

Management of Brachytherapy Patients

Introduction

Overview

The University of Southern California uses ionizing radiation in the following areas:

- ❖ Medical research studies
- ❖ As a diagnostic agent
- ❖ As a therapeutic agent

This chapter deals with the use of radioactive material in sealed sources inserted into body cavities or surgically implanted into tumor sites for the treatment of cancer. All personnel involved in the treatment or care of these patients should be familiar with the recommendations in this section.

All patients undergoing brachytherapy will be located in a private room with toilet as designated by Radiation Protection, except for cases that require patient placement in the ICU. These will be authorized by Radiation Protection on a case-by-case basis, based on the use of portable shielding and the ALARA principle.

Radiation Protection Staff Responsibilities

Training Design

Radiation Protection will determine the needs for training and establishing a system to provide training consistent with the recommendations of:

- ❖ National Council on Radiation Protection and Measurements (NCRP)
- ❖ Joint Commission on the Accreditation of Healthcare Organizations

Radiation Protection will provide appropriate training to the following groups:

- ❖ Nursing Service
- ❖ Housekeeping Staff
- ❖ Physicians

Management of Brachytherapy Patients

Regulatory Compliance

In order to guarantee compliance with recommendations of the NCRP, JCAHO and the CRCR, Radiation Protection will conduct spot checks of radiation therapy activities such as:

- ❖ Posting of signs and labels.
- ❖ Source accountability.
- ❖ Staff awareness.

Recordkeeping

Radiation Protection will maintain the records necessary to show compliance with the regulations of various responsible agencies.

Radiation Oncology Staff Responsibilities

Consent Form

The Radiation Oncology Department must discuss with the patient the hazards and risks involved with brachytherapy and obtain a signed consent form.

Notification of Radiation Protection

At least 1/2 working day prior to source implantation, Radiation Protection must be notified of the following information:

- ❖ Date of insertion.
- ❖ Estimated length of treatment.
- ❖ Radionuclide used.
- ❖ Radionuclide activity.
- ❖ Hospital and room in which the patient is housed.

Management of Brachytherapy Patients

Briefing Attendant Staff

All attendant staff will be briefed on the course of treatment planned, to include:

- ❖ Approximate dose rates.
- ❖ Estimated length of treatment.
- ❖ Reminder of rules and precautions for visitors and staff.

After Source Insertion

After insertion of radiation sources, the Radiation Oncology Department must:

- ❖ Post a warning sign on or by the patient's door.
- ❖ Place a warning sign on patient's chart.
- ❖ Complete the form *Nursing Instructions for Patients Treated with Brachytherapy Sources* and place it in the Patient's chart.
- ❖ Perform a radiation exposure survey.

Radiation Exposure Survey

The Radiation Oncology staff will survey the patient's room and all surrounding areas as soon as possible after the sources have been implanted. The following exposure rate measurements will be recorded on the nursing instruction sheet:

- ❖ In the patient's room, one meter from the patient, except for remote after-loading devices, such as the Selectron.
- ❖ In the hallway at the nearest point to the patient.
- ❖ In all adjacent rooms along the wall common to the patient's room, only if there is reason to believe that the exposure rate exceeds 2 mR/hr or that the total exposure to the patient in the adjacent room could exceed 100 mR for the total duration of the treatment

Management of Brachytherapy Patients

Radiation Levels

Radiation levels in unrestricted areas will be maintained within the limits specified in 10 CFR 20.1301 (2 mrem in any one hour and 100 mrem in any one year). If radiation levels cannot be maintained less than these limits, notify Radiation Protection immediately.

Conclusion of Treatment

At the conclusion of treatment, the Radiation Oncology staff will perform a survey using a suitable instrument, to guarantee that all radiation sources have been removed from the patient. The Radiation Oncology staff will also survey the patient and the patient's room to ensure that no source of radiation is left behind. When this has been completed, Radiation Protection should be notified. Radiation Protection will then remove all radiation signs and labels and officially release the room for unrestricted use.

Note: This does not apply to permanent implants.

Inventory of Sources

A physical inventory of the number of sources removed will be conducted at the time of removal and compared against the number implanted, for verification.

Records

Radiation Oncology will record the results of area surveys taken after the implant, patient surveys, room surveys taken after removal of the sources, and the final inventory of sources. These records will be kept separate from the patient's chart and available for inspection.

Nursing Instructions

Questions

Nursing personnel are encouraged to contact the Radiation Oncology Department with any questions about patient care. Contact Radiation Protection in regard to radiation safety precautions.

Management of Brachytherapy Patients

Dosimetry Badges

Nurses caring for brachytherapy patients must wear whole body dosimetry badges. In addition, finger badges may also be assigned to nurses who provide extended personal care to the patient.

Nurses assigned to brachytherapy patients should adhere to the following badge procedure:

- ❖ Obtain a dosimeter from Radiation Protection.
- ❖ Wear the dosimeter whenever in the patient's room.
- ❖ Wear only your own dosimeter; dosimeters are not to be exchanged between nurses.
- ❖ Control dosimeters are never assigned to personnel even in emergencies

Specific Patient Care Guidelines

The physician's order sheet may contain guidelines or special instructions for nursing. All nurses should read these instructions before caring for the patient. Some of the basic guidelines for specific patient care are the following:

- ❖ No patient should receive a bed bath while radiation sources are in place, except for treatments controlled by automatic loaders for which the sources are removed prior to entry of the attending staff.
- ❖ Perineal care is not given during gynecologic treatment. The perineal pad may be changed when necessary, unless orders to the contrary are on the sheet.
- ❖ Special orders will be written for oral hygiene for patients with oral implants.
- ❖ Do not remove portable radiation shields that have been positioned by Radiation Oncology or Radiation Protection.

Exposure Time

Nurses should spend only the minimum time near the patient in order to perform routine nursing care.

Management of Brachytherapy Patients

Pregnant Women

No nurse, visitor or attendant who is pregnant is allowed in the room of a brachytherapy patient while sources are implanted. Female visitors should be asked if they are pregnant.

Housekeeping Staff

A member of the nursing staff must accompany housekeeping staff into patient rooms. Only essential cleaning should be done. Trash and laundry should not be removed from the patient's room unless cleared by Radiation Oncology or Radiation Protection.

Hospital Staff

In general, unless specific instructions to the contrary are written, hospital staff not directly associated with the treatment of the patient should not be permitted to enter the patient's room. If in doubt, call Radiation Oncology or Radiation Protection.

Loose Radioactive Sources

Nurses must never touch:

- ❖ Radioactive needles.
- ❖ Radioactive capsules.
- ❖ Containers holding brachytherapy sources.

If a source becomes dislodged, use long forceps to put it in the shielded container provided. After the source has been secured, immediately refer to the Nursing Instruction Sheet for emergency phone numbers.

Dressing Changes

Surgical dressings and bandages used to cover the area of source insertion may only be changed by the attending physician or radiation therapist. Dressings may

Management of Brachytherapy Patients

not be discarded until directed by the therapist. Dressings should be kept in a basin until checked.

Bed Linens

All bed linens must be surveyed before being removed from the patient's room. It is important to guarantee that no dislodged radiation sources are accidentally removed with the bed linen.

Activities of Patients

Brachytherapy patients are confined to bed unless an order to the contrary is written. All patients will remain in their assigned rooms during the treatment period.

Visitors

Visitors must be 18 years old or older, unless other instructions are given on the Physician's Order Sheet in the patient's chart. Visitors should:

- ❖ Sit or stand at least six feet from the patient.
- ❖ Remain no longer than two hours per day (unless otherwise instructed).

No pregnant visitors shall be allowed to visit patients receiving brachytherapy treatment.

Emergency Procedures

If	Then
The patient dies or requires emergency surgery.	Refer to Nurses' instructions Sheet in the chart for emergency phone numbers.
A source becomes dislodged.	Using long-handled tongs or forceps, quickly place the source in the shield provided, then refer to the Nurses' Instruction Sheet in the chart for emergency phone numbers.

Management of Brachytherapy Patients

Conclusion of Treatment

At the conclusion of treatment, call Radiation Oncology to:

- ❖ Survey the patient.
- ❖ Survey the patient room.
- ❖ Inventory the radiation sources to ensure that all temporary implants have been removed prior to discharging the patient.
- ❖ Call Radiation Protection.

After the room has been surveyed and declared free of sources of radiation, Radiation Protection will remove all signs and labels and release the room to unrestricted use. Until then, treat the room as a radiation area even if the patient is no longer present.

Emergency Procedures for Patients Containing Radioactive Material

To ensure prompt emergency care for patients that contain radioactive materials:

Step	Procedure
1	Life support measures are initiated immediately as specified by code blue policy and procedure, with the following special instructions: Do not delay any life saving treatment simply because a patient is being treated with radioactive material. Any exposure of 30 minutes to a patient containing radioactive material is usually within permissible limits. It is suggested that personnel be rotated whenever possible.
2	Do not attempt to remove any radioactive material.
3	Tracheotomy may be performed if indicated.
4	Use an ambu-bag rather than mouth-to-mouth resuscitation.
5	Do not allow unnecessary personnel to remain in the patient room.

Management of Brachytherapy Patients

6	Do not remove anything from the patient's room unless it has been cleared by the Radiation Safety Officer.
7	Notify the Radiation Safety Officer.
8	If the patient expires, the body will remain in the room until released by the Radiation Safety Officer.

Management of Brachytherapy Patients
