gap analysis to gather the information listed above and understand their specific risks, hazards, and resources available for a response. Additional guidance on collaborative planning and the role of HCCs through the phases of disaster can be found in the 2017-2022 Health Care Preparedness and Response Capabilities. In addition to the above, HCCs should also consider identifying incident specific essential elements of information, integrating with state and local crisis standards of care plans, and supply stockpiles of relevant acquisition and standards of re-use and extended use.

NOTE TO COALITIONS: Although jurisdictions are not required to use this template nor follow this format, the previously listed **core elements** must be included in the radiation emergency surge annex. There are many acceptable planning methods and document formats. However, HCCs are encouraged to use this template to promote consistent operational planning and formatting of the specialty annexes. The focus of this planning is to facilitate the growth of operational capabilities of coalitions to address specialty casualties. The planning process should be collaborative between hospitals, community-based healthcare facilities, public health departments (particularly with local and state response teams), emergency medical services (EMS), emergency management agencies, and other community organizations to discuss, strategize, and plan for the level of care that can be provided and resources available during and after a radiation emergency. This annex template is consistent with our base Healthcare Coalition Response Plan format and supports a seamless planning process and facilitated response. The length and complexity of the annex is directly proportional to the diversity of resources and members within the coalition. Additional ASPR TRACIE resources developed for HCCs include:

- Preparedness Plan, Response Plan, and Recovery Plan templates
- Pediatric Surge Annex Template, Burn Surge Annex Template, and Infectious Disease Surge Annex Template
- Radiological and Nuclear Topic Collection
- Select CBRN Resources
- Major Radiological or Nuclear Incidents: Potential Health and Medical Implications
- Additional resources that are helpful for HCCs

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For more information, visit https://asprtracie.hhs.gov or contact our Assistance Center at 1-844-5-TRACIE or askasprtracie@hhs.gov.

1. Introduction

Section Headers/ Subheadings	Description and Considerations	Sample Resources
1.1 Purpose	This section describes what the Radiological/Nuclear surge annex will address and related HCC goals and objectives. **Sample language:** The annex provides guidance to support a coordinated healthcare response to a radiation emergency in which the number and severity of exposed or possibly exposed patients challenges the capability of HCC member facilities. The annex will outline specific incident response, treatment, and response protocol necessary to properly plan for, manage, and care for patients during a radiological emergency. This Annex does not replace other county or local emergency operations plans or procedures, but rather builds upon the existing plans and their annex.	American College of Radiology Disaster Preparedness for Radiology Professionals ASPR TRACIE Major Radiological or Nuclear Incidents: Potential Health and Medical Implications ASPR TRACIE Radiological and Nuclear Topic Collection Centers for Disease Control and Prevention Radiation Emergencies Information for Public Health Professionals Department of Homeland Security Nuclear Radiological Incident Annex Environmental Protection Agency Radiological Emergency Response Planning Federation of American Scientists Federal Radiological Emergency Response Plan (FRERP)
1.2 Scope	This section should include: • Timeframe covered by the plan, • Involved coalition and jurisdictional partners, • General command structure and communication protocols (may refer to base plan), • Definitions of key terms • Any necessary disclaimers about the plan (e.g., not to supersede authorities of the participating entities). This section may also describe elements not addressed in the plan and refer the reader to relevant organizational documents, related considerations, and other annexes such as pediatrics, burn surge, etc.	
1.3 Overview/Background of HCC and Situation	This section should include a general overview of the HCC and the community relative to a **radiation emergency**, including: • Members	

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	• Demographics (general), at-risk groups (e.g., power plant workers, EMS/first responders, etc.), and vulnerable populations (e.g., elderly, pediatric community). • Geography including areas at higher risk of a radiological event (e.g., power plants, industrial/research facilities, terrorism risk, etc.). • Facilities specific for radiation emergency response including healthcare facilities, trauma centers, specialized treatment centers, urgent care facilities, coalition hospitals, and community health centers, to include a description of the healthcare system and their potential role during a radiological incident. • Coalition agreements (e.g., transfer agreements, resource exchanges, staffing transfers) • Key partners and external resources with the necessary radiological expertise needed to temporarily provide treatment, support, and recovery skills.	Health Physics Society Emergency Department Management of Radiation Casualties National Academies of Sciences Engineering Medicine Federal Planning for Nuclear Incidents National Association of County and City Health Officials Public Health Radiological Response Annex
1.4 Assumptions	This section should outline the key points/assumptions of the plan, for example: • Radiation incidents may be accidental in nature (e.g., industrial or transportation accident) or purposeful, require prolonged response and extensive resource management challenges. • Substantial differences in response protocols and priorities exist between power plant / industrial, terrorist (e.g., RDD/dirty bomb) and nuclear bomb detonation. The plan should emphasize the scenario(s) most relevant to the community. • The coalition annex does not replace the need for protocols at each hospital and EMS agency • Different agencies may have authority over management of power plant, transportation, and terrorist incidents, including the authority to implement shelter-in-place and evacuation orders. • The roles and responsibilities of agencies and organizations will change depending on the severity and scale of the incident and the respective level of activation by impacted jurisdictions and should be outlined ahead of an incident. • Federal, state, and local emergency resources will all be needed during a large-scale event. • Contamination assessments, proper PPE utilization, and decontamination efforts will be essential in protecting coalition partners, staff, and the public	National Council on Radiation Protection and Measurements Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers Pennsylvania Emergency Management Agency Response Resources Radiation Emergency Medical Management Hospital Activities During Radiation Emergencies

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	• Staff at coalition facilities may be impacted by exposure, fear of exposure, or family obligations (e.g., child/family care if schools are closed, acute care facilities are affected). • Fear from the incident will cause a worried well surge to the emergency departments and pharmacies. Consider how limited understanding of radiation and nuclear contamination will contribute to public anxiety and will require multi-modal solutions. • Public safety (e.g., police, fire, EMS) and other first responder personnel are considered a high-risk population; the implementation of protocols for monitoring control zones and effective contamination control measures will be essential for workforce protection. • Federal resources (e.g., ambulance contracts, National Disaster Medical System [NDMS] teams) cannot be relied upon to mobilize and deploy for the first 72 hours. • Management of contaminated waste from decontamination efforts should be managed in consultation with SMEs, EPA, and local water authorities. Each facility or healthcare organization should understand expectations specific to them as part of the coalition. For example: • Implementation of surge protocol specific to a radiation emergency will occur quickly- staff must be prepared to pivot operational procedures immediately. • Initial trauma care should precede radiation injury management. • Radiation contamination assessments will require rapid protocol and education implementation. Staff will need to evaluate real versus possible exposure, internal versus external contamination, and assess overall exposure levels for at-risk patients based on serial blood testing. • Specialized expertise (such as clinical advisors) will be needed to manage the complexities of a major radiological incident (e.g., dose estimation, exposure type, treatment plans, site evaluations, decontamination protocol). • Contaminated injury care and decontamination may require rapid expert consultation. • Community screening sites will be required to assess low-risk patients.	State of Florida Radiological and Nuclear Incident Emergency Response Plan University Nevada Las Vegas Radiation Emergency Response Plan Wisconsin Department of Military Affairs Radiological Emergency Preparedness

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	• Depending on the scale of the radiological event, it may be necessary to establish alternate care sites, especially for radiological exposure requiring higher levels of care. • Emergency departments, outpatient care centers, and alternate care sites, must be prepared to rapidly screen large groups of potentially exposed individuals, triage, and transport as needed. • Allocation of limited/scarce resources, and their distribution, should be based on agreed upon prioritization systems / methods. • Large-scale radiological incidents may require the recruitment of volunteers (e.g., Medical Reserve Corp), retirees, and trainees to support and relieve screeners and healthcare workers. • Some individual healthcare facilities may require large-scale fatality management support. • Community-based interventions will require significant public health effort if an evacuation or shelter in place order is necessary. Critical infrastructures will be impacted (e.g., food distribution, isolation assistance, surveillance activities). • Health concerns, prolonged response requirements, difficult work environments, and stress may present behavioral health challenges among staff of coalition members and the general public. • Rural areas may be severely impacted by citizens fleeing an affected area and seeking care.	

2. Concept of Operations

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2.1 Activation	This section should include the annex activation process (and levels, if relevant) and indicators/triggers that initiate the plan (including use of incident command and a description of the system if relevant). This section should also define who is contacted to initiate the coordination response and how that is done. Information should include who will be responsible for characterizing the incident severity level to establish accurate timelines, impact zones, and assess infrastructure damage.	Department of Homeland Security Nuclear Radiological Incident Annex Environmental Protection Agency Radiological Emergency Response Authorities

Section Headers/ Subheadings	Description and Considerations	Sample Resources
2.2 Notifications	This section should include alerting/notification strategies specific to a radiation emergency, including who will be notified, by whom, when, and how. Content should address communication systems, information management needs, and include coordination strategies between the HCC, healthcare facilities, specialty facilities, and with local, state, and federal agencies. Consider what mechanisms are in place, or needed, to properly notify all responding agencies/organizations in a timely manner to ensure they take proper protective measures.	Environmental Protection Agency Radiological Emergency Response Planning FEMA Planning Guidance for Response to a Nuclear Incident Federation of American Scientists Federal Radiological Emergency Response Plan (FRERP) Health Physics Society Emergency Department Management of Radiation Casualties National Academies of Sciences Engineering Medicine Federal Planning for Nuclear Incidents National Council on Radiation Protection and Measurements Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers
2.3 Roles and Responsibilities	This section should define HCC, agency, and specialty facility support and coordination roles specific to a radiation emergency. This should include: • Detection equipment and resources for pre-hospital and hospital use including screening equipment at each hospital. • The expected decontamination capabilities of each facility. • Whether or not facilities have radiation safety/nuclear medicine services/staff. • Whether or not a facility can provide oncology/hematology services. • Identifying a specific institution, agency, or partner to coordinate healthcare aspects of the response. Note: this may be the same agency listed in an all-hazards plan or there may be a need to designate specialized entities to assist with the coordinated movement of radiation affected individuals, evacuation or shelter in place activities, and decontamination efforts. • The designated lead agency for radiologic event response, lead agency to operate community reception centers. Information should differentiate the roles between agencies involved directly with clinical surge care and those actively navigating environmental components of a radiological incident to include evacuation orders, contamination and decontamination efforts, environmental monitoring, population-based screening, investigations, and safety assessments. Some of these roles may vary between a nuclear power plant and a terrorist incident.	

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	Consider how to identify and manage issues and gaps among responding members, other coalitions, or jurisdictions to improve response activities. This section should also explain the application of crisis standards of care principles with essential radiation exposure protocol following a nuclear detonation and how critical resources will be allocated across a region as well as how new clinical policy will be developed, approved, and implemented. This section should define HCC, agency, and specialty facility support and coordination roles specific to a radiation emergency: • Identify which facilities can provide care for patients with severe radiation injury (e.g., hematology/oncology services, familiar with chemotherapy patients). • Define expectations of EMS regarding initial patient distribution from a radiological incident and mutual aid for secondary transfers. • Establish who has responsibility for patient movement activities including matching patients to available resources. • Emphasize and discuss the coordination plan with regional trauma centers and identify local, regional, and national sub-specialty sources of expertise available to support a response- or provide specialty consult (this may include radiation safety officers, health physicists, and other consultation resources such as regional Radiation Injury Treatment Network (RITN) centers, Radiation Emergency Assistance Center/ Training Site (REAC/TS), and others. • Describe how radiation treatment expertise is obtained for crisis standards of care decision-making that is consistent with facility, HCC, and state crisis standards of care plans. • Describe initial coordination and information gathering strategies to determine impact, contamination levels, and specialty transportation needs. This should include essential elements of information to be gathered on all patients according to coalition requirements. • Determine the specific roles of public health entities and emergency management personnel in assessing exposed citizens without acute medical needs (e.g., at community reception centers).	Radiation Emergency Medical Management Hospital Activities During Radiation Emergencies Radiation Emergency Medical Management Incident Characterization State of Florida Radiological and Nuclear Incident Emergency Response Plan University Nevada Las Vegas Radiation Emergency Response Plan U.S. Department of Health and Human Services Medical Planning and Response Manual for a Nuclear Detonation Incident: A Practical Response Guide Wisconsin Department of Military Affairs Radiological Emergency Preparedness

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2.4 Logistics	This section should outline any anticipated resource issues during a radiological incident and the strategies for the HCC and member facilities to address these challenges. These should include resource shortages, resource allocation, and supply chain issues. Include protocol for how resources are requested and thresholds to identify inadequate supply levels to meet demand consistent with the HCC crisis standards of care plans. Include specific mechanisms to prioritize resource allocation. Include documentation of available local, state, and interstate resources and activation procedures that can support the specialty response as well as key resource gaps that may require external support (including inpatient and outpatient resources). This should also include behavioral health support for patients, families, and staff. There may be a need to collect and process evidence and utilize laboratory resources to assess bodily fluids and other samples. Depending on the severity of the incident, this may cause strain on existing resources. Policies and plans should include strategies for expanding laboratory capabilities and consider safety guidance and protocol for safe evidence gathering/processing.	ASPR TRACIE Exchange Issue 8: Supporting Hospital Surge—Meeting Patient and Staff Needs ASPR TRACIE Hospital Personal Protective Equipment Planning Tool ASPR TRACIE Hospital Pharmacy Disaster Calculator ASPR TRACIE Partnering with the Healthcare Supply Chain During Disasters Caro, J.J., DeRenzo, E.G., Coleman, C.N. et al. Resource Allocation After a Nuclear Detonation Incident Centers for Disease Control and Prevention Community Reception Center (CRC) Drill Toolkit Department of Homeland Security Nuclear Radiological Incident Annex
2.4.1 Space	This section should include information on the available space needed for a radiation emergency response, including strategies for setting up, occupying, and managing these spaces. This should include regulatory considerations, use limitations, access restrictions, and security needs. Coalition members may integrate at the jurisdictional EOC during a radiation event. Consider the need for community reception centers, shelter in place sites, alternate care sites, triage/screening space, specialty treatment facilities or at-risk/vulnerable population needs (e.g., pediatric care, prisons, homeless shelters).	

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	Include alternate plans if there is a need to meet virtually, in addition to a Continuity of Operations (COOP) site.	Executive Office of the President Planning Guidance for Response to a Nuclear Detonation National Academies of Sciences Engineering Medicine Federal Planning for Nuclear Incidents Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN) Pennsylvania Emergency Management Agency: Nuclear Power Plant Safety Resources Pennsylvania Emergency Management Agency Radiological Responder Certification Program REDi Healthcare Coalition Resource Coordination Process Radiation Emergency Medical Management Nuclear Detonation:
2.4.2 Staff	This section should include strategies for increasing/maintaining staffing levels, including specialty care staff. Identify the necessary skills and expertise needed to adequately respond to a large-scale radiological event. Outline recruitment, training, and use/allocation strategies. This section may reference surge capacity plans, in the coalition base plan, or anticipated Federal requests. • Consider how limited staffing may impact facilities, healthcare providers, and overall HCC duties during a surge event. Some staff may have to shelter in place or may be unable to travel. Consider developing a secondary plan with limited staffing to account for these circumstances. • Utilize available health care facility (HCF) radiation safety/nuclear medicine personnel to assist with critical decision making and response coordination. • Consider cross-training staff on radiological safety and response protocol and leveraging staff from Radiation Injury Treatment Network (RITN) medical centers, pediatric critical care hospitals, or other major medical centers. • Ensure decontamination teams at hospitals have protocols in place to guide radiologic decontamination activities within those facilities. • Consider what sharing agreements are in place, (e.g., shifting and sharing staff from HCC partners, vendors, other non-impacted health system facilities). • Leverage existing government and non-governmental volunteer registration programs (e.g., Emergency System for Advance Registration of Volunteer Health Professionals [ESAR-VHP] or MRC personnel) or NDMS staffing support. • Outline plans to expedite credentialing, licensing, and onboarding while reducing liability, compensation policies for temporary staff. • Include policies and procedures for engaging volunteers; define thresholds for when these supplemental staff activities should start.	

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	• Incorporate hospital, HCC, jurisdictional, or state-based medical assistance teams into medical surge planning and response. Anticipate the need for supplemental staff for extended periods of time- depending on the scale and severity of the event. • Consider support services, including healthcare and non-healthcare staff or material resources required to support the care of radiologically exposed patients (e.g., blood banks/ blood product providers, laboratories, waste and contaminated material management, food and dietary services, pharmacy, and environmental services). • Consider long-term engagement with a specialist or subject matter experts (e.g., radiologists, radiation oncologists, medical physicists).	Weapons, Improvised Nuclear Devices Radiation Response Volunteer Corps Development Toolkit State of Florida Radiological and Nuclear Incident Emergency Response Plan University Nevada Las Vegas Radiation Emergency Response Plan U.S. Department of Health and Human Services Medical Planning and Response Manual for a Nuclear Detonation Incident: A Practical Response Guide. Wisconsin Department of Military Affairs Radiological Emergency Preparedness
2.4.3 Supplies	This section should document the coalition-level equipment expectations of member healthcare facilities relevant to a radiological incident and coalition-level strategies to ensure adequate supply levels and available equipment. This section may also include coalition-level resources. • Document essential elements of supply information to be shared across the coalition including, bed availability, ICU availability, specialized equipment availability (e.g., detection and dosimetry equipment), and current capacity relevant to a radiological emergency. • List current HCC PPE and other stockpile data. Ensure local PPE, stockpile release, replenishment, and sharing policies are clear (e.g., who gets what, when). • Include policies to request, receive, and distribute radiation incident specific assets in accord with jurisdictional public health and emergency management processes, including personal protective equipment (PPE), respirators, medical treatments, radiation countermeasures, and decontamination materials/supplies. • Document public safety and hospital radiation assessment resources (e.g., dosimeters, hand-held and portal detectors/survey instruments, etc.). • Document appropriate PPE resources needed for hospital decontamination, equipping community reception sites, including stockpiling considerations; consider vendor managed inventory and the potential extended use or reuse of equipment.	

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	• Include state plans to request and distribute local, state, and federal radiation countermeasures (e.g., Prussian Blue for cesium 137, bone marrow cytokines for acute radiation illness). • Define baseline preparedness thresholds for hospitals/EMS agencies as appropriate. • Describe strategies to overcome inventory management, supply chain, or delivery issues; include promising practices or lessons learned during other radiological emergencies. • Identify HCC partners/networks to access private sector assets; consider timelines for order/delivery/transfer of these supplies (e.g., delivery mechanisms, storage, location barriers).	
2.5 Operations- Medical Care	This section should document categories of clinical care and emergency management needs associated with a radiation emergency. Specific operational requirements for each category should be outlined.	American College of Radiology Disaster Preparedness for Radiology Professionals ASPR TRACIE Continuity of Operations (COOP)/ Business Continuity Planning TC ASPR TRACIE Major Radiological or Nuclear Incidents: Potential Health and Medical Implications ASPR TRACIE Recovery Planning TC Centers for Disease Control and Prevention Radiation Emergencies Information for Public Health Professionals
2.51. Triage and Screening	This section should include triage guidelines for exposed, or possibly exposed patients, and outline expectations for hospital transport to adequate treatment facilities (e.g., use of the Exposure and Symptom Triage (EAST) sorting tool after a nuclear detonation, establishing screening criteria for community reception centers, capabilities for conducting outpatient absolute lymphocyte counts). Note: For determination of who to give the limited resource bone marrow cytokines to review the RITN Cytokine Administration Triage Guidelines for Acute Radiation Syndrome (Adult and Pediatric). These guidelines provide healthcare providers with myeloid cytokine triage guidelines to assist with the administration of these pharmaceuticals to adult and pediatric casualties in the immediate aftermath of a radiological disaster. List available local experts in radiation injury / response. Likely, experts outside the immediately affected area will need to be engaged. • Outline the basis for prioritizing patient screening, treatment, transport (e.g., dose rate, exposure severity, longevity, other trauma).	

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	• Consider the need for screening and care to occur in separate areas to avoid overload and contamination. Know what types of spaces coalition partners can make available and what additional spaces may be leveraged for a large-scale incident. • Highlight what information is needed (e.g., exposure level, patient history, diagnostic data, lab/test results) to support decision-making. Note how information will be collected, documented, shared. • Establish how the coalition will engage with needed experts.	Centers for Disease Control and Prevention Population Monitoring, Community Reception Centers and Shelter Resources for a Radiation Emergency. Department of Homeland Security Health and Safety Planning Guide for Protecting First Responders Following a Nuclear Detonation Department of Homeland Security Nuclear Radiological Incident Annex Executive Office of the President Planning Guidance for Response to a Nuclear Detonation FEMA Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath FEMA Radiological Emergency Preparedness (REP) National Public Information Map
2.5.2 Patient Care/ Management	This section should describe the HCC resources available to support radiation emergency surge operations. It should include the HCC role in developing and helping to implement strategies to maintain patient care when the system is overwhelmed. Plans should include the ability to shift from conventional to contingency to crisis care and back as the situation requires. • Outline what guidelines will be used to prioritize treatment or decontamination efforts (e.g., extent of trauma, external contamination counts, partial or whole-body exposure, etc.). • Outline coalition involvement in surge activities, coordination of emergency response efforts. • Describe how just-in-time training will be conducted to support care of radiation patients in a limited resource setting, and how related information will be circulated to other facilities. • Consider how treatment and patient conditions will be documented and shared. • Describe how patient movement will be coordinated and by whom. • Consider the potential need to move a large number of patients with minimal current symptoms but who are at significant risk for complications due to significant radiation exposure. • Outline mechanisms and processes to track patients, contamination, lab results, and treatments. • Consider the need for palliative care which could be critical during a large-scale incident.	
2.5.3 Treatment	This section should include the coalition role in planning for and implementing monitoring and treatment protocols for radiologically exposed patients. This should include how specialty consult will be initiated and maintained for the duration of patient care, including transport to a different facility. Provide an overview of the coalition role in distribution/administration of treatments.	

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	• Consider establishing consultation and coordination mechanisms with hematology, oncology, radiology facilities. Include engagement with the Radiation Injury Treatment Network (RITN) and other similar organizations to stay up to date on currently approved treatment protocol. • If the healthcare system utilizes Epic electronic medical records system download the acute radiation syndrome treatment medical orders developed by RITN. • Incorporate established radiation treatment plans (e.g., diagrams, flow charts, and algorithms) to ensure best practice treatment methods. • Consider use of radiation countermeasures. Ensure understanding of the request process and guidance for use.	FEMA Resilience Analysis and Planning Tool (RAPT) Greater New York Hospital Association Acute Care Needs for Responding to a Detonated Improvised Nuclear Device Greater New York Hospital Association Mass Casualty Incident Response Toolkit Health Physics Society Emergency Department Management of Radiation Casualties Hick, J.L, Coleman, C.N. Population-Based Triage, Treatment, and Evacuation Functions Following a Nuclear Detonation Los Angeles County Multi-Agency Radiological Response Plan Monitoring People for Contamination at Public Reception Centers
2.5.4 Safety and Control Measures	This section should discuss the coalition role in establishing and implementing necessary safety and control measures during a radiological emergency (i.e., limiting exposures and avoiding spread of radioactive/contaminated materials) alongside deeper understanding of the time/distance/shielding principles to reduce dose rates. HCC plans should incorporate jurisdictional emergency management protocols if already outlined in local emergency response plans. • Outline the coalition involvement and strategy for supporting and communicating evacuation or shelter in place orders. • Consider the need for large-scale disposal of contaminated waste from decontamination and patient care operations. • Consider any special transportation waste management protocol (e.g., state, local regulations). Some jurisdictions may have limitations on the disposition, or transportation of, certain types of medical waste (to include nuclear contaminated materials). • Reference specific decontamination protocols for self-care, pre-hospital, community reception centers, and healthcare facilities, as well as the need for just-in-time training on standard safety measures. • Include relevant waste management protocols for EMS agencies.	

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	• Ensure there are local protocols for establishing thresholds for rescue (e.g., > 10 mrem/h) and safe zones (e.g., <1 mrem/h) for first responder operations.	Lawrence Livermore National Laboratory Nuclear Detonation Fallout: Key Considerations for Internal Exposure and Population Monitoring National Academies of Sciences Engineering Medicine Federal Planning for Nuclear Incidents National Council on Radiation Protection and Measurements Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN) Oak Ridge Institute for Science and Education Radiation Countermeasures Radiation Emergency Medical Management Diagnosis and Treatment
2.5.5 Fatality Management	This section should describe the HCC role in helping to develop and disseminate decedent handling guidance for contaminated casualties to healthcare agencies and relevant partners during a mass casualty event.	
2.5.6 Transport	This section should refer to transport policies, plans and procedures, including transport of potentially contaminated casualties and the mass movement of persons with significant radiation exposure but who have minimal current symptoms (i.e., latent phase radiation illness). Reference any use of EMS for “level loading” during a radiological emergency. Consider the need for safe inter-facility transport of stable, unstable, and potentially unstable or contaminated patients. Include regional resources for ground and air transport for movement of seriously affected individuals.	
2.5.7 Surveillance, Tracking, and Situational Awareness	This section should describe the HCC’s role in monitoring populations impacted by a radiological incident (e.g., how does healthcare support public health registries). This should include the coalition strategies for patient tracking and documenting specific radiological exposure information. This section should also outline the HCC’s role in maintaining and promoting situational awareness. Outline coalition-based protocol for developing and sharing critical situational awareness information (e.g., patient/bed tracking, availability of essential resources and burn beds, ability to maintain services, surge capacity status, decontamination, shelter in place, evacuation status). Plans should consider the need for family reunification efforts in especially catastrophic radiological events. Families of patients may strain a healthcare system through information-seeking about loved ones or concerns about exposure/illness.	

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2.5.8 Rehabilitation and Outpatient Follow Up Services	This section should discuss the use of a registry and patient tracking of all those who were screened and treated. This should include outpatient follow-up services such as serial lymphocyte counts (as appropriate), coordination of continued care following a surge event, and procedures for repatriation of any patients transferred out of the area as needed. Address possible need for long-term care of affected patients, include plans for tracking patients and monitoring treatment.	Radiation Emergency Medical Management Hospital Activities During Radiation Emergencies Radiation Emergency Medical Management Recovery / Resilience after Radiation Emergencies Radiation Emergency Medical Management Nuclear Detonation: Medical Management Radiation Injury Treatment Network Triage State of Florida Radiological and Nuclear Incident Emergency Response Plan University Nevada Las Vegas Radiation Emergency Response Plan Wisconsin Department of Military Affairs Radiological Emergency Preparedness
2.5.9 Deactivation and Recovery	This section should include considerations for deactivation of the annex, continuity of recovery efforts, the after-action report process, reimbursement, and analysis and archiving of incident documentation. The plan should define the expected contributions of the coalition to the incident action plan at the jurisdictional or regional level	
2.6 Special Considerations		

Section Headers/ Subheadings	Description and Considerations	Sample Resources
2.6.1 Behavioral Health	This section should include considerations for access to a continuum of stepped-care mental health services for patients, caregivers, and providers with emphasis on radiation survivor support and radiation counseling that include telehealth options. General behavioral health response issues should be addressed in the all-hazards coalition response plan. Consider coalition role in supporting long-term mental health implications in cases with prolonged or severe dose rate exposure.	ASPR TRACIE Disaster Behavioral Health Resources ASPR TRACIE Mental/Behavioral Health (non-responders) TC ASPR TRACIE Disaster Behavioral Health Self Care for Healthcare Workers Modules
2.6.2 Pediatric and At-Risk Populations	This section should include considerations specific to at-risk populations and people with special needs (e.g., children, communities of color, elderly populations, individuals with underlying physical and behavioral health conditions, persons experiencing access to care issues, language barriers, individuals experiencing homelessness, and incarcerated individuals). The information should ensure that coalition member organizations account for community members who could be more vulnerable during a radiological emergency. Consider the need for supporting special interventions (e.g., higher sensitivity to radiation, smaller body size, physical characteristics, increased stress/panic levels) to ensure access to appropriate services and care. This section should include considerations specific to caring for pediatric cases including triage, specialty care, transport needs, or specialty resources/supplies. Decision-making for pediatric patients with trauma should be highlighted (e.g., is the regional care center that receives children capable of caring for trauma and radiation illness - and if not, what factors will decide where a pediatric patient goes?). Coalition members should address possible issues surrounding suddenly orphaned children, children separated from family, and the need to reunite family members/caretakers.	American Academy of Pediatrics Considerations Before, During, and After Radiological or Nuclear Emergencies Health Physics Society Emergency Department Management of Radiation Casualties Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health Assisting People Exposed to Radiation Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health Participant Manual
2.5.4. Communications	This section should include HCC role in disseminating timely, accurate, and consistent information to partners and the public. Coalition partners should:	ASPR TRACIE TCs: • Communication Systems • Information Sharing

Section Headers/ Subheadings	Description and Considerations	Sample Resources
	• Work with member organizations and local jurisdictions to ensure streamlined communications efforts across the community to prevent the public from overwhelming healthcare systems. • Ensure consistent messaging and understanding of incident status and severity via use of the Centers for Disease Control Radiation Hazard Scale. • Have mechanisms in place to maintain awareness of current conditions within the community. • Monitor multiple sources of information to identify and counter rumors and misinformation. • Consider the best mechanism to clearly articulate to the public what they can and cannot do (e.g., an incident has occurred at this location, anyone within a 1-mile radius should…, and should not…) Provide specific guidance on what to do if they were in a contaminated area or are experiencing symptoms. • Provide real-time information through coordinated HCC and jurisdictional public health information sharing systems. Adjust timing and content to fit operational tempo of the response. • Consider how the HCC will share situational awareness information, or any other essential data received, from the state, Medical Operations Coordination Cell (MOCC), or other organization within the reporting chain. • Consider designating media-trained clinicians to speak on behalf of the HCC. FEMA offers a Public Information Officer (PIO) training program to teach the essentials of disaster operations public information communications.	• Risk Communications/ Emergency Public Information and Warning • Social Media in Emergency Response Centers for Disease Control and Prevention Nuclear Detonation Response Communications Working Group Department of Homeland Security Nuclear Radiological Incident Annex Executive Office of the President Planning Guidance for Response to a Nuclear Detonation Federal Emergency Management Agency Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN)

Section Headers/ Subheadings	Description and Considerations	Sample Resources
		State of Florida Radiological and Nuclear Incident Emergency Response Plan University Nevada Las Vegas Radiation Emergency Response Plan
2.5.5 Jurisdictional-Specific Considerations	This section should outline and specific jurisdictional/demographic/geographic based protocol that could impact response and recovery efforts. (e.g., tribal, or territorial policies, border control laws, etc.).	ASPR TRACIE Rural Disaster Health TC Pennsylvania Emergency Management Agency: Farmers Emergency Information Nuclear Power Plant Incidents Washington State Department of Health State Radiological Emergency Preparedness Agencies U.S. Department of Health and Human Services State and Local Planners Playbook for Medical Response to a Nuclear Detonation

3. Appendices

Section Headers/ Subheadings	Description and Considerations	Sample Resources
3.1 Training and Exercises	This appendix should include relevant baseline or just-in-time training for radiological incident care. This section should address how to: • Develop a coalition-wide training, exercise, and evaluation program to improve response capabilities in a radiological incident scenario. This may include safety, decontamination, and screening or triage training; implementation of acute radiation syndrome resources; and establishment of community reception centers. • Ensure ongoing training on appropriate use of PPE, radiation, contamination, and exposure assessments, decontamination protocols, and treatment regimens. • Include radiologic incident specialty personnel and jurisdictional level planning/training/exercises. • Develop exercise plans to coordinate patient management and distribution for a variety of radiation incident scenarios with differing levels of severity and impacts. These exercises should include assessing and treating complex medical cases, to include vulnerable or at-risk populations.	ASPR Radiation Emergency Surge Annex Tabletop Exercise Template Situation Manual California Emergency Medical Services Authority Nuclear Detonation Improvised Nuclear Device Scenarios California Office of Emergency Services: Nuclear Power Preparedness Program Department of Homeland Security Radiological Emergency Preparedness Program (REPP) FEMA: Modular Emergency Radiological Response Transportation Training FEMA: REP Program Manual Health Physics Society Emergency Department Management of Radiation Casualties

		Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health Participant Manual Minnesota Multi-year Planning, Training, and Exercise Plan Template National Alliance for Radiation Readiness Radiation Training Modules for Public Health Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN) Oak Ridge Institute for Science and Education Radiation Emergency Assistance Center Training Site Radiation Emergency Medical Management Implementing the Scarce Resources Project Guidance: Video Teaching Tools Radiation Injury Treatment Network Tabletop Exercises Radiation Injury Treatment Network Training Materials Radiation Injury Treatment Network Functional Radiological/ Nuclear

		Exercise Toolkit (To be released fall 2021) Radiation Response Volunteer Corps Development Toolkit State of Florida Radiological and Nuclear Incident Emergency Response Plan University Nevada Las Vegas Radiation Emergency Response Plan
3.1 Legal Authorities	This appendix should list applicable legal authorities/regulatory information specific or relevant to radiological incidents, mass casualties, and waste management, surveillance and population monitoring, and any pertinent safety and control measures (e.g., evaluation procedures or shelter in place). This may refer the reader back to the all-hazard coalition response plan unless related issues are covered in this section. Inter-state issues of staff licensure/sharing, use of volunteers, or patient transport may be particularly relevant for radiological incidents when both providers and patients may cross state lines.	ASPR TRACIE Healthcare-Related Disaster Legal/ Regulatory/ Federal Policy TC Federation of American Scientists Federal Radiological Emergency Response Plan (FRERP)
3.2 Additional Resources/ References	This appendix lists applicable plans, tools, templates, and/or resources used to develop the radiation emergency surge annex. This may include: • Decision support tables, graphics • Sample forms • Treatment visuals • Clinical guidance tip sheets • Decontamination methods • Media packages related to public messaging and crisis communications best practices	American College of Radiology Disaster Preparedness and Response American Hospital Association Emergency Readiness Department of Labor Radiation Emergency Preparedness and Response

		Executive Office of the President Planning Guidance for Response to a Nuclear Detonation National Alliance for Radiation Readiness Tools Oak Ridge Institute for Science and Education Occupational Safety and Health Administration Ionizing Radiation University of Rochester Medical Center Radiation Emergencies Radiology Medical Response to a Major Radiologic Emergency: A Primer for Medical and Public Health Professionals

Appendix A: Healthcare Coalition Radiation Emergency Surge Annex Outline Example

4. Introduction

1.1 Purpose

1.2 Scope

1.3 Overview/Background of HCC and Situation

1.4 Assumptions

2. Concept of Operations

2.1 Activation

2.2 Notifications

2.3 Roles and Responsibilities

2.4 Logistics

- 2.4.1 Space
- 2.4.2 Staff
- 2.4.3 Supplies

2.5 Operations- Medical Care

- 2.5.1 Triage and Screening
- 2.5.2 Patient Care/Management
- 2.5.3 Treatment
- 2.5.4 Safety and Control Measures
- 2.5.5 Fatality Management
- 2.5.6 Transport
- 2.5.7 Surveillance, Tracking, and Situational Awareness
- 2.5.8 Rehabilitation, Outpatient Follow-Up Services
- 2.5.9 Deactivation and Recovery

2.6 Special Considerations

- 2.6.1 Behavioral Health
- 2.6.2 Pediatric and At-Risk Populations
- 2.6.3 Communications
- 2.6.4 Jurisdictional- Special Considerations

3. Appendices

3.1 Training and Exercises
3.2 Legal Authorities
3.3 Additional Resources/References

Appendix B: Resources

ASPR TRACIE Developed Resources for HCCs:

- Additional resources that are helpful for HCCs
- Communication Systems
- Continuity of Operations (COOP)/ Business Continuity Planning TC
- COVID-19 Legal/Regulatory/Authorities Resources
- Disaster Behavioral Health Resources
- Disaster Behavioral Health Self Care for Healthcare Workers Modules
- Exchange Issue 8: Supporting Hospital Surge—Meeting Patient and Staff Needs
- Healthcare-Related Disaster Legal/ Regulatory/ Federal Policy Topic Collection
- Hospital Personal Protective Equipment Planning Tool
- Hospital Pharmacy Disaster Calculator
- Information Sharing
- Mental/Behavioral Health (non-responders) TC
- Partnering with the Healthcare Supply Chain During Disasters
- Pediatric Surge Annex Template, Burn Surge Annex Template, and Infectious Disease Surge Annex Template
- Preparedness Plan, Response Plan, and Recovery Plan templates
- Recovery Planning TC
- Risk Communications/ Emergency Public Information and Warning
- Rural Disaster Health TC
- Social Media in Emergency Response

ASPR TRACIE Developed Resources for Radiological Emergencies:

- Major Radiological or Nuclear Incidents: Potential Health and Medical Implications
- Radiological and Nuclear Topic Collection
- Select CBRN Resources

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