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If any changes to the booklet are recommended, please contact the Snohomish Health District at: commhealth@shd.snohomish.wa.gov

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A Head Lice Prevention and Treatment Booklet
References

2) *Draft Toxicological Profile for Malathion*, U.S. Department of Health and Human Services, September 2001
4) *Head Lice (Pediculosis)*, Washington State Department of Ecology, Publication #97-423, 2000
7) *Parasites and Health: Head Lice*, CDC Division of Parasitic Diseases, 2001
8) OVIDE (Malathion) Factsheet, MEDICIS, The Dermatology Company, 2000
10) *RID Factsheet*, Bayer Corporation, 2002
11) Safety of Topical Lindane Products for the Treatment of Scabies and Lice, FDA Public Health Advisory, March 28, 2003
12) Lindane Shampoo USP 1%, Physician’s Desk Reference, 2002
When a person in your family gets head lice, your life can get a little crazy. But the more you know about lice prevention and treatment, the better off you and everyone else will be!

Helpful resources

- Your child’s school nurse
- Your health care provider
- Snohomish Health District: 425.339.5259
- Two head lice with dime for size comparison:
  www.ent.iastate.edu/imagegal/phthiraptera/pedhlicewdime.html
- National Pediculosis Association:
  www.headlice.org/kids
- Washington State Department of Health:
  www.doh.wa.gov/publicat/publications
- U.S. Food and Drug Administration: www.fda.gov (on site “search”, type in: head lice)

The purpose of this booklet is to give you the most current information about head lice. Descriptions of brand name products are for identification only and do not constitute endorsement by the Snohomish Health District, even when the advantages of one product over another is described. Details are provided for your information only.

We understand that head lice are a difficult and frustrating problem for you and your family.

It is important to remember to:

- Be kind to yourself and your children.
- Reassure your children that they are loved and they are not the cause of this common problem.
Facts of lice

- Head lice do not transmit disease.
- Head lice need human blood to survive.
- Head lice prefer clean hair - but will get on anyone...young, old, rich, poor, clean, dirty.
- Head lice don’t fly, hop, or jump - they crawl.
- Head lice do not live on pets or other animals.

Lice words defined:

- A louse = one lice bug.
- Lice = more than one louse.
- Nit = a louse egg.
- Nymph = a young louse.

Still have lice after using lice pesticides?

People may think that they have not used enough if they see nits or lice after using a lice pesticide. Sometimes they don’t wait long enough (at least seven days) before they use a lice pesticide again. This is not safe for anyone. Even when lice pesticides are used correctly, lice may live as long as 24 hours.

Sometimes people see dandruff or nits that have already hatched and think they have lice again. Seeing crawling lice or looking at the nit under a microscope are the only sure ways to verify that live lice or live nits are present.

Adequate combing and nit picking will remove all of the nits - dead or alive. If combing and nit picking are done every day for three weeks, missed live nits will not have a chance to hatch and become live lice. Using a lice pesticide will not remove dead or living nits from the hair.

Alternatives

We cannot recommend any alternative treatments because they have not been scientifically tested to be safe or effective. Even if some of these alternative treatments seem to be effective, they could have unintended side effects that could lead to illness or injury. Most alternative or “natural” lice treatments are not monitored by the Federal Drug Administration for safety, purity or quality.

Oil-based treatments, such as mayonnaise and olive oil, are no longer recommended due to lack of scientific testing. Some people use a shower cap or plastic wrap over the oil-this could cause death if the plastic slipped over the face of a sleeping child. Lice can “play dead” after a suffocation treatment and then hours later, start breathing again. Experts call this “sham death.” Additionally, this method does not kill nits, which must still be combed out.
Malathion ("Ovide") is only available by prescription. It is flammable and should not be used near open flame, electric heat, or someone smoking.  

Malathion can be absorbed through the skin. Malathion is genotoxic (DNA damaging) based on animal studies. However, doses used in these studies were much greater than would normally occur when Malathion is used correctly to treat head lice. The safety of Malathion is not known for children under age six years. Malathion can be irritating to the skin and scalp. If it gets into the eyes, it can cause conjunctivitis. 

People taking medication that inhibits cholinesterase may be at increased risk for serious side effects if they use Malathion, which is a cholinesterase inhibitor. People with asthma or other respiratory conditions may also be at increased risk. It is important for the medical provider who prescribes Malathion for you to be familiar with all of your health conditions. 

Severe respiratory distress is the major and most serious symptom of overdose.

Malathion should be applied to dry hair. After applying Malathion, the hair should be allowed to dry naturally without a hair dryer or towel. The Malathion should be thoroughly washed out of the hair after eight to twelve hours. 

Carefully follow the instructions given to you with the Malathion and the "Safety recommendations for all lice pesticides" listed on page 14 and 15 of this booklet.

Lice lay their eggs, called nits, onto the hair close to the head. They use a glue that firmly holds the nits or eggs onto the hair. The nits or eggs can be clear, white, yellow, brown, or gray. It takes about a week for the nits or eggs to hatch. Head lice are clear in color when they hatch.

It takes about seven to ten days for a newborn louse to become an adult. At this point she can begin laying eggs. One louse can lay six to eight eggs or nits a day for nine to ten days.

Adult head lice are reddish-brown in color. Lice have six legs with claws to help hold onto the hair. Adult lice are about the size of a sesame seed.

The total life span of a louse beginning with the egg or nit is about 25 to 30 days.
How lice spread

- Lice spread through head to head contact.
- Lice may spread when personal items are shared.

How to prevent head lice infestations

- Keep long hair up or in a braid or ponytail.
- Don’t share items that have been in close contact with the head. A louse might be hiding in hats, coats, combs, brushes, barrettes, helmets, or pillows, especially if they were recently used.
- Hang coats and backpacks separately. Stuff hats into coat or jacket sleeves.

Checking for lice

- Check your child’s head for lice if your child is scratching his head more than usual.
- Lice and lice eggs or nits are very small, so use a bright light and a magnifying glass if you have one. Outdoor light is best.
- It is suggested that families check for lice every week, just in case.
- Encourage your school, childcare, youth group, and PTA to have lice prevention and treatment training every year.

Lice Pesticides: (continued)

Lindane

Lindane (“Kwell”) is only available by prescription. Due to the potential for neurotoxicity (such as seizures), Lindane should only be considered when all other lice treatments have failed or are not tolerable. The Environmental Protection Agency does not recommend the use of Lindane at anytime.

Lindane is absorbed through the skin. It can cross the placental barrier and has been found in breast milk. Lindane should not be used in premature infants. Lindane is not recommended for use in infants.

Lindane should be used with caution in patients who weigh less than 110 pounds. Since Lindane is absorbed through the skin and children have more skin area for each pound of body weight, Lindane treatment may result in a higher concentration in a child’s blood than in the blood of an adult. Children can experience convulsions from exposure to Lindane.

There is potential increased risk of adverse reactions in immuno-compromised people (such as those with HIV infection). There is potential increased risk in people taking medications (such as antidepressants) that may increase the chances of having a seizure. People that have a seizure disorder should not use Lindane. Lindane should not be used on people that have cuts, sores, or other wounds on the scalp.

Before applying Lindane, use a shampoo without conditioner. Oils enhance the absorption of Lindane, so oil-based hair preparations should not be used prior to or immediately after use of Lindane.

Lice may be resistant to Lindane. Carefully follow the medication guide given to you with Lindane and the “Safety recommendations for all lice pesticides” listed on page 14 and 15 of this booklet.
Lice Pesticides: (continued)

Permethrin

Permethrin is a synthetic pyrethroid. It is similar to pyrethrin, but is made without the chrysanthemum flower extract. There are conflicting views regarding use of permethrin by those with chrysanthemum allergies—talk with your medical provider if you are allergic to chrysanthemums or ragweed before you use permethrin. Permethrin may cause breathing difficulty or an asthmatic episode in susceptible persons.

Animal studies have been done to test the safety of pyrethroid. Offspring of animals exposed to pyrethroid showed signs of possible damage to the immune system. Some animals that were exposed to pyrethroid right after birth showed altered behavior as adults. These studies exposed animals to much larger doses of pyrethroid than would normally occur when correctly used to treat head lice.

Permethrin does not kill all of the nits (lice eggs). Permethrin is designed to leave a residue of pesticide on the scalp and hair to kill newly hatched lice for up to 14 days. Even after washing the scalp and hair, the pesticide will remain for 14 days. A second treatment may still be needed in 7 days. Sometimes permethrin does not work—lice may be resistant. If 1% permethrin does not kill the lice, the 5% prescription strength (used for scabies) will not be any more effective. Combing and picking are necessary to get rid of the nits and any remaining live lice.

A lice spray may be included in the package—use is not recommended. Lice spray exposes your family to pesticides and is not necessary. Carefully follow the package instructions and the “Safety recommendations for all lice pesticides” listed on page 14 and 15 of this booklet.

Are they nits or just dandruff?

You “have lice” when live lice or nits (lice eggs) are seen in your hair. If you see what looks like nits without ever seeing a louse, you may not have lice. Dandruff, dirt, scabs, hairspray droplets or hair casts can look like nits.

Here are a few pointers to help you identify nits:

- Nits are hard to remove from your hair and are glued to the hairshaft at an angle.
- Nits feel like little grains of sand stuck to the hair, so you may feel them even if you can’t see them!
- Dandruff can be flicked away easily with your finger. NITS CAN’T!
- Nits are tiny and can be clear, white, yellowish, brown or sometimes gray. Dandruff is usually larger and white. Nits may vary in size, but are always the same oval shape.
- Nits are usually laid close (1/8”-3/16”) to the scalp and most often found around the ears and along the nape back of the neck. However, eggs found further away from the scalp are not always dead or empty. They still might hatch.
If you find nits or lice

To get rid of head lice, you must do two things:

1) Remove the live lice
2) Remove nits or lice eggs

Combing: Head lice and nits may be removed by combing every day for three weeks. Combing with a special lice comb is the safest way to get rid of head lice and nits. No scientific studies have been done to test how well daily combing for three weeks works. School nurses, parents, and many others believe combing is the best way to get rid of lice and nits.

Combing every day?
Combing every day may prevent a missed nit from hatching or a missed louse from laying more nits. Nits can be so small that you might miss them without a microscope. Even if you don’t see any more lice or nits—keep combing every day for three weeks.

Three weeks?
Combing for three weeks may help assure that all nits are removed before they can hatch into lice, and that all lice are removed before they lay more nits. If you quit before three weeks, you might miss a tiny nit or egg that will hatch later and start the whole problem over.

What about nit picking?
When you see a nit that won’t come off the hair with a comb, use your fingernails to slide the nits off the hair. That is called “nit picking”. Nit picking is part of the combing process.

What about lice shampoo or rinse?
Head lice shampoo or rinse contains pesticide (also called insecticide or pediculicide). Lice pesticides are meant to kill lice. Lice pesticides may not kill all of the nits or lice. Some lice are resistant to lice pesticides. Combing is recommended to remove nits whether or not you use lice pesticide. If you are thinking about using lice pesticide, please read carefully pages 14 through 21.

Lice Pesticides: (continued)

Pyrethrin

Pyrethrin is an extract from the chrysanthemum flower. People with allergies to chrysanthemums or ragweed should talk to their medical provider before using pyrethrin. People with allergies to petroleum products should talk to their medical provider before they use “synergized” petroleum products.

Animal studies have been done to test the safety of pyrethrin. Offspring of animals exposed to pyrethrins right after birth showed altered behavior as adults. These studies exposed animals to much larger doses of pyrethrin than would normally occur when correctly used to treat head lice.

Pyrethrin is meant to kill live lice. Pyrethrin does not kill all nits (lice eggs). Sometimes pyrethrin does not work - lice may be resistant. Pyrethrin is designed to be rinsed away after an application without leaving a residue on the hair. A second treatment is needed in 10 days. Combing and picking are necessary to get rid of the nits and any remaining live lice.

If you see lice moving 10 minutes after the treatment, don’t assume the treatment did not work. It may take up to 24 hours after the treatment for lice to die.

A lice spray may be included in the package—use is not recommended. Lice spray exposes your family to pesticides and is not necessary. Carefully follow the package instructions and the “Safety recommendations for all lice pesticides” listed on page 14 and 15 of this booklet.
Lice Pesticides:
Specific health concerns or recommendations

Many studies have been done on lice pesticides which suggest caution and concern for their use. These studies have primarily been conducted with animals, workers exposed in pesticide factories, agricultural use of pesticides, or occasions where a person has accidentally been exposed to a large amount of pesticide. Studies have not been done to look at the safety of pesticides when used as directed to get rid of lice on children. This booklet contains the health concerns with lice pesticides as described by the manufacturer, a governmental agency, or a professional publication. More information can be found by contacting one of the Helpful Resources at the end of this booklet. The four types of lice pesticides are:

- Pyrethrins—over the counter
- Permethrin—over the counter
- Lindane—by prescription
- Malathion—by prescription

Each of these lice pesticides has specific health concerns and recommendations for use described in the next few pages. It is very important to carefully follow all of the directions on the package as well as the “Safety recommendations for all lice pesticides” listed on page 14 and 15 in this booklet. If you have concerns or questions, talk with your medical provider.

Products are available to help with the combing process

Metal toothed nit combs: Because the metal teeth do not flex, metal nit combs may be more effective than plastic combs in removing nits from the hair.

Battery operated comb: The MagiComb™ is battery operated with vibrating removable teeth. Some people find this comb takes less time and is more comfortable. It is more expensive.

Immobilizing gel: Immobilizing gel traps lice so that nit combs can remove lice and nits. It also makes it easier to comb through the hair without pulling. Nontoxic immobilizing gels wash out easily and are safe to use. Always follow the instructions on any lice treatment product.
The combing and nit picking process

What you will need for each person:

- One sheet or large towel
- Two towels or hair dryer
- A sink to wash hair in
- One regular toothed comb
- Hair clips
- One metal toothed nit comb
- Immobilizing gel (optional)
- Tissue (facial tissues or toilet paper)
- Good lighting (sunlight is best)
- Magnifying glass is useful

1. Wet hair in sink. Place a sheet or large towel under the chair and seat the person with head lice in the chair. Remember that nits are very small so make sure that you are in a place with good lighting (sunlight is best).

2. Dry the hair with a towel or hair dryer until it is completely dry. The heat will help loosen the nits from the hair.

3. **Wet the hair again** and comb out tangles with a regular comb.

4. Part the hair into six sections, or more as needed depending upon the thickness of the hair. Pin sections with clips if necessary.

5. Pick one section. Starting at the top of this section, lift a very thin layer of hair and place the **nit comb** as close to the scalp as possible. Wetting the hair or using an immobilizing gel while combing may make it easier to remove the lice and nits. Make sure the teeth of the comb are deep into the strands of hair. Pull the nit comb through the strands of hair.

   _Wipe the comb off thoroughly with a tissue after each stroke through the hair._

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Safety recommendations for all lice pesticides continued:

When using a lice pesticide, apply it to the head over a sink instead of in a shower or bathtub. It is best to limit the amount of skin that gets lice pesticide on it to reduce exposure to the chemicals.¹

Be very careful not to get any lice pesticide into the eyes, nose, or mouth. Keep eyes tightly closed until the lice pesticide is rinsed from the hair. With children, also protect the eyes by covering with a washcloth. If any lice pesticide gets into the eyes, nose or mouth, rinse immediately with clean water.

Using cool water instead of warm water may help reduce the amount of lice pesticide that is absorbed through the scalp.¹ The person applying the lice pesticide should wear disposable waterproof gloves for their own protection.⁴

After applying lice pesticide, the person with head lice and the person applying the lice pesticide should wash their hands and change their clothes.

Store all lice pesticides out of the reach of children. Do not mix lice pesticides.

_If you think someone has swallowed lice pesticide or has received an overdose of a lice pesticide, contact the National Poison Center immediately at: 1-800-222-1222._

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¹ The person applying the lice pesticide should wear disposable waterproof gloves for their own protection.

⁴ After applying lice pesticide, the person with head lice and the person applying the lice pesticide should wash their hands and change their clothes.

If you think someone has swallowed lice pesticide or has received an overdose of a lice pesticide, contact the National Poison Center immediately at: 1-800-222-1222.
Safety recommendations for all lice pesticides

The Environmental Protection Agency recommends using pesticides only as a last resort.5

Some people are more sensitive to ill effects of lice pesticides and should only use lice pesticides after talking with a medical provider. Pregnant or nursing mothers, children younger than two years of age, people with scratches, cuts, or open sores on their head, and people with allergies or asthma should talk with their medical provider before using any lice pesticides.4

Lice can be resistant to lice pesticides. Even if you use a lice pesticide, the lice may not be killed. Using more lice pesticide will not kill lice that are resistant.6 Allow at least seven days between uses of lice pesticide. If you choose to use a lice pesticide, carefully follow the package instructions and never use it more often than directed.

Using lice pesticide does not prevent you from getting lice in the future.5

Remember, lice pesticides can make you or your child sick if they are not used in the right way or if you or your child are more sensitive to the lice pesticide.

6. Place the nit comb underneath the same thin layer of hair, make sure the teeth of the comb are deep into the strands of hair. Pull the comb slowly through the hair. Wipe the comb again with a new tissue. Flush tissues down the toilet or seal in a plastic bag.

7. Nits that are difficult to remove may be scraped off by moving the nit comb up and down the hair shaft starting at the scalp. Or you can use your fingernails to slide the nits off the hair (nit picking).

8. If hair is long, pin back each section of hair after removing the nits.

9. Repeat steps five through seven to the remaining sections of hair. If the hair becomes dry, dampen with a little water or immobilizing gel.

10. After combing out or picking out all the lice and nits, rinse the hair with water to wash out any loose nits.

11. Dry the hair with a clean towel or hair dryer, then check the entire head for nits you may have missed.

12. Pick or comb the nits at least once per day for three weeks, even if you don’t see nits. Reinfestation usually occurs because of a missed nit or louse. Don’t stop combing during the three weeks just because you are not seeing anything. Remember that the nits may be microscopic in size and not possible to see even with a magnifying glass.
Clean up after combing and nit picking

- Wash the sheet or large towel that was placed under the person who was treated.

- Before starting to comb the next person, wash all the combs and hair clips in hot (130° degree) soapy water.

- Wash all of the used towels.

- Flush all of the used tissues down the toilet or seal in a garbage bag.

- Have the person who was combing for nits and the person who was treated wash their hands and change into clean clothes.

Cleaning household items to get rid of lice

Cleaning clothes, the house and household items is not as important as you might think. Lice cannot live more than two days off of a head. There is no need to clean every nook and cranny.¹

If lice return, it is usually because a louse or nit was missed during combing. Lice sprays for your house are not recommended.¹

Pets cannot get head lice. Don’t use lice pesticides on your pets.

Suggested household cleaning:

Clean items used by people with lice during the two days before you began lice treatment.

- Wash sheets, pillow cases, towels, and clothing. Use hot water (130° degrees) and the “hot” dryer setting for 30 minutes.

- Things that can’t be washed can be sealed in a plastic bag for two weeks or dry cleaned: coats, hats, helmets, scarves, stuffed animals, pillows, and comforters.

- Wash brushes, combs, barrettes and other hair holders thoroughly with hot (130° degree) soapy water.

- Vacuum the floor, furniture, car seats and headrests used by the person with lice.