

EFFECTIVENESS

Matters

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Treating Head Lice and Scabies

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Head lice

- Infestation with head lice is widespread and most commonly occurs in children.
- Physical evidence of living lice is necessary prior to the commencement of treatment.
- Close contacts should be traced and if found to be infested treated at the same time.
- There is no evidence that any one insecticide currently in use in the UK has a greater effect than another. Best choice will depend on local resistance patterns.
- It is unclear whether physical methods such as wet combing are effective as a means of curing head lice infestations.

Scabies

- While infestation with the scabies mite is not a life-threatening condition, the severe, persistent itch debilitates and depresses people.
- There is a lack of good quality research on the effectiveness and comparative effectiveness of available treatments.
- Health professionals treating scabies face considerable uncertainty as to the most effective and safe topical treatment for scabies.
- Whilst permethrin appears to be the preferred treatment for scabies at the present time, this choice is based on small trials together with traditional reviews and professional opinion.

This issue of *Effectiveness Matters* summarises research evidence on the effectiveness of interventions for treating head lice and scabies. It is based upon the findings of two recent systematic reviews carried out for the Cochrane Infectious Diseases Group.^{1,2} Full details of these reviews are available on the Cochrane Library.

Treating head lice

Infestation with head lice is widespread and most commonly occurs in children, but also affects adults. Head louse infestations can be intensely irritating and, if left untreated, skin infections can occur if the bites are scratched.

Head lice are normally found on the scalp and can be difficult to detect, but physical evidence of living lice is necessary prior to the commencement of treatment. Infestation is not indicated by the presence of nits (hatched and empty egg shells).

Head lice spread from one person to another only by relatively prolonged head to head contact. Fleeting contact will be insufficient for lice to be transferred between heads.³ Lice which are observed on chair backs, pillows, hats and other locations are incapable of transferring to another person.

Once a person has contracted head lice, the infestation develops steadily if left unchecked. It is believed that time spent curing an individual is wasted unless close contacts are also traced and those found to be infested are treated at the same time.⁴ By doing this, the risk of re-infestation to the patient will be reduced as will the degree of transmission of lice on a wider scale. As most infestations have existed for weeks rather than days before they are discovered, close contacts over the last month should be traced.

The association between head lice and a lack of personal hygiene is a common, although misfounded, belief as lice are equally likely to be found on clean or dirty hair. Such beliefs can lead to difficulties when contact tracing because parents often do not want to admit that their children have lice because of the embarrassment and social stigma attached.

The highest prevalence of head louse infestation occurs in children between the ages of 4 and 11, with girls tending to show a higher incidence of infection than boys.⁵⁻⁷ Previously it has been argued that head lice are a school rather than a community problem, however it is now recognised that head lice are spread into schools from the community and that children of school age are the group most likely to become infested.

Interventions

Insecticides (pediculicides) which are in use in the UK are malathion, the pyrethroids permethrin and phenothrin (all available over the counter without prescription), and carbaryl (prescription only).

Whilst the recent Cochrane review identified 70 clinical trials, the majority of these are of poor methodological quality and their findings may be subject to bias as a result. Only three trials were found to be of a suitable quality for inclusion.¹ Of these, two small placebo trials of malathion and permethrin showed both to be effective with high

Implications for practice

■ Physical evidence of living lice is necessary prior to the commencement of treatment. It is essential that close contacts are also traced and those found to be infested are treated at the same time.

■ There is no evidence that any one pediculicide currently in use in the UK has greater effect than another. However, due to the development of resistance some products may no longer be as effective as they were previously. Best choice will depend on local resistance patterns.

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cure rates. There is currently no evidence of the comparative effectiveness of these two products.

These trials were conducted in developing countries using participants who had no prior exposure to pediculicide, hence infested with fully susceptible lice. Future trials should be conducted in populations which have been previously exposed to pediculicides and therefore may possess lice which may be resistant.

There is evidence that the development of resistance in head lice to permethrin and malathion is already widespread in the UK and may render any products containing related compounds ineffective.^{3,8} No resistance has been noted for malathion plus terpenoids (Suleo-M). Whilst there have been no published reports of resistance to carbaryl, isolated pockets of resistance have been recorded.⁹ Treatment failure is also often caused by misdiagnosis and inadequate or inappropriate application.⁴

A strategy of rotating recommended insecticides on an annual or tri-annual basis, to limit the development of resistance, was implemented by the majority of health authorities in the late 1970s. Since 1992 however, the increasing availability of pediculicides over the counter means such a rotation policy is unenforceable.¹⁰

Current UK practice works on an individual patient basis using a 'structured mosaic' of treatments. One product is used for a course of treatment (two applications spaced seven days apart). If the treatment fails then another product whose active ingredient is in a different insecticide class should be tried (e.g. switch from permethrin or phenothrin to either malathion or carbaryl). Generally, carbaryl is kept as the fall back position to be used when all else fails.

Other interventions

In the UK, a physical method of wet combing known as 'bug busting' is often used to control head lice. This method requires the hair to be wet combed, using a special fine toothed comb and conditioner, for at least 30 minutes every third or fourth day over a two week period.

There is currently no reliable evidence to indicate whether physical methods such as wet combing/ 'bug busting' are effective as a means of curing head lice infestations.

Similarly, no reliable evidence exists to indicate the effectiveness of other chemical control methods, such as herbal treatments, in the curative treatment of head lice.

Safety

Concerns regarding the toxicity of some of the insecticides used to treat head lice have been expressed by members of the public, recorded in the popular press, with isolated incidents of toxicity being reported in the scientific literature.¹¹⁻¹⁵

The Committee on Safety of Medicines have also received a very small number of suspected drug reaction reports through the 'Yellow Card Scheme' for identifying suspected adverse reactions. However, these reactions have not necessarily been caused by the drug. Other factors may have to be taken into account including co-prescribing and underlying disease.

Treating scabies

While infestation with the scabies mite is not a life-threatening condition, the severe, persistent itch debilitates and depresses people.¹⁶ Repeated scratching of the rash can cause skin lesions. The discomfort and itching can be especially debilitating among immuno-compromised patients such as those with HIV/AIDS. The more severe or hyperkeratotic crusted presentation of infestation (also called Norwegian scabies) is particularly associated with immuno-compromised patients.

Scabies is primarily an allergic reaction to the mite which burrows into the skin. The classical sites of infestation are between the fingers, the wrists, axillary areas, female breasts (particularly the skin of the nipples), peri-umbilical area, penis, scrotum and buttocks. In infants the areas of the body affected also include the face, scalp, palms and soles. For diagnosis it is generally accepted that it is necessary to demonstrate at least the classical burrows, or definitively, the mite and eggs.

Scabies spreads from person to person via direct physical contact including sexual contact. There is very little chance of transfer from clothing and bedding as mites found in the environment die quickly and do not present an infestation risk.

Implications for practice

- Whilst Permethrin appears to be the preferred treatment for scabies at the present time, this choice is based on small trials together with traditional reviews²³⁻²⁵ and professional opinion.
- Malathion is being used widely, and yet there is no reliable comparative information of its effectiveness. It requires careful evaluation against permethrin in well conducted RCTs.
- Future research should consider the acceptability, convenience and cost effectiveness of available treatments.

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The prevalence of the disease is cyclical with peak prevalence occurring every 15-20 years and lasting 2-3 years before diminishing. The rise and fall of scabies incidence in developed countries is due in part to the intervention of health professionals (by treating cases) when the incidence reaches clearly recognisable levels.¹⁷

Prevention is based on principles common to most infectious diseases, that is, limitation of contact with the mite. This implies early diagnosis, adequate contact tracing, and treatment of those found to be infested.

Interventions

Health professionals treating scabies face considerable uncertainty as to the most effective and safe topical treatment for scabies. Scabicides which are currently available and in use in the UK are benzyl benzoate, crotamiton, malathion and permethrin. All are available without prescription.

The recent Cochrane review found eight RCTs of a suitable quality for inclusion.² Of these, two small trials compared products available in the UK. These trials comparing crotamiton and permethrin (undertaken in Egypt and Panama) were consistent in their results showing permethrin to be more effective.

Treatment with benzyl benzoate requires repeat applications. Its use has not been adequately evaluated in RCTs, but non-controlled studies indicate cure rates of around 50%.¹⁸ However, resistance is frequent and in addition about a quarter of people treated with benzyl benzoate report a transient burning sensation, itching and dermatitis. No RCTs comparing benzyl benzoate with permethrin were identified.²

No RCTs of malathion in relation to scabies were identified. However, non-controlled studies have suggested it is an effective treatment,^{19,20} and the British National Formulary states that it "is recommended for (the treatment of) scabies".²¹ There is currently no evidence of the comparative effectiveness of malathion and permethrin.

In the UK, permethrin is around seven times more expensive per treatment (£5.50 per 30g application) than benzyl benzoate and twice as expensive as crotamiton and malathion.²¹

Patients with Norwegian scabies and patients with concomitant HIV disease are often difficult to treat effectively and may require repeat applications of treatments. Case series suggest oral ivermectin is an effective treatment for these cases.²² However, ivermectin is not licensed for this use and needs thorough comparative evaluation, including assessment of side effects, in RCTs.

Treatment Failure

No resistance has been reported to malathion or permethrin treatments. Most treatment failures can be attributed to inadequate application.

Treatment is theoretically simple but failure is often caused by inadequate or inappropriate application. Treatments should be applied to cool dry skin and not after a hot bath. Bathing prior to application may increase absorption into the blood stream, removing the drug from the site of action at the skin. After the appropriate period of time, treatment should be washed off with plain cool water followed by normal bathing. All close contacts, including all members of the household, should be treated at the same time.

Evidence of cure requires follow-up for about one month. This is the time it takes for any lesions to heal and for any eggs and mites to reach maturity if treatment fails (i.e. longest incubation interval). Itching may persist for at least two weeks after treatment, even if treatment has been successful.

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