

**Principal Investigator's Report
Advanced Technology QA Consortium
RTOG Meeting – Phoenix, AZ
January 20, 2005**

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“Advanced Technology QA Center”

P.I.'s Report

- **Welcome**
- **Approval of minutes from January 5, 2005 Teleconference**
- **Carryover budget requests**
- **ATC Steering Committee Response#2**
- **ATC Website-(Priority List; Tools Status Report)**
- **Software Tools (CERR, MINERVA)**
- **Update on interactions with cooperative groups**
- **Plans for participation in 2005 Scientific Meetings**
- **Schedule of ATC conference calls and next meetings**

P.I.'s Report

- Approval of minutes from January 5, 2005 Teleconference
- Carryover budget requests

P.I.'s Report

- **Response to Dr. Art Olch's questions was reviewed by ATC subcontract P.I.s.**
 - Time lines
 - user input from reviewers outside of the ATC
 - CRA needing information about ATC
 - national infrastructure and procedure for outcomes research
 - Use of Dicommunicator

ATC WEB SITE (<http://atc.wustl.edu>)

itc@castor.wustl.edu', 'Phone: 314-747-5415', and 'FAX: 314-747-5423'. The browser status bar at the bottom left shows 'Done'."/>

Advanced Technology Consortium - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://atc.wustl.edu/>

MEMBERS CREDENTIALING PROTOCOLS PUBLICATIONS RESOURCES HOME

About the ATC
Cooperative Groups
How to participate
Contact Us
News
Online T2 Form
ATC Members
Image-Guided Therapy Center (ITC)
Quality Assurance Review Center (QARC)
Radiation Therapy Oncology Group (RTOG)
Radiological Physics Center (RPC)
Resource Center for Emerging Technologies (RCET)
Supported by the National Cancer Institute
NCI Steering Committee Resources (requires password)

Done

Scientific Advisory Committee for Advanced Technology Consortium for Clinical Trials QA

Resources

- ATC Steering Committee Meeting, March 31, 2004, Washington, D.C.
 - [Agenda and Slides](#)
- ATC Priority and Status Documents
 - [ATC Priority List](#) (Jan. 2005)
 - [ATC Tools Status Report](#) (Jan. 18, 2005)

Send email to: itc@castor.wustl.edu
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FAX: 314-747-5423

ATC Priority List

1. Provide daily operational support for ongoing ATC facilitated protocols (RTOG, JCOG, see ATC website for protocol details) - [Service for ATC supported protocols is given highest priority; ask that response be given within three day period]
 - a. Facilitate digital data submissions
 - b. Evaluate/approve institution's credentialing tests for each specific protocol
 - c. Facilitate/perform QA reviews of submitted digital data sets
 - d. Maintain QA and treatment planning databases

ATC Priority List

2. Facilitate outcome analysis and data mining for ATC supported closed protocols (RTOG 9406, 9311, 9803, 0319) [ongoing]

ATC Priority List

3. Implement ATC Method 1 technology at QARC (and eventually RPC) [ITC to pursue license agreement with CMS]. The current time line for this work is as follows:
 - a. Establish a secure network connection between ITC and QARC to facilitate installation and support of ATC Method 1 software on the QARC-ITC Linux workstation (completed as of 10/12/04)
 - b. Install/test ITC Remote Review Tool software and related utilities (complete as of 10/27/04).
 - c. Install utilities and graphical user interface for importing DICOM and RTOG-format data into the RRT review system (appears to be working as of 11/9/04; further configuration and testing in progress)
 - d. Begin training QARC personnel in the use of RRT and import of treatment planning data (December 2004)
 - e. Configure QARC FTP server to receive data from protocol participants (late January/February 2005)
 - f. System prepared to receive and review COG data (prior to COG meeting, late March 2005)

ATC Priority List

4. Continue to interface with RTP vendors and foster implementation of ATC compliant DICOM export capability [ongoing effort]
 - a. ITC assistance to vendors for DICOM and/or RTOG Data Exchange implementation
 - b. ATC representation in NEMA/DICOM Working Group 7
 - c. ATC/AAPM/NEMA DICOM Connectathons
 - d. ATC representation in IHE initiative

ATC Priority List

5. Develop, test, and implement ATC Method 2 technology [testing to be performed within ITC with support provided by RCET until system is ready for deployment outside ATC]
6. Develop, test, and implement ATC Method 3 technology at NCIC [testing to be performed by NCIC with support provided by RCET]
7. Provide expertise in the areas of protocol design, credentialing, monitoring, and analysis for new clinical trials that utilize advanced technologies and require digital data submission (e.g., NSABP B-39/RTOG 0413); includes phantoms, credentialing documents and criteria, QA procedures, documents, and criteria, ATC web page/links, and QA database

ATC Priority List

8. Develop formal interface mechanisms with other cooperative groups (NSABP, NCIC, JCOG, COG, PBTC, SWOG, CALGB, EORTC) [ongoing]
9. Develop BrachySys software to facilitate RPC supported clinical trials [software being developed by RCET with testing done by RPC]
10. Increase ATC profile in radiation oncology community through presentations at national/international meetings and through publications. [ongoing: goal of at least four publications during next funding period]

ATC Compliant Treatment Planning Systems Per Modality

Treatment planning systems deemed to be *ATC Compliant* are listed in the table below. They are those with which ATC protocol participants have submitted *complete, reviewable* protocol data sets.

Treatment Planning Systems			Exchange Format	Treatment Modality				
Vendor	System	Version *		3DCRT	IMRT	Seed Brachy	HDR Brachy	Protons
CMS	Focus/XiO	3.1	R	✓	✓	✓		
Elekta	RenderPlan 3D		R	✓				
	PrecisePlan	2.01	D	✓	✓			
Nomos	Corvus		R		++			
Nucletron	Helax TMS		R	✓	✓			
	TheraPlan Plus		R	✓				
	PLATO RTS	2.62	D	✓				
	PLATO BPS	14.2.6	D				✓	
Philips	Pinnacle ³		R	✓	✓			
	AcqPlan	4.9	R	✓				
Rosses Medical	Strata Suite CTPlan	4.0	R			✓		
RTek	PIPER	2.1.2	R			✓		
Varian	Eclipse	7.1	D	✓	✓			
	VariSeed	7.1	D			✓		

Exchange formats for submission of ATC Protocol Data: **D** = DICOM RT Objects **R** = RTOG Data Exchange Format

Software Tools: caBIG Clinical Trials Management Systems

- Effort aimed at deploying and developing caBIG compliant software tools to support data capture/analysis and management of clinical trials.
- Tools designed to integrate into existing Cancer Center clinical data management systems (those that are already robust and those Centers that have no such systems currently in place).
- Tools will be standards based and will adhere to caBIG core principles of open source, open access, open development and federation of data sources.
- Important ongoing efforts include the Enterprise Vocabulary Services (EVS), a set of services/ resources that provide a biomedical thesaurus created specifically to meet needs of NCI.
- Another important effort is caCORE (from the NCICB Core Infrastructure Group), which is the open-source foundation upon which the NCI builds its research information management systems. T
- Key contacts are Drs. Scott Finley and Sue Dubman (NCICB).
- For more information on this effort go to: <http://cabig.nci.nih.gov/> and <http://ncicb.nci.nih.gov/>

Software Tools: CERR

- **CERR (Computational Environment for Radiotherapy Research)**

CERR
 Computational Environment
 For Radiotherapy Research

Washington University in St. Louis
 SITEMAN CANCER CENTER
 SCHOOL OF MEDICINE
 MIR Mallinckrodt Institute of Radiology

Why CERR?

CERR (pronounced 'sir') is a software platform for developing and sharing research results in radiation therapy treatment planning.

CERR is written in the widely-used Matlab language (version 6.1 or later), allowing for low-cost development of visualization and analysis tools.

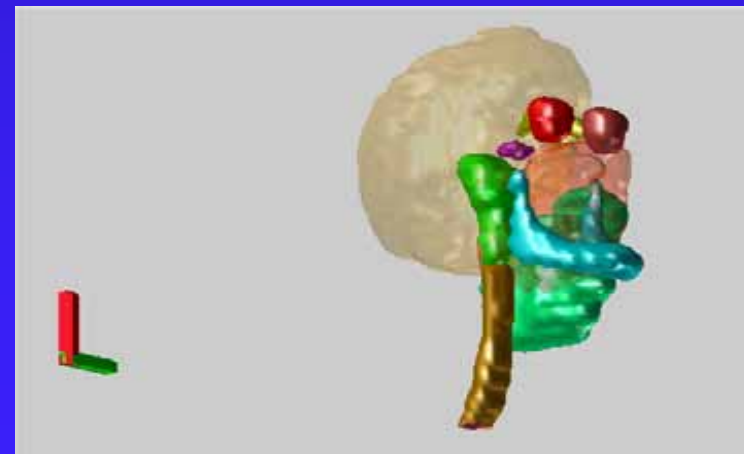
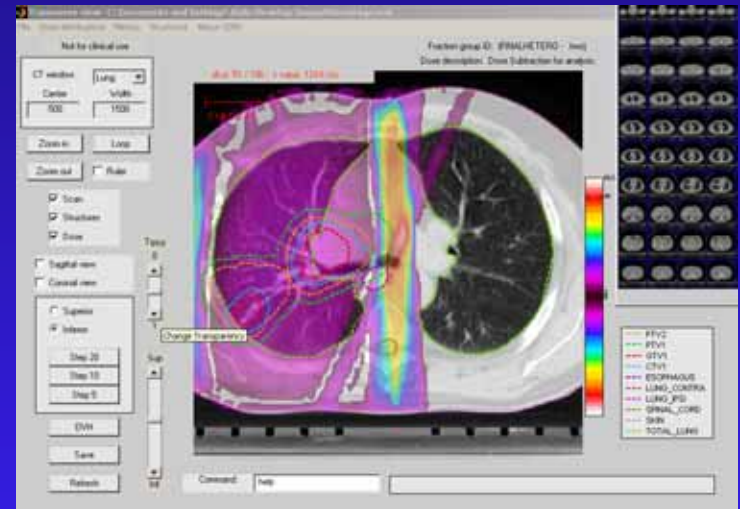
CERR will import and display treatment plans from a wide variety of commercial or academic treatment planning systems (including both the RTOG format and now the DICOM-RT format thanks to Emiliano Spezi's contributions).

CERR provides a common filetype for the creation of multi-institutional treatment plan databases for various types of research studies, including dose-volume-outcomes analyses and IMRT treatment planning comparisons.

Requirements

Current version is 2.6 beta 6

- Matlab version 6.1 or later for non-compiled version.



Software Tools: MINERVA & PEREGRINE

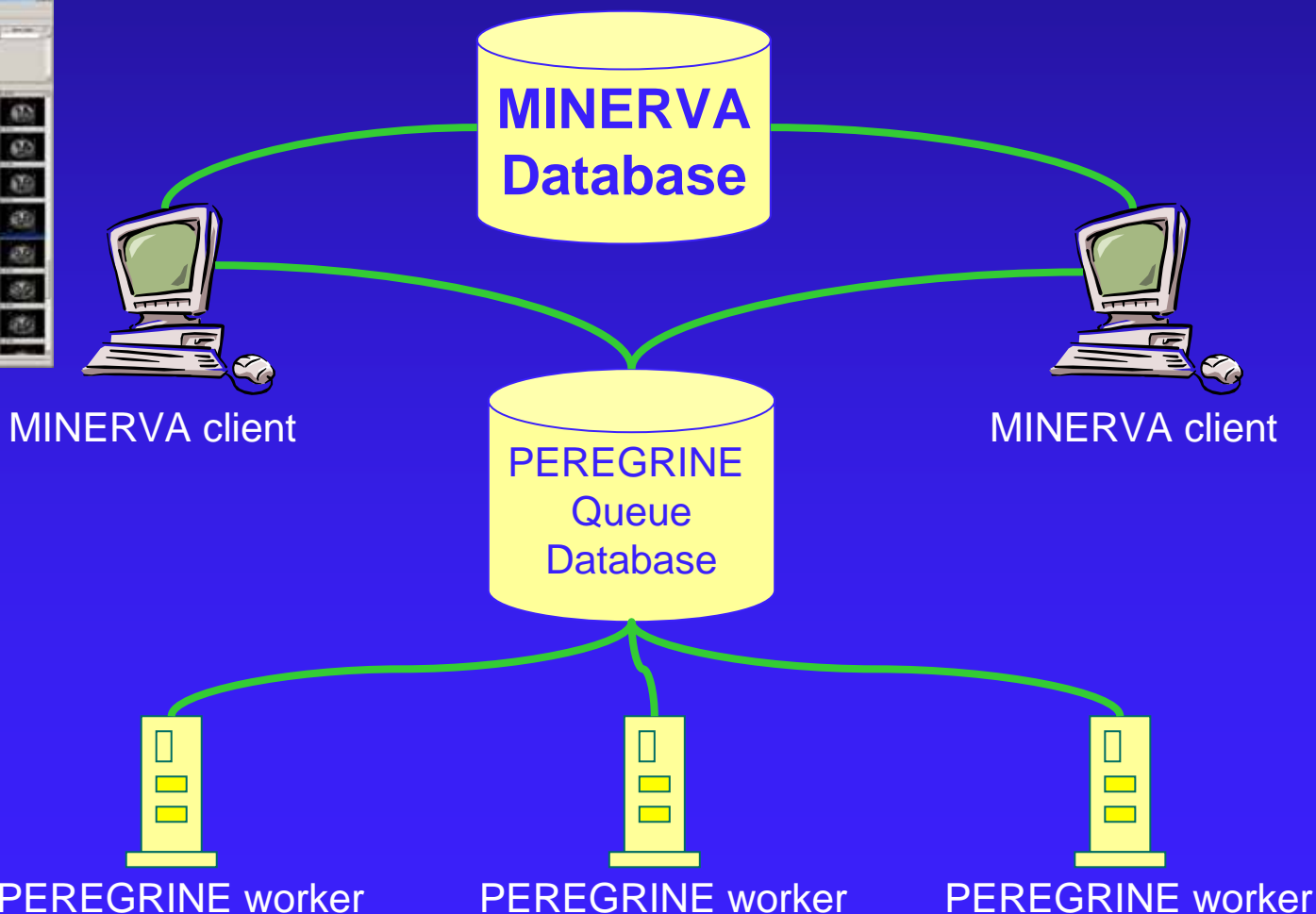
- **MINERVA (Modality Inclusive Environment for Radiotherapeutic Variable Analysis)**



- Dose display for an molecular targeted radioisotope therapy plan.
- Dose distribution of an ^{90}Y treatment is overlaid on the CT images of the patients.
- Axial view is chosen.

Software Tools: MINERVA & PEREGRINE

- **MINERVA (Modality Inclusive Environment for Radiotherapeutic Variable Analysis)**



Software Tools: Industry

- On January 18, 2005, Dr. Purdy met with Dr. Joel Goldwein, M.D., Vice President, Medical Affairs, IMPAC Medical Systems, Inc. to review ATC's mission and history and to set the stage for a meeting to discuss ways IMPAC could help make digital data submission by institutions more efficient, and also make receipt of such data by QA Centers more efficient.
- We are continuing our discussion with CMS regarding the use of FOCUS/XIO/FOCAL software by the ITC and other members of the ATC

ATC INTERACTIONS WITH COOPERATIVE GROUPS

Digital Data Protocols

- **RTOG**
- **JCOG**
- **NSABP**
- **NCIC**
- **COG**
- **PBTC**
- **NABTT**



ATC INTERACTIONS WITH COOPERATIVE GROUPS

RTOG Digital Data Protocols

Protoc	Description	Institutions Credentialed	Cases
9406	Ph I/II 3DCRT Prostate Dose Escalation	54	Accrued 1084
9311	Ph I/II 3DCRT Lung Dose Escalation	27	180
9803	Ph I/II 3DCRT GBM Dose Escalation	46	210
0022	Ph I/II 3DCRT/IMRT Oropharynx	31	69
0319	Ph I/II 3DCRT Partial Breast	31	58
0117	Ph I/II 3DCRT/chemo Lung	39	20
0126	Ph III 3DCRT/IMRT Prostate	108 (35 IMRT)	452 (50 IMRT)
0225	Ph I/II 3DCRT/IMRT Nasopharynx	31	38
0232	Ph III Ext Beam/TIPPB Prostate	50	88
0236	Ph II SBRT Lung	3	3
0321	Ph I/II HDR/Ext Beam Prostate	2	1

JCOG 0403: Phase II Study of Stereotactic Body Radiation Therapy in Patients with T1N0M0 Non-Small Cell Lung Cancer

- Currently, 13 institutions are eligible to enroll patients and capable of digital data submission on JCOG 0403.
- As of 1/17/2004, four SBRT data sets (cases 3, 7, 9, and 10) have been received and prepared for review using ATC Method 1.

Institution	Location	RTP System	Approval Date
Hiroshima University	Hiroshima, Japan	Philips Pinnacle3	Nov 5, 2004
Hokkaido University	Sapporo, Japan	CMS FOCUS/Xio	Aug 11, 2004
Institute of Biomedical Research and Innovation	Kobe, Japan	CMS FOCUS/Xio	Aug 6, 2004
Keio University	Tokyo, Japan	CMS FOCUS/Xio	Nov 2, 2004
Kitasato University	Sagamihara, Japan	Philips Pinnacle3	Dec 27, 2004
Kyoto University	Kyoto, Japan	Varian Eclipse	Aug 25, 2004
Kyushu University	Fukuoka, Japan	Varian Eclipse	Nov 24, 2004
Nihon University	Tokyo, Japan	CMS FOCUS/Xio	Oct 21, 2004
Sapporo Medical University	Sapporo, Japan	CMS FOCUS/Xio	Sep 27, 2004
Tohoku University	Sendai, Japan	Varian Eclipse	Oct 1, 2004
Tokyo Metropolitan Komagome Hospital	Tokyo, Japan	CMS FOCUS/Xio	Sep 3, 2004
Tokyo Women's Medical University	Tokyo, Japan	CMS FOCUS/Xio	Dec 27, 2004
University of Yamanashi	Tamaho, Japan	CMS FOCUS/Xio	Jul 29, 2004

ATC INTERACTIONS WITH COOPERATIVE GROUPS

Digital Data Protocols

- **NSABP B-39/RTOG 0413**
 - Have made significant progress; truly a team effort between NSABP, RTOG, RPC, and ITC to implement this PBI protocol
 - Will utilize ATC Method 1

ATC INTERACTIONS WITH COOPERATIVE GROUPS

Digital Data Protocols

- **NCIC MA.20 Breast Protocol**
 - NCIC working directly with RCET has made significant progress; Server in place; NetSys installed. User manuals written.
 - Will utilize ATC Method 3

ATC INTERACTIONS WITH COOPERATIVE GROUPS

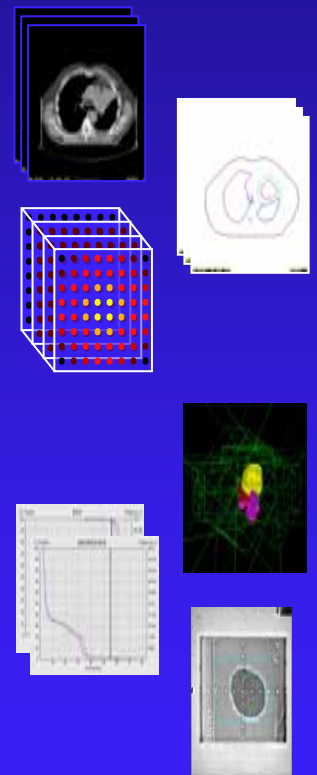
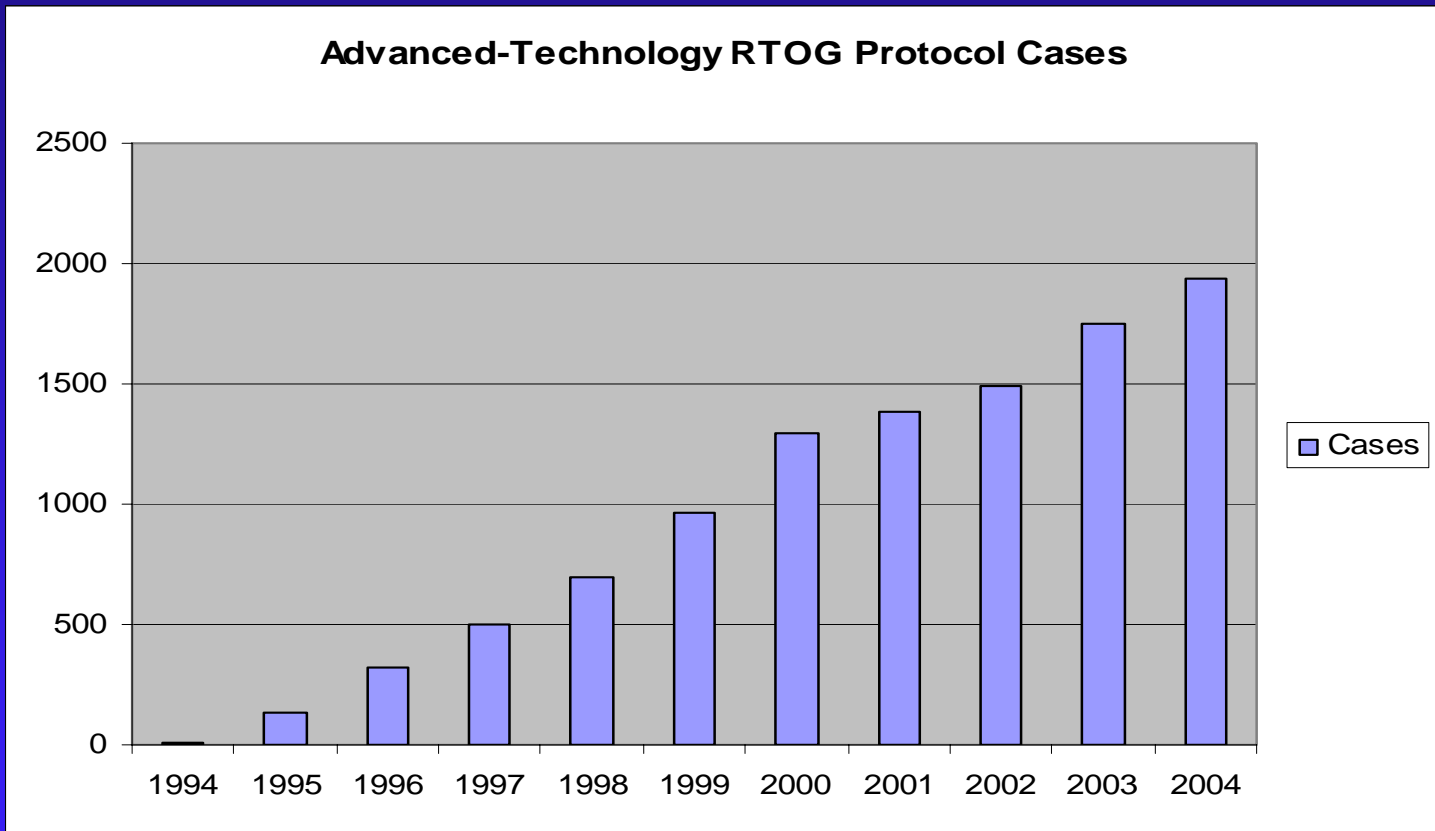
- **COG**

- **QARC/ITC working together to implement ATC Method 1 at QARC for receipt and review of radiation therapy data in digital format, both RTOG Data Exchange and DICOM RT.**
- **QARC has contacted several institutions to notify them to begin submitting digital data for Protocols ACNS0331 - Standard Risk Medulloblastoma and ACNS0126 - High Grade Glioma or Diffuse Intrinsic Pontine Gliomas.).**

ATC INTERACTIONS WITH COOPERATIVE GROUPS

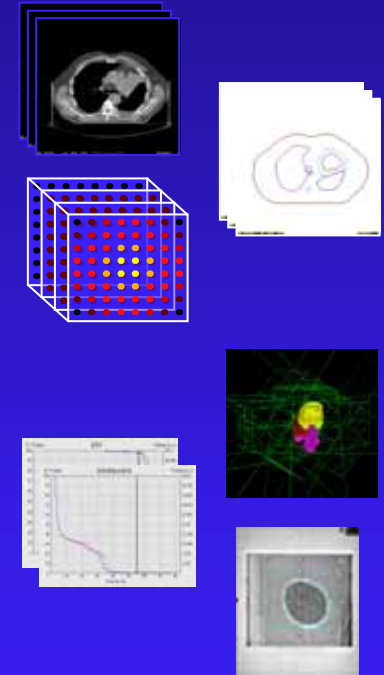
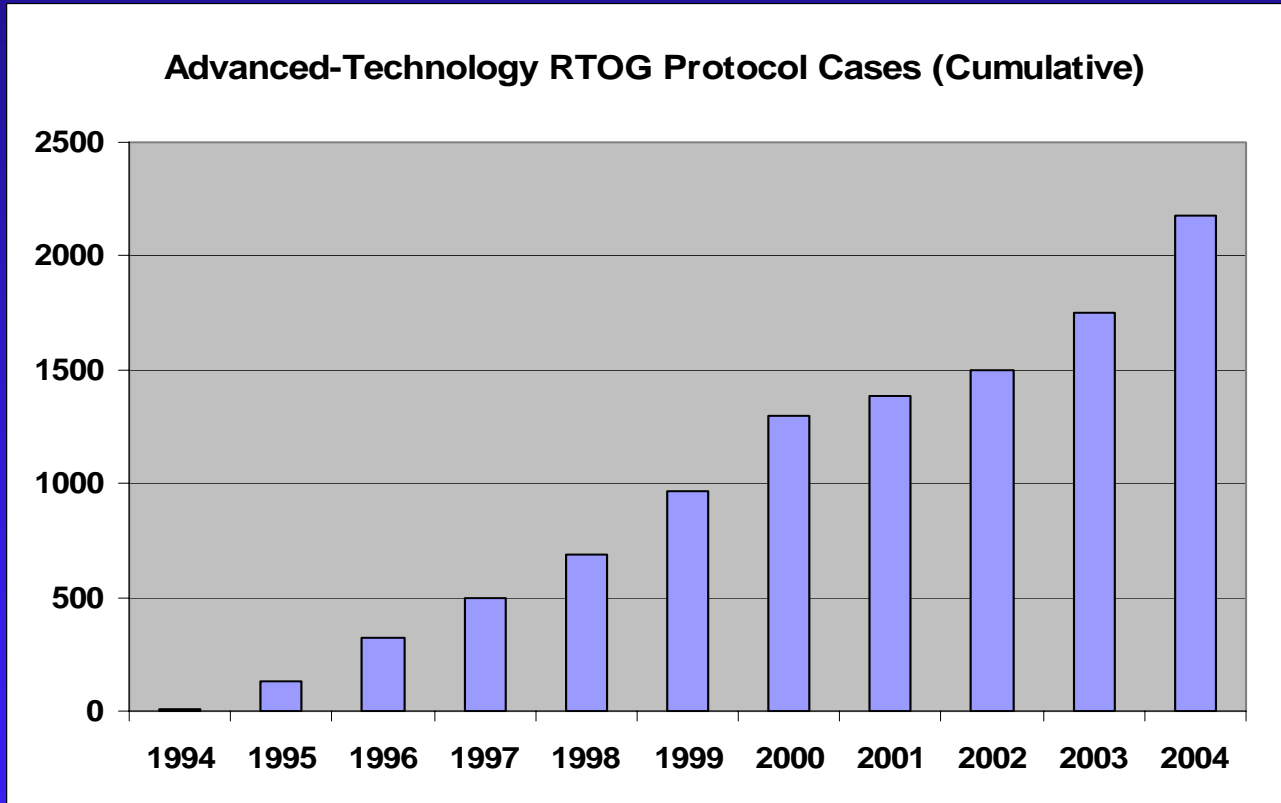
- **NABTT (Dr. John Fiveash, M.D., Department of Radiation Oncology, University of Alabama-Birmingham)**
- **PBTC (on hold)**
- **EORTC (J. Bernard Davis, M.D., Univ. Hospital of Zurich)**
- **UKCCSG Phase II Study of Prospective QA by Web-Based Review of Radiotherapy Fields in the Treatment of Standard Risk Medulloblastoma within the HIT-SIOP PNET4 Protocol (Ms. Susan Harden contact person).**
- **Dr. Andy Beavis, Princess Royal Hospital, University of Hull has discussed potential collaboration and use of ATC technology in future clinical trials in Great Britain.**

June 24 2004 ATC Mtg; 1939 Complete Digital Data Sets Submitted Over 10 Year Period using ATC Method 1



- 10 commercial RTP systems have implemented export capability
- 121+ institutions able to submit data

Jan. 20 2005 ATC Mtg: 2180 Complete Digital Data Sets Submitted Over 10 Year Period using ATC Method 1



- 14 commercial RTP systems have implemented export capability (see <http://atc.wustl.edu>)
- 166 institutions able to submit data

P.I.'s Report: 2005 Scientific Meetings

- **ATC presentation at 2005 AAMD Annual Meeting to be held JUNE 26-30, 2005, in SAN DIEGO, CA.**
 - Propose that we have a workshop to demonstrate ATC Method 1 (and possibly ATC Method 3) digital data submission for each RTP platform.

P.I.'s Report: 2005 Scientific Meetings

- **ATC presentation at 2005 AAPM Annual Meeting to be held July 24-28, 2005, in SEATTLE, WASHINGTON.**
 - Propose we have ATC Booth same as last year.
 - Participate in DICOM Refresher Course
 - Request RCET, RPC, ITC, QARC, and RTOG to consider submitting individual abstracts.

P.I.'s Report: 2005 Scientific Meetings

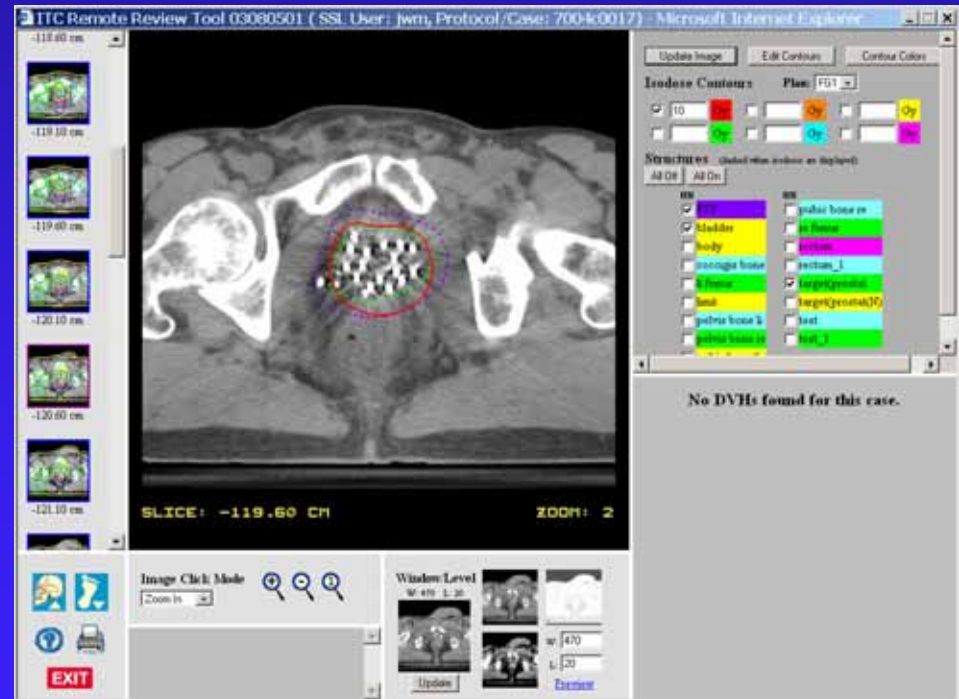
- **ATC presentation at 2005 ASTRO Annual Meeting to be held OCTOBER 16-20, 2005, in DENVER, COLORADO.**
 - **Propose we present ASTRO Refresher Course similar to last year, (all groups participating?)**
 - **Request RCET, RPC, ITC, QARC, and RTOG to consider submitting abstracts.**

P.I.'s Report: Future ATC Teleconferences and Meetings

- **Next Teleconference**
 - **March 2, 2005**
- **Future Meetings**
 - **COG Semi-Annual meeting scheduled for March 29-April 3, 2005**
 - **RTOG Semi-Annual meeting June 23, 2005
Loews Philadelphia Hotel, Philadelphia, PA.**
 - **RTOG Semi-Annual meeting January 19, 2006
Fontainebleau Hilton Resort, Miami Beach, FL**

Challenges: ATC Supported Clinical Trials

- Only one ATC compliant HDR RTP system



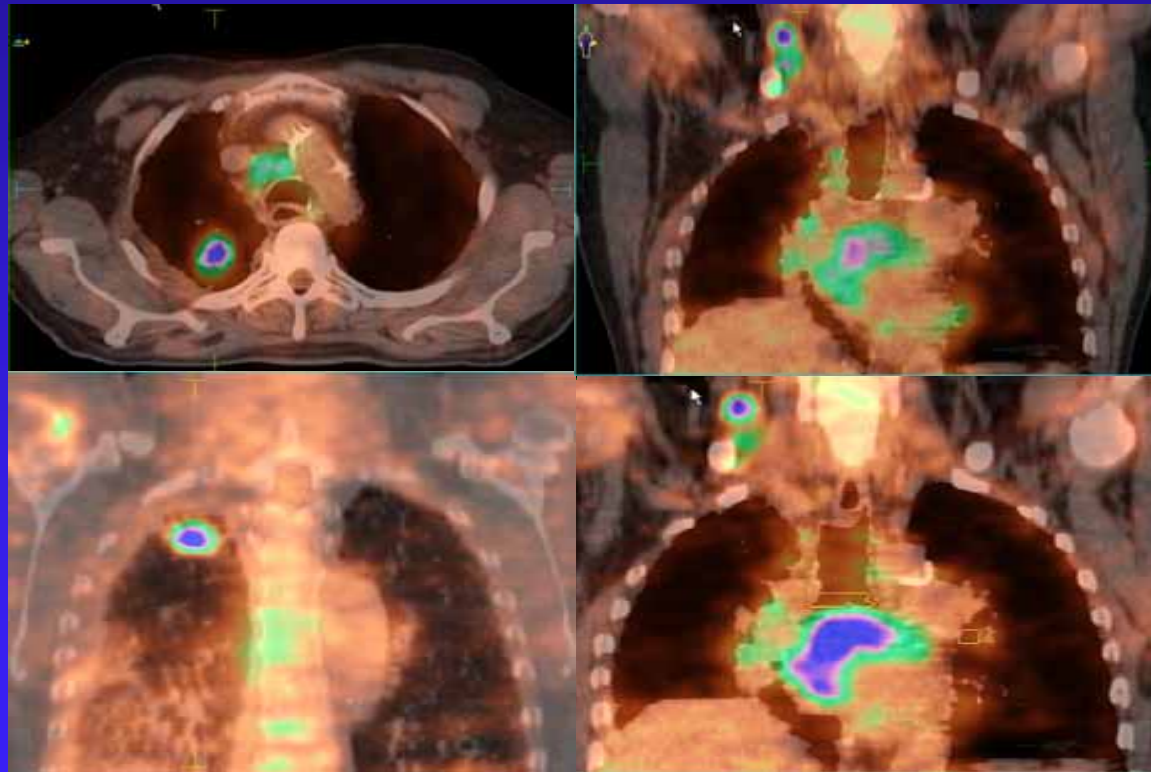
Challenges: ATC Supported Clinical Trials

- No ATC compliant stereotactic radiosurgery or radiotherapy RTP system



Challenges: ATC Supported Clinical Trials

- PET (Quantitative) and image fusion QA



Challenges: ATC Supported Clinical Trials

- 4-D CT (several 100 MB)

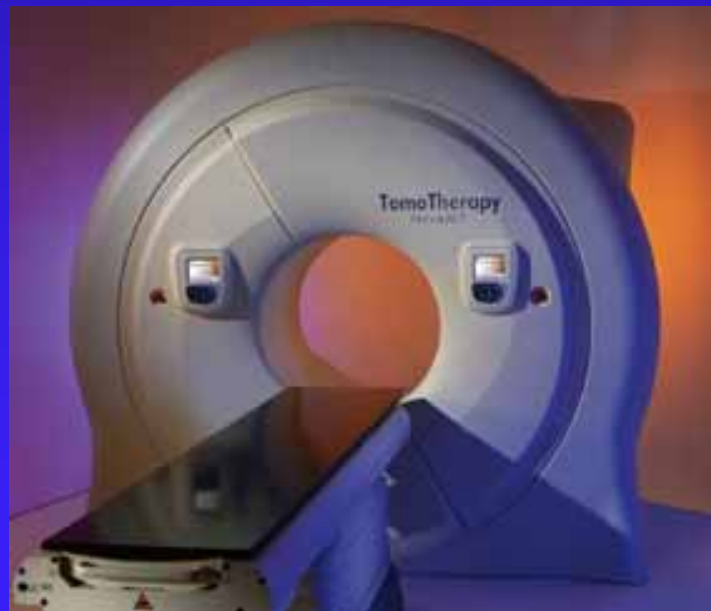


Challenges: ATC Supported Clinical Trials

- Image-Guided RT (EPID, Kilovoltage Cone beam CT, Helical Tomotherapy megavoltage CT)
- Adaptive Radiotherapy (Daily Confirmation and Adjustment using On-Board Imaging)



Elekta Synergy System



TomoTherapy HI-ART System

ATC Meeting Agenda

- **8:00AM: Project Officer Report (Deye)**
- **8:15 AM: P.I.'s Report (Purdy)**
- **9:00 AM: RCET Report to ATC (Palta)**
- **9:30 AM: RPC Report to ATC (Ibbott)**
- **10:00 AM: QARC Report to ATC (FitzGerald)**
- **10:30 AM: RTOG Report to ATC (Martin)**
- **11:00 AM: ATC IT Task Group Report to ATC (Bosch)**
- **11:45AM: Open Discussion (All participants)**
- **12:30 PM: Lunch**
- **1:30 PM: RTOG 0236 Issues (Galvin)**
- **2:00 PM: NSABP B-39 / RTOG 0413 Issues (RPC/ITC/RTOG)**
- **2:30 PM: ACRIN / PET Core Lab (Mahon, Wilton, King)**
- **3:00 PM: NCIC Report to ATC regarding ATC Method 3 (Field)**
- **3:30 PM: JCOG 0403:(Purdy/Bosch)**
- **3:45 PM: RCET Brachy QA software and RPC needs (Palta/Frouhar/Ibbott/Purdy)**
- **4:00 PM: Plans for 2005 ATC Steering Committee Meeting (All participants)**
- **4:30 PM: Open Discussion (All participants)**
- **5:00 PM Adjourn**