# Image-guided brachytherapy for cervix cancer: Audit of practice and outcomes

**Descriptor:**

Audit of local performance with respect to:

- Technical quality of delivery of CT or MRI-guided brachytherapy for locally advanced cervix cancer

- Relevant clinical outcomes in patients treated with CT or MRI-guided brachytherapy for locally advanced cervix cancer i.e. rates of local recurrence and late toxicity

**Background:**

Standard treatment for locally advanced cervix cancer consists of concomitant external beam radiotherapy (EBRT) with cisplatin-based chemotherapy followed by brachytherapy. In response to GEC-ESTRO guidance 2005-2006, conventional brachytherapy has been superseded by image-guided brachytherapy (IGBT), enabling greater dose conformity and improved local tumour control. Regular audits are required to ensure that high technical standards are maintained and patient outcomes are comparable to leading centres.

## The Cycle

**The standard:**

PRACTICE: Standards from RCR guidance 2009 and 2012

   • Equivalent dose in 2Gy fractions (EQD2) to 90% of the high-risk clinical target volume (HR-CTV D90) to be ≥85Gy

   • EQD2 to the most exposed 2cc (D2cc) of organ at risk (OAR) to be ≤95Gy for bladder, ≤75Gy for rectum, ≤75Gy for sigmoid

   • Overall treatment time to be ≤50 days

OUTCOMES: Standard taken to be published outcomes of a leading image-guided brachytherapy centre e.g. Vienna

   • Local (i.e. within brachytherapy field) tumour control rates for tumours ≤5cm and >5cm  to be comparable to a leading centre e.g. Vienna

   • Late (i.e. onset >3 months following end of treatment) toxicity rates to be comparable to a leading centre e.g. Vienna

**Target:**

PRACTICE:

   • 90% of cases meeting each standard

OUTCOMES:

   • Actuarial 3-year rates to be within 10% of figures achieved at a leading centre e.g. Vienna

## Assess local practice

**Indicators:**

PRACTICE:

   • Percentage of cases meeting each standard

OUTCOMES:

   • Actuarial 3-year rates

**Data items to be collected:**

• Baseline characteristics: Age, tumour size, nodal status, FIGO stage, histology, external beam radiotherapy Y/N, chemotherapy Y/N

• Brachytherapy data: Planning imaging modality (CT or MRI), type of applicator (tandem-ovoid or tandem-ring), interstitial needles Y/N, EQD2 HR-CTV D90, EQD2 D2cc bladder / rectum / sigmoid, overall treatment time for external beam radiotherapy and brachytherapy

• Outcome data (ideally 3 years of follow-up, minimum 1 year of follow-up): Local recurrence within brachytherapy field Y/N, time of recurrence, late toxicity event Y/N, time of event, CTCAE grading of event

**Suggested number:**

Minimum of 20 patients.

**Suggestions for change if target not met:**

• Review of brachytherapy planning process and dosimetry to identify contributory factors in patients who:

   a) Fail to meet criteria for HR-CTV D90 or organ at risk D2cc

   b) Develop in-brachytherapy field recurrence

   c) Develop grade 3 or 4 late bladder or bowel toxicity

• Departmental dissemination of audit findings

• If significant logistical delays in outpatient delivery of brachytherapy fractions, consider implementing an inpatient admission pathway to facilitate delivery of all fractions during a single hospital stay.

**Resources:**

• Radiotherapy physics database

• Clinical records

**References:**

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5. Potter R, Georg P, Dimopoulos JC, Grimm M, Berger D, Nesvacil N et al. Clinical outcome of protocol based image (MRI) guided adaptive brachytherapy combined with 3D conformal radiotherapy with or without chemotherapy in patients with locally advanced cervix cancer. Radiother Oncol. 2001;100(1):116-23.

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