Questions About the

Transmission, Diagnosis & Treatment of Head Lice

Head lice are wingless, blood-sucking parasites of people. They are normally just a nuisance and source of irritation, but their medical importance can increase if left untreated. Although head lice epidemics are more common when people are subjected to overcrowded, substandard living conditions, they can be a problem in the best of socioeconomic conditions.

The biology of head lice is rather simple, since all stages of the life cycle occur on people. Adult females can live for about three weeks and may lay up to 10 eggs per day after mating. Eggs (referred to as nits) hatch in about one week, after which the nymphs (immature lice that resemble the adults) must have a blood meal within 24 hours. The nymphs molt three times during a seven- to 10-day period before they become adults.

This publication answers common questions about the transmission, diagnosis and treatment of head lice.

How do you get head lice?

The most common way is by direct head-to-head contact. Children often spread lice to one another when they take naps or sleep together at night. Lice also can be spread through indirect means such as the sharing of towels, combs, brushes and other grooming aids. Hanging coats and scarves close together or piling them can allow lice to spread from one person to another, too.

Lice are wingless insects that cannot fly or jump. Head lice spend the entire life cycle on people, and they normally die within two days after being detached from a person.

How do you know if you have a head lice problem?

Diagnosis can be made by medically trained personnel or by knowledgeable lay people such as teachers or parents. Infested individuals may complain of a tickling sensation, scratching or irritability. In extreme cases, the hair may be matted, and the scalp may have sores and lesions from scratching. In other cases, people may be completely unaware of being infested. The only way to be sure is by checking the head of suspected individuals.

Lice are very small, but they can be seen with the naked eye. Head lice are tan and about two to three mm in length (about the size of a sesame seed). A good light source, preferably natural sun light, is necessary to observe them in the hair. Look through the hair in sections, but be aware that live lice can move very quickly. You may not see more than five or 10 live lice on an infested individual. Lice are most commonly found behind the ears or at the base of the head near the neck line. A more thorough method of examination is by combing the hair in 1-inch sections with a nit comb. Comb outward from the base of the scalp to the end of the hair, and then dip the comb in a glass of water. Examine the water for lice and eggs.

Lice eggs are glued to hairs at the base of the scalp. They are oval and white to yellow in color. Eggs can be seen with the naked eye, but they often are confused with other debris such as dandruff scales and flakes from hair sprays. Lice eggs, however, cannot be easily flicked off because they are glued to the hair.

Human hair grows at a rate of about 0.35 mm per day. Since eggs are normally laid at the scalp line, the distance it is observed from the scalp can tell you the age of the egg. By knowing the age of the egg, you can determine whether or not it has hatched. This knowledge can be useful when inspecting people after they have been treated. A general rule is that eggs 1/4 inch or more from the scalp have either already hatched or are dead.

How do you eliminate a head lice problem?

There are three majors steps in the control of head lice, and all are equally important. First, treat the hair and scalp with a recommended pediculicide. These products contain insecticidal chemicals that control lice. A second application with most products is necessary seven to 10 days later to control newly hatched lice. Some pediculicides do

not kill lice eggs, so they will eventually hatch into more lice. The recommended pediculicides are discussed individually under the next question.

The second step is the use of a nit comb, but wait 8 to 12 hours after the pediculicide treatment before using it. The nit comb should be used every two to three days for about two to three weeks.

The third step involves sanitation and good housekeeping. This will help prevent reinfestation and the indirect spread of head lice to others. All bedding, towels and clothing used by the infested individual two days before treatment should be either washed in hot water or dry cleaned. Items that cannot be cleaned such as comforters and stuffed animals should be placed in plastic bags and sealed for two weeks. Soak combs and brushes for about one hour in hot water or some type of sterilant such as rubbing alcohol or Lysol. And finally, frequent vacuuming of carpets and furniture will eliminate any other detached lice. Personal hygiene is important, but washing and shampooing the hair with standard shampoos will not eliminate head lice.

Are home remedies efffective?

Shaving the head is no longer recommended in normal situations. Shaving will certainly eliminate the lice problem, but it may create a stigma or cause children undue teasing and embarrassment. Other home remedies such as using mayonnaise or olive oil to suffocate lice or using vinegar as a nit-dissolving agent are not recommended. These practices can be harmful to the scalp and skin. Commercial formulations of nit dissolving agens and suffocation agents are often sold through various retail outlets. These products may claim to be safe, but they usually lack independent research to support their control claims.

What products (pediculicides) can be used to treat head lice?

As of 2006, these products were available to treat head lice.

Prescription Treatments (Rx)

1. Generic Lindane - This is an older product, once sold as Kwell, that was commonly used at one time. It is generally considered safe when used as directed, but side effects can occur if it is used improperly. Lindane provides effective lice control, but adult and immature lice die slowly. It is not effective on the nits (eggs). Lice resistance to this product has been documented.
2. Malathion (Ovide) - This product was reintroduced because of control problems with the other products. This product kills both the lice and their eggs, but a second treatment may be necessary.

Over-the-counter Treatments (OTC)

1. Permethrin - This treatment is sold as Nix, although some pharmacies may have their own generic brands. Permethrin provides good control of lice and their eggs, and it provides residual control. A second treatment may or may not be necessary. Control failures with this product have been common.
2. Synergized Pyrthrins - This treatment is sold as Rid and many other generic brands. These products kill lice, but there is little or no activity on the eggs. A second treatment is always necessary. Control failures with this product have been common, too.

Always follow label instructions when using a prescription or OTC treatment product. These products contain chemicals that can be harmful to the user, and improper use can make lice control more difficult in the long term. The following restrictions apply to all of the available products.

1. Do not use on children less than two years of age.
2. Do not use Ovide (malathion) on children less than six years of age.
3. Do not use extra amounts or apply more frequently than recommended.
4. Do not use a product more than three times if lice control is not successful.
5. Do not mix different products in the same treatment.

What is a nit comb?

These very fine-toothed combs are designed to remove lice and eggs. Nit combs with steel teeth are preferred. The Lice Meister is one such product that is recommended, and some of the OTC pediculicides are sold with a nit comb. Frequent and thorough combing is always recommended. Non-insecticidal gels and conditioners are sometimes sold with nit combs to make the combing process easier.

What should I do if treatment is not effective?

Control failures with recommended products have occurred. But, before assuming that the pediculidide was ineffective or the lice were resistant, review the overall management of the problem. Did you follow the treatment directions for the product used? Did you supplement the treatment with a nit comb and recommended housekeeping practices? The product may have been effective, but the in-

dividual could have been reinfested. Was a second application required? Is so, was it made within the prescribed time interval? If the product has proved to be ineffective, then it may be necessary to switch to a different pediculicide. In the absence of an effective pediculicide, the best alternative is frequent and thorough combing with a nit comb.

Should I see a physician if I have a head lice problem?

Not necessarily. Diagnosis can be made by teachers, parents, pharmacists and others who are trained and knowledgeable about the problem. Over-the-counter products can be obtained to treat infested people, but you must consult a doctor to obtain prescription treatments. People with severe infestations may need a doctor's care for scalp lesions and sores if they become infected.

Should I have my house treated with an insecticide?

No. Lice normally die within two days if they are detached from their host. Frequent vacuuming, laundering and other recommended house cleaning practices are normally sufficient.

Should I treat my pets?

No. Head lice are human parasites and do not infest other animals. Dogs, cats and other pets are not involved with the transmission and spread of head lice.

Do head lice transmit disease?

No. Head lice should not be confused with body lice, which are notorious for transmitting relapsing fever and typhus fever. Body lice are similar to head lice in appearance, but they are never found on the head.

Are head lice more common in any particular group of people?

Anyone can get head lice, but the problem is more common in certain groups of people. Preschool and elementary age children are the most common, and most infestations originate in schools. Infested children then bring the problem home and spread lice to other members of the family. Females tend to have more problems because they usually have more hair. Lice problems tend to be more common during the colder months, simply because people are grouped together indoors more.

Head lice infestations are more successful in racial groups whose hair is round in cross section. This group includes Caucasians, Orientals and native Americans. Round hairs enable lice to attach more firmly with their leg claws. Head lice problems are not as common in African-Americans, because their hair has an oval cross section.

Adult Head Louse

Head Louse Nymph

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