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

YING XIAO, PHD

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 the network groups, even if their investigators are not qualified. Consequently, researchers from NCCORP, academic centers, community practices, and international members associated with the Network groups may all enroll patients onto NCTN trials.

NRG Committee Structure

Research Strategy Committee

Non-Cancer Site Scientific Committees
- Developmental
- Therapeutics (CT)
- Cancer Prevention & Control
- Genitourinary
- Gynecologic
- Thoracic
- Gastrointestinal
- Head & Neck
- Lung

Scientific Core Committees
- Medical Oncology
- Radiation Oncology
- Pathology
- Surgery
- Clinical Research Administration
- Nursing
- Patient Advocacy
- Special Populations

Administrative Committees
- Steering Committee
- Scientific Review Committee
- Project Management
- Oversight Committee
- Investigator Training

Center for Innovation in Radiation Oncology (CIRI)
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
Questionnaire Continued

I. Imaging for Pre-treatment Evaluation/Stage-only (i.e. not for treatment planning/guidance)

II. Imaging for Treatment Response Assessment

III. Imaging for Radiative Treatment Planning & Guidance

Radiation Therapy Section Templates

Templates for each disease site


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 & Tools

- HEAD & NECK
  - Head and Neck Atlas Link
  - NRG Protocol Radiation Therapy Section Templates (includes Proton and Photon)
  - [CERN] (2D/3D) Image Analysis, Eclipse Templates, MGmt/Phantom Templates
  - [CERN] (2D/3D) Evaluation software, Eclipse Templates, Mgmt/Phantom Templates

Example for RO section Template
Feedback & Comments

Quality Implementation: Collaboration with IROC

Guidance – NRG & protocols
Enforcements – IROC core functions
IROC’s five programmatic QA approaches

- Site Qualification
  - Trial design support
- Credentialing
  - Site (preclinical) management
- Case Review
  - Case (postreview) management

Centralized data submissions, review and analyses

Centralized data submissions, review and analyses

TRIAD Validation of Structure Names
NRG Oncology
Medical Physics Sub-committee

Ying Xiao, PhD
Jason Sohn, PhD

Committee Membership Structure

- Disease site liaisons
  - Leading member to report at 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)

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 (≤ 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
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

Disease Site Liaisons

<table>
<thead>
<tr>
<th>Disease Site</th>
<th>Approx. # of member</th>
</tr>
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<tbody>
<tr>
<td>Breast</td>
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<tr>
<td>Brain</td>
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<tr>
<td>GI</td>
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<td>GU</td>
<td>4</td>
</tr>
<tr>
<td>GYN</td>
<td>2</td>
</tr>
<tr>
<td>H&amp;N</td>
<td>2</td>
</tr>
<tr>
<td>Lung</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
</tbody>
</table>

NCTN Inter-Group Liaisons

• ALLIANCE (previous ACOSOG, CALGB, NCTG)
• ECOG-ACRIN
• SWOG
• COG
• IROC
Modality/Technology Liaisons Working Group

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

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 PIs
  - 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!