UNIVERSITY OF CINCINNATI
RADIATION SAFETY COMMITTEE
POLICY STATEMENT 97-3

Policy Concern: This policy concerns the reporting of missing brachytherapy seeds (sources) when seeds are unaccounted for after a permanent brachytherapy seed implant procedure.

Policy Implementation: The Radiation Safety Officer is directed to implement this policy upon approval by the Radiation Safety Committee. All necessary procedure changes and instructions to implement this policy must be approved by the Radiation Safety Officer.

Discussion: During an investigation of an incident involving three missing brachytherapy seeds, it became apparent that policy guidance was needed. Procedures to ensure seeds are being properly inventoried before and after each permanent implant procedure, and guidelines on when a seed(s) is determined to be missing are needed.

It is practice to accept the original number of seeds in a new vial as certified by the vendor. During the implant procedure, a tally is kept of the number of seeds removed from the vial and then implanted into the patient. The number of seeds from the implant tally is subtracted from the original number in the vial with the remainder entered into inventory records as the number of seeds in the vial. In the past, the remaining seeds in the vial were only counted if they happened to be used on a future patient. The problem with this method is when and if a seed(s) is misplaced and not found on a survey it is not immediately identified as missing.

Radiographs are taken of each permanent implant site to verify the location and to make a count of the seeds. The count from the radiographs often does not exactly match the tally of seeds implanted because of the difficulty of seeing all the seeds.

Policy Statement: Brachytherapy permanent implant seeds will be controlled and inventoried in the following manner:

1. An unused, sealed vial of seeds certified by the vendor or a vial sealed with tape that has the number of seeds indicated does not require a physical count of the seeds prior to use. Any unsealed vial must have the seeds counted before they are taken from the seed storage room.

2. After a permanent implant procedure is complete, the seeds remaining will be physically counted. The number of seeds remaining plus the seeds implanted per the tally must equal the number of seeds originally available for the implant. No further action is required if the numbers indicate all seeds are accounted for.

3. When the number of seeds remaining is less than the number expected, immediate action will be initiated to locate the seed(s) or confirm the seed(s) are lost. Action to be taken must include, but is not limited to the following:

1. Resurvey all areas where the seeds were handled.

2. Recover and count all seeds misplaced in the area of use.

3. Inform the RSO immediately of the discrepancy if the missing seeds cannot be found on the resurvey of the areas of use.

4. Take radiographs of the patient to count the number of seeds implanted.

4. If the missing seeds are not found during subsequent surveys and are not counted on the radiograph, the RSO will declare the seeds missing. Any required regulatory reports will be made based on this determination.

5. When the physical count of seeds indicates a shortage and circumstances do not allow the taking of a radiograph within four hours of the implant procedure, the seeds will be declared missing based on the physical count.

6. The number of seeds counted on a radiograph will not be used as a primary inventory factor. If the physical count of remaining seeds and the tally of seeds implanted equals the beginning balance, but the count of seeds on the radiograph is short, the seed count will not be reviewed unless one of the following conditions is met.

1. The number of seeds counted is significantly less (10 percent or more) than the number thought to have been implanted.

2. The number of seeds counted is less than the tally of the implant when the quality of the radiograph and the spacing of the seeds allows an accurate count.

7. The RSO will be immediately informed when conditions in 6.a or 6.b are found. An attempt will be made to determine the reason for the discrepancy and to ascertain if a misadministration or recordable event has occurred.

Approved by the Radiation Safety Committee on February 2, 1998