Systematic review of clinical efficacy of topical treatments for head lice

Vander Stichele R H, Dezeure E M, Bogaert M G

Authors' objectives
To evaluate all trials on clinical efficacy of topical treatments for head lice.

Searching
MEDLINE was searched from 1966 to March 1995 using the keywords 'Pediculosis', 'Lice', 'Pediculus'. International Pharmaceutical Abstracts and the Science Citation Index were also searched. Reference lists of identified studies were scanned. Key authors, pharmaceutical companies and the World Health Organization centre Vector Biology Control were approached. Methodologically-acceptable trials without a main outcome measure of cure rate at 14 days after treatment were excluded (longer as well as shorter periods were excluded).

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) which had fewer than four flaws in eight general quality criteria (covering randomisation, blinding, exclusion criteria and statistical procedures), and fewer than twelve flaws in eighteen treatment-specific quality criteria (covering documentation, specification of treatment, prevalence, standardisation and adverse event reporting). These criteria were developed after having inspected the trials, to measure susceptibility to bias.

Specific interventions included in the review
Topical treatments for killing lice. Most trials evaluated single applications of the treatments. Compounds (in lotion and/or shampoo form) included in trials were: carbaryl; lindane; malathion; permethrin; pyrethrin; pyrethrines (bioresmethrin, chlorphenamide, pyrethrin).

Participants included in the review
People infested with head lice in the community or schools were included.

Outcomes assessed in the review
The outcome assessed was the absence of live lice and viable nits on day 14 after treatment (determined by visual inspection).

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
Risk of bias, defined as low if fewer than eight flaws were identified in the treatment specific criteria and moderate otherwise. This criterion was set after all the trials had been inspected. Each study was independently assessed by each author. Structured abstracts, assessment scores and overall ratings were submitted to an advisory panel and discussed until consensus was reached.

Data extraction
The data were abstracted onto structured abstract forms.

Methods of synthesis
How were the studies combined?
Principally, a narrative review comparing the results of single arms of trials was undertaken. Odds ratios of the two...
largest studies were pooled using Mantel-Haenszel method.

How were differences between studies investigated? Studies were separated by treatment and length of outcome measure. For the pooled comparison of the two studies a Breslow-Day test for homogeneity of odds ratios was used.

Results of the review
Seven RCTs (1808 index patients, 21 individual evaluations) were included.

Most studies had a cure rate at 14 days of higher than 80%. A number of studies reported the lower 95% confidence limit of cure rates as higher than 90% for permethrin. Only one study reported this for carbaryl or malathion. There was no clear difference of effectiveness between places with high or low background prevalence. The combined odds ratio of treatment failure for lindane versus permethrin was 15.18 (95% CI: 7.99-28.84) for the two largest trials. The associated test for heterogeneity gave a p value of 0.99.

Cost information
Permethrin is more expensive than malathion or carbaryl.

Authors’ conclusions
There is only sufficient published evidence to show that permethrin is effective in the topical treatment of head lice.

CRD commentary
Eleven unpublished trials comparing permethrin and malathion were identified but not reported in the paper because the authors did not accept the company’s demands on confidentiality. The use of the quality criteria is somewhat ad hoc (major/minor flaws were identified but not utilised). Comparisons were made between the single arms of trials, thus it is not clear whether such comparisons are valid. There are studies with longer follow-up of 14 days, which show effective treatment rates at 21 days or longer. By not giving attention to studies with longer than 14 days follow-up they appear to overlook results indicating effective treatment with delta-phenothrin 0.2% lotion or shampoo. There is a suspicion that these results might not accurately reflect all the available evidence.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.