

## Head Lice



Adult head lice are roughly 2-3 mm long. Head lice infest the head and neck and attach their eggs to the base of the hair shaft. Lice move by crawling; they cannot hop or fly.

Head lice infestation, or pediculosis, is spread most commonly by close person-to-person contact. Dogs, cats, and other pets do not play a role in the transmission of human lice.

Both over-the-counter and prescription medications are available for treatment of head lice infestations.

*Image: Two lice viewed under an electron microscope. Note the claws used to grasp onto individual hairs. Credit: CDC*

### **What are head lice?**

The head louse, or *Pediculus humanus capitis*, is a parasitic insect that can be found on the head, eyebrows, and eyelashes of people. Head lice feed on human blood several times a day and live close to the human scalp. Head lice are not known to spread disease.

### **Who is at risk for getting head lice?**

Head lice are found worldwide. In the United States, infestation with head lice is most common among preschool children attending child care, elementary school children, and the household members of infested children. Although reliable data on how many people in the United States get head lice each year are not available, an estimated 6 million to 12 million infestations occur each year in the United States among children 3 to 11 years of age. In the United States, infestation with head lice is much less common among African-Americans than among persons of other races, possibly because the claws of the head louse found most frequently in the United States are better adapted for grasping the shape and width of the hair shaft of other races.

Head lice move by crawling; they cannot hop or fly. Head lice are spread by direct contact with the hair of an infested person. Anyone who comes in head-to-head contact with someone who already has

head lice is at greatest risk. Spread by contact with clothing (such as hats, scarves, coats) or other personal items (such as combs, brushes, or towels) used by an infested person is uncommon. Personal hygiene or cleanliness in the home or school has nothing to do with getting head lice.

### ***What do head lice look like?***

Head lice have three forms: the egg (also called a nit), the nymph, and the adult.



Actual size of the three lice forms compared to a penny. (CDC Photo)



Illustration of egg on a hair shaft. (CDC Photo)

**Egg/Nit:** Nits are lice eggs laid by the adult female head louse at the base of the hair shaft nearest the scalp. Nits are firmly attached to the hair shaft and are oval-shaped and very small (about the size of a knot in thread) and hard to see. Nits often appear yellow or white although live nits sometimes appear to be the same color as the hair of the infested person. Nits are often confused with dandruff, scabs, or hair spray droplets. Head lice nits usually take about 8-9 days to hatch. Eggs that are likely to hatch are usually located no more than ¼ inch from the base of the hair shaft. Nits located further than ¼ inch from the base of hair shaft may very well be already hatched, non-viable nits, or empty nits or casings. This is difficult to distinguish with the naked eye.



Nymph form. (CDC Photo)

**Nymph:** A nymph is an immature louse that hatches from the nit. A nymph looks like an adult head louse, but is smaller. To live, a nymph must feed on blood. Nymphs mature into adults about 9-12 days after hatching from the nit.



Adult louse. (CDC Photo)

**Adult:** The fully grown and developed adult louse is about the size of a sesame seed, has six legs, and is tan to grayish-white in color. Adult head lice may look darker in persons with dark hair than in persons with light hair. To survive, adult head lice must feed on blood. An adult head louse can live about 30 days on a person's head but will die within one or two days if it falls off a person. Adult female head lice are usually larger than males and can lay about six eggs each day.



Adult louse claws. (CDC Photo)

### ***Where are head lice most commonly found?***

Head lice and head lice nits are found almost exclusively on the scalp, particularly around and behind the ears and near the neckline at the back of the head. Head lice or head lice nits sometimes are found on the eyelashes or eyebrows but this is uncommon. Head lice hold tightly to hair with hook-like claws at the end of each of their six legs. Head lice nits are cemented firmly to the hair shaft and can be difficult to remove even after the nymphs hatch and empty casings remain.

### ***What are the signs and symptoms of head lice infestation?***

- Tickling feeling of something moving in the hair.
  - Itching, caused by an allergic reaction to the bites of the head louse.
  - Irritability and difficulty sleeping; head lice are most active in the dark.
  - Sores on the head caused by scratching. These sores can sometimes become infected with bacteria found on the person's skin.
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### ***How did my child get head lice?***

Head-to-head contact with an already infested person is the most common way to get head lice. Head-to-head contact is common during play at school, at home, and elsewhere (sports activities, playground, slumber parties, camp).

Although uncommon, head lice can be spread by sharing clothing or belongings. This happens when lice crawl, or nits attached to shed hair hatch, and get on the shared clothing or belongings. Examples include:

- sharing clothing (hats, scarves, coats, sports uniforms) or articles (hair ribbons, barrettes, combs, brushes, towels, stuffed animals) recently worn or used by an infested person;
  - or lying on a bed, couch, pillow, or carpet that has recently been in contact with an infested person.
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Dogs, cats, and other pets do not play a role in the spread of head lice.

### ***How is head lice infestation diagnosed?***

The diagnosis of a head lice infestation is best made by finding a live nymph or adult louse on the scalp or hair of a person. Because nymphs and adult lice are very small, move quickly, and avoid light, they can be difficult to find. Use of a magnifying lens and a fine-toothed comb may be helpful to find live lice. If crawling lice are not seen, finding nits firmly attached within a ¼ inch of base of the hair shafts strongly suggests, but does not confirm, that a person is infested and should be treated. Nits that are attached more than ¼ inch from the base of the hair shaft are almost always dead or already hatched. Nits are often confused with other things found in the hair such as dandruff, hair spray droplets, and dirt particles. If no live nymphs or adult lice are seen, and the only nits found are more than ¼-inch from the scalp, the infestation is probably old and no longer active and does not need to be treated.

If you are not sure if a person has head lice, the diagnosis should be made by their health care provider, local health department, or other person trained to identify live head lice.

### ***Do head lice spread disease?***

Head lice should not be considered as a medical or public health hazard. Head lice are not known to spread disease. Head lice can be an annoyance because their presence may cause itching and loss of

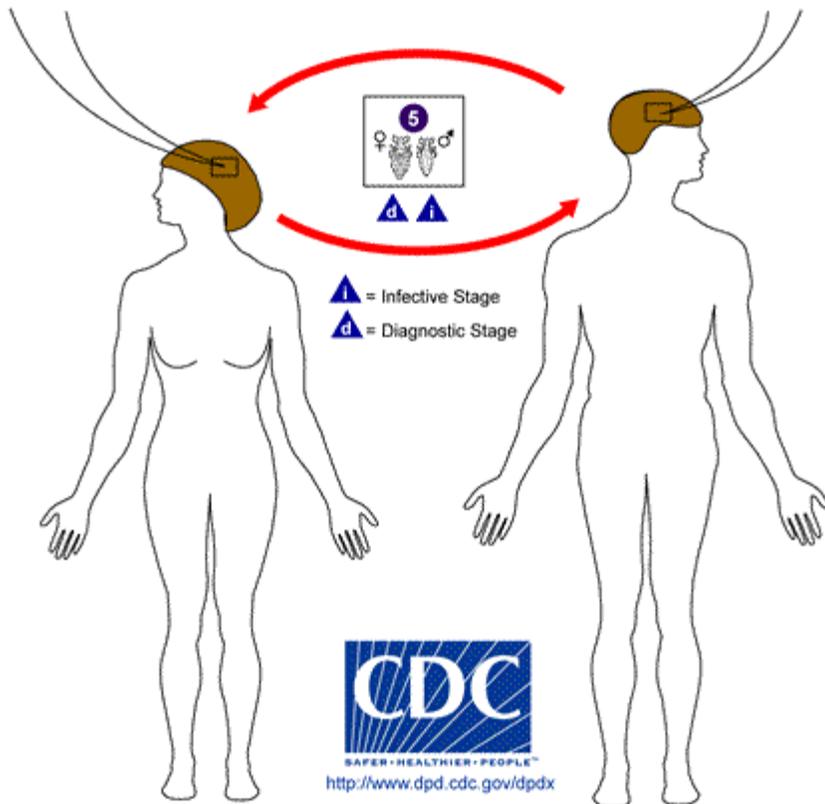
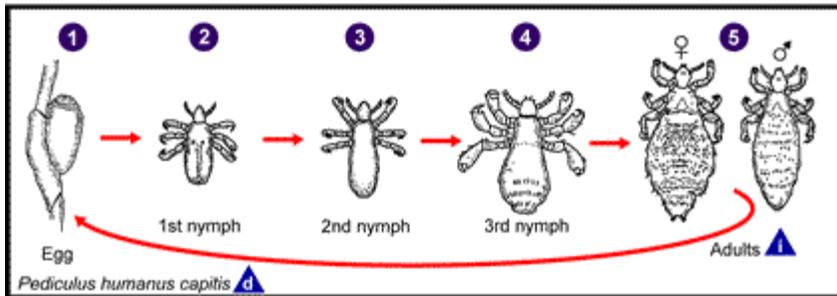
sleep. Sometimes the itching can lead to excessive scratching that can sometimes increase the chance of a secondary skin infection.

## Biology

### Causal Agent:

*Pediculus humanus capitis*, the head louse, is an insect of the order Psocodea and is an ectoparasite whose only host are humans. The louse feeds on blood several times daily and resides close to the scalp to maintain its body temperature.

### Life Cycle:



The life cycle of the head louse has three stages: egg, nymph, and adult.

**Eggs:** Nits are head lice eggs. They are hard to see and are often confused for dandruff or hair spray droplets. Nits are laid by the adult female and are cemented at the base of the hair shaft nearest the scalp **1**. They are 0.8 mm by 0.3 mm, oval and usually yellow to white. Nits take about 1 week to hatch (range 6 to 9 days). Viable eggs are usually located within 6 mm of the scalp.

**Nymphs:** The egg hatches to release a nymph **2**. The nit shell then becomes a more visible dull yellow and remains attached to the hair shaft. The nymph looks like an adult head louse, but is about the size of a pinhead. Nymphs mature after three molts (**3**, **4**) and become adults about 7 days after hatching.

**Adults:** The adult louse is about the size of a sesame seed, has 6 legs (each with claws), and is tan to grayish-white **5**. In persons with dark hair, the adult louse will appear darker. Females are usually larger than males and can lay up to 8 nits per day. Adult lice can live up to 30 days on a person's head. To live, adult lice need to feed on blood several times daily. Without blood meals, the louse will die within 1 to 2 days off the host.

*Life cycle image and information courtesy of [DPDx](#).*

## Disease

Head lice are not known to transmit any disease and therefore are not considered a health hazard.

Head lice infestations can be asymptomatic, particularly with a first infestation or when an infestation is light. Itching ("pruritus") is the most common symptom of head lice infestation and is caused by an allergic reaction to louse bites. It may take 4-6 weeks for itching to appear the first time a person has head lice.

Other symptoms may include:

- a tickling feeling or a sensation of something moving in the hair;
  - irritability and sleeplessness; and
  - sores on the head caused by scratching. These sores caused by scratching can sometimes become infected with bacteria normally found on a person's skin.
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## Diagnosis



Examination of hair and scalp for head lice. Close examination of the hair and scalp is necessary to determine head lice infestation. (CDC Photo)

Misdiagnosis of head lice infestation is common. The diagnosis of head lice infestation is best made by finding a live nymph or adult louse on the scalp or hair of a person.

Because adult and nymph lice are very small, move quickly, and avoid light, they may be difficult to find. Use of a fine-toothed louse comb may facilitate identification of live lice.

If crawling lice are not seen, finding nits attached firmly within ¼ inch of the base of hair shafts suggests, but does not confirm, the person is infested. Nits frequently are seen on hair behind the ears and near the back of the neck. Nits that are attached more than ¼ inch from the base of the hair shaft are almost always non-viable (hatched or dead). Head lice and nits can be visible with the naked eye, although use of a magnifying lens may be necessary to find crawling lice or to identify a developing nymph inside a viable nit. Nits are often confused with other particles found in hair such as dandruff, hair spray droplets, and dirt particles.

## Prevention & Control

Head lice are spread most commonly by direct head-to-head (hair-to-hair) contact. However, much less frequently they are spread by sharing clothing or belongings onto which lice have crawled or nits attached to shed hairs may have fallen. The risk of getting infested by a louse that has fallen onto a carpet or furniture is very small. Head lice survive less than 1-2 days if they fall off a person and cannot feed; nits cannot hatch and usually die within a week if they are not kept at the same temperature as that found close to the scalp.

The following are steps that can be taken to help prevent and control the spread of head lice:

- Avoid head-to-head (hair-to-hair) contact during play and other activities at home, school, and elsewhere (sports activities, playground, slumber parties, camp).
  - Do not share clothing such as hats, scarves, coats, sports uniforms, hair ribbons, or barrettes.
  - Do not share combs, brushes, or towels. Disinfest combs and brushes used by an infested person by soaking them in hot water (at least 130°F) for 5-10 minutes.
  - Do not lie on beds, couches, pillows, carpets, or stuffed animals that have recently been in contact with an infested person.
  - Machine wash and dry clothing, bed linens, and other items that an infested person wore or used during the 2 days before treatment using the hot water (130°F) laundry cycle and the high heat drying cycle. Clothing and items that are not washable can be dry-cleaned OR sealed in a plastic bag and stored for 2 weeks.
  - Vacuum the floor and furniture, particularly where the infested person sat or lay. However, spending much time and money on housecleaning activities is not necessary to avoid reinfestation by lice or nits that may have fallen off the head or crawled onto furniture or clothing.
  - Do not use fumigant sprays or fogs; they are not necessary to control head lice and can be toxic if inhaled or absorbed through the skin.
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To help control a head lice outbreak in a community, school, or camp, children can be taught to avoid activities that may spread head lice.