Overview of important cervical cancer screening process values in European Union (EU) countries, and tentative predictions of the corresponding effectiveness and cost-effectiveness

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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
Cervical cancer screening policies.

Type of intervention
Screening.

Economic study type
Cost-effectiveness analysis.

Study population
Birth cohort of women following the recommended screening policy.

Setting
The setting was hospital. The economic study was carried out in 13 of the 15 EU Member States (the exceptions being Austria and Luxembourg).

Dates to which data relate
Effectiveness, resource use, and cost data were collected from studies published between 1990 and 1997.

Source of effectiveness data
The effectiveness evidence was derived from a review of the literature and expert opinion.

Modelling
The MISCAN cervical cancer screening simulation model was used to determine the cost-effectiveness of the screening policies.

Outcomes assessed in the review
The review assessed recommended screening age ranges and intervals, coverage, proportion of non-negative smears and smear use.

Study designs and other criteria for inclusion in the review
Not stated.
Sources searched to identify primary studies
Not stated.

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

Methods used to judge relevance and validity, and for extracting data
Summary statistics from individual studies were used in the review.

Number of primary studies included
At least 3 primary studies were included in the review.

Methods of combining primary studies
Primary studies were combined using the narrative method.

Investigation of differences between primary studies
Not stated.

Results of the review
The mortality reduction in women participating in screening was 75% for a 30-60 every 5-year policy and 90% for 16
smears between age 20 and 70 years.

The age distribution of the incidence of cervical cancer was very similar across countries with a peak age of 44-47
years.

Screening intensity varied from 7-16 smears per woman in a lifetime, with the exception of Germany where there is a
1-year screening interval and over 50 smears are taken in a lifetime.

The three-year coverage in the participating countries varied from 50% to 82% in the national programmes.

The percentage of screen positives varied from 3% to 8% of screened women.

Methods used to derive estimates of effectiveness
Estimates were derived from the Epidemiology Working Group of the European Cervical Cancer Screening Network,
which consists of representatives from 13 EU Member States.

Estimates of effectiveness and key assumptions
See the results of the review reported above.

Measure of benefits used in the economic analysis
The percentage reduction in life-years lost was used as the measure of benefits.

Direct costs
The number of smears was used as an approximate proportionality factor for direct costs. These data were based on the
literature review and expert opinion.
Statistical analysis of costs
No statistical analysis was reported.

Indirect Costs
Indirect costs were not included.

Currency
This was not relevant.

Sensitivity analysis
No sensitivity analysis was reported.

Estimated benefits used in the economic analysis
At 100% coverage, the number of life years lost because of cervical cancer was reduced by between 84% and 94% when screening women between 7 and 14 times, respectively.

The German policy with over 50 smears a lifetime resulted in an almost 100% reduction.

Differences in coverage resulted in more or less proportional differences in expected percentage life years lost reduction; with much less impact for the number of smears recommended in a lifetime. For instance, for a 7 smears per lifetime policy, increasing the coverage from 50% to 75% added 21% extra life years lost reduction, while intensifying screening to 14 smears in a lifetime only added 5% life years lost reduction.

Cost results
Cost results were not reported.

Synthesis of costs and benefits
Policies with a low smear-taking intensity had a more favourable cost-effectiveness ratio compared with policies with many smears in a lifetime. Differences in +40-130% excess smears and in 7-16 of smears recommended in a lifetime resulted in approximately two-fold differences in the expected number of smears per percentage life years lost reduction. In Ireland, for instance, for an excess smear use percentage between 0 and 140%, the predicted number of smears per percentage life years lost reduction varied between 2.1% and 5%.

Authors’ conclusions
Estimates for a restricted set of well-defined parameters are quite useful for country-specific cost-effectiveness evaluations. The results show the importance of a high coverage for the effectiveness of screening, and of a restricted intensity of smear taking for cost-effectiveness.

CRD COMMENTARY - Selection of comparators
A justification was given for the comparators used, namely that they were recommended screening policies across EU countries. You, as a user of the database, should decide if these health technologies are relevant to your setting.

Validity of estimate of measure of benefit
The authors did not state that a systematic review of the literature had been undertaken. More information about the design of the review, the composition of the expert panel, and the method of combining primary effectiveness
estimates would have been useful. The estimate of benefits was obtained directly from the effectiveness analysis.

**Validity of estimate of costs**
The problem with the method chosen by the authors to obtain cost-effectiveness ratios is that only the cost of screening is accounted for in the calculations. Treatment costs for example are not included.

**Other issues**
The authors did not make appropriate comparisons of their findings with those from other studies and did not address the issue of generalisability to other settings. The authors did not present their results selectively. The study considered women following the recommended screening policy and this was reflected in the authors' conclusions.

**Implications of the study**
The authors stated that the next step in the cost-effectiveness analysis of cervical cancer screening would be to estimate the number of life years gained and to account for age dependency of coverage and hysterectomy rates. The main, and to some extent, insoluble problem for further improvement of the analysis is the lack of reliable country-specific estimates for the background risk of cervical cancer in women eligible for screening in the near future.

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