TG201: Rapid Communication

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Learning Objectives

1. Understand data flow, errors, and the management of the QA program
2. Organize recommendations into a checklist to assess the QA program.
3. Learn relevant database concepts for information integrity and logical consistency
4. Determine the applicable image data transfer recommendations.

Outline of Course

1. Rationale, and administrative issues for the QA program (RC I & II) - Alf
2. Treatment Data (RC III) - Jim
3. Database State and Imaging (RC IV and V) and Conclusion (RC VI and manpower requirements) – Chuck

Part I - Rationale, and administrative issues for the QA program
Alf Siochi
Rationale
• Complexity of modern RT treatments
• Increased use of information technology in modern RT treatments
• Importance of checking Information, not just data

Scope
• External Beam Radiation Therapy
• Linacs, Tomotherapy, GammaKnife, Cyberknife, Protons
• Data Transfers
• Recommendations for QA
• Some comments within recommendations for manufacturers
• CHECKLIST – not detailed report

Method
• TG members listed 5 - 10 recommendations for systems within their expertise
• Chair organized these in a database
• Analysis and abstraction
• Recommendations and justification/explanation
• Multiple rounds of reviews!

QA Program
• Physicist is responsible
• Patient specific data transfer chain
• Data transfer functionality (clinical scenarios)
• Periodic tests, upgrades
• Test QA system with intentional errors
• Review/Update QA Program
Clinical Workflow

- Robust
- Documented
- All personnel trained prior to participation
- DICOM compatibility tests and documented work-arounds
- Don’t Ignore Warning and Error Messages
- Checklists, specially for manual data transfer
- Treatment Interruptions
- Change driven QA paradigm

Data Flow in RO

Data Flow vs Data Store

- Data Flow deals with the sequence in which data is transferred, accessed, or modified among processes
- The flow may work with data from multiple sources or from a single source
- Data store may be centralized or distributed

Distributed Data Stores

Tends to parallel the clinical workflow; check that information matches at each stage.
Centralized Data Store

Fault Tree – Wrong Site

Fault Tree with Mitigations

Robust clinical workflow with hazard mitigation