

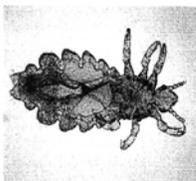
Head Lice (Pediculosis): A Treatment Guide

Life Cycle

The head louse is one of three types of lice that infest people. These tiny insects (about 1/10 to 1/8 of an inch long) make their home in human hair and feed on human blood. The entire head lice life cycle, including feeding and reproduction, occurs on the human host. They do not live on pets, and most head lice will die of starvation or desiccation within two days of falling off of their host. Similarly, head lice eggs (called nits) almost never hatch if they fall off of their host, as the warmth and humidity of the scalp are needed for successful hatching. Head lice multiply rapidly, laying 5-10 small oval-shaped nits each day, which are glued to the base of the hair, close to the scalp. After 6-10 days the nits hatch, and the nymph stage of head lice emerge and begin feeding on blood. After 10 days the lice are mature, and can begin the reproduction cycle again. Adult lice may live up to 3-5 weeks.

Signs of a Head Lice Infestation

Anyone can get head lice. They are not a sign of being dirty. Most people don't know they have lice until they see them. One telltale sign of head lice is a persistent itching of the scalp, which is sometimes accompanied by inflamed scratch marks or what appears to be a rash. Itching may not start until several weeks after a person has been infested. Head lice have been reported to be more prevalent in girls than boys.



Live head lice may be difficult to find as they can move quickly through hair, usually near the scalp. Adult head lice are usually brownish in color, and the nymph stage is usually transparent to reddish brown.

Nits are more readily seen even though they are only about 1/16th of an inch long. They are most often found along the hairline at the back of the head and neck and behind the ears. The color of the nits is variable (white, grey, dark brown, or somewhat translucent).

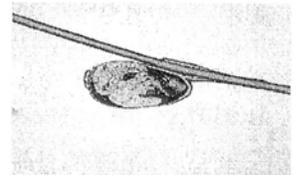
Nits should not be confused with an accumulation of hair spray, hair gels or dandruff. Dandruff can be easily flicked off the hair; nits cannot because they are firmly attached to individual hairs.

How People Become Infested With Head Lice

Head lice have no wings and do not fly or jump, but they can move quickly through hair. You can "catch" head lice through:

- direct head contact with an infested person;
- sharing personal items such as combs, brushes, other hair-care items, towels and pillowcases;
- sharing clothing, headgear (hats, scarves, football and batting helmets, head phones, etc.), ribbons and other head coverings.

Shared school lockers and unassigned wall hooks for coats have been associated with higher rates of infestation than individual lockers. Even if schools have individual lockers, remember that there may be other times during the day when children's clothing comes together (e.g., throwing coats in a pile before or after recess).



Treatment and Control

Head Lice Treatment: The recommended treatment includes using an over-the-counter (OTC) lice-killing product. These treatments include (1) "Nix"®, a cream rinse product which contains permethrin, a synthetic insecticide; and (2) many other brands of pyrethrin-based shampoo products ("RID"®, "R&C"®, "Triple-X"®, etc.). With these products, adult lice are usually killed with one treatment.

However, these products may not be 100 effective in killing viable nits, and there have also been reports of treatment failure.

Therefore, a second treatment 7-10 days

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later is recommended to ensure all of the freshly hatched head lice nymphs are killed. When using OTC head lice control products, it is important to carefully follow the directions as described on the product package:

General Instructions for Over-the-Counter Lice Treatment Creme Rinse

1. Wash the hair using any shampoo that does not contain conditioners.
2. Dry the hair thoroughly (this product should be applied to towel-dried hair).
3. Apply single dose bottle directly to the hair (use a sufficient amount to saturate the hair and scalp). Work thoroughly into the hair from roots to ends until all the hair is treated. Leave it on for a full ten minutes.
4. Rinse well and towel dry hair.
5. Remove all nits and any live lice as discussed under the Nit Removal section.
6. A second treatment is recommended in 7-10 days to kill any newly hatched lice.

General Instructions for Over-the-Counter Lice Treatment Shampoo

1. Apply the single dose bottle of OTC shampoo directly to dry hair and scalp, without adding water. Thoroughly work the shampoo into the hair from roots to ends until all the hair is treated. Leave it on the hair for ten minutes.
2. Rinse with warm water and shampoo as usual.
3. Remove all nits and any live lice as discussed under the Nit Removal section.
4. A second treatment must be done in 7-10 days to kill any newly hatched lice.

Note that even successfully treated lice may live up to 24 hours after the treatment was conducted. If after repeating the treatment the infestation persists (still seeing live lice, or freshly laid nits within 1/4 inch of the scalp), the person should consult with their health care provider. An effective head lice treatment (Malathion) is available by prescription. To avoid potential toxic reactions in people, repetitive use of OTC head lice control products is not recommended.

Alternative Head Lice Treatment Strategies

Many alternatives to OTC or prescription

head lice control products have been suggested. Although there is little scientific information to support these methods, successful treatment has been reported using several alternative treatments. People often use alternative treatments when conventional treatments haven't worked, or when there is a concern about the toxicity of using head lice control products repeatedly. *The Minnesota Department of Health cannot recommend these treatments without further evidence of their effectiveness. However, we feel it is important to mention some of the more commonly used methods.*

The alternative treatments listed below are referred to as suffocants. When applied, the treatment may suffocate and/or create a habitat unfavorable to the head lice.

- petroleum jelly (Vaseline®)
- mayonnaise
- oil (e.g., vegetable, olive, or mineral)

General Instructions for Suffocant Treatment*

1. Apply the selected suffocant generously to the hair, making sure the hair and scalp are saturated (for petroleum jelly, approximately two ounces should be sufficient).
2. Cover the hair with a close-fitting shower cap. Leave the cap on for eight hours (the exact time needed to kill the lice is unknown. Some people have reported success with shorter times). Avoid treatment while the infested person sleeps, as the cap may become a suffocation hazard.
3. Remove the shower cap and wash the hair with shampoo to remove most of the suffocant (petroleum jelly may be hard to remove, and we are not certain of the best method to do this, but commonly suggested methods include rinsing with a mild degreasing soap like Dawn®, or baby oil).
4. Remove all nits and any live lice as discussed under the Nit Removal section.
5. Wash hair thoroughly with shampoo to remove the remaining suffocant.

* Note: Specific, well-tested procedures have not been developed for these treatments. Many treatment variations exist.

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While the optimal time to repeat alternative treatments is unknown, treatments should be repeated 7-10 days later to ensure that all freshly hatched nymphs and surviving adult lice are killed. The advantages to alternative treatments are the low costs and the non-toxicity. Disadvantages include the lack of established treatment procedures and scientific evidence demonstrating effectiveness, difficulty of removing petroleum jelly or oils from the hair, and the amount of time necessary for the procedure.

Nit Removal

Removal of viable nits after treatment is an important supplement to the use of OTC head lice control products and suffocants. Nits do not fall off the hair after treatment, and can be difficult to remove as they are firmly cemented onto the hair shaft. Nits found near the scalp and up to 1/4 inch up on the hair shaft may still be viable and should be removed with a louse comb or fingernails to help end the infestation. The majority of nits that are over 1/2 inch out on the hair shaft are already hatched or dead. The infested person's head should be checked regularly for two weeks following head lice control product treatment to ensure that active lice and potentially viable nits are removed.

General Instructions for Nit Removal

1. Select a comfortable area with strong overhead lighting to facilitate inspecting the hair for nits. A television show or videotape may help the child sit quietly while the inspection takes place.
2. Use a head louse removal comb (metal may be better than plastic) for nit removal. Fingernails may also be used to remove nits from the hair shaft.
3. Lift a one-inch wide tuft of wet hair and place the louse comb as close to the scalp as possible. Comb slowly away from the scalp to the end of the hair tuft. Wipe the comb with a tissue to remove accumulated nits.
4. Hair clips may be used to pin the back the sections of hair you have completed, and keep them separated from uninspected hair. Continue the systematic inspection until all hair has been checked (nits are

especially common behind the ears and near the nape of the neck).

* Note: Any live lice found during the inspection should also be removed with the comb or fingernails.

People have also used several alternative methods to facilitate nit removal (loosen nits, make louse combing easier). Similar to suffocant treatments, *the Minnesota Department of Health cannot recommend these methods without scientific evidence of their effectiveness.* However many people claim that the following methods help to remove nits:

- Vinegar and water (one-to-one mixture) is commonly used to help remove nits. Hair is soaked with the mixture for 30-60 minutes (a damp towel soaked in the same mixture may be used to contain the solution). Rinse the hair following removal of nits.
- An over-the-counter product such as Clear® may be applied at least three minutes prior to removing nits. The product may be rinsed out after use. An OTC head lice treatment is then recommended to kill live lice.
- Hairclear 1-2-3®, a 15-minute hair treatment available at health food stores, has been used by people as a nit removal aid. The product may also irritate live lice to the point where they attempt to leave the hair, thus making them easier to remove.
- Alternative treatments such as mayonnaise, oils, and petroleum jelly are usually oily enough to make louse combing easier.

Environmental Cleanup

While the majority of head lice are transmitted directly from person to person, to control any head lice that are temporarily surviving off of a human host, you should:

1. Wash bedding in hot water (above 130 degrees F) and dry in a hot dryer or iron with a hot iron. Wash and dry recently worn clothing (including coats, caps and scarves) in hot temperatures. Clothing or bedding that cannot be washed may be dry cleaned or sealed in a plastic

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bag for two weeks (the plastic bags contain the lice until they are dead, and prevent head lice from temporarily infesting these items again while the treatment process is taking place).

While people often place bagged items outside in below freezing temperatures to kill the lice, we do not know how long it takes to freeze head lice.

2. Clean combs, brushes and similar items by:
 - soaking in the medicated shampoo for 10 minutes, or
 - soaking in a 2 Lysol® solution for one hour, or
 - heating in water of at least 130 degrees F for 10 minutes.
3. Clean floors, carpeting and furniture by thorough vacuuming only. The use of insecticide spray is not recommended.

Cleaning efforts should occur on the day of the first head lice treatment, and subsequently whenever live lice are found on the patient's head during the daily inspections. The effort should focus on areas frequented by the infested person.

Prevention

Parents should be encouraged to check their children's heads for lice on a regular basis throughout the year. Families should not depend on someone else to check a child's head, as this may delay treatment.

Remember, if one person in a family, camp, daycare or school has head lice, there's a chance others will too. Check everyone and

use the same treatment if necessary.

Treating persons without lice or nits will unnecessarily expose them to potentially harmful chemicals. Parents are encouraged to communicate with other parents of children that may have been exposed to their child. To avoid reinfestation, speak with their child about reducing direct contact with other children (touching heads), and avoiding shared objects such as brushes, combs, and clothing.

The Minnesota Department of Health makes the following recommendations to schools concerning head lice:

- Schools districts should make their own policies on whether or not to do "head checks" at school. Parents should not rely on school staff to check for lice but should do this at home, whether or not the children are checked at school.
- Infested children should be dismissed from school until the first treatment is completed.
- When a case of head lice is found, notices should be sent home to inform parents about head lice, outline the current problem in the school, and advise them to check for lice and nits in their children's hair.

Note: The use of brand names in this document is for identification purposes only, not for product endorsement.