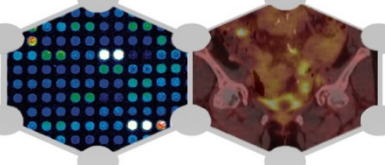

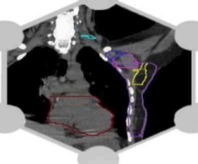

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Updated Consensus Guidelines for Delineation of Clinical Target Volume for Intensity-Modulated Pelvic Radiation Therapy in Postoperative Treatment of Endometrial and Cervical Cancer

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a National Cancer Institute program

NCI Community Oncology Research Program
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Disclaimer

- The atlas is a guide for clinicians. The actual contours and clinical decision making is dependent on physician judgement and does not necessarily have to be consistent with the atlas.
- We believe the atlas should be updated as new data is developed. As such there may be some discrepancies with the published manuscript.

Please refer to the full manuscript for a full discussion of the Atlas:

Small, W. Jr., Bosch, W., Harkenrider, M., Strauss, J., Abu-Rustum, N., Albuquerque, K., Beriwal, S., Creutzberg, C., Eifel, P., Erickson, B., Fyles, A., Hentz, C., Jhingran, A., Klopp, A., Kunos, C., Mell, L., Portelance, L., Powell, M., Viswanathan, A., Yacoub, J., Yasher, C., Winter, K., Gaffney, D., NRG Oncology/RTOG Consensus Guidelines for Delineation of Clinical Target Volume for Intensity-Modulated Pelvic Radiation Therapy in Postoperative Treatment of Endometrial and Cervical Cancer- An Update, International Journal of Radiation Oncology, Biology, Physics, Feb 1, 2021;109(2):413-424. https://doi.org/10.1016/j.ijrobp.2020.08.061. PMID 32905846.

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Background

- This is an updated atlas constructed by an international consensus guideline working group to define the clinical treatment volumes (CTV) using IMRT or 3D conformal radiation techniques in the post-operative treatment of endometrial or cervical cancer.

- CTVs were defined for the following nodal regions: para-aortic, common iliac, external iliac, internal iliac, presacral and obturator nodal regions. A vaginal CTV was also defined.

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Para-Aortic (PA) Nodal CTV

- Include if pathologic or radiographic evidence of involvement or if clinical suspicion for microscopic disease involvement outweighs the risks of treatment.
- This volume encompasses the aorta, inferior vena cava (IVC), and adjacent nodal regions with a non-uniform expansion from the vasculature.
- It is important to contour on a non-contrast scan for the PA nodal CTV, as the IVC may distend with administration of IV contrast and may lead to excessive contouring.

Para-Aortic (PA) Nodal CTV

- PA Nodal CTV borders * :
  - Superior: For cervical cancer: level of left renal vein; For endometrial cancer: 1-1.5cm above the left renal vessels.
  - Inferior: bifurcation of the aorta where it becomes common iliac CTV.
  - Anterior: 3-5mm anterior to IVC up to 7mm anterior to aorta; the CTV delineation at the aortocaval space should be straight rather than concave.
  - Posterior: vertebral body, excluding bone and muscle.
  - Lateral: A right lateral expansion of 3-5mm off the IVC is used; A left lateral expansion off the aorta of 1-2cm is typically used, extending to the medial border of the left psoas muscle.

* There are some exceptions to these recommendations. See manuscript for additional details

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Common Iliac Nodal CTV

- This CTV starts immediately beneath the PA nodal CTV at the aortic bifurcation.
- This will be a 7mm uniform expansion off the right and left common iliac vessels, excluding bone and muscle.
- At the midpoint of the common iliac vessels, the CTV margin should increase to 1cm anterior to the vessels, abutting the iliopsoas muscle laterally.
- The common iliac nodal CTV extends inferiorly until the bifurcation of the common iliac artery.

Presacral Nodal CTV

- Include presacral nodes for all post-operative cervical cancer patients and for post-operative endometrial cancer patients with cervical stromal invasion. Inclusion can be considered in cases with other high-risk factors for nodal involvement.
- The superior extent is the bifurcation of the internal and external iliac vessels and is a relatively fixed strip of tissue measuring 1-1.5cm wide in a perpendicular plane to the face of the sacral bodies.
- The inferior extent is the first CT image where the piriformis muscle becomes apparent.

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External Iliac Nodal CTV

- This CTV begins superiorly at the bifurcation of the common iliac vessels and is a 7mm uniform expansion off the external iliac vessels, excluding adjacent bone and muscle, but can extend up to 10mm anteriorly.
- The CTV continues inferiorly until the external iliac vessels course laterally as they leave the pelvis, becoming the inguinofemoral vessels. The inferior extent can also be delineated where the deep circumflex artery branches off the external iliac artery.

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Internal Iliac Nodal CTV

- The CTV begins superiorly at the bifurcation of the common iliac vessels with a uniform expansion of 7mm off the internal iliac vessels, excluding bone and muscle.
- This volume courses distally until the vessels turn laterally before leaving the pelvis.

Obturator Nodal CTV

- The CTV is a strip of space 15-18mm in diameter medial to the obturator internus muscle, situated between the external and internal iliac vessels, not extending into bone, muscle or bladder.
- This CTV continues inferiorly until the obturator vessels leave the pelvis through the obturator foramen.
- Consideration of an obturator nodal ITV or a larger PTV for this region should be considered to account for changes in bladder filling.

Vaginal CTV

- The vaginal CTV should include the proximal 3.5-4cm* of the vaginal canal and any paravaginal or retracted parametrial tissue that can be visualized on the planning CT.
  - The urethra can be excluded from the CTV for routine cases.
- Consider using a flexible vaginal marker at the time of CT simulation to better visualize the vaginal cuff. Surgical clips at the cuff may also help with visualization.
- The CTV should extend posteriorly to the anterior rectal wall and should include the anterior 1/3 of the mesorectum *. The anterior border is the posterior aspect of the bladder wall.
- The lateral extent is the medial border of the obturator nodal CTV or the urogenital diaphragm more inferiorly.

* There are some exceptions to these recommendations. See manuscript for additional details

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Use of ITV (Internal Target Volume)

- Internal motion of the bladder and rectum can cause the CTV volumes, in particular the vaginal cuff and to a lesser extent the nodal volumes, to move significantly.
- Either simulate the patient with a full and empty bladder to create an ITV or plan with a larger increased PTV to account for vaginal motion.
- IGRT can also help to assure appropriate CTV coverage.

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