Radiotherapy Guideline for Endometrial Cancer

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RT indication

- Stage I endometrial cancer who have thorough surgical staging are stratified by adverse risk factors (ie, age, positive LVSI, tumor size, and lower uterine segment or surface glandular involvement).
- In surgical stage I and II endometrial cancer, other pathologic factors that may influence the decision regarding adjuvant therapy include LVSI, patient age, tumor volume, depth of invasion, and lower uterine segment or surface cervical glandular involvement.
- For stage IIIA to IIIC disease, the recommended treatment options are systemic therapy and/or EBRT with (or without) vaginal brachytherapy.
- For stage IVA/IVB disease systemic therapy forms the mainstay of treatment and can be combined with EBRT and/or vaginal brachytherapy.
- When administering adjuvant RT, it should be initiated as soon as the vaginal cuff has healed, no later than 12 weeks after surgery.
- Brain metastases should typically be treated with WBRT; however, selected patients with a small number of metastases may be appropriately treated with stereotactic radiotherapy (SRT)/radiosurgery (SRS).
- RT is recommended for local palliation or prevention of symptoms (such as pain, bleeding, or obstruction).

Simulation and immobilization

- CT-based treatment planning with conformal blocking and dosimetry is considered standard care for EBRT.
- Brachytherapy is typically combined with EBRT in an integrated treatment plan.
- Multiple conformal fields based on CT-treatment planning should be utilized, and consideration for IMRT for normal tissue sparing may be considered, with appropriate attention to QA and tissue interfraction mobility.

Field design and treatment volume

- Target volumes for 3D-RT and IMRT.

- GTV comprises the known extent of disease (primary and nodal) on imaging and pathologic assessment, CTV includes regions of presumed microscopic extent or dissemination, and PTV comprises the ITV (which includes margin for target motion) plus a setup margin for positioning and mechanical variability.
- Pelvic radiotherapy should target the gross disease (if present), the lower common iliacs, external iliacs, internal iliacs, obturators, parametria, upper vagina/para-vaginal tissue, and presacral lymph nodes (in patients with cervical involvement).
- Extended-field radiotherapy should include the pelvic volume and also target the entire common iliac chain and para-aortic lymph node region. The upper border of the extended field depends on the clinical situation but should at least be 1–2 cm above the level of the renal vessels.
- Pelvic tissues at risk, especially in the post-hysterectomy setting, can be highly variable depending on bowel and bladder filling. In this situation, the integrated target volume (ITV), which encompasses the range of organ movement and deformation, is considered the clinical target volume (CTV), and should be fully covered in the treatment volume.

Dose prescriptions

- External-beam doses for microscopic disease should be 45–50 Gy.
- Postoperatively, if there is gross residual disease and the area(s) can be sufficiently localized, a boost can be added to a total dose of 60–70 Gy, respecting normal tissue sensitivity.
- For neoadjuvant radiation, doses of 45–50 Gy are typically used. One could consider adding 1–2 high dose-rate (HDR) insertions to a total dose of 75–80 Gy low-dose-rate equivalent, to minimize risk of positive or close margins at hysterectomy.
- Initiate brachytherapy as soon as the vaginal cuff is healed, preferably 6–8 weeks after surgery but in general initiation of brachytherapy should not exceed 12 weeks.
- For vaginal brachytherapy, the dose should be prescribed to the vaginal surface or at a depth of 0.5 cm from the vaginal surface; the dose depends on the use of EBRT. The target for vaginal brachytherapy after hysterectomy should be no more than the upper two-thirds of the vagina.
- For postoperative high-dose-rate (HDR) vaginal brachytherapy alone, regimens include 6 Gy x 5 fractions prescribed to the vaginal surface, or 7 Gy x 3 fractions or 5.5 Gy x 4 fractions prescribed to 5 mm below the vaginal surface. While 7 Gy x 3 fractions prescribed at a depth of 0.5 cm from the vaginal surface is a

regimen used by many, the use of smaller fraction sizes may be considered to potentially further limit toxicity in selected cases.

- When HDR brachytherapy is used as a boost to EBRT, doses of 4–6 Gy x 2 to 3 fractions prescribed to the vaginal mucosa are commonly used.
- WBRT is 30 Gy in 10 daily fractions. For patients with a better prognosis (eg, ≥4 months), consider hippocampal-sparing WBRT using IMRT.
- Common radiation dose-fractionation regimens (eg, 30 Gy in 10 fractions, 20 Gy in 5 fractions, 8 Gy in 1 fraction) used for palliation of other solid tumors are appropriate for palliation of metastases in most patients.

Constraints for organ at risk

- Normal organ dose responses from the QUANTEC project.

Reference

- NCCN Practice Guidelines in Oncology, 2024
- Perez and Brady's : Principles and Practice of Radiation Oncology, 7th ed, 2018
- Eric K. Hansen, Handbook of Evidence-Based Radiation Oncology