

# Head Lice

Head lice (*Pediculus capitis*) are small, wingless, egg laying insects found on the human head. They grow to about 3.5mm (the size of a sesame seed or pin head). Head lice live on the hair and feed by sucking blood from the scalp. They are pale grey in colour before feeding and reddish brown after feeding.

Live eggs (sometimes called nits) are glued to the hair shaft within a distance of 1.5 cm from the scalp. They hatch in 7-10 days as young lice (nymphs). It takes up to ten days for the nymphs to become mature lice and begin laying eggs. Adults are larger than nymphs and a mature female lays up to eight eggs per day.

## Signs and Symptoms:

Detection of adult lice or nymphs on the scalp is the best way to determine if head lice are present. While most people with head lice will not develop an itch, a small number of people develop an itch due to an allergic reaction to the saliva of the louse. Scratching can give rise to secondary bacterial infections on the scalp. Swelling of lymph nodes (adenopathy) in the neck can occur in some people due to this infection.

The presence of eggs is not a reliable sign of active head lice. Eggs need the warmth and moisture of the scalp to hatch. Eggs that are further than 1.5cm from the scalp are dead or hatched and do not need to be treated. Dead and hatched eggs can remain in the hair for several weeks.

## Treatment:

Treatment should only be applied when live lice are found on the head. To break the cycle, all infested people should be treated at the same time.

There are two methods of treatment:

### 1. Non-insecticidal treatment using the conditioner and combing technique

This is the same as detection using conditioner and combing (see above) except continue combing with the head lice comb until all the conditioner is gone. The conditioner blocks the louse's breathing pores and stuns the louse. This, together with the slippery effect of the conditioner, makes it easy to mechanically remove the lice.

Repeat the conditioner and combing method every second day to remove the young nymphs as they hatch. Continue until no live lice are found for ten consecutive days.

This treatment method is equally as effective as insecticidal or other chemical treatments but generally requires longer treatment times. However, it may be preferred as a cheaper alternative to insecticidal or other chemical treatments.

### 2. Treatment with synthetic or natural insecticides or other chemicals

There are four groups of treatment agents available in different forms (ie. shampoo, mousse, and lotion) which can be obtained from chemists without prescription. All preparations must be applied strictly according to the manufacturer's instructions. None of them should be used on children under two years of age, except on medical advice.

No chemical treatment kills all the eggs. A second treatment should be applied 7-10 days after the initial treatment to kill the nymphs that have hatched from the eggs remaining from the first treatment. Do not apply the treatment more than once per week as more frequent applications could lead to scalp problems and have little or no effect.

If lice are still found after three weeks of chemical applications, switch to the non-insecticidal method until no lice are found. Eggs are the most difficult stage to kill. The most effective way to remove eggs is to actually pull them off the hair using your fingernails.

## Chemical Head Lice Products

The following types of active ingredients were approved in Australia by the Therapeutic Goods Administration (2003) for use against head lice:

- Pyrethrins, eg. Amcal Head Lice Foam, Lyban Foam
- Synthetic Pyrethroids (bioallethrin, permethrin), eg. Parallice, Quellada Head Lice Treatment
- Organophosphates, eg. Exolice Medicated Foam, Lice Rid
- Combinations of Herbal and Essential Oils, eg. Quit Nits Natural Head Lice Treatment, Herba Lice.

## Treatment Outcomes

Checking whether the treatment product is effective

It is essential to check the effectiveness of every treatment after a product has been on the hair for the recommended amount of time and before washing it out:

- Comb the hair with a fine tooth head lice comb, wiping the comb onto a white tissue after each sweep.

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- Repeat until whole head is combed and little treatment formulation is visible on the hair.
- After five minutes examine the tissues and assess the lice as dead (no movement), inactive (louse is stationary but moving legs or antennae) or active (louse moving).
- If the product is effective, all lice should be dead.

What to do if the product of choice does not work

If the product is not effective, ie. head lice are not dead at the end of exposure time, you can switch to the non-chemical method while waiting 7-10 days before re-treating with a different active ingredient. Continue checking the effectiveness of treatment products until an effective product is found, or use the non-chemical method.

Why treatment agents may not work

True treatment failure has occurred when live head lice are detected immediately after the end of exposure time to a treatment agent. Failures can sometimes occur even when solutions are used according to the manufacturer's instructions. This may be the result of using an ineffective treatment formulation or the lice having become resistant to a particular treatment agent. It is then preferable to change to a different formulation or another treatment agent with a different active ingredient, or use the conditioner and combing method.

The reappearance of head lice in a short time after a successful treatment (ie. all lice were dead after the exposure time) does not indicate treatment failure. It could be due to head lice hatching from eggs which survived the initial treatment or re-infestation from another source. Ensure that you maintain a weekly detection routine and apply follow-up treatments as specified in the treatment section.

### Transmission:

Head lice do not jump or fly. They are spread mainly by direct head to head contact. They have strong claws and move by swinging from hair to hair. This can happen when people play, cuddle or work closely together.

A few head lice have been found on combs, hairbrushes and pillowcases. However, transmission from these objects can only occur when the item is used within the 24 hour period following use by an infested person. This is because head lice can survive only up to a day away from the human host. Head lice must feed on human blood every six hours to replenish their water supply or they will die from dehydration. The longer they are away from a human host, the weaker they become and the less likely they are to infest the next person.

Head lice do not live or breed on animals, bedding, furniture, carpets, clothes or soft toys. Their life cycle must be completed on the human head.

Head lice are a very common problem in schools and institutions everywhere in the world. While they are not a threat to health and do not transmit disease, they do cause a lot of distress and anxiety for families and schools. Anyone can get head lice. They affect all socioeconomic groups and are not a sign of poor hygiene. They have no preference for ethnic background, hair colour, hair type or age.

Detection of head lice

All parents should check their children and other family members for head lice regularly as early detection decreases treatment time and helps break the breeding cycle.

The most effective way to detect head lice is by using the hair conditioner and combing method. You will need white coloured hair conditioner, an ordinary comb, a fine tooth head lice comb and white tissue/kitchen towel.

- Apply sufficient white conditioner to dry hair to completely cover the scalp and hair from roots to tips.
- Use an ordinary comb to detangle hair and evenly distribute the conditioner. Divide the hair into four sections.
- Comb hair from root to tips using a fine tooth head lice comb.
- After each stroke, wipe the comb onto a white tissue, checking the comb and tissue for head lice.
- Comb the whole head, checking for lice.
- Put all tissues in a plastic bag, tie the top and put the bag in a rubbish bin.

All members of the family/household should be checked once per week using this method as long as infestation remains within the household.

### Prevention:

While there is no need to vacuum, wash or treat with insecticide any furniture, clothing, bedding (except pillowcases), toys, carpets or hats, the following actions can be taken to help prevent infestation/re-infestation:

- Avoid head to head contact with other persons.
- Keep long hair tied back or in plaits, especially at school.
- Do not share brushes, combs, or pillows.
- Wash combs and hair brushes after each use (60oC for 30 seconds).
- Pillow cases of persons known to be infested should be washed daily on hot cycle or put in the clothes dryer for 15 minutes.
- Treat all household members whose head lice have been detected.
- Keep hair short, particularly during an outbreak. It is easier to detect and treat head lice in short hair.

- Notify your school so that others can be alerted to the problem and can check for head lice and arrange treatment if necessary.

**Help and assistance:**

For more information and assistance in managing head lice, families can contact their local public health nurses, child health clinics, pharmacists and family doctors.