A cost utility analysis of sonohysterography compared with hysteroscopic evaluation for dysfunctional uterine bleeding

Evans K D

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
The use of sonohysterography and hysteroscopy for the diagnosis of dysfunctional uterine bleeding (DUB).

Type of intervention
Diagnosis.

Economic study type
Cost-utility analysis.

Study population
The study population comprised women presenting with DUB.

Setting
The setting appears to have been a managed care unit. The economic study was conducted in the USA.

Dates to which data relate
The dates when the effectiveness and resource use data were collected were not reported. The price year was not given.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was not conducted on the same sample of patients as that used in the effectiveness analysis.

Study sample
Power calculations were not carried out. A sample of 100 women presenting with DUB, who self-selected to obtain services from a managed care facility during a one-year period, was identified. Their age ranged from 31 to 78 years. The patients were split into two groups, women receiving only sonohysterography and women receiving both sonohysterography and hysteroscopy. The actual number of patients included in each group was not reported. Given the little information on the patients' characteristics, it was unclear whether the study sample was appropriate for the clinical question.

Study design
The author stated that this was a correlational study, but it might be more appropriate to consider it a retrospective
comparative study. The study was conducted in a single managed care facility. Patients in both groups, once diagnosed, were treated for DUB. Then, a retrospective chart audit was used to assess whether they returned to normal health or not. Other information on the follow-up and outcome assessment methods was not reported.

**Analysis of effectiveness**

It was unclear whether all of the patients included in the study were considered in the analysis of effectiveness. The outcome measures used were the days of missed work due to DUB and the quality of life score. Both measures were assessed through the use of a questionnaire. Quality of life appears to have been estimated with the time-trade-off approach (the score ranged from 0 for death, to 1 for perfect health). However, the author mentioned also the use of a self-rated scale. It was unclear which method was actually applied when estimating the final scores. The author did not discuss the baseline comparability of the two groups.

**Effectiveness results**

The number of days of missed work due to DUB was 0.3 for women who had sonohysterography plus hysteroscopy, and 0.2 for women who received sonohysterography alone.

The quality of life score while having dysfunctional bleeding was 0.67 in the sonohysterography plus hysteroscopy group, and 0.70 in the sonohysterography alone group.

After DUB was diagnosed and treated, the quality of life score was 1 in both groups since the patients were able to return to a normal health state. Therefore, the appropriate diagnosis of DUB led to improvements in quality of life of 0.33 with sonohysterography plus hysteroscopy, and 0.30 with sonohysterography alone.

Given the similar results for the two techniques, the author assumed that the improvement in quality of life was 0.30 for both groups.

**Clinical conclusions**

The effectiveness study showed that the appropriate diagnosis of DUB led to patients returning to a normal health state. In addition, both approaches were associated with a similar gain (0.30) in quality of life. DUB had no impact on working days. A clear measure of efficacy was not used, but it appears that the equal effectiveness of the two approaches has been implicitly derived from the fact that all patients returned to a normal health state.

**Measure of benefits used in the economic analysis**

The summary benefit measure was the gain in quality of life. This was derived from the effectiveness study.

**Direct costs**

Discounting was irrelevant since the costs were incurred during a short time. The unit costs were reported separately from the quantities of resources used. The health services included in the economic evaluation were sonohysterography and hysteroscopy, which included both a technical and a professional component. The cost/resource boundary of the study was that of the third-party payer. Resource use was estimated on the basis of one sonohysterography and one hysteroscopy performed. The costs were derived from Medicare reimbursement rates, which were based on region-specific relative value units. The price year was not reported.

**Statistical analysis of costs**

The costs were treated deterministically.

**Indirect Costs**

The indirect costs were not included since the impact of the disease on productivity losses was negligible, as shown in
the effectiveness study.

**Currency**

US dollars ($).

**Sensitivity analysis**

Sensitivity analyses were not conducted.

**Estimated benefits used in the economic analysis**

See the 'Effectiveness Results' section.

**Cost results**

The estimated costs were $217 ($137 for technical component and $80 for professional component) for hysteroscopy and $152 ($72 for technical component and $80 for professional component) for sonohysterography.

**Synthesis of costs and benefits**

An average cost-utility ratio was calculated to combine the costs and benefits of the two diagnostic approaches. The average cost-utility ratio was $723 with hysteroscopy (i.e. $217 divided by 0.30) and $506 with sonohysterography (i.e. $152 divided by 0.30).

**Authors' conclusions**

Sonohysterography proved to be more cost-effective than hysteroscopy in the diagnosis of DUB, being equally effective and less costly.

**CRD COMMENTARY - Selection of comparators**

The author discussed the reasons for choosing these comparators. Sonohysterography represented a widely used approach for the diagnosis of DUB, while hysteroscopy was less frequently used. However, published studies showed that hysteroscopy had a high specificity, which represents a key issue when a diagnosis of exclusion is necessary to identify DUB. While one group of patients received only sonohysterography, the other sample of patients received both hysteroscopy and sonohysterography. Therefore, the cost-effectiveness of hysteroscopy alone was not tested. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**

Limited information on the analysis of effectiveness was reported. The author considered this to be a correlational study, but it might be more appropriate to classify it as a retrospective comparative study. The use of a prospective clinical trial would have been more appropriate and guaranteed more internal validity. Power calculations were not conducted and no justification for the sample size was provided. The method used to select the sample was not described and there were few details on the size and characteristics of the sample, such as sociodemographics (with the exception of age range) and characteristics of the disease. Therefore, it was unclear whether the study sample was representative of the study population and whether the two groups were comparable at baseline. The length of and loss to follow-up were also not reported. These issues cast some doubts on the validity of the effectiveness study.

**Validity of estimate of measure of benefit**

The benefit measure was the change in quality of life, which was appropriate for assessing the impact of the interventions on the patients' health. It was unclear whether quality of life scores were obtained using a time trade-off method or a self-rated scale. Also, the effectiveness of the two interventions was not explicitly shown.
effectiveness was assumed to have been equal since all patients returned to a normal health state. The use of an explicit outcome measure (or intermediate measures such as sensitivity and specificity) showing the equal effectiveness would have been useful.

Validity of estimate of costs
The author reported the perspective adopted in the study and considered only two categories of costs in the analysis. The indirect costs (i.e. productivity losses) were not included because days of work lost were negligible in both groups. The unit costs were presented separately from the quantities of resources used. Resource use was calculated assuming one diagnostic procedure per patient. The source of the cost data was reported. The costs were presented as punctual estimates and statistical tests were not conducted. Reimbursement rates were used as a proxy for the costs. The price year was not reported, which makes reflation exercises in other settings difficult. The cost estimates are likely to have been specific to the region where the study was conducted (which was not reported) and no sensitivity analyses were conducted.

Other issues
The author reported the results of several published studies that highlighted the advantages and disadvantages of both diagnostic procedures. However, the issue of the generalisability of the study results to other settings was not addressed and sensitivity analyses were not performed. The cost estimates were specific to the study setting, which further reduced the external validity of the analysis. The costs and benefits were combined using average ratios. An incremental analysis would have been more appropriate. Also, the basis of the effectiveness analysis was a comparison between sonohysterography plus hysteroscopy and sonohysterography alone, while the economic analysis compared sonohysterography with hysteroscopy. Therefore, it was unclear whether the effectiveness results in the group receiving both techniques should be associated with sonohysterography or hysteroscopy. In general, the author used different comparators for the effectiveness and cost analyses. Finally, the use of a cost-utility analysis would appear superfluous. Given the same effectiveness results assumed for the two techniques, a cost-minimisation analysis should have been performed.

Implications of the study
The study results suggested that sonohysterography should be the preferred option for the diagnosis of DUB. However, caution is required when interpreting the results of the analysis due to its limitation, mainly on the effectiveness side. The author suggested that further studies to confirm the results of the current analysis should be conducted.

Source of funding
None stated.

Bibliographic details
Evans K D. A cost utility analysis of sonohysterography compared with hysteroscopic evaluation for dysfunctional uterine bleeding. Journal of Diagnostic Medical Sonography 2000; 16(2): 68-72

Other publications of related interest

Towbin N, Gviazda I, March C. Office hysteroscopy versus transvaginal ultrasonography in the evaluation of patients with excessive bleeding. AJOG 1996;174:1678-83

Indexing Status
Subject indexing assigned by CRD
MeSH
Adult; Aged; Costs and Cost Analysis; Diagnostic Imaging; Female; Humans; Hysteroscopy; Metrorrhagia /diagnosis; Quality of Life; Uterine Hemorrhage /diagnosis

AccessionNumber
22000007565

Date bibliographic record published
30/09/2004

Date abstract record published
30/09/2004