

High dose rate versus low dose rate intracavity brachytherapy for locally advanced uterine cervix cancer

NICE has developed the Cochrane Quality and Productivity topics to help the NHS identify practices that could be significantly reduced or stopped completely, releasing cash and/or resources without negatively affecting the quality of NHS care. Each topic has been derived from a Cochrane systematic review that has concluded that the evidence shows that the practice is harmful or ineffective and should not be used, or that there is insufficient evidence to support widespread use of the practice.

Unless otherwise stated, the information is taken with permission from the Cochrane systematic review.

NICE summary of Cochrane review conclusions

The evidence from the systematic review of clinical trials suggests that high dose rate intracavity brachytherapy is comparable with low dose rate brachytherapy in improving tumour control and survival rates for women with cervical carcinoma. The incidence of small bowel complications was slightly higher with high dose rate intracavity brachytherapy but the disadvantage of this complication may be outweighed by the advantages of high dose rate brachytherapy, which include outpatient treatment, patient convenience, accuracy of treatment, individualised treatment and complete radiation protection for personnel.

Replacing the use of low dose rate intracavity brachytherapy with high dose rate treatment in patients with cervical cancer will improve patient care by reducing use of a less convenient and frequently uncomfortable therapy and replacing it with an equally efficacious and more acceptable alternative for the patient.

The 'Implications for practice' section of the Cochrane review stated:

'Due to some potential advantages of high dose rate intracavity brachytherapy, such as rigid immobilisation, outpatient treatment, patient convenience, accuracy of source and applicator positioning, individualised treatment with source optimisation and complete radiation protection for personnel, high dose rate intracavity brachytherapy should be considered a standard treatment strategy for patients with cervical cancer instead of low dose rate intracavity brachytherapy, especially in developing countries.

This review included the current available evidence and showed that high dose rate intracavity brachytherapy was comparable with low dose rate intracavity brachytherapy. In the subgroup analysis there was no significant difference between high dose rate and low dose rate when considering overall survival, disease specific survival, relapse-free survival, local control rate, recurrence and metastasis and treatment related to complications for patients with clinical stages I, II and III. Therefore, we recommend the use of high dose rate intracavity brachytherapy for all clinical stages of uterine cervix cancer.'

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Details of Cochrane review

Cochrane review title

High dose rate versus low dose rate intracavity brachytherapy for locally advanced uterine cervix cancer.

Citation

[Liu R, Wang X, Tian JH, Yang K, Wang J, Jiang L, Hao XY. High dose rate versus low dose rate intracavity brachytherapy for locally advanced uterine cervix cancer. *Cochrane Database of Systematic Reviews* 2014, Issue 10. Art. No.: CD007563. DOI: 10.1002/14651858.CD007563.pub3.](#)

When the review content was assessed as up to date

21 March 2014

Quality and productivity category

Medicines use and procurement

Relevant codes	OPCS	ICD10	HRG
	N/A	C53	N/A

Programme budget:

Cancers and tumours

Evidence

Relevance to the NHS

The update of this review, indicated that no new studies were identified for inclusion in the review. The evidence from the Cochrane review of four randomised clinical trials, with the number of patients ranging from 151 to 517 per trial (1265 patients in total), showed similar results with the use of high dose rate and low dose rate brachytherapy and there were no significant differences in overall survival, disease specific survival, relapse-free survival, local control rate and recurrence between the two treatments.

All studies included detailed complications data. The normal tissues at risk of developing late complications from radiotherapy for cervical cancer were the bladder, rectosigmoid and the small bowel. Although the follow-up period was very variable, the outcomes at 3, 5 and 10 years were comparable. There was no statistically significant difference in late complications rates for high dose rate versus low dose rate brachytherapy for either bladder or rectosigmoid complications. However, there was a statistically significant difference in small bowel complications, which were higher in the high dose rate arm (relative risk = 3.37, 95% confidence interval 1.06 to 10.72, p = 0.04).

Comparative incidences of severe complications in the high dose rate and low dose rate arms respectively were as follows:

- bladder complications: 1.8% (12 of 668) versus 1.3% (8 of 597)
 - rectosigmoid complications: 3.1% (21 of 668) versus 3.0% (18 of 597)
 - small bowel complications: 2.0% (14 of 668) versus 0.5% (3 of 597).
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When the oldest trial, (using a different scoring scale for complications than the other trials) was excluded, and the analysis repeated, the significant difference found in rates of small bowel complications between high and low dose brachytherapy was no longer present. The occurrence of severe complications also decreased in more recently conducted trials. This was postulated to be attributable to the treatment regimen of high dose rate brachytherapy, which was not standardised, and the protective measures for adjacent organs. These factors were not thoroughly considered in earlier trials, which may explain the higher rate of complications in these trials.

Despite the possibility of a slight increase in the incidence of small bowel complications with high dose rate intracavity brachytherapy, it was considered that this disadvantage may be outweighed by the clear advantages of high dose rate therapy including: outpatient treatment, patient convenience, accuracy of treatment and individualised treatment with complete radiation protection for personnel.

Relevant NICE guidance and products

[High dose rate brachytherapy for carcinoma of the cervix - NICE interventional procedure guidance \(IPG160\)](#)

(Published March 2006; 20 January 2012: minor maintenance)

1.1 Current evidence on the safety and efficacy of high dose rate brachytherapy for carcinoma of the cervix appears adequate to support the use of this procedure provided that the normal arrangements are in place for consent, audit and clinical governance.

Other accredited guidance and products

No other accredited guidance was available at the time of publication (September, 2016).

Potential productivity savings

Estimate of current NHS use

- There were around 2,600 newly diagnosed cases of cervical cancer in England in 2014 ([Office for National Statistics, 2016](#)). In 2014-15 there were around 400 finished consultant episodes for the delivery of a fraction of intracavity radiotherapy (The Health and Social Care Information Centre, 2015). It is not known how many of these were for cervical cancer, and how many were treated using the low dose rate or high dose rate.

Level of productivity savings anticipated

- The cost of intracavitary brachytherapy of low dose rate or high dose rate does not have a NHS national tariff. Commissioners negotiate a local tariff with their providers.
- High dose treatments are usually done as an outpatient or with an overnight stay (between 2 and 5 separate treatments). Low dose treatments are done as an inpatient for up to 5 days. Therefore high dose treatments may deliver savings to commissioners and providers when compared with low dose treatments.

Type of saving

- There may be cash savings when comparing low dose to high dose treatments for the

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commissioner and productivity savings for the provider.

Any costs needed to achieve the savings

- Change can be achieved with minimal additional resources.
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Other information

Many radiotherapy centres have now switched from using low dose rate to a different system using a pulsed dose rate.

Potential impact on quality of NHS care

Impact on clinical quality

Clinical quality will be improved resulting in better outcomes for patients

Impact on patient safety

Not anticipated to have any significant impact on patient safety

Impact on patient and carer experience

Significantly improved patient and carer experience anticipated

Likely ease of implementation

Time taken to implement

Can be achieved in the short to medium term 3 months to 1 year

Healthcare sectors affected

Affects one team or department

Stakeholder support

Likely to achieve good-buy in from all key influencers

References

[The Health and Social Care Information Centre, Hospital Episode Statistics for England, Admitted Patient Care statistics, 2014-15](#). Main procedures and interventions: 4 character code - Delivery of a fraction of intracavitary radiotherapy

[Office for National Statistics, 2016](#). Cancer Registration Statistics, England