Economic analysis of treatments for external condyloma acuminatum
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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
Use of imiquimod or podofilox in the treatment of anogenital warts, followed by CO2 laser (carbonic ice) for recurrent cases.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients suffering from anogenital warts. The average age of imiquimod patients was 32 years and for podofilox patients was 31.5 years. The percentage of males to females was 58/42 for imiquimod versus 60/40 for podofilox. The average duration of the condition was 24.5 (+/- 58.8) months for imiquimod patients and 27.3 months for podofilox patients. The lesion surface was 247 mm2 (+/- 745.4) for imiquimod patients and 159.2 mm2 for podofilox patients.

Setting
The study was conducted in the community, as these two drugs are self-administered by patients, and in outpatient settings such as venereal clinics. The study was based on two previous studies conducted in the USA, with the cost-analysis being conducted in France.

Dates to which data relate
Effectiveness data were extracted from 2 studies published in the USA in 1998. The cost year and price year were not stated.

Source of effectiveness data
The study was based on a review or synthesis of previously published studies.

Modelling
A decision analytic model was used to extrapolate the results of the studies reviewed to a hypothetical group of 100 patients treated with imiquimod and 100 patients treated with podofilox.

Outcomes assessed in the review
The main health outcomes used in the analysis were:
number of patients not cured (therapeutic failure) after 4 weeks of treatment (one session);

number of patients cured (where cured patients were those without anogenital warts 3 months after the treatment was stopped);

number of patients treated by CO2 laser as second line treatment;

number of patients completely cured after CO2 laser therapy; and

number of patients with recurrent anogenital warts after laser therapy.

Study designs and other criteria for inclusion in the review
Two clinical studies were used for the bulk of the effectiveness results: Edwards et al for imiquimod and Tyring et al for podofilox. Both were placebo-controlled clinical studies. The effectiveness of CO2 laser therapy was extracted from a randomised placebo-controlled double-blind trial comparing the combined therapy with laser surgery and systemic interferon alpha-2a in the treatment of anogenital condylomata acuminata, a placebo-controlled study assessing the impact of systemic interferon alpha-2b for treating patients with persistent genital warts and another clinical study dealing with superficial laser vulvectomy.

Sources searched to identify primary studies
Archive of Dermatology, Physician Desk reference guide, Urology Journal, Journal for Infectious Diseases, Genitourinary Medical Journal, and the American Obstetrics and Gynaecology Journal were used to identify primary studies.

Criteria used to ensure the validity of primary studies
The two clinical studies used to extract the bulk of the effectiveness data were chosen because of the comparability of the study samples and their identical inclusion criteria.

Methods used to judge relevance and validity, and for extracting data
Placebo-controlled clinical studies and RCTs were reviewed, all dealing with the treatment of anogenital warts. It appears that one single reviewer was responsible for reviewing and extracting data.

Number of primary studies included
Seven studies were referenced.

Methods of combining primary studies
A decision tree was used to extrapolate the results of the studies reviewed to a hypothetical group of 100 patients treated with imiquimod and 100 patients treated with podofilox.

Investigation of differences between primary studies
The two clinical studies used to extract the bulk of the effectiveness data were chosen because of the comparability of the study samples and their identical inclusion criteria.

Results of the review
Extrapolated to 100 patients, the results of the review were as follows:

IMIQUIMOD TREATMENT COMBINED WITH CO2 LASER:
50 patients would not be cured (therapeutic failure) after 4 weeks of treatment (1 therapeutic session);

50 patients would be cured (where cured patients were those without anogenital warts 3 months after the treatment was stopped);

57 patients were treated by C02 laser as a second line of treatment (as 7 of the patients considered cured presented recurrent warts);

57 patients were cured after CO2 laser therapy; and

38 patients had recurrent anogenital warts after laser therapy, leaving 62 patients completely cured after the combined treatments, 43 due to imiquimod and 19 due to CO2 laser therapy and 38 patients in need of further treatment.

**PODOFILOX THERAPY COMBINED WITH CO2 LASER:**

72 patients were not cured (therapeutic failure) after 4 weeks of treatment (1 therapeutic session);

28 patients were cured (where cured patients were those without anogenital warts 3 months after the treatment was stopped);

81 patients were treated by C02 laser as second line of treatment (as 9 of the patients considered cured presented recurrent warts);

81 patients were cured after CO2 laser therapy and

53 patients had recurrent anogenital warts after laser therapy, leaving 47 patients completely cured after the combined treatments, 19 due to podofilox and 19 due to CO2 laser therapy and 53 patients in need of further treatment.

**Measure of benefits used in the economic analysis**
The author did not provide a summary measure of benefits. As such, a cost-consequences analysis was performed.

**Direct costs**
Health insurance costs were considered in the analysis, namely the percentage of costs reimbursed by the French social security. A survey was conducted over 28 weeks among specialists working in anti-venereal outpatient clinics dealing with the treatment of the condition considered, assessing the number of consultations, examinations, and follow-up. French social security reimburses 65% of the price of imiquimod and podofilox and the cost of a consultation provided in these anti-venereal centres was evaluated at 70% of the cost of a specialist consultation (which is the equivalent of a consultation provided by a hospital consultant in the UK). The cost of the initial therapeutic session, cost of extra sessions after this, cost of a final evaluation visit, and the cost of supplementary visits was considered. Quantities and costs were not presented separately and costs were not discounted due to the short duration of the study (28 weeks). The price year was not given.

**Statistical analysis of costs**
No statistical analysis was performed.

**Indirect Costs**
Not considered.

**Currency**
French francs (Ffr).
Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
A cost-consequences analysis was performed and the reader is referred to the effectiveness results reported above.

Cost results
The average cost per patient was Ffr2,733 for imiquimod + laser and Ffr2,120 for podofilox + laser, with a cost per cured patient amounting to Ffr4,383 for imiquimod + laser and Ffr4,519 for podofilox + laser.

Synthesis of costs and benefits
Costs and benefits were not combined due to the cost-consequences approach adopted in the analysis.

Authors' conclusions
Despite a higher average cost per patient for imiquimod versus podofilox treatment, the average cost per cured patient is equivalent for the two therapies. The efficiency of imiquimod versus podofilox is comparable to the efficiency of the latter versus the 'no treatment' option.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the two treatment alternatives was clear, as both are used in the settings considered by the author. You, as a database user, should consider if the same applies to your own setting.

Validity of estimate of measure of effectiveness
The author did not state that a systematic review of literature had been undertaken, thus it is unclear if the review was conducted in a fashion designed to identify relevant research and minimise biases. Effectiveness results from primary studies were combined and extrapolated to a hypothetical sample of 100 patients for each treatment alternative. The author did not adopt a weighting scheme to reflect differences in sample sizes.

Validity of estimate of measure of benefit
The author did not derive a summary measure of health benefit. The analysis was therefore categorised as a cost-consequences study.

Validity of estimate of costs
All costs relevant to the approach adopted in the analysis were considered, but quantities and costs were not presented separately and were not statistically analysed. French Social Security reimbursements were used as a proxy for costs, but the year to which they refer was not stated.

Other issues
The issue of generalisability of the results was addressed, as the author attempted to apply the results from two American clinical studies to the French context. Although statistical analysis of costs was lacking, this was an interesting study with a simple and effective design.

Implications of the study
The author stressed that the present study did not consider the ease of use for the patient of the two drugs, and that this could offer an even higher comparative advantage for imiquimod as this is a cream as opposed to podofilox, which can
only be found as a solution in France.

**Source of funding**
None stated.

**Bibliographic details**

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