

NCRP REPORT No. 37

**PRECAUTIONS IN THE
MANAGEMENT OF PATIENTS
WHO HAVE RECEIVED
THERAPEUTIC AMOUNTS OF
RADIONUCLIDES**

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Council on Radiation Protection and Measurements

general, be allowed to visit patients having an appreciable radioactive burden. Exceptions can be made in case of urgency, but the visits should be brief, and a distance of six feet or more *should* be maintained.

A patient not receiving radiation treatment but in a room or ward with a radioactive patient presents a different problem. If both are confined to bed, exposure is practically continuous. Even if one or both are ambulatory, there will be long periods of simultaneous bed occupancy at night and during rest hours. It is recommended that, if possible, non-radioactive patients, *should* receive a dose equivalent of no more than 100 mrem from another patient during any one hospital admission. This may be somewhat increased under conditions of emergency, but *should* not exceed 200 mrem. This may necessitate a private room assignment for the radioactive patient, but this by itself does not guarantee dose limitations, if walls are thin and beds are near walls which may have other beds just beyond.

For example, a patient has a gynecological applicator containing 60 mg of radium, which is to be kept in place for 50 hours. At a distance of 6 feet from a point source of this activity the exposure rate would be 12.5 mR/h. Absorption of radiation in the bodies of the radioactive patient and his neighbor would reduce the rate in the neighbor's critical organs somewhat, but a dose equivalent of 100 mrem would probably be accumulated in about 12 hours. With a 12-foot separation this time would be increased to 48 hours, which is satisfactory. It is evident that extra separation *should* be provided for patients of this type.

If one or both patients are ambulatory, it may be difficult to make an estimate of dose accumulation. In all such cases, the Radiation Protection Supervisor *shall* make a study of the situation, and establish appropriate procedures. In the hospital where a number of such cases are treated, routines can be set up, possibly involving special rooms or wards. The irradiation of one radium patient by another such patient is of no significance, but putting several of these patients together may pose problems for attendants. In institutions having only a few cases, individual consideration of each exposure *shall* be made. Here the 100 mrem limit may be relaxed somewhat, since there is less probability of a second episode for the non-radiation patient. But in any such case, the dose *shall not* exceed 0.5 rem and *should not* exceed 200 mrem. The receipt of such a dose *should* be shown in the patient's clinical record.

4. Release from Hospital of Patients Containing Radioactive Material

The Atomic Energy Commission has usually required that patients receiving radioactive materials be hospitalized until their content of radioactivity is less than 30 mCi.⁷ Since the exposure rates and half-lives of various radionuclides differ greatly, a more meaningful basis for release from the hospital is the possible exposure to other individuals with whom the patients are likely to associate.

There may be some relatively rare and unusual situations where it would be necessary, or highly desirable, to send a patient home in spite of his carrying a burden that could result in a dose to other persons in excess of 0.5 rem. Such cases may be permitted, as *exceptions*, provided in general that

- (1) No person under the age of 45 years *shall* be permitted to receive a dose in excess of 0.5 rem in a year.
- (2) No person over the age of 45 years *shall* be permitted to receive a dose in excess of 5 rems in a year.
- (3) The circumstances leading to the decision to make an exception, the evaluation of the exposure conditions, and the means of controlling individual exposures *shall* be documented.
- (4) The local health authorities *shall* be notified of the action.

The division at the age of 45 is suggested by that made in NCRP Report No. 17 [1] which permits weekly doses twice as high for the individual over 45 as for those under that age. A higher permissible dose as an exception for the older group is recommended here for the probably small number of exceptional patients to be sent home. The alternative would be to declare someone in the household a radiation

⁷ Exceptions to this requirement are provided when it appears likely that the release of the patient will not result in radiation exposure to members of the household, or others, greater than that permitted for members of the general public. In this report it is recommended that exposure rate rather than activity constitute the basis for patient release.

4.1 Discharge of Radioactive Patients from the Hospital

4.1.1 Patients Containing Radioactive Nuclides with Half-lives Greater than 125 Days. It is recommended that for therapeutic procedures involving the use of gamma-ray emitting nuclides with half-lives greater than 125 days, the patients shall be hospitalized for the duration of the treatment. Radium-226, cobalt-60, and cesium-137 are nuclides in this category; these sources shall be removed before discharge of the patient. Exposures to other patients can be calculated as discussed in Section 3.5 and the provisions of that Section shall be observed. Such a situation has been analyzed in Section 3.7.

4.1.2 Patients Containing Radioactive Nuclides with Half-lives Less than 125 Days.

(a) It is recommended that in the case of iodine-125, iodine-131, chromium-51, and radon, patients may be released without restrictions when their radioactive content does not exceed the amount listed in Table 2. The physician, with the concurrence of the Radiation Protection Supervisor, shall be permitted to increase these values slightly for the short-lived nuclides. However, it is suggested that rather than making any substantial increase he should make use of one of the restrictive procedures discussed in Section 4.1.2 (d)

(b) It is recommended that hospitalization be required for at least 48 hours following the intraperitoneal or intrapleural administration of colloidal gold-198. Accidental loss of colloidal gold occurs usually via the insertion site and a period of at least 48 hours permits observation of the progress of healing of the puncture wound. After this period release can be in accordance with Section 4.1.2 (a)

(c) Patients treated with the long-lived tantalum-182 or iridium-192 need special consideration (see 4.1.2 (c) below)

(d) Following hospitalization, as recommended in (a) and (b) above, discharge of all patients who have received therapeutic amounts of any radioactive nuclide shall be governed by the following provisions.

(1) A patient shall not be discharged from the hospital if the maximum integrated exposure, at a distance of one meter from the patient, for continuous exposure, exceeds 5 R in one year.

The initial exposure rates at one meter, or the activities which will result in an integrated exposure (for continuous exposure) of approximately 5 R in one year, can be obtained from the last two columns of Table 2, by multiplying the values there given by a factor of 10.

(2) If the initial exposure rate at one meter, or the activity remaining in the patient, indicates by the above application of values in

TABLE 4—Radioactivity levels for discharge of radioactive patients from hospital

Radionuclide	No Restrictions		All Persons in Household Over 45 Years of Age. Restrictions as in Section 4.1.2 (b) ^a		Some Members of Household Under 45 Years of Age. Restrictions as in Section 4.1.2 (d) ^b	
	Exposure Rate at 1 Meter	Activity at Discharge	Exposure Rate at 1 Meter	Activity at Discharge	Exposure Rate at 1 Meter	Activity at Discharge
	mR/h	mCi	mR/h	mCi	mR/h	mCi
Cr-51	0.5	35	5	350	1.5	100
Au-198	5.3	23	53	230	16	70
I-125	0.2	8-80 ^c	2	20-800 ^c	0.6	25-250 ^c
I-131	1.8	8	18	80	11	50
Rn-222	3.8	4.6	38	46	15	18
Ir-192	0.2	0.4	2	4	0.6	1.2
Ta-182	0.1	0.2	1	2	0.3	0.6

^a These levels are in general higher than any likely to be encountered.

^b These values are rather arbitrarily selected on a basis of the probability of the situation. They represent complete integrated doses of between 1.5 and 2.5 R.

^c These values cover a large range, due to the variable attenuation of the 35 keV x rays in the patient.

worker, and to institute the necessary system of supervision and monitoring.

Table 2 presents data for total integrated exposure from specific therapeutic doses of several radionuclides. Based on this information, further tables for permissible exposure times for the two levels assigned to persons under and over 45 years of age have been developed (see Table 4 and Section 4.1). It is recognized that as far as people in the household are concerned, exposures taken from these tables will be approximate, since it is certain that specified distances will not be maintained for specified periods. The object here is to present reasonable limits. Longer distances and shorter times will lead to smaller exposures and need cause no concern. But shorter distances and longer times lead to higher exposures and are to be avoided.

On the basis of Table 4, it is seen that in some cases a 30-millicurie limit for discharge of the patient from the hospital is unnecessarily restrictive, especially when treatment has been with short-lived radionuclides. On the other hand, adequate protection for other individuals is not necessarily assured by a 30-millicurie limit when long-lived nuclides are used. The following recommendations have been formulated to correlate discharge from hospitals with possible exposure to persons in patients' homes.

the last two columns of Table 2, that the integrated exposure will not exceed 5 R in one year, provision for release from the hospital shall be made for one of two different situations, as follows:

(i) In the event that all persons in the household of the radioactive patient, and hence all those persons with whom the patient will have appreciable contact, are over the age of 45 years:

—The patient *should* be instructed to remain at distances greater than 3 feet from other people, except for brief periods for necessary procedures.

—Babies and young people (of ages less than 45 years) *should not* visit the patient, but if they do, the visits *should* be brief, and a distance of at least 9 feet from the patient *should* be maintained.

(ii) In the event that a person under the age of 45 years lives in the household of the patient:

—Stricter precautions *shall* be observed than when all contacts are with persons over 45 years of age.

—Children and persons under 45 years of age *shall not* be allowed in the same room, nor at a distance of less than 9 feet, for more than a few minutes a day. Observance of these conditions will insure that persons under 45 years of age will not be exposed to more than 0.5 R per year from the radioactive individual.

—Other restrictions may be specified by the physician.

All restrictions may be removed when the activity reaches that listed in Table 2. The Radiation Protection Supervisor *shall* determine this time, and give the necessary instructions. The instructions *should* be printed or typewritten. A form similar to that given in Appendix IV, or at least the pertinent parts thereof, may be used.

These conditions for release are summarized in Table 4.

(e) Permanent implants with the relatively long-lived iridium-192 and tantalum-182 constitute more serious problems than arise with the shorter-lived nuclides. It is difficult to maintain precautions for a year or more. Accordingly, permanent implants with these nuclides *should* be limited. A patient with such an implant *should* be discharged only when it is reasonably certain that precautions will be observed. The precautions *shall* be given in detail by the physician or the Radiation Protection Supervisor to the responsible persons in the household.

For doses of these long-lived nuclides such as might be encountered, and also for larger doses of short-lived nuclides, for households containing young people (under 45 years of age), more detailed data may be useful to the physician and the Radiation Protection Supervisor. Accordingly, Table 5 has been developed for this purpose.

Three categories of contact with the patient are used in Table 5: "no

TABLE 5—Approximate times for permissible exposures (for persons under 45 years of age) at indicated distances from patients with indicated exposure rates at 1 meter, or indicated radionuclide content, at time of hospital discharge

[These rates at the time of discharge from the hospital are arbitrarily selected on the basis of probability of the situation.]

Radioactive Nuclide	Exposure Rate at 1 Meter at Time of Discharge from Hospital	Approximate Activity at Time of Discharge	Category of Contact with the Patient			
			"No Contact" (Greater than 2 Meters Distance)	1/2 Hour/Day at 1 Meter Plus 2 Hours/Day at 2 Meters	4 Hours/day at 1 Meter	
I	II	III	IV	V	VI	
Chromium-51	mR/h 1.5	mCi 100	weeks following discharge (see column V)	weeks following discharge 1st, 2nd & 3rd	weeks following discharge 4th, 5th & 6th	
Gold-198	16	70	1st	2nd & 3rd	no restrictions	
Iodine-125	0.6	75	1st thru 4th ^a	5th thru 10th ^a	11th thru 18th ^a	
Iodine-131	11	50	1st	2nd, 3rd & 4th	5th thru 8th	
Radon	15	18	1st	2nd & 3rd	4th, 5th & 6th	
Iridium-192	8.0	15	1st thru 24th	25th thru 35th	36th thru 45th ^b	
Tantalum-182	5.0	17	1st thru 27th	28th thru 44th	45th thru 60th ^b	

^a For the very unpenetrating radiation from this nuclide, a fluoroscopic type leaded rubber apron should provide good protection. On the advice of the Radiation Protection Supervisor, such a garment may be used to permit spending more time near the patient.

^b It is recognized that these conditions are extremely difficult to maintain. Accordingly, use of permanent implants of these nuclides *should* be limited. The activities given are much greater than ten times the values of Table 2. They represent, however, clinically possible situations.

contact", "1/2 hour per day at 1 meter (3 feet) plus 2 hours per day at 2 meters", and "4 hours per day at 1 meter". These obviously do not meet all practical situations; they serve, rather, as practical guides.

(i) There *should* be "no contact" with the patient after discharge from the hospital for the period specified in column IV, Table 5. By "no contact" is meant that the distance between the patient and an individual under 45 years of age *should* be greater than 2 meters (6 feet). In practice it *should* be considerably greater most of the time.

(ii) For the period listed in column V, Table 5, the individual under 45 years of age may spend half an hour a day at 1 meter, and 2 more hours per day at 2 meters. For the remainder of the time he *should* be farther away.

(iii) At the expiration of the period listed in column V, Table 5,

restrictions can be considerably relaxed, but the conditions listed in column VI should be observed—not more than 4 hours a day at 1 meter.

(iv) Holding of infants by the patient *should not* be allowed until the period listed in column VI has passed, and then only for a brief period each day.

(v) Brief periods of closer contact, such as shaking hands, may be permitted.

(vi) Following the period in column VI, Table 5, definite restrictions are removed, but prolonged close association with the patient *should* be limited.

For somewhat smaller initial exposure rates, observation of the same times will result in a larger margin of safety, and this is probably simpler than trying to make adjustments in the table. If the initial rates are as little as half those tabulated, the times per day in each category can be doubled or distances reduced to $\frac{3}{4}$ of those tabulated.

For initial exposure rates exceeding those tabulated by more than 15 percent, corresponding reductions *should* be made in the permissible times. Thus for a patient with 30 mCi of radon (25 mR/h at onset), the time at one meter in the second week *should* be reduced to 40 minutes per day. The appropriate instructions *should* be given to the responsible family member at the time of discharge. This may well be in the form of a typewritten memorandum embodying the times for the two specified "contacts". A suggested form for such instructions is given in Appendix IV.

When such a patient is sent home, it will be noted on his chart. A specific statement concerning instructions given the family is desirable. A suitable form for insertion in the history is given in Appendix III.

TABLE 6—Approximate activity which will produce an exposure rate of 0.25 R/h at 25 cm^a

Radionuclide	Approximate Activity mCi
Gold-198	70
Iodine-131	70
Iridium-192	30
Radon-222 ^b	20
Tantalum-182	20

^a Values for Cr-51 and I-125 are not given in this table because the amounts required to produce this exposure rate are not ordinarily used in clinical practice.

^b In equilibrium with short-lived daughters and filtered by 0.5 mm PL.

4.2 Return of Patient to Work

The patient with a permanent implant may feel well enough to return to work after a short period. In such a case there would be a possibility of his irradiating his fellow workers, or in the case of a teacher, of irradiating his students. Accordingly, any such case *should* be studied by the Radiation Protection Supervisor before permission to work is granted. The same rules *should* be followed as for individuals under 45 years of age at home. Workers who are always at least 2 meters from others would be governed by the provisions of column IV of Table 5, but those who may be closer will need to wait longer. Particularly when school children might be exposed, the patient with iridium-192 or tantalum-182 *should not* return to work for the first year without the advice of the Radiation Protection Supervisor. Exposure to "innocent bystanders" in travel to and from work by public transport must be considered and conditions set by the Radiation Protection Supervisor.

4.3 Death of Radioactive Patient at Home

It must be impressed upon the responsible family member that if the patient dies at home or in another hospital, the radiation therapist *shall* be informed *immediately*. (A statement to this effect *should* be included in the instruction sheet. See Appendix IV.) The embalmer is not to be considered a radiation worker, and hence his maximum exposure *should not* exceed 0.5 R/year. Table 6 gives the approximate millicuries which will result in one half of this total exposure in one hour (see Section 5.2). If the patient received iodine-131, gold-198, or radon, embalming can be safely performed provided the body is not opened. If there is to be an autopsy the provisions of Section 5 *shall* apply and the autopsy *shall* be performed in an institution with a Radiation Protection Supervisor.

Section 5 contains detailed information covering many contingencies for patients who die or need emergency surgery while in the hospital. Pertinent parts of this section can be applied to the patient who dies or has an emergency illness at home.

RADIOACTIVITY TAGS

_____ HOSPITAL

RADIOACTIVITY



PRECAUTIONS

RADIONUCLIDE _____ mCi
DATE _____

See Nursing Station for Instructions.

- Tag is not to be removed until:
- 1) Radioactive material is removed from patient, or
 - 2) Authorization is received from Radiation Protection Supervisor.

Signature _____
RADIATION PROTECTION SUPERVISOR

This should be a tag to be placed on the foot of the patient's bed or attached to the door of his room.



RADIOACTIVITY PRECAUTIONS

This may be placed in a wristband on the patient.

APPENDIX III

Radiation Safety Check List for Discharged Patients Containing Radionuclides

Name of Patient: _____ Age: _____
 Address: _____ Tel. No. _____

Name of Person Interviewed: _____
 Description of dwelling: _____
 In multifamily buildings, possible proximity of neighbors.
 Household: Names, relationship, ages: _____

Regular visitors to dwelling: _____

Persons regularly visited by patient outside dwelling: _____

Matters discussed:
 ___ Handling of extruded source
 ___ Importance of separate beds
 ___ Importance of distance
 ___ Importance of special care in regard to young persons
 ___ Procedure in case of hospitalization or death

Film badges issued _____
 Identification card, or wristband issued _____

Date _____ Physician or Radiation Protection Supervisor _____

This should be a part of the patient's record.

APPENDIX IV

Instructions for Family of Re- leased Patient

Name of Patient _____
Name of Hospital _____ Address _____ Tel. No. _____
For further information contact _____ Tel. No. _____
Please show this form to every physician consulted concerning the patient
until _____ (date)

_____ was treated on _____, 19____
(Name of patient)
with _____ millicuries of _____ in the form of _____
NO SPECIAL RADIATION SAFETY PRECAUTIONS ARE NECESSARY
AFTER _____ (date)

UNTIL THAT DATE:
Persons under 45 years of age should not remain closer than the following dis-
tances from the patient, for the time period indicated:

- a) _____ to _____ (date)
Permissible distance _____ feet or more, for _____ hours per week.
(At other times, remain farther than 6 feet.)
 - b) _____ to _____ (date)
Permissible distance _____ feet or more, for _____ hours per week.
(At other times remain farther than 6 feet.)
- Note: During the above times brief periods of closer contact (for example while shaking hands, or kissing the patient) are permissible.

SPECIAL PRECAUTIONS:
a) Spouse or other person caring for patient: _____

b) Children or pregnant women: _____

c) Sleeping Arrangements: _____

IF THE PATIENT IS TO BE HOSPITALIZED, OR IF DEATH SHOULD OCCUR NOTIFY THE FOLLOWING INDIVIDUAL(S) IMMEDIATELY:

A copy of this form should be kept with the patient's record.

APPENDIX V

An Acceptable Form for Radi- oactivity Report Accompanying Body

Report on Radioactivity to Funeral Director from Radiation Protection
Supervisor or Delegate _____ HOSPITAL

- [] This body does not contain significant amounts of radioactive materials. No special precautions are required if standard embalming procedures are employed.
- [] This body contains a significant amount of radioactive material. The following precautions are to be observed.

Signed _____
Radiation Protection
Supervisor or Delegate
Date _____

APPENDIX IV

Instructions for Family of Released Patient

Name of Patient _____
Name of Hospital _____ Address _____ Tel. No. _____
For further information contact _____ Tel. No. _____
Please show this form to every physician consulted concerning the patient
until _____ (date)

_____ was treated on _____, 19____
(Name of patient)
with _____ millicuries of _____ in the form of _____
NO SPECIAL RADIATION SAFETY PRECAUTIONS ARE NECESSARY
AFTER _____ (date)

UNTIL THAT DATE:
Persons under 45 years of age should not remain closer than the following distances from the patient, for the time period indicated:

- a) _____ to _____ (Date) _____ (date)
Permissible distance _____ feet or more, for _____ hours per week.
(At other times, remain farther than 6 feet.)
- b) _____ to _____ (Date) _____ (date)
Permissible distance _____ feet or more, for _____ hours per week.
(At other times remain farther than 6 feet.)

Note: During the above times brief periods of closer contact (for example while shaking hands, or kissing the patient) are permissible.

- SPECIAL PRECAUTIONS:
- a) Spouse or other person caring for patient: _____

 - b) Children or pregnant women: _____

 - c) Sleeping Arrangements: _____

IF THE PATIENT IS TO BE HOSPITALIZED, OR IF DEATH SHOULD OCCUR NOTIFY THE FOLLOWING INDIVIDUAL(S) IMMEDIATELY:

A copy of this form should be kept with the patient's record.

APPENDIX V

An Acceptable Form for Radioactivity Report Accompanying Body

Report on Radioactivity to Funeral Director from Radiation Protection Supervisor or Delegate
_____ HOSPITAL

- [] This body does not contain significant amounts of radioactive materials. No special precautions are required if standard embalming procedures are employed.
- [] This body contains a significant amount of radioactive material. The following precautions are to be observed.

Signed _____
Radiation Protection Supervisor or Delegate
Date _____

ACNP

DOCKET NUMBER
PETITION RULE PRM 35-10
(57 FR 8282)

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Physicians

The Society
of Nuclear
Medicine

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OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

April 24, 1992

Samuel Chilk
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Docketing and Service Branch (PRM-35-10)

Dear Secretary Chilk:

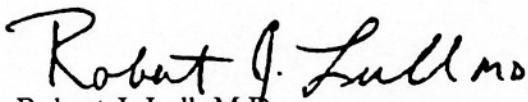
The American College of Nuclear Physicians (ACNP) and the Society of Nuclear Medicine (SNM) wish to formally respond to the American College of Nuclear Medicine (ACNM) petition docketed January 14, 1992.

The petitioner's first request proposed the deletion of 10 CFR Part 35.72(a)(2). This issue is already under consideration by the NRC according to a previous petition (docket number PRM-20-20). ACNP and SNM wrote in support of the previous petition on July 15, 1991. We still maintain that this action is necessary and strongly urge the NRC to resolve this issue by deleting Part 35.72(a)(2) immediately. In order to support regulation to ensure safety, we recommended substitution of NCRP no. 37 for 35.72 (a)(2).

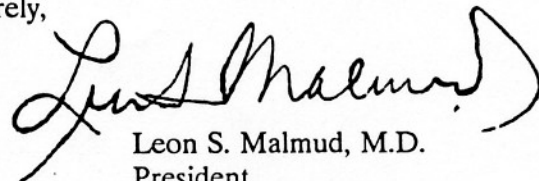
The petitioner's second request addressed mandated hospitalization and confinement. ACNP and SNM believe that NRC regulation is silent on the issue of mandated hospitalization and that the real issue is adequate confinement. Our interpretation of NRC's regulations regarding confinement does not mandate hospitalization for patients receiving radioactive treatments. The regulations state that until the measured dose rate falls to acceptable levels, the patient must be under medical care, not necessarily hospital care. Nuclear medicine's and the NRC's objective is to ensure safety efficiently and effectively. The rationale for establishing an alternative protected environment for patients receiving very high doses is unclear, since there are unlikely to be economic benefits. In either case, a regulatory change should not be necessary.

In summary, ACNP and SNM urge NRC to expedite a resolution on the ACNM petition and its predecessor (PRM-20-20).

Sincerely,



Robert J. Lull, M.D.
President
American College of Nuclear Physicians



Leon S. Malmud, M.D.
President
Society of Nuclear Medicine

Acknowledged by card JUL 16 1992

NCRP

National Council on Radiation Protection
and Measurements

7910 WOODMONT AVENUE, SUITE 1016, BETHESDA, MARYLAND, 20814-3095 AREA CODE (301) 657-2652

WARREN K. SINCLAIR, Ph.D., *President*
S. JAMES ADELSTEIN, M.D., *Vice President*
W. ROGER NEY, J.D., *Executive Director*

September 26, 1983

RECEIVED

SEP 29 83

MEDICAL PROGRAM
ADMINISTRATOR

Edmond E. Griffin, Ph.D
Medical Program Science Administrator
American Heart Association
7320 Greenville Avenue
Dallas, Texas 75231

Dear Dr. Griffin:

This is in response to your request to Dr. Sinclair concerning exemptions to the 30 millicuries requirement prior to release from the hospital. Dr. Sinclair has asked that I respond to you. I am a staff scientist for the NCRP with responsibility in the medical areas of radiation protection.

Attached is a complimentary copy of NCRP Report No. 37. The philosophy to back up my response to your question is contained in Report 37 and in Report 39 - Basic Radiation Protection Philosophy. The NCRP would recommend against "exemptions" from the standard 30 mCi body content prior to release from the hospital. If anything, in the case of Iodine-131, we would recommend that in the majority of cases the patient should not be released until the total amount in the body is 8 mCi. However that is too restrictive, and, since the number of people receiving therapeutic amounts of radiiodine is not great, the 30 mCi quantity provides adequate radiation protection to members of the family. This, of course, assumes that the members of the family are properly instructed in accordance with the provisions of Section 4.1 of Report 37.

I recommend that anyone responsible for making decisions, such as this one facing your Advisory Board, read all of Report 37 so as to get a full appreciation of the problem. This report was first issued in 1970 and I would add only that, in today's political climate, I would treat all members of the patient's family as under 45 and delete the easing of restrictions for those over 45. Please realize that these restrictions are important for others who may come into contact with the patient. The concern for the patient is that he or she receive the benefit of the procedure and subsequent freedom from the condition being treated.

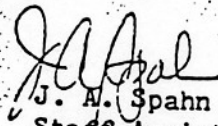
Contamination is another significant problem especially when iodine is the administered isotope. Everything the patient touches or that is in contact with the patient is contaminated. When I was a radiation safety officer at a large medical center, patients who had been administered iodine

Dr. Griffin
September 26, 1983
Page 2

for therapeutic purposes were placed in moderate isolation. They were placed in a private room, were required to wear light cotton gloves whenever using the phone or reading a book, were required to use disposable utensils, were encouraged to collect their own urine in a shielded 10 gallon container kept in their own private bathroom and were fully instructed in procedures which would lessen the exposure of anyone who had to come into the room. Visitors were allowed but they were encouraged not to touch the patient and to sit as far away as possible. Nursing staff were fully trained in proper radiation safety procedures to be followed.

If you have further questions, please don't hesitate to call (301-657-2652) or write. I hope this is helpful to you.

Sincerley,


J. A. Spahn
Staff Assistant

P.S. Our overriding consideration would be that no person in the general population should be exposed to more than 500 mrem per year.

JAS:sat

Enclosures: (1)