Improved cost-effectiveness by pharmacokinetic dosing of factor VIII in prophylactic treatment of haemophilia A

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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
Pharmaceutical dosing regimens for factor VIII when used to treat haemophilia A.

Type of intervention
Prophylactic treatment for severe haemophilia A.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with severe haemophilia A, aged 8 years or older and receiving regular prophylactic FVIII:C at the haemophilia treatment centre in Malmo, Sweden.

Setting
Secondary care. The economic study was carried out in Sweden.

Dates to which data relate
The effectiveness data were collected over a 12-month period. The dates to which effectiveness results and prices refer, were not stated.

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

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

Study sample
The sample included 21 patients who were receiving regular prophylactic FVIII:C at the haemophilia treatment centre in Malmo, Sweden and were aged 8 years or older. The number of persons eligible for inclusion in the study was not explicitly stated in the report although it appears that all those eligible for inclusion were considered. No power calculations were performed to determine an optimal sample size. Only thirteen of the 21 patients originally enrolled in the study completed the entire study protocol. Data from an additional patient who obtained pharmacokinetic dosing for 5 of the 6 study months were included in the analysis. The study was conducted over a 12-month period.
Study design
The study was a randomised trial with a crossover design. Patients started with either the current standard dosage or with a pharmacokinetic dosage during the first 6 months of the study and then switched to the other treatment during the following 6 months.

Analysis of effectiveness
The analysis was based on treatment completers only. Effectiveness measures included trough levels of FVIII:C, number of spontaneous joint bleedings and differences in the amount of factor concentrate used during the two study periods.

Effectiveness results
The mean trough level of exogenous FVIII:C was raised from 0.89 U/dl during standard dosage to 2.2 U/dl during pharmacokinetic dosing. This difference was statistically significant (p<0.005). The mean reported consumption of FVIII:C was decreased by 32% during pharmacokinetic dosage. This difference was also statistically significant (p<0.005). Spontaneous joint bleedings were generally similar during both study periods.

Clinical conclusions
Individual pharmacokinetic dosing is a useful tool for promoting a reduction in the utilisation of FVIII:C whilst achieving the same therapeutic outcomes in the prophylactic treatment of haemophilia A.

Modelling
No economic modelling was undertaken for this study.

Measure of benefits used in the economic analysis
No single measure of benefit was identified for the economic analysis.

Direct costs
Direct costs included in the analysis were the acquisition and assay costs of FVIII:C, physician, pharmacist and nurse time as well as the accommodation and travel expenses incurred by patients. Quantities and costs were not reported separately. The source of the cost data was not specified in the report, although, since all patients came from a single outpatient centre, it may be assumed that the costs came from the Malmo University Hospital.

Statistical analysis of costs
No statistical analyses were performed on the cost data.

Indirect Costs
Loss of income for the patient or parent was included in the cost estimates.

Currency
Swedish kroner (SEK), US dollars ($) and UK pounds Sterling (GBP).

Sensitivity analysis
No sensitivity analyses were performed for this study.
Estimated benefits used in the economic analysis
Not applicable.

Cost results
The saving of FVIII:C for the 14 patients during the six months of pharmacokinetic dosing amounted to a cost saving of around SEK2.78 million ($418 000 or 270 000 as at September 1996).

Synthesis of costs and benefits
Costs and benefits were not combined to form a single ratio.

Authors' conclusions
Individual pharmacokinetics is a useful tool for the cost-effective utilisation of FVIII:C in the prophylactic treatment of haemophilia A.

CRD COMMENTARY - Selection of comparators
The selection of comparators was appropriate. You should consider whether this is a widely used health technology in your own setting.

Validity of estimate of measure of benefit
The general evidence seems to support the value of pharmacokinetic dosing although the sample size involved in this study was small and the number of eligible patients who did not complete the study protocol was high. It is possible that the more difficult cases were excluded, although this does not detract from the apparent value of pharmacokinetic dosing for certain individuals.

Validity of estimate of costs
A more adequate explanation for the choice of costs included in the study should have been provided as well as a breakdown of the resource use and unit cost data. It appears that all major cost items were included.

Other issues
Some modelling to predict the longer term cost implications of pharmacokinetic dosing would have strengthened the study.

Implications of the study
Further research is needed to assess the value of prophylactic treatment with FVIII:C and pharmacokinetic dosing in patients with severe haemophilia A.

Source of funding
Supported by grants from Pharmacia-Upjohn and from the Swedish Medical Research Council (grant no. 00087).

Bibliographic details

Indexing Status
Subject indexing assigned by CRD
MeSH
Adolescent; Adult; Child; Cost-Benefit Analysis; Factor VIII /administration & dosage /therapeutic use /economics; Hemophilia A /complications /drug therapy; Hemorrhage /prevention & control

AccessionNumber
21997000672

Date bibliographic record published
31/12/1998

Date abstract record published
31/12/1998