

Head Lice

in Children

Checks and
measures



Shinjuku Public Health Center



Introduction

In recent years, due to improvements in hygiene conditions, such as maintenance of water and sewage systems, the number of diseases borne by sanitary insect pests has been greatly reduced.

With construction and renovation of houses, living environments are seeing increases in population density, and more high-insulation housing. Because of this, cases have been observed of mites (which cause allergic diseases such as asthma and atopic dermatitis), or health hazards caused by chemical substances found in building materials and furniture.

The World Health Organization (WHO) is addressing the global re-emergence of various lice. Head lice are widespread in developed countries, including Japan. They have little to do with poor hygiene and are not involved in the transmission of pathogens. However, head lice are known to cause severe itchiness and emotional stress. And, because children who play near each other often transmit headlice during head contact, in the Japanese School Health and Safety Act, head lice are described as an "infectious disease that should be prevented in schools, etc."

If teachers and guardians at elementary schools, kindergartens, nurseries, etc. understand and share correct knowledge and appropriate measures relating to head lice, the misunderstanding that "head lice are caused by uncleanliness" can be dispelled. In this way, we can ensure that children are not emotionally hurt, and protect them from bullying or discrimination.

Shinjuku Public Health Center



The outdated notion that head lice are caused by uncleanness

Although head lice are often thought to be synonymous with uncleanness, cases of head lice can occur even for people living a very normal lifestyle.

A great number of head lice infestations are caused by head-to-head contact. Some of the causes are playing with heads in contact, group naps, or head lice falling on pillows or futons and then transferring to another's hair. Sharing of hats, hairbrushes, towels, and clothing is another cause contributing to their spread. Head lice may also transfer to the hair of an adult sleeping next to a child.

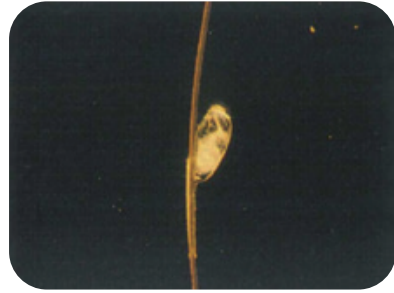
Cases of head lice are more common with children of lower-elementary school age or younger, and are rarely observed in children of higher elementary school age or older, or in adults. One explanation for this is hair-washing. Small children tend to want to wash their own heads, and some dislike washing their hair. Head lice can be reduced by proper hair washing; however, due to incompleteness of hair washing, some head lice may remain and spread. This tendency can be seen particularly in girls with long hair, and the fact that children are less likely to brush their hair or use a hair dryer is also a cause for the increase of lice.

For children under age 10, an adult should occasionally help check for head lice eggs. Parents should understand that head lice infestation can occur from travelling abroad, or from playing with neighboring children, and that in developed countries head lice can spread irrespective to cleanliness.





Head louse adult



Head lice egg

Symptoms due to head lice infestation

When hematophagous insects such as mosquitos, fleas and lice suck blood, they inject saliva from their salivary glands into the human's skin. In the human body, antibodies (IgE) are created against proteins present in this saliva.

In the case of head lice, itchiness does not immediately occur. When blood-sucking and laying eggs is repeated, and the number of head lice increase, the human immune system produces an antibody against proteins, and itchiness occurs after approximately one month.

Head lice do not attach to animals other than humans, and do not separate from a human body on their own. Both their egg and adult phases are spent in human hair.

Head lice generally suck blood several times a day, and will starve after about two days if they are not able to suck blood.

Head lice often infest the temporal and occipital regions of the head. Due to repeated blood-sucking, strong itching sensations are often experienced in these regions. Caution is required for infants and preschoolers with head lice, as excessive scratching could lead to contagious impetigo, which is caused by a bacterial infection.

Checking for head lice

When children find their heads to be itchy despite frequent hair-washing, head lice can be suspected. Head lice larvae and adults move between hair strands in a swimming-like motion, and can move as fast as 40 cm per minute. Also, in Japan there are many cases where the number of lice present on the head is 10 or less. Discovering head lice is therefore difficult, and careful observation of a child's hair and scalp is required. A magnifying glass should be used if needed.

Besides complaints of itchiness, head lice infestation should also be suspected when discovering glossy, greyish-white eggs attached to hairs in diagonal angles.

Time of infection can be approximated by measuring the distance from the scalp to the where the egg is attached, and dividing this measured length by 0.5 mm (the approximate length a hair grows in one day). As for the developmental period of head lice, the egg stage is about 7 days. Once entering the larval stage, about 10 days are required to reach adulthood. Adults have a life span of around one month, and lay 50~150 eggs during this period. Their size is 2 mm for males, and 3 mm for females.



Hair cast ("false egg")



Head lice eggs



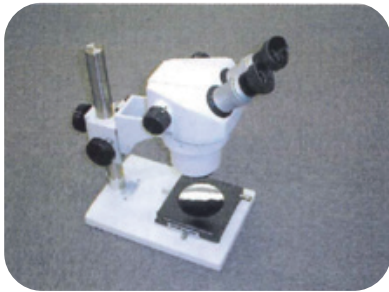
Judgment regarding head lice eggs

Head lice eggs are oval-shaped and 0.5 mm by 0.3 mm in size. They are greyish-white and are attached to hair through a cement-like substance. After the larvae hatch, eggs generally remain on hair strands as empty shells. These are difficult to remove even when using fingernails.

On the other hand, hair casts, unlike dandruff, have a shaft-like structure that surround the hairs. Hair casts can be gently held between thumb and finger and moved along a hair strand. However, because there are occasional eggs that are also moveable, it is risky to make judgments based on this alone.

At Shinjuku City if you are uncertain of your discernment regarding head lice, please stick what you think to be an egg attached to a strand of hair to a paper sheet using cellophane tape (see photo below). Please use a type of paper where tape is easily removed. We will check whether the specimen is a head lice egg.

Regarding the inspection method, a stereo microscope is used to discern between eggs and hair casts.



Judgment using a stereo microscope



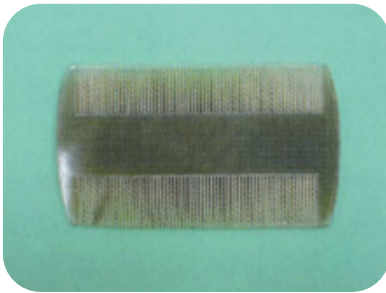
Attach the hair to be investigated on mounting paper using cellophane tape



Lending of special combs for head lice

At Shinjuku City we rent special combs to those who have head lice.

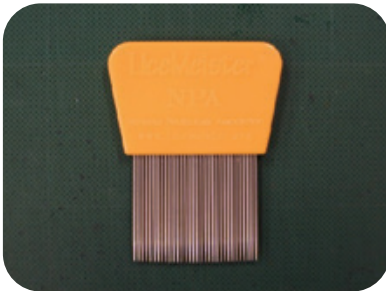
This comb is a product recommended by the American Pediculosis Association, and using it allows one to remove head lice without using lice insecticide. The reasoning behind this method for removing head lice (eggs, eggshells, larvae and adults) is that chemicals are not very effective against eggs, and also because the eggshells remain attached to hairs after hatching.



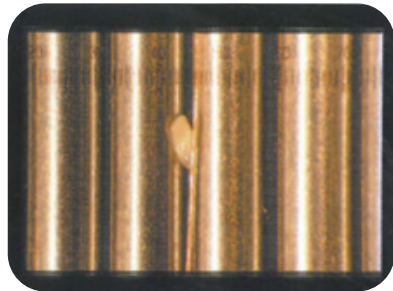
Amazon comb



Japanese comb



American Pediculosis Association
comb (for lending)



Removal of eggs using
a special comb

Combs have existed throughout the world for a long time. Check the status of egg-removal by carefully combing the child's hair, and then wash their hair with care using shampoo.

Prevention of head lice

Head lice attach to hair without being unnoticed and spread within a population, but are not involved in infectious diseases. On the other hand, body lice carry important diseases such as epidemic typhus and relapsing fever, but cases are rarely seen in Japan.

What you can do at home

Even if a child can wash their own hair, for children of lower-elementary school age or younger, at home, have an adult occasionally wash the child's head while checking for lice. Also, teach your children how to brush their hair and use a hair dryer. Also, be sure to check for lice after travelling abroad. In general, head lice can be treated at home.

Spreading basic knowledge in elementary schools, kindergartens and nurseries

Children with head lice may be subject to bullying. In developed countries, head lice are transmitted in normal life, and not by unsanitary conditions. They spread very commonly, but today there are fewer people belonging to older generations who are familiar with head lice, and this is presumably why response is often delayed. It is important for elementary schools, kindergartens, and nurseries to spread basic knowledge to parents and children in order to prevent the spread of head lice.

For cases of head lice at elementary schools, kindergartens and nurseries, Shinjuku Public Health Center provides comb-lending services, workshops, and individual consultations.

Head lice countermeasures

There is a worldwide movement to restrict the use of pesticides for sanitary insect pest control; lice developing resistance to lice insecticides has also been observed. Thus, lice countermeasures that do not rely on pesticides are starting to be considered.

Removal with chemicals

Powders or shampoos containing 0.4% of low-toxicity phenothrin are sold commercially as head lice countermeasures. However, they are not effective against eggs, and so must be used about three times a day, every 2~3 days when the eggs hatch. When using powder, sprinkle approximately 7 grams to on hair during one instance of use. By hand or comb, ensure that the powder covers the regions where lice are present. Leave for around 1 hour after sprinkling, and then rinse off with water, soap, etc.

When using a shampoo, after wetting the hair, use about 10~20 ml of shampoo and ensure it is evenly distributed. Leave for 5 minutes and then rinse thoroughly. When using chemical treatment, be careful that chemicals do not enter your or your child's mouth or eye. In addition, please follow usage and dosage instructions for commercially available pesticides, and discontinue use if no effect is observed.

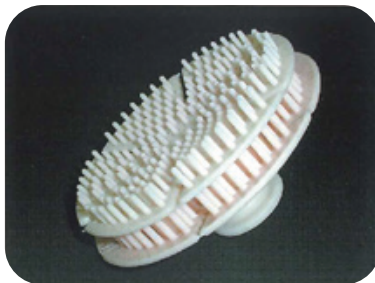
Removal method using a special comb for head lice

Taking into consideration that head lice infestation is mainly seen in infants and preschool children, Shinjuku Public Health Center proposes a removal method using a comb, for city citizens who would like to remove head lice – adults, larvae and eggs – without relying on chemicals.

[Removal procedure]

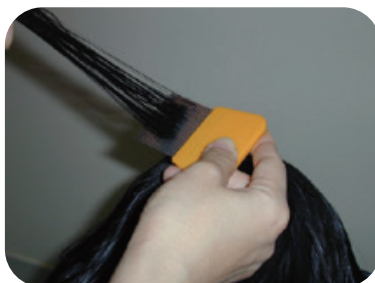
1. Use shampoo and wash hair with care. Depending on skin condition, use a hypoallergenic shampoo that is gentle on the skin.
2. Apply hair conditioner, etc., to the hair and lightly **rinse**, to improve combability.

3. Use a **shampoo brush** to brush the hair, covering the entirety of the head and gradually getting rid of tangles. Next, comb with care using the special comb, starting from the hair roots. During this step, look carefully for lice eggs, especially across the temporal and occipital regions.



Shampoo brush

4. When discovering an egg, press the comb against the scalp and draw the comb completely through the hair to the tips, in order to remove head lice adults, larvae, eggs and eggshells. In this way, one can remove head lice adults, larvae and eggs. There may sometimes be slight pain accompanying the removal of eggs, but please be sure to draw the comb all the way



Comb thoroughly while conversing with the child

through to the hair ends. The trick is to comb a bundle of hair around **2~3 cm** in width, as shown in the photo on the right.

5. To remove head lice and their eggs from the comb, rinse the comb after each stroke in running water, or in water prepared in a cup containing a small amount of hair conditioner. After each stroke, hold the comb to the light to ensure it is completely clean. A guideline for one hair-combing session is to spend about 20 minutes on the entire head, which is admittedly a cumbersome process, **combing the hair evenly**.
6. Immediately flush the lice down the drain, as they have very little ability to move in water.
7. Continue the above steps for 3 days. Even after removal is complete, please regularly monitor the child's hair and scalp
8. Use separate brushes, towels, etc., in the family. Items such as pillow covers and sheets that come into direct contact with the hair must be changed daily for a week, because of the high possibility that head lice are attached to them.
9. Keep the comb out of children's reach to prevent accidental use.

Disinfection of bedding, underwear, clothes, etc.

100% of head lice adults and eggs will die when immersed in hot water of 60°C for 5 minutes. Place the sheets, pillowcases, underwear, etc., you want to disinfect in hot water, and maintaining the water temperature at 60 °C for 5 minutes. Once the water temperature reaches a safe temperature to touch, drain water and conduct laundry, etc.

Measures at elementary schools, kindergartens, nurseries, etc.

If the occurrence of head lice is observed in children, there is a possibility the head lice are quite widespread. In these cases, there is a high possibility that while trying to remove head lice from one child, the head lice have already spread to other children. It is therefore important for elementary schools, kindergartens, nurseries, etc., to conduct head-lice removal all at once, based on an investigation of the situation.

When providing instructions on head lice removal at schools, etc., please be mindful that children with lice may be targeted for bullying. Thus, great care should be exercised when examinations are conducted, or when teachers give explanations to children. For example, avoid conducting more detailed, or longer, examinations for only certain children. Also, avoid using expressions that suggest a certain child could be the source. Also, please use communication networks to ensure guardians and parents share the same understanding.



"Head Lice in Children – Checks and measures"

Issue date: June 2000

Revision date: December 2019

Edited and issued by: Sanitation Division, Shinjuku Public Health Center
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Photos courtesy of: Department of Medical Entomology, National Institute of Infectious Diseases

Printed document creation number:

2019-22-3221

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