

Quality Assurance for Advanced Radiotherapy Technologies - The Challenge for RT Clinical Trials

An educational symposium
brought to you by **AAPM Working Group on Clinical Trials**

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What is the Challenge for Radiotherapy Clinical Trials?

- Advances in radiation therapy technology and delivery techniques rapidly adopted
- Standardized quality assurance (QA) procedures are not fully developed and widely practiced on new techniques
- Clinical trials require **comparability** of data between institutions to obtain valid results
- QA for more complex new technology, both for the clinic and for clinical trials, can overwhelm physicists

Why Should You Care about Clinical Trial QA?

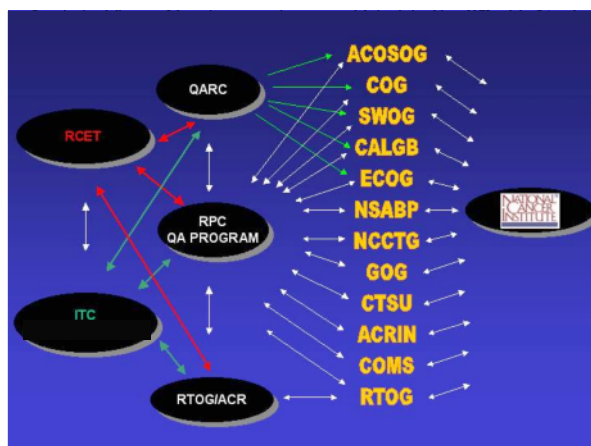
1. The Medical Physicist's efforts to ensure that treatments are delivered per protocol guidelines is critical in establishing the statistical significance of the findings of the clinical trial.
2. RT trials are using more complex treatment methods than in the past: IMRT, IGRT, gating, SRS
3. The NCI has a program which permits and encourages much wider participation in clinical trials throughout the country.

Presentations

- **Image Fusion for Target Definition** - Marcia Urie, Director of Physics, Quality Assurance Review Center, Providence, RI and Professor, UMass Medical School
- **Heterogeneity Corrections in Clinical Trials** - Eric Klein, Professor, Radiation Oncology Department, Washington University, St. Louis, MO
- **Requirements for Addressing Respiratory Motion in Cooperative Group Clinical Trials** - Geoff Ibbott, Director, Radiological Physics Center, Houston TX
- **Credentialing for the Use of IGRT in Clinical Trials** - James M. Galvin, Professor and Director of Medical Physics, Thomas Jefferson University Hospital, Philadelphia, PA (co-chair of Medical Physics comm. RTOG)
- **TG113: Improving Treatment Consistency and Data Quality for Clinical Trials** - Jean Moran, Assistant Professor, Radiation Oncology Department, University of Michigan, Ann Arbor, MI

Learning Objectives

- Understand the quality assurance issues facing Medical Physicists using advanced technologies and how these relate to clinical trial data validity
- Understand the problems and potential solutions to controversies in quality assurance measures for image fusion, target motion, patient localization, and heterogeneity corrections
- Learn what Task Group 113 is doing to address physics practice standards and the accuracy and consistency of data we send to quality assurance review centers



Work Group on Clinical Trials Charge

- 1. To serve as an educational resource by keeping the AAPM membership informed of relevant issues in current clinical trials involving radiotherapy.
- 2. To provide guidance and standards to physicists participating in clinical trials in the area of quality assurance and physics practices through the production of various reports.
- 3. To act as a liaison between the AAPM and the various national clinical trial quality assurance review and resource centers.

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New Technologies in the Clinic and in Clinical Trials

- Cyberknife
- Tomotherapy
- Proton Beam Therapy
- Respiratory Gating
- Adaptive Radiotherapy
- Image Fusion, PET-CT