V. RADIATION SURVEY AND PATIENT DISCHARGE

The whole body absorbed dose to the physics staff, who prepares the seeds and stands by the implant procedure is reported to be negligible. The hands are estimated to receive less than 0.5 mSv (50 mR) per implant. Therefore the same physics staff can perform up to 100 cases of implant without violating the 5 mSv (= 5 R) limit. As far as the physicians are concerned, the exposure to the head is 0.1 mSv per implant. Fluoroscopic x-rays operating at 100 mR/h for 5 minutes, contribute to a total exposure of less than 0.1 mSv per implant.

For the radiation survey, the AAPM TG Report No. 56 recommends using a scintillation probe calibrated for low energy x-rays. Ion chamber type survey meters typically under-respond at I-125 photon energies by more than a factor of 2. Right after the completion of the seed implant, a radiation survey at a distance of 1 m from the surface of the pelvis is recommended. There are two US government documents that recommend the conditions of discharge from the hospital. They are the National Council on Radiation Protection and Measurements (NCRP) Report No. 37 and the US Nuclear Regulatory Commission Regulatory Guide 8.39. Their recommendations can be summarized as follows.

NCRP Report No. 37
At 1 m from the patient, if the exposure rate is
* Less than 0.2 mR/h, the patient will be discharged with no restrictions.
* More than 2.5 mR/h, the patient will not be discharged.
* Between 0.2 and 2.5 mR, the patient can be discharged with such restrictions as

  The patient stays at least 3 feet away from another person.
  The patient stays at least 9 feet away from younger person.

US NRC Regulation
* The patient can be released if the total implanted activity is less than 30 mCi, or the dose rate at 1 m is less than 5 mR/h.

A summary of the patient's survey at 1 m from the pelvis depends strongly on the number of seeds and the size of the patient. The results are, therefore, expected to wander all over the figure. The survey of approximately 55 patients at the University of Toronto Sunnybrook Hospital shows that the average reading is 0.14 mR/h. The reading on the surface of the abdomen is approximately 1.6 mR/h. Importantly, the patient's spouse will receive less than 0.3 mSv (or 30 mR).

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RELEVANT LITERATURES

Though no attempt was made for references in this paper, the following documents and papers are noteworthy.