The value of repeat Pap smear at the time of initial colposcopy

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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
Repeat Pap smear at the time of initial colposcopy.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
Patients referred for initial colposcopy.

Setting
The practice setting was the hospital. The economic study was performed in New York, NY, USA.

Dates to which data relate
Effectiveness data were from the period 1984 to 1995. The price date was not stated.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
Costs were estimated retrospectively on the same patient sample as that used in the effectiveness analysis.

Study sample
Records from 2,969 patients, who had presented for initial colposcopy between 1984 and 1995, were reviewed (mean patient age 29 (+/- 11.7) years). The mean interval between the referral Pap smear and the colposcopy visit was 3.9 (+/- 4.8) months. 2,830 patients (95.3%) had undergone a repeat Pap smear at the time of colposcopy; these patients formed the study sample.

Study design
Retrospective cohort study.

Analysis of effectiveness
The effectiveness analysis was based on a complete set of patient records. The effectiveness of a repeat Pap smear was defined as clinically valuable if it would have changed the patient's management. Clinical value was defined by three criteria. Firstly, the result of the repeat Pap smear had to be a low-grade squamous intraepithelial lesion (LGSIL), high-grade squamous intraepithelial lesion (HGSIL), or malignant cells seen (MCS). Secondly, this repeat Pap result had to be at least one grade higher than the result of the referral Pap smear. Lastly, the more advanced disease was not identified on the colposcopically directed biopsy. The patient sample acted as its own control group.

**Effectiveness results**
Of those who received a repeat Pap smear at the time of colposcopy, 948 (33.5%) had a result of LGSIL, HGSIL or MCS. For 312 women (11%), the repeat Pap result was one or more grades higher than the referral cytology. However, in 236 cases, the higher grade of disease was detected by the colposcopically directed biopsy. Therefore repeating the Pap smear changed the management in only 76 (2.7%) of the cases and indicated cone biopsy (a major change in management) in 1.1%. In the case of the 12 women with a final diagnosis of invasive cancer, none had a repeat Pap smear at a higher grade than the referral cytology.

**Clinical conclusions**
The repeat Pap smear did not identify any women with invasive cancer who were not already identified by the initial Pap smear or the colposcopically directed biopsy. Repeat cytology provided little additional insight into the disease process of most of the patients.

**Measure of benefits used in the economic analysis**
Estimates of effectiveness were not converted to a single measure of benefit.

**Direct costs**
Cost/quantities were reported separately. Costs were estimated from the perspective of the hospital and included the cost of the Pap smear and cost of additional physician's visit to repeat a smear. It was assumed that if routine repeat Pap smears were not performed, then women with low-grade histology or referral cytology would need a repeat smear in 6 months. Costs were not discounted and the price date was not given.

**Statistical analysis of costs**
A statistical analysis of costs was not performed.

**Indirect Costs**
Indirect costs were not included in the analysis.

**Currency**
US dollars ($).

**Sensitivity analysis**
A sensitivity analysis was not performed.

**Estimated benefits used in the economic analysis**
Not applicable.

**Cost results**
The total cost of repeating a Pap smear at the time of colposcopy was estimated to be $70,750. The cost of having a repeat Pap smear at 6 months, only for the subgroup of women with low-grade histology or referral cytology, was estimated to be $2,170. Had there been no routine repeat Pap smear at the time of colposcopy, total cost savings of $68,580, or $24.23 per patient, would have been achieved. If these results were extrapolated to the rest of the USA, the saving would exceed $24 million.

**Synthesis of costs and benefits**
Since no clinically significant difference between the two practices was found, and one was found to cost less, no synthesis of costs and benefits was required.

**Authors’ conclusions**
Given the potential drawbacks, the increasing monetary costs, and the limited clinical benefits of repeat cytology at the time of initial colposcopy, this practice seems not to be justified.

**CRD COMMENTARY - Selection of comparators**
The reason for the choice of comparator is clear, namely that it is a ‘do nothing’ alternative to routine practice. You, the user of this database, should decide if this is a widely used technology in your own setting.

**Validity of estimate of measure of benefit**
The analysis was based on a sample of women who had received a repeat Pap smear at the time of colposcopy. This was compared with the clinical management that would have occurred had this group not received a repeat Pap smear. Those who did not receive a repeat Pap smear were excluded from the analysis. Although no case of invasive cancer was detected by a repeat Pap smear alone, this test was shown to be of clinical value to a small proportion of patients. The authors did not demonstrate that there was no health benefit, in terms of subsequent morbidity or mortality, for these patients.

**Validity of estimate of costs**
Costs and quantities were reported separately, but did not include the cost of subsequent treatment. The incremental cost of changes in patient management, made in response to additional information provided by the repeat Pap smear, was therefore not taken into account when calculating cost.

**Other issues**
The authors provided adequate comparisons of their findings with those from other similar studies. The issue of the generalisability of the results to other settings or countries was addressed in a narrative fashion, but was not formally investigated.

**Implications of the study**
A prospective, randomised study to estimate morbidity and mortality following repeat Pap smear at the time of initial colposcopy and compared with no repeat Pap smear would give a more accurate indication of the cost-effectiveness of the intervention.

**Source of funding**
None stated.

**Bibliographic details**
Spitzer M, Ryskin M, Chernys A E, Shifrin A. The value of repeat Pap smear at the time of initial colposcopy. Gynecologic Oncology 1997; 67(1): 3-7

**PubMedID**
9345348
DOI
10.1006/gyno.1997.4829

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Aged; Aged, 80 and over; Colposcopy /methods; Cost-Benefit Analysis; Female; Humans; Middle Aged; Papanicolaou Test; Vaginal Smears /economics /methods /utilization

AccessionNumber
21997001462

Date bibliographic record published
31/08/1999

Date abstract record published
31/08/1999