FACILITY NAME
POLICY/PROCEDURE: Prostate Seed Implant Program
POLICY #
DATES: START REVIEWED REVISED
DEPARTMENT REPRESENTATIVE:
FACILITY ADMINISTRATOR:
MEDICAL DIRECTOR:
MEDICAL PHYSICIST:

POLICY/PURPOSE:

A prostate seed implant is a brachytherapy procedure involving permanent radioactive sources placed transperineally via ultrasound. This policy provides an outline for training, clinical scope, radiation safety, quality control and documentation to assure that the Prostate Seed Implant Program provides optimum patient care and a safe environment for everyone involved in the process.

1. **Training –**
   a. Qualifications for the radiation oncologist to perform prostate brachytherapy follow The ACR Practice Guideline for Transperineal Permanent Brachytherapy of Prostate Cancer (II A). If the physician training program didn't include formal prostate brachytherapy training, then appropriate training in transrectal ultrasound (TRUS) guided prostate brachytherapy will be obtained as well as additional training by participating in hands-on workshops on the subject or through proctored cases, with a minimum of five cases required. These workshops must provide the radiation oncologist with personal supervised experience with seed placement and implant evaluation.
   b. Additional staff qualifications follow The ACR Practice Guideline for Transperineal Permanent Brachytherapy of Prostate Cancer (II B-E).
   c. The RSO and/or medical physicist will provide initial and ongoing educational programs for new and existing staff.

2. **Clinical Scope –** (follows ACR guidelines)
   a. The patient selection criteria is divided into the following three groups:
      i. Group 1 – Brachytherapy as monotherapy with or without androgen deprivation (stages T1b, T1c and T2a, Gleason sums of 2-6 and PSA equal or less than 10 ng/ml)
      ii. Group 2 - Brachytherapy plus external beam radiation therapy (clinical stage T2b-T3a or Gleason sums 7 and 8 or PSA 10-20 ng/ml)
      iii. Group 3 - Brachytherapy plus external beam radiation therapy in conjunction with androgen deprivation (Androgen deprivation followed by brachytherapy for patients with/without high AUA obstructive score; Androgen deprivation followed by EBRT and brachytherapy for patients at high risk for extracapsular extension, at high risk for regional node metastases, PSA greater than 20 and/or high Gleason score)
   b. The exclusion criteria for permanent seed brachytherapy are:
      i. Life expectancy of less than 5 years
      ii. Large or poorly healed transurethral resection of the prostate defect (TURP)

iii. Unacceptable operative risk and/or poor anatomy
iv. Distant metastases

c. Criteria for contraindications for permanent seed brachytherapy include:
   i. Previous TURP
   ii. Gland size greater than 60cc at time of implant
   iii. Positive seminal vesicles as suggested by digital rectal exam, radiographic findings or biopsy
   iv. Anorectal strictures
   v. Severe diabetes or blood dyscrasias
   vi. Large median lobe
   vii. Pathologically positive lymph nodes
   viii. Significant obstructive uropathy.
d. Criteria for treatment planning includes:
   i. A transrectal ultrasound, using a high-resolution biplanar ultrasound probe with dedicated brachytherapy software, will be utilized to perform a volume study prior to initializing the implant procedure
   ii. Computerized treatment planning using the volume study images before the implant procedure to determine source activity and placement
   iii. A CT scan will be done post implant
   iv. Computerized treatment planning using the post implant CT will be done 2 to 4 weeks post implant, depending on the physician, to determine the actual dose given. The following parameters will be documented:
      - Prescribed dose
      - Percentage of prostate volume receiving at least 90% of the prescribed dose
      - Percentage of prostate volume receiving at least 100% of the prescribed dose
e. Dose calculation criteria is based on the AAPM Task Group 43 and includes:
   i. Patients with low risk or favorable disease treated by monotherapy - range is 115-130 Gy for P-103 and 140-160 Gy for I-125
   ii. External beam plus brachytherapy, the external beam dose to the prostate and periprostatic area is 40-46 Gy (whole pelvic irradiation may be used in those cases at high risk for pelvic node metastases per the physician)
   iii. The P-103 boost dose is 80-110 Gy and for I-125 is 100-110 Gy.
f. The CQI team will review the prostate implant program as part of their routine meetings.

3. Prostate Implant Radiation Safety & Quality Control Procedures –

The following policies and procedures are in place to address the aspects of radiation safety and quality control for prostate seed implants.

Prostate Seed Implant Startup Guidelines
Bowel Prep for Volume Study and Implant
Volume Study
Prostate Implant CT Protocol
Ordering, Calibrating, Sterilizing and Loading Seeds
Surgical Procedures
Prostate Patient Education
Prostate Follow-up
Radioactive Seed Implant for Prostate Cancer (handout)
Personnel Safety and Monitoring Radiation Exposure

QM: Equipment
QM:TPS/Dosimetry
Brachytherapy: Management of Sealed Radioactive Materials
Brachytherapy: Emergency Procedures for Radioactive Sources
Brachytherapy: Ordering, Receiving and Returning Radioactive Materials
Brachytherapy: Handling and Loading of Radioactive Materials
Brachytherapy: Transporting and Surveying Radioactive Sources and Patients

4. Documentation –

a. The volume study, pre-implant and post-implant computerized treatment plans and seed loading template should be filed in the patient medical record along with the physician's written prescription.
b. Proper documentation of source removal and return to the designated storage area may be found in the *Radioactive Source Inventory Log.* This log is stored in the Radioactive Materials Storage area.
c. Documentation of sources ordered for individual patients may be found in the *Radioactive Source Management Log* stored in the Radioactive Materials Storage area.
d. The *Prostate Implant Checklist* documents each step of the implant process including volume study details, seed ordering information, loading verification and patient survey measurement results.
e. The *Permanent Implant Survey and Precautions Form* is used to document survey information and precautions for posting.