Facility Preparation

INTRODUCTION

In this module, you will learn about the requirements for preparing a radiation emergency area and how to properly control radioactive contamination by isolating the area and using personnel protective clothing. This module will also discuss the importance of establishing a treatment team for radiation emergencies.

PURPOSE

The purpose of this module is to increase your understanding of methods that can be implemented to help avoid the spread of radioactive contamination to the hospital environment and to control the exposure to care givers. This knowledge will help you prepare the treatment area and treatment personnel for receiving accident victims exposed to or contaminated with radioactive materials.

MODULE OBJECTIVES

Upon completion of this module, you will be able to:

1. Identify requirements for preparation of the radiation emergency area (REA).
2. Identify proper techniques for contamination control.
3. Identify the appropriate PPE for the response effort.
4. Identify the suggested makeup, roles, and responsibilities of a treatment team.

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DESIGNATING A RADIATION EMERGENCY AREA (REA)

The radiation emergency area should be identified prior to an event involving radioactive material. A radiation emergency area has the following characteristics:

- Proper size
- Exclusive entry
- Minimal emergency department disruption

Proper Size

The REA should be large enough to hold one or more patients and the necessary medical personnel.

Exclusive Entry

Contaminated patients should have a separate access route to the emergency area.

Minimal Emergency Department Disruption

It is important to have the REA in an isolated location where disruption to other areas of the hospital will be minimal. This will help to control the spread of the contaminant.

BASIC REQUIREMENTS FOR FACILITY PREPARATION

Contamination Control

Once the facility is prepared, personnel should dress into their protective clothing. Procedures used in the handling of contaminated patients are similar to strict isolation precautions and to the protocol for "dirty" surgical cases. When handling contaminated patients, the goal is to provide prompt emergency care while keeping personnel exposures to a minimum and preventing the spread of contamination.

Supply Requirements

The table on the following page lists some basic supplies and equipment that are needed to prepare the REA.

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Sample Supplies and Equipment Needed to Prepare the Emergency Department for the Care of the Contaminated Patient	
Brown wrapping paper	Shampoo
Rope	Emergency medical supplies and equipment (such as suction, oxygen, airways intubation, IV solutions)
"Caution: Radiation Area" signs	Scrub suits
Decontamination table	Gowns
5-gallon containers for wash water	Surgical hoods
Large waste containers lined with plastic bags	Masks
Cotton-tipped applicators	Surgical gloves of various sizes
Various sizes of plastic bags	Waterproof shoe covers
Small lead storage containers (available from Nuclear Medicine)	Masking Tape
Sterile saline	Dosimeters/survey meters
Sterile water	Rubber or plastic aprons
Sodium hypochlorite or household bleach	Batteries
Providone iodine solution or other surgical soap	Wax or felt tip pens
Soft scrub brushes	Radioactive labels
3-percent hydrogen peroxide solution	Sheets, blankets, towels, patient gowns

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Drills

It is important to practice preparation techniques prior to an event involving radioactive material to ensure that proper procedures are understood and followed.

NOTIFICATION OF RADIATION INCIDENT

When the hospital receives a call that a hazardous material incident has occurred and that a potentially contaminated patient is en route to the hospital, the call-taker should record as much information as possible. An effective response cannot occur without accurate and complete information. At a minimum, the following should be obtained:

- Number of accident victims
- Each victim's medical status
- Whether or not victims have been surveyed for contamination
- Whether or not any decontamination efforts have been made
- For radiation incidents, the radiological status of the victims (exposed versus contaminated)
- Identity of contaminant, including isotope and chemical
- Estimated time of arrival
- Call-back number for verification

Personnel responding to emergency event calls should assume that patients are contaminated until proven otherwise and base their response actions accordingly. They should advise ambulance personnel of any special entrance requirements.

PREPARATION OF THE REA TO RECEIVE PATIENTS

Techniques for Contamination Control

Contamination control is an important consideration during the patient admission process. Once the radiation emergency area has been identified, use rolls of brown wrapping paper or butcher paper 3 to 4 feet wide to make a path from the ambulance entrance to the REA. Use ordinary sheet cloths or square absorbent pads if paper is unavailable. Whatever the floor covering, tape it securely to the floor. The floor of the decontamination or treatment area should be covered in the same way.

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The following list summarizes the basic steps that should be followed to control contamination:

Steps to Controlling Contamination

1. Set up a controlled area large enough to hold the anticipated number of patients
2. Restrict access to the controlled area
3. Monitor anyone or anything that leaves the controlled area
4. Use a buffer zone or secondary control line for added security
5. Control ventilation
6. Prevent tracking of contaminants by covering floor areas
7. Use strict isolation precautions, including protective clothing and bagging waste
8. Change instruments, outer gloves, drapes, etc. when they become contaminated
9. Control waste by using large, plastic-lined containers for clothing, linens, dressings, etc.
10. Use waterproof material to limit the spread of contaminated liquids (for example, waterproof aperture drapes)

Control Zones

A control zone should be established for the decontamination area. A control line should be set up at the entrance to the REA to differentiate the controlled (contaminated) area from the non-controlled (uncontaminated) area. Once the patient(s) is in the decontamination room, no person or equipment should leave the decontamination area until monitored at the control line for contamination.

EQUIPMENT PREPARATION

All non-essential equipment in the room should be removed or covered. Door handles and light switches should be covered by taping plastic over them to reduce hand contamination. Life support and other essential medical equipment and supplies should be available and ready for immediate use.

A decontamination table can be prepared in a variety of ways. For example, a standard treatment table can be draped with a waterproof covering—a disposable surgical pack cover from the

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operating room is ideal. A burn table or specially designed decontamination tray can also be used. If desired, sheets can be rolled lengthwise and placed along the edges of a treatment table then covered with plastic sheeting formed into a trough for fluid drainage.

Not all equipment can be decontaminated. The straps used on hospital carts cannot be decontaminated effectively and, after use, should be discarded. If wooden backboards are used, they can absorb contamination through scratches in the finish that allow the contamination to access the plywood base. Contaminated wooden backboards require either refinishing or replacement after use.

PERSONNEL PREPARATION

Emergency response team personnel should be dressed in appropriate personnel protective equipment (PPE). In the hospital environment, this would include surgical clothing (scrub suit, gown, mask, cap, and gloves). Waterproof shoe covers should also be used.

Note: You should also carefully consider secondary hazards (toxic, corrosive, etc.) that may require additional PPE.

Proper use of PPE includes inspecting your PPE thoroughly prior to use. It is a good practice to tape around openings of protective clothing as an extra precaution (for example, tape gloves to sleeves, etc.).

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CONTAMINATION FOUND AFTER ADMISSION

Procedures for Handling Contamination Found After Admission

The following procedures should be followed when radioactive contamination is discovered after a patient has been admitted:

1. Continue attending to the patient's medical needs.
2. Completely assess the patient's radiological status.
3. Secure entire area where patient and attending staff have been.
4. Establish control lines to prevent the spread of contamination.
5. Personnel should remove contaminated clothing before exiting the area and be surveyed. After surveying "clean" they should shower and put on clean clothing.
6. Do not allow anyone or anything to leave the area until cleared by the radiation safety officer.

TEAM PREPARATION

To adequately prepare for response to a radiation incident, you must designate team members and assign responsibilities. It is good practice to have key components of your team identified prior to an incident involving radioactive material.

Team Composition

The emergency response team consists of a number of individuals, each of whom plays a critical role in a successful response.

Roles and Responsibilities of Team Members

The following list identifies emergency response team members and their roles and responsibilities. The exact number of members will vary according to each facility and the nature and extent of the incident.

- Team Coordinator: Leads, advises, coordinates
- Physician: Diagnoses, treats, and provides emergency medical care; can also function as team coordinator or triage officer
- Triage Officer: Performs triage
- Nurse: Assists physician with medical procedures, collection of specimens, radiological monitoring (where applicable) and decontamination, assesses patient needs, and intervenes appropriately

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- Recorder: Records and documents medical data and, where applicable, specific data regarding hazardous materials
- Radiation Safety Officer: Monitors patient and area and advises on contamination and exposure control; maintains survey equipment
- Public Information Officer: Releases accident information to the media
- Administration: Coordinates hospital response and ensures normal hospital operations
- Security: Secure the emergency area and control crowds
- Maintenance: Aid in preparation of the emergency area for contamination control, where applicable
- Laboratory: Provides routine clinical analysis of biological samples as required

Check Your Understanding

1. It is essential that a radiation emergency area has the following characteristics:
   a. Proper _____
   b. Exclusive _____
   c. Minimal _____ _____ _____

2. What is the purpose of setting up a control zone?
   a. Differentiate the contaminated area from the non-contaminated area.
   b. Control access into the treatment area
   c. Prevent tracking of contamination outside the contaminated area
   d. All of the above are correct

3. What should be done to prepare equipment inside the REA?
   a. Everything should be moved out of the area; any needed equipment can be handed across the control zone boundary as needed
   b. Remove or cover non-essential equipment, cover door handles and switches
   c. The floor, walls, and ceiling should be covered with thick plastic
   d. Nothing needs to be done, all equipment can be decontaminated

4. How should emergency room personnel dress to handle contaminated patients?
   a. In an OSHA-approved, fully encapsulating suit
   b. Full protective suit with self-contained breathing apparatus
   c. Surgical clothing or similar to what would be used for Universal Precautions
   d. Emergency room personnel should never handle contaminated patients

5. It is a good practice to designate treatment team members _____ to an incident involving radioactive material occurring.

Idaho Transportation Emergency Preparedness Program




ANSWERS

1. size
   entry
   er disruption
2. d
3. b
4. c
5. prior