

# THERAPEUTIC PROCEDURES

## LESSON OBJECTIVES:

1. Describe how therapy is delivered in the nuclear medicine department.
2. List the various diseases that may be treated with nuclear medicine therapy.
3. State the patient preparations that must be taken before radiopharmaceutical therapy is administered.
4. Recognize which radiopharmaceuticals and how much activity is administered to treat specific diseases by using nuclear medicine therapy.
5. Discuss how the room is prepared for a patient receiving a therapeutic dose of  $^{131}\text{I}$  for thyroid cancer.
6. Discuss the instructions given to nursing personnel administering care to a patient who has received therapy for thyroid cancer.
7. Discuss how the patient is monitored who has received therapy for thyroid cancer.
8. Discuss how the patient may be treated on an outpatient basis in accordance with Regulatory Guide 8.39.
9. Discuss the complications associated with radiopharmaceutical therapy treatment.

# NUCLEAR MEDICINE THERAPY:

DELIVERED IN UNSEALED SOURCES

PARTICULATE RADIATION DELIVERED

THYROID CANCER THERAPY:

SURGERY USUALLY FIRST

FOLLOWED BY AN ABLATION DOSE OF  $^{131}\text{I}$

HOSPITALIZATION MAY BE REQUIRED FOR A  
PATIENT RECEIVING MORE THAN 33 mCi

# **ROOM PREPARATION:**

CORNER ROOM AT THE END OF THE HALLWAY  
AS FAR AWAY FROM THE NURSES' STATION  
AS POSSIBLE

LARGE SURFACE AREAS LIKELY TO BECOME  
CONTAMINATED COVERED WITH LEAK-  
PROOF ABSORBENT PAPER

SMALL ITEMS LIKELY TO BE TOUCHED BY  
PATIENT SHOULD BE WRAPPED IN PLASTIC  
OR COVERED WITH ABSORBENT PAPER

WASTE DISPOSAL ITEMS PLACED IN PLASTIC  
BAGS DELIVERED TO DECAY-IN-STORAGE OR  
DECONTAMINATION AREA

# ROOM PREPARATION (CONTD.)

HOSPITAL CART OUTSIDE PATIENT'S ROOM  
WITH DISPOSABLE GLOVES, SHOE COVERS,  
AND GOWNS

VISITOR'S "SAFE LINE"

ROOM RELEASE

DECONTAMINATE TO BELOW 200 DPM PER 100  
SQUARE CM AREA

ALL ABSORBENT PAPER AND DECAY  
CONTAINERS SENT TO STORAGE DECAY  
ROOM OR DECONTAMINATION AREA

THYROID CANCER

RADIOPHARMACEUTICAL ADMINISTRATION:  
100-200 mCi of  $^{131}\text{I}$

# **NURSING INSTRUCTIONS**

NURSING INSTRUCTIONS POSTED ON  
PATIENT'S DOOR

CRITICAL CARE SUPPORT WILL BE DELIVERED  
(MAY BE DONE WITHOUT RSO  
AUTHORIZATION)

RSO RELEASES ROOM TO OTHER PATIENTS

HOUSEKEEPING PERSONNEL SHOULD STAY  
OUT OF PATIENT'S ROOM WHILE  
HOSPITALIZED

SEEK NURSE FOR VISITING RULES

# **SPECIFIC INSTRUCTIONS TO NURSES**

PREGNANT NURSES SHOULD NOT DELIVER CARE TO THE TREATED PATIENT

DAILY TIME RESTRICTIONS ON NURSES DELIVERING CARE

NURSES TREATING PATIENTS SHOULD WEAR MONITORING DEVICES

INSTRUCTIONS ON WHAT NURSES SHOULD WEAR ARE POSTED

WASTE DISPOSAL INSTRUCTIONS POSTED

# **PATIENT MONITORING**

"RADIOACTIVE MATERIALS" SIGN POSTED ON  
PATIENT'S DOOR

## **PATIENT RELEASE**

RETAINED ACTIVITY HAS DECAYED TO OR  
BELOW 33 mCi OR

DOSE RATE AT 1 METER IS AT OR BELOW  
7 MREM/HR AT A DISTANCE OF 1 METER

PHYSICIAN MAY ASK TREATED PATIENT TO  
AVOID CLOSE CONTACT WITH OTHER  
INDIVIDUALS FOR SEVERAL DAYS

# OUT PATIENT THERAPY

10 CFR 35.75 RELEASE OF INDIVIDUALS CONTAINING  
RADIOPHARMACEUTICALS OR PERMANENT  
IMPLANTS

LICENSEE MAY AUTHORIZE RELEASE OF ANY  
INDIVIDUAL WHO HAS BEEN ADMINISTERED  
RADIOACTIVITY FOR THERAPY IF THE TOTAL  
EFFECTIVE DOSE EQUIVALENT TO ANY OTHER  
INDIVIDUAL EXPOSED IS NOT LIKELY TO EXCEED 5  
MILLISIEVERTS (0.5 rem)

INSTRUCTIONS MUST BE GIVEN TO THE RELEASED  
INDIVIDUAL, INCLUDING WRITTEN INSTRUCTIONS,  
ON ACTIONS THAT WILL KEEP EXPOSURES TO  
OTHERS AS LOW AS REASONABLY ACHIEVABLE IF  
THE DOSE EQUIVALENT TO ANY OTHER INDIVIDUAL  
IS LIKELY TO EXCEED 1 MILLISIEVERT (0.1 rem)

RECORD FOR THE BASIS OF RELEASE MUST BE KEPT  
FOR 3 YEARS IF THE TOTAL DOSE EQUIVALENT IS  
CALCULATED BY USING:

RETAINED ACTIVITY (DECAYED ADMINISTERED  
ACTIVITY)

AN OCCUPANCY FACTOR LESS THAN 0.25 AT 1 METER  
BIOLOGICAL OR EFFECTIVE HALF-LIFE or  
CONSIDERING THE SHIELDING BY TISSUE



# **SPECIAL INSTRUCTIONS TO BREAST-FEEDING MOTHERS**

REQUIRED IF THE INFANT OR CHILD'S  
EXPOSURE COULD EXCEED

1 MILLISIEVERT (0.1 rem) IF BREAST-FEEDING  
WAS NOT INTERRUPTED OR DISCONTINUED

INSTRUCTIONS MUST INCLUDE:

GUIDANCE ON THE INTERRUPTION OR  
DISCONTINUATION OF BREAST-FEEDING AND  
THE CONSEQUENCES OF NOT FOLLOWING  
THE INSTRUCTIONS

RETAIN FOR 3 YEARS THE INSTRUCTIONS  
GIVEN IF THE EXPOSURE TO THE INFANT OR  
CHILD COULD EXCEED 5 MILLISIEVERTS (0.5  
rem)

## **GRAVE'S DISEASE**

DIFFUSE THYROID ENLARGEMENT

HYPERTHYROIDISM APPROXIMATE DOSAGE:  
10 mCi OF  $^{131}\text{I}$

## **PLUMMER'S DISEASE**

AUTONOMOUS NODULES HYPERTHYROIDISM

APPROXIMATE DOSAGE: 15-29 mCi OF  $^{131}\text{I}$

## **PAIN REDUCTION IN BONE CANCER PATIENTS**

TREMENDOUS PAIN DURING LAST FEW  
MONTHS OF LIFE

NARCOTICS REDUCE QUALITY OF LIFE

TWO APPROVED RADIOPHARMACEUTICALS:

$^{89}\text{Sr}$ -chloride (Metastron) - 40 to 60 mCi/kg of  
patient body weight administered

$^{153}\text{Sm}$ -EDTMP (Quadramet) - 1 mCi/kg of  
patient body weight administered

## **POLYCYTHEMIA VERA**

OVERPRODUCTION OF RED BLOOD CELLS

APPROXIMATE DOSAGE:

3-6 mCi  $^{32}\text{P}$  SODIUM PHOSPHATE