THE MEDICAL CENTER OF DELAWARE

ADDRESS REPLY TO:

DEPARTMENT OF RADIATION THERAPY

CARLO A. CUCCIA, M.D., F.A.C.R.
EKKEHARD S. SCHUBERT, M.D.
DONALD C. TILTON, D.O.
VIROON DONAVANIK, M.D.

DIPLOMATES
AMERICAN BOARD OF RADIOLOGY

EDWARD TORVIK, Sc.D.
JOSEPH A. ROSE, B.S.E.E.

February 17, 1986

U.S. Nuclear Regulatory Commission
631 Park Ave.
King of Prussia, PA 19406

License No. 07-12153-02
Subject: Amendment to Items
19 & 20

Gentlemen:

Enclosed please find check #00056650 in the amount of $120.00 to cover amendment to our license # 07-12153-02. The amendment is to cover material contained in items 19 & 20.

This new material reflects modifications in our current procedures at Christiana Hospital.

I am requesting that you exempt this hospital from the provisions contained in 10CFR20.105b as they relate to our brachytherapy patients placed in adjacent beds in the same room. These patients are primarily being treated with 20 to 100 milligrams Radium equivalent of Cesium-137. Further details will be found in Item 20.

From March 1985 to January 1, 1986 the hospital has admitted 116 brachytherapy patients to the 6th floor. All permanent personnel working on this floor have been issued film badge dosimeters. The maximum film badge dosimeter reading obtained for January 1 to December 1, 1985 is 180 millirems. Most of the personnel on this floor have film badge dosimeter readings for the 11 month period of 50 millirems or less.

The contact exposure rate at the entrance door to the brachytherapy room has never exceeded 0.6 mR per hour.

Yours truly,

Edward Torvik

Edward Torvik, Sc.D., Physicist

CHRISTIANA HOSPITAL
4755 OGLETOWN-STANTON ROAD
P.O. BOX 6001
NEWARK, DELAWARE 19718

ET/el

ITEM 19

NUCLEAR MEDICINE SECTION

Amendment to License # 07-12153-02

Revised January 20,1986

A. General Requirements:

All Nuclear Medicine therapy patients receiving more than 30 milliCuries of radioactive material will have to be scheduled with the Nuclear Medicine Laboratory at least 72 hours in advance. All such patients will be required to be admitted to a private room at the Christiana Hospital. The Nuclear Medicine section shall notify the Radiation Safety Officer about all patients who are to receive quantities of radioactive materials greater than 30 milliCuries. The following information shall also be provided:

1. Patient's Name
2. Room Number
3. Radioactive material to be administered
4. Activity to be administered to the patient

A Nuclear Medicine Technologist will be assigned to perform the following functions:

1. Pre-admission preparation of patient's room.

2. Radiation survey after administration of the radioactive material.

3. Pre-discharge survey of patient to insure that the total residual activity is less than 30 milliCuries.

4. Radiation survey of patient's room after discharge of patient to insure that contamination levels are below acceptable limits.

5. Remove all low level radioactive waste material to Radioactive storage room.

A copy of the completed patient's room survey report is to be sent to the Radiation Safety Officer within 48 hours after the patient's room has been returned to normal use.

B. Iodine-131 Cancer Therapy

All Iodine-131 for cancer therapy is administered to the patient by a Nuclear Medicine technologist. It is the responsibility of the technologist to place in the patient's chart a copy of "Nursing Instruction" and the two Radioactive Material Labels. The technologist shall perform all required radiation protection surveys of the patient's room and record data on survey form.

The technologist who administered the Iodine-131 therapy shall determine the total activity in his/her thyroid 24 hours post administration and submit report to the Radiation Safety Officer.

C. Radioactive Waste:

The empty radioactive therapy container shall be returned to Nuclear Medicine section for storage and radioactive decay.

NURSING INSTRUCTIONS FOR PATIENTS RECEIVING IODINE-131 THERAPY

PATIENT _____

This patient was administered _____ mC of _____
(Isotope)

on _____ at _____ a.m. p.m.
(date)

_____
(Name of Physician)

GENERAL

1. Nurses may spend whatever time is necessary near the patient for ordinary nursing care unless restrictions have been established by the Radiation Safety Officer. During the first 24 hours, private duty nurses remaining in the patient's room should stay about 2 meters (6 ft.) away from the bed except during actual nursing procedures.

   No bed baths should be performed by attendants during the first 48 hrs. post administration time.

2. Patients are allowed visitors in accordance with usual hospital rules unless other instructions are given by the Radiation Safety Officer. However, the first few days visitors should sit at least 1 meter (3 ft.) away from the bed.

3. Pregnant personnel SHALL NOT be assigned to work with this patient.

4. When patient is discharged, room will be surveyed for contamination before remaking room.

IODINE-131 PATIENTS

5. A disposable bedpan and urinal shall be kept for the patient's use until he is discharged. If bathroom privileges are allowed, the toilet is to be flushed twice after each use.

IODINE-131 PATIENTS (cont'd)

6. Vomiting within 24 hours after oral administration may result in serious contamination of linens or even of the floor. In any such emergency call the Nuclear Medicine section or the Radiation Safety Officer.

7. Food shall be served using disposable plates, cups, and eating utensils. The bed linen and disposable items should be stored inside patient's room. These items shall be monitored by Nuclear Medicine technologist using a calibrated G.M. survey meter. If radiation levels are at background the linen and disposable utensils may be removed and handled in normal manner. If radiation levels are greater than background this material shall be stored in radioactive material storage room until measured radiation levels are at background.

POST MORTEM CARE OF PATIENTS

The physician in charge and the Radiation Safety Officer shall be notified upon the death of a patient containing radioactive material. Release of the body to the Department of Pathology or to the funeral director will be done only after receiving a release from the Radiation Safety Officer or his designated representative.

EMERGENCY SURGERY

The Radiation Safety Officer and the Nuclear Medicine section shall be notified immediately if patient must undergo emergency surgery. Surgeon must be informed that patient contains radioactive material.

II. NURSING CARE OF PATIENTS RECEIVING A THERAPY DOSE OF RADIOACTIVE MATERIALS

A. General Information

1. For all patients who have received a therapeutic amount of a radioactive material a "CAUTION RADIOACTIVE MATERIALS" sign is to be placed on the entrance door of the patient's room.

2. Nurses are to perform all duties in a normal and routine manner except for any special instructions given below and any special instructions given by the Radiation Safety Officer or his deputy.

3. In accordance with institutional policy no pregnant personnel will be assigned to any radioactive therapy patient, i.e., any patient with more than 30 milliCuries of any radioactive material.

B. Hazards may arise from three sources:

1. Contamination of the skin with radioactive materials.

2. Inhalation or ingestion of radioactive materials.

3. Irradiation by gamma or x-rays escaping from patient.

C. General Principles of Radiation Protection

1. Skin contamination, ingestion or inhalation is prevented in part by practicing good housekeeping, hand washing, and clean work habits.

2. External irradiation of the body may be kept below maximum permissible limits by:

   a. Taking precautions in handling contaminated equipment.

   b. Spending the minimum amount of time close to patient containing therapeutic dose of radioactive material.

For additional information see Item 20 material listed as "NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS" page 5 of 6, VIII. Care of Patients Having 131 Iodine.

SURVEY REPORT FOR NUCLEAR MEDICINE THERAPY PATIENT'S ROOM

All areas adjacent to the room in which a patient has received 30 milliCuries or more of radioactive material must be surveyed as well as designated locations inside the room to insure that Medical Center of Delaware is in compliance with federal and state regulations. This means that survey should demonstrate that the measured dose rates outside the patient's room do not exceed 2.0 mrem/hour, nor will anybody receive a total does in excess of 100 millirems during the total time that this patient occupies this room.

For the Iodine-131 cancer therapy patient the following procedure must be followed:

1. The therapy container must be opened in the fume hood and allowed to stay there with hood fan operating for five minutes before being taken to the patient's room.

2. Plastic sheeting must be placed on bedside table, around sink and toilet floor, over chair patient will sit in. Plastic bags should be placed over telephone, and inside door handle. This procedure will help minimize surface contamination.

3. After administration of the Iodine-131 a radiation safety survey must be made and measurement recorded on survey form.

4. The Nuclear Medicine Technologist administering the Iodine-131 dose to the patient must determine his/her thyroid burden 24 hours after administering the Iodine-131 to the patient. The appropriate form is located in the Nuclear Medicine section and must be filled out completely and sent to the Radiation Safety Office.

5. A pre-discharge survey must be made to insure that patient contains less than 30 milliCuries of radioactive material.

6. A post discharge survey must be made to insure that room can safely be returned to normal patient use.

ITEM 20

Department of Radiation Therapy

Item 20 Therapeutic Use of Sealed Sources

a. Areas where sealed sources will be stored:

All sealed sources that are used in the Department of Radiation Therapy are stored in the Radium Room located in the Physics Section, Christiana Division.

A monthly radiation survey is performed by the Assistant Physicist and results recorded in notebook.

b. Special precautions to be used while handling sealed sources:

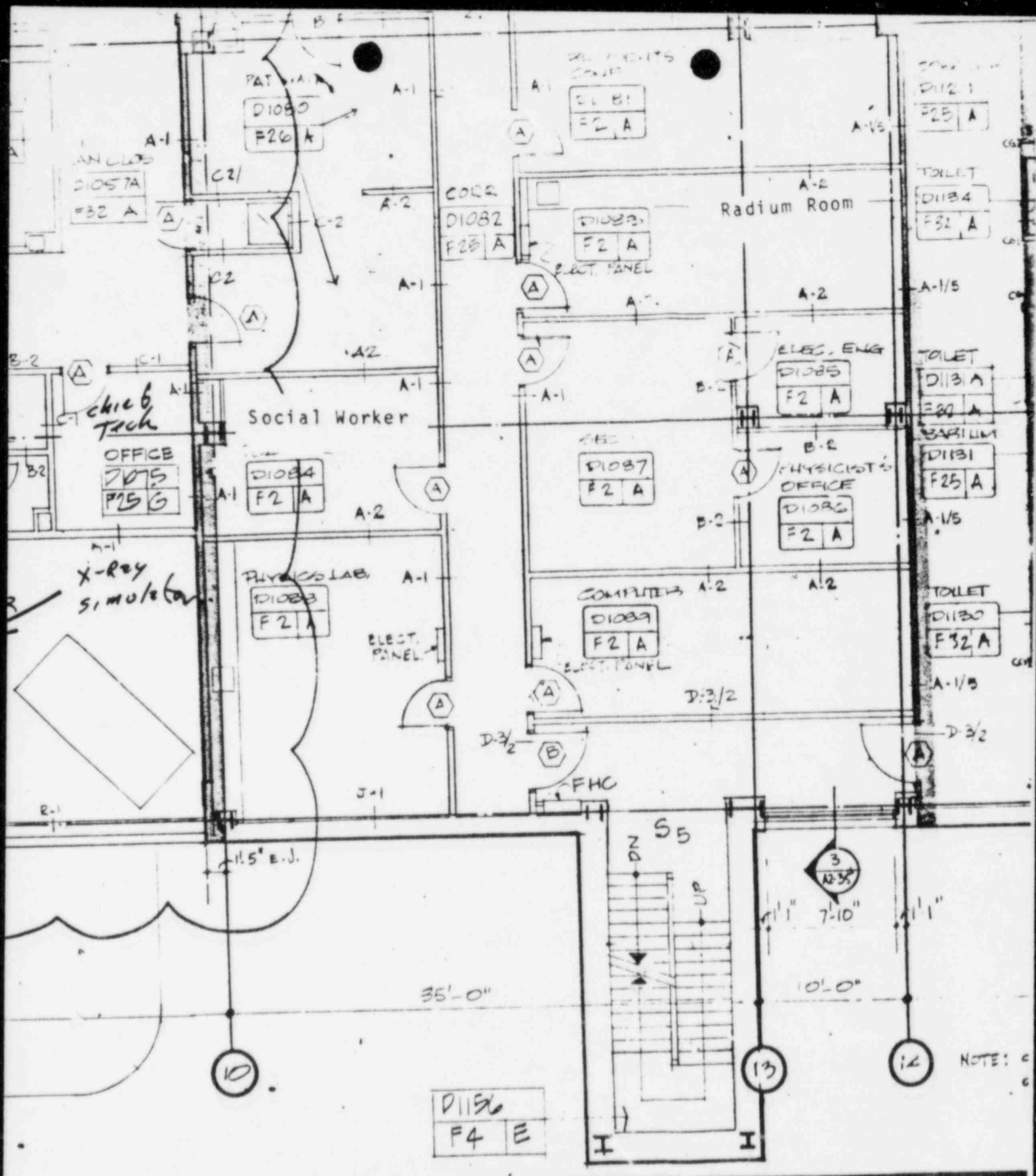
Long handled hemostats, tweezers, source holding vise are located in this Radium room and are used by personnel preparing sealed sources for patient use. Personnel are required to stand behind the L-Block when preparing sources for patient use and when unloading applicators after they have been returned to the Radium Room.

c. Method used to determine radiation doses to the extremities of personnel handling sealed sources:

All personnel working with sealed radioactive sources are required to wear a lithium fluoride finger ring dosimeter.

d. The equipment and shielding available for transporting sources from Radium Storage Room to place of use.

There are four (4) long handled carts that are used to transport radioactive sealed sources from the Radium Storage Room to either the operating room or the nursing floor. Two of the carts have built-in radiation shielded containers. These carts are used for transporting Iridium-192 moulds or vaginal applicators to and from the Radium Storage Room. The other two carts are used to transport radiation shielded containers.



WILMINGTON MEDICAL CENTER
Christiana Division
Radiation Therapy Dept.

HEW, METCALF AND PARTNERS
TURAL/ECONOMIC CONSULTANTS

Item 20 1/20/86

Item 20.

e. Source Accountability:

Treatment Orders: All request for brachytherapy are written up on the "Green Sheet", Form No. 15275(658)(0276). This form list the patient's name, clinical diagnosis, referring physician, proposed treatment plan, and name of physician responsible for treating patient.

Radium Curator: All "Green Sheets" requiring source preparation are sent to the Radium Curator. The Radium Curator removes sources from storage containers, prepares sources for patient use as indicated in treatment plan, completes inventory control forms, and places sources and/or applicator in shielded transport cart along with "Green Sheet" and inventory control forms. The Radium Curator also list on chalk board the date sources were removed from storage container, name of patient, kinds and type of sources, and date returned to Radium Storage Room. After sources have been returned to storage containers the data written on chalk board is erased, inventory control forms are completed and placed in drawer located in Radium Storage Room.

Physicist: Each shipment of iridium-192 is removed from its shipping container by the physicist and assigned an inventory control number. All iridium-192 sources are prepared for patient use by the physicist. Inventory control forms are completed by physicist.

Strontium-90: All strontium-90 eye applicator treatment orders are written u in the patient's chart. This data is not recorded on the "Green Sheet". The strontium-90 eye applicator is removed from the Radium Storage Room by the nurse working with the physician using the eye applicator. After completion of treatment the Strontium-90 eye applicator is returned to the Radium Storage Room by the nurse. The date, patient's name, name of physician using eye applicator and date returned are recorded in notebook by the nurse.

Inventory: An inventory of all sealed sources is performed on a monthly basis by the Asst. Physicist.

4.

CHRISTIANA HOSPITAL

Department of Radiation Therapy

RADIUM THERAPY REQUISITION

Name _____

Clinical Diagnosis and Comments:

_____
Requesting Physician

Proposed plan of treatment:

15275P(658)(0276)

_____ M.D.
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THE MEDICAL CENTER OF DELAWARE
DEPARTMENT OF RADIATION THERAPY

OPERATING ROOM RECEIPT FOR: ☐ Radium-226
☐ Cs-137
☐ Ir-192

Name of Patient_____ Date of Treatment_____

A. BRACHYTHERAPY ORDER

No. and types of needles or tubes	Type of applicator and/or identification

The above listed sources were
removed from safe by_____ on_____
Sealed sources
prepared by_____ Checked by_____
Received in operating
theater by_____ (Any discrepancy must be reported at once.)

B. UNUSED SEALED SOURCES (To be returned without delay to Radium Room)

The above amount checked and returned to safe by_____

C. SEALED SOURCES ACTUALLY USED

To remain inserted for_____hours, and be removed on_____at_____ a.m. p.m.

D. RETURN OF SEALED SOURCES

Amount returned_____

Received in Department of Radiation Therapy by_____

Checked and returned to safe by_____

NOTE: SECTIONS B & C TO BE COMPLETED BY PHYSICIAN INSERTING APPLICATOR OR SEALED SOURCES.

(This form is the property of the Department of Radiation Therapy and should be returned thereto after completion of Sections B & C.)

15277P(2658)(0485)

THE MEDICAL CENTER OF DELAWARE

DEPARTMENT OF RADIATION THERAPY

WARD RECEIPT FOR: ☐ Radium-226
☐ Cs-137
☐ Ir-192

Name of Patient_____ No._____

Date_____

Number of needles and/or description of applicators used:

_____

Time inserted_____19_____ a.m. p.m.

Time to be removed_____19_____ a.m. p.m.

REMOVAL OF SEALED SOURCES:

Removed by_____

Time of removal_____19_____ a.m. p.m.

Pre-discharge Radiation Survey done by_____

Received in the Department of Radiation Therapy by:

_____

Note: If any applicator or sealed sources is expelled or removed by patient before calculated time has elapsed, please notify Department of Radiation Therapy immediately.

(This form should accompany sealed sources returned to the Radium Room.)

15276P(2658)(0485)

Item 20

f. Surveys to be Performed

The patient and room will be surveyed with a radiation survey instrument following the removal of the sealed sources from patient and return of these sources to Radium Storage Room.

g. Radiation Procedure for Brachytherapy Patient

1. All brachytherapy patients will be admitted to the 6th floor, Tower A. On this floor two rooms have been specifically set aside for brachytherapy patients. The rooms adjacent to these rooms are not used for other patients, i.e., they are left vacant. When three or more patients must be treated in any weekly period, these patients are placed in the adjacent bed in one of these two rooms. This means that each patient is irradiating the other patient in the adjacent bed. A mobile lead radiation shield is placed between the two beds. This radiation shielding reduces the transmitted intensity by a factor of 18. The intensity at 1-meter from the midline of pelvis yields a maximum value of:

$$\frac{0.4 \text{ mR/hr}}{\text{mg. Radium Equivalent Cs-137}}$$

The total activity contained within one patient can vary from 20 to 100 milligrams Radium Equivalent of Cs-137 (1-mg Ra Eqv. Cs-137 = 2.5 millicuries of Cs-137).

The distance from the midline of one patient to the entrance skin surface of the other patient is greater than 7 feet (2.1 meters). The maximum dose received by one patient from the other would not exceed 40 mRem.

A floor plan of one of the brachytherapy rooms is displayed in Figure I. The other room is a mirror image of this room.

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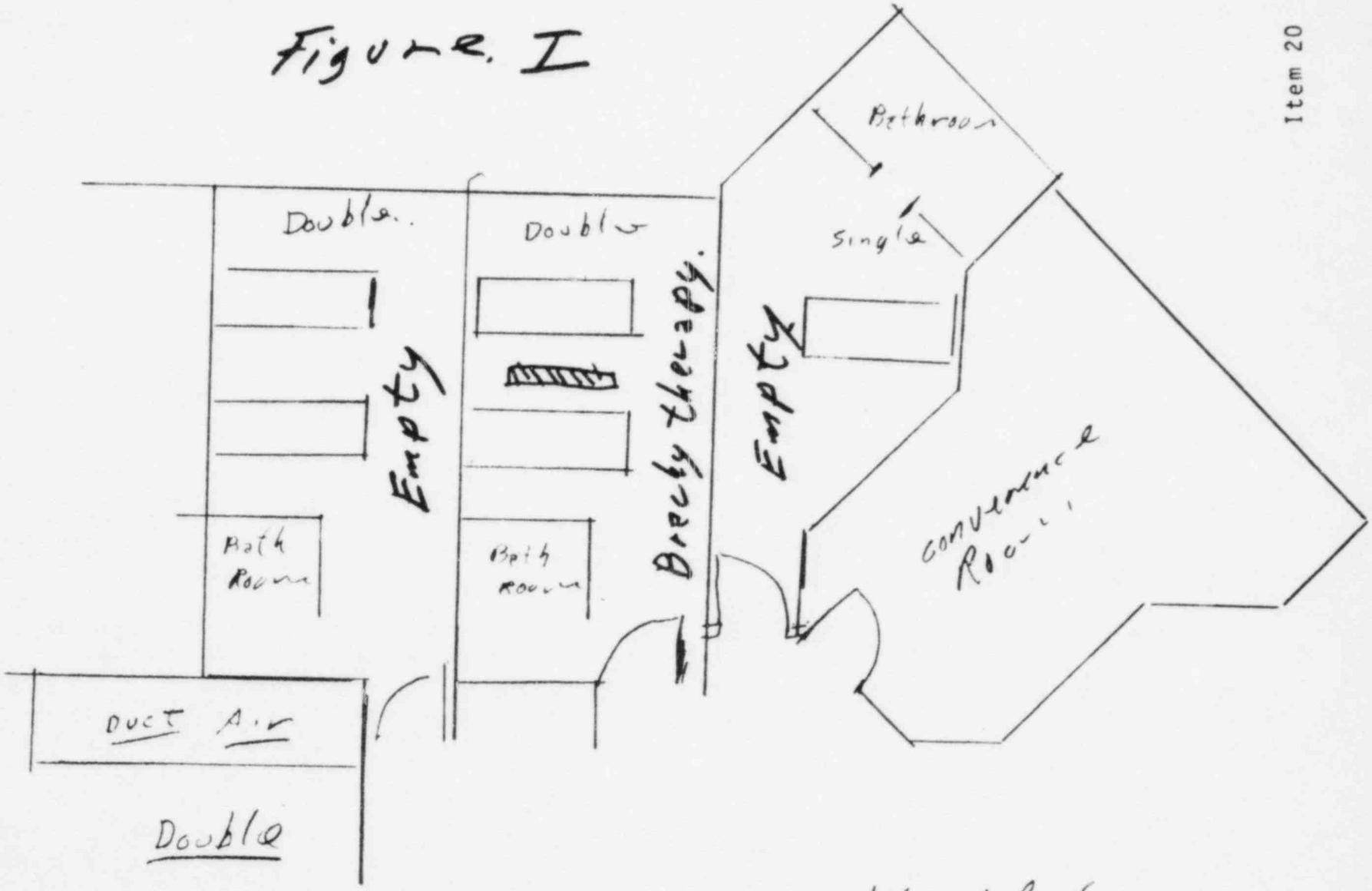
Christiana Hospital Newark - Del.

Figure I



scale: 1/8 = 1 foot

g. Radiation Procedure for Brachytherapy Patient (cont'd)

1.

$$\text{Dose} = \left[\frac{0.4 \text{ mR/hr}}{\text{mg. Ra. Eq.}}\right] \times \left[100 \text{ mg Ra Eq}\right] \times \left[\frac{1\text{-meter}}{2.1 \text{ meter}}\right]^2 \times \left[0.965 \frac{\text{mrads}}{\text{mR}}\right] \times \left[72 \text{ hrs}\right] \times \left[\frac{1}{18}\right] = 35 \text{ mR}$$

The maximum dose without the lead shielding barriar would not exceed 650 mRem at this same separation distance. This value indicates that the extremities, head would be less than 500 mrems per hospital admission.

2. The patient's room will be posted with a radiation sign with radiation symbol and has the following printed on it:

CAUTION
RADIOACTIVE MATERIAL

Visitors Allowed for
30 minutes only each
24 hour period.

Persons under 18 years
of age and Pregnant women not
allowed

Do not sit on patient's bed

3. Radiation protection surveys have been performed in areas adjacent to the brachytherapy rooms and this data substantiates the fact that the exposure rates outside these controlled areas will not exceed the limits specified in 10 CFR 20.201 (b). Therefore, surveys will not be routinely performed for all patients admitted to this floor. All patients will be surveyed as required by 10 CFR 35.4 (b)(5)(VII), that is, predischarge survey of patient and post discharge survey of patient's room.

Item 20.

g. Nursing Care:

1. General Instructions

a. The patient's bed must be isolated from other patients.

b. Nurses and other personnel should spend only the necessary time near a patient for routine nursing care and shall be wearing a personnel radiation dosimeter.

c. Visitors must be restricted to 30 minutes per day.

d. No special precautions are needed for sputum, urine, vomitus, stools, dishes, instruments, utensils or bedding unless specifically ordered.

2. Special Instructions:

a. Patients:

1. These patients must stay in bed unless orders to the contrary are written.

2. Unless specifically ordered by the doctor, the bath should be postponed for the duration of the radiation treatment. Patients should be encouraged to take care of their own personal hygiene.

3. Nursing Care:

a. Never handle needles, capsules or boxes containing radium or iridium with your hands. Use long forceps, preferably 12 inches.

b. While the radium or iridium is in place, hospital personnel should spend only the minimum amount of time near the patient necessary for routine nursing care.

c. All hospital personnel involved in the care of a radium or iridium patient shall wear a film badge dosimeter.

d. Pregnant nurses shall not be assigned to the care of a radium or iridium patient.

e. Perineal care is not given during gynecologic treatment; the perineal pad may be changed when necessary, unless orders to the contrary have been written.

f. Surgical dressings and bandages used to cover the area of needle insertion may be changed only by the attending physician and may not be removed from room until released by physician or Radiation Safety Officer.

g. Special orders will be written for oral hygiene on patients having radium in the oral cavity.

ITEM 19

NUCLEAR MEDICINE SECTION

Amendment to License # 07-12153-02

Revised January 20,1986

A. General Requirements:

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1. Patient's Name
2. Room Number
3. Radioactive material to be administered
4. Activity to be administered to the patient

A Nuclear Medicine Technologist will be assigned to perform the following functions:

1. Pre-admission preparation of patient's room.

2. Radiation survey after administration of the radioactive material.

3. Pre-discharge survey of patient to insure that the total residual activity is less than 30 milliCuries.

4. Radiation survey of patient's room after discharge of patient to insure that contamination levels are below acceptable limits.

5. Remove all low level radioactive waste material to Radioactive storage room.

A copy of the completed patient's room survey report is to be sent to the Radiation Safety Officer within 48 hours after the patient's room has been returned to normal use.

B. Iodine-131 Cancer Therapy

All Iodine-131 for cancer therapy is administered to the patient by a Nuclear Medicine technologist. It is the responsibility of the technologist to place in the patient's chart a copy of "Nursing Instruction" and the two Radioactive Material Labels. The technologist shall perform all required radiation protection surveys of the patient's room and record data on survey form.

The technologist who administered the Iodine-131 therapy shall determine the total activity in his/her thyroid 24 hours post administration and submit report to the Radiation Safety Officer.

C. Radioactive Waste:

The empty radioactive therapy container shall be returned to Nuclear Medicine section for storage and radioactive decay.

NURSING INSTRUCTIONS FOR PATIENTS RECEIVING IODINE-131 THERAPY

PATIENT _____

This patient was administered _____ mC of _____
(Isotope)

on _____ at _____ a.m. p.m.
(date)

_____
(Name of Physician)

GENERAL

1. Nurses may spend whatever time is necessary near the patient for ordinary nursing care unless restrictions have been established by the Radiation Safety Officer. During the first 24 hours, private duty nurses remaining in the patient's room should stay about 2 meters (6 ft.) away from the bed except during actual nursing procedures.

   No bed baths should be performed by attendants during the first 48 hrs. post administration time.

2. Patients are allowed visitors in accordance with usual hospital rules unless other instructions are given by the Radiation Safety Officer. However, the first few days visitors should sit at least 1 meter (3 ft.) away from the bed.

3. Pregnant personnel SHALL NOT be assigned to work with this patient.

4. When patient is discharged, room will be surveyed for contamination before remaking room.

IODINE-131 PATIENTS

5. A disposable bedpan and urinal shall be kept for the patient's use until he is discharged. If bathroom privileges are allowed, the toilet is to be flushed twice after each use.

IODINE-131 PATIENTS (cont'd)

6. Vomiting within 24 hours after oral administration may result in serious contamination of linens or even of the floor. In any such emergency call the Nuclear Medicine section or the Radiation Safety Officer.

7. Food shall be served using disposable plates, cups, and eating utensils. The bed linen and disposable items should be stored inside patient's room. These items shall be monitored by Nuclear Medicine technologist using a calibrated G.M. survey meter. If radiation levels are at background the linen and disposable utensils may be removed and handled in normal manner. If radiation levels are greater than background this material shall be stored in radioactive material storage room until measured radiation levels are at background.

POST MORTEM CARE OF PATIENTS

The physician in charge and the Radiation Safety Officer shall be notified upon the death of a patient containing radioactive material. Release of the body to the Department of Pathology or to the funeral director will be done only after receiving a release from the Radiation Safety Officer or his designated representative.

EMERGENCY SURGERY

The Radiation Safety Officer and the Nuclear Medicine section shall be notified immediately if patient must undergo emergency surgery. Surgeon must be informed that patient contains radioactive material.

II. NURSING CARE OF PATIENTS RECEIVING A THERAPY DOSE OF RADIOACTIVE MATERIALS

A. General Information

1. For all patients who have received a therapeutic amount of a radioactive material a "CAUTION RADIOACTIVE MATERIALS" sign is to be placed on the entrance door of the patient's room.

2. Nurses are to perform all duties in a normal and routine manner except for any special instructions given below and any special instructions given by the Radiation Safety Officer or his deputy.

3. In accordance with institutional policy no pregnant personnel will be assigned to any radioactive therapy patient, i.e., any patient with more than 30 milliCuries of any radioactive material.

B. Hazards may arise from three sources:

1. Contamination of the skin with radioactive materials.

2. Inhalation or ingestion of radioactive materials.

3. Irradiation by gamma or x-rays escaping from patient.

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2. External irradiation of the body may be kept below maximum permissible limits by:

   a. Taking precautions in handling contaminated equipment.

   b. Spending the minimum amount of time close to patient containing therapeutic dose of radioactive material.

For additional information see Item 20 material listed as "NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS" page 5 of 6, VIII. Care of Patients Having 131 Iodine.

SURVEY REPORT FOR NUCLEAR MEDICINE THERAPY PATIENT'S ROOM

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For the Iodine-131 cancer therapy patient the following procedure must be followed:

1. The therapy container must be opened in the fume hood and allowed to stay there with hood fan operating for five minutes before being taken to the patient's room.

2. Plastic sheeting must be placed on bedside table, around sink and toilet floor, over chair patient will sit in. Plastic bags should be placed over telephone, and inside door handle. This procedure will help minimize surface contamination.

3. After administration of the Iodine-131 a radiation safety survey must be made and measurement recorded on survey form.

4. The Nuclear Medicine Technologist administering the Iodine-131 dose to the patient must determine his/her thyroid burden 24 hours after administering the Iodine-131 to the patient. The appropriate form is located in the Nuclear Medicine section and must be filled out completely and sent to the Radiation Safety Office.

5. A pre-discharge survey must be made to insure that patient contains less than 30 milliCuries of radioactive material.

6. A post discharge survey must be made to insure that room can safely be returned to normal patient use.

ITEM 20

Department of Radiation Therapy

Item 20 Therapeutic Use of Sealed Sources

a. Areas where sealed sources will be stored:

All sealed sources that are used in the Department of Radiation Therapy are stored in the Radium Room located in the Physics Section, Christiana Division.

A monthly radiation survey is performed by the Assistant Physicist and results recorded in notebook.

b. Special precautions to be used while handling sealed sources:

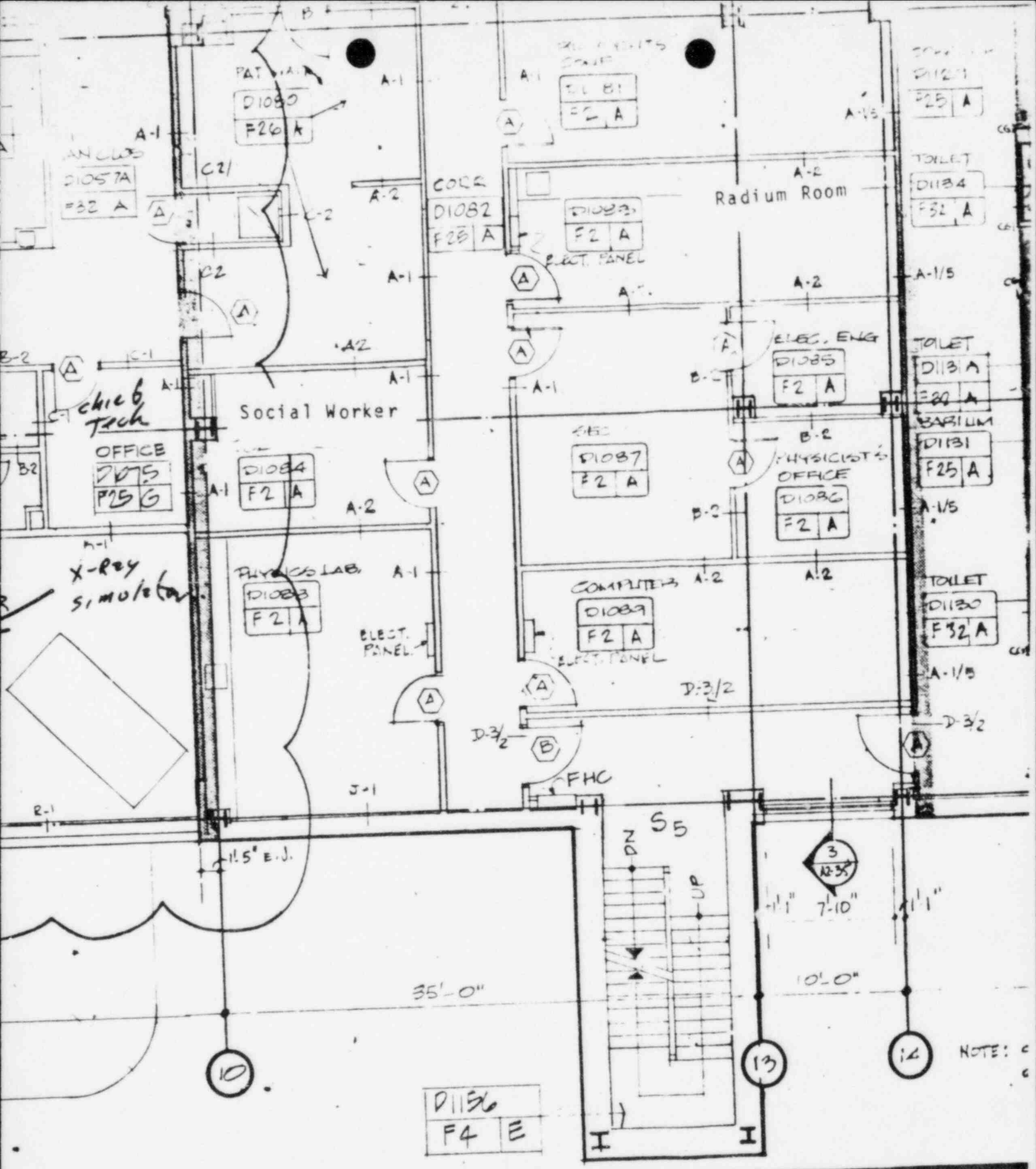
Long handled hemostats, tweezers, source holding vise are located in this Radium room and are used by personnel preparing sealed sources for patient use. Personnel are required to stand behind the L-Block when preparing sources for patient use and when unloading applicators after they have been returned to the Radium Room.

c. Method used to determine radiation doses to the extremities of personnel handling sealed sources:

All personnel working with sealed radioactive sources are required to wear a lithium fluoride finger ring dosimeter.

d. The equipment and shielding available for transporting sources from Radium Storage Room to place of use.

There are four (4) long handled carts that are used to transport radioactive sealed sources from the Radium Storage Room to either the operating room or the nursing floor. Two of the carts have built-in radiation shielded containers. These carts are used for transporting Iridium-192 moulds or vaginal applicators to and from the Radium Storage Room. The other two carts are used to transport radiation shielded containers.



WILMINGTON MEDICAL CENTER
Christiana Division
Radiation Therapy Dept.

HEW, METCALF AND PARTNERS
TURAL/ECONOMIC CONSULTANTS

Item 20 1/20/86

Item 20.

e. Source Accountability:

Treatment Orders: All request for brachytherapy are written up on the "Green Sheet", Form No. 15275(658)(0276). This form list the patient's name, clinical diagnosis, referring physician, proposed treatment plan, and name of physician responsible for treating patient.

Radium Curator: All "Green Sheets" requiring source preparation are sent to the Radium Curator. The Radium Curator removes sources from storage containers, prepares sources for patient use as indicated in treatment plan, completes inventory control forms, and places sources and/or applicator in shielded transport cart along with "Green Sheet" and inventory control forms. The Radium Curator also list on chalk board the date sources were removed from storage container, name of patient, kinds and type of sources, and date returned to Radium Storage Room. After sources have been returned to storage containers the data written on chalk board is erased, inventory control forms are completed and placed in drawer located in Radium Storage Room.

Physicist: Each shipment of iridium-192 is removed from its shipping container by the physicist and assigned an inventory control number. All iridium-192 sources are prepared for patient use by the physicist. Inventory control forms are completed by physicist.

Strontium-90: All strontium-90 eye applicator treatment orders are written up in the patient's chart. This data is not recorded on the "Green Sheet". The strontium-90 eye applicator is removed from the Radium Storage Room by the nurse working with the physician using the eye applicator. After completion of treatment the Strontium-90 eye applicator is returned to the Radium Storage Room by the nurse. The date, patient's name, name of physician using eye applicator and date returned are recorded in notebook by the nurse.

Inventory: An inventory of all sealed sources is performed on a monthly basis by the Asst. Physicist.

CHRISTIANA HOSPITAL

Department of Radiation Therapy

RADIUM THERAPY REQUISITION

Name _____

Clinical Diagnosis and Comments:

_____
Requesting Physician

Proposed plan of treatment:

15275P(658)(0276)

_____ M.D.

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TH[redacted] MEDICAL CENTER OF DELAWAR[redacted]
DEPARTMENT OF RADIATION THERAPY

OPERATING ROOM RECEIPT FOR: ☐ Radium-226
☐ Cs-137
☐ Ir-192

Name of Patient_____ Date of Treatment_____

A. BRACHYTHERAPY ORDER

No. and types of needles or tubes	Type of applicator and/or identification

The above listed sources were
removed from safe by_____ on_____
Sealed sources
prepared by_____ Checked by_____
Received in operating
theater by_____ _____ (Any discrepancy must be reported at once.)

B. UNUSED SEALED SOURCES (To be returned without delay to Radium Room)

The above amount checked and returned to safe by_____

C. SEALED SOURCES ACTUALLY USED

To remain inserted for_____ hours, and be removed on_____ at_____ a.m. p.m.

D. RETURN OF SEALED SOURCES

Amount returned_____

Received in Department of Radiation Therapy by_____

Checked and returned to safe by_____

NOTE: SECTIONS B & C TO BE COMPLETED BY PHYSICIAN INSERTING APPLICATOR OR SEALED SOURCES.

(This form is the property of the Department of Radiation Therapy and should be returned thereto after completion of Sections B & C.)

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THE MEDICAL CENTER OF DELAWARE

DEPARTMENT OF RADIATION THERAPY

WARD RECEIPT FOR: ☐ Radium-226
☐ Cs-137
☐ Ir-192

Name of Patient _____ No. _____

Date _____

Number of needles and/or description of applicators used:

_____

Time inserted _____ 19 _____ a.m. p.m.

Time to be removed _____ 19 _____ a.m. p.m.

REMOVAL OF SEALED SOURCES:

Removed by _____

Time of removal _____ 19 _____ a.m. p.m.

Pre-discharge Radiation Survey done by _____

Received in the Department of Radiation Therapy by:

_____

Note: If any applicator or sealed sources is expelled or removed by patient before calculated time has elapsed, please notify Department of Radiation Therapy immediately.

(This form should accompany sealed sources returned to the Radium Room.)

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Item 20

f. Surveys to be Performed

The patient and room will be surveyed with a radiation survey instrument following the removal of the sealed sources from patient and return of these sources to Radium Storage Room.

g. Radiation Procedure for Brachytherapy Patient

1. All brachytherapy patients will be admitted to the 6th floor, Tower A. On this floor two rooms have been specifically set aside for brachytherapy patients. The rooms adjacent to these rooms are not used for other patients, i.e., they are left vacant. When three or more patients must be treated in any weekly period, these patients are placed in the adjacent bed in one of these two rooms. This means that each patient is irradiating the other patient in the adjacent bed. A mobile lead radiation shield is placed between the two beds. This radiation shielding reduces the transmitted intensity by a factor of 18. The intensity at 1-meter from the midline of pelvis yields a maximum value of:

$$\frac{0.4 \text{ mR/hr}}{\text{mg. Radium Equivalent Cs-137}}$$

The total activity contained within one patient can vary from 20 to 100 milligrams Radium Equivalent of Cs-137 (1-mg Ra Eqv. Cs-137 = 2.5 millicuries of Cs-137).

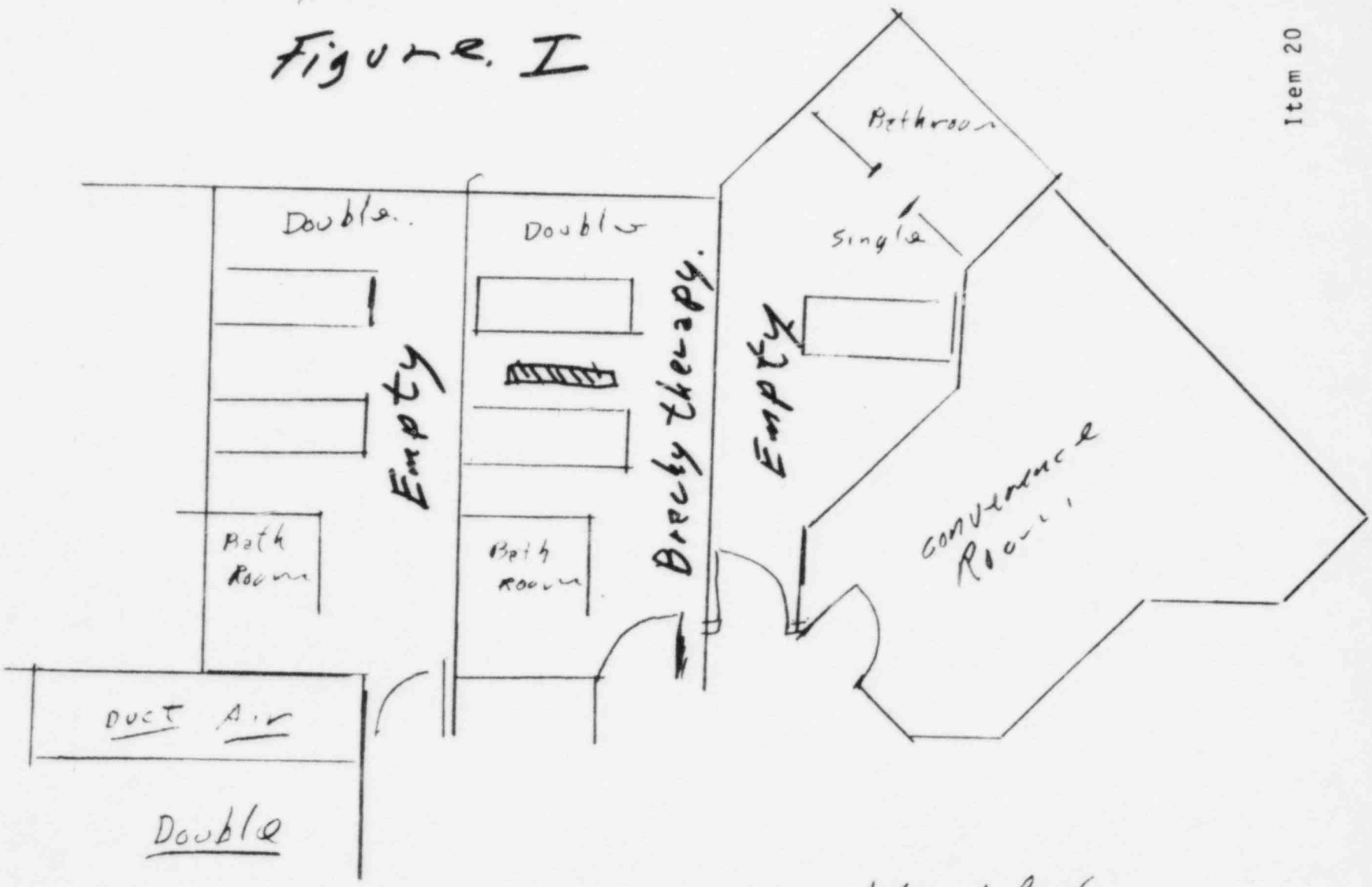
The distance from the midline of one patient to the entrance skin surface of the other patient is greater than 7 feet (2.1 meters). The maximum dose received by one patient from the other would not exceed 40 mRem.

A floor plan of one of the brachytherapy rooms is displayed in Figure I. The other room is a mirror image of this room.

Item 20 1/20/86

Christiana Hospital
Newark - Del.

Figure I



scale: 1/8 = 1 foot

q. Radiation Procedure for Brachytherapy Patient (cont'd)

1.

$$\text{Dose} = \left[\frac{0.4 \text{ mR/hr}}{\text{mg. Ra. Eq.}}\right] \times \left[100 \text{ mg Ra Eq}\right] \times \left[\frac{1\text{-meter}}{2.1 \text{ meter}}\right]^2 \times \left[0.965 \frac{\text{mrads}}{\text{mR}}\right] \times \left[72 \text{ hrs}\right] \times \left[\frac{1}{18}\right] = 35 \text{ mR}$$

The maximum dose without the lead shielding barriar would not exceed 650 mRem at this same separation distance. This value indicates that the extremities, head would be less than 500 mrems per hospital admission.

2. The patient's room will be posted with a radiation sign with radiation symbol and has the following printed on it:

CAUTION
RADIOACTIVE MATERIAL

Visitors Allowed for
30 minutes only each
24 hour period.

Persons under 18 years
of age and Pregnant women not
allowed

Do not sit on patient's bed

3. Radiation protection surveys have been performed in areas adjacent to the brachytherapy rooms and this data substantiates the fact that the exposure rates outside these controlled areas will not exceed the limits specified in 10 CFR 20.201 (b). Therefore, surveys will not be routinely performed for all patients admitted to this floor. All patients will be surveyed as required by 10 CFR 35.4 (b)(5)(VII), that is, predischarge survey of patient and post discharge survey of patient's room.

Item 20.

g. Nursing Care:

1. General Instructions

a. The patient's bed must be isolated from other patients.

b. Nurses and other personnel should spend only the necessary time near a patient for routine nursing care and shall be wearing a personnel radiation dosimeter.

c. Visitors must be restricted to 30 minutes per day.

d. No special precautions are needed for sputum, urine, vomitus, stools, dishes, instruments, utensils or bedding unless specifically ordered.

2. Special Instructions:

a. Patients:

1. These patients must stay in bed unless orders to the contrary are written.

2. Unless specifically ordered by the doctor, the bath should be postponed for the duration of the radiation treatment. Patients should be encouraged to take care of their own personal hygiene.

3. Nursing Care:

a. Never handle needles, capsules or boxes containing radium or iridium with your hands. Use long forceps, preferably 12 inches.

b. While the radium or iridium is in place, hospital personnel should spend only the minimum amount of time near the patient necessary for routine nursing care.

c. All hospital personnel involved in the care of a radium or iridium patient shall wear a film badge dosimeter.

d. Pregnant nurses shall not be assigned to the care of a radium or iridium patient.

e. Perineal care is not given during gynecologic treatment; the perineal pad may be changed when necessary, unless orders to the contrary have been written.

f. Surgical dressings and bandages used to cover the area of needle insertion may be changed only by the attending physician and may not be removed from room until released by physician or Radiation Safety Officer.

g. Special orders will be written for oral hygiene on patients having radium in the oral cavity.

Permitted To Do Procedure:
R.N. - X
L.P.N.- X
N.T. - may assist
N.A. - may assist

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
I. General Considerations	1. Nursing care management of individuals with radioactive sources is concerned with the comfort of the patient and maximum safety to patient, caretakers, and others who are in contact with the patient (family, visitors).
	2. Ionizing radiation has the ability to remove electrons out of their orbits around the atomic nucleus of a cell which results in the death of the cell. Sources of ionizing radiation are x-rays and radioactive materials.
	3. Radioactive materials are materials (man-made or natural) which emit ionizing radiation.
	a. Natural radioactive materials are radium or uranium.
	b. Materials can be made radioactive by bombarding them with high-energy particles in a nuclear reactor.
	c. Man-made radioactive materials are called isotopes.
	4. Each radioactive source gives off specific emissions (alpha, beta, gamma). Some give off one, two, or all three types of emissions.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE

GUIDELINES

a. Alpha particules are heavy particles which are stopped by the outer layer of skin and can be harmful if ingested.

b. Beta particles are lighter particles ejected at a higher speed. They are capable of penetrating several layers of skin however, body tissue provides enough shielding to prevent implanted beta particles from travelling inside the body. They are harmful if ingested.

c. Gamma rays are very penetrating rays of energy and have unlimited range and can easily penetrate all body tissues. Gamma rays have immediate and residual effects.

5. There are various methods of administration of radioactive materials.

a. Interstitial Implant - The radioactive material is implanted directly into a tumor. The material can be in the form of needles, seeds, wires, ribbons, or catheters.

b. Intracavitary Application - The radioactive materials are placed directly into a body cavity. Intracavity application can be done with sealed applicators or colloidal instillation. Sealed applicators are inserted in uterine and vaginal cavities.

PROCEDURE

GUIDELINES

c. Systemic Administration - The radioactive material is given orally or intravenously and, therefore, are unsealed sources.

d. Afterloading - Empty applicators containing dummy sources can be implanted in the operating room. When the patient returns to the room the radioactive sealed sources are put in place.

6. Reference to the Radio-Isotope table provides useful information when caring for the patient who is treated with a radioactive material. (see table which follows)

RADIO-ISOTOPE TABLE

ISOTOPE	EMISSION	HALF-LIFE	EXTERNAL HAZARD	ADMINISTRATIONS
Iodine (131 I)	Gamma rays	8.05 days	Yes	Systemically by mouth
Phosphorus (32 P)	Beta particles	14.3 days	No	Intracavitary in colloidal form
Radium (226 Ra)	Alpha particles Beta particles Gamma rays	1,602 yrs.	Yes	Intracavitary in an applicator or interstitially.
Iridium (192 Ir)	Beta particles Gamma rays	74.4 days	Yes	Interstitially or externally in a mould.
adon (222 Rn)	Alpha particles Beta particles Gamma rays	3.82 days	Yes	Interstitially.
esium (137 Cs)	Beta particles Gamma rays	30.0 yrs.	Yes	Intracavitary in an applicator

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE

GUIDELINES

7. When caring for the patient treated with a radioactive source the nurse should observe the rules of time, distance and shielding at all times.

   a. The nurse should minimize the amount of exposure time when providing nursing care.

   b. The nurse should maximize distance from the radioactive source.

8. Film badge radiation dosimeters should be worn by those individuals caring for patient with a radioactive source.

   a. Film badges measure the amount of radiation exposure.

   b. The radiation dose measured by the company supplying the film badge dosimeters is sent to the radiation safety office on a monthly basis.

   c. The national Council on Radiation Protection recommends the following in regard to radiation exposure;

      - less than 1250mRems/three months
      - 100 mRems/week
      - 5 Rems/year

   d. Film badge dosimeters should be left at a fixed location at the end of your shift and picked up at this location at the start of your shift.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
	9. To minimize personnel exposure only one patient should be assigned per room.
	10. The patient should be placed in a radiation shielded room. If patient is placed in a non-radiation shielded room, the two adjacent rooms must be vacant and radiation warning signs placed on entrance door.
	11. Pregnant personnel will not be assigned to care for the patient with a radioactive source.
	12. Radiation Precaution Signs should be placed outside rooms with radioactive source.
	13. Visitors under 18 years old or pregnant visitors are not permitted in the room.
	14. Visitors should maintain a distance of at least 6 feet from the source.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
1. Place two containers in patient room. Each container should be lined with trash bag. One container is to be marked TRASH; the other is to be marked LAUNDRY.	1. All soiled linen and trash should be collected in these containers while radioactive source is in place. a. The containers are not to be removed from the room or their contents disposed of until monitored for presence of radioactive material by the Radiation Safety Officer. b. If disposal is to take place on weekend it is the responsibility of physician removing source to monitor radioactivity and approve disposal. c. Rooms should not be cleaned until monitored for radioactivity.
2. Monitor the patient every four hours in order to check for proper placement of the radioactive source.	1. The physician should be called immediately if source is found displaced. 2. Do Not Touch Source With Your Hands. 3. The radioactive source should be picked up with long-handled tongs and placed in a lead-lined container which is to be on floor at all times while radioactive source is present.
3. Prior to insertion of a radioactive implant, assess the patient and family's level of understanding in relation to radioactive source.	1. The nurse should clarify misconceptions, reduce fear and reinforce the physician's explanation.

PROCEDURE	GUIDELINES
4. Review the procedure for insertion of implant with patient and family and explain post-procedure appearance of patient to family.	1. Post-procedure the patient will return the room with an I.V. infusing and a foley catheter in place. These devices may be frightening to family members.
5. Explain to the patient and family members that nurses will not be able to spend more than 15 minutes at a time in the room, but that nurses will make scheduled rounds every four hours to check on the patient and will be in verbal contact with them at all times.	1. Often patients and family members feel that the patient is being neglected because the nurse can not spend an extra amount of time in the room because of her own safety.
6. Inform the patient and family members that the period of radioactivity as well as isolation is only temporary.	1. Patients and family members sometimes believe that radioactivity is permanent and do not understand that once source is removed so is the radioactivity.
II. Interstitial Radioactive Source	
A. Oral Cavity	
1. Prepare post-op equipment to include tracheostomy set, suction machine, suction catheters and a liter bottle of normal saline.	1. Respiratory and/or swallowing difficulties may occur following insertion procedure.
2. Identify position, number of sealed sources and type of isotope being used.	
3. Discourage patient from talking and swallowing especially if implant is in tongue.	1. Excessive movement may dislodge radioactive sources.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
4. Provide nonverbal means for patient to communicate with staff members.	1. Patient is often anxious because of difficulty and/or contraindication in communicating verbally.
5. Observe patient for restlessness and pain every two hours for twelve hours post-operatively then prn. Provide medication as ordered.	1. Maintaining patient's comfort decreases possibility of source dislodgement.
6. Observe patient for accumulation of oral secretions and suction as needed.	1. The patient is encouraged not to swallow secretions. 2. Avoid placing suction catheter on radioactive sources during suctioning.
7. Provide nutritional supplement as ordered.	1. Any patient with an oral cavity implant will have a feeding tube inserted through nose in the operating room. Supplements are administered via this tube.
8. Observe the patient for unusual swelling, redness and/or drainage.	1. There is a potential for infection secondary to insertion of radioactive source.
9. Monitor temperature every four hours.	1. Temperature should be taken rectally.
10. Monitor for dislodgement or absence of radioactive source every four hours.	
11. Monitor patient for signs of respiratory distress.	
B. Implant in Other Region of Body	
1. Refer to 2, 5, 8, 10, in Section A.	
2. Reinforce need for limited movement of site where radioactive source is located.	1. Limited movement decreases potential for dislodgement.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
3. Cleanse implanted area only if specific orders are given by physician.	1. Personal care of patient is to be completed as quickly as possible.
C. Removal of Interstitial Radioactive Source	
1. Review removal procedure with patient.	
2. Medicate patient with pain medication as ordered one-half hour before removal.	
3. Provide physician with sterile suture removal set and any other equipment requested.	
4. Verify number of sources removed as stated in chart.	
I. Intracavitary Radioactive Source	
A. Gynecological Implant	
1. Pre-operative douche and enema are given as ordered by physician.	1. Radioactive source application may be inserted in the operating room or in patient's room. a. When the radioactive source is inserted in OR, the patient is taken to the X-ray Department following the insertion for the necessary localization film. b. A foley catheter will have been inserted into the bladder prior to leaving the Operating Room. c. When a vaginal applicator is inserted by the physician at the patient's bedside, the nurse will insert a foley catheter before applicator is brought to the floor.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
2. To hold applicator in place, a T binder is placed around the patient's waist and pinned snugly. Then:	
a. Tie strings that are attached to applicator to front and back of binder waistband.	
b. Place 8 x 12 piece of cotton padding under strings on both sides front and back.	1. To prevent pressure on patient's skin.
c. Apply peripad to perineal area. Bring T binder flaps between legs to hold peripad in place. Run flap under waistband and pin. Then bring flap down over waistband and pin again.	
3. Head of bed can be elevated 10^{o}-15^{o}.	1. This avoids changing position of the radium.
	2. Patient may have a pillow under head and knees.
4. Under no conditions shall the patient leave the bed.	
5. Secure drainage tubing from foley catheter to thigh.	1. Use method as found in Retention Catheter Procedure.
6. Keep catheter open and draining as bladder must be kept empty at all times.	1. Force fluids if necessary for adequate output.
7. If there are two patients with radioactive sources in same room with foleys, place foley drainage bags on same side of bed - not both in the center.	1. To prevent extra exposure to staff during emptying.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
8. Whenever the radioactive source applicator is protruding from the vulva, the position shall be checked by the nurse twice a day.	1. If any change has occurred, the nurse shall notify the physician.
9. Use of the bedpan is discouraged. Patient is given Lomotil to prevent defecation. E-vac-u-sac is used if patient feels urge to defecate.	
10. Patient's temperature is to be taken b.i.d.	1. Notify doctor if temperature elevation is 37.7° or above.
11. Soft, low residue diet is to be given.	1. Reduced bowel activity is indicated to minimize trauma to the irradiated bowel.
12. Patient is not to turn from side to side or on abdomen.	
13. Do not give patient a complete backrub.	
14. Encourage active range of motion of upper extremities only.	1. A pillow may be put under patient's knees. Mild leg and foot exercises are permitted.
15. Limit bathing to face, hands, arms and chest daily.	1. Do not bathe patient below waist.
16. Monitor and report any rash, skin eruption, vaginal discharge, excessive vaginal bleeding, abdominal distention or evidence of dehydration.	1. Patients can easily become dehydrated, or develop a paralytic ileus.
17. Removal time of the radioactive source is indicated on doctor's orders or radium sheet.	1. Physician will remove the radioactive material. 2. Before disposing of vaginal packing, be sure all radioactive materials are accounted for and placed in the proper shielded container.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
18. Elevate head of bed after removal of radium.	1. To get patient used to change of position.
19. Give douche and enema as ordered by physician.	
20. Assist the patient out of bed for the first time.	
21. Instruct patient to resume normal activities gradually.	
22. Instruct patient to ask her physician about when to resume sexual intercourse.	1. Physician may provide patient with vaginal dilator.
23. Advise patient to notify physician if she experiences any nausea, vomiting, diarrhea, urinary frequency, dysuria or temperature above 100°F.	
IV. Systemic Radioactive Source	
A. Care of Patients Having 131 Iodine	1. 131 Iodine is administered systemically by the oral route.
1. Place patient in a private room.	1. Patients should be placed in an uncarpeted isolation room if one is available.
2. Surface contamination can be minimized by placing plastic sheeting on the bedside table, around sink, and toilet floor, and over the chair the patient will sit in. Also, by placing small plastic bags on door handle and over telephone.	1. Notify housekeeping.

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
3. No bed bath for 48 hours.	
4. When handling excretions or contaminated material, skin-type surgical gloves are worn and hands should be washed with gloves on and then after they are removed.	1. Most of the 131 Iodine is excreted through the urine. Small amounts are eliminated in stool, perspiration, and saliva. 2. Any appropriate handwashing agent may be used.
5. If patient vomits within 24 hours, is incontinent of urine or perspires profusely within the first 48 hours, paper towels or disposable wash cloths can be used to clean up, which are then placed in a plastic bag to be monitored by the Radiation Safety Officer.	
6. Disposable dishes are used.	
7. Instruct patient to flush toilet twice after each use.	
B. Care of Patients Having 32 Phosphorous	1. 32 Phosphorous is administered into the pleural or peritoneal cavity or injected into tumor growth.
1. Dressings at injection site should be changed only as directed by physician in charge.	1. Source of contamination would be leakage from the puncture wound made during the injection.
2. Those dressings which are stained, damp, or bloody should be monitored for contamination when they are removed.	1. Dressings may be handled as usual if no drainage from the wound after the first few days.
C. For Both 131 Iodine & 32 Phosporous	
1. Room monitored upon discharge and before scrub down.	

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
2. Limits on visitors, pregnant women, and children for 131 Iodine.	
V. Applied Radioactive Source	
A. Iridium Mould	
1. Admit patient to private room.	1. Patient is permitted to ambulate in room.
2. Prepare patient and family members for procedure.	
3. Assist physician in applying mould.	1. The mould is held in place with three - four inch elastic bandages and pieces of three-inch adhesive tape.
4. Place a pillow under the arm of the affected side and instruct patient to keep arm in this position.	1. This abducts arm from radioactive source and provides support.
5. Check the position of mould every four hours. Notify physician immediately if there is any change in mould's position.	1. Proper position to the millimeter is mandatory to achieve desired results.
6. Instruct the patient that she can be out of bed but must remain in her room.	
7. Keep the door to the room closed.	1. Gamma rays will penetrate wood, however a closed door serves as a reminder for the patient that she is not to ambulate out of the room.
8. Provide the patient with psychological/emotional support through frequent contact.	1. The nurse may talk to the patient from the room's doorway while the patient is on the far side of the room. This

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

PROCEDURE	GUIDELINES
	distance minimizes the nurse's exposure to the radioactive source.

NOTE: Please read Preamble to Procedures, found in front of Manual, in addition to information found in this procedure.

NOTE: File Card for Procedure.

/ak

EQUIPMENT FILE BOX CARD SIDE I

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

Care of Patient With Implant in Oral Cavity:

STORES: Kangaroo Feeding Bag
Tracheostomy Tray
Suction Trays

CENTRAL PROCESSING: Suction Machine
560 IVAC Pump

For Removal of Radium Needles:

STORES: Disposable Sterile Suture Set

FLOOR STOCK: Gloves
Pour Saline

For Insertion of Gynecologic Applicator

FLOOR STOCK: T. Binder
Peri Pad
4 Pieces 8x12 Cotton Padding
Pins in bar of soap
Gloves
Lubricant
E-vac-u-sac

(Continued on SIDE II)

EQUIPMENT FILE BOX CARD SIDE II

NURSING CARE OF PATIENTS RECEIVING THERAPEUTIC RADIOACTIVE MATERIALS

For Removal of Gynecologic Applicator:

FLOOR STOCK: Gloves
Lubricant
Forceps
Peri Pad

For Iridium Mould Application:

STORES: 3" - 4" Elastic (Ace Bandages)
1 Roll 3" Adhesive Tape

Radiation Precaution Equipment

RADIATION THERAPY DEPARTMENT:
1 Yellow Lead Container

FLOOR: Radiation Precaution Sign

"N" Revised 4/22/85

BETWEEN: William O. Miller, Chief
License Fee Management Branch
Office of Administration

John E. Glenn, Chief
Nuclear Materials Section B
Division of Engineering and
Technical Programs

Name Change

03001303
02120
11/87

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: The Medical Center of Delaware

Application Dated: 2-17-86

Control No.: 105082

License No.: 07-12153-02

2. FEE ATTACHED

Amount: $120.

Check No.: 00056650

3. COMMENTS

Signed [signature]

Date 2/20/86

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: 7C ($120)

2. Correct Fee Paid. Application may be processed for:

Amendment ✓

Renewal

License

Signed [signature]

Date 2/27/86

REGION I FORM 213
MARCH 1983)