



Quality assurance guideline development from the Center for Innovation in Radiation Oncology (NRG CIRO)

Presented by

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Stanley Benedict, PhD (NRG Physics SubComm Co-Chair)

A Multi-Disciplinary Scientific Symposium (Imaging and Therapy Physics):
“Medical Physics in Clinical Trials: Design, Quality Assurance, and NIH Programs”
AAPM Annual 64th Meeting, Washington DC, July 12, 2022



Disclosures

- Ying Xiao is the Chair of the NRG Physics Subcommittee
- Stan Benedict is the Co-Chair of the NRG Physics Subcommittee

NRG Oncology – CIRO

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

Center for Innovation in Radiation Oncology (CIRO)

Leadership

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Administrative Support: Theresa Powell

NRG Oncology – CIRO

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NRG Oncology established Center for Innovation in Radiation Oncology (CIRO) to achieve the following aims:

1) Promote innovative Radiation Therapy (RT) research within the entire National Clinical Trials Network (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

OPPORTUNITIES FOR MEDICAL PHYSICISTS TO PARTICIPATE IN CLINICAL TRIALS

- Physicists contribute to new clinical trials through activities of **CIRO, NRG Oncology**.
- Opportunities to interface with AAPM task groups for **new technology** implementation guidelines
- Physicists help develop, publish, and expedite medical physics dosimetry protocols and templates for **new clinical trials**

CIRO Updates



Center for Innovation
in Radiation Oncology

NRG Oncology

NRG
ONCOLOGY™

Concepts and Protocols

Disease Site Templates

Special Projects

Special Project Highlights

CIRO Website Updates

Special Projects

NCI/NCTN RPT

- Review (2021)
- Ra-223 & Lu-177 Templates (2021)

GHG

- OAR Definition Standardization (2020)

Proton:

- MC WG (2021)
- SBRT WG (2022)
- Proton protocol template

UHDR (Flash) Assessment

SFRT

CodeX

NCTN Med Phys

Special Projects

Conferences

AAPM: 7/12
ASTRO: CT
Sessions

BN

Radiomics
(201911/202003)
Pulsed dose rate
RT for GBM

BR

SBRT Definition
white paper
Electronic
brachytherapy

HN

HN005/006: KBP/AI
for QA of
contours/plans
GY

LU

Summation of Dose
from prior RT

GU

- Image guided
dose painting
(GU009/10)
- LDR OAR
assessment

- Summation dose
from external
beam and
brachytherapy
(2021)
- Standardize

ART WG

Supplemental
template (2021)

RT/DI Protocol
Concept
Questionnaire
(202201)

Imaging

- Radiomics (2019)
- Radiomics phantom
- Imaging Templates
(2022)
- QA for deformable
registration (2021)
- Adaptive RT trial
concept
- AI/Autosegmentation

NRG Oncology – CIRO

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

The screenshot displays the NRG Oncology website's 'Center for Innovation in Radiation Oncology' (CIRO) page. The header features the NRG Oncology logo with the tagline 'Advancing Research. Improving Lives.' and a navigation menu with links to 'Contact Us', 'News', 'Member Login', and a search bar. Below the header, a dark blue banner contains the title 'Center for Innovation in Radiation Oncology'. The main content area is divided into two columns. The left column, titled 'Contouring Atlases, Templates & Tools', includes a disclaimer and a grid of links for various cancer types: Brain Tumor, Breast Cancer, Gastrointestinal Cancer, Genitourinary Cancer, Radiopharmaceutical Therapy, Gynecologic Cancer, Lung Cancer, Head and Neck Cancer, and CIRO Resources. The right column, titled 'About Us', contains a dropdown menu with options for 'About Us >', 'Center for Innovation in Radiation Oncology', 'Membership', 'Who We Are & What We Do', 'Policies & Bylaws', 'Biospecimen Bank', and a detailed 'Center for Innovation in Radiation Oncology' section listing specific cancer types: Brain Tumors, Breast Cancer, Gastrointestinal Cancer, Genitourinary Cancer, and Gynecologic Cancer.

NRG ONCOLOGY
Advancing Research. Improving Lives.™

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Patients Clinical Trials Committees & Programs About Us Meetings & Resources Support NRG

Center for Innovation in Radiation Oncology

Contouring Atlases, Templates & Tools

Disclaimer: The contouring atlases, templates, and tools made available on this webpage illustrate the consensus reached among physicians, physicists and other clinical trialists involved in cooperative research groups and disease site committees. The cooperative groups and authors are not responsible for any use of these guidance by third parties.

BRAIN TUMOR	GYNECOLOGIC CANCER
BREAST CANCER	LUNG CANCER
GASTROINTESTINAL CANCER	HEAD AND NECK CANCER
GENITOURINARY CANCER	OTHER
RADIOPHARMACEUTICAL THERAPY	CIRO RESOURCES

About Us

About Us >
[Center for Innovation in Radiation Oncology](#)

Membership ▾

Who We Are & What We Do ▾

Policies & Bylaws

Biospecimen Bank

[Center for Innovation in Radiation Oncology](#) ▾

- [Brain Tumors](#)
- [Breast Cancer](#)
- [Gastrointestinal Cancer](#)
- [Genitourinary Cancer](#)
- [Gynecologic Cancer](#)

NRG Oncology – CIRO

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[OTHER](#)

[RADIOPHARMACEUTICAL THERAPY](#)

[CIRO RESOURCES](#)

NRG Oncology/CIRO - BRAIN TUMOR

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

Brain Tumor items behind the login below:

- Guidelines for the Use of Radiomics in NRG Oncology Clinical Trials Involving Brain Tumors
- Hippocampal Sparing Atlas Link
- Glioblastoma Atlas Abstract
- NRG Protocol Radiation Therapy Template Brain Photon and Proton Therapy Template
- NRG Protocol Radiation Therapy Section Template (SRS)

NRG Oncology/CIRO – BREAST CANCER

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

Breast Cancer items behind the login below:

- Breast Atlas Link
- NRG Protocol Radiation Therapy Template (Whole Breast Photon Therapy)
- RADCOMP Breast Atlas

NRG Oncology/CIRO – GI CANCER

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

Gastrointestinal Cancer items behind the login below:

- Anorectal Atlas Link
- Liver Atlas Link
- Pancreas Atlas Link
- NRG Protocol Radiation Therapy Template (Anal)
- NRG Protocol Radiation Therapy Template (Liver - SBRT)
- NRG Protocol Radiation Therapy Template (Esophageal)
- NRG Protocol Radiation Therapy Template (Lower Gastrointestinal)
- NRG Protocol Radiation Therapy Template (Pancreas)
- GI002 MiM Software Script Template

NRG Oncology/CIRO – GU CANCER

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

Genitourinary Cancer items behind the login below:

- NRG Protocol Radiation Therapy Template (Bladder - Photon/Proton)
- Bladder Atlas Link
- Male Pelvic Atlas
- Prostate Pelvic Lymph Nodes Atlas Link
- Prostate Post-Operative Atlases: Positive Apex Margins Atlas Link
- Positive Seminal Vessels Atlas Link
- NRG Protocol Radiation Therapy Template (Prostate - Photon/Proton Conventional, Hypofractionation & SBRT)
- NRG Protocol Radiation Therapy Section Template *(Coming Soon)*

NRG Oncology/CIRO – GYN CANCER

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

Gynecologic Cancer items behind the login below:

- Female Pelvis Atlas
- Female RTOG Normal Pelvis
- GYN Cervical Cancer Brachytherapy Atlases for CT and MRI
- GYN Post-Op Endometrial Cervical Atlas
- Vulvar cancer atlas - mim and fullaccess interactive viewer packages with the final consensus contours
- NRG protocol radiation therapy section template (cervix, uterine cervix)
- NRG protocol radiation therapy template (endometrial)
- NRG protocol radiation therapy template (vulva)
- NRG NCTN Dose Summation EBRT and Brachytherapy Resource

NRG Oncology/CIRO – HEAD & NECK

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

Head and Neck Cancer items behind the login below:

- Head and Neck Atlas
- NRG Protocol Radiation Therapy Section Template (includes Proton and Photon)
- HN SBRT Protocol Template
- Brachial Plexus Contouring Atlas

NRG Oncology/CIRO – LUNG CANCER

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

Lung Cancer items behind the login below:

- Organs at Risk in Thoracic Radiation Therapy
- Atlases for CT Gross Tumor Volume and PET Metabolic Tumor Volume
- NRG Protocol Radiation Therapy Section Template (SBRT)
- Mesothelioma Contouring Atlas

NRG Oncology/CIRO – RADIOPHARMACEUTICAL THERAPY

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

Radiopharmaceutical Therapy items behind the login below:

- Radium-223 Dichloride Dosimetry Template
- Lu177 Dosimetry Template (Revised April 2022)

NRG Oncology/CIRO – OTHER

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

Other items behind the login below:

- NRG Protocol Radiation Therapy Section Template (Spine SBRT) *(Coming Soon)*
- Male RTOG Normal Pelvis
- RTOG Extremity Soft Tissue Sarcoma
- Upper Abdominal Atlas Link

NRG Oncology/CIRO – CIRO RESOURCES

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

CIRO Resources behind the login below:

General Resources

- NCTN CIRO Radiotherapy Section Feedback
- Organs at Risk (OAR) Dosimetric Constraints Summary/Spreadsheet (BR/GI/LU)
- Organs at Risk (OAR) Dosimetric Constraints Summary/Spreadsheet (HN/BN)
- Organs at Risk (OAR) Dosimetric Constraints Summary/Spreadsheet (GU/GY/GI)
- NRG Protocol Radiation Therapy Section Template
- Structure Names, Templates, and Definitions (TG 263, Global Harmonization Group OAR Guideline)
- NRG Protocol Radiation Therapy Section Template: Adaptive (MR-Linac Systems)
- Radiotherapy and Imaging Questionnaire for Concept
- Imaging Guidelines

Software Tools

- Machine Learning Radiotherapy Plan Models (HN001, HN002)
- Eclipse Scripting API Source & App

Meeting Records

- NRG Proton SBRT Workshop (4/11/2022), Recording / Chat Log / Flyer / Slides

Acknowledgements

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Slide Title

This slide is to be used for meetings or graphics that require a dark background.