A cost analysis of topical drug regimens for dermatophyte infections

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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
Topical antifungal drug (miconazole cream form) which is commonly used to treat dermatophyte infections, such as athlete's foot and ringworm.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with tinea pedis (athlete's foot).

Setting
Primary care. The economic study was carried out in Cleveland, Ohio, USA.

Dates to which data relate
Effectiveness rates for miconazole were taken from the literature published in the period 1973-90. Cost data related to 1992-93. The price date for final costing was not specified.

Source of effectiveness data
Synthesis of previously published studies.

Outcomes assessed in the review
Therapeutic efficacy rates for miconazole.

Study designs and other criteria for inclusion in the review
English language peer-reviewed literature was included in the study.

Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
Not stated.
Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
Seven studies (including reviews and RCTs) were included in the analysis.

Methods of combining primary studies
Not combined.

Investigation of differences between primary studies
Not investigated.

Results of the review
Overall efficacy rates were found to be between 70% and 100%.

Measure of benefits used in the economic analysis
Therapeutic efficacy rates of miconazole.

Direct costs
Patient costs were included in the analysis. Quantities and costs were analysed separately. Quantities of drugs (frequency and duration) were taken from the recommended drug regimens.

The direct costs included were the drug charge and the cost to the health service of a follow-up visit. In order to take account of variations between pharmacies, drug costs were increased by 10% for retail mark-up to the average wholesale price of the least expensive brand of each drug. In addition, a pharmacy fee per drug was also added. For the cost of a follow-up charge the Medicare-approved charge for a level 2 visit by an established patient to a physician in Cleveland, Ohio in 1993 was used as a base case.

Indirect Costs
Quantities and costs were analysed separately. The cost of the patient's time was derived from the average hourly earnings in 1992.

Currency
US dollars ($)

Sensitivity analysis
A multi-way sensitivity analysis was performed to test variability in data.

Estimated benefits used in the economic analysis
Hypothetical threshold efficacy rates were used - see values reported in the synthesis of costs and benefits.

Cost results
The cost of four-week courses of therapy ranged from $9.04 (miconazole) to $174.39 (terbinafine). In the baseline
case, the visit charge was $21.98 and the patient time cost $0.

**Synthesis of costs and benefits**
The threshold efficacy rate of miconazole below which it will always be less expensive to start with a one-step regimen ranged from 55% (oxiconazole) to 16% (terbinafine). The threshold efficacy rates of miconazole increased as the total cost of follow-up visit increases.

If the efficacy rate of miconazole is 70% then the extra cost per patient for all patients under the one-step regimen instead of the two-step regimen using miconazole first ranged from $8.64, (oxiconazole) to $106.44 (terbinafine) (if total visit costs were $0 and $21.98).

Miconazole remained the least expensive alternative as long as the efficacy rate is 70% and the total cost of the follow-up visit was less than $50.76.

**Authors’ conclusions**
For reported efficacy rates and standard costs of a follow-up office visit, the two step regimen is less expensive than the one-step regimen.

**CRD Commentary**
The authors did not state how they searched the literature for the effectiveness data of miconazole or the other drugs which were considered, although they stated that comparative clinical trials of topical antifungal drugs are uncommon. The estimation methods of the costs were not generalisable to other countries. The cost calculation was appropriate for the question posed and the analysis was directed to a post-hoc analysis. The representation of the synthesis was based on incremental results. Uncertainties about costs were subjected to sensitivity analysis. There was no discussion of possible side-effects or of non-drug treatments and no consideration given to longer term savings although this was referred to in the article as an area which was not addressed.

**Implications of the study**
A comparative clinical trial of topical antifungal drugs would be useful.

**Bibliographic details**

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**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Administration, Topical; Antifungal Agents /administration & dosage /economics /therapeutic use; Clotrimazole /economics /therapeutic use; Cost-Benefit Analysis; Dermatophyoses /drug therapy /economics; Drug Administration Schedule; Drug Costs /statistics & numerical data; Humans; Imidazoles /economics /therapeutic use; Miconazole /economics /therapeutic use; Naphthalenes /economics /therapeutic use; Office Visits /economics; Tinea Pedis /drug therapy /economics; United States

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