

STORE 2018 RT Items and Guidelines for Implementation

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WHA Consulting

CAROLINAS REGIONAL EDUCATIONAL CONFERENCE

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2



CLINICAL SCENARIOS



Clinical Scenario 1a: Breast Tangents

- 65 y/o female w/ clinical stage IA: T1c, N1, M0, infiltrating ductal carcinoma of left breast. Pt underwent a LT breast SAVI Scout localizer lumpectomy. ER/PR+. HER2 IHC= 1+, neg. G1
- Lt breast tangents with 10X beam, 25 fractions to 50 Gy from 7/23/18 to 8/24/18. The left SCV/axilla treated with 10X, to 3850 in 22 fractions from 7/23/18 to 8/21/19. Both plans were 3D conformal.
- Lt breast boosted using enface/mini tangents technique with 15E/15MV, to 10 Gy in 5 fractions from 8/27/18 to 8/31/18. Plan was also conformal.



Clinical Scenario 1a: Breast Tangents

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- Lt breast tangents with **10X beam**, 25 fractions to **50 Gy** from 7/23/18 to 8/24/18. The left SCV/axilla treated with **10X**, to 3850 in 22 fractions from 7/23/18 to 8/21/19. Both plans were **3D conformal**.
- Lt breast **boosted** using **enface/mini tangents** technique with **15E/15MV, to 10 Gy** in 5 fractions from 8/27/18 to 8/31/18. Plan was also **conformal**.

SAVI Scout localizer system



Strut assisted volume implant (SAVI)



Device has 7-11 "struts" or catheters through which the **iridium seed** travels. The struts are expanded after the device is inserted into the lumpectomy cavity.

Used for **IORT HDR intracavitary** therapy

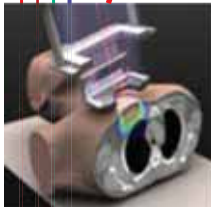




Clinical Scenario 1a

• Step 1: Extract treatment information in a format that can be readily interpreted:

Treatment Site	Dose (cGy)	Energy /Technique	Fx	Start date	End date
LT breast tangents	5,000	10MV conformal	25	7/23/18	8/24/18
LT SCV/Axilla	3,850	10X conformal	22	7/23/18	8/21/18
LT breast boost, enface/mini tangents	1,000	15E/15MV	5	8/27/18	8/31/18



- # of phases
- Order of phases,
- Primary Volume



- Treatment Modality,
- Planning Technique

8



Bolus: Tissue-equivalent material, often used during an electron boost to breast/lumpectomy scar. Can also be used with photons. Bolus increases dose to the skin. It is not associated with any particular planning technique.

Case 1a- LT Breast

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	3 Radiation after surgery
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	07/23/18
	5	Date RT Ended/Flag	08/31/18
	6	Number of Phases of RT	03
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	006000
Phase 1	9	Primary Treatment Volume	40 Whole breast
	10	Rad to Draining LNs	00 No RT to draining lymph nodes
	11	Treatment Modality	02 External beam, photons
	12	Planning Technique	04 3D Conformal
	13	Dose per Fraction	00200
	14	Number of Fractions	025
Phase 2	15	Phase I Total Dose	005000
	16	Primary Treatment Volume	04 Breast/Chest wall LN regions
	17	Rad to Draining LNs	88 NA
	18	Treatment Modality	02 External beam, photons
	19	Planning Technique	04 3D Conformal
	20	Dose per Fraction	00175
Phase 3	21	Number of Fractions	022
	22	Phase II Total Dose	003850
	23	Primary Treatment Volume	41 Partial breast
	24	Rad to Draining LNs	00 No RT to draining lymph nodes
	25	Treatment Modality	01 External beam, NOS
	26	Planning Technique	04 3D Conformal
	27	Dose per Fraction	00200
	28	Number of Fractions	005
	29	Phase III Total Dose	001000



Case 1a Rationale:

#8: When the SCV field is captured as a separate phase, **do not** add the total dose from this phase to get the total dose for all phases. This total includes the dose to the regional site, LT breast (5000 cGy), plus the dose from the LT breast boost with mixed modalities (1000 cGy).

#24: The breast boost targets a much smaller volume than the entire breast. It **does not** encompass any regional lymph nodes.

#25: Mixed modalities used for the breast boost (photons and electrons). Best choice is 01 External beam, NOS.

#26: Breast boosts are generally delivered via conformal plans, including electron boosts.

Clinical Scenario 1b



- Lt breast tangents with 10X beam, 25 fractions to 50 Gy from 7/23/18 to 8/24/18. The left SCV/axilla treated with 10X, to 50 Gy in 25 fractions from 7/23/18 to 8/24/19. Both plans were 3D conformal.
- Lt breast boosted using enface/mini tangents technique with 15E/15MV, to 10 Gy in 5 fractions from 8/27/18 to 8/31/18. Plan was also conformal.

Treatment Site	Dose (cGy)	Energy /Technique	Fx	Start date	End date
LT breast tangents	5,000	10MV conformal	25	7/23/18	8/24/18
LT SCV/Axilla	5,000	10X conformal	25	7/23/18	8/24/18
LT breast boost, enface/mini tangents	1,000	15E/15MV	5	8/27/18	8/31/18

Case 1b- LT Breast

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	3 Radiation after surgery
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	07/23/18
	5	Date RT Ended/Flag	08/31/18
	6	Number of Phases of RT	02
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	006000
Phase 1	9	Primary Treatment Volume	40 Whole breast
	10	Rad to Draining LNs	04 Breast/Chest wall LN region
	11	Treatment Modality	02 External beam, photons
	12	Planning Technique	04 3D Conformal
	13	Dose per Fraction	00200
	14	Number of Fractions	025
Phase 2	15	Phase I Total Dose	005000
	16	Primary Treatment Volume	41 Partial breast
	17	Rad to Draining LNs	00 No RT to draining lymph nodes
	18	Treatment Modality	02 External beam, photons
	19	Planning Technique	04 3D Conformal
	20	Dose per Fraction	00200
	21	Number of Fractions	005
	22	Phase II Total Dose	001000
Phase 3	23	Primary Treatment Volume	00
	24	Rad to Draining LNs	
	25	Treatment Modality	
	26	Planning Technique	
	27	Dose per Fraction	
	28	Number of Fractions	
	29	Phase III Total Dose	

Case 1b Rationale:



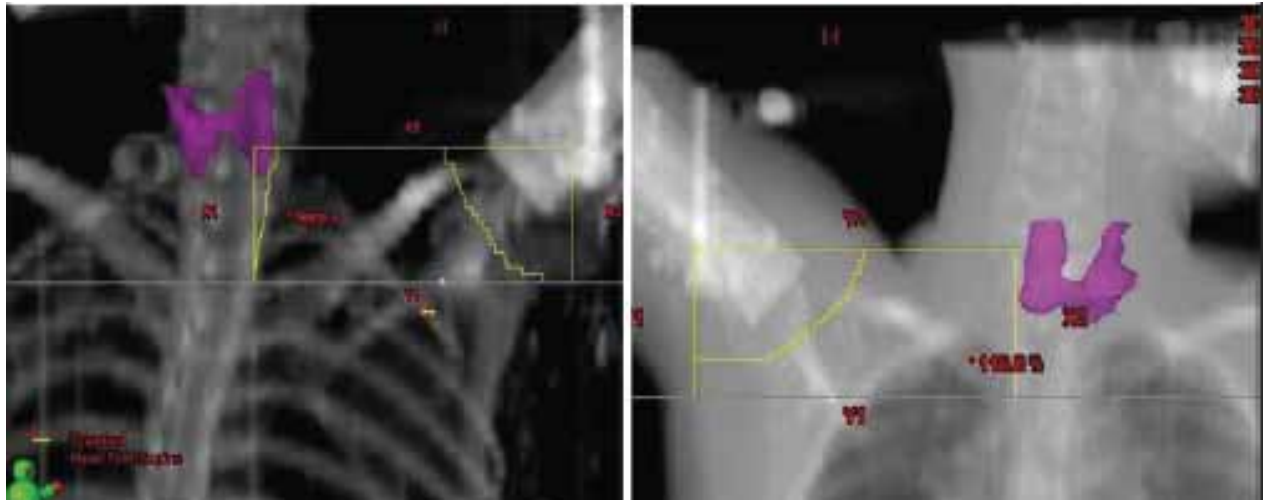
#6: When the SCV field is irradiated to same total dose and in same time frame as whole breast (WB) irradiation, you can include SCV treatment in same phase as WB phase.

#18: Mixed modalities used for the breast boost (photons and electrons). Best choice is 01 External beam, NOS.

#19: Breast boosts are generally delivered via conformal plans, including electron boosts.

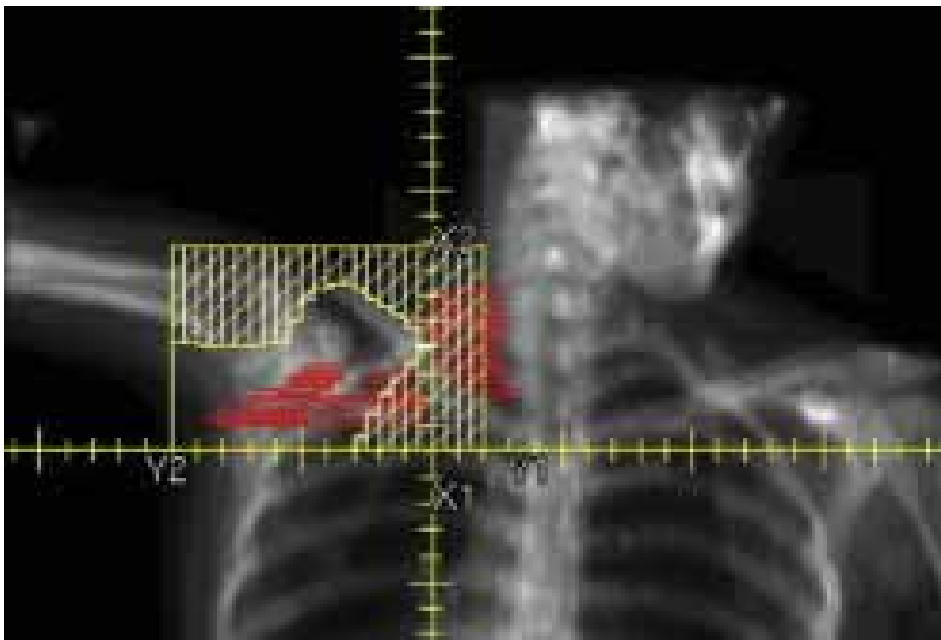
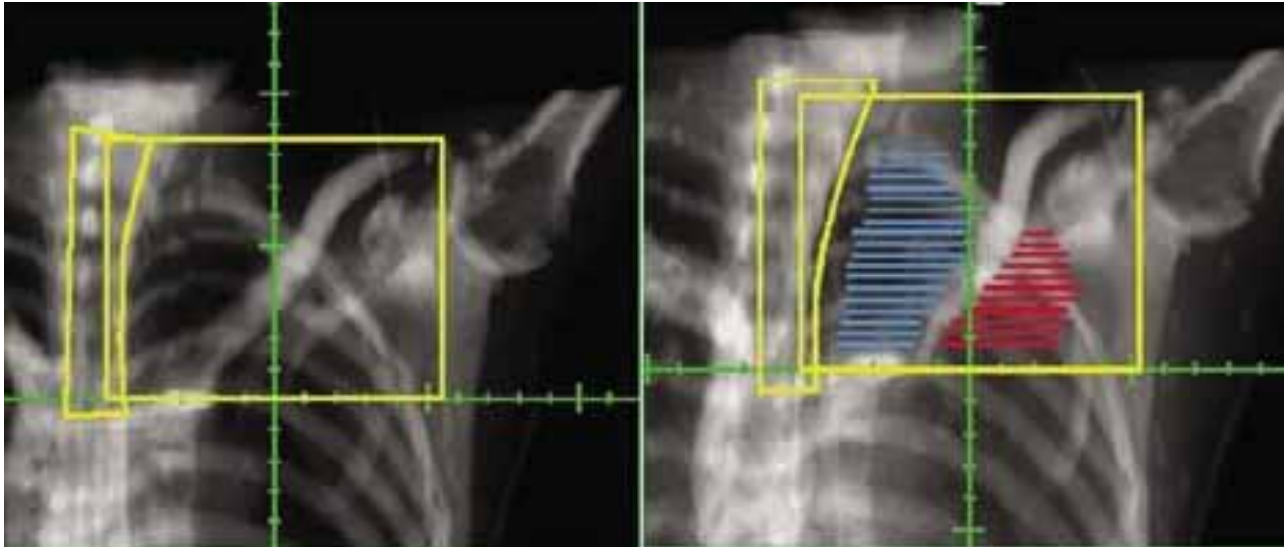


Typical Supraclavicular field





S'clav & Axillary lymph node field

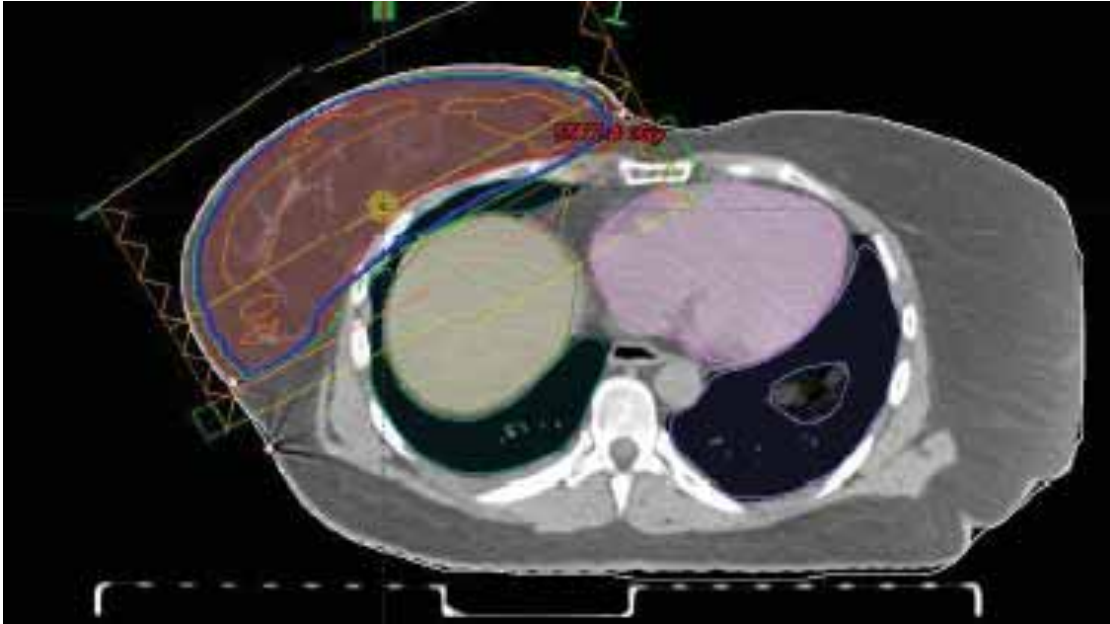


(a)

Posterior
Axillary Boost
(PAB) Field



Breast Tangents w/ Internal Mammary Nodes (IMN)



Clinical Scenario 2: SBRT



- 74 y/o female w/ clinical stage IA: T1b, N0, M0 adenocarcinoma of LLL lung, s/p bx. Patient opted for EBRT
- A course of RT was started on February 12, 2018 and completed on February 16, 2018. A dose of 5000 cGy in 5 fractions of 1000 cGy each was delivered to the target lesion using Intensity Modulated Radiation Therapy. Treatment was given on the Varian Trilogy using 6 MV photons, dynamic multileaf collimation, and Arc technology. Custom stereotactic body immobilization was used. Daily image guidance using cone beam CT scanning and robotic couch positioning was performed for positional verification prior to treatment. Align RT was utilized for motion management.



Clinical Scenario 2: SBRT

- 74 y/o female w/ clinical stage IA: T1b, N0, M0 adenocarcinoma of LLL lung, s/p bx. Patient opted for EBRT
- A course of RT was started on **February 12, 2018 and completed on February 16, 2018**. A dose of **5000 cGy in 5 fractions of 1000 cGy each** was delivered to the target lesion using **Intensity Modulated Radiation Therapy**. Treatment was given on the Varian Trilogy using **6 MV photons**, dynamic multileaf collimation, and **Arc technology**. Custom **stereotactic body immobilization** was used. Daily image guidance using ~~cone beam CT scanning~~ and robotic couch positioning was performed for positional verification prior to treatment. **Align-RT** was utilized for motion management.



Clinical Case 2: SBRT



Step 1:

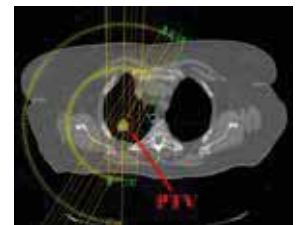
- From treatment summary, extract the most important data needed for coding:

Site	Energy / Technique	Dose/fx (cGy)	# Fx	Total Dose (cGy)	Start	End	Elapsed Days
LT Lung	6X/SBRT	1,000	5/5	5,000	2/12/18	2/16/18	4

- # of phases
- Order of phases,
- Primary Volume

- Treatment Modality,
- Planning Technique

- Planning Technique: IMRT vs. SBRT
- Total Dose Summary



Case 2- Lung SBRT

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	3 Radiation after surgery
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	02/12/18
	5	Date RT Ended/Flag	02/16/18
	6	Number of Phases of RT	01
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	005000
Phase 1	9	Primary Treatment Volume	30 Lung or Bronchus
	10	Rad to Draining LNs	00 No RT to draining lymph nodes
	11	Treatment Modality	02 External beam, photons
	12	Planning Technique	06 Stereotactic RT or radiosurgery
	13	Dose per Fraction	01000
	14	Number of Fractions	005
Phase 2	15	Phase I Total Dose	005000
	16	Primary Treatment Volume	00 No RT treatment
	17	Rad to Draining LNs	
	18	Treatment Modality	
	19	Planning Technique	
	20	Dose per Fraction	
Phase 3	21	Number of Fractions	
	22	Phase II Total Dose	
	23	Primary Treatment Volume	
	24	Rad to Draining LNs	
	25	Treatment Modality	
	26	Planning Technique	
	27	Dose per Fraction	
	28	Number of Fractions	
	29	Phase III Total Dose	



Case 2 Rationale:

#10: Draining lymph nodes are not targeted with SBRT planning technique,
#12: When IMRT is mentioned in a treatment summary, review the dose fractionation used. Hypofractionation (1000 cGy) delivered in a few fractions (5), in a short period of time (4 days) is indicative of **SBRT**. When both planning techniques are mentioned (IMRT, SBRT) code treatment to SBRT (06).

Clinical Scenario 3: H&N ca



- 75 Y/O W/F, long-term smoker, who presented w/ cough and mild dysphagia and was eventually dx'd base of tongue SCC.
- Pt treated w/ concurrent cisplatin and EBRT.
- All PTVs treated concurrently with Tomo IMRT.
- Start date: 4/29/18 End Date: 5/29/18

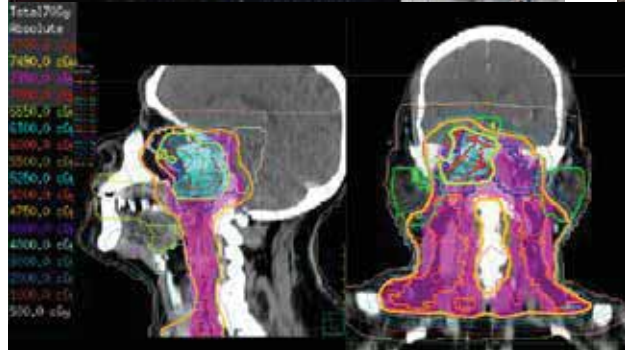
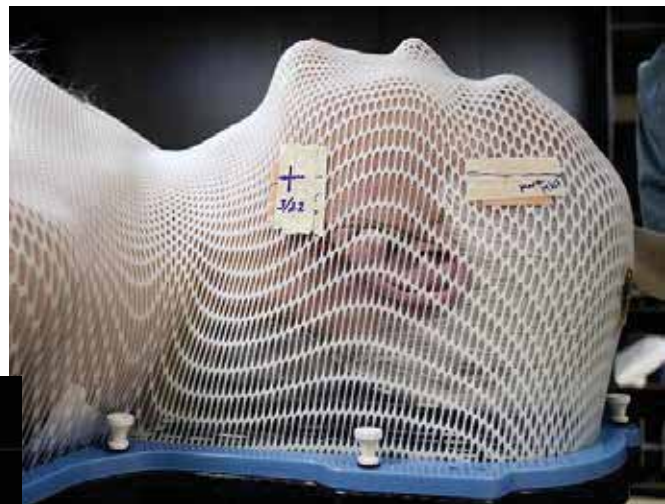
Clinical Scenario 3-EBRT SIB Treatment



Txt Site	Energy	Dose/Fx (cGy)	Fractions	Total Dose (cGy)
PTVp1_70Gy. Primary & LN	6X	200	35	7000
PTVp_66.5Gy Primary subclinical	6X	190	35	6650
PTVn_60Gy RT neck	6X	171	35	5895
PTVn_56Gy LT neck	6X	160	35	5600

Treatment Modality = 02: external beam, photons
 Planning Technique = 05: IMRT

22



Prepared by Wilson Apollo, MS, RTT, CTR

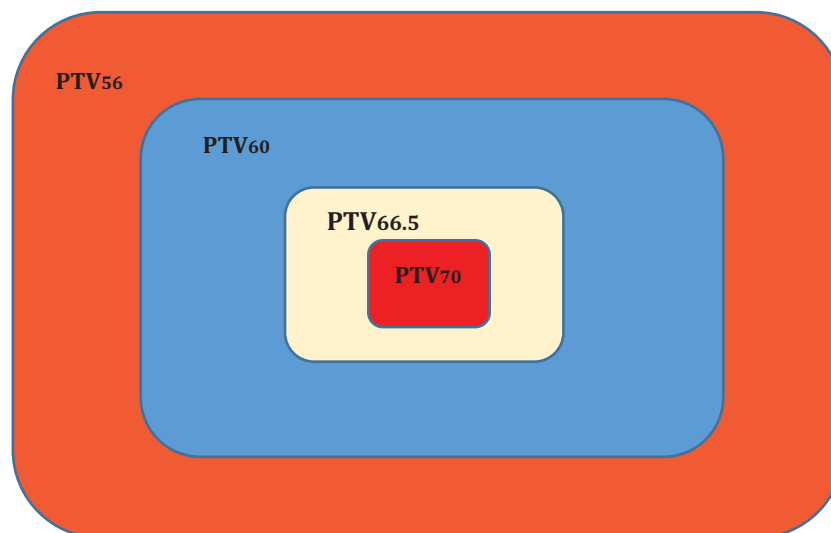


Clinical scenario 3- H&N w/ SIB-IMRT...



- When Simultaneous Integrated Boost (SIB) is used, the regional dose along with the boost doses are delivered *at the same time every day*.
- This is why each phase consists of 35 fractions.
- The field size (PTV) is basically reduced to deliver the boost on a daily basis.

Simultaneous Integrated Boost (SIB)



Case 3-SIB

Summary	1	Rad/Surg Sequence	0 No radiation and/or sur
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date Started/Flag	10/23/18
	5	Date Finished/Flag	12/17/18
	6	Number of Phases	04
	7	Discontinued Early	01 Radiation completed
	8	Total Dose	007000
Phase 1	9	Volume (PTVp1_70Gy)	22 Oropharynx
	10	Rad to draining LNs	01 Neck lymph node regions
	11	Modality	02 External beam, photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	035
	14	Dose per Fraction	00200
	15	Total Phase 1 Dose	007000
Phase 2	16	Volume (PTVn_66.5Gy)	22 Oropharynx
	17	Rad to Nodes	0 No RT to draining lymph nodes
	18	Modality	02 External beam, photons
	19	Planning Technique	05 IMRT
	20	Number of Fractions	35
	21	Dose per Fraction	00190
	22	Total Phase 2 Dose	006650
Phase 3	23	Volume (PTVn_60Gy)	01 Neck lymph node regions
	24	Rad to Nodes	88 NA
	25	Modality	02 External beam, photons
	26	Planning Technique	05 IMRT
	27	Number of Fractions	035
	28	Dose per Fraction	00171
	29	Total Phase 3 Dose	005985



Case 3 Rationale:

#6: There will be cases that exceed the 3-phase limit. However, we must still count them here and document them in the abstract.

This information can potentially lead to increasing the # of phases we capture in the future.

#13, 20, 27: When SIB is used, number of fx should be the same for all phases of SIB.

Note: Since all PTVs are treated simultaneously (SIB), order phases from largest delivered dose to lowest delivered dose.

Clinical Scenario 4: Endometrial cancer



- 67 y/o pt, G2P2, presented w/ postmenopausal bleeding w/ positive findings on endometrial bx. Pt underwent TAH/BSO with pelvic lymphadenectomy. Former smoker. –etoh. +fhx: M-grandfather dx'd w/ colon cancer.
- Pathology revealed 6.5 cm endometrioid adenocarcinoma with 89% Myometrial invasion, high histologic grade. Involvement of uterine serosa, upper endocervix with positive margins on inf endocervical. LVI-. Mismatch repair normal. Pelvic LNs = 0/11 neg. Stage pT3b, N0. Pt underwent concurrent cisplatin/RT followed by carboplatin + paclitaxel.

Clinical Scenario 4: Endometrial cancer



• Radiation Therapy Treatment Summary:

Txt Site	Total Dose	Modality	Fx	Start date	End date
Whole pelvis	4500 cGy	6X/IMRT	25	1/7/19	2/11/19
Vaginal cuff	1200 cGy	Ir-192	2	2/13/19	2/18/19

- “Whole Pelvis” implies RT to primary site or tumor bed **and** regional lymph nodes.
- “Vagina cuff” implies intracavitary brachytherapy.

28

ALERT!

- Upcoming revision/addition to Dose/fx and Total Dose for brachytherapy procedures!
- Look for upcoming update in the Brief.
- Will also be added to the revised CRT Guide and STORE manual

ALERT!

- If dose/fraction and total dose is provided in Gy or cGy units for any brachytherapy procedure, capture this information in your abstract. Do not use codes 99998 or 999998 if this information is found in treatment summary!
- If brachytherapy is only mode of treatment and dose is not provided in cGy, code to 999999 for total dose.
- You **cannot**, however, add dose from EBRT phase to that of brachytherapy phase to get total dose!

Case 4: Endometrial

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	3 Radiation after surgery
	2	Reason No Rad	0 Radiation was administered
	3	Location of Rad	1 All RT at this facility
	4	Date Started/Flag	01/07/19
	5	Date Finished/Flag	02/18/19
	6	Number of Phases	02
	7	Discontinued Early	01 Completed
	8	Total Dose	999998
Phase 1	9	Volume	86 Pelvis
	10	Rad to Nodes	06 Pelvic lymph nodes
	11	Modality	02 External beam, photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	025
	14	Dose per Fraction	00180
	15	Total Phase 1 Dose	004500
Phase 2	16	Volume	72 Vagina
	17	Rad to Nodes	00 No RT to draining LNs
	18	Modality	09 Brachytherapy, intracavitary, HDR
	19	Planning Technique	88 NA
	20	Number of Fractions	02
	21	Dose per Fraction	00600
	22	Total Phase 2 Dose	001200
Phase 3	23	Volume	00
	24	Rad to Nodes	
	25	Modality	
	26	Planning Technique	
	27	Number of Fractions	
	28	Dose per Fraction	
	29	Total Phase 3 Dose	

Case 4 Rationale:



#8: You cannot add dose from brachytherapy procedure with EBRT dose.

#9: Phases in chronological order. If primary site in pelvic region is surgically removed, code to 86.

#10: RT treatment summary clearly states that the whole pelvis was irradiated. This includes regional LNs.

#16: When intracavitary HDR brachytherapy is administered to the vaginal cuff for endometrial cancer or cervical cancer, post TAH/BSO, primary treatment volume is Vagina.

#21-22: If dose/fx & total dose is given in cGy, code it as such in the abstract.

Clinical Scenario 5: Cervical ca



- How would I code this radiation treatment plan using the new data items? Does this qualify as three phases? In particular, how do I code the LT inguinal LN boost? Pt declined surgery & opted for EBRT

RT Treatment Summary:

Txt Site	Energy	Dose/Fx (cGy)	# of Fx	Total Dose (cGy)	Start date	End date
Pelvis, Cervix	6X/VMAT	180	25/25	4,500	5/30/18	7/26/18
LT Inguinal LN Boost	6X/3D	180	3/3	540		
Vaginal Cuff HDR brachy	Elekta Venezia	400	6	2,400	7/11/18	7/27/18

32

Clinical Scenario 5- Cervix RT



- Pelvis/cervix EBRT(Regional) delivered via **VMAT**.
- LT inguinal lymph node boost delivered via 3D-conformal plan.
- 7/11/18-7/27/18: **Elekta Venezia** brachytherapy applicator to cervix. 400 cGy x 6 fx= 2,400 cGy.

33

Clinical Scenario 5- Cervix RT



- Elekta Venezia is a hybrid system that can deliver interstitial and/or intracavitary HDR brachytherapy. *If the device is used to perform interstitial HDR with a simultaneous intracavitary treatment, then code as 07, brachytherapy, NOS.*
- Treatment summary specifically states “Vaginal Cuff Brachytherapy”. This implies intracavitary.

34



Case 5: Cervical Cancer

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	0 No RT and/or surgical procedures
	2	Reason No Rad	0 Radiation was administered
	3	Location of Rad	1 All RT at this facility
	4	Date Started/Flag	5/30/18
	5	Date Finished/Flag	07/27/18
	6	Number of Phases	03
	7	Discontinued Early	01 Completed
	8	Total Dose	999998
Phase 1	9	Volume	71 Uterus or cervix
	10	Rad to Nodes	06 Pelvic lymph nodes
	11	Modality	02 External beam, photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	025
	14	Dose per Fraction	00180
	15	Total Phase 1 Dose	004500
Phase 2	16	Volume (Inguinal LNs)	06 Pelvic lymph nodes
	17	Rad to Nodes	88 NA
	18	Modality	02: External beam, photons
	19	Planning Technique	04 Conformal or 3D
	20	Number of Fractions	003
	21	Dose per Fraction	00180
	22	Total Phase 2 Dose	000540
Phase 3	23	Volume	71 Uterus or cervix
	24	Rad to Nodes	00: No RT to draining LNs
	25	Modality	09 Brachytherapy, Intracavitary HDR
	26	Planning Technique	88 NA, txt not by external beam
	27	Number of Fractions	006
	28	Dose per Fraction	00600
	29	Total Phase 3 Dose	002400

Case 5 Rationale:



#8: You cannot add dose from brachytherapy procedure with EBRT dose.

#9: Primary site not surgically removed.

#10: RT treatment summary clearly states that the pelvis was irradiated. This includes regional LNs.

#16: Primary target is lymphatic region.

#23: Primary site not surgically removed.

#24: Vaginal cuff brachytherapy does not target lymphatics!

#25: Elekta Venezia hybrid system can deliver intracavitary and interstitial HDR brachytherapy via Ir-192 seeds. Vaginal cuff implies intracavitary.

Clinical Scenario 6-Colorectal RT



- Patient diagnosed w/ colorectal cancer
- EBRT treatment summary:
 - All treatment with Arc IMRT

Txt Site	Total Dose	Modality	Dose/fx	Fx	Start	End
Pelvis SIB 5000	5000 cGy	10 MV	200	25	8/6/18	9/10/18
Rectum 400	400 cGy	10 MV	200	2	9/11/18	9/12/18

37

Clinical Scenario 6-Colorectal RT



- Mesorectum treated w/ IMRT technique. 5000 cGy delivered in 25 fx, prescribed to 95% PTV coverage. Custom MLC blocking used to shield uninvolved tissue. Pelvis & Inguinal nodes treated to 4500 cGy.
- Boost to rectal tumor prescribed to 95% PTV coverage. Boost dose of 400 cGy, 200 cGy x 2 fx.

38

Case 6- Colorectal

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	0 No RT and/or surgical procedures
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date Started/Flag	08/06/18
	5	Date Finished/Flag	09/12/18
	6	Number of Phases	03
	7	Discontinued Early	01 Radiation completed
	8	Total Dose	005400
Phase 1	9	Volume	54 Rectum
	10	Rad to Nodes	06 Pelvic lymph nodes
	11	Modality	02 External beam, photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	025
	14	Dose per Fraction	00180
	15	Total Phase 1 Dose	004500
Phase 2	16	Volume (SIB boost)	54 Rectum
	17	Rad to Nodes	00 No RT to draining LNs
	18	Modality	02 External beam, photons
	19	Planning Technique	05 IMRT
	20	Number of Fractions	025
	21	Dose per Fraction	000200
	22	Total Phase 2 Dose	005000
Phase 3	23	Volume	54 Rectum
	24	Rad to Nodes	00 No RT to draining LNs
	25	Modality	02 External beam, photons
	26	Planning Technique	05 IMRT
	27	Number of Fractions	002
	28	Dose per Fraction	00200
	29	Total Phase 3 Dose	000400

Case 6 Rationale:

- #6:** Preferable to code it as three phases to preserve SIB treatment information.
- #9:** Assuming no surgery.
- #10:** Treatment summary states that the pelvis was irradiated. This includes regional lymph nodes.
- #16:** SIB boost is to the rectum. Boost or C/D (cone down), typically targets a smaller volume.
- #17:** smaller volume targeted does not include lymph nodes.
- #20:** Same number of fx as phase I since it is SIB boost.
- #22:** With SIB, total dose is cumulative.
- #23:** Different phase, smaller PTV irradiated at different time frame, but within larger PTV.

Clinical Scenario 7-Prostate RT

No prostatectomy



- Patient dx'd w/ clinical stage IIC: T2, N0, M0
- Region treated: Pelvis, prostate, prostate & seminal vesicles. Technique: RArc, RArc, RArc

Txt Site	Total Dose	Modality	Dose/fx	Fx	Start	End
Pelvis	4500	6X	180	25	12/26/18	2/27/19
Prostate CD1	2160	6X	180	12		
Prostate CD2	1260	6X	180	7		

40

Clinical Scenario 7-Prostate RT

No prostatectomy



LN's included

- Patient dx'd w/ clinical stage IIC: T2, N0, M0
- Region treated: Pelvis, prostate, prostate & seminal vesicles. Technique: RArc, RArc, RArc

Rapid Arc/IMRT

Txt Site	Total Dose	Modality	Dose/fx	Fx	Start	End
Pelvis	4500 cGy	6X	180	25	12/26/18	2/27/19
Prostate CD1	2160 cGy	6X	180	12		
Prostate CD2	1260 cGy	6X	180	7		

CD: cone down/boost

41

Case 7 - Prostate

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	0 No RT and/or surgical procedures
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date Started/Flag	12/26/18
	5	Date Finished/Flag	2/27/19
	6	Number of Phases	03
	7	Discontinued Early	01 Radiation completed
	8	Total Dose	007920
Phase 1	9	Volume	64 Prostate
	10	Rad to Nodes	06 Pelvic lymph nodes
	11	Modality	02 External beam, photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	025
	14	Dose per Fraction	00180
	15	Total Phase 1 Dose	004500
Phase 2	16	Volume (CD/ boost)	64 Prostate
	17	Rad to Nodes	00 No RT to draining LNs
	18	Modality	02 External beam, photons
	19	Planning Technique	05 IMRT
	20	Number of Fractions	012
	21	Dose per Fraction	000180
	22	Total Phase 2 Dose	002160
Phase 3	23	Volume (CD/boost)	64 Prostate
	24	Rad to Nodes	00 No RT to draining LNs
	25	Modality	02 External beam, photons
	26	Planning Technique	05 IMRT
	27	Number of Fractions	007
	28	Dose per Fraction	001800
	29	Total Phase 3 Dose	001260

Case 7 Rationale:

#8: Sum of all phases.
#9: Assuming no prostatectomy.
#10: Treatment summary states that the pelvis was irradiated. This includes regional lymph nodes.
#17/24: smaller volume targeted does not include lymph nodes.
Note: When EBRT is the only 1st course treatment for prostate cancer, expect total dose to exceed 7700 cGy (curative).

Clinical Scenario 8- H&N SIB



- 9/11/18-10/30/18: VMAT/IMRT/6X. LT tonsillar area & PET+ LNs 70 Gy @ 200 cGy/fx. High risk areas to 63 Gy @ 180 cGy/fx. Elective neck to 54 Gy @ 154.3 cGy/fx

Txt Site	Total Dose	Modality	Dose/fx	Fx	Start	End
LT tonsil, LNs	7000 cGy	6X	200	35	9/11/18	10/30/18
PTV63	6300 cGy	6X	180	35	9/11/18	10/30/18
PTV54	5400 cGy	6X	154.3	35	9/11/18	10/30/18

Case 8- H&N SIB

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	0 No RT and/or surgical procedures
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date Started/Flag	09/11/18
	5	Date Finished/Flag	10/30/18
	6	Number of Phases	03
	7	Discontinued Early	01 Radiation completed
	8	Total Dose	007000
Phase 1	9	Volume (PTV70)	22 Oropharynx
	10	Rad to Nodes	01 Neck lymph nodes
	11	Modality	02 External beam, photons
	12	Planning Technique	05 IMRT
	13	Number of Fractions	035
	14	Dose per Fraction	00200
	15	Total Phase 1 Dose	007000
Phase 2	16	Volume (PTV63)	22 Oropharynx
	17	Rad to Nodes	01 Neck lymph nodes
	18	Modality	02 External beam, photons
	19	Planning Technique	05 IMRT
	20	Number of Fractions	035
	21	Dose per Fraction	000180
	22	Total Phase 2 Dose	006300
Phase 3	23	Volume (PTV54)	01 Neck lymph nodes
	24	Rad to Nodes	88 NA
	25	Modality	02 External beam, photons
	26	Planning Technique	05 IMRT
	27	Number of Fractions	035
	28	Dose per Fraction	00154
	29	Total Phase 3 Dose	005400

Case 8 Rationale:

#6: There are three PTV plans (3 phases)
#8: Enter highest PTV dose of all phases.
#9, 10: Treatment summary clearly states primary site & regional LNs are included in this phase.
#11: All phases treated w/ VMAT/IMRT. VMAT: Volumetric Modulated Arc Therapy (rotational therapy = IMRT).
#13, 20, 27: When SIB is used, # of fx same for all phases (start/end date same for all phases).
#23, 24: Only neck nodes targeted on this phase.

Question: Will you ever see a **2D-plan** for treatment of a H&N primary?

Question 1: GYN RT



- Pt dx'd w/ mucinous adenocarcinoma of cervix. Clinical stage IIB: T2b, N0, M0. Pt underwent chemo/RT. No surgery.
- RT Treatment summary states,
4/3/19 to 4/4/19: Cervix, RT parametrium, Interstitial Ir-192 HDR brachytherapy. 600 cGy in four fractions for a total dose of 24 Gy.

How should we code the total dose and the dose for the phase of treatment??

Resources



- “Handbook of Evidence-Based Radiation Oncology”, 3rd ed. 2018 Edition
- “Principles and Practice of Radiation Therapy” 4th edition,
- <https://www.acr.org/Clinical-Resources/Practice-Parameters-and-Technical-Standards/Practice-Parameters-by-Subspecialty>
- There are a couple of links you will find tremendously useful:
 - Radiation Oncology: General
 - Radiation Oncology: Radiation Therapy



Questions??

