Cost effectiveness of concurrent chemoradiation in comparison with radiation alone in locally advanced cervical cancer
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The use of chemoradiation for the treatment of locally advanced cervical cancer. Chemotherapy consisted of three courses of 75 mg/m2 cisplatin followed by 4,000 mg 5-fluorouracil. Radiation comprised external pelvic radiation (total dose 5,000 cGy) with four high doses of intracavitary brachytherapy given one week apart, starting at the second week of external radiotherapy.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis and cost-utility analysis.

Study population
The study population comprised women with locally advanced cervical cancer.

Setting
The setting was tertiary care. The economic study was carried out in Thailand.

Dates to which data relate
The effectiveness evidence was taken from papers published between 1984 and 1999. The date of the resource use data was not given in the paper. No price year was reported.

Source of effectiveness data
The effectiveness data were derived from a review or synthesis of published studies, as well as estimates of effectiveness based on opinion.

Modelling
A decision tree model was used to identify resource use and costs in the two treatment groups. A graphical representation and a narrative description of the structure were provided in the paper.

Outcomes assessed in the review
The following model parameters were taken from published papers:
the probability of Grade 4 neutropenia;
mortality among febrile neutropenic patients; and
the probability of tumour recurrence including tumour progression.

**Study designs and other criteria for inclusion in the review**
The criteria for identifying the primary studies were not reported but some model parameters were taken from a published systematic review.

**Sources searched to identify primary studies**
Not reported.

**Criteria used to ensure the validity of primary studies**
Not reported.

**Methods used to judge relevance and validity, and for extracting data**
Not reported.

**Number of primary studies included**
Two primary studies provided the model parameters.

**Methods of combining primary studies**
Data from more than one primary study were not combined.

**Investigation of differences between primary studies**
Not relevant.

**Results of the review**
For patients in the chemoradiation group:
the probability of Grade 4 neutropenia was 8.2%;
mortality among febrile neutropenic patients was 5%; and
the probability of tumour recurrence, including tumour progression, was 33%.

For patients in the radiation group:
the probability of Grade 4 neutropenia was 0%; and
the probability of tumour recurrence, including tumour progression, was 68%.

**Methods used to derive estimates of effectiveness**
The authors appear to have estimated the probability of patients with Grade 4 neutropenia being febrile.

**Estimates of effectiveness and key assumptions**
The probability of patients with Grade 4 neutropenia being febrile was 50%.
Measure of benefits used in the economic analysis
The measures of health benefit used were the months survived and quality of life adjusted survival. A gynaecological oncologist valued the health states.

Direct costs
The direct costs of the health care payer were identified in this study. The resource use data were derived from the decision tree model but the source of the resource use model parameters was not reported. The unit costs were taken from an analysis of costs at the King Chulalongkorn Memorial Hospital. No price year was reported. All costs incurred after the first year were discounted.

Statistical analysis of costs
The cost data were treated deterministically.

Indirect Costs
Inline with the perspective adopted, no indirect costs were included in this study.

Currency
Thailand baht (THB).

Sensitivity analysis
One-way sensitivity analyses were undertaken to assess variability in the data. The authors appear to have made assumptions about the parameters used.

Estimated benefits used in the economic analysis
The following health benefits were used in the economic analysis:

- survival following chemoradiation, 48.7 months;
- survival following radiation, 34.8 months;
- quality of life adjusted survival following chemoradiation, 46.4 months; and
- quality of life adjusted survival following radiation, 30.6 months.

Cost results
The total cost was THB 139,054.4 in the chemoradiation group and THB 82,345.1 in the radiation alone group.

Synthesis of costs and benefits
The cost-effectiveness of chemoradiation was THB 2,855 per month survived, compared with 2,366 per month survived for radiation alone. The cost utility of chemoradiation was THB 2,996 per quality-adjusted month survived, compared with THB 2,687 per quality-adjusted month survived for radiation alone.

Chemoradiation would have been more cost-effective if the unit cost of inpatient and outpatient care were reduced to 30% of the values used in this study, chemotherapy was administered on an outpatient basis (rather than inpatient), or the difference in recurrence between chemoradiation and radiation alone was less than 20%.
**Authors' conclusions**
Radiation alone is more cost-effective than chemoradiation in treating locally advanced cervical cancer. The authors suggested that chemotherapy might be more cost-effective if administered on an outpatient basis (rather than inpatient).

**CRD COMMENTARY - Selection of comparators**
The authors compared chemoradiation for the treatment of locally advanced cervical cancer with radiation alone. This option appears to have been chosen as it reflected current practice in the authors' setting. You should consider how this relates to usual practice in your own setting prior to applying the results of this study.

**Validity of estimate of measure of effectiveness**
The measure of effectiveness was estimated using a decision tree model. The parameters used to populate the model were derived from published papers and authors' assumptions. No details of the sources searched or the search methodology were included in the paper. This means that it is not possible to comment on the quality of the methodology used to identify the primary studies. In addition, there were no details of how the authors arrived at their assumptions for the model parameters that were not derived from the published studies included in the paper.

**Validity of estimate of measure of benefit**
Two measures of health benefit were used in the economic analysis. These data were taken from the same model that provided the clinical effectiveness data. The use of quality of life adjusted survival will allow the results of this study to be compared with other oncology interventions.

**Validity of estimate of costs**
The paper stated that the study was conducted from the perspective of a health care payer. As such, all the appropriate costs appear to have been included. The cost data was treated deterministically, but some sensitivity analyses were undertaken. Details of the unit costs and resource use data were given in the paper. These factors enhance the generalisability of the study findings. Future costs were discounted at a rate of 5%. The price year was not reported, which will prevent any future reflation exercises.

**Other issues**
The authors do not appear to have presented their results selectively and their conclusion reflected the scope of the analysis. They did not compare their findings with those from similar studies. Although the economic analysis was based on costs at a single hospital, the authors did not discuss whether their findings could be generalised to other settings. The authors acknowledged that the short time span of their study meant that the analysis might not have taken full account of the impact of long-term effects of the two treatments.

**Implications of the study**
The authors did not make any recommendations for further research or changes in practice.

**Source of funding**
None stated.

**Bibliographic details**

**PubMedID**
Other publications of related interest
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