

AbstractID: 7469 Title: Quality Management for Intravascular Brachytherapy

For much of the time intravascular brachytherapy (IVB) has existed, the manufacturers of the equipment dictated the quality management for their units, and in some cases, prohibited participants in their clinical trials from performing anything additional. In this aspect, IVB differed from every other procedure in radiotherapy physics, where the physics community establishes the recommended quality management programs. Physicists are just now taking control of facet of the procedure. While simple, the procedure holds a sizable potential for harm to the patient. The medical physicist maintains the responsibility to minimize the likelihood of operational problems or dosimetric errors. The delivery devices range from incredibly simple (actually, no device) to very sophisticated. The principals remain the same as with any radiotherapy treatment: to deliver the correct dose, to the correct location, safety. Verification of the planned dose delivery requires checks on the source strength calibration and uniformity, the prescription dose (given the vessel geometry), the dose rate for the prescription and the calculated time for the prescribed dose. Correct delivery of the dose implies control systems to assure proper execution of the prescribed time in the event of failure of the normal procedures. Delivery of the dose to the correct location assumes knowledge of the vessel dimensions and verification of the correct positioning of the catheter, and of the sources in the catheter, during the treatment. Delivering the treatment safely in this context means that the sources will go to the treatment position in the catheter and then return to the protective housing, all at the correct time. This requires testing of the catheter for patency and integrity, and testing of the source delivery device for proper operation. Part of the testing includes a dummy run with the catheter in the treatment position. Afterloading devices have additional checks very akin to those applicable to afterloading devices used for general brachytherapy. Given the relatively high frequency of non-routine events in IVB, attention to QM takes on a great importance.