Cost effectiveness of rescreening cervicovaginal smears
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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
Rescreening of cervicovaginal smears.

Type of intervention
Screening.

Economic study type
Cost-effectiveness analysis.

Study population
A reference case 30-year-old white woman at "high", "low", and "average" risk.

Setting
Hospital. This study was carried out at the University of Iowa, Iowa City, USA.

Dates to which data relate
Effectiveness data were collected from women’s records on cervicovaginal smear rescreening between 1 January 1992 and 18 August 1996 and from studies previously published between 1960 and 1998. The dates during which resource use and cost data were collected were not reported. The price year was not stated.

Source of effectiveness data
Effectiveness data were derived from a single study, literature review, and expert opinion.

Link between effectiveness and cost data
Not stated.

Study sample
16,188 women for whom cervicovaginal smears were rescreened at the University of Iowa (10,792 women at "low" risk and 5,396 women with a history of atypical cells or surgically detected cervical disease within the previous year or who underwent a same-day surgical procedure).

Study design
This was a retrospective cohort study carried out at a single centre. A woman was considered lost to follow-up if no additional smears were examined or procedures performed. Of patients with a rescreening diagnosis of atypical squamous cells of undetermined significance (ASCUS), atypical glandular cells of undetermined significance (AGUS),
or squamous intraepithelial lesion (SIL), 21.3% were lost to follow-up. The average duration of follow-up was 3.4 years.

Analysis of effectiveness
The primary health outcomes studied were diagnosis after rescreening and risk of cervical disease.

Effectiveness results
The number of rescreening diagnoses of ASCUS, AGUS, or SIL was 417 (2.6% of all rescreened smears). Of patients with a rescreening diagnosis of ASCUS, AGUS, or SIL, 21.3% were lost to follow-up, 41.7% had benign findings at follow-up, 36.9% had a preneoplastic or neoplastic lesion, and 11.3% had high-grade SIL or adenocarcinoma in situ (AIS). Of the 5,396 patients at high risk and 10,792 at low risk, 0.4% and 0.04%, respectively, had an HSIL or AIS at follow-up.

Clinical conclusions
Not reported.

Modelling
A decision model was used to determine the cost-effectiveness of the rescreening strategies.

Outcomes assessed in the review
The review assessed the following outcomes: life expectancy data and probability data.

Study designs and other criteria for inclusion in the review
Not stated.

Sources searched to identify primary studies
Effectiveness data were obtained from the Surveillance Epidemiologic and End Results Program, the National Center for Health Statistics and a MEDLINE search.

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
Not stated.

Methods of combining primary studies
Not stated.

Investigation of differences between primary studies
Not stated.
Results of the review
Not stated.

Methods used to derive estimates of effectiveness
Estimates of effectiveness were also derived from the authors’ assumptions based at least partly on the literature review above.

Estimates of effectiveness and key assumptions
The probability of developing a second clinically significant lesion was nil. It was assumed that if a preneoplastic lesion was detected it would be adequately treated and would not progress to cancer. It was assumed that a repeat smear would be obtained within 1 year. It was assumed that life expectancy was normal for women who had no SIL, a SIL that was treated, or a SIL that was not treated and did not develop into cancer. It was assumed that if invasive cancer developed, it would be either squamous cell carcinoma or adenocarcinoma.

Measure of benefits used in the economic analysis
The measures of benefit were patient life expectancy, number of women in whom invasive cancer developed, number of women for whom the cytologic findings were false-positive, and the number of detected HSIL or AIS. Life expectancy was discounted at a fixed annual rate of 3%.

Direct costs
Costs were not discounted. Quantities and costs were not reported separately. Direct costs included rescreening costs. The quantity/cost boundary adopted was that of the hospital. The estimation of quantities and costs was based on actual data. Cost data were obtained from the University of Iowa Hospitals and Clinics. The price year was not reported.

Statistical analysis of costs
Not reported.

Indirect Costs
Not included.

Currency
US dollars ($).

Sensitivity analysis
A sensitivity analysis was conducted on the cost of rescreening.

Estimated benefits used in the economic analysis
The number of invasive cancers per 100,000 women was 0 with 100% rescreening, 6 with 15% rescreening, and 7 with 0% rescreening.

The number of false-positive results per 100,000 women was 1,366 with 100% rescreening, 204 with 15% rescreening, and 0 with 0% rescreening.

The number of detected HSIL or AIS per 100,000 women was 259 with 100% rescreening, 39 with 15% rescreening, and 0 with 0% rescreening.
The number of life years per 100,000 women was 19,229,764 with 100% rescreening, 19,299,742 with 15% rescreening, and 19,229,738 with 0% rescreening.

The number of cancers per 100,000 women at low risk was 0 with 100% rescreening, 1 with 15% rescreening, and 1 with 0% rescreening.

The number of HSIL or AIS per 100,000 women at low risk was 56 with 100% rescreening, 8 with 15% rescreening, and 0 with 0% rescreening.

The number of cancers per 100,000 women at high risk was 0 with 100% rescreening, 15 with 15% rescreening, and 18 with 0% rescreening.

The number of HSIL or AIS per 100,000 women at high risk was 667 with 100% rescreening, 100 with 15% rescreening, and 0 with 0% rescreening.

Cost results
The cost per patient amounted to $2.80 with 100% rescreening, $1.30 with 15% rescreening, and $1.03 with 0% rescreening.

Synthesis of costs and benefits
The incremental cost-effectiveness over 0% rescreening was $68,076 with 100% rescreening and $67,500 with 15% rescreening. As the cost of rescreening increases, the 100% rescreening strategy becomes less cost-effective.

The incremental cost-effectiveness over 0% rescreening for women at low risk was $516,000 with 100% rescreening and $386,890 with 15% rescreening.

The incremental cost-effectiveness over 0% rescreening for women at high risk was $2,500 with 100% rescreening and $2,980 with 15% rescreening.

Authors' conclusions
Rescreening only smears from women with a history of cervical disease could save US laboratories more than $11.2 million annually without seriously compromising care.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparators was clear. You, as a user of this database, should verify whether these rescreening strategies are relevant to your setting.

Validity of estimate of measure of benefit
Relevant measures of benefit were considered. Effectiveness data were derived from the literature and a single study if no published data were available. With respect to the single study, other institutions may have other long-term rescreening results that could affect the efficacy of rescreening. More details about the literature search could have been provided. High risk is not well defined and further studies are needed to determine the factors that define high risk and to determine whether other risk groups may be defined. A number of assumptions were made in the decision model, and additional studies should be performed to examine the validity of these results.

Validity of estimate of costs
The authors only considered rescreening costs and excluded cancer treatment costs. Costs of follow-up and treatment after a false-positive result were not assessed. This created a bias favouring the rescreening strategies. Costs were derived from a local source and, hence, are likely to be specific. This is important since the cost-effectiveness results are sensitive to the cost of rescreening.
Other issues
Generalisability of the results to other settings or countries was not discussed.

Implications of the study
Further studies are need to assess the cost-utility of the performance evaluation of rescreening negative smears from the population at low risk. Further studies are also needed to examine rescreening strategies at different rates, with different methods, in populations at different risk.

Source of funding
None stated.

Bibliographic details

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10230350

Other publications of related interest


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