Is centralization of ovarian cancer care warranted? A cost-effectiveness analysis
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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.

CRD summary
This study investigated the cost-effectiveness of the treatment of ovarian cancer in three hospital settings: general, semi-specialised, and tertiary care. The authors concluded that semi-specialised hospitals were the most cost-effective option in the Netherlands. The authors’ conclusions appear to reflect their analysis.

Type of economic evaluation
Cost-utility analysis

Study objective
The aim was to assess the costs and health effects of tertiary care for ovarian cancer patients in the Netherlands, using a hypothetical cohort of women with ovarian cancer and a mean age of 63 years.

Interventions
This study compared the treatment of patients with ovarian cancer in three hospital settings, which were tertiary care, semi-specialised, and general. Tertiary care was provided in university hospitals that employed gynaecologic oncologists. Semi-specialised hospitals were large community teaching hospitals with semi-specialised gynaecologists and general hospitals had no dedicated oncology services.

Location/setting
Netherlands/in-patient.

Methods
Analytical approach:
A decision model, with Markov chains, was used to synthesise the published data from various sources and primary individual patient data. The analysis covered a 10-year period. The authors did not state the perspective.

Effectiveness data:
The health outcomes included the median overall survival, progression-free survival (from end of first-line treatment to clinical recurrence), and disease recurrences. The effectiveness data were derived from primary data for 1,077 individual ovarian cancer patients, who were selected from a random sample of 18 Dutch hospitals, and were newly diagnosed between 1996 and 2003 (Vernooij, et al. 2009, see ‘Other Publications of Related Interest’ below for bibliographic details).

Monetary benefit and utility valuations:
The values of the health states for progression-free and residual or relapsed ovarian cancer were from published studies (Grann, et al. 1998 and 1999, see ‘Other Publications of Related Interest’ below for bibliographic details).

Measure of benefit:
The measure of benefit was quality-adjusted life-years (QALYs) and these were discounted at an annual rate of 4%.

Cost data:
The direct medical costs were included for surgical treatment (surgeon, staff, and operating theatre), hospitalisation, out-patient clinic visits, tests and investigations, and chemotherapy. Individual patient resource use data were obtained from 155 ovarian cancer patients treated from 2000 to 2003 in six participating hospitals, two for each setting. Administrative sources provided data on hospitalisations, out-patient visits, and investigations, while patient records
were scanned for chemotherapy data and follow-up care. The costs were discounted at a rate of 4% and reported in 2006 Euros (EUR).

**Analysis of uncertainty:**
Uncertainty was measured in a probabilistic sensitivity analysis, with Monte Carlo simulations, and 95% confidence intervals were generated. The sensitivity results were presented in cost-effectiveness acceptability curves. One-way sensitivity analyses were also undertaken on the key parameters. A scenario analysis was performed to assess the levels of adequately staged (90%) and optimally debulked (70%) patients in tertiary care.

**Results**
The discounted mean cost per patient over 10 years was EUR 34,274 for general hospitals, EUR 35,156 semi-specialised hospitals, and EUR 45,748 for tertiary hospitals. The mean discounted QALYs were 3.05 for general hospitals, 3.18 for semi-specialised hospitals, and 3.28 for tertiary hospitals.

Over 10 years, the incremental cost-utility ratio for semi-specialised over general hospitals was EUR 7,135 per QALY gained. Tertiary care hospitals were dominated as they were more costly and less effective. The probability that the incremental cost per QALY would fall below EUR 20,000 for ovarian cancer treatment in tertiary hospitals was zero and in semi-specialised hospitals it was 47%.

In the scenario analysis, if tertiary hospitals improved to 90% adequate staging and 70% optimal debulking, the incremental cost per QALY gained was EUR 28,000 compared with semi-specialised hospitals.

**Authors’ conclusions**
The authors concluded that treatment of women with ovarian cancer was most cost-effective in semi-specialised hospitals, in the Netherlands, and ovarian cancer should not be treated in general hospitals.

**CRD commentary**

**Interventions:**
The authors chose three hospital settings to compare, but acknowledged that specialised gynaecologists worked in the general hospitals on one-fifth of cases. The reader should decide if these settings are similar and appropriate for their own context.

**Effectiveness/benefits:**
The utility values were derived from relevant published literature, which should be consulted to ascertain their measurement methods and quality (Grann, et al. 1998 and 1999). The health outcomes were derived from observational primary data (Vernooij, et al. 2009). The differences in the baseline patient or clinical profiles between the hospital settings were not provided and it is not known whether those patients treated at higher-volume settings had more serious conditions or more difficult to manage disease. There was no indication that the authors adjusted for any differences in patient characteristics.

**Costs:**
The perspective was not stated, but appears to have been that of the health provider, with only the direct medical resources included. The costs of hospitalisations due to serious adverse events (surgical or chemotherapy-related), which commonly occur in ovarian cancer treatment, were not included, but might have been relevant given that more experienced care could have influenced them.

**Analysis and results:**
Statistical analyses of the significance of the cost and effectiveness data were not reported and it is not known whether the incremental effects were statistically significant and the estimates were valid for the analysis. The authors evaluated the impact of data variation in thorough sensitivity analyses and do not appear to have presented the results selectively.

**Concluding remarks:**
Despite some limitations with the cost and effect analyses, the methods were generally appropriate and comprehensive. The authors’ conclusions were a fair assessment of the results of the analysis undertaken.
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Other publications of related interest


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