

## Fact sheet: Head lice



They are small, stubborn and unpleasant: head lice – tiny parasites that bite your scalp (the skin on your head), which can be very itchy. Apart from this, though, they are not dangerous and do not cause any bodily harm. They usually affect children, who pass them on to others. With the help of certain substances and strategies you can get rid of the small bloodsuckers. There are chemicals against head lice, but they do not always work and many people would rather not use them because of their ingredients. But for some time now there have also been non-chemical alternatives. Here we will present the different treatment options.

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## What are head lice and who gets them?

Head lice are tiny parasites that live in your hair and feed on blood from your scalp. A single one is called a louse. When lice bite into the scalp to get blood it can cause itching. Lice lay eggs called nits in the hair. It is very hard to get rid of nits and head lice. Head lice mainly affect children, and they spread quickly and easily from child to child. Head lice are especially likely to spread if people share brushes and combs.

Although some people think head lice are a sign of uncleanliness, being infected with head lice has nothing to do with poor hygiene. Head lice are very common. When researchers tested large groups of children to see how many have lice, they found that close to 10% do. It is not clear yet whether having long hair increases children's risk of getting lice, but it makes it much harder to find them. There is no proof that lice prefer clean or dirty hair. They feed on blood, not dirt or skin cells on the scalp. One of the problems with having head lice is the unreasonable association with being dirty.

## How do you know if someone has head lice?

The only way you can know for sure if a child has head lice is by finding a living louse. Although head lice often make your scalp itch, itching could also be caused by other things. To be really certain, you have to find a living louse in the person's hair. But how can you see them? Head lice are only 2 to 3 mm long. They have flat bodies and no wings. Unlike fleas, lice cannot jump. They are usually greyish brown in color, but this can vary. Because head lice are very small, it is difficult to see them in a tuft of hair. Carefully combing hair could help to find lice, particularly if it is damp – they might be detected this way.

If your child still has a few nits after being treated for head

lice, but you have not found any lice for a while, they are probably gone. Dead or hatched nits can stick to the hair for a long time after the infestation with living parasites is over.

## How can head lice be treated?

Head lice do not generally go away by themselves: treatment is necessary. To have a big enough effect, the treatment usually has to be applied more than once. When using anti-lice products it is important to follow the manufacturer's instructions because every product is applied slightly differently. There are a number of options. The lice can either be treated with

- a special comb,
- pesticide-free medication, or
- a pesticide-based product.

The combing approach involves wetting the hair and removing lice with a very fine comb. Here it is important to use the comb regularly and very thoroughly – 2 weeks will probably be enough if the comb is used at least every 4 days. Sometimes people recommend using shampoo or conditioner while combing the hair, but it is not clear whether this helps. Although lice combs help to remove lice, compared to other treatments, combing is less likely to get rid of all the lice, which can lead to new symptoms.

Another pesticide-free way to treat head lice is using herbal products, like sprays with coconut oil. There has not been enough research to be able to say whether they really work. Some herbal products could irritate the skin.

## Are there effective alternatives to pesticides?

Two years ago a new type of head lice treatment was developed, called dimeticone. This is a silicone-based lotion. Silicone is a type of synthetic material, not a pesticide. It is believed to kill head lice and their eggs by coating them in a thick layer and suffocating them. Because this is a physical, rather than a chemical action, the lice cannot develop resistance. Also, because dimeticone is not absorbed into the skin, there are fewer adverse effects than with chemical treatments, which can cause skin irritation.

Researchers looked at the effectiveness of dimeticone 4% lotion compared to various pesticides in a number of

trials. The dimeticone lotion was kept on for about 8 hours or overnight, and the pesticides were kept on for about 12 hours or overnight. The two treatments were applied in the same way: by completely coating the scalp and the full length of the hair. Both groups were given two applications of their treatments, one week apart.

The results showed that pesticides were not more effective than dimeticone: about 7 or 8 out of 10 people no longer had lice after treatment. However, dimeticone caused less skin irritation than the pesticides did. For example, in one trial 3 out of 100 people who used dimeticone had skin irritation problems, compared to 9 out of 100 people who used a pesticide.

Dimeticone 4% lotion is probably the most effective way to get rid of lice without using pesticides. It is not known whether weaker products work as well. There are stronger products with over 90% dimeticone too. These have also been tested in trials and did not appear to have more adverse effects. As soon as a complete analysis of the research on this becomes available, we will report on it.

## What products are based on pesticides?

Most head lice products are based on substances that fight insects (insecticides or pesticides). The pesticides that are most commonly used against head lice in Germany, applied in the form of lotions or sprays, are allethrin, permethrin and pyrethrum. In other countries, a substance called malathion is used too. However, these products are not always fully effective and have adverse effects. In particular, products that contain alcohol can lead to skin irritation and burning with children and people who apply the products. In addition, some lice and their eggs survive the treatment. Because these pesticides have been used so much, in some European countries (France, Great Britain, Denmark and the Czech Republic), the lice have become especially resistant to them.

Some head lice products contain a pesticide called lindane, but there are concerns about the safety of this substance. US authorities suspect a link between lindane and central nervous system damage and cancer. Its use in medication has been banned in the European Union since 2008. It is also probably not as effective as permethrin.

## What if my child experiences adverse effects?

If treatment with any of the products makes the itching even worse, the manufacturers advise people to stop the

treatment. A different product can then be tried out some time after. It is important to read the package insert carefully before using the product and to follow its advice. Head lice products should be prevented from getting into the eyes, nose and mouth. If they do, they should be rinsed out with water. There is no proof that it helps to use several head lice products at a time, or shortly after another. This could increase the risk of adverse effects.

## What else should I know?

Because head lice spread so easily, if your child has head lice you need to tell the people who are in close contact with your child. It is also important that children do not share their towels, bedding and combs with others as long as they have head lice. According to German law, children who have head lice must stay out of kindergarten or school until they are free of lice. What is more, parents are required to inform the establishment in question about their child's head lice.

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## Sources

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Burgess I. Head lice. *Clinical Evidence* 2009; 01: 1703.

Burgess IF, Brown CM, Lee PN. Treatment of head louse infestation with 4% dimeticone lotion: randomised controlled equivalence trial. *BMJ* 2005; 330: 1423. [Full text (URL: <http://www.bmj.com/cgi/content/full/330/7505/1423> ) ]

Burgess IF, Lee PN, Matlock G. Randomised, controlled, assessor blind trial comparing 4% dimeticone lotion with 0.5% malathion liquid for head louse infestation. *PLoS ONE* 2007; 2: e1127. [Full text (URL: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0001127> ) ]

DTB. Does dimeticone clear head lice? *Drugs Therap Bulletin* 2007; 45: 52-55.

Heukelbach J, Pilger D, Oliveira FA, Khakban A, Ariza L, Feldmeier H. A highly efficacious pediculicide based on dimeticone: randomized observer blinded comparative trial. *BMC Infectious Diseases* 2008; 8: 115. [Full text (URL: <http://www.biomedcentral.com/1471-2334/8/115>) ]

Infektionsschutzgesetz (IfSG). [Full text – in German (URL: <http://bundesrecht.juris.de/ifsg/index.html>) ]

Jahnke C, Bauer E, Hengge UR, Feldmeier H. Accuracy of diagnosis of pediculosis capitis: visual inspection vs wet combing. *Arch Dermatol* 2009; 145: 309-313. [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/19289764?dopt=Abstract>) ]

Lebwohl M, Clark L, Levitt J. Therapy for head lice treatment based on life cycle, resistance, and safety considerations. *Pediatrics* 2007; 119: 965-973. [Full text (URL: <http://pediatrics.aappublications.org/cgi/content/full/119/5/965>) ]

London New Drugs Group. Hedrin and Lyclear Spray Away for the treatment of head lice. APC/DTC Briefing. London: London New Drugs Group. October 2007.

Roberts RJ, Burgess IF. New head-lice treatment: hope or hype? *Lancet* 2005; 365: 8-10.

Robert Koch Institute (RKI). Kopflausbefall (Pediculosis capitis). RKI-Ratgeber Infektionskrankheiten - Merkblätter für Ärzte. Berlin: Robert Koch Institute. 2007. [Full text – in German (URL: [http://www.rki.de/CLN\\_048/nn\\_468404/sid\\_816D124800283720EC092BE9B22D28A9/nsc\\_true/DE/Content/Infekt/EpidBull/Merkblaet](http://www.rki.de/CLN_048/nn_468404/sid_816D124800283720EC092BE9B22D28A9/nsc_true/DE/Content/Infekt/EpidBull/Merkblaet)) ]

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