



Thai
Medical
Physicist
Society

Treatment Planning Symposium

Komkrit Krongkietleart,
Warinthorn Rattanaareeyakorn,
Narueporn Pischom



Thai
Medical
Physicist
Society

IN



KOMKRIT KRONGKIETLEARTS
Medical Physics



Thai
Medical
Physicist
Society

Staff Lopburi Cancer Hospital

- Radiation Oncologists 7
- Medical Physicists 7
- Radiation Therapists 16
- Supporter 16



Treatment Machines



LOPBURI CANCER HOSPITAL

Linacs : VitalBeam, Clinac iX, TrueBeam, Unique and Radixact

Simulators : Conventional (Acuity iX)

: CT – Sim (Tochiba Aquilion LB) #2

HDR : Saginova

TPS : Eclipse V.17.1 (13Wks)

: RayStation V.11B (6Wks)

Water Phantom : medtec and 1D Scanner

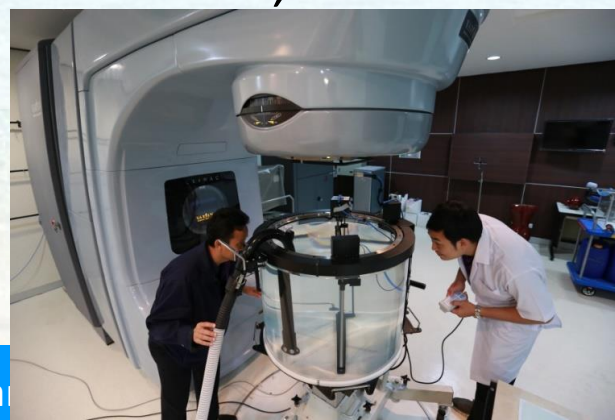
Beam Scan : PTW MP3, 3D Scanner and Blue Phantom2



LOPBURI CANCER HOSPITAL



LOPBURI CANCER HOSPITAL



s li



Treatment Technique

- Conventional (2d)
 - 3Dcrt
 - Imrt
 - Vmat
- Sbrt, SRT, SRS

ตารางสถิติจำนวนคนไข้ประจำวัน ห้องฉายแสง
วันที่ 8 กุมภาพันธ์ 2567

| Room | จำนวนคนไข้/จำนวน Field | | Room | Port | Eletron | เทคนิคการฉาย | | | | | | Rest RT | OFF | NEW | สถานะ | | |
|--------------|------------------------|------------|--------------|------------|----------|--------------|-----------|----------|-----------|----------|-----------|-----------|-----------|-----------|--------------|-----------|------------|
| | ราย | Field | | | | 2D | 3D | IMRT | VMAT | SBRT/SRT | CBCT | | | | Tomo helical | Ward | OPD |
| | TOMO | 21 | | | | 21 | TOMO | | | 0 | 0 | | | | 0 | 0 | 21 |
| Truebeam | 36 | 135 | Linac 2 | | 0 | 0 | 4 | 0 | 32 | 0 | 2 | 3 | 2 | 0 | 4 | 32 | |
| Unique | 41 | 141 | Uiique | 35 | | 3 | 38 | 0 | 0 | | | 4 | 9 | 1 | 11 | 30 | |
| Clinac iX | 42 | 150 | Clinac iX | 32 | | 0 | 18 | 0 | 24 | 0 | 6 | 6 | 0 | 1 | 10 | 32 | |
| Vital Beam | 43 | 158 | Vital Beam | 38 | | | 7 | 0 | 36 | 0 | 5 | 13 | 1 | 3 | 10 | 33 | |
| Total | 183 | 605 | Total | 105 | 0 | 3 | 67 | 0 | 92 | 0 | 13 | 21 | 28 | 13 | 8 | 37 | 146 |



Patient specific Qa in LBCH

- **Point dose:**

IC, Diode, microDiamond, Scintillation

- **Planar dose:**

Film, Portal, MapCHECK2, SRS Mapcheck

- **Volume dose:**

Delta4 family, ArcCHECK

- **MU verification:**

MU check, dose check

Software patient specific qa



Thai
Medical
Physicist
Society



- Perfraction 3D



Radcalc



- adaptivo



Thai
Medical
Physicist
Society

SRU มหาวิทยาลัย
สงขลานครินทร์

Radiotherapy Practice

งานรังสีรักษา โรงพยาบาลสงขลานครินทร์

Staff



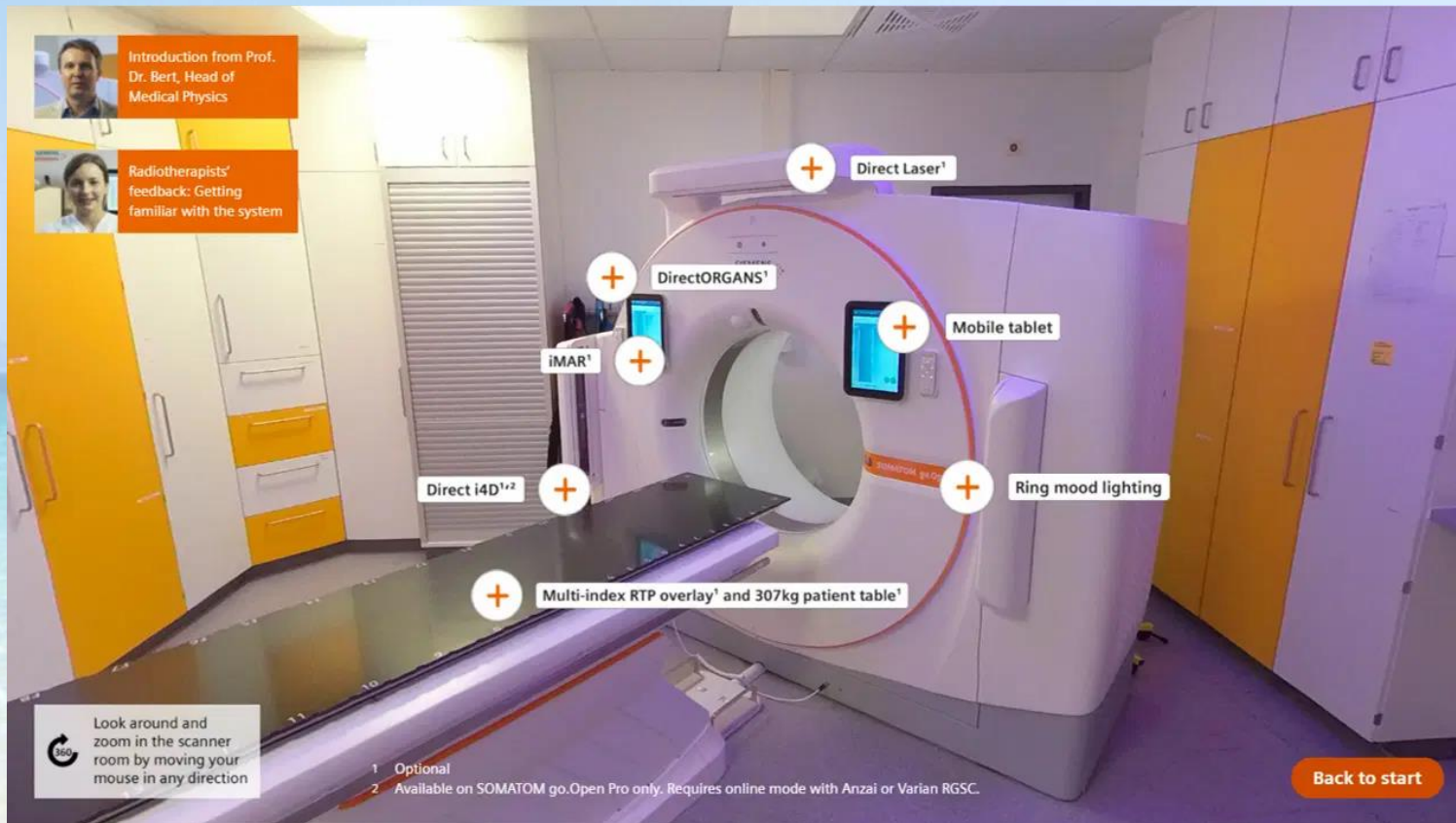
Thai
Medical
Physicist
Society

- Radiation oncologists 8
- Medical physicist 5+1PT
- Radiation therapist 16+1PT
- Nurse 9
- Engineer 2
- Supporter 13

Simulation



Thai
Medical
Physicist
Society



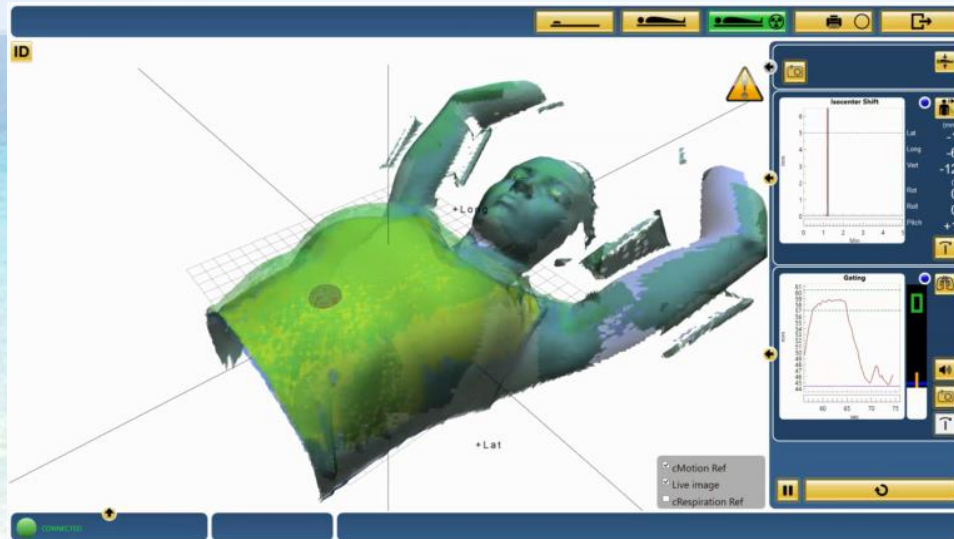
- CT siemens Somatom Go open pro #2
- Big bore 85 cm
- Flat bed with indexer
- External Laser (Direct laser)

Simulation



Thai
Medical
Physicist
Society

- 4D-CT (with Direct i4D software)
 - RGSC,
 - Sentinel (C-rad) (Surface tracking)



Sentinel System



RGSC System



Treatment Planning & QA

- Eclipse V16.1 (13Workstations)
- Element (Brainlab) (4Workstations)
- Scadidos Delta 4
- SRS mapcheck
- 1D Tankscan
- IBA Bluephantom



Thai
Medical
Physicist
Society

Brachytherapy

- Oncentra Brachytherapy
- Flexitron afterloader



Treatment delivery



Thai
Medical
Physicist
Society



Unique



Clinac iX



เครื่องฉายแสงใน ม อปัจจุบัน



Thai
Medical
Physicist
Society





Thai
Medical
Physicist
Society



Division of Radiation Oncology Department of Radiology Surin Hospital

Facility Resource



- **1** CT simulator : Siemens SOMATOM go.sim
- **1** Brachytherapy : Flexitron
- **2** Linacs
 - Elekta Precise : 3D
 - Elekta Harmony Pro : IMRT, VMAT
- **8** planning workstations
 - 1 Oncentra external beam
 - 1 Oncentra Brachytherapy
 - 6 Monaco external beam

Radiation Oncology Staffs



Thai
Medical
Physicist
Society

- 3 Radiation oncologists
- 2 Medical physicist
- 6 Radiotherapy technologists
- 6 Radiation nurses
- 10 Radiation assistants



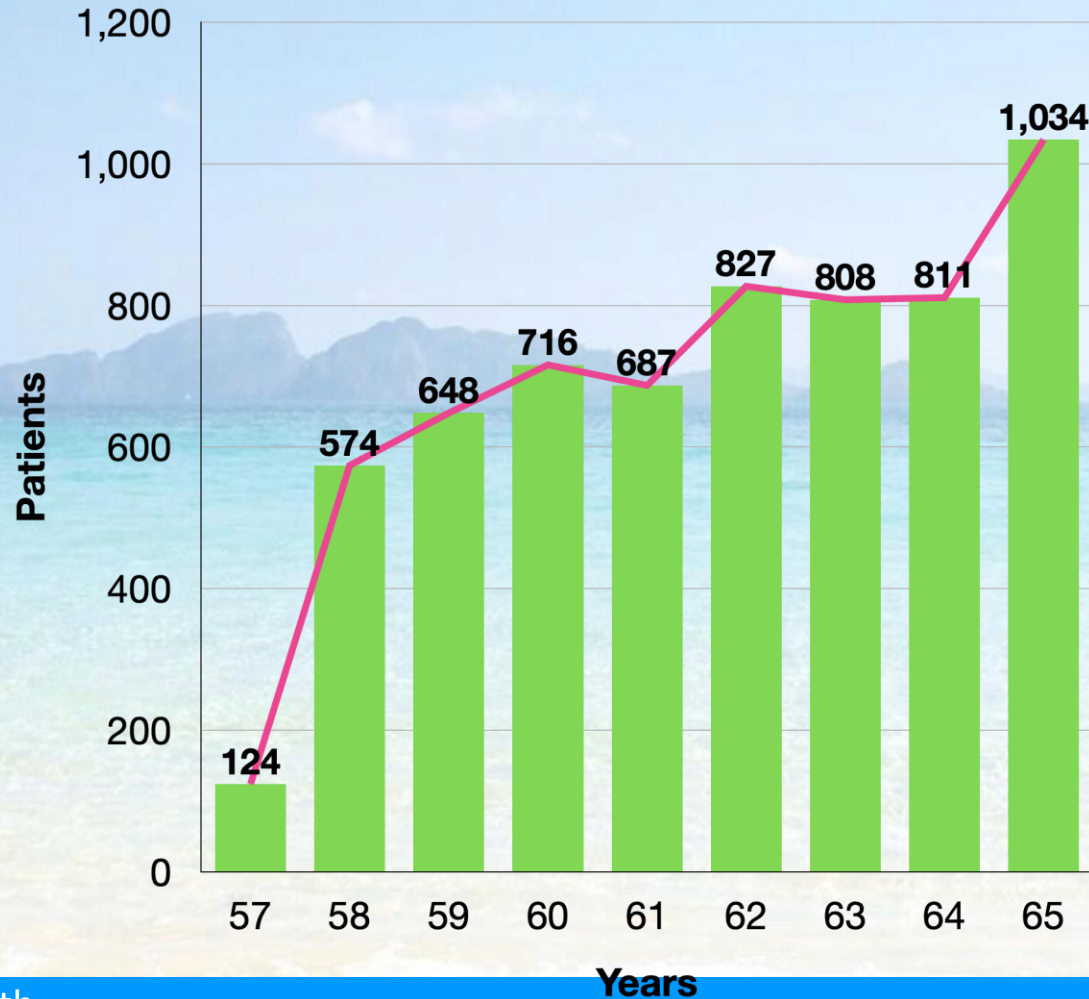
Patients Statistic



Thai
Medical
Physicist
Society

Since 2557 – 2565 B.E.

2565 B.E.



| Cancer | Percentage(%) |
|-----------|---------------|
| Emergency | 19.3 |
| H&N | 17.6 |
| Breast | 17.1 |
| Cervix | 14.0 |
| Rectum | 13.4 |
| Brain | 4.6 |
| Esophagus | 4.0 |
| Other | 3.3 |
| Lung | 2.8 |
| Lymphoma | 2.6 |
| Prostate | 1.4 |

Commissioning QA of Treatment planning

AAPM Medical Physics Practice Guideline 5.a.: Commissioning and QA of Treatment Planning Dose Calculations — Megavoltage Photon and Electron Beams

Medical Physics Practice Guideline: Jennifer B. Smilowitz, Chair, Indra J. Das, Vladimir Feygelman, Benedick A. Fraass, Stephen F. Kry, Ingrid R. Marshall, Dimitris N. Mihailidis, Zoubir Ouhib, Timothy Ritter, Michael G. Snyder, Lynne Falrobert, AAPM Staff

Accelerator beam data commissioning equipment and procedures: Report of the TG-106 of the Therapy Physics Committee of the AAPM

- Indra J. Das¹
Department of Radiation Oncology, University of Pennsylvania, Philadelphia, Pennsylvania 19104
 - Chee-Wai Cheng
Department of Radiation Oncology, Morristown Memorial Hospital, Morristown, New Jersey 07962
 - Ronald J. Watts
International Medical Physics Services, San Antonio, Texas 78232
 - Anders Ahnesjö
Uppsala University and Nucletron Scandinavia AB, 751 47 Uppsala, Sweden
 - John Gibbons
Department of Radiation Oncology, Mary Bird Perkins Cancer Center, Baton Rouge, Louisiana 70809
 - X. Allen Li
Department of Radiation Oncology, Medical College of Wisconsin, Milwaukee, Wisconsin 53226
 - Jessica Lowenstein
Radiological Physics Center, MD Anderson Cancer Center, Houston, Texas 77030
 - Raj K. Mitra
Department of Radiation Oncology, Ochsner Clinic, New Orleans, Louisiana 70121
 - William E. Simon
Sun Nuclear Corporation, Melbourne, Florida 32940
 - Timothy C. Zhu
Department of Radiation Oncology, University of Pennsylvania, Philadelphia, Pennsylvania 19104
- (Received 4 February 2008; revised 18 July 2008; accepted for publication 18 July 2008; published 22 August 2008)

**American Association of Physicists in Medicine
Radiation Therapy Committee Task Group 53:
Quality assurance for clinical radiotherapy treatment planning**

Benedick Fraass¹
University of Michigan Medical Center, Ann Arbor, Michigan

Karen Doppke
Massachusetts General Hospital, Boston, Massachusetts

Margie Hunt
*Fox Chase Cancer Center, Philadelphia, Pennsylvania
and Memorial Sloan-Kettering Cancer Center, New York, New York*

Gerald Kutcher
Memorial Sloan-Kettering Cancer Center, New York, New York

George Starkschall
H. D. Anderson Cancer Center, Houston, Texas

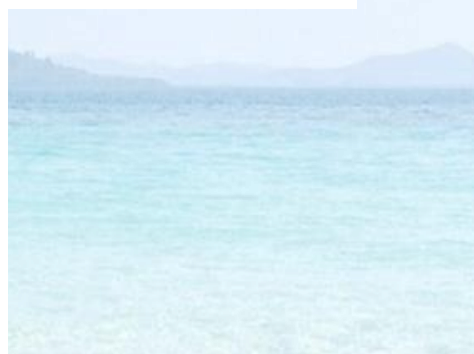
Robin Stern
University of California, Davis Medical Center, Sacramento, California

Jako Van Dyke
London Regional Cancer Center, London, Ontario, Canada

(Received 15 December 1997; accepted for publication 4 August 1998)

IMRT commissioning: Multiple institution planning and dosimetry comparisons, a report from AAPM Task Group 119

- Gary A. Ezzell
Department of Radiation Oncology, Mayo Clinic Scottsdale, 5777 East Mayo Boulevard, MCSB Conference, Phoenix, Arizona 85054
- Jay W. Burmeister
Wayne State University School of Medicine, Karmanos Cancer Center, 4100 John R Street, Detroit, Michigan 48201
- Nesrin Dogan
Department of Radiation Oncology, Virginia Commonwealth University, 401 College Street B-129, Richmond, Virginia 23298
- Thomas J. LoSasso and James G. Mechalakos
Department of Medical Physics, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, New York 10065



Task Group Report | [Free Access](#)

Tolerance limits and methodologies for IMRT measurement-based verification QA: Recommendations of AAPM Task Group No. 218

Moyed Miften✉, Arthur Olch, Dimitris Mihailidis, Jean Moran, Todd Pawlicki, Andrea Molineu, Harold Li, Krishna Wijesooriya, Jie Shi, Ping Xia, Nikos Papanikolaou, Daniel A. Low

First published: 14 February 2018 | <https://doi.org/10.1002/mp.12810> | Cited by: 20



Non dosimetric TPS Commissioning

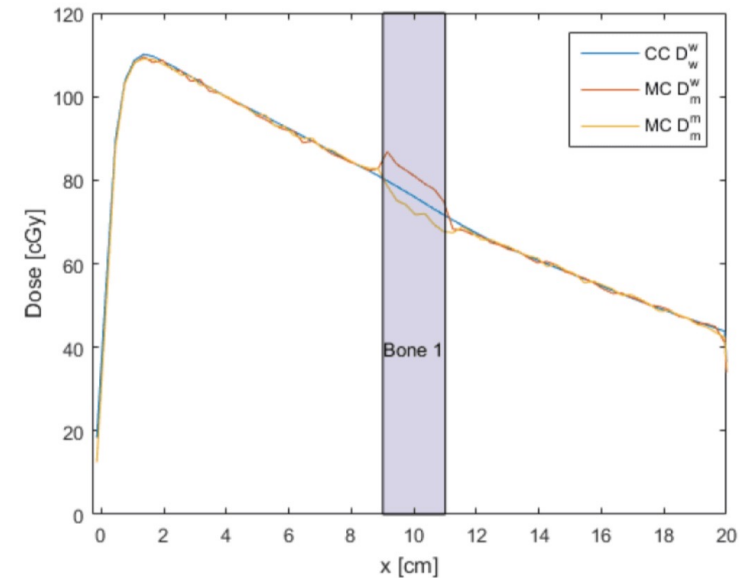
- Accurate image interpretation
 - Distance
 - CT number to physical or electron density
 - volume



Dosimetry TPS Commissioning

- Algorithm Verification
- Calculation Verification
 - Irregular field shape
 - Heterogeneous material (Lung bone)
 - Differing SSD
 - Dynamically shaped field
 - MLC shape field
- Evaluation of limiting case
- End to End >>> Phantom

Reference: Ma, C-M and Li J, *Dose specification of radiation therapy: dose to water or dose to medium?* Phys. Med. Biol. 56 (2011) 9073-3089.



Treatment Beam data



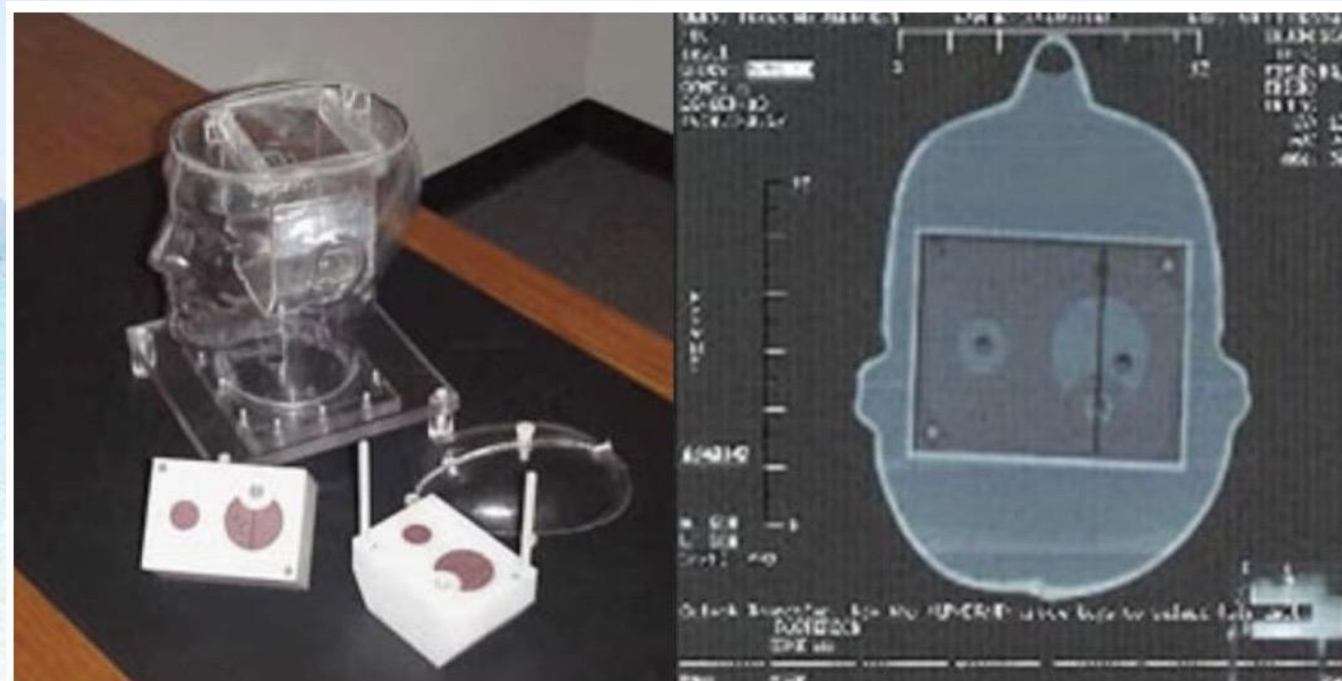
Thai
Medical
Physicist
Society

- PDD
- Profile
- MLC
 - Interleaf leakage
 - Intraleaf leakage
 - Tongue and groove
- Head leakage
- Total Scatter



IMRT&VMAT

- PDD profile small field (2x2)
- Small field output (2x2)
- MLC





Thai
Medical
Physicist
Society

Case study

Head and Neck



Thai
Medical
Physicist
Society

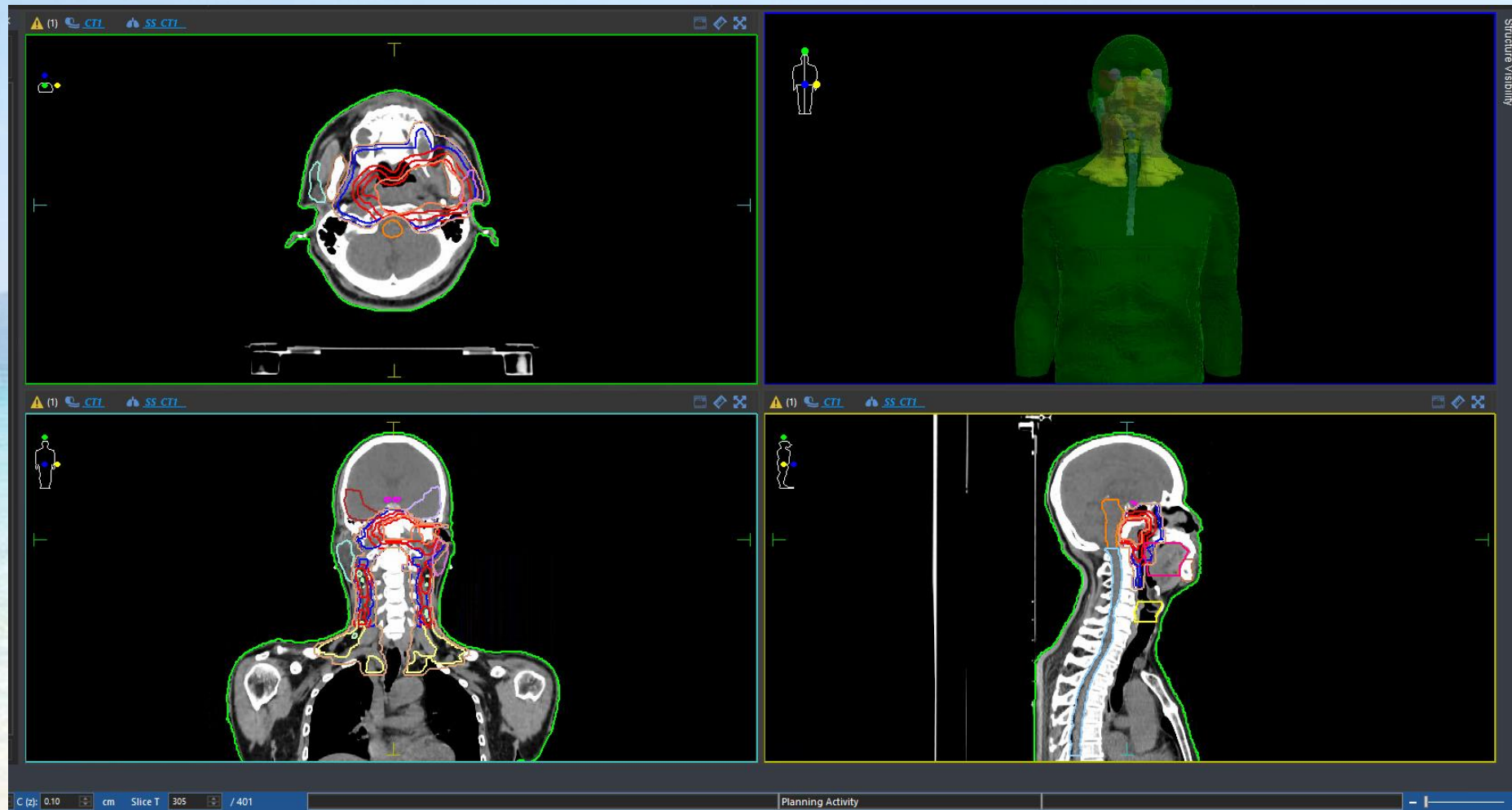


Table 1. QUANTEC Summary: Approximate Dose/Volume/Outcome Data for Several Organs Following Conventional Fractionation (Unless Otherwise Noted)*

| Organ | Volume segmented | Irradiation type (partial organ unless otherwise stated) [†] | Endpoint | Dose (Gy), or dose/volume parameters [†] | Rate (%) | Notes on dose/volume parameters |
|----------------------|--------------------------------|---|---|---|----------|--|
| Brain | Whole organ | 3D-CRT | Symptomatic necrosis | Dmax <60 | <3 | Data at 72 and 90 Gy, extrapolated from BED models |
| | Whole organ | 3D-CRT | Symptomatic necrosis | Dmax = 72 | 5 | |
| | Whole organ | 3D-CRT | Symptomatic necrosis | Dmax = 90 | 10 | |
| | Whole organ | SRS (single fraction) | Symptomatic necrosis | V12 <5–10 cc | <20 | Rapid rise when V12 > 5–10 cc |
| Brain stem | Whole organ | Whole organ | Permanent cranial neuropathy or necrosis | Dmax <54 | <5 | |
| | Whole organ | 3D-CRT | Permanent cranial neuropathy or necrosis | D1–10 cc [‡] ≤59 | <5 | |
| | Whole organ | 3D-CRT | Permanent cranial neuropathy or necrosis | Dmax <64 | <5 | Point dose <<1 cc |
| | Whole organ | SRS (single fraction) | Permanent cranial neuropathy or necrosis | Dmax <12.5 | <5 | For patients with acoustic tumors |
| Optic nerve / chiasm | Whole organ | 3D-CRT | Optic neuropathy | Dmax <55 | <3 | Given the small size, 3D-CRT is often whole organ ^{††} |
| | Whole organ | 3D-CRT | Optic neuropathy | Dmax 55–60 | 3–7 | |
| | Whole organ | 3D-CRT | Optic neuropathy | Dmax >60 | >7–20 | |
| | Whole organ | SRS (single fraction) | Optic neuropathy | Dmax <12 | <10 | |
| Spinal cord | Partial organ | 3D-CRT | Myelopathy | Dmax = 50 | 0.2 | Including full cord cross-section |
| | Partial organ | 3D-CRT | Myelopathy | Dmax = 60 | 6 | |
| | Partial organ | 3D-CRT | Myelopathy | Dmax = 69 | 50 | |
| | Partial organ | SRS (single fraction) | Myelopathy | Dmax = 13 | 1 | Partial cord cross-section irradiated 3 fractions, partial cord cross-section irradiated |
| | Partial organ | SRS (hypofraction) | Myelopathy | Dmax = 20 | 1 | |
| Cochlea | Whole organ | 3D-CRT | Sensory neural hearing loss | Mean dose ≤45 | <30 | Mean dose to cochlear, hearing at 4 kHz |
| | Whole organ | SRS (single fraction) | Sensory neural hearing loss | Prescription dose ≤14 | <25 | Serviceable hearing |
| Parotid | Bilateral whole parotid glands | 3D-CRT | Long term parotid salivary function reduced to <25% of pre-RT level | Mean dose <25 | <20 | For combined parotid glands [§] |
| | Unilateral whole parotid gland | 3D-CRT | Long term parotid salivary function reduced to <25% of pre-RT level | Mean dose <20 | <20 | For single parotid gland. At least one parotid gland spared to <20 Gy [§] |

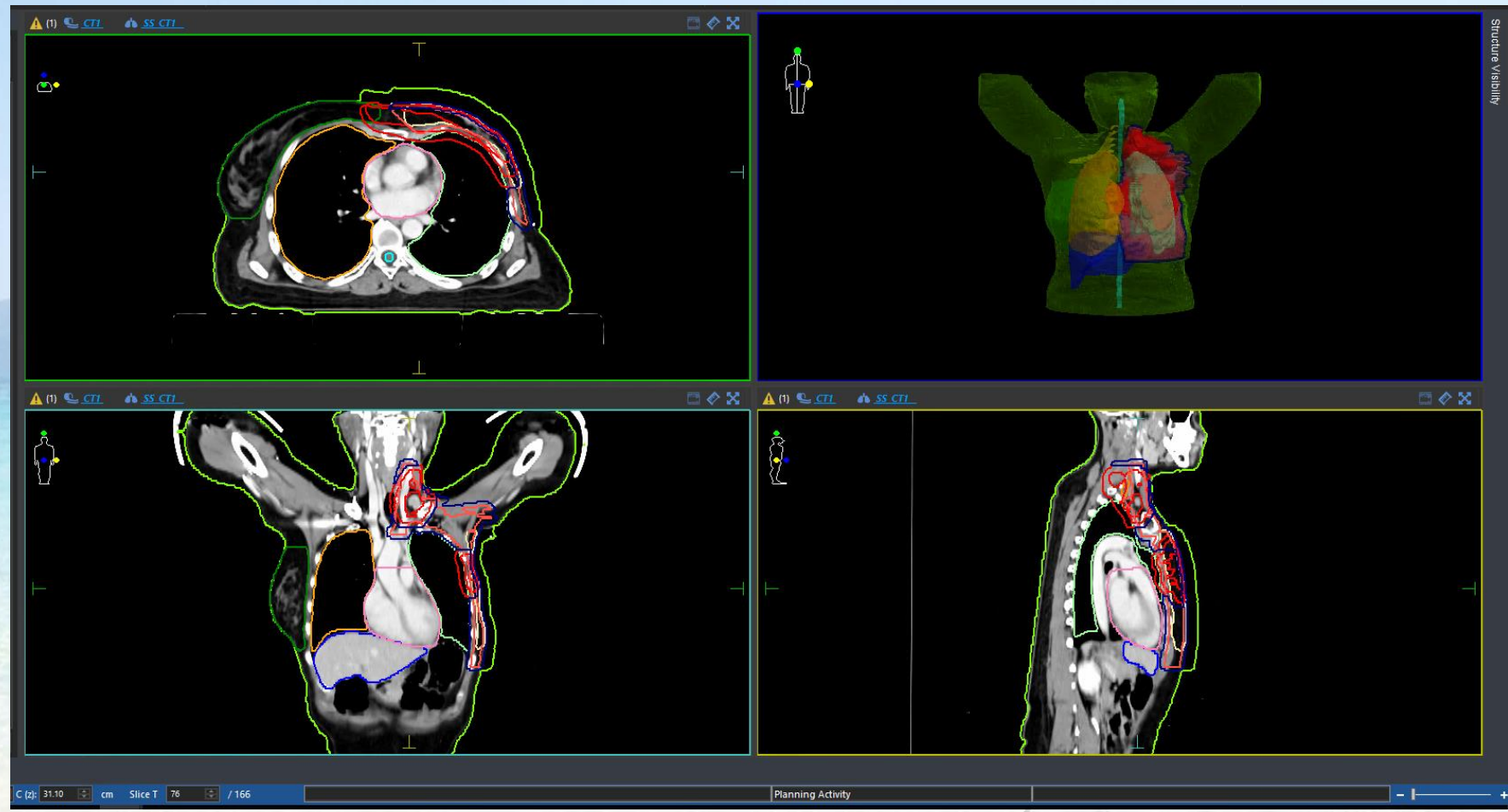
(Continued)

Use of NTCP models in the clinic ● L. B. Marks et al.

cal
icist
ety

Outcomes"

LT Breast



Practical Guides in Radiation Oncology
Series Editors: Nancy Y. Lee · Jiade J. Lu

Jennifer R. Bellon
Julia S. Wong
Shannon M. MacDonald
Alice Y. Ho *Editors*

Radiation Therapy Techniques and Treatment Planning for Breast Cancer

 Springer



Thai
Medical
Physicist
Society

| | MSKCC dosimetric planning guidelines for breast VMAT/IMRT (assuming a prescription dose of 50Gy/25F) (book: radiation therapy techniques and treatment planning for breast cancer 2016) | Book: Practice Guides in Radiation Oncology, Nancy Y. Lee, chapter12: regional lymph node irradiation for breast cancer, Alice Y. Ho, 2022 | MA39 (arm2 breast+/-boost and regional nodal irradiation, chest wall and regional nodal irradiation, IMRT) Dose 50Gy/25F and 42.56Gy/16F | NSABP B51 arm2 breast+/-boost and regional nodal irradiation, chest wall and regional nodal irradiation, 3DCRT and IMRT Dose 50Gy/25F | | | | |
|--------------------|---|--|--|---|--------------------------------------|--|---|--|
| | | | | Protocol | Variation acceptable | Maximum dose | Per protocol | Variation acceptable |
| PTV | D95%≥95% D05%≤110% | D95%≥95% V95%≥95% D05%≤110% | | | | | | |
| IMN | D95%≥100% | D95%≥90% | | | | | | |
| | | | Breast or chestwall PTV_Eval (calculated without boost) | ≥95% receives 95% of prescribed dose | ≥90% receives 90% of prescribed dose | Photons only: <10cc receives 107% (up to 110%) < 0.03cc receives 115% (up to 120%) | At least 95% of the PTV-Eval receives at least 95% of 50Gy | At least 90% of the PTV-Eval receives at least 90% of 50Gy |
| | | | Lumpectomy boost PTV_Eval and mastectomy scar PTV_Eval (calculated only if boost used) | ≥95% receives 95% of prescribed dose | ≥90% receives 90% of prescribed dose | <10cc receives 110% < 0.03cc receives 120% | At least 95% of the lumpectomy PTV Eval receives 95% of cumulative boost dose 62-64Gy | At least 90% of the lumpectomy PTV Eval receives 90% of boost dose |
| | | | Supraclavicular SCL_PTV | ≥95% receives 95% of prescribed dose | ≥90% receives 90% of prescribed dose | <10cc receives 105% < 0.03cc receives 110% | At least 95% of the SCL PTV receives 95% of 50Gy | At least 90% of the SCL PTV receives 90% of 50Gy |
| | | | Axillary PTV | ≥95% receives 95% of prescribed dose | ≥90% receives 90% of prescribed dose | <10cc receives 105% < 0.03cc receives 110% | At least 95% of the Ax PTV receives 95% of 50Gy | At least 90% of the Ax PTV receives 90% of 50Gy |
| | | | IMN_PTV | ≥95% receives 90% of prescribed dose | ≥90% receives 80% of prescribed dose | <10cc receives 110% < 0.03cc receives 115% | At least 95% of the IMN PTV receives 90% of 50Gy | At least 90% of the IMN PTV receives 80% of 50Gy |
| Ipsilateral lung | - V20Gy ≤33%, ≤30% (with DIBH) - V10Gy ≤68%, ≤63% (with DIBH) - Mean dose ≤20Gy, ≤18Gy (with DIBH) | - V20Gy ≤30-33%, ≤27-30% (with DIBH) - V10Gy ≤65-68%, ≤60-63% (with DIBH) - Mean dose ≤18Gy | | V5 ≤ 65% ^b V10 ≤ 45% ^b V20 ≤ 25% | V20 ≤ 35% | | V20 ≤ 35% | V20 ≤ 40% |
| Contralateral lung | V20Gy ≤8% | V20Gy ≤5% | | V5 ≤ 10% V10 ≤ 5% ^b | V5 < 15% | | | |
| Bilateral lung | | | | V20 ≤ 15% Mean dose≤10Gy | | | | |

| Heart | V25 Gy \leq 25% maximum point dose \leq 50Gy | | | | | | Mean dose \leq 4Gy | Mean dose \leq 5Gy |
|--|--|---|--|--|--|--|----------------------|----------------------|
| Heart, Lt breast | mean dose \leq 9Gy (if IMN D95 \geq 100%), \leq 8Gy (if IMN D95 \geq 90%) ^a | mean dose - Non-DIBH: \leq 8-9Gy (if IMN D95 \geq 100%), \leq 7-8Gy (if IMN D95 \geq 90%) - DIBH: \leq 7-8Gy (if IMN D95 \geq 100%), \leq 6-7Gy (if IMN D95 \geq 90%) | | Mean dose \leq 3Gy and V25 \leq 10% | Mean dose \leq 5Gy and V30 \leq 10% | | V25 \leq 10% | V30 \leq 10% |
| Heart, Rt breast | mean dose \leq 5Gy (if IMN D95 \geq 100%), \leq 4Gy (if IMN D95 \geq 90%) | mean dose - Non-DIBH: \leq 5Gy (if IMN D95 \geq 100%), \leq 4Gy (if IMN D95 \geq 90%) | | Mean dose \leq 2Gy and V25 \leq 2% | Mean dose \leq 5Gy and V30 \leq 2% | | V25 \leq 2% | V30 \leq 2% |
| | | If any of the constraints above cannot be achieved: Mean dose - Non-DIBH: \leq 10-12Gy DIBH: \leq 9-10Gy | | | | | | |
| Left anterior descending artery maximum point dose | \leq 50Gy | \leq 25-35Gy | | | | | | |
| Thyroid mean dose | \leq 20Gy | \leq 20Gy | | | | | | |
| Esophagus maximum point dose | \leq 50Gy | \leq 35-40Gy | | | | | | |
| Brachial plexus maximum point dose | \leq 55Gy | \leq 55Gy | | | | | | |
| Contralateral intact breast mean dose | \leq 5Gy | \leq 6Gy | | V10 \leq 15% | | | V3 \leq 10% | V5 \leq 10% |
| Contralateral implant mean dose | \leq 8Gy | \leq 8Gy | | | | | | |
| Liver (for right sided cases) mean dose | \leq 10Gy | \leq 8-10Gy | | | | | | |

| | | | | | | | | |
|---|------------------------|------------------------|--|--|--|--|--|--|
| Stomach (for left sided cases) mean dose | ≤5Gy, ≤3Gy (with DIBH) | ≤5Gy, ≤3Gy (with DIBH) | | | | | | |
| Cord maximum point dose | ≤20Gy | ≤20Gy | | | | | | |

^a using DIBH, the mean heart dose (MHD) can further reduced for left-sided cases to within 5-6Gy, when the IMN D95_≥100%

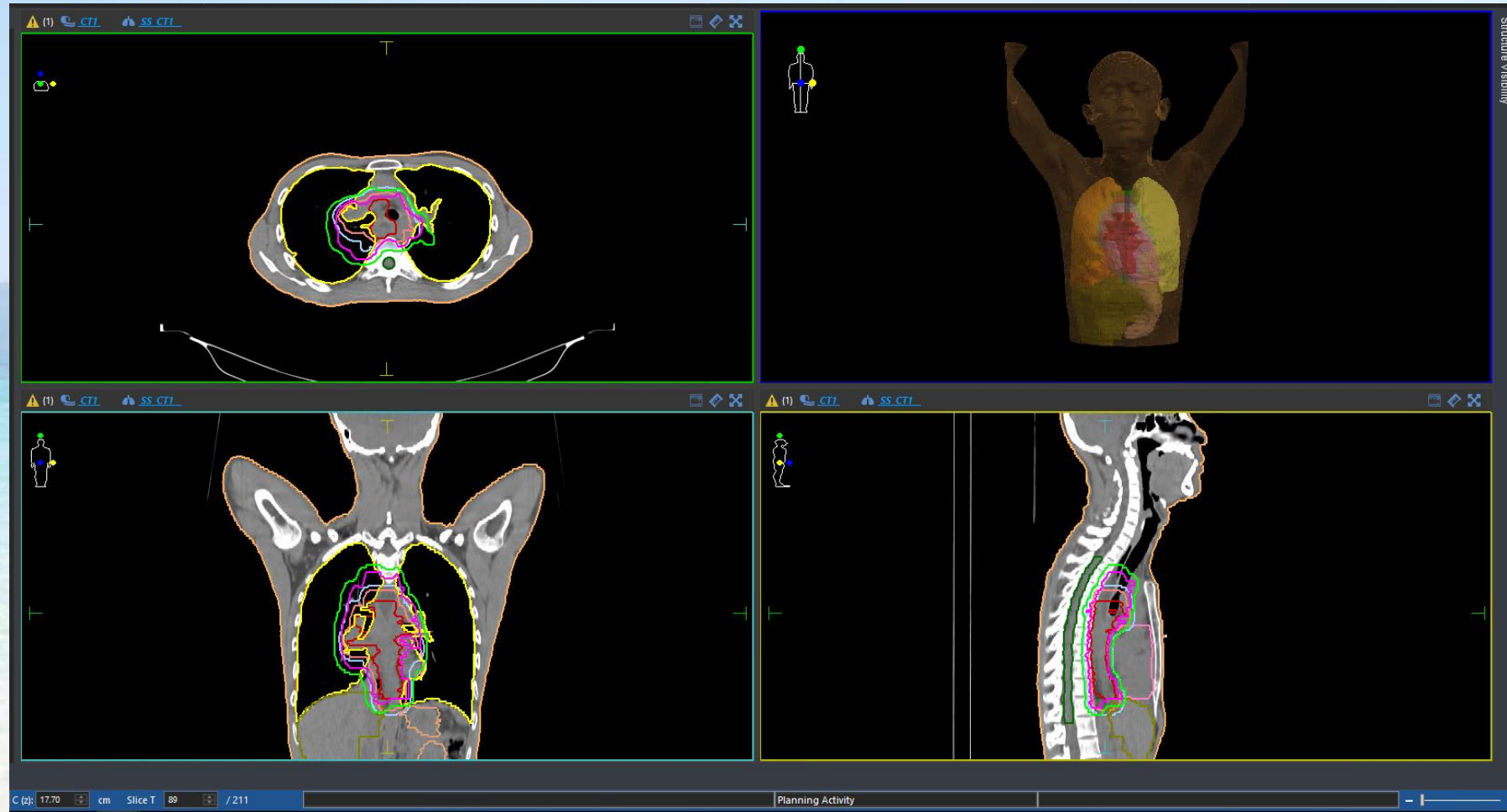
^b: These criteria are required and no variation is acceptable

st

Esophagus



Thai
Medical
Physicist
Society





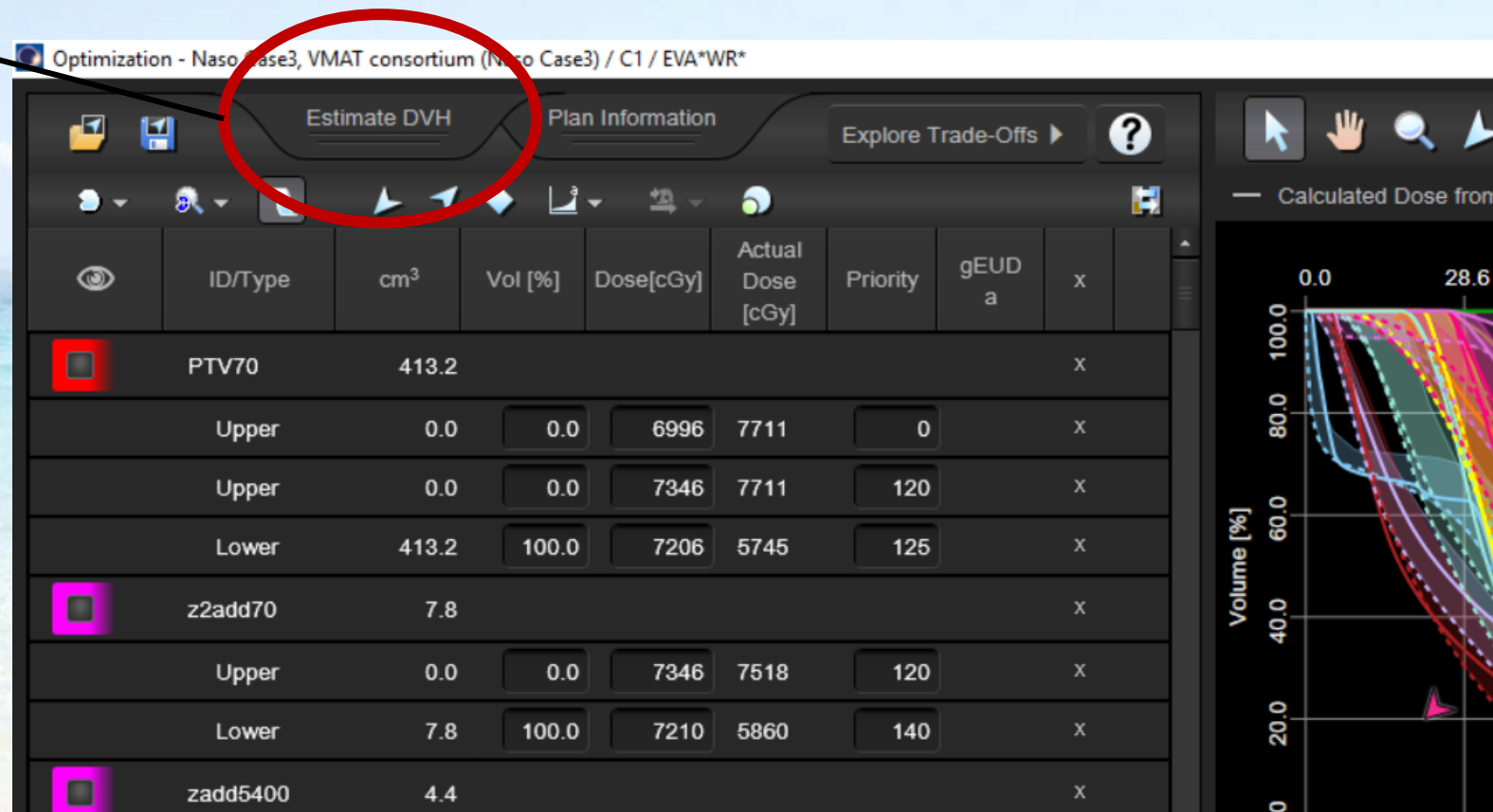
Thai
Medical
Physicist
Society

Eclipse Feature

- Rapid plan
- MCO
- Eclipse Scripting

Rapid plan

- Knowledge-based treatment planning software



Estimate DVH

Plan Information

Sort Order: ID Show Unpublished Models

DVH Estimation Model: **WUSTL Head & Neck Model Head/Neck**
01 November 2021 17:32:22 13.6.23(Varian)

Description: **Targets in the head and neck region (base of skull to clavicles)** [View Clinical Description...](#)

| Plan Structure ID (Codes) | Type | Model Structure ID (Codes) | Target Dose |
|---|-------|----------------------------|-------------|
| <input checked="" type="checkbox"/> PTV70 (PTV_High) | PTV | PTV_High (PTV_High) | 6996 cG |
| <input checked="" type="checkbox"/> zPTV54 (PTV_Low) | PTV | PTV_Low (PTV_Low) | 5400 cG |
| <input checked="" type="checkbox"/> zPTV60 (PTV_Intermediate) | PTV | PTV_Intermediate (PTV_Int) | 6000 cG |
| <input checked="" type="checkbox"/> BrainStem (79876) | ORGAN | BrainStem (79876) | |
| <input checked="" type="checkbox"/> Chiasm (62045) | ORGAN | Chiasm (62045) | |
| <input checked="" type="checkbox"/> Cochlea_L (60203) | ORGAN | Ear_Middle (56515, 56514) | |
| <input checked="" type="checkbox"/> Cochlea_R (60202) | ORGAN | Ear_Middle (56515, 56514) | |
| <input checked="" type="checkbox"/> Eye_L (12515) | ORGAN | Eye (12515, 12514) | |
| <input checked="" type="checkbox"/> Eye_R (12514) | ORGAN | Eye (12515, 12514) | |

Unmatched Non-Target Model Structures: Esophagus_Upper, Lips, NS_Shoulders, PharynxConst, Submandibular

[Estimation Statistics...](#) [Generate Estimates and Objectives](#)

Settings: Estimate DVH Normal (2.5 mm)

Automatic Optimization Mode
 Automatic Intermediate Dose
 Use GPU

Intermediate Dose

Calculated Dose from Original Plan

Dose Shown: Calculated Dose from Original Plan

Isodoses...

- 6646 cGy
- 6000 cGy
- 3000 cGy

Z: -3.20 cm 10.00 cm

The priority of some objectives is 0.

Progress Clinical Goals ▲

| | |
|-------------------|----------|
| 3D Dose Max | 7711 cGy |
| 3D MAX for PTV70 | 7711 cGy |
| 3D MEAN for PTV70 | 7279 cGy |
| 3D MIN for PTV70 | 5745 cGy |
| Elapsed Time | |
| Monitor Units | MU |
| Step in MR | |

[Open Log...](#)

MCO



Thai
Medical
Physicist
Society

es, VMAT Consortium (Naso Cases) / C1 / EVA WR EN English (United States)

Estimate DVH Plan Information Explore Trade-Offs ?

| cm ³ | Vol [%] | Dose[cGy] | Actu Dose [cGy] |
|-----------------|---------|-----------|-----------------------|
| 413.2 | | | |
| 0.0 | 0.0 | 6996 | 771 |
| 0.0 | 0.0 | 7346 | 771 |
| 413.2 | 100.0 | 7206 | 574 |
| 7.8 | | | |
| 0.0 | 0.0 | 7346 | 751 |
| 7.8 | 100.0 | 7210 | 586 |
| 4.4 | | | |
| 4.4 | 100.0 | 5562 | 511 |
| 9.7 | | | |
| 9.7 | 100.0 | 6180 | 515 |
| 2.7 | | | |

Select Trade-off Objectives

Target structures

| ID/Type | Trade-off |
|---------------------------------|--------------------------|
| PTV70 | |
| Upper Point (7346 cGy, 0.0 %) | <input type="checkbox"/> |
| Lower Point (7206 cGy, 100.0 %) | <input type="checkbox"/> |
| Homogeneity | <input type="checkbox"/> |

Organs at risk

| ID/Type | Trade-off |
|-----------|--------------------------|
| BODY | <input type="checkbox"/> |
| BrainStem | <input type="checkbox"/> |
| Chiasm | <input type="checkbox"/> |
| Cochlea_L | <input type="checkbox"/> |
| Cochlea_R | <input type="checkbox"/> |

Continue optimization
 Use the current plan as intermediate dose
 Calculate intermediate dose
 Hybrid optimization
 Use GPU

Generate Plans Cancel

Start VMAT Optimization Intermediate Dose

Eclipse scripting



Thai
Medical
Physicist
Society

The screenshot shows the GitHub interface for the repository 'esimiele / VMAT-TBI'. The repository is public and has 10 forks and 22 stars. The main content area displays a list of files and folders with their commit history. The 'About' section on the right provides details about the repository, including its description, license (MIT), and activity.

| File/Folder | Commit Message | Time |
|------------------------------------|--|--------------|
| VMATTBIAutoPlan | Minor changes to config file | last year |
| VMS_TPS_resources | Fixed MLC machine issue #1 and fixed MR-level specification... | 2 years ago |
| bin/configuration | Minor changes to config file | last year |
| documentation | Removal of master branch | last year |
| example_patients | Removal of master branch | last year |
| log_files | Removal of master branch | last year |
| .gitignore | Fix for issue #24 and Pull request #20 | 2 years ago |
| License | winter 2021 beta new features | 3 years ago |
| Readme.md | update readme extensions | 2 months ago |
| VMAT TBI Shifts.xlsx | Removal of master branch | last year |
| VMAT TBI install and run guide.pdf | updated install and run guide for latest push | 2 years ago |

About
ESAPI code used for VMAT TBI autoplanning
esapi
Readme
MIT license
Activity
22 stars
3 watching
10 forks
Report repository

Releases
No releases published

Packages
No packages published

Eclipse scripting



Thai
Medical
Physicist
Society

TBI, 7 (TBI7) - External Beam Planning

EN English (United States)

Warinthorn R

QuickLinks TBI, 7 (TBI7) Worklist

File Edit View Insert Planning Tools Window

Selection Contouring Image Registration External Beam Planning Brachytherapy Planning Brachytherapy 2D Entry Plan Evaluation

Plan Sum - Transversal - C200224_Bodytest

Iodose Levels [cGy]

2640.0
2520.0
2400.0
2280.0
2160.0 Z: -117.00 cm

Old Leg / 15 Upper Legs

Plan Sum - Frontal - C200224_Bodytest

Y: 5.00 cm

427.3 cGy

Plan Sum - Sagittal - C200224_Bodytest

X: 0.00 cm

3D Dose MAX: 2448.2 cGy
3D MAX for PTV_Body: 2448.2 cGy
3D MIN for PTV_Body: 548.8 cGy
3D MEAN for PTV_Body: 1215.7 cGy

365.3 cGy

| Group | Plan ID | Field ID | Technique | Machine/Energy | MLC | Field Weight | Scale | Gantry Rtn [deg] | Coll Rtn [deg] | Couch Rtn [deg] | Wedge | Field X [cm] | X1 [cm] | X2 [cm] | Field Y [cm] | Y1 [cm] | Y2 [cm] | X [cm] | Y [cm] | Z [cm] | Calculated SSD [cm] | MU | Ref. D [cGy] |
|-------|--------------|------------------|---------------|----------------|------|--------------|------------|------------------|----------------|-----------------|-------|--------------|---------|---------|--------------|---------|---------|--------|--------|---------|---------------------|-----|--------------|
| I | Old Leg | 13 AP Upper Legs | Static-I | iX1 - 6X | | 1.000 | Varian IEC | 0.0 | 90.0 | 0.0 | None | 40.0 | +20.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -117.00 | | 97 | |
| I | Old Leg | 14 PA Upper Legs | Static-I | iX1 - 6X | | 1.000 | Varian IEC | 180.0 | 90.0 | 0.0 | None | 40.0 | +20.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -117.00 | | 101 | |
| II | Old Leg | 15 AP Lower Legs | Static-I | iX1 - 6X | | 1.000 | Varian IEC | 0.0 | 90.0 | 0.0 | None | 40.0 | +20.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -156.00 | | 97 | |
| II | Old Leg | 16 PA Lower Legs | Static-I | iX1 - 6X | | 1.000 | Varian IEC | 180.0 | 90.0 | 0.0 | None | 40.0 | +20.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -156.00 | | 102 | |
| I | Old VMAT TBI | 1 CCW Head | Arc Therapy-I | iX1 - 6X | VMAT | 0.964 | Varian IEC | 179.0 CCW 181.0 | 3.0 | 0.0 | None | 22.0 | +2.0 | +2.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -2.00 | 96.1 | 193 | |
| I | Old VMAT TBI | 2 CW Head | Arc Therapy-I | iX1 - 6X | VMAT | 0.931 | Varian IEC | 181.0 CW 179.0 | 357.0 | 0.0 | None | 22.0 | +20.0 | +2.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -2.00 | 96.1 | 186 | |
| I | Old VMAT TBI | 3 CCW Head90 | Arc Therapy-I | iX1 - 6X | VMAT | 0.836 | Varian IEC | 179.0 CCW 181.0 | 87.0 | 0.0 | None | 20.0 | +20.0 | 0.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -2.00 | 96.1 | 167 | |
| II | Old VMAT TBI | 4 CW Chest | Arc Therapy-I | iX1 - 6X | VMAT | 1.039 | Varian IEC | 181.0 CW 179.0 | 3.0 | 0.0 | None | 22.0 | +2.0 | +2.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -28.00 | 88.4 | 208 | |
| II | Old VMAT TBI | 5 CCW Chest | Arc Therapy-I | iX1 - 6X | VMAT | 0.960 | Varian IEC | 179.0 CCW 181.0 | 357.0 | 0.0 | None | 22.0 | +20.0 | +2.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -28.00 | 88.4 | 192 | |
| II | Old VMAT TBI | 6 CW Chest90 | Arc Therapy-I | iX1 - 6X | VMAT | 1.055 | Varian IEC | 181.0 CW 179.0 | 87.0 | 0.0 | None | 20.0 | 0.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -28.00 | 88.4 | 211 | |
| II | Old VMAT TBI | 7 CCW Chest90 | Arc Therapy-I | iX1 - 6X | VMAT | 1.011 | Varian IEC | 179.0 CCW 181.0 | 93.0 | 0.0 | None | 20.0 | +20.0 | 0.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -28.00 | 88.4 | 202 | |
| III | Old VMAT TBI | 8 CW Abdomen | Arc Therapy-I | iX1 - 6X | VMAT | 1.151 | Varian IEC | 181.0 CW 179.0 | 3.0 | 0.0 | None | 22.0 | +2.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -54.00 | 89.0 | 230 | |
| III | Old VMAT TBI | 9 CCW Abdomen | Arc Therapy-I | iX1 - 6X | VMAT | 1.033 | Varian IEC | 179.0 CCW 181.0 | 357.0 | 0.0 | None | 22.0 | +20.0 | +2.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -54.00 | 89.0 | 207 | |
| III | Old VMAT TBI | 10 CW Abdomen90 | Arc Therapy-I | iX1 - 6X | VMAT | 0.958 | Varian IEC | 181.0 CW 179.0 | 87.0 | 0.0 | None | 20.0 | +20.0 | 0.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -54.00 | 89.0 | 192 | |
| IV | Old VMAT TBI | 11 CCW Pelvis | Arc Therapy-I | iX1 - 6X | VMAT | 1.463 | Varian IEC | 179.0 CCW 181.0 | 0.0 | 0.0 | None | 22.0 | +2.0 | +20.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -80.00 | 91.1 | 293 | |
| IV | Old VMAT TBI | 12 CW Pelvis | Arc Therapy-I | iX1 - 6X | VMAT | 1.534 | Varian IEC | 181.0 CW 179.0 | 0.0 | 0.0 | None | 22.0 | +20.0 | +2.0 | 40.0 | +20.0 | +20.0 | 0.00 | 5.00 | -80.00 | 90.8 | 307 | |

Eclipse scripting



Thai
Medical
Physicist
Society

EN English (United States)

Quick Start VMAT TBI auto planning script Help

Structure Set ID: C200224_Bodytes

Dose per fraction (cGy/fraction): Scleroderma trial (Rx = 800 cGy):

Number of fractions: Non-myeloablative regimen (Rx = 200 cGy):

Rx dose (cGy): Myeloablative regimen (Rx = 1200 cGy):

Add flash:

TS Generation Beam Placement Optimization Setup Plan Preparation Script Configuration

PTV inner margin from body (cm): 0.3 ?

Structures to Spare

Add Structure Add Defaults Clear List

| X2 [cm] | Field Y [cm] | Y1 [cm] | Y2 [cm] |
|---------|--------------|---------|---------|
| +20.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +2.0 | 40.0 | +20.0 | +20.0 |
| 0.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +2.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| 0.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +2.0 | 40.0 | +20.0 | +20.0 |
| 0.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +2.0 | 40.0 | +20.0 | +20.0 |
| 0.0 | 40.0 | +20.0 | +20.0 |
| +20.0 | 40.0 | +20.0 | +20.0 |
| +2.0 | 40.0 | +20.0 | +20.0 |

Generate Tuning Structures

User: Warinthorn R Group:



Monaco scripting

What is Scripting?

- Scripting is a series of commands being executed automatically to complete the steps of a process that could alternatively be executed one-by-one by a human operator.

What are the advantages of using Scripting?

- Improves efficiency
- Standardize workflows

What kind of tasks could be automated in Monaco using Scripting?

- Import and export patients
- Create and calculate plans
- Generate reports
- Generate QA plans
- And much more



Monaco Sample Script

API Index

Contents | Index | Search |

Eleka.MonacoScripting.API Namespace

Classes

| Class | Description |
|----------------------|--|
| MonacoApplication | Represent the application instance, which refers to the mainframe GUI of Monaco. |
| ScriptingPlanObjBase | Base class of NewMonacoPlanCreator and ImportPlanTemplateCreator to provide the common interfaces. |

Enumerations

| Enumeration | Description |
|--|---|
| MonacoApplication.DicomExportOffsetOption | Enum of the options to deal with the dialog box that warns user of the enabled automated export of the patient setup shift. This dialog box is present when the manu/auto DICOM export is triggered if the table top permission is activated in the installed Monaco license. |
| MonacoApplication.RobustnessEvaluationOption | Enum of the options to deal with the dialog box that warns user of the enabled continue evaluating robustness. This dialog box is present click robustness evaluation button when the plan is not saved |
| MonacoApplication.SaveDlgOptions | Enum of the options to deal with the "Save Changes" dialog box. |

www.eleka.com

11:50 AM
01/03/2024

- AdaptAnatomy
- AutoDicomImport
- BatchDicomImport
- ExtractPlanData
- ImportDosimetricCriteria
- MCOworkflow
- NewPlan
- NewPlanWithUserInput
- NewQAPlan
- PlanComparison
- RobustnessEvaluation
- RobustOptimization
- SampleData
- ScriptingSample.sln



Thai
Medical
Physicist
Society

Thank you