Cost-effectiveness analysis of a psoriasis care instruction programme with dithranol compared with UVB phototherapy and inpatient dithranol treatment


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
Three treatments for patients with moderate to severe psoriasis were examined. These were dithranol short contact therapy in a care instruction programme (short contact therapy), ultraviolet B phototherapy (UVB), and inpatient dithranol treatment (inpatient treatment).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients suffering from moderate to severe psoriasis.

Setting
The setting was a hospital. The economic study was conducted in The Netherlands.

Dates to which data relate
The effectiveness and resource use data were gathered from April 1996 to December 1999. The price year was 1998.

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

Link between effectiveness and cost data
The costing was performed prospectively on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not performed and the method of sample selection was not reported. Overall, 250 patients were included in the study. Of these, 238 (160 men and 78 women) were selected for the analysis. The mean age was 46.7 (+/- 14.3) years. There were 100 patients in the short contact treatment group, 78 patients in the UVB group, and 60 patients in the inpatient treatment group.

Study design
This was an open, multi-centre, randomised controlled trial, which was carried out in two extramural day-care centres.
and four university centres in The Netherlands. Randomisation was concealed using sealed envelopes and the patients were stratified according to three groups. Stratum I comprised all three treatments, stratum II contained short contact treatment and inpatient treatment, and stratum III contained short contact treatment and UVB. The maximum length of follow-up was one year. There were 6 drop-outs in the short contact treatment group, 4 in the UVB group, and 3 in the inpatient treatment group. Sixteen patients (7 in the short contact treatment group, 6 in the UVB group and 3 in the inpatient treatment group) were lost to follow-up.

Analysis of effectiveness
The clinical study was analysed on an intention to treat basis on a sample of 216 patients. The primary health outcomes used in the effectiveness analysis were:

the clinical response rate (percentage of patients with clearance), defined as a reduction of the baseline area of at least 90% within the maximum treatment period); and

the number of clearance days during follow-up, defined as the number of days from clearance until relapse for patients with clearance. It was set at 0 days for those patients with a therapy failure, and 365 days for those without a relapse during follow-up.

The comparability of the study groups was not reported.

Effectiveness results
The clinical response rate was 57% in the short contact treatment group, 57% in the UVB group, and 85% in the inpatient treatment group. The differences between short contact treatment and UVB and inpatient treatment were statistically significant.

The number of clearance days was 160 (median: 119; interquartile range: 0 - 357) with short contact treatment, 136 (median: 81; interquartile range: 0 - 226) with UVB, and 211 (median: 241; interquartile range: 99 - 350) with inpatient treatment.

The number of clearance days with short contact treatment was not statistically significant from that with UVB or inpatient treatment, while those with UVB were statistically less than after inpatient treatment.

Clinical conclusions
The effectiveness analysis showed that inpatient treatment was associated with the highest response rate, while clearance days obtained with short contact treatment were comparable with those related to inpatient treatment and UVB.

Measure of benefits used in the economic analysis
The benefit measures used in the economic analysis were the response rate and clearance days. These were derived directly from the effectiveness analysis.

Direct costs
Discounting was irrelevant since the time horizon of the study was one year. The unit costs were reported separately from the quantities of resources. The cost/resource boundary adopted in the analysis of the direct costs was that of the hospital. The cost items included in the economic evaluation were medical and non-medical costs. These were for dithranol, the UVB unit, day-care unit nursing time, consultations, visit to a general practitioner, outpatient visits to a dermatologist, outpatient visits to other specialists, home help (professionals or family), travelling and remaining expenses, such as new clothes and medication not on prescription. The quantities were estimated using actual data from the trial, which were recorded using registration forms filled in by nursing staff at the treatment ward and patient diaries continued until the end of the one-year follow-up. The costs were estimated using Dutch guidelines for economic
evaluation and hospital data. The unit costs were obtained from the university hospital and the day-care centre. Therefore, a weighted average price was calculated and used in the base-case analysis. No overhead costs were calculated in the day-care centre, but the costs were adjusted using the percentage overhead costs estimated at the university hospital. Resource use was estimated from April 1996 to December 1999. The price year was 1998. The costs from before 1998 were adjusted to that year using a specific index.

Statistical analysis of costs
Standard statistical analyses (Wilcoxon test) were conducted to test for the statistical significance of the total costs. Missing data for resource use were estimated using the patient-year approach.

Indirect Costs
The indirect costs were included in the analysis, as the overall perspective of the study was that of society. Hours of absenteeism from work were derived from the mean national costs of paid work per hour. The unit costs and the quantities of resources were reported separately. The price year was 1998.

Currency
Dutch guilders converted into Euros.

Sensitivity analysis
One-way sensitivity analyses were conducted to test the robustness of the estimated cost-effectiveness ratios to variations in several cost items. The cost items varied were the dermatologist visit, price of UVB, short contact treatment and hospitalisation. The highest and lowest values were identified using three values of the same item, that is, charges, costs in the teaching hospital, and costs in the general hospital. A bootstrapping approach taking 1,000 samples from the original data was also conducted to identify the confidence intervals around the incremental cost-effectiveness ratios (ICERs).

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The total average costs per patient were Euro 1,641 (median: 1,305; interquartile range: 917 - 1,991) in the short contact treatment group, Euro 1,258 (median: 981; interquartile range: 671 - 1,562) in the UVB group, and Euro 7,706 (median: 8,103; interquartile range: 5,700 - 9,511) in the inpatient treatment group.

The mean costs of absenteeism during treatment were Euro 594 in the short contact treatment group, Euro 321 in the UVB group, and Euro 796 in the inpatient treatment group. The corresponding monthly costs during clearance were Euro 19 (short contact treatment), Euro 5 (UVB) and Euro 25 (inpatient treatment). Similarly, the monthly costs after relapse per patient were Euro 264 (short contact treatment), Euro 219 (UVB) and Euro 220 (inpatient treatment).

Synthesis of costs and benefits
Two incremental cost-effectiveness analyses were performed to combine the costs and benefits of the three treatments considered in the study.

In terms of the clinical response rate, the extra cost required to increase the response rate by 28% with short contact treatment in comparison with inpatient treatment was Euro 6,065. As there was no statistically significant difference between the benefits when comparing short contact treatment and UVB, a cost-minimisation analysis showed that short compact treatment was more expensive than UVB treatment.
In terms of the number of clearance days, no statistically significant differences were found across the three treatments. Thus, the cost-minimisation analysis showed that short contact treatment was more expensive than UVB, but cheaper than inpatient treatment.

The sensitivity analysis showed that none of the cost variations conducted affected the conclusions of the main analysis. The bootstrapping approach suggested the following. First, when comparing short contact treatment and inpatient treatment, most of the ICERs indicated that short contact treatment was cheaper and led to fewer clearance days than inpatient treatment. Second, when comparing short contact treatment and UVB, most of the ICERs indicated that short contact treatment gave higher costs and more clearance days than UVB, although in 19% of the cases, the ICERs indicated higher costs and fewer clearance days for short contact treatment.

Authors’ conclusions
Short contact treatment was an appropriate alternative to inpatient treatment for patients with moderate to severe psoriasis, as the costs were lower and the clearance days were comparable. However, the clinical response rate was far higher with inpatient treatment. Short contact treatment did not represent a convenient treatment in comparison with ultraviolet B (UVB) treatment due to the higher costs.

CRD COMMENTARY - Selection of comparators
The authors commented on the advantages and disadvantages of each intervention examined in the study. You should decide whether they represent widely used health interventions in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness analysis used a randomised controlled trial, which was appropriate for the study question. The basis of the analysis was intention to treat and the length of follow-up was reported. The study sample was representative of the study population. The authors considered the impact of some variables, such as study centre, on the results. This minimised bias and confounding, which were already limited given the randomisation employed. The period during which the effectiveness data were collected was reported. These issues tend to enhance the internal validity of the analysis. However, power calculations were not conducted and the authors did not provide any evidence that the study groups were comparable at baseline.

Validity of estimate of measure of benefit
The benefit measures used in the economic analysis were derived directly from the effectiveness study.

Validity of estimate of costs
The cost analysis was conducted from the societal perspective. It appears that all the relevant categories of costs have been included in the study. The unit costs were reported separately from the quantities of resources and the price year was reported. These issues enhance the generalisability of the study results and facilitate reflation exercises in other settings. Statistical analyses were conducted on the costs and quantities. The cost estimates were specific to the study setting, but the sensitivity analyses were conducted using cost data from a different source.

Other issues
The authors compared their findings with those from other studies, but did not address the issue of the generalisability of the study results to other settings. However, several sensitivity analyses were conducted on cost data to assess the impact of data variability. The study enrolled a sample of unselected patients with moderate to severe psoriasis and this was reflected in the conclusions of the analysis.

Implications of the study
The study results suggest that, in the management of patients with moderate to severe psoriasis, short contact treatment
may represent a feasible alternative to inpatient treatment. However, it was more expensive than UVB treatment.

**Source of funding**
None stated.

**Bibliographic details**

**PubMedID**
12207597

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Administration, Topical; Adult; Ambulatory Care /economics; Anthralin /economics /therapeutic use; Anti-Inflammatory Agents /economics /therapeutic use; Combined Modality Therapy; Cost-Benefit Analysis; Drug Administration Schedule; Female; Health Care Costs; Hospital Costs; Hospitalization /economics; Humans; Male; Middle Aged; Netherlands; Psoriasis /drug therapy /economics /radiotherapy; Treatment Outcome; Ultraviolet Therapy /economics

**AccessionNumber**
22002001600

**Date bibliographic record published**
30/06/2003

**Date abstract record published**
30/06/2003