



*Section of Radiation Oncology*

## FACT SHEET

### RADIOACTIVE SEED IMPLANTATION FOR PROSTATE CANCER

Internal radiation therapy, also called Interstitial Radiotherapy or Brachytherapy involves implanting radioactive seeds into the prostate gland to treat cancer. In selected men, this option offers quick, minimally invasive treatment with good cancer control. Small radioactive rice-sized pellets or “seeds” (Palladium 103 or Iodine 125) are placed directly into the prostate gland and give off a known amount of radioactivity into the surrounding prostate tissue. In this way, radiation is placed as close as possible to the cancerous cells so that the pelvic organs are exposed to less radiation than with external beam radiation.

Seeds are implanted without a surgical incision. They are inserted through the skin of the perineum (just behind the scrotum and in front of the anus) using small pre-loaded needles. General or spinal anesthesia is used. Each seed is carefully placed in a predetermined location and depth. Placement is guided by a template attached to an ultrasound probe and a computer plan is designed specifically for the size of the patient’s prostate. Placement is monitored in real time with ultrasound and fluoroscopy.

The permanent seeds give off radiation continually for an extended period of time. The amount of time that the seeds remain radioactive depends on the dose and what type of radioactive material is used. For example, the half-life of Palladium-103 is 17 days. That means that the prostate receives half of the dose in the first seventeen days; then one quarter in the next 17 days. The useful dose will have been delivered in three to four half-lives.

The entire gland gets treated because microscopic cancer cells may be present at different sites in the prostate even though the biopsy in the general area was negative. The seeds irradiate a small volume of tissue so several seeds have to be placed to cover the entire gland. The number of seeds used can range from 40 – 150 depending on the size of the prostate gland.

