Modelling the cost-effectiveness and capacity impact of changes to colposcopy referral guidelines for women with mild dyskaryosis in the UK Cervical Screening Programme


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
The study objective was to assess the cost-effectiveness and capacity implications of new guidelines recommending referral to colposcopy after one mild result during cervical screening rather than after two consecutive mild results. The authors concluded that referral after one mild result increased workload at colposcopy but was a cost-effective strategy using UK thresholds. On the whole, the study was based on solid methodology although it was not fully reported. Nevertheless, the authors’ conclusions appear valid.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective was to assess the clinical and economic impact, in terms of both cost-effectiveness and capacity implications, of new guidelines recommending referral to colposcopy after one mild result during cervical screening rather than after two consecutive mild results. This study was commissioned by the National Health Service Cervical Screening Programme (NHSCSP) in the UK to evaluate the impact of this change in referral policy.

Interventions
Until 2004, the standard of care for women aged 25 to 64 years who presented with a mildly abnormal cervical smear result (mild dyskaryosis) was to re-screen them after 6 months, and to refer them for investigation and treatment in a colposcopy centre if the mild smear result persisted or progressed. In 2004/2005, these guidelines were revised and it was proposed to refer women to colposcopy services after only one mildly dyskaryotic smear. Regardless of the referral policy, screening was performed every 3 years, every 5 years, or was age-related.

Location/setting
UK/primary care.

Methods
Analytical approach:
A Markov model was developed on the basis of experience of clinicians within the NHSCSP to simulate the impact of the two referral guidelines. The model considered both the diagnostic pathways for women with initial mild dyskaryosis and disease progression from cervical intraepithelial neoplasia (CIN) grade 1 to invasive cervical cancer. A lifetime horizon was considered. The authors did not explicitly state the perspective of the analysis.

Effectiveness data:
A systematic review of the literature was undertaken in order to identify clinical inputs for the decision model. Commonly used databases were searched together with official national data. Routine NHS data and local audits provided population data, including coverage of the cervical screening programme and colposcopy outcomes for each grade of smear. Several assumptions were also made, based on expert opinion. Details of the other studies used to derive the clinical data were not described.

Monetary benefit and utility valuations:
The utility valuations were based on a published Health Technology Assessment of liquid-based cytology. No other details were provided.
Measure of benefit:
The summary benefit measures were the life-years (LYs) and quality-adjusted life-years (QALYs). Both of these were estimated using the decision model and combined with the costs.

Cost data:
The cost categories included in the analysis were screening, colposcopy, treatment of CIN and treatment of invasive cervical cancer. The costs were derived directly from the published Health Technology Assessment of liquid-based cytology. The unit costs and the quantities of resources used were not presented separately. The price year was 2003. The costs were in UK pounds sterling (£). Discounting was performed but the rate used was not reported.

Analysis of uncertainty:
A sensitivity analysis was performed in order to consider alternative scenarios of referral policies based on age of the women or the number of borderline results.

Results
In the scenario of 3-year screening, the expected costs were £110.25 with referral after two mild smears and £130.36 with referral after one mild smear (£80.48 and £94.22 with 5-year screening; £100.52 and £118.54 with age-related screening).

In the scenario of 3-year screening, the expected LYs were 25.2564 with referral after two mild smears and 25.2569 with referral after one mild smear (25.2613 and 25.2626 with 5-year screening; 25.2580 and 25.2588 with age-related screening).

In the scenario of 3-year screening, the expected QALYs were 25.2418 with two smears and 25.2427 with one smear (25.2498 and 25.2520 with 5-year screening; 25.2445 and 25.2458 with age-related screening).

The incremental costs per LY gained with referral after one mild smear over two smears were £35,126 in the 3-year screening scenario, £10,031 in the 5-year screening scenario, and £21,639 in the age-related screening scenario.

The incremental costs per QALY gained with referral after one mild smear over two smears were £21,893 in the 3-year screening scenario, £6,244 in the 5-year screening scenario, and £13,477 in the age-related screening scenario.

In terms of capacity, the national average capacity would be expected to increase by around 21% one year after the implementation of the new referral policy.

The sensitivity analyses showed that the model findings were quite robust.

Authors’ conclusions
The authors concluded that referral after one mild result increased workload at colposcopy but was a cost-effective alternative to the current policy of referral after two consecutive mild results.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear in that they reflected the change in referral patterns in the authors’ setting.

Effectiveness/benefits:
The approach used to identify clinical parameters for the model was appropriate as the aim of a systematic review is to gather all relevant evidence. Nevertheless, the authors did not provide extensive information on the methods of the review, except for the databases searches. Inclusion and exclusion criteria, characteristics of the sources used, and other aspects such as the issue of heterogeneity among sources used, were neither reported nor discussed. Thus, it is not possible to judge the quality of the data used. Furthermore, some assumptions were made, which lead to further uncertainty around the clinical data. The benefit measures were appropriately selected since they not only reflect the impact of the interventions on patient health, but are also comparable with the benefits of other health care
interventions. However, little information on the derivation of the utility weights was reported.

Costs:
The analysis of the costs was characterised by limited reporting because it was based on a published study. Thus, few details on the cost items, the sources and the types of economic data were given. The costs were presented as macro-categories and the viewpoint of the analysis was not explicitly stated, although it is likely to have been that of the NHS.

Analysis and results:
The synthesis of the costs and benefits was appropriately performed and presented clearly. The issue of uncertainty was only partially addressed and was not fully reported. However, the authors considered three scenarios for screening timing, which are likely to reflect the variability in screening patterns. The authors discussed the implications of the implementation of the new referral policy on colposcopy services. It was stated that the current model differed in some respects from the original model on liquid-based cytology, which might have led to some differences in the key outputs of the two models. In general, readers were referred to an original Health Technology Assessment for more details on clinical and economic inputs and on the methodology applied in this study.

Concluding remarks:
On the whole, the study was based on solid methodology although it was not reported in full. Nevertheless, the authors' conclusions appear valid.

Funding
NHS Cervical Screening Programme.

Bibliographic details

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Cervical Intraepithelial Neoplasia /economics /prevention & control; Colposcopy /economics /utilization; Cost-Benefit Analysis; Female; Great Britain; Health Policy; Humans; Mass Screening /economics; Middle Aged; Models, Biological; Practice Guidelines as Topic; Referral and Consultation /standards; Uterine Cervical Neoplasms /economics /prevention & control; Workload

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