ITEM 19-THERAPEUTIC USE OF RADIOPHARMACEUTICALS

ITEM 20-THERAPEUTIC USE OF SEALED SOURCES

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HEALTH PHYSICS
WALTER REED ARMY MEDICAL CENTER
Washington, D.C. 20012

HSWP-QHP
MEMO Number 7

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MANAGEMENT OF PATIENTS UNDERGOING BRACHYTHERAPY OR GROUP IV AND V RADIOPHARMACEUTICAL PROCEDURES AND PROTECTION OF PERSONNEL DURING BRACHYTHERAPY OR GROUP IV AND V THERAPY PROCEDURES

1. Purpose. The purpose of this SOP is to delineate the responsibilities of those individuals involved in brachytherapy or NRC Group IV and V procedures so as to minimize the ionizing radiation exposure to nursing and other patient care personnel, visitors, and to those who occupy or may occupy areas adjacent to the patient being treated.

2. Responsibilities.

a. Responsible Physician. The physician responsible for the brachytherapy or Group IV and V procedure should notify the Health Physics Office as far in advance of the planned procedure as possible but not less than two (2) full working days before the procedure. Information should include patient's name, ward, procedure, isotope, activity, and procedure duration. Records of the procedure and radioactive materials used will be maintained in accordance with standard clinical practice and the provisions of the Principal User's WRAMC authorization. Appropriate information will be placed in the patient's ward chart identifying the Responsible Physician. For brachytherapy cases forceps and a shielded radioactive source pig will be left in the patient's room during the procedure.

b. Health Physics Office.

(1) The Health Physics Office will coordinate aspects of the Health Physics support of the patient with the Responsible Physician.

(2) The Health Physics Office will brief nursing and other patient care personnel as to the radiation safety procedures involved with the particular patient. Aspects of the Health Physics support of the patient will be coordinated with the Primary Care Nurse.

(3) The Health Physics Office will discuss the procedure and Health Physics responsibility with the patient and, if possible, the patient's family so as to assure that the radiation safety requirements are understood.

(4) Health Physics personnel will be present during the application/insertion of brachytherapy sources and ingestion/application Group IV or V materials to insure that procedures are followed.

(5) The Health Physics Office will perform a radiation survey on the patient's room and environs and document the findings, both during and after the brachytherapy or other therapy procedure. Appropriate procedure SOP's, warning signs and labels will be posted. Bedside shields will be positioned to minimize exposure to personnel in adjacent areas to less than two (2) millirem in any one hour or 100 millirem in any seven (7) days.

Anti-contamination precautions will be effected when required. At least daily visits to this patient's room will be made during the procedure to insure safety precautions are being followed.

(6) Upon initiation of a brachytherapy or Group IV or V therapy procedure in Bldg 2, the Health Physics Office will survey the interstitial floors above and below the patient's room to determine if any areas exist where a person could receive a radiation dose in excess of two (2) millirem in any one (1) hour or 100 millirem in any seven (7) days. When such area(s) exist, the Health Physics Office will mark the perimeter of the area(s) with appropriate radiation warning signs, warning tape and flashing lights. The Health Physics Office will notify the Facilities Engineering Directorate that an area has been so marked. Upon completion of the brachytherapy or other therapy procedure, the Health Physics Office will remove the radiation warning signs, warning tape and flashing lights and notify the Facilities Engineering Directorate that the procedure has been completed and warning signs, tape and lights removed.

(7) After removal of the brachytherapy sources from the patient, the Health Physics Office will survey the patient's room to verify the removal of the sources and absence of contamination. The patient and, if possible, the patient's family will be debriefed. Nursing personnel and other patient care personnel will also be debriefed. The temporary shields will be removed.

(8) After determination has been made by the Health Physics Office that the activity in an iodine therapy patient (or other radionuclide therapy patient) has reached a level such that the integrated exposure will be less than 0.5 R at one (1) meter during the remaining complete decay, the Health Physics Office will coordinate with the Responsible Physician and the Primary Care Nurse for the debriefing and discharge of the patient and, if possible, the debriefing of the patient's family. Contamination control measures will be terminated and the room decontaminated as required. A final survey will be conducted to validate that decontamination has been effected. Any temporary shields will be removed.

(9) The Health Physics Office will provide Radiation Protection in-service classes and other instruction as required for personnel whose duties require their presence in or immediately adjacent to the patient's room.

c. Nursing Service.

(1) Nursing Service personnel should read the Health Physics instructions prior to performing nursing care on therapy patients.

(2) Pregnant nurses should not be assigned to care for these patients.

(3) Surgical dressings and bandages should be changed only by or under the direction of the attending physician. Dressings should not be disposed of until checked by the Health Physics Technician.

(4) Emergency Procedures:

The attending physician and Health Physics Technician must be notified in the event that

(a) The patient expires.

(b) Patient requires emergency surgery.

(c) An emergency occurs that requires the patient to be moved to another location.

(d) A brachytherapy source becomes loose or separated from the patient.

(e) Leakage occurs from puncture wounds associated with Group IV and V radiopharmaceutical therapies, e.g. colloidal Phosphorus-32.

3. Radioactive Waste Disposal.

Radioactive waste disposal will be in accordance with Health Physics Memo #3 and the provisions of this Memo and Annexes. Where feasible, urine from patients undergoing therapeutic doses of Iodine-131 will be collected in shielded containers for subsequent disposal by the Health Physics Office. Feces will not be saved unless required as part of the treatment plan. Disposal of feces, etc., by the patient's toilet will be accomplished by a minimum of three (3) complete flushes.

ROBERT M. QUILLIN
LTC, MSC
Health Physics Officer

ANNEXES
A - Health Physics Brachytherapy Instructions
B - Health Physics Instructions Concerning Patients Undergoing Colloidal Phosphorus-32 Therapy
C - Health Physics Iodine Therapy Instructions
D - Radioisotope Brachytherapy Monitoring Record
E - Radioisotope Therapy Monitoring Record Permanent Implant or Internal Dose.

HEALTH PHYSICS BRACHYTHERAPY INSTRUCTIONS

1. VISITORS. Visitors shall stay behind the line indicated by tape on the floor of the patient's room. No one under the age of 18 is allowed as a visitor. No pregnant women are allowed as visitors. Visits should be limited to 30 minutes except for those individuals who have been specifically instructed by the Health Physics Office (usually the spouse or other next of kin).

2. NURSING AND PATIENT CARE PERSONNEL. Nursing personnel caring for brachytherapy patients shall wear the personnel dosimeters furnished by the Health Physics Office while on duty. Other patient care personnel will not normally be assigned dosimeters unless the patient care requires their continued close proximity to the patient. Nursing and patient care personnel should spend as little time as possible near the patient for routine care procedures. Whenever possible the bedside shield should be used to shield personnel during such procedures. Bed baths should be minimized and kept as brief as possible. Again the bed shiled should be used if at all possible. Linen changes should be kept to a minimum and done as rapidly as possible. Dressings should be handled by or under the direction of the attending physician.

3. HOUSEKEEPING PERSONNEL. Only limited housekeeping procedures should be performed in the patient's room such as emptying the wastebasket, etc. Further housekeeping services should be performed only when determined to be necessary by the Nursing Supervisor. If more than minimal housekeeping procedures are to be performed, the housekeeping staff shall wear personnel dosimeters furnished by the Health Physics Office.

4. BRACHYTHERAPY SOURCES. Brachytherapy sources are sealed radioactive sources and no radioactive contamination should occur during the therapeutic procedure. No special precautions are needed for sputum, urine, vomitus, stool, dishes, utensils or bedding. The only potential problem which all personnel should be aware of is the loss of a brachytherapy source from the patient or the removal of a source by the patient. These sources vary in design but for the interstitial implants they are generally in the shape of large thick needles (several centimeters in length) or a series of individual small cells either imbedded together in a ribbon or separate. The separate cells or seeds look like short pieces of wire, usually gold in color. For intracavitary implants the sources are large cells (two centimeters long and three to four milimeters in diameter). While the loss of a brachytherapy source is rare, any unusual situation that arises or any unusual items found in the bed, near the patient, or in the patient's discarded dressings which match the above descriptions should be handled with forceps and reported at once to the Health Physics Technician and the Attending Radiation Therapy Physician in charge of the brachytherapy procedure.

5. HEALTH PHYSICS SUPPORT. Questions concerning any radiation protection measures related to this patient should be directed to the Health Physics Office, 427-5107. The Health Physics Technician monitoring this case is:

NAME: _____

HOME PHONE: _____

OFFICE PHONE: _____

HEALTH PHYSICS INSTRUCTIONS CONCERNING PATIENTS UNDERGOING COLLODIAL PHOSPHORUS-32 THERAPY

1. VISITORS. Visiting is in accordance with usual rules. There are no restrictions related to visitors except that visitors are not allowed to touch or handle patient's surgical dressings or clothing unless authorized to do so by the attending physician or nurse.

2. NURSING AND PATIENT CARE PERSONNEL. Nursing personnel caring for phosphorus-32 therapy cases will not normally be assigned personnel dosimeters due to the minimal external exposure involved. Bedside shields are not required. When handling surgical dressings, gloves should be worn. If there is any evidence of leakage from the puncture wound (e.g. stains, dampness, blood), the Attending Nuclear Medicine Physician and the Health Physics Technician must be notified immediately. All dressings showing evidence of leakage must be assumed to be radioactively contaminated. If such dressings must be removed by nursing personnel, they should be placed in plastic bags for disposal by the Attending Physician or the Health Physics Technician. If any question arises concerning contamination of patient linens or clothing, the Health Physics Technician should be notified so that an evaluation may be made. If there is no drainage from the wound after the first few days, dressings may be handled in the usual manner.

3. HOUSEKEEPING PERSONNEL. Routine housekeeping procedures apply.

4. COLLOIDAL PHOSPHORUS-32 THERAPY. Colloidal Phosphorus-32 therapy involves the injection of a colloidal phosphorus-32 solution into a body cavity. Phosphorus-32 is a pure beta emitter and does not give rise to significant external radiation. No special precautions regarding vomitus, urine, or sputum are necessary for patients treated with colloidal phosphorus. The only potential hazard as far as patient care is concerned relates to leakage from the puncture wound on to dressings, linens or clothing. Patients will, however, wear radioactivity precaution wrist bands. If a patient should need emergency surgery or should die, notify the Health Physics Technician and the Attending Nuclear Medicine Physician immediately.

5. HEALTH PHYSICS SUPPORT. Questions concerning any radiation protection measures related to this patient should be directed to the Health Physics Office, 427-5107. The Health Physics Technician monitoring this case is:

NAME: _____

HOME TELEPHONE NO. _____

OFFICE TEL. NO. _____

HEALTH PHYSICS IODINE THERAPY INSTRUCTIONS

1. VISITORS. Visitors shall stay behind the line indicated by tape on the floor of the patient's room. No one under the age of 18 is allowed as a visitor. No pregnant women are allowed as visitors. Visitors should be limited to 30 minutes except for those individuals who have been specifically instructed by the Health Physics Office (usually the spouse or other next of kin). Visitors shall not use the patient's bathroom. Smoking is not permitted either by the patient or by visitors.

2. NURSING AND PATIENT CARE PERSONNEL. Nursing personnel caring for iodine therapy patients shall wear the personnel dosimeters furnished by the Health Physics Office while on duty. Other patient care personnel will not normally be assigned dosimeters unless the patient care requires their continued close proximity to the patient. Nursing and patient care personnel should spend as little time as possible near the patient for routine care procedures. Whenever possible the bedside shield should be used to shield personnel during such procedures. Although the patient is usually ambulatory, the patient is confined to his/her room. Any departure, except for emergency reasons, requires the approval of the Health Physics Office. Excretions and vomitus from the patient are radioactive. If urine or vomitus is spilled, notify the Health Physics Office and use rubber gloves and booties during clean-up. Avoid spreading any contamination present. Containers lined with magenta bags will be available for deposit of disposable wastes. Linens will be placed in another magenta bag to be sorted and released by the Health Physics Office. Disposable eating utensils, dishes, and trays shall be used throughout the patient's hospitalization. Disposable gloves must be worn when attending the patient or handling items touched by the patient or containing material obtained from the body of the patient. No blood or urine samples should be obtained during the first 48 hours unless coordinated with the Health Physics Technician. Urinals or bed pans used by the patient should be flushed several times with hot soapy water after use.

3. HOUSEKEEPING PERSONNEL. Housekeeping personnel should not perform any tasks in the patient's room until the room has been released by the Health Physics Office. Magenta bags are not to be handled by housekeeping personnel.

4. RADIOIODINE THERAPY. Radioiodine therapy involves the oral administration of a solution containing I-131. What is not retained by the thyroid is excreted primarily in the urine and sputum. Consequently, special care must be taken when handling these excretions. Iodine-131 decays with an 8-day half life, therefore the radiation exposure rate will fall off fairly rapidly during the procedure. If the patient should need emergency surgery or should expire, notify the Health Physics Technician and the Attending Physician immediately.

5. HEALTH PHYSICS SUPPORT. Questions concerning any radiation protection measures related to this patient should be directed to the Health Physics Office, 427-5107. The Health Physics Technician monitoring this case is:

NAME: _____

OFFICE PHONE: _____

HOME PHONE: _____

RADIO[illegible]OPE BRACHYTHERAPY MONITORIN[illegible] RECORD

NAME:	ADDRESS:	HOME PHONE:

ISOTOPE:	ACTIVITY:	TYPE OF IMPLANT:

PATIENT'S PHYSICIAN:	PHONE: DUTY: HOME:

ADMINISTRATION

LOCATION:	DATE:

PERSONNEL PRESENT:

DOSE DURING PROCEDURE: (IF AVAILABLE)

START TIME:	FINISH TIME:

NUMBER OF SOURCES/ACTIVITY TAKEN FROM STORAGE:

NUMBER OF SOURCES/ACTIVITY USED:

NUMBER OF SOURCES/ACTIVITY RETURNED TO STORAGE:

UNUSUAL EVENTS/REMARKS:

AREA SURVEY

WARD:	ROOM/BED:

PATIENT ROOM(S) SKETCH:

MEASUREMENTS

LOT.	MR/HR	DIST.	HEIGHT

SURVEY METER (MFG, MODEL, SN)

AREA SURVEY *(Continued)*

EXPOSURE TO ADJACENT PERSONNEL

NAME	LOCATION	STATUS	EXPOSURE RATE	EST. TOTAL EXP.

WARD PERSONNEL DOSIMETRY ☐ SIGNS ☐ STAFF BRIEFING SHIFT #1 ☐ SHIFT #2 ☐ SHIFT #3 ☐

SURVEYOR NAME (PRINT): SURVEYOR NAME (SIGNATURE):

REMOVAL

LOCATION: DATE:

PERSONNEL PRESENT: EXPOSURE (IF AVAILABLE)

START TIME: FINISH TIME:

NUMBER OF SOURCES/ACTIVITY REMOVED AND RETURNED TO STORAGE:

SURVEY:

PATIENT'S BED/AREA	mR/hr
ROOM	mR/hr
BATHROOM	mR/hr
LINEN ETC.	mR/hr

REMARKS:

SURVEYOR'S NAME (PRINT): SURVEYOR'S NAME (SIGNATURE):

RADIOISOTOPE THERAPY MONITORING RECORD
Permanent Implant or Internal Dose

NAME:	ADDRESS:	HOME PHONE:

Isotope	Activity	Type of Implant

Patient's Physician:	Phone: Duty: Home:

A D M I N I S T R A T I O N

Location:	Date:

Personnel Present:

Dose During Procedure (if applicable)

START TIME:	FINISH TIME:

Unusual Events/Remarks:

AREA SURVEY

Ward	Room/Bed

Patient's Room(s) Sketch:

MEASUREMENTS			
loc.	mR/hr	dist.	height

Survey Meter(mfg, mdl,sn)

EXPOSURE TO ADJACENT PERSONNEL

NAME	IDENTIFICATION	LOCATION	STATUS	EXP. RATE	EST. TOTAL EXP.

WARD PERSONNEL DOSIMETRY ☐ SIGNS ☐ STAFF BRIEFING ☐

Surveyor Name (Print) Surveyor Name (Sign)

THERAPY PROGRESS

DATE	TIME	DOSE RATE/1m	Activity

RELEASE DATA (Initial spaces)

Patients Residual Activity Below "No Restriction" Level ____
(See Table 2 NCRP Report #37)
Patient given instructions:
Verbal ____ Written ____

*If patient's residual activity exceeds "No Restriction" level following must be completed.

Notify Health Physics Officer ____

Interview patient ____

"Radiation Safety Checklist ____

"Instructions for Family ____

Inform Patient's Doctor ____

Remarks:

Date Patient Released _____ Time _____

Survey of Room completed Date _____ Time _____

Room released to Ward _____

Surveyor Name (Print) | Surveyor Name (Sign)