

Advanced Technology Consortium – RTOG Headquarters QA

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New technological advances in radiation oncology can be overwhelming!

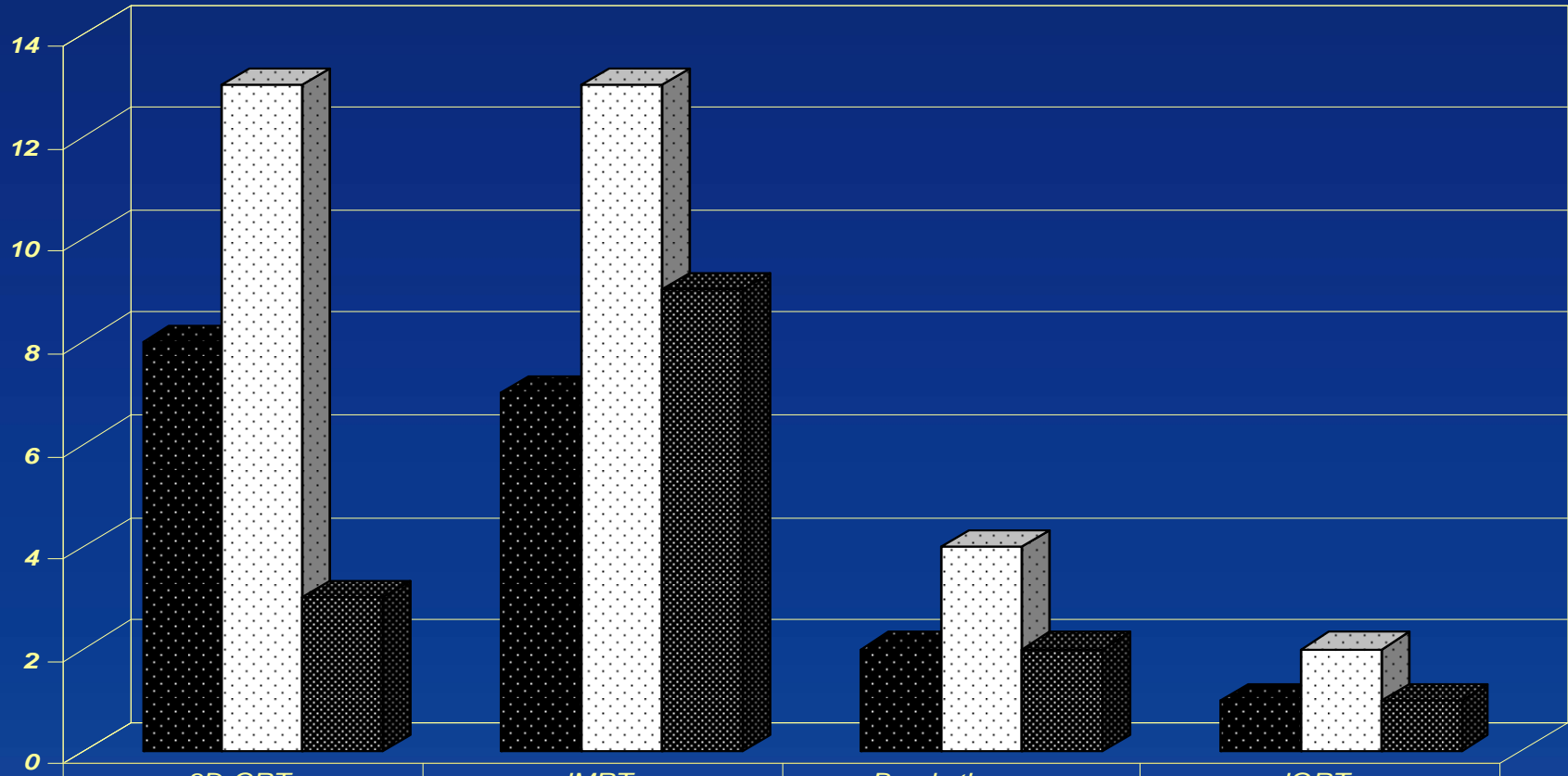
- ATC is an essential resource for dealing with this issue

What are the problems?

- Guaranteeing the accuracy of innovative dose delivery techniques (CyberKnife, Tomotherapy, protons, IMAT, etc.)
- Unifying dose prescription techniques for protocols using advanced technologies
- Unifying credentialing mechanisms for advanced technology protocols
- Implementing the use of IGRT in cooperative group studies
- Management of image datasets used for planning, patient positioning and follow-up
- Providing efficient and effective case review tools for highly complex dose distributions
- Designing advanced technology protocols that are both comprehensive and understandable
- Multi-institutional protocols with institutions accruing patients around the world
- Monitoring and approving the performance of external beam dose calculation techniques
- Credentialing for interstitial and intra-cavitary brachytherapy

RTOG Headquarters Report

ALL PROTOCOLS



	3D-CRT	IMRT	Brachytherapy	IGRT
■ Closed	8	7	2	1
▣ Active	13	13	4	2
▤ Developing	3	9	2	1

Other RTOG IGRT Protocols Under Development

- Lung SBRT (RTOG 0813) – in development
- Spine (RTOG 0631) – in development
- Head & Neck (RTOG 0811) – in development

ATC initiatives for solving problems

- Unified credentialing approach for advanced technologies
- Unified web-based Facility Questionnaire for all studies
- Standard prescription technique for all studies
- Coordination meetings with cooperative groups outside of North America
- Enlisting the help of industry to provide tools for case review
- Develop new analysis tools for both case review and credentialing

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How does a new technology fit into the current structure of guidelines and credentialing processes? The ATC is an important group for making such decisions before different answers are formulated by different QA centers.

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- Unifying credentialing mechanisms for advanced technology protocols

This effort is underway within the ATC and involves all QA centers.

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What are the specific problems for IGRT?

- There are many different IGRT systems
- Deformable image registration is now available
- QA techniques are not standardized
- IGRT dose can be significant in some situations
- Some IGRT systems include 6-degree of freedom couches
- Large image datasets must be accommodated
- Institution credentialing is needed

IGRT in RTOG Protocols

- Protocol IGRT specifications
 - Description of IGRT implementation
 - Provide information on dose from IGRT
 - Description of IGRT QA procedures
- IGRT questionnaire
- Image Registration Software Tests

Using Phantom to Check Performance of Robotic Couches



Using IGRT in RTOG Protocols

- The RTOG has developed Guidelines for the use of IGRT in their protocols
- The Advanced Technology Consortium (ATC) is working on having a uniform set of guidelines for all cooperative groups using radiation in studies

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Conclusions

- The RTOG is struggling with the rapid introduction of new technologies
- The ATC is an essential resource for dealing with this problem