Costs and benefits of routine follow-up after curative treatment for endometrial 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
Routine versus interval (non-routine) follow-up involving pelvic examination, Pap smears and chest radiographic examinations after curative treatment of endometrial cancer.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients referred to a tertiary care cancer clinic with previous treatment with curative intent and continuing with routine follow-up.

Setting
The ORCC-C tertiary care cancer clinic, Eastern Ontario, Canada.

Dates to which data relate
Effectiveness data for the period between 1982 and 1991 were used. The authors report that patients with recurrences were identified in 1992, whilst additional recurrences and survival estimates were ascertained in 1995. Resources used were calculated for each patient from the time of diagnosis (between 1982-1991) to death or to September 1992. No price date was given.

Source of effectiveness data
Effectiveness data were derived from a single study. The evidence for endometrial cancer recurrence, survival outcome and loss to follow-up was based on a single retrospective chart review.

Link between effectiveness and cost data
Retrospective costing was undertaken on the same patient sample as that was used in the effectiveness study.

Study sample
No power calculation was undertaken to determine sample size. A total of 432 (median age, 64.8 years) patients were considered suitable for analysis, whereas 30% of the group of eligible patients were excluded from the study sample. There were 50 recurrences, 40% of which were detected in asymptomatic patients (60% = symptomatic). Most of the symptomatic recurrences were detected at interval visits. All asymptomatic recurrences were detected at routine visits.
Study design
This study was a case series. The study was single centred. Patients were followed-up from point of referral to the ORCC-C any time between 1982 and 1991, to death or to September 1992. Of the 432 original patients, 32 were lost to follow-up.

Analysis of effectiveness
The principle used in the analysis (intention to treat or treatment completers only) was not relevant to the study results. The primary health outcome was the overall survival rate from the time of diagnosis of endometrial cancer to 5 and 10 years. Recurrences, by type of detection (i.e. at routine visits versus at interval period between routine visits, and symptomatic versus asymptomatic).

Effectiveness results
Median overall survival for patients who were diagnosed with recurring cancer at a routine visit was 44 months (range: 12 - 134 months), whilst for those diagnosed at an interval visit the median was 45 months (range: 11 - 134 months, p=0.97). The corresponding figures for patients who were symptomatic and asymptomatic were, respectively, 42 months (range: 11 - 147 months) and 47 months (range: 12 - 134 months, p=0.33). Similar results were found for median survival after recurrence. Of 4,830 Pap smears performed routinely, only 6 cases of cancer were detected. The overall 5-year survival rate for patients who had a recurrence was 84.3%. The recurrence rate was 11%. Overall survival was not found to be influenced by stage of disease, age at diagnosis, depth of myometrial invasion or local or distant recurrence of disease. However the grade of disease showed a trend toward statistical significance (p=0.08).

Clinical conclusions
Intensive follow-up of women with endometrial cancer does not result in improved survival.

Modelling
In order to assess health-related outcomes associated with the early detection of recurrences, survival curves were generated and survival analysis was performed by means of the Kaplan-Meier product limit method. The effect of age, stage and grade of disease, and depth of myometrial invasion were analysed in univariate and multivariate analyses using the Cox proportional hazards model.

Measure of benefits used in the economic analysis
The benefit measure was additional recurrences detected.

Direct costs
Costs were not discounted. Quantities and costs were reported separately and they included the cost of physician and nursing time, administration and overheads, ambulatory care, Pap smears and chest radiographic examinations. A health service perspective was adopted. Quantities were based on actual data taken from a chart review. Unit costs used were taken from actual data at the ORCC-C as well as the Ottawa General Hospital Case Costing Project. Resource quantities were calculated for each patient from the time of diagnosis (between 1982-1991) to death or to September 1992. The date to which the price data refer was not specified.

Currency
Canadian dollars (Can$).

Sensitivity analysis
Not performed.
Estimated benefits used in the economic analysis
Twenty-five (25) out of 5,254 routine visits led to the detection of a recurrence, 16 through physical examination and clinically indicated tests, 7 through chest radiographic examinations and 2 by Pap smears.

Cost results
The total cost of follow-up for the 432 patients was Can$480,200. The 5,254 routine visit costs (a combination of physical examinations and clinically indicated tests) amounted to Can$308,000 in total. Costs were not discounted. When the total follow-up cost reported above was calculated excluding the routine Pap smear, the estimate was Can$426,000. If the costs associated with nursing were excluded from the latter, the figure would become Can$394,000.

Synthesis of costs and benefits
Estimated costs and benefits were combined as cost per recurrence detected. Incremental analysis was performed. The mean cost per recurrence detected was Can$19,200. The incremental cost per recurrence detected including routine annual chest radiographic examinations was Can$16,900 compared to Can$27,000 when routine Pap smears were included.

Authors’ conclusions
Improved survival is not achieved through intensive follow-up of women with endometrial cancer irrespective of whether the patient has symptoms or not or the recurrence is diagnosed at a routine or interval visit. No clinical or economic justification emerges from the routine use of Pap smears in the follow-up of patients with endometrial cancer. However, a prospective randomised study which included other potential benefits to follow-up, such as psychosocial support, may reveal additional benefits. Although the incremental cost per case detected through routine chest radiographic examination is small, it is yet to be proven that early detection results in reduced morbidity. As 80% of all recurrences occur by the third year, the authors maintained that follow-up beyond 5 years is not warranted.

CRD COMMENTARY - Selection of comparators
The economic study compared the strategy of routine testing at follow-up with that of no routine follow-up testing for patients having undergone treatment with curative intent for endometrial cancer. The aim was to determine the economic value of such a strategy in detecting early recurrences. The cost-effectiveness of modifications to the package of tests in the original protocol was also investigated.

Validity of estimate of measure of benefit
Although the economic benefits were measured in terms of recurrences detected at routine follow-up, the health-related benefit of such an intermediary end point still needs to be confirmed in further studies. Thus the analysis is only tentative and, given its retrospective nature, can only attempt to provide a basis for the construction of hypotheses regarding those intermediary outcomes. The estimate of measure of benefit thus warrants validation by further, better-designed studies.

Validity of estimate of costs
Resource quantities were reported separately from prices and with adequate detail. No important cost items were omitted. However, overhead costs were incorrectly labelled as indirect costs. Only direct costs were included.

Other issues
As the authors noted, costs may differ from centre to centre but variation would need to be substantial if the results of the study were to be altered. However, no figures are provided to support this contention. As the authors say, ideally a prospective randomised study design evaluating all aspects of patient follow-up should be used to improve upon the results obtained. Appropriate comparisons were made with other studies and results were supported by the literature. Results could be improved upon by the inclusion of quality-adjusted life year (QALY) assessment for example, thereby assessing effects on the patients’ quality of life.
Implications of the study
Further studies need to be conducted to validate the results obtained in this study.

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