

Recent articles in the New York Times have focused attention on catastrophic errors that can occur during radiation treatment. While the concern is particularly important for the IMRT treatment modality that uses a relatively high number of monitor units that, taken in total, can be lethal, there are many well known reports of serious incidents during conventional radiation therapy. The first talk in this session will set the scene through a general overview of the topic including a discussion of the relationship between quality and safety. This theme will continue with the second talk which will frame the problem of catastrophic error prevention as a special QA issue that should be considered as distinct from procedures aimed at avoiding dose deviations that can compromise the outcome of treatment in more subtle ways. Quality assurance strategies specifically designed to detect potentially catastrophic errors will also be discussed in this second talk relative to methodologies used to measure treatment plan quality in general. Two major tests will be considered in this review: 1) the patient-specific end-to-end test for IMRT, and 2) and the imaging and treatment coordinate coincidence test stated in the IGRT Table V of the AAPM Task Group 142. The remaining four 20 minute talks will focus on four complementary approaches to error management. These are Root Cause Analysis, Incident Learning Systems, Failure Modes and Effects Analysis and Fault Tree Analysis. Each of these talks will follow a similar format of identifying the role and history of the particular strategy, an overview of the methodology, sample results and opportunities and challenges of implementing each technique.

### **Educational Objectives**

1. Present a connection between quality and safety.
2. Discuss quality assurance strategies designed to prevent catastrophic errors.
3. Introduce common error management techniques.