

Human Lice

There are three species of lice that can at times infest humans—the head louse, the body louse, and the crab or pubic louse. These pests belong to the group called sucking lice and, as their name implies, feed by sucking blood from a host. The feeding activity of these lice produces a considerable amount of personal discomfort and skin irritation that may cause itching, swelling, or the formation of various skin maladies. Additionally, continued scratching of infested areas may lead to secondary bacterial infection.

Human lice infestations (called pediculosis) have become increasingly common over the past several years. These lice occur throughout the world. Contrary to popular belief, they may temporarily infest anyone, regardless of their level of cleanliness or economic status. Human lice occur almost exclusively on humans and are rarely, if ever, contracted from or passed to pets or other animals.

Human lice infestations can be easily and effectively controlled. Infestations also can be prevented or minimized if individuals have a good understanding of the biology of these pests, their habits, and the methods that lead to their transmission.

Head Lice

Adult head lice are approximately 2 to 3 millimeters in length, lack wings, and vary in color from dirty white to grayish-black (Figure 1). These lice have three pairs of legs that are about equal in size, and have abdomens or rear body regions that are distinctly longer than they are wide. The head has a pair of antennae that are waved from side to side as the louse moves forward. The mouthparts of head lice are unique in that they are withdrawn into a pouch in the head so that they are normally not visible.

Head lice almost always occur on the head. Female lice use an extremely persistent, insoluble glue to attach their eggs (called nits) to hair shafts (Figure 2). These eggs are attached close to the scalp and are

usually found on the hair behind the ears and on the neck. In about 7 to 10 days the eggs hatch into nymphs, which resemble adults but are smaller. The nymphs undergo three molts before maturing into adults in about 8 to 14 days or longer. Both nymphs and adults feed on human blood at least twice daily. Adult head lice normally live 2 to 4 weeks, during which time females may produce about 50 to 150 eggs.

Medically, head lice are not considered to be dangerous and are not known to transmit any human diseases. They can, however, become a serious nuisance and annoyance due to their feeding activity. Each time a head louse feeds it injects irritating saliva into the wound. This saliva may cause a mild fever and muscular aches, especially in the calves of the legs. Occasionally, swelling of the cervical glands may occur. The first noticeable symptom of a head louse infestation is usually intense itching of the scalp. Continued scratching of the infested area increases the inflammation of the bites and may lead to secondary bacterial infection.



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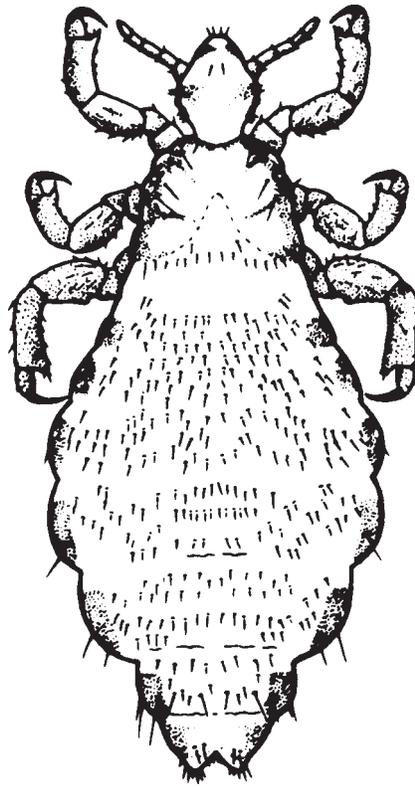
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Head lice are transmitted primarily through direct contact with an infested individual. Transmission also may occur as a result of contact with louse-contaminated articles such as combs, brushes, towels, coats, sweaters, hats, or other head coverings. For this reason, head lice infestations are more commonly encountered in young, school-age children. The increased amount of time spent by children at day care or school activities leads to more interpersonal contact and a greater opportunity for louse transmission. Contrary to popular belief, studies have shown that hair length, hair color, and sex are not associated with head louse transmission. Factors that have been found to influence transmission include young age, bed sharing, infestation within the family, large households, and crowding. Although statistics on head louse incidence in the United States are virtually nonexistent, health authorities indicate that infestations have increased dramatically in the last 10 years.

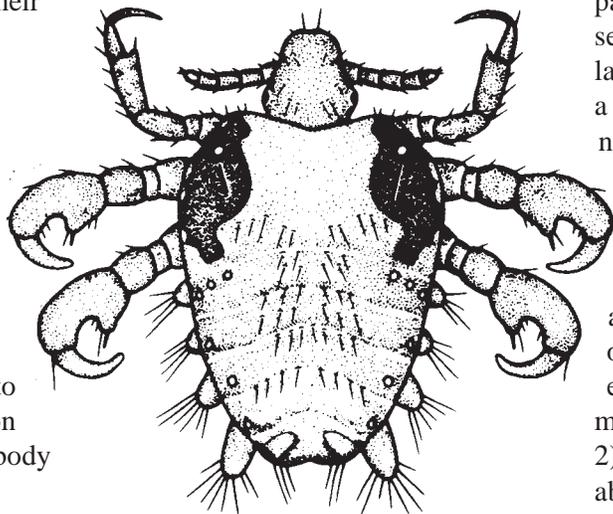
Body Lice

Body lice are similar to head lice in appearance (Figure 1), life cycle, and development. The main difference between these two pests is their habits. Body lice prefer to live in clothing or bedding. They most frequently occur in the seams of garments, or in places where the body is in close contact with the clothing. Female lice glue their eggs to clothing fibers (Figure 2), and are capable of producing 200 or more eggs during their lifetime. Both nymphs and adults feed on human blood, but prefer to spend the majority of their time on the infested clothing. Therefore, body louse contact with the skin only occurs during feeding.

Figure 1A. Head louse and body louse. All legs are about the same length.



B. Crab louse. First pair of legs are smaller than second and third pairs of legs.



The feeding activity of body lice can cause extreme irritation, and sores resulting from intense scratching may develop. Secondary skin disorders such as bacterial infection or impetigo often occur. The skin of individuals who continuously harbor body lice often becomes hardened and deeply pigmented. In addition, body lice have been implicated in the transmission of louse-borne relapsing fever, trench fever, and epidemic typhus. Fortunately, these diseases have not been reported in the United States for several decades.

Infestations of body lice, which are relatively rare in the United States, are primarily transmitted by direct contact with infested individuals or by contact with louse-contaminated clothing or bedding. Because body lice survive best in conditions where clothing is not changed or washed often, epidemic outbreaks have frequently been encountered during time of war, famine, or other human disaster.

Crab Lice

Adult crab lice are approximately 1 millimeter in length, lack wings, and vary in color from grayish-white to whitish-pink (Figure 1). These lice have three pairs of legs, with the first pair being slightly smaller than the second and third pairs. Each leg has a large hooked claw that gives this pest a crablike appearance and thus the name crab louse.

Crab lice prefer to infest the coarse body hairs of the pubic or perianal areas, although they have occasionally been found in other areas such as eyebrows, eyelashes, or beards. Female lice attach their eggs to the base of pubic hairs in a manner similar to head lice (Figure 2). These eggs hatch into nymphs in about 6 to 8 days. Nymphs, which resemble adults but are smaller, undergo three molts before maturing

into adults in about 14 to 21 days. Both nymphs and adults feed intermittently on human blood for several hours at a feeding. Adult crab lice normally live about 1 month; during this time females may produce about 25 to 50 eggs.

Like head lice, crab lice are not known to transmit any human diseases. They can, however, cause extreme discomfort and skin irritation due to their feeding activity. Small blue spots with irregular outlines may develop around the bite area. These spots normally do not appear until several hours after the louse has fed, and usually persist for several days. Intense itching also accompanies an infestation, and lymph node inflammation, impetigo, or pyoderma may develop.

Crab lice infestations are found most commonly on young adults. Because these lice are sluggish in their movement, transmission occurs primarily through intimate personal contact with an infested individual. Crab lice also can occasionally be transmitted by direct contact with louse-contaminated bedding, clothing, or other articles. Although statistics on crab louse incidence have not been reported, health officials indicate that infestations have become more common in the United States in recent years.

Control

The first step in any louse control program is positive identification of a current infestation. Knowledge of the biology and habits of these pests is essential. Lice do not jump or fly but can move rather quickly when disturbed.

Check for head lice by parting the hair on the head and looking for nymphs or adults crawling or feeding on the scalp. A magnifying glass and flashlight can aid in this process, and particular attention should be given to the areas behind the ears and on the nape of the neck. Because nymphs and adults may be difficult to find, a head louse infestation is frequently diagnosed on the basis of finding louse eggs attached to the hair.

Similar procedures can be used for identifying crab louse infestations. The pubic and perianal areas should be examined closely for nymphal or adult lice. Because crab lice are rather sluggish in their movement, finding these pests may be slightly easier. A crab louse infestation also can be diagnosed by finding louse eggs attached to the hair in the pubic and perianal areas.

Because body lice spend very little time on the skin surface, diagnosis of an infestation is based on finding living lice or eggs in the individual's clothing. Particular attention should be given to the inside seams of

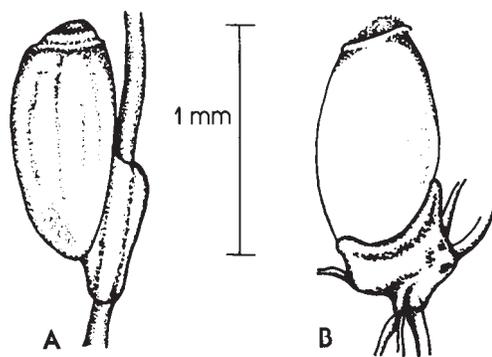


Figure 2.

A. Head louse egg attached to hair.

B. Body louse egg attached to clothing fiber.

C. Crab louse egg attached to hair.

Head Lice

Normal hair combing, grooming, or washing will not eliminate a head louse infestation. Control, however, can be accomplished through the use of an insecticidal shampoo. Nonprescription products currently available for head lice control include Triple-X, Rid, A 200-Pyriinate, and R & C Shampoo. These products contain pyrethrin as their active ingredient and can be purchased at most drugstores. Nix, a cream rinse containing 1% permethrin as its active ingredient, also can be purchased at most drugstores. Kwell, which contains 1% lindane, is a prescription product that can be purchased at most local pharmacies.

There is no evidence to indicate that one shampoo product is superior to others. These materials should only be used to eliminate an existing head louse infestation. They should not be used as a routine or preventive shampoo application. Care should be taken to read and follow label directions to ensure proper use. In addition, treatment of young children, pregnant women, and nursing mothers with Kwell is not advised.

Although all of the products currently available for head lice control profess to be effective in killing louse eggs, this claim has not been completely substantiated. Therefore, a second treatment 7 to 10 days later is recommended. By waiting this length of time, all of the eggs that were not destroyed during the initial treatment will have hatched and the newly emerged lice will be effectively eliminated.

After treatment, many empty egg cases or nonviable eggs will remain attached to the hair. In fact, these eggs will probably become more noticeable as the hair grows out. This may cause concern as to the possibility of reinfestation. These eggs, however, should be of little concern. Female head lice attach their eggs to

garments, or areas of clothing that come in close contact with the body. Control or treatment should start as soon as a louse infection has been identified.

The type of control or treatment program depends on the type of louse causing the infestation.

the base of the hair shaft, very close to the scalp. These eggs will normally hatch in about 7 to 10 days. Because hair grows at the rate of 1/4 to 3/8 inch in 10 days, eggs that are more than this distance from the scalp will have already hatched or will never hatch. Individuals who have followed the recommended treatment program should not suspect reinfestation on the presence of louse eggs found more than 1/4 to 3/8 inch from the scalp. Reinfestation should only be confirmed by finding nymphal or adult lice, or eggs attached close to the scalp.

Although louse eggs found more than 1/4 to 3/8 inch from the scalp are of no significance, they may be unappealing. Unfortunately, there is no material currently available that will dissolve or remove these eggs without causing harm to the hair or scalp. Eggs will eventually disappear with hair growth or removal through haircuts. Eggs also can be manually removed with a tweezers or the use of a fine-toothed metal comb designed for this purpose.

Once an individual has been successfully treated, the major source of head lice will have been eliminated. Because head lice can live 2 to 3 days off of a person, there is the possibility of reinfestation from the home environment. At the same time the individual is undergoing the treatment program it is advisable to launder clothing and bedding articles. Heat is lethal to both lice and eggs and exposure to temperatures of 150°F for 10 minutes or longer will ensure effective control. Clothing or bedding that can not be washed should be drycleaned. Personal articles such as combs or brushes can be disinfected by soaking for 1 hour in a 2% Lysol solution or in hot water (150°F) for 5 to 10 minutes, provided these articles will not be damaged by heat. Storing articles in sealed containers for 30 days also will

ensure that no lice or eggs will survive. Lice or eggs that may be present in rugs, furniture, or floors can be effectively removed by thorough vacuuming. Spraying or fumigating of the home environment is probably of limited value and is not recommended.

Crab Lice

Bathing and frequent changes of underwear will not eliminate a crab louse infestation. Control of crab lice involves the same procedures described for head lice. Products available for head lice control are also effective in eliminating crab lice. Two treatments, spaced 7 to 10 days apart, are recommended. Because crab lice can only live away from a human up to 24 hours, there is less danger of reinfestation from other sources. However, it is still advisable to launder or dryclean clothing and bedding articles as a routine part of the overall control program.

Body Lice

Body lice spend the majority of their time in infested clothing or bedding. Therefore, ordinary levels of cleanliness such as bathing and frequent changes of clothing or bedding will eliminate a body louse infestation. Hot water laundering, drycleaning, or storage of infested clothing or bedding will effectively destroy both lice and eggs. Most products available for head lice control also can be used to control any lice that may be feeding on the body. Treatment of the home environment by using procedures described for head lice also is recommended as part of the overall control program.

Prevention

Knowledge of the biology and behavior of human lice can help prevent an infestation. Avoiding unsanitary crowded conditions; close contact with individuals who are

infested; sharing of personal articles such as combs, brushes, hats, and scarves; and increased attention to personal cleanliness and hygiene can all aid in preventing or minimizing louse infestations. Of particular importance is frequent inspection to determine possible louse infestations. As stated earlier, anyone can temporarily acquire a louse infestation. Knowledge of this fact is essential and can be an important factor in preventing or minimizing potential problems.

To simplify information, trade names of products have been used in this publication. No endorsement is intended, nor is criticism implied of similar products not named.

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