Diagnostic yield and cost-effectiveness of endoscopy in chronic human immunodeficiency virus-related diarrhoea

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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
Endoscopy in chronic human immunodeficiency virus-related diarrhoea.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with documented HIV infection and chronic diarrhoea, with negative stool examination.

Setting
Secondary care. The economic study was conducted in New York, USA.

Dates to which data relate
Effectiveness and resource use data were collected between 1 October 1993 and 31 October 1996. It is not clear which price year was used.

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

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same patient sample as that used in the effectiveness analysis.

Study sample
A total of 479 endoscopic procedures were performed in 307 patients with documented HIV infection with chronic diarrhoea and negative stool examination who were referred for diagnostic endoscopy. The following diagnostic procedures were performed: upper endoscopy (n=203), flexible sigmoidoscopy (n=85) and colonoscopy (n=191). Power calculations were not used in determining sample size.

Study design
This was a retrospective cohort study carried out in a single centre.
Analysis of effectiveness
The main health outcome used in the analysis was the diagnostic yield of endoscopy, namely of upper endoscopy, flexible sigmoidoscopy and colonoscopy. Complications related to endoscopy were also considered. It is not clear whether groups were comparable in terms of their baseline characteristics. It was reported that there was no significant difference in the number of upper endoscopies, flexible sigmoidoscopies or colonoscopies between patients with CD4 count of less than 100 cells/mm³, and those with higher CD4 counts.

Effectiveness results
A pathogen was identified in 147 patients (47.9%) and cytomegalovirus was the most frequent organism found (21.5%). Colonoscopy had a greater diagnostic yield than flexible sigmoidoscopy (38.7% versus 22.4%, p=0.009). The yield of upper endoscopy was 29.6%. In patients with CD4 count of less than 100 cells/mm³, endoscopy had a higher diagnostic yield (62.8%) than in those with higher CD4 counts (8.3%), (p<0.0001). There were no complications related to endoscopy.

Clinical conclusions
Endoscopy is a safe and effective procedure. The diagnostic yield of colonoscopy is significantly higher than the yield of flexible sigmoidoscopy, while upper endoscopy results in a low diagnostic yield.

Measure of benefits used in the economic analysis
The benefit measure was the number of cases where a pathogen was identified.

Direct costs
Direct health service costs were considered. The cost of endoscopy was estimated by adding the physician fee under Medicaid reimbursement, the facility fee for endoscopy and the pathology fee for the biopsy regimens. The cost of identifying a pathogen was calculated by combining the cost of endoscopy and histologic examination, as well as the cost of electron microscopy and small bowel aspirates when performed, and dividing the total cost by the number of patients with a pathogen identified. Price dates were not stated. Discounting was not carried out because of the short period of time during which costs were incurred.

Statistical analysis of costs
Not carried out.

Currency
US dollars ($).

Estimated benefits used in the economic analysis
A pathogen was identified in 147 patients (47.9%). Colonoscopy had a greater diagnostic yield than flexible sigmoidoscopy (38.7% versus 22.4%, p=0.009). The yield of upper endoscopy was 29.6%.

Cost results
Total costs (per procedure) of flexible sigmoidoscopy, upper endoscopy and colonoscopy were $749.42, $946.81 and $1079.64 respectively.

Synthesis of costs and benefits
The average cost of identifying a pathogen by endoscopy was $3,822.92. The costs of identifying a pathogen for flexible sigmoidoscopy, upper endoscopy and colonoscopy were $3,352.67, $4,867.68 and $2,786.64 respectively.
Authors' conclusions
Endoscopy frequently identifies a pathogen in HIV-related chronic diarrhoea. Colonoscopy is the most cost-effective procedure. Endoscopic evaluation has a significantly higher diagnostic yield and is considerably more cost-effective in patients with CD4 count of less than 100/mm³ than in those with higher CD4 counts.

CRD COMMENTARY - Selection of comparators
Three endoscopic procedures were compared: upper endoscopy, flexible sigmoidoscopy and colonoscopy. The reason for the choice of these procedures is clear, as all were widely used in the authors' setting. You, as a database user, should consider if this applies to your own setting.

Validity of estimate of measure of benefit
The internal validity of the results may be weakened by the retrospective design of the study, the lack of randomisation and the lack of information about the comparability of the groups.

Validity of estimate of costs
No important cost items appear to have been omitted, although more details about the cost analysis would have been helpful. Charges were used instead of true costs. It is not clear which price year was used when estimating costs.

Other issues
Appropriate comparisons with other studies were made. Cost results may not be generalisable to other settings or countries.

Implications of the study
As acknowledged by the authors, further research is needed in order to assess the cost-effectiveness of different types of endoscopy in the diagnosis of HIV-related diarrhoea.

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MeSH
AIDS-Related Opportunistic Infections /diagnosis /economics; Adult; CD4 Lymphocyte Count; Case-Control Studies; Colonoscopy /economics; Cost-Benefit Analysis; Cytomegalovirus Infections /diagnosis /economics; Endoscopy, Gastrointestinal /economics; Female; HIV Enteropathy /diagnosis /economics; Humans; Male; Risk Factors