The cost-effectiveness of treating women with a cervical vaginal smear diagnosis of atypical squamous cells of undetermined significance

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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
Treatment protocols for women with a cervical vaginal smear diagnosis of atypical squamous cells of undetermined significance.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
A reference case of a 30-year-old white woman who was at normal risk for development of cervical cancer and had a diagnosis of atypical squamous cells of undetermined significance on her most recent cervical vaginal smear.

Setting
Hospital. The study was carried out in the USA.

Dates to which data relate
Effectiveness and resource use data were collected from studies published between 1960 and 1997. The price year was not stated.

Source of effectiveness data
Effectiveness data were derived from a review of studies.

Modelling
A decision tree was created to model costs and outcomes of the various treatment strategies.

Outcomes assessed in the review
The following outcomes were assessed: probabilities of diagnosis and progression, LEEP complication rates, and the sensitivity and specificity of tests.

Study designs and other criteria for inclusion in the review
Not stated.
Sources searched to identify primary studies
A MEDLINE search was carried to identify studies published between 1960 and 1997.

Criteria used to ensure the validity of primary studies
Not stated.

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

Number of primary studies included
Approximately 12 studies were included.

Methods of combining primary studies
Not stated.

Investigation of differences between primary studies
Not stated.

Results of the review
The probability of a diagnosis that was benign was 60%. The probability of a diagnosis of low and high grade squamous intraepithelial lesion (LSIL and HSIL) was 30% and 10%, respectively. The probability of progression of LSIL and HSIL to invasive cancer was 1% and 10%, respectively. The carcinoma stage after the "do-nothing" alternative was local, regional, distant, and unstaged in 51%, 33%, 8%, and 7% of cases. The cancer stage after any of the other strategies was local in 100% of cases. The LEEP complication rate was 1.5%. If a woman underwent colposcopy, visual examination was assumed to have a specificity of 100% and a sensitivity of 95%. A biopsy procedure was assumed to have both sensitivity and specificity equal to 100%.

Measure of benefits used in the economic analysis
The measures of benefits used included life expectancy, the number of cancers, the number of false-positive results and the number of complications.

Direct costs
Costs were not discounted. Quantities and costs were not reported separately. Direct costs included long-term costs associated with the diagnosis and treatment of invasive carcinoma. The quantity/cost boundary adopted was that of the health service. The estimation of quantities and costs was based on actual data. Cost data were obtained from a MEDLINE search and the University of Iowa Hospitals and Clinics. The price year was not stated.

Statistical analysis of costs
Not reported.

Indirect Costs
Not included.

Currency
US dollars ($).

**Sensitivity analysis**
Sensitivity analysis was conducted on the following parameters: probability of a high-grade squamous intraepithelial lesion, the rate for progression to cancer within 1 year of high-grade squamous intraepithelial lesion, the percentage of low-stage cancers, and the costs of treating cancer.

**Estimated benefits used in the economic analysis**
The number of cancers varied between 0 and 130 per 10,000 patients. The number of false-positive results ranged from 0 to 7,500 per 10,000 patients. The number of LEEP complications varied between 0 and 150 per 10,000 patients. The discounted life expectancy varied between 19.2126 and 19.2298.

**Cost results**
Total costs per patient varied between $347 and $1,292.

**Synthesis of costs and benefits**
Total costs per discounted life year varied between $75,553 and $306,830. Strategy 6, which consisted of colposcopy performed for LSIL or HSIL and LEEP performed for HSIL, was the most cost-effective strategy.

**Authors’ conclusions**
The results indicated that less aggressive strategies consisting of smear follow-up are the most cost-effective strategies for many patients with atypical squamous cells of undetermined significance.

**CRD COMMENTARY - Selection of comparators**
The rationale for the choice of the comparators was clear.

**Validity of estimate of measure of benefit**
The relevant measures of benefit were considered. The assumptions made in this analysis favoured the more aggressive strategies. The model did not take into account patient pain and suffering associated with cervical cancer. In addition, other factors such as patients' preferences or professional liability were not examined.

**Validity of estimate of costs**
Only direct costs were included and charges, which do not represent true opportunity costs, were used rather than real costs. No statistical analysis was conducted.

**Other issues**
These results are only applicable to 30-year-old women who do not have a history of cervical disease. Cost-effectiveness may change if women were to be taken from other populations.

**Implications of the study**
More research is required to study the impact of several variables, such as the probability of a squamous intraepithelial lesion after a diagnosis of atypical squamous cells of undetermined significance, on the cost-effectiveness of the various treatment strategies. The usefulness of subclassifying cases of atypical squamous cells of undetermined significance into different categories also needs to be examined.

**Source of funding**
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