RTOG
Radiation Therapy Oncology Group

RTOG Report to ATC

ATC Advanced Technology Consortium
Providing support in quality assurance and data management for radiation therapy clinical trials

RTOG
Radiation Therapy Oncology Group

Image-Guided Therapy Center
An Advanced Technology Clinical Trials QA and Support Center

RPC Radiological Physics Center
Excellence through Quality Assurance

QARC
QUALITY ASSURANCE REVIEW CENTER

ACR
American College of Radiology

RTOG Headquarters Report

RTOG Protocols supported by the ATC (as of November 5, 2007)

- 3D-CRT Protocols
  - Closed Protocols (4)
    - RTOG 0319: Phase I/II Study to Evaluate 3D-CRT Irradiation Confined to Region of the Lumpectomy Cavity for Stage I/IIA Breast Carcinoma
      - 31 institutions credentialed; 58 patients registered to study; Target Accrual – 46 (study closed, data analysis continues)
    - RTOG 93-11: Phase I/II Dose Escalation Study Using 3D Conformal Radiation Therapy in Patients with Inoperable NSCLC
      - 27 institutions credentialed; 180 patients registered to study (study closed, data analysis continues)
    - RTOG 94-06: Phase I/II Dose Escalation Study Using 3D Conformal Radiation Therapy for Adenocarcinoma of the Prostate
      - 54 institutions credentialed; 1084 patients registered to study (study closed, data analysis continues)

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- 3D-CRT Protocols (cont.)
  - RTOG 98-03: Phase I/II Radiation Dose Escalation Study Applying Conformal Radiation Therapy in Supratentorial Glioblastoma Multiforme
    - 46 institutions credentialed; 210 patients registered to study; (study closed, data analysis continues)
  - Active Protocols (7)
    - RTOG 0117: Phase I/II Dose Intensification Study using 3D-CRT and Concurrent Chemotherapy for Patients with Inoperable, Non-Small Cell Lung Cancer
      - 51 institutions credentialed; 63 patients registered to study; Target Accrual – 73
    - RTOG 0126: Phase III Randomized Study of High Dose 3D-CRT/IMRT versus Standard Dose 3D-CRT/IMRT in Patients treated for Localized Prostate Cancer (9/18/03 IMRT allowed)
      - 263 institutions credentialed (203 IMRT); 1359 patients registered to study (791 3D-CRT, 398 IMRT); Target Accrual – 1520

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

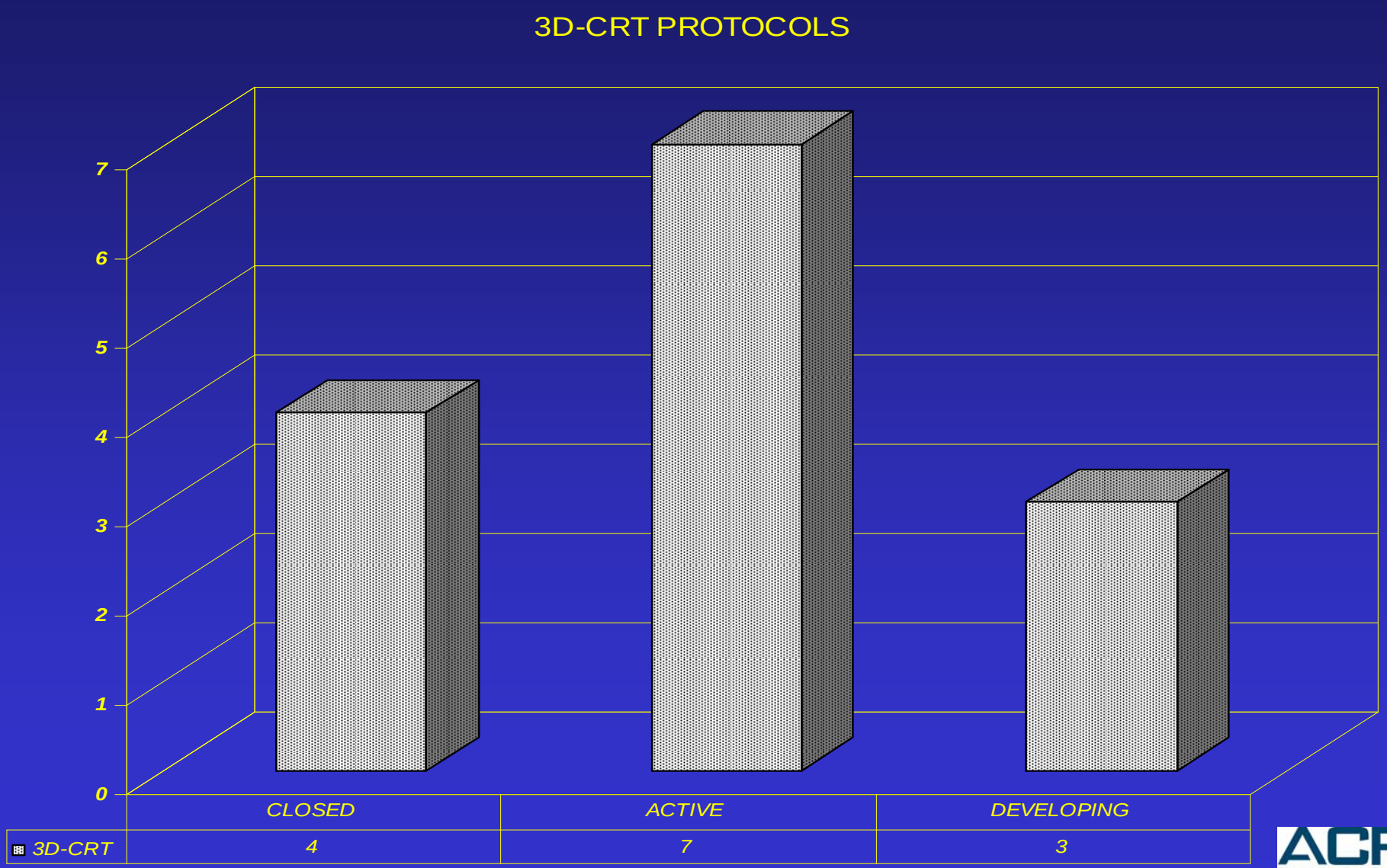
- 3D-CRT Protocols (cont.)
  - RTOG 0413/NSABP B39: Phase III Study of Whole Breast RT versus Partial Breast Irradiation
    - 553 institutions credentialed (448-3DCRT, 316 Mammosite, 52 Multi-Cath);
    - 2893 patients registered to study (1063 3DCRT, 296 Mammosite, 55 Multi-Cath, 1448 WBI)
  - RTOG 0415: Phase III study of Hypofractionated 3D-CRT/IMRT versus Conventionally Fractionated 3D-CRT/IMRT in Patients Treated for Favorable-Risk Prostate Cancer
    - 191 institutions IMRT credentialed; 299 patients registered to study; Target Accrual – 1067
  - RTOG 0515: A Comparative study of Gross Tumor Volume Definition with or without PET Fusion for Patients with Non-Small Cell Lung Carcinoma, 3D-CRT.
    - 5 institutions credentialed; 35 patients registered to study; Target Accrual – 48

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- 3D-CRT Protocols (cont.)
  - RTOG 0521: Phase III study of Androgen Suppression (AS) and Radiation Therapy (RT) vs AS and RT followed by Chemotherapy with Docetaxel and Prednisone for Localized, High-Risk Prostate Cancer
    - 207 institutions credentialed (192 IMRT Phantom, 8 IMRT Benchmark, 7 3D-CRT); 239 patients registered to study; Target Accrual – 600
  - RTOG 0522: Phase III study of Concurrent Accelerated Radiation and Cisplatin Versus Concurrent Accelerated Radiation, Cisplatin, and Cetuximab (C225) [Followed by Surgery for Selected Patients] for Stage III and IV Head and Neck Carcinomas
    - 183 institutions IMRT credentialed; 53 PET Participants; 341 patients registered to study; Target Accrual – 720
- 3D-CRT Developing Protocols (3)
  - RTOG 0436: Phase III Esoph., Cetux./Cis/RT vs. Cis./Taxo/RT; 3D-CRT
  - RTOG 0617: Phase II/III study of Cetuximab in Combination with Concurrent 3D-CRT and Chemotherapy in Patients with Stage IIA/B Non-Small Cell Lung Cancer (NSCLC)
  - RTOG 0622: Phase II Study Samarium 153 Prostate; IMRT/3DCRT

RTOG Headquarters Report (cont.)



RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- IMRT Protocols
  - Closed Protocols (4)
    - RTOG 0022: Phase I/II Study of Conformal and Intensity Modulated Irradiation for Oropharyngeal Cancer
      - 36 institutions credentialed; 69 patients registered to study (study closed, data analysis continues)
    - RTOG 0225: Phase I/II Study of Conformal and Intensity Modulated Irradiation for Nasopharyngeal Cancer
      - 36 institutions credentialed; 68 patients registered to study (study closed, data analysis continues)
    - RTOG 0234: A Phase II Study of Surgery followed by Chemoradiotherapy Plus C225 (Cetuximab) for Advanced Squamous Cell Carcinoma of the Head and Neck
      - 87 institutions credentialed; 238 patients registered to study; Target Accrual – 230

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- IMRT Protocols (cont.)
  - RTOG 0421: Phase III Head & Neck: Re-irradiation (GCSF)/IMRT
    - 77 institutions credentialed; 15 patients registered to study, Target Accrual – 240 (study closed, data analysis continues)
  - Active Protocols (8)
    - RTOG 0126: Phase III Randomized Study of High Dose 3D-CRT/IMRT versus Standard Dose 3D-CRT/IMRT in Patients treated for Localized Prostate Cancer (9/18/03 IMRT allowed)
      - 263 institutions credentialed (203 IMRT); 1359 patients registered to study (791 3D-CRT; 398 IMRT); Target Accrual – 1520
    - RTOG 0415: Phase III study of Hypofractionated 3D-CRT/IMRT versus Conventionally Fractionated 3D-CRT/IMRT in Patients Treated for Favorable-Risk Prostate Cancer
      - 156 institutions IMRT credentialed; 299 patients registered to study; Target Accrual – 1067
    - RTOG 0418: Phase II Study of Intensity Modulated Radiation Therapy (IMRT) to the Pelvis +/- Chemotherapy for Post-Operative Patients with Either Endometrial or Cervical Carcinoma
      - 140 institutions credentialed; 81 patient registered to study; Target Accrual – 92

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- IMRT Protocols (cont.)
  - RTOG 0435: Phase III Study Unresectable H&N; IMRT/3D-CRT
    - 137 institutions credentialed; 16 patients registered to study; Target Accrual – 298
  - RTOG 0521: PhaseIII study of Androgen Suppression (AS) and Radiation Therapy (RT) vs AS and RT followed by Chemotherapy with Docetaxel and Prednisone for Localized, High-Risk Prostate Cancer
    - 207 institutions credentialed (192 IMRT Phantom, 8 IMRT Benchmark, 7 3D-CRT); 239 patients registered to study; Target Accrual – 600
  - RTOG 0522: Phase III study of Concurrent Accelerated Radiation and Cisplatin Versus Concurrent Accelerated Radiation, Cisplatin, and Cetuximab (C225) [Followed by Surgery for Selected Patients] for Stage III and IV Head and Neck Carcinomas
    - 183 institutions IMRT credentialed; 53 PET Participants; 341 patients registered to study; Target Accrual – 720

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

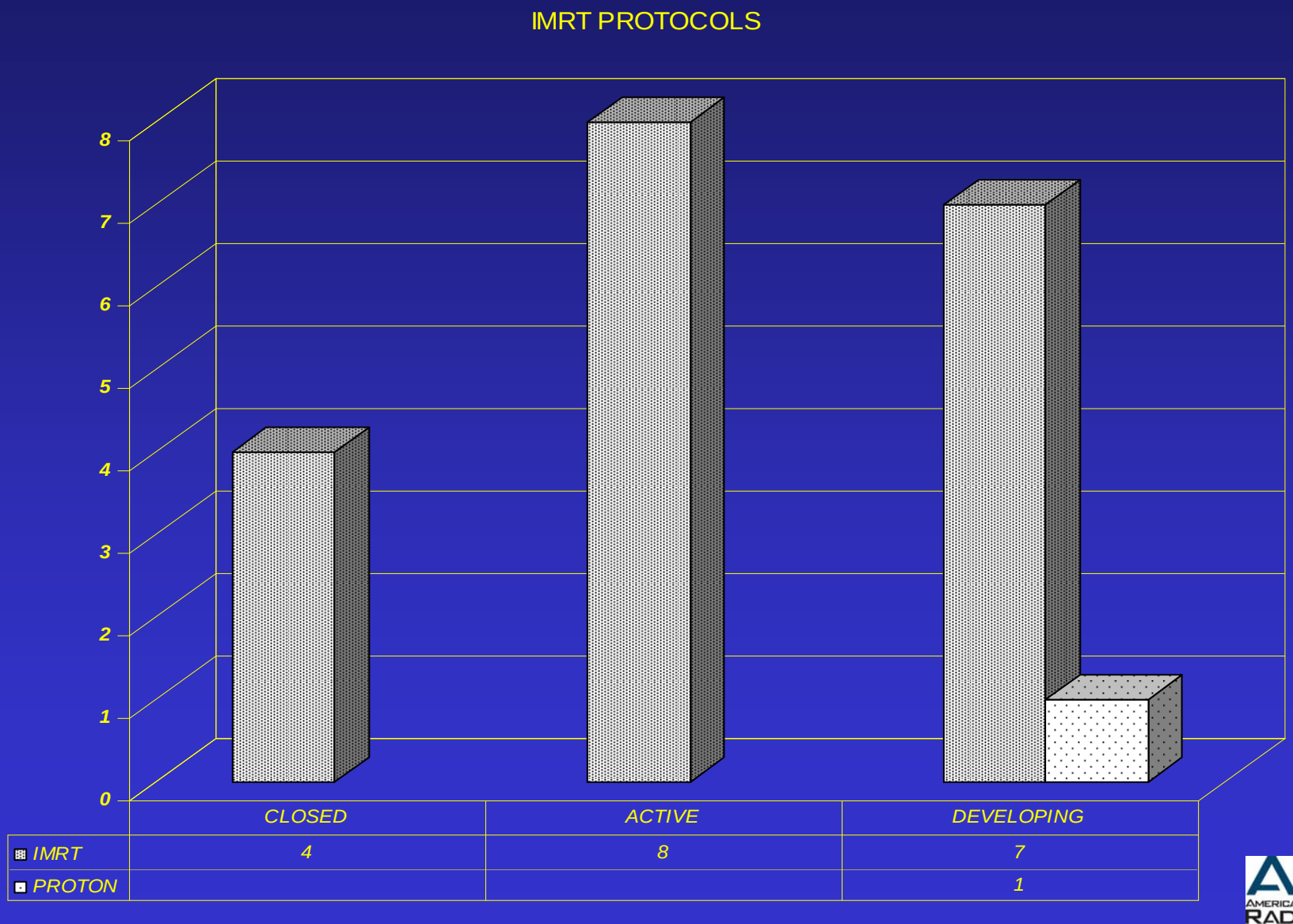
- IMRT Protocols (cont.)
  - RTOG 0529: Phase II Study Trial Evaluating Capecitabline, Cisplatin and IMRT (plus Cetuximab) in Carcinoma of the Anal Canal
    - 143 institutions credentialed; 34 patients registered to study; Target Accrual – 59
  - RTOG 0615: Phase II study of Radiotherapy (IMRT) and Concurrent Cisplatin (CDDP) followed by Adjuvant Cisplatin and 5FU + Bevacizumab (BV) for Patients with Locally Advanced Nasopharyngeal Carcinoma (NPC)
    - 138 institutions credentialed; 5 patients registered to study; Target Accrual – 46

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- IMRT Developing Protocols (7)
  - RTOG 0534: Phase III trial of PBRT alone vs NC-STAD+PBRT vs NC-STAD+WPRT for Patients with a Rising PSA after Radical Prostatectomy, IMRT
  - RTOG 0539: Phase II Feasibility study of IMRT for Intermediate- and High-Risk Meningiomas, and of Observation for Low-Risk Meningiomas
  - RTOG 0619: Phase II IMRT, Chemo, ZD6474 for high-risk post op H&N
  - RTOG 0621: Phase II Prostate RT/AS & Docetaxel; IMRT
  - RTOG 0622: Phase II Prostate Samarium 153; IMRT/3DCRT
  - RTOG 0623: Phase II Combined Modality with Growth Factor in SCLC; IMRT
  - RTOG 0628: Phase II IMRT Locally Advanced Rectal
- Proton Developing Protocol (1)
  - RTOG 0814: Proton Beam Phase II in Locally Advance Prostate Cancer

RTOG Headquarters Report (cont.)



RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

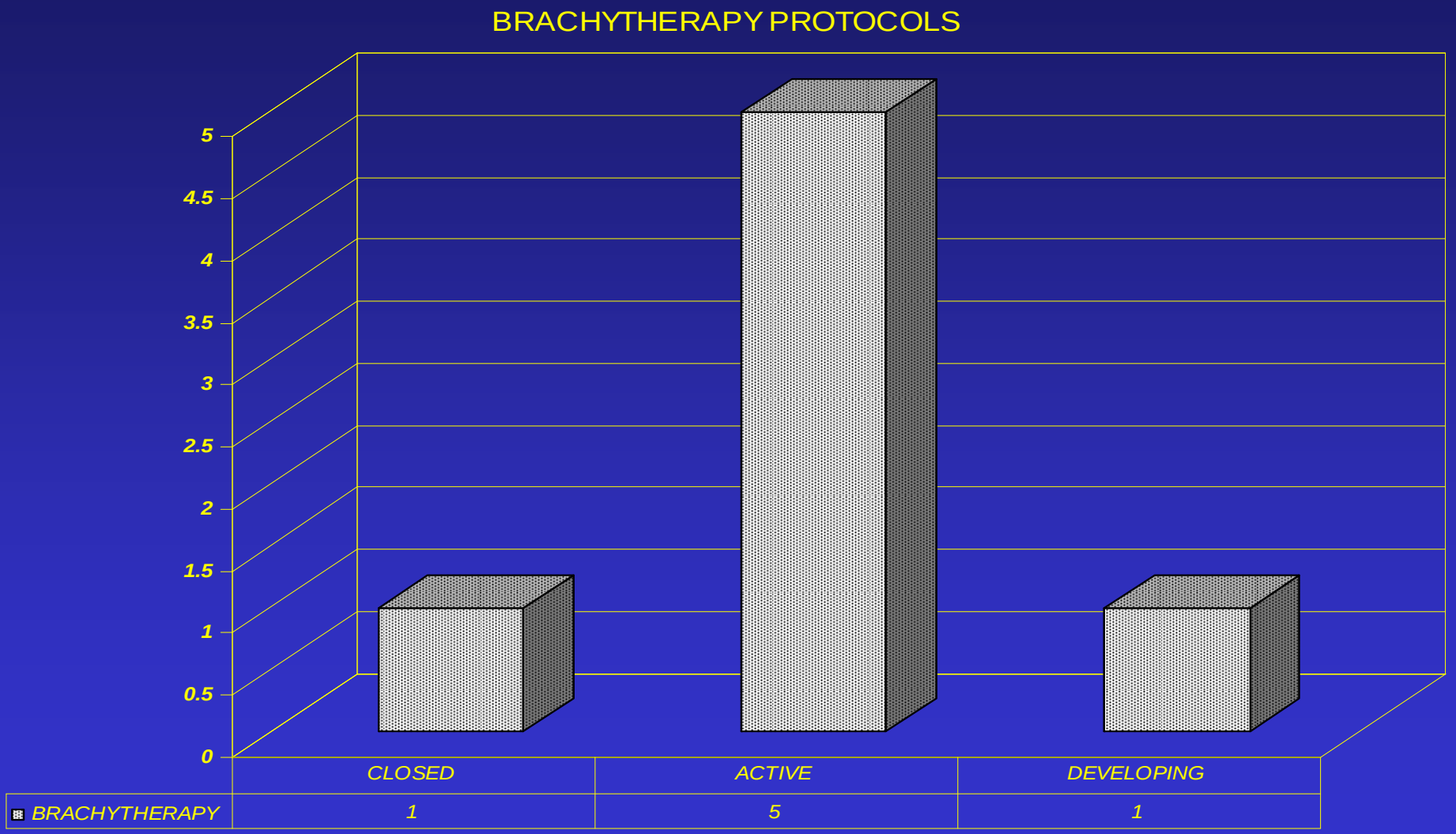
- Brachytherapy Protocols
  - Active Protocols (5)
    - RTOG 0116: Phase I/II Study of Extended Field External Irradiation and Intracavitary Brachytherapy Combined with Chemotherapy (Weekly Cisplatin-Arm 1) and Amifostine (Weekly Cisplatin and Amifostine-Arm 2) in Carcinoma of the Cervix with Positive Para-Aortic or High Common Iliac Lymph Nodes
    - RTOG 0232: Phase III Study Comparing Combined External Beam Radiation & Transperineal Interstitial Permanent Brachytherapy with Brachytherapy alone (IMRT added 6/2005)
      - 79 institutions Brachytherapy credentialed (66 IMRT); 319 patients registered to study; Target Accrual – 1520
    - RTOG 0413/NSABP B39: Phase III Study of Whole Breast RT versus Partial Breast Irradiation
      - 553 institutions credentialed (448 3DCRT, 316 Mammosite, 52 Multi-Cath); 2893 patients registered to study (1063 3DCRT, 296 Mammosite, 55 Multi-Cath)

RTOG Headquarters Report (cont.)

RTOG Protocols supported by the ATC (as of November 5, 2007)

- Brachytherapy Protocols (cont.)
  - RTOG 0417: Phase II Study of Iressa in Combination with Definitive RT and Cisplatin Chemo in Locally Advanced Cervical Cancer, Optional Brachy/CT
    - institutions credentialed; 13 patient registered to study; Target Accrual – 57
  - RTOG 0526: Sequential Cohort Phase II trial of Two Dose Levels of Transperineal Ultrasound-Guided Brachytherapy for Locally Recurrent Prostate Adenocarcinoma following External Beam Radiotherapy
  - Closed (1)
    - RTOG 0321: Phase I/II Prostate: High Dose Brachytherapy and External Beam
      - 18 institutions credentialed; 129 patients registered to study; Target Accrual – 110
  - Developing (1)
    - RTOG 0816/0719: Phase II HDR Brachy Prostate

RTOG Headquarters Report (cont.)



RTOG Headquarters Report (cont.)

IGRT in RTOG Protocols (as of November 5, 2007)

IGRT Protocols

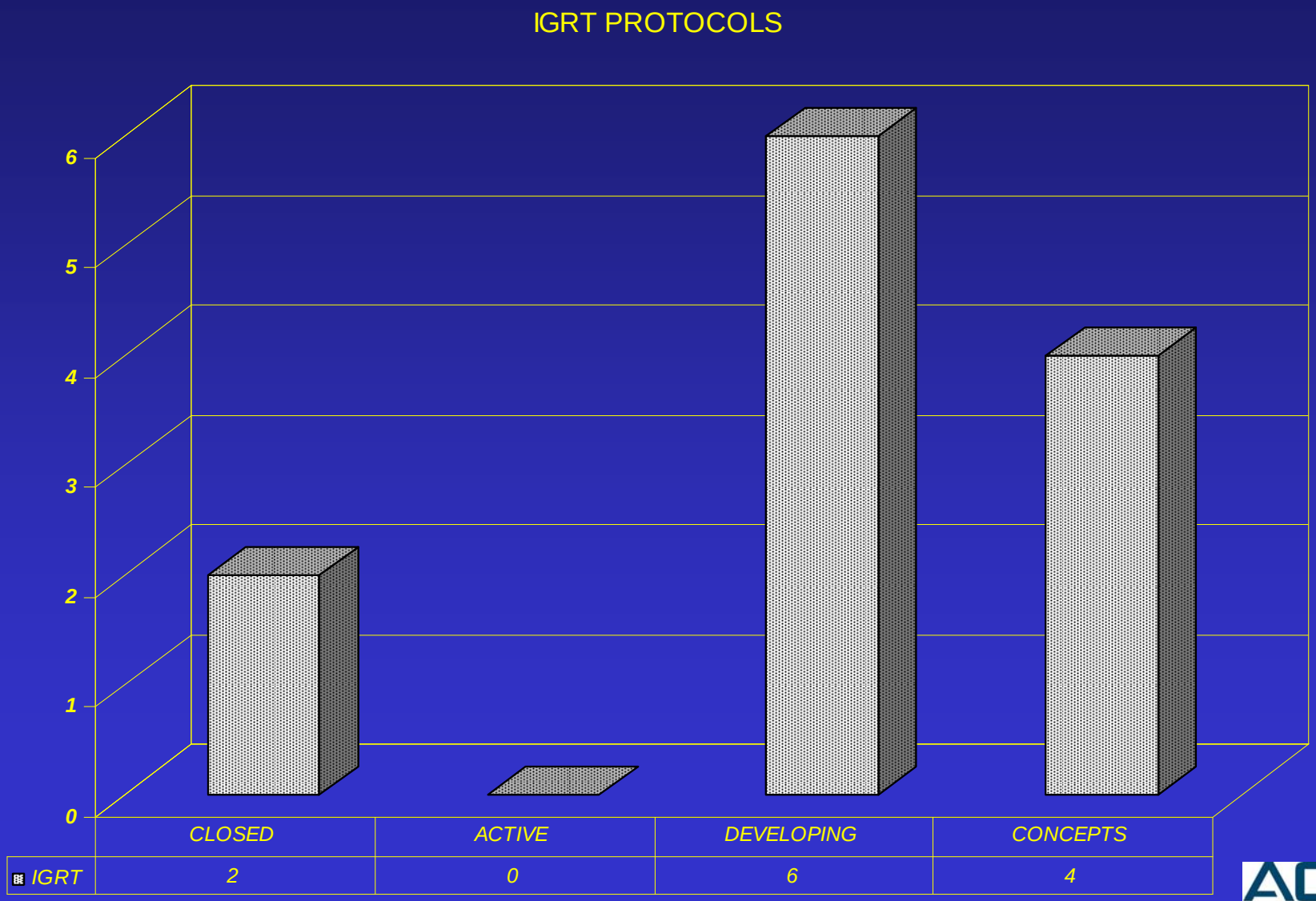
- Lung (7 = 1 Closed; 3 Development; 3 Concepts)
  - RTOG 0236: Phase II Study of Extracranial Stereotactic Radioablation in Treatment of Patients with Medically Inoperable Stage in NSCLC
    - 9 institutions credentialed; 10 Pending; 59 patients registered to study; Target Accrual – 59 (study closed, data analysis continues)
  - RTOG 0618: Phase II SBRT for Patients with Operable Early State NSCLC (Approved by CTEP / To Open Soon) – Target Accrual 33
  - RTOG 0617: Phase III High Dose 3DCRT in (Taxo/Cis) NSCLC (Encourages IGRT / Opening 11/27/2007) – Target Accrual 512
  - RTOG 0813: Phase I SBRT Inoperable NSCLC (Developing) – Target Accrual 94
- Concepts
  - Steiber – SBRT for Lung Mets
  - Grills – Volumetric IGRT
  - Kavanagh – Phase III RT vs SBRT for inop NSCLC

RTOG Headquarters Report (cont.)

IGRT in RTOG Protocols (as of November 5, 2007)

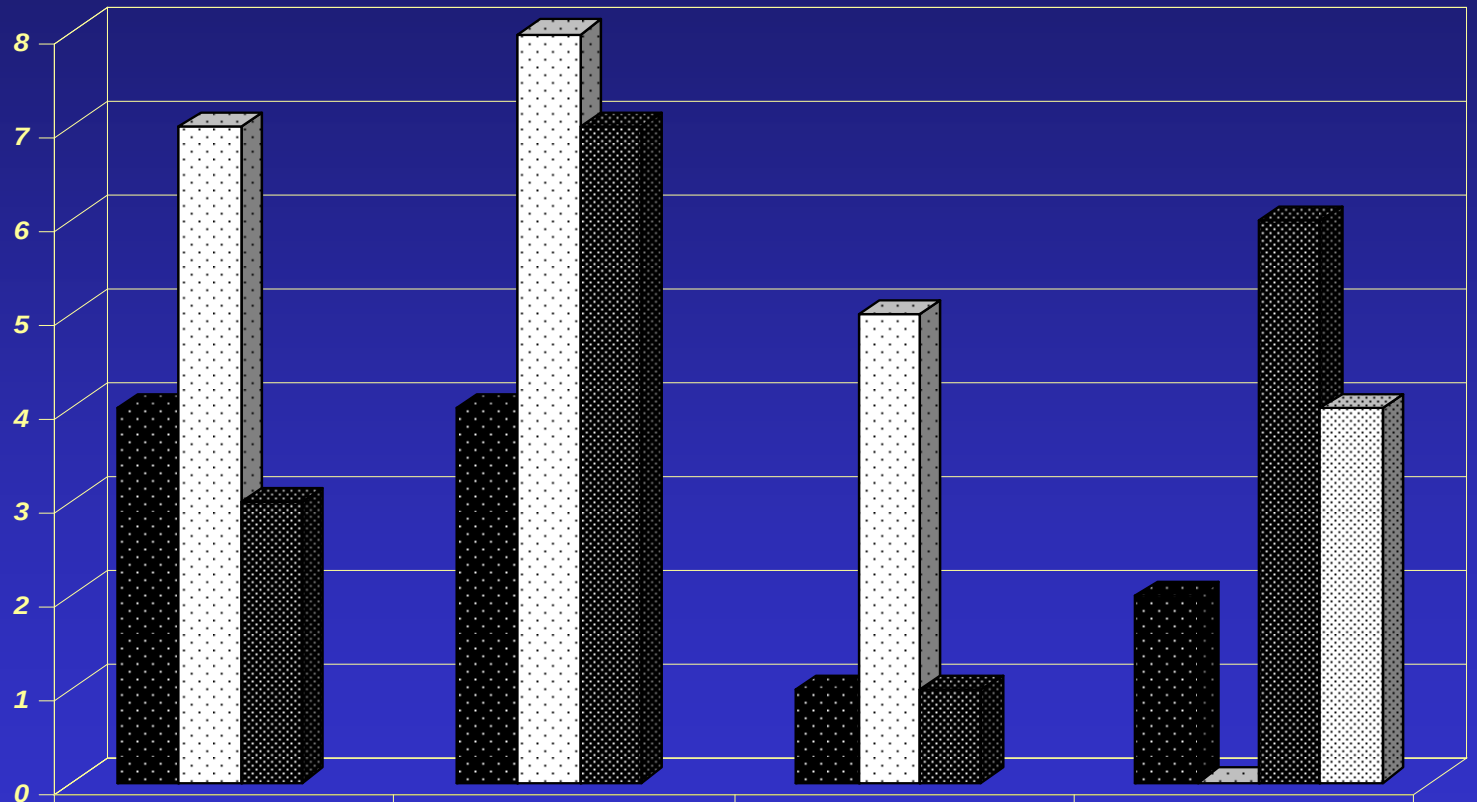
- Liver
  - RTOG 0438: Phase I Trial of Highly Conformal Radiation Therapy for Patients with Unresectable Hepatobiliary Cancer with Liver Metastases
    - 3 institutions credentialed; 2 Pending; 10 patients registered to study; Target Accrual – 18 (Temporary Closed)
- Sarcoma
  - RTOG 0630: Phase II IGRT Large Size Soft Tissue Sarcoma (Developing) – Target Accrual 102
- H&N
  - RTOG 0811: Phase IIR Intermediate H&N Cancer IMRT + or – C225 / IGRT Optional (Developing) – Target Accrual 145
- Spine Mets
  - RTOG 0631: Phase II Stereotactic Radiosurgery for Spine Mets – Target Accrual 77
- Concepts
  - Kestin – Comp. Study to 0415 – IGRT registry

RTOG Headquarters Report (cont.)



RTOG Headquarters Report (cont.)

ALL PROTOCOLS



	3D-CRT	IMRT	Brachytherapy	IGRT
Closed	4	4	1	2
Active	7	8	5	0
Developing	3	7	1	6
Concepts				4

IGRT in RTOG Protocols

- Protocol IGRT specifications
- IGRT questionnaire
- Phantom Irradiation
  - Treatment units that do not include a robotic couch
  - Test to evaluate the performance of robotic couches with pitch and roll capabilities
- Image Registration Software Tests
- Dose consideration with IGRT

Phantom Irradiation

- The steps in the process of Phantom Irradiation:
  1. Image the phantom using a diagnostic quality CT scanner
  2. Generate different treatment plans for each marker. Each of the three plans should have three beams hitting a particular marker. The field sizes should be on the order of a 2.0 cm square or circle. The plans should be generated with the assumption that the phantom will NOT be moved to target each marker. Instead, for the CyberKnife unit, the accelerator must be moved to the next marker or, for isocentric units, the MLC must be adjusted for targeting each marker.

Phantom Irradiation

3. Move the phantom from the CT-Sim unit to the treatment unit and position it to match the setup used during the CT procedure as closely as possible. For treatment units that have a mechanical isocenter, set the central marker as near to this position as possible. For treatment units that do not have a physical isocentric unit, use the approximate isocenter of the imaging system to position the marker.
4. Introduce small setup errors (i.e., central marker relative to the physical or the imaging isocenter) by using the linear motions and turntable rotation of the patient support system.

Phantom Irradiation

5. Use the in-room image-guided capability to re-image the phantom.
6. Register the simulation and in-room datasets to determine magnitude of setup errors.
7. Use these setup errors to correct positioning of phantom.
8. Using one of the treatment plans generated in step #2, irradiate the first of the multi-field plan with a small piece of radiochromic film placed on the exit side of the phantom. The film should be marked to show its orientation. Remove this film.

Phantom Irradiation

9. Select the second field of this plan and reposition the accelerator. Place a second film on the exit side of the beam and irradiate. Remove this film and repeat the process for the third field.
10. Without moving the phantom, repeat the entire process described above for the second and third markers.
11. This procedure results in 8 film images that can be analyzed to determine the ability of the IGRT system to position treatment fields relative to points with known coordinates positioned in space.

Instructions for completing questionnaires for RTOG Protocol 0617

Instructions for completing questionnaires for RTOG Protocol 0617

Protocol #0617 allows both 3DCRT and IMRT, and you must complete the Part I (General Information – 3DCRT and IMRT) questionnaire. If you intend to place patients on this protocol using only 3DCRT, you can skip the IMRT questions. If you intend to enter patients using either IMRT alone or using 3DCRT for some patients and IMRT for others, you should complete all questions in this questionnaire.

Although protocol #0617 is not identified specifically as an IGRT protocol, you should complete the Part II (IGRT) questionnaire so that the RTOG can capture this data. You should complete this Part II form even if you intend to use this technology for only a portion of the patients you intend to enter on this protocol.

The RTOG has a specific definition for IGRT. This definition is clearly stated on both the Part I and Part II forms. If you are using a technique that does not come under this definition, please ignore the Part II form.

For the #0617 protocol, your answers to the questions in Table 2a of the Part I form will direct you to complete the Part III (Heterogeneity Corrections and Motion Management) questionnaire. Please answer all questions asked on this form and fill in the requested information.

Part I – Facility Questionnaire for RTOG Protocol 0617

Facility Questionnaire
PART I (General Information for 3DCRT and IMRT)

The following items are required before you can enter cases on any RTOG protocol that requires data submission to the Image-Guided Therapy QA Center (ITC). This includes 3DCRT, IMRT or IGRT protocols supported by the ITC. Some of these protocols could require additional information relating to motion management or heterogeneous dose calculations when treating targets in or around the thorax. Additionally, some protocols might require you to complete two or more additional forms. For example, you must complete multiple forms for a protocol that requires or allows IMRT, IGRT and motion management. The additional forms are available through the ITC. If you have completed this or any of the other forms for previous credentialing and now wish to enter patients on another protocol requiring digital data submission, please request a copy of your previous application forms from the ITC. You should update any information on these forms that has changed since your earlier credentialing.

1. Submit this completed Facility Questionnaire to:

   Radiation Therapy Oncology Group (RTOG Headquarters)
   RT Quality Assurance Department
   1818 Market Street; Suite 1600
   Philadelphia, PA 19103

   Email: rtog-facquest@phila.acr.org
   Phone: 215-574-3219
   FAX: 215-940-8817

2. Contact the ITC (itc@castor.wustl.edu) and request an FTP account for digital data submission
3. Submit and successfully complete any required protocol specific Dry-Run test
4. A successful phantom experiment may also be required depending on the specific protocol requirements

Institution Name:_____ **RTOG Institution #:**_____

If Affiliate, Name of Member Institution:_____

Date Questionnaire Submitted:____/____/_____ **RTF#** _____

List the best contact individuals for general question regarding RTOG protocols

Physicist:_____ e-mail:_____

Address:_____

_____

_____

_____

Telephone:_____ Fax:_____

Research Associate:_____ e-mail:_____

Telephone:_____ Fax:_____

Dosimetrist:_____ e-mail:_____

Telephone:_____ Fax:_____

Responsible Radiation Oncologist _____

Telephone:_____ e-mail:_____

Part I – Facility Questionnaire for RTOG Protocol 0617

A. Delivery Resources (TABLE 1)

List the treatment units you use for 3DCRT, IMRT or IGRT protocols. **(NOTE: If units differ in the type of multileaf collimator or IGRT capabilities, you should list them separately. Please be sure to list all units that will be used with the protocol for which you are credentialing. Also, if you do not intend to credential for IMRT, you can skip the last column.)**

ID #	Local identifier(s) of unit	Vendor	Model	Photon Energies Used for IMRT	Number of identical units	MLC or other beam modulator (footnote 1)	Uses (Check applicable boxes)	IMRT Method (see footnote 2)
1							☐ IMRT	☐ SMLC
							☐ IGRT	☐ DMLC
								☐ Helical tomotherapy
								☐ Serial tomotherapy
								☐ other
2							☐ IMRT	☐ SMLC
							☐ IGRT	☐ DMLC
								☐ Helical tomotherapy
								☐ Serial tomotherapy
								☐ other
3							☐ IMRT	☐ SMLC
							☐ IGRT	☐ DMLC
								☐ Helical tomotherapy
								☐ Serial tomotherapy
								☐ other
4							☐ IMRT	☐ SMLC
							☐ IGRT	☐ DMLC
								☐ Helical tomotherapy
								☐ Serial tomotherapy
								☐ other
5							☐ IMRT	☐ SMLC
							☐ IGRT	☐ DMLC
								☐ Helical tomotherapy
								☐ Serial tomotherapy
								☐ other

FOOTNOTES appear at the top of the next page

Part I – Facility Questionnaire for RTOG Protocol 0617

FOOTNOTES
1. Enter the letter from the following list:

a. Varian 80 leaf
b. Varian Millennium 120 leaf
c. Elekta 80 leaf
d. Elekta 80 leaf Beam Modulator
e. Tomotherapy Binary Collimator
f. NOMOS Binary Collimator
g. Seimens 58 leaf
h. Siemens 82 leaf
i. 3D Line
j. Radionics
k. BrainLAB 52 leaf
l. BrainLAB Tx 120 leaf
m. physical compensators
n. Cyber Knife using circular collimators

o. other _____

2. If you have checked the box for other in the last column of the above table, please explain in the space provided above and place additional information here. _____

_____

B. List Protocols (TABLE 2a)

If the information listed in Part I of this form is different for various RTOG protocols, enter additional data here. That is, if specific individuals are responsible for particular protocols at your institution, please list them in the table below. Please update earlier information, and add the new protocol you are currently credentialing for at the end.

Enter protocol # below	Are you credentialing for IMRT, IGRT or both (footnote 1)	Radiation Oncologist [List Rad Onc(s) in Table 2b and enter ID #(s) here]	Research Associate [List RA(s) in Table 2b and enter ID #(s) here]	Physicist [List physicist(s) in Table 2b and enter ID #(s) here]	Dosimetrist [List Dosimetrist(s) in Table 2b and enter ID #(s) here]	Does treatment in or near the thorax require heterogeneity corrections for this protocol? (footnote 2)	Does this protocol require treatment in or near the thorax so that respiration control is required? (footnote 2)	From the list of Delivery Resources (Table 1), insert the identification # of the unit(s) that will be used for this protocol.
Protocol #								
Protocol #								
Protocol #								
Protocol #								
Protocol #								
Protocol #								
Protocol #								
Protocol #								

FOOTNOTES
1 – enter IMRT, IGRT or IMRT/IGRT
2 – enter Yes or No. If Yes, you must complete the Part V questionnaire.

Part I – Facility Questionnaire for RTOG Protocol 0617

. ***List Protocols (TABLE 2b)***

List personnel here, and enter numbers from the first column in this table in the appropriate location in the table above.
The names entered below should be for those individuals routinely involved with the protocol for which you are credentialing. You can enter more than one name per protocol.

	Name	Occupation (check one)				e-mail	phone
ID #		Physicist	Research Associate	Radiation Oncologist	Dosimetrist		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

Part I – Facility Questionnaire for RTOG Protocol 0617

C. Planning Resources (TABLE 3)

List your treatment planning systems here. Skip the last column if you are not credentialing for IMRT

I.D. #	Vendor	Software Version	Calculation Algorithm (Enter # from list in Footnote #1 below)	Treatment units commissioned for this system (Enter # from Table 1)	Is system commissioned for heterogeneity corrections? (Enter yes or no and see Footnote 2)	Does the system transfer beams to a phantom for QA? (Enter yes or no. If no, explain the technique you do use for IMRT QA in the blank space below.)
1						
2						
3						
4						
5						
7						

Footnote 1 (If you are using more than one calculation algorithm for a particular system, enter them separately in different rows of the table above.)

1. BrainLAB pencil beam
2. Corvus pencil beam
3. Helax pencil beam
4. Helax collapsed cone
5. Cadplan pencil beam
6. Eclipse pencil beam
7. Eclipse AAA
8. PLUNK pencil beam
9. MSKCC pencil beam
10. Pinnacle fast convolve
11. Pinnacle collapsed cone or adaptive convolution superposition
12. XiO modified Clarkson or convolution
13. XiO superposition or fast superposition
14. Tomotherapy convolution superposition
15. Other _____

Footnote 2 If you answered "no" for the question about the system being commissioned for heterogeneity corrections, please explain? Identify each system using the # in the list._____

Part I – Facility Questionnaire for RTOG Protocol 0617

D. TREATMENT VERIFICATION

Note: If you use IGRT for patient positioning verification for some of your 3DCRT or IMRT treatments, you should complete the Part II questionnaire for IGRT. The RTOG has a very specific definition for IGRT. IGRT is defined here to include only those procedures where an x-ray imaging technique is used in combination with some form of computer-assisted manual or automatic registration with the image information obtained during the patient's planning CT procedure. The standard use of MV EPID images as a visual comparison to DRRs does not fall under this definition. Also, the use of silver halide film radiographs alone is not accepted under this definition of IGRT. Thus, you should use the Part II questionnaire only if you have this type of computer-assisted technology. If you are using standard EPID or radiographic imaging, please answer the relevant question below.

Do you use IGRT in your department (see RTOG definition above)? Yes ☐ No ☐

1. TREATMENT POSITIONING VERIFICATION FOR 3DCRT or IMRT

How do you verify field positioning relative to the patient's anatomy (check all that apply)?

☐ port film ☐ orthogonal port films ☐ BAT ultrasound

☐ Other: _____

How often is positioning verification done?

☐ first treatment only ☐ daily ☐ weekly

☐ Other: _____

2. VERIFICATION OF DELIVERED DOSE FOR 3DCRT

Describe the method(s) used to conduct a check of the dose and monitor unit calculations generated by the 3DRTP system.

_____

_____

_____

_____

Are your 3DCRT treatments monitored by a record and verify system?

Manufacturer & Model:

3. VERIFICATION OF DELIVERED DOSE FOR IMRT

How do you verify that the treatment unit delivers the planned dose for individual patients?

a. Absolute dose

☐ point(s) measurement with

Part I – Facility Questionnaire for RTOG Protocol 0617

☐ ion chamber (chamber size____) ☐ diode ☐ TLD

☐ radiographic film ☐ radiochromic film

☐ Other: _____

b. Relative dose

☐ isodose distribution with

☐ radiographic film ☐ radiochromic film ☐ Gel dosimetry

☐ other_____

in _____ (#) axial planes & in _____ (#) sagittal planes & in _____(#)coronal planes

Describe the type of phantom you use for QA:

☐ anthropomorphic phantom Vendor: _____

☐ geometric phantom: _____(material)

shape: ☐ square ☐ Cylinder ☐ other ___

size of phantom _____cm X _____cm X ___ cm

What agreement between planned and measured doses for individual patients is considered acceptable at your institution?

For absolute dose in target volume (high dose) region _____

For absolute dose in critical normal tissue region _____

For absolute dose in low dose region _____

For relative dose in high dose gradient region _____

For relative dose in low dose gradient region

in high dose region (target) _____

in low dose region _____

Are your monitor unit calculations checked by an independent program?

☐ no ☐ yes Vendor: _____

You have completed this form. There are two additional forms you might have to complete. If you answered "Yes" to the IGRT question at the top of page 6 and you are credentialing for an IGRT protocol, you must complete the Part II Questionnaire for IGRT. If you answered "Yes" to the questions about motion management or heterogeneity corrections in Table 2a above, you must complete the Part III Questionnaire. Please be sure to complete all necessary forms. If IGRT is optional in the protocol you are credentialing and you do not intend to use this technology, you can simply skip that questionnaire. However, you will not be able to use IGRT in the future until you have completed this requirement.

Part II – Facility Questionnaire for RTOG Protocol 0617

FACILITY QUESTIONNAIRE - PART II (IGRT)

If you have credentialed previously for any protocols involving IMRT or IGRT, do not fill in this part of the form until you have updated information currently on record. Please contact the Image-Guided Therapy QA Center (ITC) to obtain a copy of that information. IGRT is defined here to include only those procedures where the imaging technique checked below is used in combination with some form of computer-assisted manual or automatic registration with the image information obtained during the patient's planning CT procedure. The standard use of MV EPID images as a visual comparison to DRRs does not fall under this definition. Also, the use of silver halide film radiographs alone is not accepted under this definition of IGRT. Part I questionnaire should be reviewed and updated before completing this form.

Table 1 - List the different types of IGRT systems you have in your department.

ID #	Vendor & Type	Treatment unit identification # from first column of Table I of Part I	Enter the letter from footnote 1 that describes your IGRT system	How is the image registration accomplished? (See footnote 2 and enter letter here)	How is the success of the image registration verified? (See footnote 3 and enter letter here)	Do any of these units have robotic couches capable of correcting angular deviations? (yes or no)	How often do you check the position of the imaging system isocenter? (See footnote 4 and enter letter here)	RTOG Protocol identification # (enter one or more #s in the space below)
1								
2								
3								
4								

FOOTNOTES

1 - a. kV cone-beam (2D or 3D match), b. Dual kV imaging panels (eg, ExacTrac, Cyberknife), c. Helical MV tomography, d. MV cone-beam
e. In-room diagnostic CT scanner, f. kV or MV Stereoscopic images using EPID,

g. other (describe)_____

2. a. automatic registration, b. manual click drag and rotate, c. other (describe) _____

_____

3. a. split screen, b. spy glass, c. color fade d. other (describe)_____

4. a. each day, b. each week, c. each month, d. yearly, e. not done, f. other _____

Part II – Facility Questionnaire for RTOG Protocol 0617

Table 2 - How do you use IGRT for different disease sites?

	Head and Neck	Prostate	Thorax	Upper GI	GYN	Other*
System or systems used for each site. Use ID # designation from first column of Table 1.						
Number of patients where this technology was used in the last 12 months						
IGRT frequency (enter letter from footnote 1)						
Do you perform a second IG study after patient position is adjusted? (yes or no)						
Estimate the patient dose in cGy due to imaging. (see footnote2)						
What tolerance levels in mm are used for x, y and z adjustments of the patient position?						
What are your rotational tolerances before repositioning the patient?						
If the system has a robotic couch, what are your tolerance levels for rotational corrections?						
Who approves these changes at the time of treatment? (see footnote 3)						
Are fiducial markers used for this disease site? (enter yes or no)						

*Please write the site name under the word "other"

FOOTNOTES

1. – a. IG is used each fraction, b. IG is used for the first five fractions and once each week thereafter, c. other _____

_____

2. – This should be the dose in cGy due to a single IG procedure. For example, if orthogonal images are used for IGRT this number should be the combined dose for the two images. If a second imaging procedure is used to check the patient's position, this amount should NOT be included.

3. - a. therapist, b. radiation oncologist, c. physicist, d. other _____

Part III – Facility Questionnaire for RTOG Protocol 0617

FACILITY QUESTIONNAIRE

PART III (Heterogeneity Corrections and Motion Management)

A. Use of Heterogeneous Dose Calculations

If you are credentialing for a protocol that treats targets in or near (e.g. esophagus, liver or spine) and using IMRT and/or IGRT, you must complete this section.

8. Is your treatment planning system capable of using custom CT number to electron density tables or does your institution use the TPS vendor supplied numbers?
   ☐ Custom CT number to electron density tables ☐ TPS vendor supplied
9. If custom tables are used, how were the numbers generated?
   ☐ Using measured data from CT
   ☐ Other (describe)_____

B. Use of Respiration Control

10. List the protocol for which you are currently credentialing. You should include in this list other protocols for which you have previously credentialed and that also require respiration control.

List protocols (including the one you are currently credentialing for) used at your institution that require respiration control.	List the technique(s) you use for respiration control. (Enter the letters from the list in footnote 1.)	How do you evaluate the extent of target movement? (Enter the letters from the list in footnote 2.)	How do you verify the position of the target at the time of treatment? (Enter the letters from the list in footnote 3)	How often do you verify the target position for this particular protocol? (Enter the letter from the list in footnote 4)
Protocol #				
Protocol #				
Protocol #				
Protocol #				
Protocol #				
Protocol #				
Protocol #				

FOOTNOTE
1. – a. voluntary breath hold at specific point in respiratory cycle b. abdominal compression
   c. Automatic Breathing Coordinator (ABC) d. ITV without control
   e. Treatment unit gating f. tracking of target movement
2. – a. 4D CT b. Fluoroscopy c. We use protocol specified margins to account for movement
3. – a. We use the IGRT technique described on the Part II IGRT Questionnaire.
   b. We do not have any of the techniques that meet the RTOG definition of IGRT (see Part II Questionnaire), but we do use orthogonal port films or EPID images.
4. – a. Each fraction b. First 5 fractions and weekly thereafter c. Weekly
   d. Other (describe)_____

Procedure for Dry Run Credentialing For RTOG Protocol #0617

Procedure for Dry Run Credentialing for RTOG Protocol #0617

Background:

Institutions using any of the treatment planning algorithms listed below for dose calculations for patients entered on RTOG protocol #0617 will be required to complete the Dry Run exercise described here. Institutions using algorithms in the second list must obtain the phantom from the RPC for irradiation (see RPC website for instructions in obtaining the phantom).

Algorithms requiring Dry Run plan without phantom irradiation:

1. Helax collapsed cone
2. Eclipse AAA
3. XiO superposition or fast superposition
4. Pinnacle collapsed cone or adaptive convolution superposition
5. Tomotherapy convolution superposition
6. CMS Monaco Monte Carlo

Algorithms requiring phantom irradiation:

1. BrainLAB pencil beam
2. Corvus pencil beam
3. Helax pencil beam
4. Cadplan pencil beam
5. Eclipse pencil beam
6. PLUNC pencil beam
7. MSKCC pencil beam
9. Pinnacle fast convolve
10. XiO modified Clarkson or convolution

The Dry Run described here consists of generating two treatment plans using a CT dataset of the RPC lung phantom. These Dry Run treatment plans will be performed using standard 3D-CRT techniques. If the institution intends to enter some patients using IMRT, they must guarantee that the algorithm that will be used at the end of the inverse planning process is the same one that is used for the 3D-CRT Dry Run planning.

The procedure below gives specific information on how the treatment planning is to be carried out. The results of your planning exercise will be compared to baseline phantom irradiation data carried out by the RPC with the help of physicists at UT MD Anderson Cancer Center.

Download procedure:

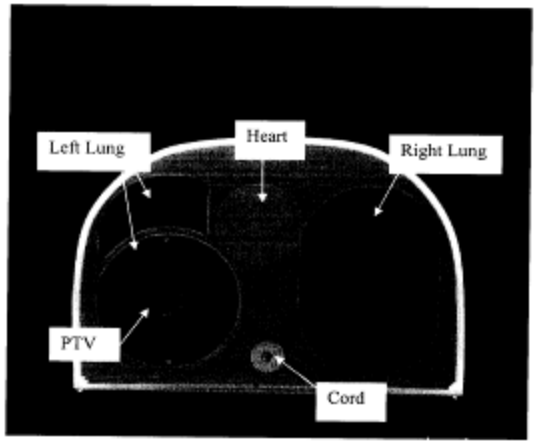
The CT dataset for the RPC lung phantom can be obtained by going to the RPC website. Figure 1 shows one CT cross-section taken from this dataset. This is a DICOM dataset that can be sent to your treatment planning computer for beam assignment and dose calculation.

Procedure for Dry Run Credentialing For RTOG Protocol #0617

Directions for planning on the Lung Phantom CT Set:

1. Create two plans:
   a. Create a simple AP/PA parallel-opposed isocentric homogeneous plan to treat the PTV. The PTV equals the GTV and the structure located in the left lung. The phantom was scanned feet first, so the PTV and left lung are on the viewer's left. The center of the PTV and isocenter is located on Slice 67 Z = 103.2. Position the isocenter at the center of the PTV on this slice, and use symmetric unblocked 6 cm x 6 cm fields (Note: There will be a 1.5 cm margin laterally and 0.5 cm margins superiorly and inferiorly). Prescribe 6 Gy to isocenter using 6 MV photons under homogenous conditions with the AP and PA beams each delivering 3 Gy to isocenter (i.e. equal dose weighting). Calculate the monitor units using the grid spacing you would customarily use to treat a lung patient.
   b. Using the monitor units from the homogeneous plan, re-calculate the plan using heterogeneity corrections.

2. Send both plans electronically to the ITC and hardcopies of each of the 2 treatment plans to the RPC.



Procedure for Dry Run Credentialing For RTOG Protocol #0617

Contact information for sending the digital data is:

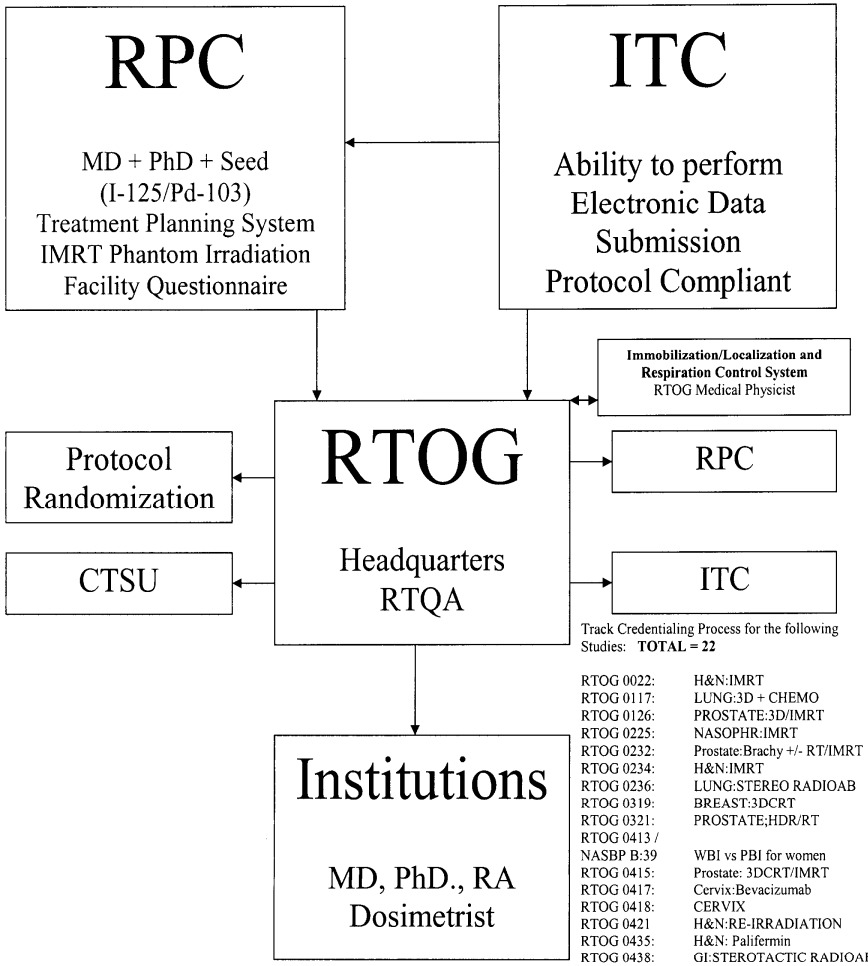
Image-guided Therapy QA Center (ITC)
4511 Forest Park Avenue
Suite 200
St. Louis, MO 63108
Attn: Roxana Haynes
(314) 747-5414
E-mail: itc@castor.wustl.edu

Contact information for sending the hard copies of the two treatment plans is:

Radiological Physics Center (RPC)
c/o 0617
7515 Main Street
Suite 300
Houston, TX 77030
(713) 745-8989
E-mail: rpc@mdanderson.org

RTOG
Radiation Therapy Oncology Group

RTOG 0232
Prostate – Brachytherapy
IMRT
Credentialing Process Notification



Track Credentialing Process for the following Studies: **TOTAL = 22**

RTOG 0022:	H&N:IMRT
RTOG 0117:	LUNG:3D + CHEMO
RTOG 0126:	PROSTATE:3D/IMRT
RTOG 0225:	NASOPHR:IMRT
RTOG 0232:	Prostate:Brachy +/- RT/IMRT
RTOG 0234:	H&N:IMRT
RTOG 0236:	LUNG:STEREO RADIOAB
RTOG 0319:	BREAST:3DCRT
RTOG 0321:	PROSTATE;HDR/RT
RTOG 0413 / NASBP B:39	WBI vs PBI for women
RTOG 0415:	Prostate: 3DCRT/IMRT
RTOG 0417:	Cervix:Bevacizumab
RTOG 0418:	CERVIX
RTOG 0421	H&N:RE-IRRADIATION
RTOG 0435:	H&N: Palifermin
RTOG 0438:	GI:STEROTACTIC RADIOAB
RTOG 0515:	NSCLC: Vol. def. PET
RTOG 0521:	PROSTATE:3DCRT/IMRT
RTOG 0522:	H&N:3DCRT/IMRT (PET Opt.)
RTOG 0529:	ANAL CANAL:IMRT
RTOG 0615:	NASOPHARYNX:IMRT
RTOG 0617:	LUNG: 3DCRT/IMRT

TOTAL STUDIES = 22

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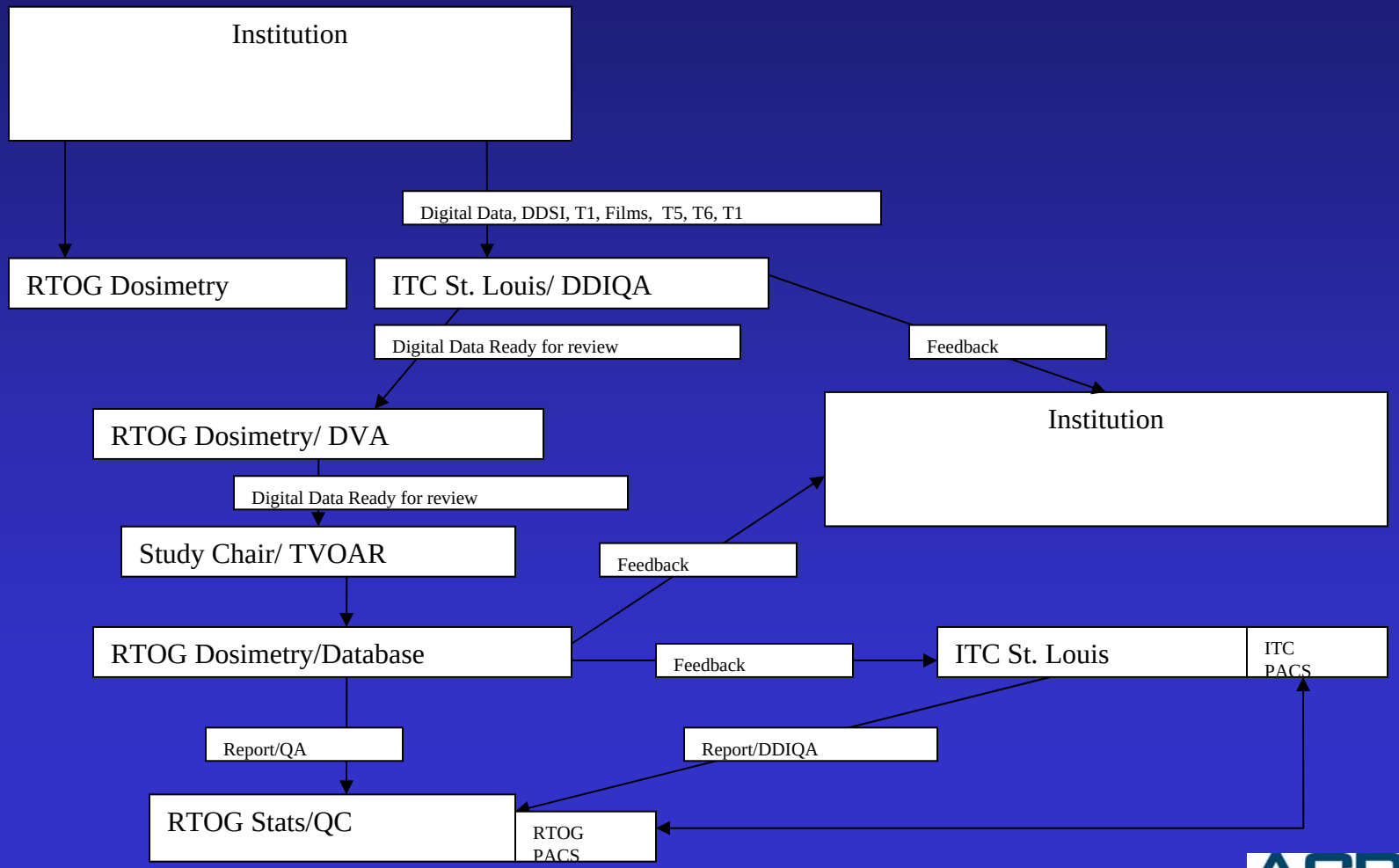
Work Flow Diagram



RTOG
Radiation Therapy Oncology Group

R. T. Quality Assurance Staff

Back Row L/R: Betty O'Meara; Denise Manfredi; Nancy Linnemann; Tammy McGlade
Front Row L/R: Joanne Hunter; Lorraine Quarles; Julie McIlvaine

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ATC Meeting Schedule

- Bi-weekly teleconferences are held on Friday for RTOG/ITC/RPC Specific issues.
  (Monthly RTOG 0522 Protocol Update call)
- ATC meeting was held at the RTOG Semi-Annual Meeting in Philadelphia, PA, Loews Philadelphia Hotel, Thursday, June 21, 2007 at 4:00pm – 7:00pm.
- ATC Mini-meeting was held during ASTRO, Monday, October 29, 2007.
- ATC meeting at the RTOG Semi-Annual Meeting in San Diego, CA, Manchester Grand Hyatt, Thursday, January 17, 2008 at 4:00pm – 7:00pm.
- ATC meeting at the RTOG Semi-Annual Meeting in Philadelphia, PA, Loews Philadelphia Hotel, Thursday, June 19, 2008 at 4:00pm – 7:00pm.

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That’s All Folks!

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