

# The Roles and Task of Medical Physicists in Clinical Trial (Therapy Trials: RTOG and NRG)

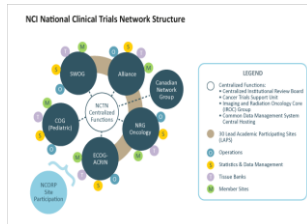
YING XIAO, PHD

AAPM Annual Meeting, 2017

## NCI National Clinical Trials Network

The NCTN structure includes five U.S. Network groups and the Canadian Collaborating Clinical Trials Network. Membership in the individual NCTN groups is based on criteria that are specific to each group. Sites can belong to more than one group, and membership in at least one group allows a site to participate in the trials led by any NCTN group for which their investigators are qualified.

Consequently, researchers from NCORP, academic centers, community practices, and international members associated with the Network groups may all enroll patients onto NCTN trials.



## NRG Committee Structure



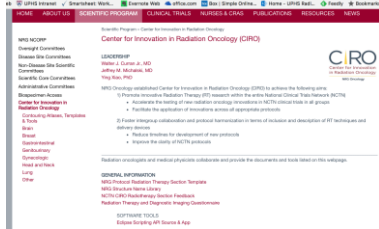
## Aims of CIRO

- 1) Promote innovative RT research within the entire NCTN
  - Accelerate the testing of new radiation oncology innovations in NCTN clinical trials in all groups
  - Facilitate the application of innovations across all appropriate protocols
- 2) Foster intergroup collaboration and protocol harmonization in terms of inclusion and description of RT techniques and delivery devices
  - Reduce timelines for development of new protocols
  - Improve the clarity of NCTN protocols

## WEBPAGE

<https://www.nrgoncology.org/Scientific-Program/Center-for-Innovation-in-Radiation-Oncology>

The CIRO webpage provides several resources for the network such as atlases, protocol templates for RT sections, and applications to facilitate RT data preparation and submission.



## Imaging and RT Questionnaire

**RADIATION THERAPY WORKSHEET**  
(Check one in most boxes within each category - in parentheses (circle one on box and choose "checked").)

Do the following (check one box in each category and circle one on box and choose "checked").

1. Radiation techniques and RT techniques used in this treatment (check one box in each category and circle one on box and choose "checked").

2. Simulation imaging and motion management.

3. Planning techniques.

4. RT techniques.

5. Do you intend to check each institution's treatment approach using any of the following techniques?

6. List potential secondary aims involving technology/methodology if applicable.

7. Do you intend to check each institution's treatment approach using any of the following techniques?

8. List potential secondary aims involving technology/methodology if applicable.

## Questionnaire Continued

**I. Imaging for Pre-treatment Evaluation/Staging Only (i.e. not for treatment planning/guidance)**

(Choose one)

No central image collection/review related to pre-treatment staging

Central image collection/review related to pre-treatment staging (describe below)

Imaging Type	Central Collection	Central Evaluation	Comments (e.g. "Fumar staining for eligibility confirmation", "Baseline tumor SUV for core imaging study", "Data warehousing for radomics study")		
CT	Anatomic	Yes	No	Yes	No
	Other (e.g. Perfusion-CT)	Yes	No	Yes	No
MR	Anatomic	Yes	Yes	Yes	No
	Other (e.g. DW/DTI, fMRI)	Yes	No	Yes	No
PET	FDG	Yes	No	Yes	No
	Other tracer	Yes	No	Yes	No
SPECT	Dynamic PET	Yes	No	Yes	No
	Tracer:	Yes	No	Yes	No
Other	Yes	No	Yes	No	

Will site scanner credentialing be performed prior to subject enrollment? ☒ Y ☐ N ☐

If yes, please describe qualification process

## II. Imaging for Treatment Response Assessment

### III. Imaging for Radiation Treatment Planning & Guidance

## Radiation Therapy Section Templates

### Templates for each disease site

- <https://www.nrgoncology.org/ciro-contouring-atlases-templates-and-tools>

Example links: [Templates for Head and Neck](#)

- Including H&N Atlas Link
- Including NRG Protocol Radiation Therapy Template (including Proton and Photon)
- Trial Specific Templates & Tools

## Contouring Atlases, Templates &amp; Tools

## HEAD &amp; NECK

- Head and Neck Atlas Link
- NRG Protocol Radiation Therapy Section Template (includes Proton and Photon)
- HN001: DVA Spreadsheet; Eclipse Templates; MIMsoftware Scripts/Templates
- HN003: DVH Evaluation spreadsheet; Eclipse Templates; MIMsoftware Scripts/Templates



## Example for RO section Template

[illegible]



[illegible][illegible]

## Feedback & Comments

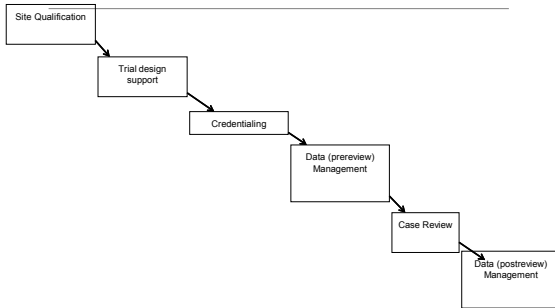
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## Quality Implementation: Collaboration with IROC



Guidance – NRG & protocols  
Enforcements – IROC core functions

## IROC's five programmatic QA approaches



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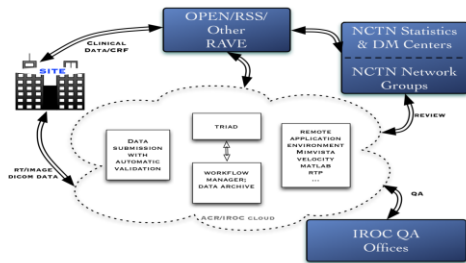
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## Centralized data submissions, review and analyses



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## TRIAD Validation of Structure Names

A screenshot of the TRIAD Validation of Structure Names interface. The interface shows a summary of validation results for a specific study. The table below displays the validation rules and their results.

Tag	Value	Rule Name	Rule	Result
Validation must pass for ALL of the following rules				
Child Rules				
Tag is column header Name for group for that column				
1. Tag	value	RuleName	Rule	Result
1. StructureGetSequence...	Required Structures	All		Green
2. StructureGetSequence...	If 5412 is applicable	All		Green
3. StructureGetSequence...	If 6270 is applicable	All		Red
4. StructureGetSequence...	If 6270 is applicable	Any		Green

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## NRG Oncology Medical Physics Sub-committee

Ying Xiao, PhD  
Jason Sohn, PhD

  
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## Committee Membership Structure

- Disease site liaisons
  - Leading member to report @ conference/meeting
  - Leading members & Chair responsible for concept related physics needs before physics PIs are identified
- Intergroup, QA core liaisons
  - Leading member to report when requested
- Modality/technology liaisons (Working Group)
  - Leading member to report when requested
- Bio-informatics liaisons (WG)
- Industry liaison(s) (ad hoc guest)
- International liaison(s) (ad hoc guest)
- NCI and Staff liaison(s) (Data Manager, Protocol, Statistics) *(invited talk on a rotating basis)*

  
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## Professional Commitment

(Missions, Job Description)

- Interface with disease site committees as liaisons
  - Cover disease site conferences and face-to-face meetings
- Interface with intergroup, QA core and NCI
- Serve as Physicist PI on protocols ( $\leq 2$  Protocols/PI)
  - Overall protocol design and development
  - Specific responsibility for technical RT aspects and QA considerations
- General Responsibilities
  - Prospective identification of physics/QA objectives in new trials
  - Aid in creation of RT clinical Trials protocol templates
  - Review physics/QA manuscripts for NRG publication committee
- Interface with Vendors of Technologies as needed
- Monthly conference
- Bi-annual NRG face-to-face meetings

  
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## Opportunities

- Co-authorship on clinical trials related reports
  - Clinical trial result for physicist PI
  - Secondary analysis of trials data
  - QA effectiveness research
  - Special projects for questions raised for concepts/protocols
- Learn structure and implementation of clinical trials
- Stimulate interest in secondary analysis of clinical trial digital data – collaboration with NCTN Group and QA core




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## Disease Site Liaisons

Disease Site member	Approx. # of
• Breast	2
• Brain	4
• GI	2
• GU	4
• GYN	2
• H&N	2
• Lung	4
• Other	2




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## NCTN Inter-Group Liaisons

- ALLIANCE (previous ACOSOG, CALGB, NCTG)
- ECOG-ACRIN
- SWOG
- COG
- IROC




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## Modality/Technology Liaisons Working Group

- Particle Therapy (Proton/Carbon)
- SBRT
- IMRT
- IGRT
- IGBT
- Motion Management

- Emerging Technologies
- Imaging



Meeting Agenda - Planning (2017)

## General Updates for NRG Meeting July 2017

- Membership survey
  - Agenda vs. Smartsheet
  - Engaging Meetings: 1 representative from each disease site
  - Annual evaluation of membership (meeting and project engagement)
  - Medical Physics Participation Metric
- Review developing protocol process
  - Consistency with template from CIRO website
  - Verify technical accuracy and consistency
- Outreach
  - AAPM newsletter on published GYN template submitted
- Medical Physics Pls
  - GU006, GU005



## Disease site Templates

- Breast: a draft is circulating around co-authors
- Pancreas: Authors working on revision from Med phys review comments
- GU SBRT template: draft proposed to be ready this July
- GYN cervical template: Med phys/RO/NCI review completed-published
- LGI Template: published on CIRO
- LU SBRT template: published, Red Journal editorial WIP



## Special Projects

- Summation of Dose from prior RT (LU)
- Evaluation of DIR (GY)
- PTV vs CTV for photon & proton
- NCI/NRG WG on Imaging and Dosimetry of Internal Radionuclide Therapy
- NCI WG on RT & QIN
- Standardization of Imaging Instructions (QIBA)
- QA for deformable registration
- Review paper on motion management
- Effort survey (revision & new survey on SBRT)



**If interested in participating, please use the contact info on this webpage:**

**<https://www.nrgoncology.org/Scientific-Program/Scientific-Core-Committees/Radiation-Oncology-Committee/Medical-Physics-Subcommittee>**



**Thank You!**