

In-depth Testing of Information Management Systems Prior to Operation

Over the past several years, the utilization of advanced treatment capabilities, such as MLC, IMRT, 3D-RTP, and Gating, has been increasing. As such, radiation oncology integrated Information Management Systems (IMS) have also grown in capability and complexity. Unfortunately, as the complexity of a system increases, and the number of other systems with which it must interface increases, the potential number of problems encountered increases exponentially. Needless to say, facing a large number of new problems that can inhibit or prohibit treatment is not something that radiation oncology departments can afford to encounter with the installation and integration of system operations with a new IMS.

Several radiotherapy clinics have reported problems upon installation and operation of new IMS software. This demonstrates that the present acceptance testing is not adequate to identify many of the problems that will be encountered for resolution prior to operation. Looking at the aircraft and nuclear industries reveals much about in-depth testing methodologies for complex systems and groups of systems, including testing beyond the present acceptance testing typically performed for radiation therapy clinics. These methodologies include diverse testing such as functional, acceptance, preoperational and integrated systems testing. The feasibility of implementing such an in-depth testing program in radiation therapy facilities will be presented.