

Q&A 377.3

## How should head lice be treated in a breastfeeding mother?

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### Background

Head lice are bloodsucking, wingless insects (*Pediculus humanus capitis*) that live on the hairs of the head and feed on the scalp. Individuals usually present with less than 20 adult lice on the scalp but up to 5% of patients can have more than 100 on presentation (1).

Head louse infestation rarely leads to complications other than itching. Secondary infection of the scalp may occur due to scratching the area, but this is rare (1). However, some people experience a great deal of embarrassment, anxiety and distress due to their, or their, children's infestation

People with head lice only require treatment if active infestation has been confirmed by isolating one or more live lice. All affected members of a household should be treated at the same time (2).

The British National Formulary (BNF) states that head lice should be treated using lotion or liquid formulations. Shampoos are diluted too much in use to be effective (3). Dimeticone is effective against head lice and acts on the surface of the organism. Malathion, an organophosphorus insecticide, is an alternative, but resistance has been reported. Benzyl benzoate is licensed for the treatment of head lice but it is less effective than other drugs (3).

The NHS Clinical Knowledge Summaries (CKS) recommend the use of either dimeticone 4% lotion (Hedrin®), dimeticone 92% lotion (Nyda®), wet combing, isopropyl myristate and cyclomethicone (Full Marks Solution®) or malathion 0.5% aqueous liquid for the treatment of head lice (4).

Wet combing or dimeticone 4% lotion are recommended as suitable for use by patients who are pregnant or breastfeeding. Malathion is recommended as an alternative for breastfeeding patients if a traditional insecticide is required in the case of treatment failure (4).

### Answer

#### Wet Combing

Fine toothed combs are designed to remove either head lice or head louse eggs; examples are the combs used in the Bug Buster® pack which are intended for use in wet combing with normal conditioner. Several clinical studies on systemic louse removal using the Bug Buster® kit have found cure rates of up to 57% after 14 days (2). However, the regimen is time consuming. For example, a treatment session may take around 20-30 minutes and needs to be repeated four times over a 2 week period, continued if necessary until no full-grown lice have been seen for three consecutive sessions (4). Bug busting with a comb appears somewhat less effective at first use than insecticides, but may be preferred by people wishing to avoid using chemicals (2).

#### Dimeticone

A wide range of dimeticone-containing products for the treatment of head lice are available, some of which are classified as medical devices.

Dimeticone is generally regarded as a relatively nontoxic and nonirritant material. In pharmaceutical formulations it may be used in oral and topical preparations. Dimeticones are also used extensively in cosmetic formulations and in certain food applications (5).

Solutions containing 4 to 95% dimeticone are used in the treatment of head lice, and act by physically coating the lice and disrupting their water management (6). Recent data on dimeticone 4% showed similar efficacy to previously published studies, around 70%. No resistance towards dimeticone has been documented (2). Dimeticone is likely to be less irritant than other chemical treatments and it is not absorbed transdermally (7).

A European expert source considers the use of oral dimethicone, as an anti-flatulent, to be safe and compatible with breast feeding (8).

No studies on the passage of dimethicone into human breast milk could be located.

## Isopropyl myristate/cyclomethicone (Full Marks Solution®)

Full Marks Solution® is classified as a medical device as such does not have an associated SPC. The manufacturer states that as the product has not been tested on pregnant or breastfeeding women they are unable to advise if it will be suitable or not (9).

Isopropyl myristate is absorbed fairly readily by the skin and is used as a basis for relatively nongreasy emollient ointments and creams. It is widely used in cosmetics and topical pharmaceutical formulations, and is generally regarded as a nontoxic and nonirritant material. Therapeutically, isopropyl myristate 50% has been shown to be an effective pediculicide for the control of head lice (5).

Cyclomethicone is a cyclic silicone fluid that is generally regarded as a relatively nontoxic and nonirritant material. Although it has been used in oral pharmaceutical applications, cyclomethicone is mainly used in topical pharmaceutical formulations. It is also widely used in cosmetics. Studies of the animal and human toxicology of cyclomethicone suggest that it is nonirritant and not absorbed through the skin (5).

No studies on the passage of isopropyl myristate or cyclomethicone into human breast milk could be located.

## Malathion

Derbac M Liquid® (malathion 0.5%<sup>w/w</sup>) is licensed for the eradication of head lice, pubic lice and their eggs and the treatment of scabies. The SPC for Derbac M Liquid states that there are no known effects in pregnancy and lactation. However, as with all medicines, caution with use is advised (10).

Percutaneous absorption of malathion is limited. In vitro studies in isolated skin suggest the percutaneous absorption of malathion from a topically applied aqueous ethanolic solution to be approximately 10% (11). Similarly in a study of human volunteers, approximately 4% of the dose applied to the skin was absorbed and this proportion did not change with repeated daily application to the same site for 8 days (12).

Malathion is hydrolysed and detoxified by plasma carboxylesterases much more rapidly in man than in insects, giving rise to selective toxicity and a low potential for toxicity in man. (13,14).

A small, open study investigated the safety of four malathion head lice preparations by applying a dose to the scalp and measuring any effects on plasma and erythrocyte cholinesterase. None of the preparations has any clinical effect on either plasma or erythrocyte cholinesterase activity irrespective of single or repeat dose treatment, or whether applied to damaged or intact skin (15).

## Summary

- ◆ No studies on the passage of any of the parasitocidal agents used to treat head lice into human breast milk following topical application have been located.
- ◆ Wet combing has achieved cure rates of up to 57% after 14 days, but is very time consuming. Bug busting with a comb appears less effective than insecticides, but may be preferred by people wishing to avoid using chemicals.

- ◆ Dimeticone has a physical action, coating the lice and disrupting their ability to manage water. There is little or no absorption of dimeticone through the skin.
- ◆ Percutaneous absorption of malathion is low. Malathion is rapidly destroyed by plasma cholinesterases.
- ◆ Wet combing or dimeticone may be used to treat head lice in breastfeeding mothers. Malathion may be used as an alternative if a traditional insecticide is required in the case of treatment failure.
- ◆ Theoretical considerations would indicate that the amount of drug passing into milk after topical application would be too low to present a hazard to the breastfeeding infant.

## Limitations

There is very limited clinical data on the use of pediculocides in human lactation. Where studies have documented the passage of these agents into breast milk, it has been in the context of aerial insecticide sprays or powders used in gardening.

The information relates to full term and healthy infants. Evidence in preterm infants is lacking. If the infant is pre-term, of low birth weight or has other concomitant pathology or medical problems, then specialist advice should be sought as this answer may not apply. *Contact the UK Drugs in Lactation Advisory Service (UKDILAS) provided by the Trent and West Midlands Medicines Information Services*

## References

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## Search strategy

- Embase  
[lactation or breast feeding or breast milk] + [louse or pediculosis]  
[lactation or breast feeding or breast milk] + [dimeticone]  
[lactation or breast feeding or breast milk] + [malathion]  
[lactation or breast feeding or breast milk] + [myristic acid isopropyl ester]  
[lactation or breast feeding or breast milk] + [cyclomethicone]
- Medline  
[milk,human or breast feeding or lactation] + [pediculus or lice or lice infestations]  
[milk,human or breast feeding or lactation] + [malathion]  
[milk,human or breast feeding or lactation] + [pyrethins]  
[milk,human or breast feeding or lactation] + [dimeticone or silicones]  
[milk,human or breast feeding or lactation] + [myristates]  
[milk,human or breast feeding or lactation] + [insecticides]
- UKDILAS Database
- Medical Information, Reckitt Benkiser. Email communication 08/06/15.  
Medical Information, Omega Pharma UK. Email communication 14/05/15.  
Medical information, Thornton & Ross. Email communication 13/05/15.  
Medical Information. LogixX Pharma. Email communication. 14/05/15