



FROM DOSE *to* DATA: Understanding Radiation



Ashley Maxey, BSRT(T), ODS-C

CANCER REGISTRAR | RADIATION THERAPIST

Oncology Data Specialist | Speaker | NCRA Presenter





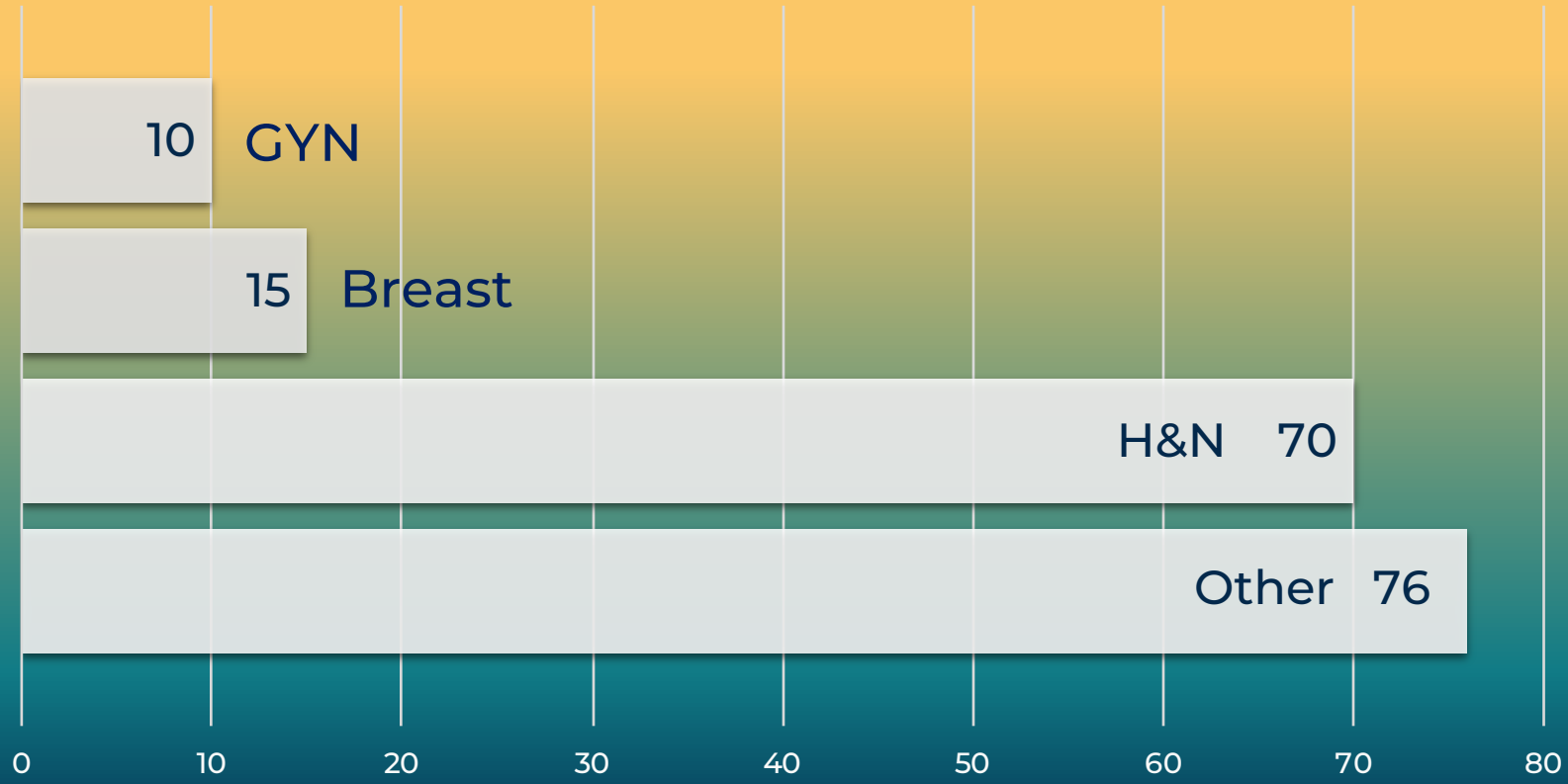
Learning Objectives

- Describe fundamental concepts of radiation therapy.
- Interpret and accurately code key elements of a radiation treatment plan.
- Apply practical tips and problem-solving strategies.



Survey Data 2025

Most Challenging Site to Code





Diagnosis to Treatment



Consult

CT Sim

Plan

QA

Blast
Off!



Immobilization Devices

Breast
Board



BiteLok



Vac-Lok



Prone
Pillow



H&N Mask



Wing Board



Modality

01 External Beam, NOS

02 External Beam, photons

03 External Beam, protons

04 External Beam, electrons

05 External Beam, neutrons

06 External Beam, carbon ions

07 Brachytherapy, NOS

08 Brachy, intracavitary, LDR

09 Brachy, intracavitary, HDR

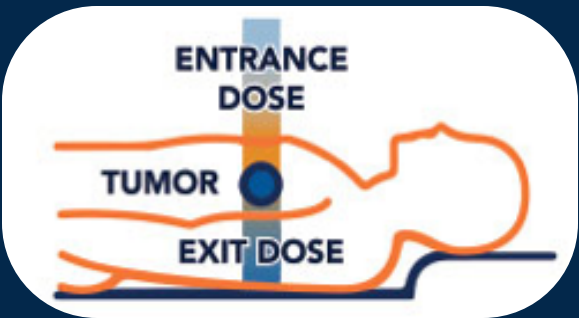
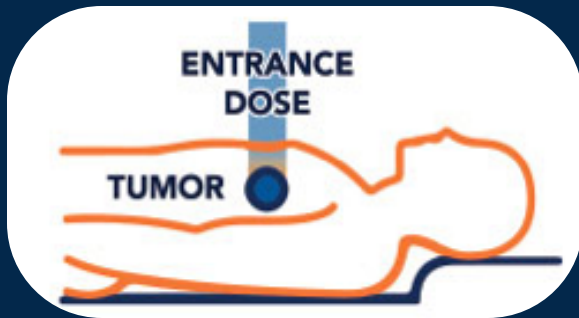
10 Brachy, interstitial, LDR

11 Brachy, interstitial, HDR

12 Brachytherapy, electronic



Modality

Photon	Electron	Proton
MV or X	MeV or E	P
Conventional	Superficial	Specialized
		

Note. Images retrieved from <https://www.floridaproton.org/blog-spot/proton-radiation-therapy>



Photon Therapy



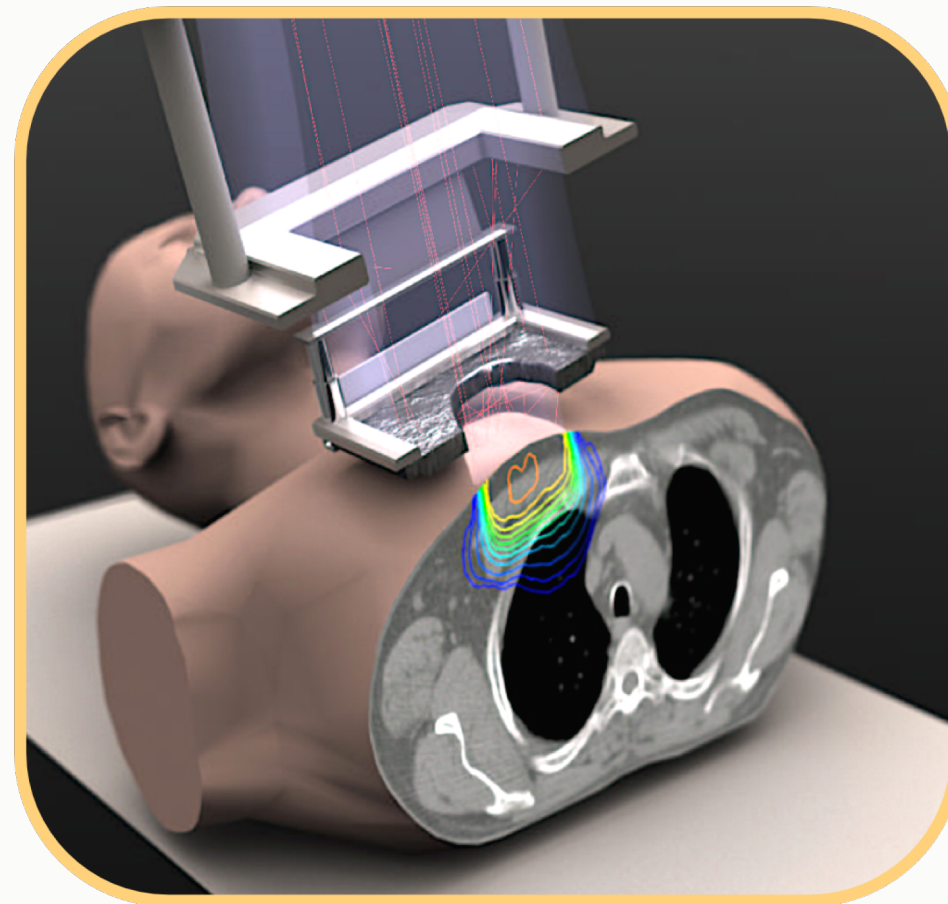
Note. Truebeam. Adapted from Varian.



Note. Trilogy. Adapted from Varian.



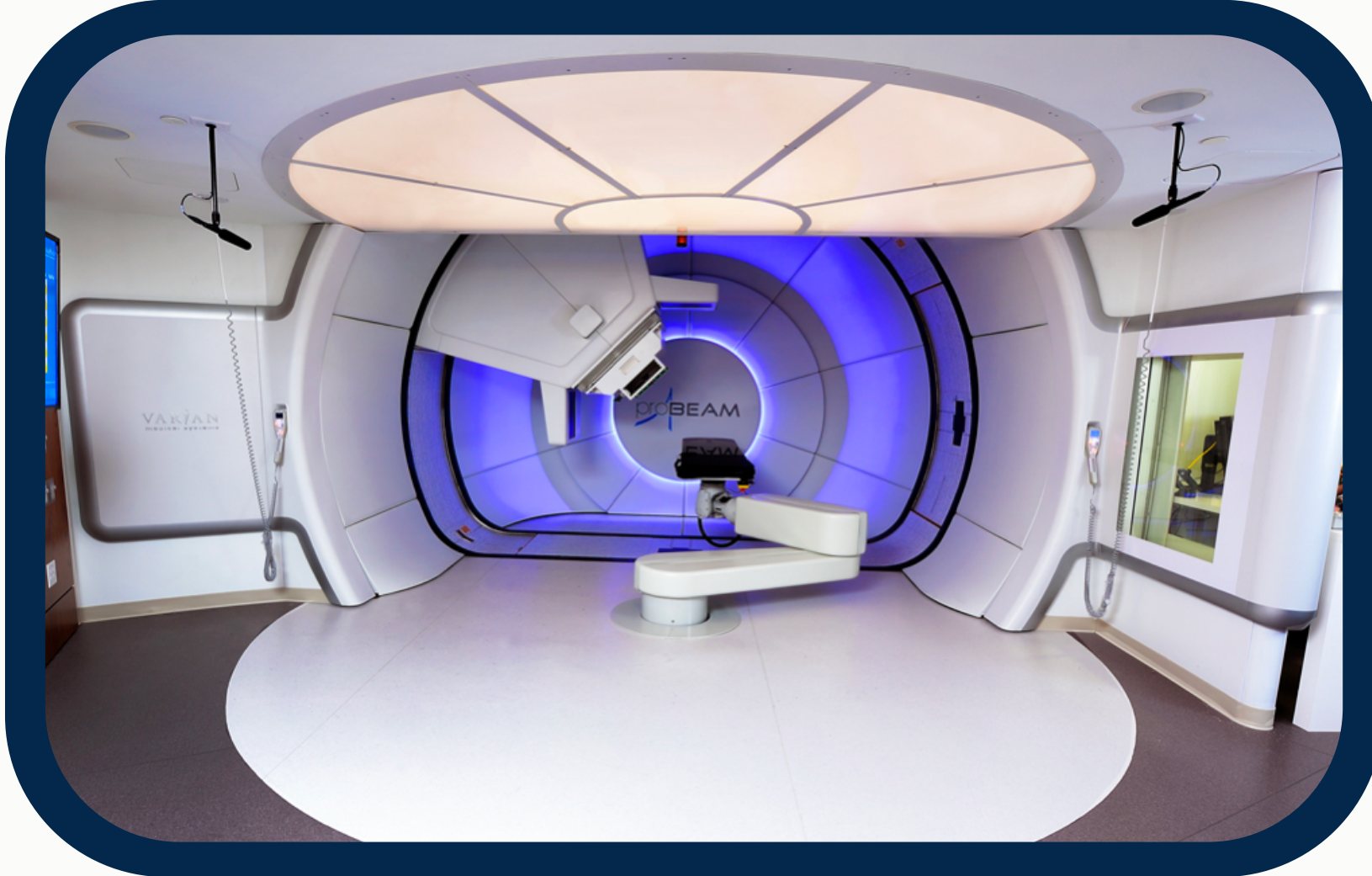
Electron Therapy



Note. Lundberg, T. Cutaway. Rendering of an electron beam dose calculation for the chest wall.



Proton Therapy



Note. ProBeam. Adapted from Varian.

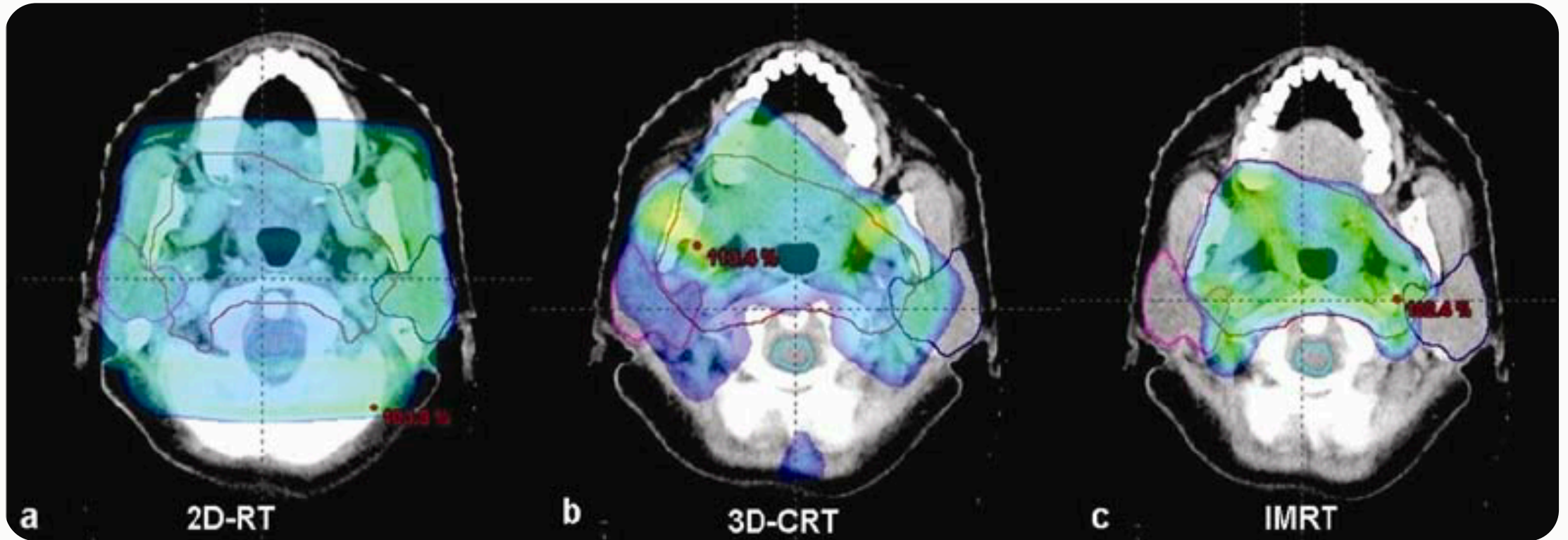


Planning Technique

3D Conformal	IMRT
Tangents	VMAT
Wedges	Dynamic MLCs
Field-in-Field	Step-and-Shoot
3D-CRT	RapidArc
<i>Code 04</i>	<i>Code 05</i>



Planning Technique



Note. Gupta, T. et al. IMRT and IGRT in head and neck cancer: Have we delivered what we promised?.
Indian journal of surgical oncology. 1. 166-85. 10.1007/s13193-010-0030-x.



Phase



- Anatomic Target Change
- Fraction Size Change
- Modality Change
- Technique Change
- Boost/Cone down



Treatment Plan

Use It

Prescription

Treatment Site

Treatment Technique

Note Section

Lose It

Field Size

Elapsed Days

Number of Beams

IGRT/OBI/CBCT



Total Course Dose

Do not add external beam +
brachytherapy doses together.



Use code 999998

Do not add primary + metastatic
site doses together.



Use the primary
dose only.

Do not add simultaneous
integrated boost doses together.



Use the highest dose.

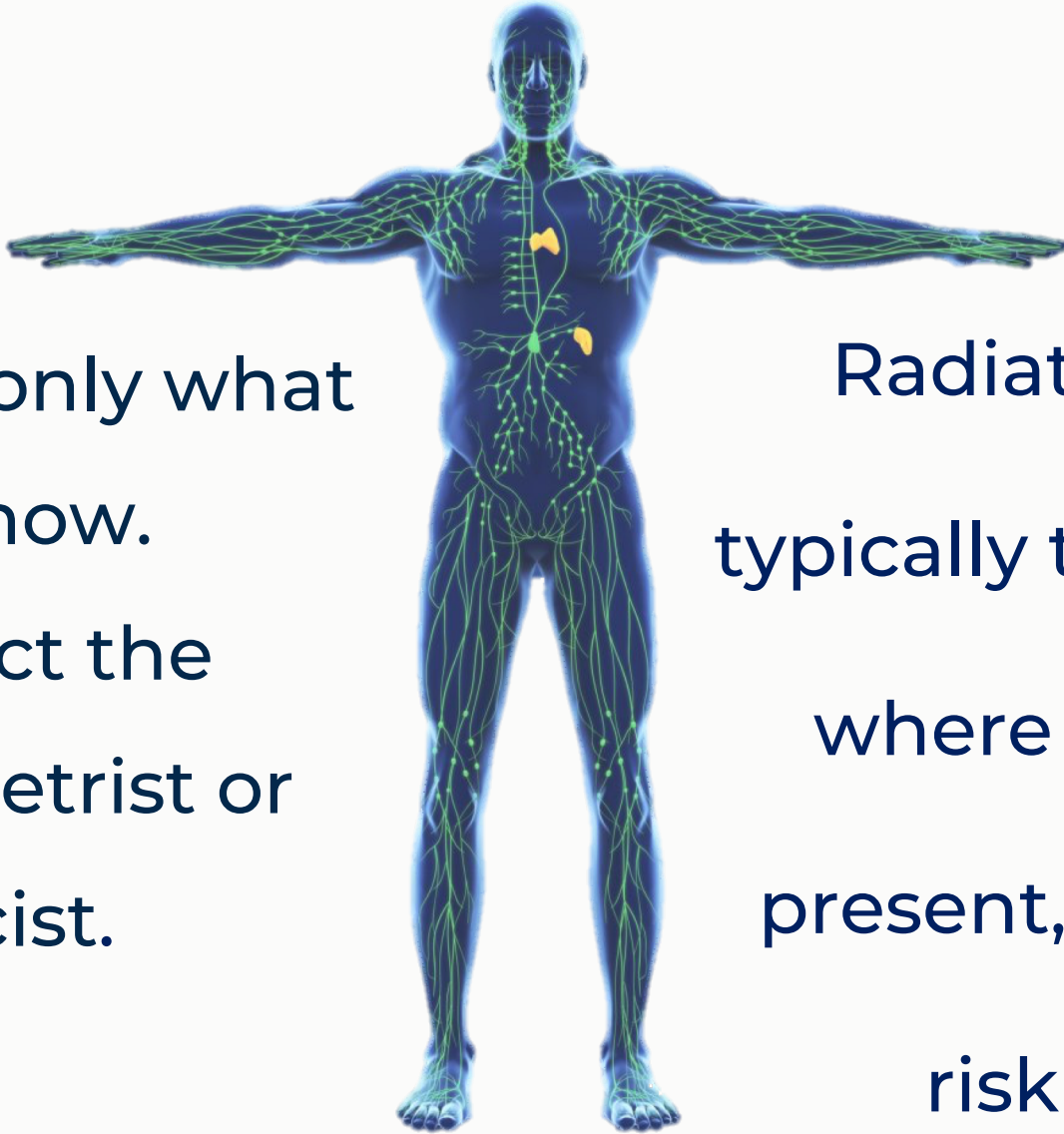


Total Course Dose

External + Brachytherapy	Primary + Mets	Simultaneous Integrated Boost
• 4500 cGy to Cervix + Pelvic LN • 1200 cGy to Vagina with HDR Brachytherapy	• 4500 cGy to Whole Breast • 540 cGy to Partial Breast for boost • 300 cGy to Hip	• 7000 cGy to Oropharynx • 6300 cGy SIB to Neck LN • 5600 cGy SIB to additional LN
Code: 999998	Code: 005040	Code: 007000
Phases: 2	Phases: 3	Phases: 3



Lymph Nodes



- Code only what you know.
- Contact the dosimetrist or physicist.

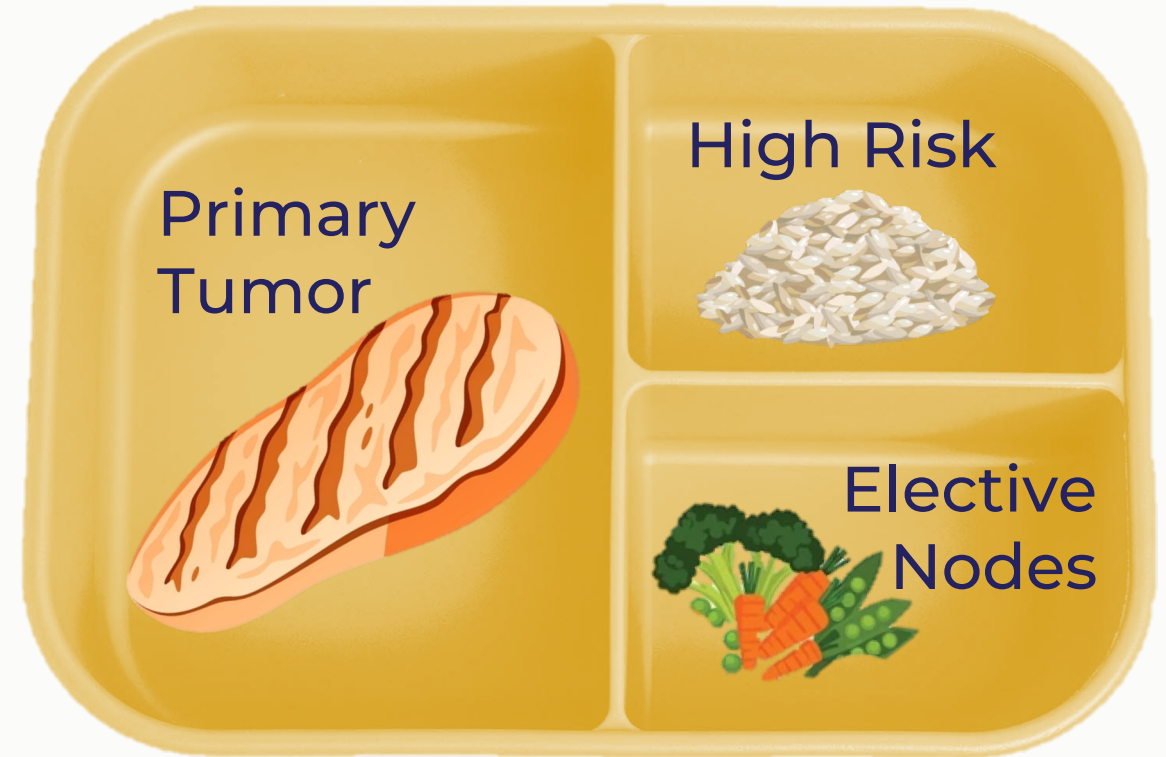
Radiation to lymph nodes is typically targeted at specific areas where cancer is known to be present, or where there's a high risk of it being present.



Simultaneous Integrated Boost

*One lunch, three portions,
served at the same time.*

- Protein = highest dose
- Rice = intermediate dose
- Veggies = lower dose





H&N SIB

Palatine Tonsil

T3N1Mx p16+

Field	Code/Definition
Date Started	02/25/2025
Date Ended	04/10/2025
Number of Phases	3
Course Total Dose	006600

Field	Phase 1	Phase 2	Phase 3
Volume	29 H&N, NOS	29 H&N, NOS	22 Oropharynx
Rad to Nodes	01 Neck LN	01 Neck LN	00 No LN
Modality	02 External, Photons	02 External, Photons	02 External, Photons
Planning Technique	05 IMRT	05 IMRT	05 IMRT
Number of Fractions	030	030	003
Dose per Fraction	00200	00180	00200
Total Phase Dose	006000	005400	000600



GYN SIB

Cervical Cancer T1b3N0M0

Field	Code/Definition
Date Started	03/03/2025
Date Ended	04/18/2025
Number of Phases	3
Course Total Dose	999998

Field	Phase 1	Phase 2	Phase 3
Volume	72 Vagina	71 Cervix	72 Vagina
Rad to Nodes	06 Pelvic LN	06 Pelvic LN	00 No LN
Modality	02 External, Photons	02 External, Photons	09 HDR
Planning Technique	05 IMRT	05 IMRT	88 N/A
Number of Fractions	025	025	002
Dose per Fraction	00200	00180	00600
Total Phase Dose	005000	004500	001200



Multiple Site

Metastatic Cancer

Field	Code/Definition
Date Started	02/25/2025
Date Ended	02/28/2025
Number of Phases	3
Course Total Dose	002000

Field	Phase 1	Phase 2	Phase 3
Volume	81 Spine	82 Shoulder	84 Hip
Rad to Nodes	00 No LN	00 No LN	00 No LN
Modality	02 External, Photons	02 External, Photons	02 External, Photons
Planning Technique	04 3D Conformal	04 3D Conformal	04 3D Conformal
Number of Fractions	005	005	005
Dose per Fraction	00400	00400	00400
Total Phase Dose	002000	002000	002000

Case #1

Patient: 62 yo w/RT tonsil squamous cell carcinoma

Stage: cT2N0M0

Treatment: IMRT, 70 Gy in 33 fractions

Plan states:

"IMRT to RT tonsil primary and bilateral neck level II-IV"

Spot the Error

Modality: IMRT (05)

Total Course Dose: 007000 (7000 cGy)

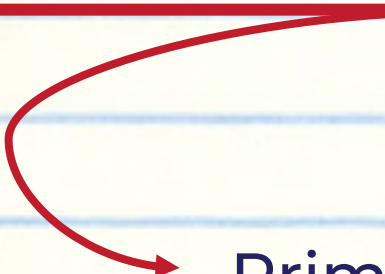
Treatment Volume: Primary site/tonsil (22)

Answer #1

Modality: IMRT (05)

Total Course Dose: 007000 (7000 cGy)

Treatment Volume: Primary site/tonsil



Primary site (22) + regional lymph nodes (01)

Even though nodes are clinically negative,
they are often electively treated.

Case #2

Patient: 70 yo w/oropharyngeal squamous cell carcinoma

Treatment note states:

"Patient received 50 Gy of planned 70 Gy, IMRT.

Stopped due to severe mucositis. Will not resume"

Spot the Error

Modality: IMRT (05)

Total Course Dose: 007000 (7000 cGy)

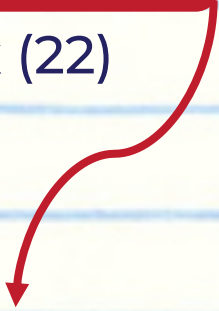
Treatment Volume: Oropharynx (22)

Answer #2

Modality: IMRT (05)

Total Course Dose: 007000 (7000 cGy)

Treatment Volume: Oropharynx (22)



005000 (5000 cGy)

The recorded total course dose must match what was actually delivered, not planned.

Case #3

Patient: 54 yo w/laryngeal squamous cell carcinoma

Modality: IMRT

Dosage: 70 Gy primary tumor, 56 Gy elective LN

Fractions: 33

Spot the Error

Phases: 2

Total Course Dose: 005600 (5600 cGy)

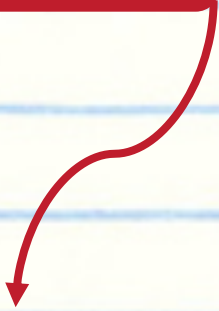
Modality: IMRT (05)

Answer #3

Phase: 2

Total Course Dose: 005600 (5600 cGy)

Modality: IMRT (05)



007000 (7000 cGy)

For SIB, only code the highest dose
delivered to the primary target.



Question

When it says that the prostate and seminal vesicles were treated, do you code the primary volume to prostate and the draining lymph nodes to pelvic lymph nodes?

Do the seminal vesicles count as the draining lymph nodes or is that just part of the primary treatment volume field?



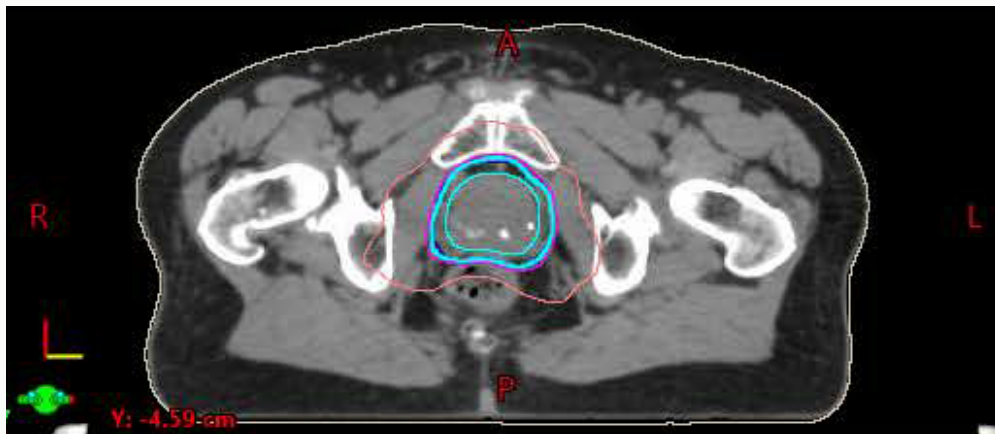
Answer

1. Seminal vesicles do not count as the draining lymph nodes.
2. They are just part of the primary treatment volume field.

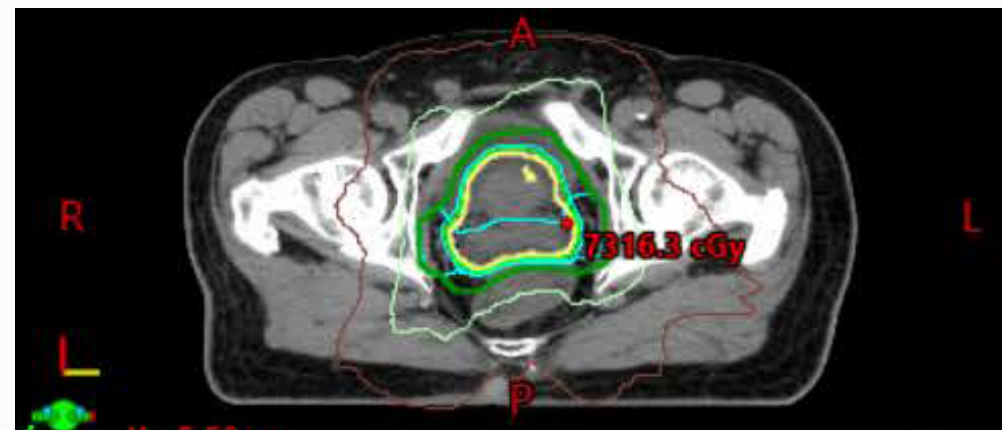
Seq	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	0 No Rad and Surgery
	2	Reason No Rad	0 RT was administered
	3	Location of Rad	1 All RT at this facility
	4	Date Started	02/25/2025
	5	Date Ended	04/03/2025
	6	Number of Phases	1
	7	Discontinues Early	01 Radiation completed
	8	Course Total Dose	007000
Phase 1	9	Volume	64 Whole Prostate/SV
	10	Rad to Nodes	00 No RT to nodes
	11	Modality	02 External, Photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	028
	14	Dose per Fraction	00250
	15	Total Phase 1 Dose	007000



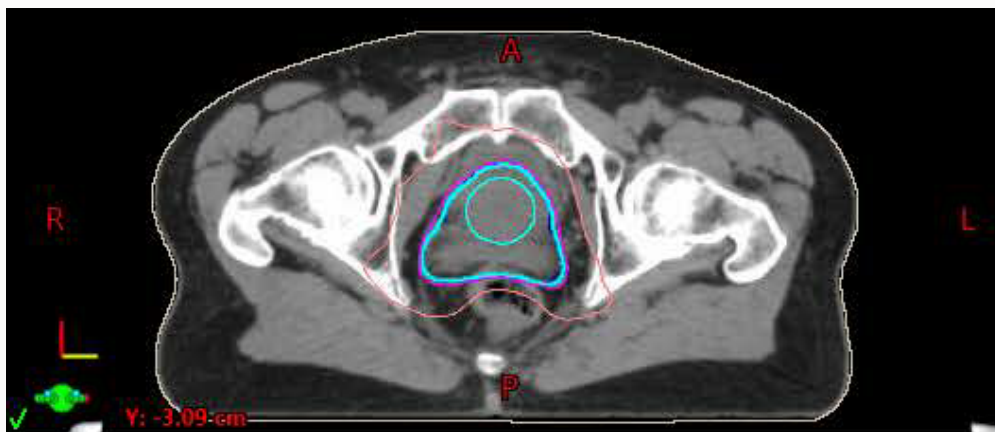
Treatment Plan



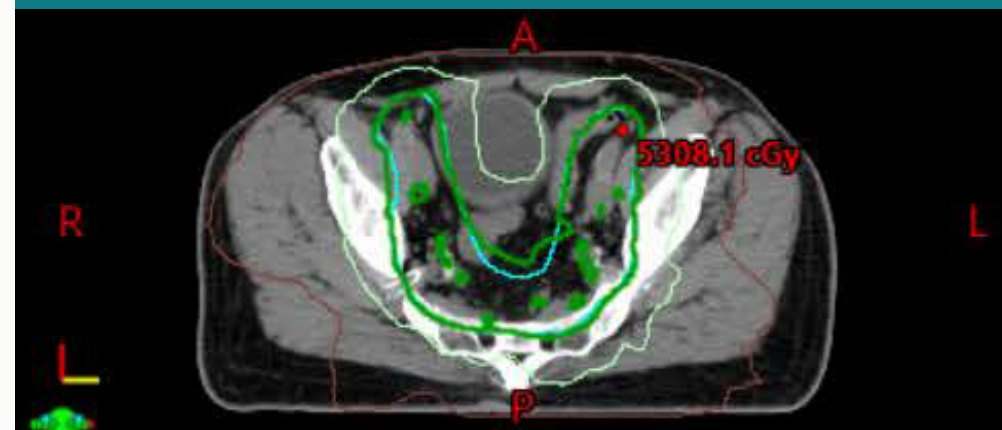
Prostate Only



Prostate + SV + LN



Prostate + SV

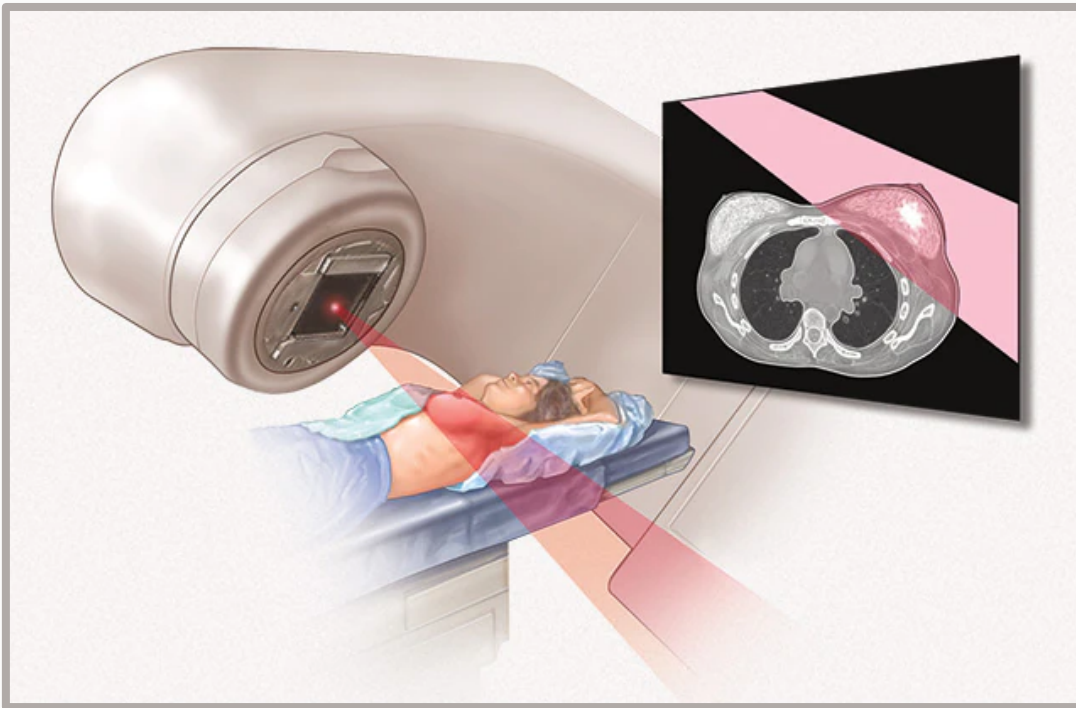




Question

What is a tangential field for breast treatment?

How do I code it?



Answer

Tangents treat on opposite sides of the breast.

Planning Technique:

3D Conformal.

Radiation
Oncologist

Dosimetrist

Resources

Physicist

Radiation
Therapist





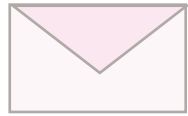
Facility Quick Guide

Care Team	Name	Email	Phone Number
Rad Onc			
Dosimetrist			
Physicist			

Location	Machine	Modality	Energy	Code	Notes

Thank you!

Questions regarding this presentation?



CTRadHotline@gmail.com

For all other radiation questions, please submit questions to the CAnswer Forum.