AbstractID: 6741 Title: Physics Policies and Procedures for Intravascular Brachytherapy at Thomas Jefferson University Hospital

A study of prospective, randomized and multicenter Stents and Radiation Therapy (START) trial found that intracoronary beta-radiation therapy produces a significant decrease in the rate of restenosis after angioplasty. A device recently approved by FDA uses beta radiation from Sr-90 Isotope to treat in-stent restenosis. We participated in the START trial and have treated numerous cases with the device since its approval. In order to have a smooth transition between the trial phase and actual clinical operation, we devised a quality management program that takes into account issues relating to Quality Assurance(QA)/calibration of the sources, radiation safety during transport and during patient treatment, and storage of the device. The calibration of the source trains traceable to NIST determines the treatment times necessary to deliver the prescribed dose. The physicist uses the dose rate specified in the calibration certificate shipped with each active transfer device to determine the associated treatment times. Due to the rapid fall-off of the dose for beta radiation from Sr-90(with 2.27 MeV and 0.54 MeV beta energies), beta radiation doesn't significantly increase patient&staff radiation exposure level. However, the principles of ALARA (as low as reasonably achievable) have to be followed by reducing the exposure time, increasing distance and keeping appropriate shielding during normal treatment and in case of accidents. We have developed a ^{90}Sr restenosis treatment summary form to be filled out and signed by physicist and radiation oncologist for each procedure with the prescription and radiation survey information. We have operated smoothly following the developed procedures.