

GUIDELINES FOR THE MANAGEMENT OF HEAD LICE (PEDICULOSIS)

BACKGROUND

Clinical Presentation

- Identification of live louse.
- Identification of nits on the hair shaft.
- Itching, scratching caused by an allergic reaction to the bites.
- Allergic reaction begins 1-2 weeks after infestation (1-5 lice). This is a reaction to the anti-coagulant products that the louse injects locally as it takes its blood meal. Others may be asymptomatic.
- In long standing cases a roseo-like exanthema on the body may accompany lice infestation.
- May be excoriation and crusting with secondary bacterial infection and regional lymphadenopathy.
- Tickling feeling of something moving in the hair.

Agent

Head lice are insects from the arthropod family and are of the order of the Anoplura. The adult lice are obligate blood sucking ectoparasites that require warmth and a source of human blood to survive. Although infestation generally occurs close to the scalp, behind the ears and the back of the neck, it has been reported to occur anywhere on the scalp.

Reservoir

Humans.

Occurrence/Susceptibility

Worldwide. Head lice are more common in children and the literature indicates the prevalence is higher in females. Caucasians are more frequently infested than other ethnic groups irrespective of social economic class. Any person may become louse infected under suitable conditions of exposure.

Transmission

- Head lice have no wings and do not fly or jump, but they can move quickly through hair.
- Primary mode of transmission is direct head contact with an infested person.
- Infestations are more commonly spread within families than within schools because of close personal contact and shared brushes and combs.

- Secondary mode of transmission is indirect through sharing:
 - Personal items such as combs, brushes, other hair-care items, towels, and pillowcases;
 - Clothing, headgear (hats, scarves, football and batting helmets, head phones, etc.), ribbons and other head coverings.
- Shared school lockers and unassigned wall hooks for coats have been associated with higher rates of infestation than individual lockers. Even if schools have individual lockers, remember that there may be other times during the day when children's clothing comes together (e.g. school gym or arena change rooms, coats thrown in a pile after recess).
- Although lice can crawl relatively quickly, they rarely travel far from a preferred habitat, such as the warmth of the scalp.

Life Cycle

- The entire head lice life cycle, including feeding and reproduction, occurs on the human host. They do not live on pets, and most head lice will die of starvation or desiccation within two days of falling off of their host. Similarly, head lice eggs (called nits) almost never hatch if they fall off of their host, as the warmth and humidity of the scalp are needed for successful hatching.
- The life cycle of the head louse has three stages: nit, nymph, and adult.
- The life cycle of a single louse from egg to egg is about 1 month.
- Most suitable temperature for incubation 32°C.
- Most suitable humidity 70%.
- Eggs do not hatch at <20° C or >38° C.

Nits:

- Head lice eggs are called nits.
- Nits are laid by the adult female louse and are attached to the base of the hair shaft by strong cement; difficult to dislodge.
- Deposited 1-4 mm from the scalp – require body heat for incubation.
- Size 0.3 mm -0.8 mm, look like grains of sand.
- Shape oval, teardrop or flask shaped.
- Color greyish-white, pearly or silvery white and even yellow-white; transparent, glistening or opalescent in nature.
- Take 6-10 days to hatch.
- After hatching, empty white to dull yellow and almost clear-colored nit casing or shells are left behind. They remain tightly adhered to hair shaft.
- Human hair grows slowly at an average rate of approximately 0.37 mm/ day. Nits found several millimetres from the scalp are now empty egg cases. Duration of infestation can be estimated by the distance of nits from the scalp.
- May persist on hair for months, even after successful treatment, if not removed.

Nymphs:

- When an egg hatches, it releases a nymph.
- The nit shell stays attached to the hair and turns a dull yellow color.
- The nymph looks like an adult louse but is smaller.

- As the nymph grows, it molts out of its exoskeleton 3 times before it becomes an adult (able to reproduce).
- Size variable but about the size of a pinhead.
- Shape same as the adult louse.
- Color yellow to rust-colored.
- Location close to the scalp, especially behind the ears and at the neckline.
- Nymphs become adults after about 7 days.

Adult:

- Wingless; oval elongated body with 3 segments (head, thorax and abdomen).
- Small head with anterior piercing mouthparts that are used to pierce the scalp and feed on blood.
- 6 short and stubby legs with powerful hook-like claws at the end of each leg – used to grasp the hair shaft.
- Dorsoventrally flattened.
- Size 2-4 mm in length; approximate size of a match head or sesame seed (females usually larger than males).
- Color – have been documented as grey, tan, brown, red or black.
- Darker in color in dark hair; tend to reflect the colour of their surroundings.
- The adult louse feeds about 5 times a day by injecting a local anaesthetic through its saliva into the scalp to prevent the host from feeling any pain and an anticoagulant to prevent the blood from clotting, thus making it easier to feed.
- Lice do not become engorged like ticks but their color changes to a rust color after feeding.
- Adult lice are active, move rapidly and are difficult to spot.
- Lice are not able to burrow into the scalp.
- Usually found close to the scalp (to maintain its body temperature) close to the scalp, especially behind the ears and at the neckline.
- Do not leave head until nearly fully grown.
- Mating only occurs once fully grown.
- Adult female lays 3-10 eggs per day.
- Adult female may deposit 100-300 nits in her lifetime.
- Louse dies 33-35 days after being laid.

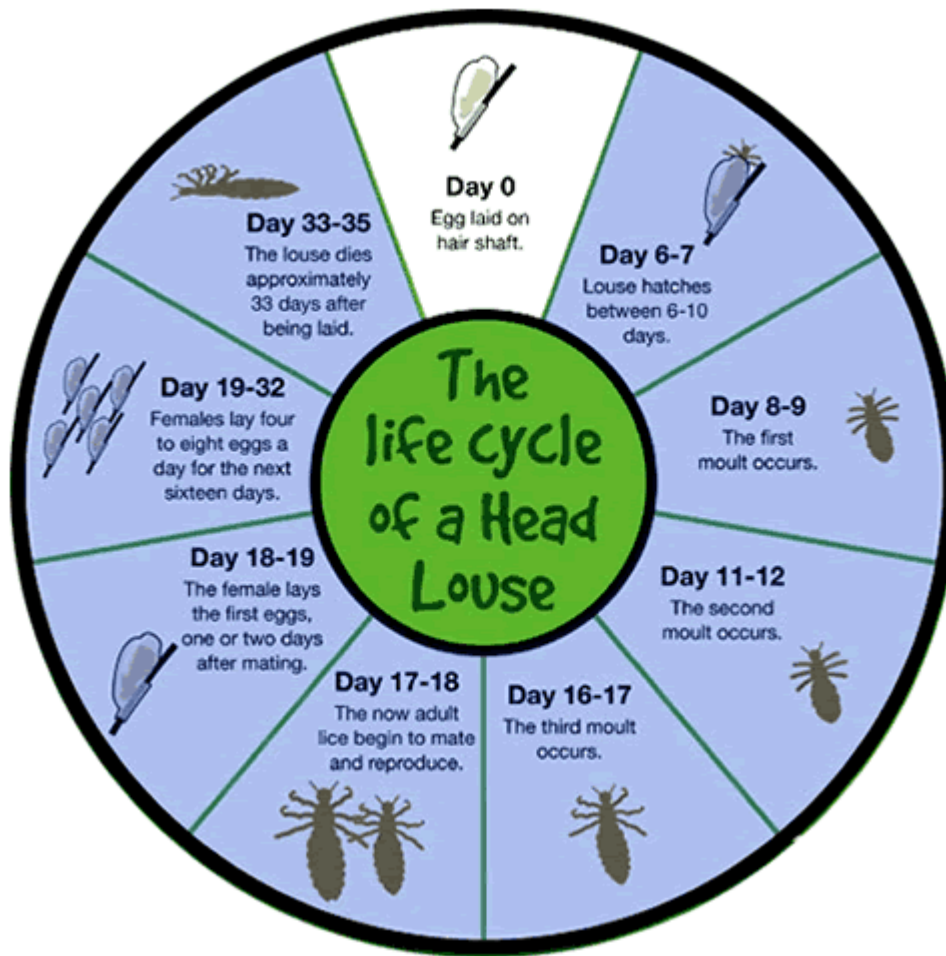


Image source: <http://www.pharmacydirect.co.nz/moov-headlice-information.html>

Period of Communicability

- As long as lice or viable eggs remain alive on the infested head.
- Nits will not hatch off the head as they are extremely temperature and humidity sensitive.
- Lice that fall off the head and are without a blood meal have been noted to die within 20-48 hours.
- Lice are capable of surviving 24 hours immersed in water.

PROCEDURES

1. Detecting Head Lice

Equipment required:

- Bright light
- Regular comb
- Lice comb

- Hair conditioner (white is best)
- Paper tissues
- Plastic bag for garbage
- A magnifying lens may be helpful.

Steps to detect head lice:

1. Apply ample conditioner to dry hair, enough to soak from the scalp to the end of the strands.
2. Remove tangles with a regular comb.
3. Start behind the ears and comb the hair section by section. Separating the hair with hair clips is helpful.
4. Place the lice comb against the scalp and pull to the end of the hair.
5. Check the comb for lice after each pull.
6. Wipe the comb with a tissue each time and look for lice.
7. Place the tissue in a plastic bag.
8. Check all the hair over the entire head.
9. Repeat combing for every part of the head at least five times.
10. Once finished, tie the bag with the soiled tissues and place in the garbage.
11. If lice are detected and treatment is required, make sure that all conditioner is washed from the hair prior to treatment.

2. Decision to Treat

The definitive diagnosis of head lice infestation is made by finding a live louse on the scalp or hair. Head lice have no wings and do not fly or jump but they can move quickly through hair. Because lice are fast, avoid light, and often blend in with the skin or hair, making them difficult to see, finding viable nits is often the most effective way of diagnosing an infestation.

Adult head lice are usually brownish in color, and the nymph stage is usually transparent to reddish brown. Adult lice are 2-4 mm in length, approximately the size of a match head or sesame seed. Nymphs are the size of a pinhead.

Nits are 0.3 mm-0.8 mm in length and look like grains of sand. They are laid 1-4 mm from the scalp, requiring body heat for incubation. They are attached to the base of the hair shaft by strong cement and are difficult to dislodge.

Nits are most predictably found on hairs at the nape of the neck and behind the ears, where they are protected from extremes of light and temperature. However, they may be laid anywhere on the hair, especially in warm weather, and the entire head should be examined. Clustering of nits, in the nape, behind the ears, or at the crown, may indicate recent infestation.

Newly-laid, viable nits are plump and shiny and have a tan or coffee color. When placed on a white Kleenex and squashed with a flat hard edge (e.g. tongue depressor or end of a never-sharpened pencil), they tend to yield a popping sound and may leave liquid residue on the Kleenex. Eggs that have hatched are clear, white, or light in color and may appear shrunken

or indented. Using a 10x hand-held magnifier helps to distinguish viable from non-viable nits. (Because the light-colored non-viable nits are often more noticeable than “camouflaged” viable nits, it is not uncommon to find more nits a day or two after treatment than were found before.)

It is reported that most nits more than 7 mm from the scalp, down the hair shaft, are likely empty eggs.

Nits are often confused with:

- Flakes of dandruff or dried particles of hair products;
- Hair casts, which are remnants of the inner root sheath, and often occur in great numbers. They are thin, elongated, cylinder-shaped, and encircle the hair shaft;
- Hair muffs, which consist of dried skin cells (desquamated epithelial cells) and oil from the hair follicle that surround the hair shaft, creating the illusion of a nit. They are especially common in individuals who have been treated many times with pediculicides, which may dry the scalp and clog the sebaceous glands;
- "Integuments" left behind as the nymph grows, molting out of its exoskeleton 3 times before becoming an adult.

Whereas the “pseudo-nits” can be easily combed off the hair or removed with the fingers, nits cannot. Nits are firmly glued to the hair and must be removed with a fine-toothed comb or fingernails, or snipped off with scissors.

3. Chemical Treatment

Read directions on pediculicide product carefully.

Two treatments, seven to ten days apart, with a known effective product are required.

Lice eggs are relatively insensitive to pediculicides and lice themselves may prove resistant to treatment. As a result, some developing louse larvae may survive the initial application. A second treatment with pyrethrins or permethrin should therefore be applied 7-10 days after the first treatment.

Before treatment with pediculicide product: wash hair thoroughly with a plain shampoo that has no additives/conditioner (e.g. baby shampoo) or with dish detergent. Additives may coat the hair shaft and prevent the pediculicide from being effective.

Treatment of Head Lice:

- Lice infestations are considered most effectively managed by chemical treatment with an insecticide (pediculicide), which acts on the central nervous system of the louse. Although very safe when used as directed, these chemicals are potentially toxic for humans.

- All treatments should be applied to the scalp as per product instructions. No product should be applied to open or locally infected skin. Apply evenly and down to scalp.
- All treatments should be applied at 0 and 7-10 days after diagnosis to ensure all nits are killed, as no treatment is 100% effective the first time.
- Persons with special medical problems such as skin diseases or a convulsive disorder should discuss treatment with their physician.
- Pregnant and breastfeeding women should wear waterproof (rubber, latex, vinyl, etc.) gloves when providing treatment.
- Extra amounts of any lice medication should not be used. The chemicals used to treat lice are insecticides and can be dangerous if misused or overused.
- Different pediculicides should not be used at the same time.
- Following treatment, hair products should not be used for at least 48 hours.
- The infested person's head should be checked regularly for two weeks following head lice control product treatment to ensure that active lice and potentially viable nits are removed.
- Note that even successfully treated lice may live up to 24 hours after the treatment was conducted. If after repeating the treatment the infestation persists (still seeing live lice, or freshly laid nits within 1/4 inch of the scalp), the person should consult with their health care provider. An infested person should not be treated more than 2-3 times with the same medication.

The following insecticides are recommended for the treatment of head lice:

- A. Pyrethrin products – R+C (Shampoo)®, Pronto®, Licetrol®, Lice-Enz® Mousse, Life Brand (Shampoo)®
- B. 1% Permethrin products – NIX® (Creme Rinse) and Kwellada-P®

A. Pyrethrin products

R+C (Shampoo)®, Pronto®, Licetrol®, Lice-Enz® Mousse, Life Brand

(Shampoo)®: The active ingredients in these products are naturally-occurring pyrethrins, found in chrysanthemums.

Contraindications: R+C® is safe to use in pregnant and breastfeeding women and children under two years of age. The safety and efficacy of the other products in these same populations has not been determined. Pyrethrin products are contraindicated in persons with known allergy to ragweed, chrysanthemums and other pyrethrin products.

Adverse Reactions: Side effects are rare, and mainly mild. Pyrethrins irritate mucous membranes and may cause allergic dermatitis. There have been reports of corneal damage, and more rarely, anaphylaxis.

Pregnant and lactating women and children under two: R+C® can be used to treat pregnant and lactating women and children under two years. The individual should discuss the treatment choice with his/her physician, pharmacist, or public health nurse.

Directions for use of pyrethrins:

- Use on dry hair.
- Apply 25 ml and leave in for 10 minutes.
- Repeat in 7-10 days.

Note: R+C® is available in both 50 ml and 200 ml formats and has the nit comb enclosed.

B. 1% Permethrin products

NIX®

NIX® contains 1% permethrin (a synthetic pyrethroid) and 20% isopropanol with several stabilizers, fragrance and a dye. The active ingredient is permethrin, which is more stable to light than the natural pyrethrins (derived from chrysanthemums). Permethrin works by paralyzing and killing lice in the same manner as pyrethrins. Less than 2% of the dose is absorbed, and this is rapidly inactivated. Claims of continuing residual activity for two weeks post-treatment are controversial. The safety profile of permethrin is favourable, with low risk for mammalian toxicity.

Contraindications: Persons who are sensitive to chrysanthemums, ragweed, or who have reacted to NIX® or other permethrin-containing products in the past. NIX® is not licensed for use in infants or pregnant women and should only be used in these persons where the benefits outweigh the risks. It is not known whether NIX® is excreted in breast milk; women who are breastfeeding should consult their physician before using NIX®.

Adverse Reactions: Adverse reactions are infrequent and limited to itching or other transient scalp discomfort in about 1% of users.

Directions for use of NIX®:

- Use on conditioner-free shampooed hair, towel dried.
- Apply 30-60 cc and leave in for 10 minutes.
- Do not use conditioner for 7 days after treatment as it may deactivate NIX.

Kwellada-P®-Crème Rinse

Kwellada-P®-Crème Rinse is a synthetic pyrethroid with a broad spectrum of insecticidal activity combined with high potency when applied to insects, including head lice.

Directions for use of Kwellada-P®:

- Use on wet, shampooed hair.
- Apply 25- 50 ml and leave in for 10 minutes.
- Available in 50 and 200 ml bottles, comes with plastic nit comb.

4. Non-recommended Treatment

Numerous other methods have been proposed to eradicate lice. The effectiveness of these treatments has not been extensively studied.

Resultz®

Resultz® is a hair rinse containing isopropyl myristate 50% and ST-cyclomethicone 50%.

It acts by dissolving the wax that covers the exoskeleton of the head louse, resulting in dehydration and subsequent death. Review of the results of clinical trials show that this product looks promising, but the evidence of efficacy is not strong enough to recommend it, except in special circumstances (e.g. over-treatment with head lice products, possible resistance to pediculicides, etc.).

Note: this product is flammable.

Directions for use of Resultz®:

- Indicated for treatment in clients 4 years of age and older.
- Should be applied to dry hair.
- Left on for 10 minutes and rinsed with warm water.
- Should be reapplied after 7 days.

Oral ivermectin

Ivermectin is used to treat parasitic infections and is approved in Canada for treating the worm infections strongyloides and onchocerciasis. Oral ivermectin has occasionally been tried off-label to treat head lice and scabies where topical therapy is impractical or has failed. This use has not been extensively studied and is not routinely recommended.

Home remedies

Many home remedies have been used to smother head lice. These include mayonnaise (full fat) and olive oil, and should be left on the scalp for at least two hours. This process can be messy. These methods only kill active lice and have no effect on nits.

Natural oils

There are several products available that are based on natural oils, e.g. tea tree oil. The safety of using these products on infants is unknown and efficacy and toxicity data are not available.

Oral antibiotics

Evidence to date suggests that no antibiotic given to a human host can cure head lice, nor is any antibiotic approved for the treatment of head lice in Canada.

5. Nit Removal

Thorough removal of nits after treatment is recommended as it makes it easier to see any new infestations. It also helps avoid unnecessary treatments due to false identification of a re-infestation (i.e. old, dead nits) by an untrained eye.

Most nits more than 7 mm from the scalp, down the hair shaft, are likely empty eggs.

Vinegar and water (one-to-one mixture) is commonly used to help remove nits. Hair is soaked with the mixture for 30-60 minutes (a damp towel soaked in the same mixture may be used to contain the solution). Rinse the hair following removal of nits.

General instructions for nit removal

1. Select a comfortable area with strong overhead lighting to facilitate inspecting the hair for nits. A television show or videotape may help the child sit quietly while the inspection takes place.
2. Use a head louse removal comb (metal may be better than plastic) for nit removal. Finger nails may also be used to remove nits from the hair shaft.
3. Lift a one-inch wide tuft of wet hair and place the louse comb as close to the scalp as possible. Comb slowly away from the scalp to the end of the hair tuft. Wipe the comb with a tissue to remove accumulated nits.
4. Hair clips may be used to pin back the sections of hair you have completed and keep them separate from uninspected hair. Continue the systematic inspection until all hair has been checked (nits are especially common behind the ears and near the nape of the neck).

Note: Any live lice found during the inspection should also be removed with the comb or fingernails.

Steel nit comb:

- May be more effective with nit removal than a plastic comb;
- Public Health Nurses recommend Nit Free Terminator comb and Lice Meister comb (available to the general public only by ordering on-line).

6. Environmental Cleaning

Head lice do not survive long if they fall off a person and cannot feed. There is no need to spend a lot of time or money on housecleaning activities. The following steps help avoid re-infestation by lice that have recently fallen off the hair or crawled onto clothing or furniture.

- Machine wash and dry clothing, bed linens, and other items that the infested person wore or used during the 2 days before treatment using the hot water (130°F or 55°C) laundry cycle and the high heat drying cycle. Clothing or bedding that are not washable can be dry-cleaned or sealed in a plastic bag and stored for 2 weeks at room temperature (this ensures that both live lice and any hatching nits will die). While

people often place bagged items outside in below freezing temperatures to kill the lice, it is not known how long it takes to freeze head lice.

- Clean combs, brushes, and similar items by:
 - soaking in the medicated shampoo for 10 minutes, or
 - soaking in a 2% Lysol® solution for one hour, or
 - heating in hot water (at least 130°F or 55°C) for 10 minutes.
- Vacuum the floor, furniture, and car seats particularly where the infested person sat or lay. However, the risk of getting infested by a louse that has fallen onto a rug or 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 human scalp. Spending much time and money on housecleaning activities is not necessary to avoid re-infestation by lice or nits that may have fallen off the head or crawled onto furniture or clothing.
- Fumigant sprays should not be used; they can be toxic if inhaled or absorbed through the skin.

7. Head Lice Resistance

It is important, although often difficult, to distinguish between treatment failure, true resistance and re-infection. Although overuse and misuse have produced treatment-resistant lice, many cases of “re-infection” are due to one of the following:

- imagined lice;
- inadequate or inappropriate treatment;
- misdiagnosis, for example itch or nits still present after successful eradication of living lice;
- the finding of young lice that have not been killed whilst in the egg after the first and before the second application of lotion.

True re-infection is usually from a close contact in the community rather than specifically from a school contact.

If true treatment failure is suspected, retreat with a different product immediately and again in 7-10 days. Retreat all contacts simultaneously. The literature supports using a product from a different class of pediculicides.

8. Attendance at School/Day Care

Head lice infestations have generally been present for several weeks before they are noticed. As children found to have head lice at school or day care have likely attended for days or weeks before detection, there is no benefit in sending them home early; they may go home at the end of the day. Immediate exclusion and/or isolation is not necessary.

Children may return to school or day care after treatment with an effective product. Exclusion for 24 hours after treatment is not required.

There is general consensus that "no-nit" policies (requiring a child to be free of nits before returning to school or day care) are unnecessary for the following reasons:

- Many nits are more than 7mm from the scalp. Such nits are usually not viable and very unlikely to hatch to become crawling lice or may in fact be empty shells;
- Nits are cemented to hair shafts and are very unlikely to be transferred successfully to other people;
- The burden of unnecessary absenteeism to the students, families and communities far outweighs the risks associated with head lice;
- Misdiagnosis of nits is very common during nit checks conducted by non-medical personnel.

Families with continuing or recurring infection with head lice should be assisted and supported by the school and health professionals.

9. Management of Contacts of Head Lice

Routine school screening for head lice is not useful and therefore not recommended.

Household and other close contacts (with prolonged head-to-head contact) should be examined for lice. If they are infested, they should be treated. Experts advise preventive treatment for persons who share the same bed with actively-infested individuals. All infested persons (household members and close contacts) and their bedmates should be treated at the same time.

10. Role of Parent/Guardian

As with other diseases, head lice management is the responsibility of the parent/guardian, not the school or other agency. Detection of head lice is best managed by the parents checking their children's heads on a regular basis 12 months a year – once weekly on a routine basis, after sleep-overs, and daily during outbreaks.

Learn about head lice from the Manitoba Health fact sheet on Head Lice supplied by the school or by visiting authoritative web sites, such as the South Eastman Health website at: <http://www.sehealth.mb.ca> or the Canadian Paediatric Society website at: <http://www.caringforkids.cps.ca/whensick/headlice.htm>.

Teach children how the spread of head lice is prevented, e.g. not sharing combs, brushes, barrettes, caps, helmets, towels, or pillows. Long hair should be tied back when lice have been identified in the school.

Check children's heads for head lice every week throughout the year. If head lice are found, notify the school/day care.

Notify others who have been in direct contact (head to head) with the child. Remember to include friends, relatives, and neighbors.

Treat head lice by following the instructions set out in the South Eastman Health Head Lice Control Check List. The child may return to school/day care after he/she has been treated with a recommended product to kill head lice.

If parents/guardians need more information or have difficulty getting rid of head lice, they should contact their primary health care provider (public health nurse, nurse practitioner, doctor) or call Health Links-Info Santé toll-free at 1-888-315-9257.

11. Role of School/Day care

Routinely provide head lice information to parents/guardians through newsletters. Remind parents/guardians to check children's heads for head lice every week throughout the year.

Actively promote practices that prevent the spread of head lice, e.g. separate storage of outerwear, no sharing of hats, combs, brushes, barrettes. Long hair should be tied back when lice have been identified in the school.

Be aware of symptoms and signs of head lice.

Notify the student's parents/guardians if he/she is found at school or day care to have head lice. It is not necessary to immediately isolate or exclude infested students; they may go home at the end of the day. Parents/guardians should receive the Manitoba Health fact sheet on Head Lice. A child should not miss school because of treatment for head lice. Children do not have to be "nit-free" in order to return to school.

Send home a letter with classmates of the student who has lice to encourage parents/guardians to do head lice checks. This may include parents/guardians of students in other classrooms, buses, or the entire school if the problem appears to be widespread.

The school or day care may consult the public health nurse for additional assistance with information, resources, and problem-solving.

Some schools and day cares may have head lice policies that differ from Public Health recommendations (e.g. screening of children's heads, "no nit" policies). Public Health will provide support, resources, and education but at the same time adhere to Public Health best practice guidelines and strategies.

12. Role of Public Health

Provide education, consultation, support, and resources on head lice for parents/guardians, school/day care staff, students.

Meet with the School Principal/Day Care Coordinator at the beginning of each school year to provide and review resource material, which can also be found at www.sehealth.mb.ca.

Assist families and schools with problem-solving and provide consultation on difficult cases (e.g. persistent infestation despite numerous treatments, highly anxious parents/guardians).

Assist parents/guardians with problem-solving when there are difficulties purchasing medication or carrying out the required treatment steps.

Routine school screening by public health is not recommended.

Public Health management of difficult cases

For difficult case management, the following steps are recommended, utilizing the Head Lice Management Tool:

- Confirm/assess the presence of lice/nits;
- Evaluate parental management and product use;
- Revisit possible contacts;
- Assess the likelihood that re-infestation has occurred;
- Recommend re-treatment based on assessment. Only treat if a living, moving louse is found;
- Determine family's ability to purchase pediculicide;
- Problem-solve the issues;
- Educate;
- Follow up.

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Head Lice Management Tool

This chart may be helpful in assessing a head lice problem, keeping a record of cases, and planning a management strategy.

Name	Grade/class	Date diagnosed / by whom	Treatment / dates	Retreatment / dates	Linkage to other cases	Comments

School/day care/other _____ PHN _____ Office: _____ Tel: _____



Head Lice Control Check List

Check your child’s head for head lice every week using bright or natural lighting.

If you find lice or nits, check the hair of other family members daily for two weeks. Do not treat anyone unless they have lice.

- 1. Brush hair thoroughly.
- 2. Before treating, wash hair thoroughly with shampoo **free** of conditioners and other additives. They may interfere with the lice product.
- 3. Read directions on lice product as some products are applied to damp or dry hair.
- 4. Shake lice product well.
- 5. Thoroughly saturate hair and scalp with sufficient amount of lice product (as indicated on product insert).
- 6. Leave on hair for period of time stated on product. For thicker, longer hair, you may want to double the time and/or amount of product.
- 7. Rinse hair well with water and towel dry.
- 8. Part hair into sections to assist with nit removal.
- 9. Remove **all** nits by pulling them off with your fingers (a nit comb may help). This can take time but it is *the most important* step.
Checking for and removing nits should be done daily for 14 days.
- 10. Repeat steps 1 - 9 in 7 days.

Immediately contact schools, child caregivers, and any other persons who may have been exposed.

Your child can return to school or child care after the first treatment.

Call your public health nurse for advice if necessary.

Household Cleaning

- 1. Clean combs, brushes and similar items by soaking in hot water (130°F or 55°C) or the lice shampoo for 10 minutes.
- 2. Launder personal belongings (especially head gear), recently-worn clothing, towels and bed linen in *hot* water (130°F or 55°C). Dry using *hot* cycle of the dryer.
- 3. Items that are not washable can be dry-cleaned or sealed in a plastic bag and stored for 2 weeks at room temperature.
- 4. Vacuum or wash areas where there has been direct head contact (couch, bed, car seat).

If you have concerns or questions, or have difficulty getting rid of head lice, call Health Links-Info Santé toll-free at 1-888-315-9257, your family doctor, or your local public health office:

Lorette	204-878-9752 ext 3	St. Pierre	204-433-7636 ext 4402
Niverville	204-388-2033	Sprague	204-437-5117
Steinbach	204-346-6123	Ste. Anne	204-422-3124
Vita	204-425-3859 ext 6201		

Head Lice Product List

PRODUCT	ACTIVE INGREDIENT	CAUTION	METHOD OF USE
Recommended Treatment			
R&C Shampoo® Licetrol® Pronto® Life Brand®	Pyrethrin (naturally occurring)	<ul style="list-style-type: none"> ▪ Does not always kill all eggs. ▪ Not to be used in persons with allergies to chrysanthemums or known allergy to ragweed. True allergic reactions are rare. 	<ul style="list-style-type: none"> ▪ Apply to dry hair in sufficient amount to soak thoroughly. ▪ Allow to remain on area for 10 minutes. ▪ Add small quantities of water, working into the hair until lather forms. ▪ Rinse well with cool water over a sink, rather than in a shower or bath, to minimize body exposure. ▪ Repeat in 7-10 days.
Nix® Crème rinse Kwellada-P® Crème rinse	1% Permethrin (synthetic pyrethroid)	<ul style="list-style-type: none"> ▪ Lice may be resistant. ▪ Mild skin reactions in approximately 1%. ▪ Not to be used in persons with allergies to chrysanthemums, known allergy to ragweed, pregnant, breastfeeding, and infants. 	Nix® <ul style="list-style-type: none"> ▪ Wash hair with conditioner-free shampoo, rinse with water and dry well. ▪ Apply sufficient creme rinse to saturate hair and scalp. ▪ Leave on for 10 minutes. ▪ Rinse well with cool water over a sink, rather than in a shower or bath, to minimize body exposure. ▪ Consider repeat treatment after 7-10 days. Kwellada-P® Same as for Nix®.
Not Recommended Treatment			
Resultz® Hair rinse	Isopropyl myristate 50% and STcyclomethicone 50%	<ul style="list-style-type: none"> ▪ Not to be used in children under 4 years of age. ▪ Flammable. ▪ Clinical trials show that this product looks promising but the evidence is not strong enough to recommend it except in special circumstances. 	<ul style="list-style-type: none"> ▪ Apply to dry hair. ▪ Amount of product used depends on hair length. ▪ Massage product into the hair – especially sides and nape of neck. ▪ Leave on for 10 minutes and rinse with warm water. ▪ Reapply after 7 days.

PRODUCT	ACTIVE INGREDIENT	CAUTION	METHOD OF USE
Alternative treatments	Home remedies	Many home remedies have been used to smother head lice. These include mayonnaise (full fat) and olive oil, and should be left on the scalp for at least two hours. This process can be messy. These methods only kill active lice and have no effect on nits.	Application of a thick coating of such agents to the hair and scalp left on overnight may suffocate and/or create conditions unfavorable to the head lice.
	Natural oils	There are several products available that are based on natural oils, e.g. tea tree oil. The safety of using these products on infants is unknown and efficacy and toxicity data are not available.	

Source: WRHA <http://www.wrha.mb.ca/healthinfo/a-z/lice/products.php>

Dear Parent (s)/Guardian:

Your child may have been in contact with head lice.

Important things to remember about head lice are:

- They do not cause or carry disease;
- They can be easily treated;
- Knowledge can help control their spread.

The main responsibility for managing head lice rests with parents/guardians.

It is recommended to check your child for head lice every day for the next two weeks.

If lice and/or nits are found, go ahead and treat. It is very important to read and follow the package instructions carefully as each type of head lice treatment is different. Check for and remove lice/nits daily until no more are found. Continue to check your child's head every week for head lice.

Learn about head lice, the recommended treatments, and how to prevent the spread of head lice to others. Information is available on the South Eastman Health website at: <http://www.sehealth.mb.ca>

The Canadian Pediatric Society also has excellent information on head lice at: <http://www.caringforkids.cps.ca/whensick/HeadLice.htm>.

If you need more information, have questions, or have difficulty getting rid of head lice, contact your public health nurse or doctor or call Health Links-Info Santé toll-free at 1-888-315-9257.

Your cooperation is vital in controlling the spread of head lice in our schools.

Public Health Office phone numbers:

Lorette	204-878-9752 ext 3	St. Pierre	204-433-7636 ext 4402
Niverville	204-388-2033	Sprague	204-425-5117
Steinbach	204-346-6123	Vita	204-425-3859 ext 6201
Ste. Anne	204-422-3124		

Q & A's

Guidelines for the Management of Head Lice

Guideline change

The major change to our lice guidelines was removing the requirement for children treated for head lice to be completely free of nits before returning to school or daycare.

Other jurisdictions have made this change and there is now strong evidence that it is best practice. Studies show that the spread of lice does not increase; families and school staff are spared many hours of unnecessary work checking for nits; and children no longer lose unnecessary days away from school

Why don't nits left in the hair spread lice?

Most of the nits left after treatment are dead nits or empty shells.

Any nits that are left behind are cemented to hair shafts and unlikely to be transferred to other people.

Many of the nits identified by non-medical people are not nits at all.

Head lice do not warrant an urgent or panicky response. Infestations have generally been present for several weeks before they are noticed and can be successfully treated. Head lice do not carry or spread disease.

Other points highlighted in the guidelines

1. Head lice infestations have generally been present for several weeks before they are noticed. As children found to have head lice at school or day care have likely attended for days or weeks before detection, there is no benefit in sending them home early; they may go home at the end of the day. Immediate exclusion and/or isolation is not necessary.
2. Children may return to school or day care after treatment with an effective product. Exclusion for 24 hours after treatment is not required.
3. As with other diseases, head lice management is the responsibility of the family. Families should check children's heads for head lice every week throughout the year. If head lice are found, notify the school or day care.
4. Routine school screening for head lice is not useful and therefore not recommended.
5. Some schools or day cares may have head lice policies that differ from Public Health guidelines. Public Health will provide support, resources, and education but at the same time adhere to Public Health best practice guidelines.
6. The school or day care will routinely provide head lice information to parents/guardians and actively promote practices that prevent the spread of head lice.

Where to find more information

South Eastman Health website at: <http://www.sehealth.mb.ca>

Canadian Pediatric Society at: www.caringforkids.cps.ca/whensick/HeadLice.htm

Head Lice

Life Cycle and Characteristics

Clinical Presentation



- Identification of live louse.
- Identification of nits on the hair shaft.³
- Itching, scratching caused by an allergic reaction to the bites.^{4,7}
- Allergic reaction begins 1–2 weeks after infestation (1 to 5 lice). This is a reaction to the anti-coagulant products that the louse injects locally as it takes its blood meal. Others may be asymptomatic.²
- In long standing cases a roseo-like exanthema on the body may accompany lice infestation.^{4,7,2}
- May be excoriation and crusting with secondary bacterial infection and regional lymphadenopathy.^{4,7}
- Tickling feeling of something moving in the hair.

Infectious Agent

Head lice are insects from the arthropod family and are of the order of the Anoplura. The adult lice are obligate blood sucking ectoparasites that require warmth and a source of human blood to survive. Although infestation generally occurs close to the scalp, behind the ears and the back of the neck, it has been reported to occur anywhere on the scalp.^{4,9,11,12}

Reservoir

Humans^{4,11,13}

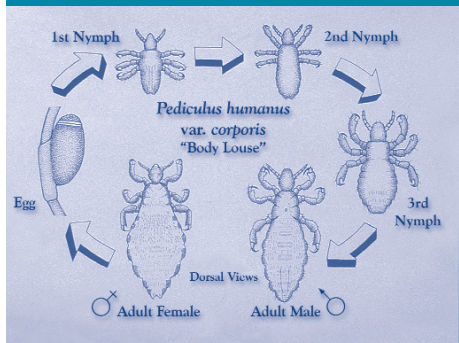
Occurrence/Susceptibility

Worldwide. Head lice are more common in children and the literature indicates the prevalence is higher in females. Caucasians are more frequently infested than other ethnic groups irrespective of social economic class. Any person may become louse infected under suitable conditions of exposure.^{13,5,2}

Transmission

- Primary mode of transmission is direct person to person contact.
- Infestations are more commonly spread within families than within schools. because of close personal contact and shared brushes and combs.¹⁶
- Secondary mode of transmission is fomites or indirect through personal belongings, i.e. hats, bedding, combs, and hair accessories.
- Head lice crawl but do not fly or jump.^{5,9,13}
- Although lice can crawl relatively quickly, they rarely travel far from a preferred habitat, such as the warmth of the scalp.¹⁷

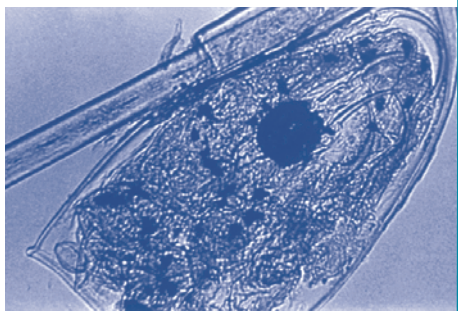
Incubation Period



- Egg to egg cycle averages 3 weeks
- Life cycle composed of 3 stages (see diagram):
 - Eggs
 - Nymph⁹
 - Adult
- Egg to nymph stage 6 – 12 days
- Nymph to adult 7 – 14 days⁹
- Adult 7 – 10 days
- Most suitable temperature for incubation 32° C
- Most suitable humidity 70%
- Eggs do not hatch at < 20° C or >38° C^{3,9,14}

Life Cycle of Head Louse

1. Eggs or Nits



Description:

- Eggs are laid in their shells (the nits).
- **Shape:** oval, teardrop or flask shaped and have a lid (operculum) that covers the free end.^{4,11}
- **Colour:** documented as grayish-white, pearly or silvery white and even yellow-white; transparent, glistening or opalescent in nature.
- **Size:** 0.3 mm – 0.8 mm, looks like grains of sand.^{9,11}
- Easier to detect than adult lice.
- After hatching, empty white to dull yellow and almost clear colored nit casing or shells are left behind. They remain tightly adhered to hair shaft.^{3,9,11}
- Often confused with dandruff or hair spray droplets, which easily come off of hair.
- Viable nits are always found close to the scalp (1 – 4 mm).
- Human hair grows slowly at an average rate of approximately 0.37 mm/ day. Nits found several millimetres from the scalp are now empty egg cases.
- Duration of infestation can be estimated by the distance of nits from the scalp.^{4,9,11}
- Egg is tightly glued to the base of the hair shaft, nearest the scalp with a special cement bond called chitin.
- Eggs are usually deposited 1 – 4 mm from the scalp.
- Eggs are difficult to dislodge.
- Eggs hatch within 6 – 12 days.
- 2 – 12% of eggs do not hatch.
- Only eggs deposited by inseminated female lice will hatch.
- May persist on hair for months, even after successful treatment, if not removed.^{3,5,6,7,9,11,13}

2. Nymph

- Looks like adult louse, but smaller and immature.
- **Size:** 1 mm in length, size of pinhead.
- Matures in 3 stages.
- They grow by molting or shedding their skin 3 times before reaching adulthood.
- Nymphs mature after three molts and become adults (able to reproduce) about 7 – 14 days after hatching.^{5,11}
- Nymphs tend to remain on the head where they hatch.^{3,8,9}

3. Adult Lice Physical Characteristics

- Wingless, elongated body with 3 segments (head, thorax and abdomen).
- Short antennae with 4 segments.
- Small head with anterior piercing mouthparts that are used to pierce the scalp and feed on blood.

(continued on next page)

	<ul style="list-style-type: none"> • 6 short and stubby legs with single tarsal segments, with powerful hook-like claws at the end of each leg. These claws are used to grasp the hair shaft. • Dorsoventrally flattened. • Size: 2 – 4 mm in length – approximate size of a match head or sesame seed (females usually larger than males). • Do not leave head until nearly fully grown. • Mating only occurs once fully grown. • Colour: have been documented as grey, tan, brown, red or black. • Colour changes to rust coloured after a blood meal. • Elusive and well camouflaged. • Darker in color in dark hair. They tend to reflect the colour of their surrounding.
Feeding habits:	<ul style="list-style-type: none"> • The louse injects a local anaesthetic through their saliva into the scalp to prevent their host from feeling any pain and an anticoagulant to prevent the blood from clotting, thus making it easier to feed. • They blood feed several times each day. • They move rapidly and are difficult to spot. • Lice are not able to burrow into the scalp. • Usually found close to the scalp to maintain its body temperature. • Adult female lays 3 – 10 eggs per day. • Adult female may deposit 100 – 300 nits in her lifetime.^{3,4,5,11,13}
Period of Communicability	
	<ul style="list-style-type: none"> • As long as lice or viable eggs remain alive on the infested head. • Nits will not hatch off the head as they are extremely temperature and humidity sensitive. • Lice that fall off the head and are without a blood meal have been noted to die within 20 – 48 hours. • Lice are capable of surviving 24 hours immersed in H₂O.^{5,11}
Diagnosis	
Active or Recent Infestation	<ul style="list-style-type: none"> • Live nymphs or adults. • Viable nits 1 – 4 mm from scalp^{1,11} <u>Highly Suggestive of Active Infestation:</u> • Numerous nits within 6 mm (1/4") from scalp.¹¹
Previous or Old Infestation	<ul style="list-style-type: none"> • Nits only; more than 6 mm (1/4") to 12 mm (1/2") from scalp. • Nearly always hatched, when located at this distance.^{1,5}
Helpful Hints for Diagnosis	<ol style="list-style-type: none"> 1. Duration of infestation can be estimated by the distance of the nits from the scalp: human hair, on average, grows at a rate of 0.37 mm / day. 2. Infested heads can carry anywhere from 8 – 24 lice at any given time. They have a high natural mortality rate; heads may have hundreds of viable, dead or hatched eggs.
Detection	
Method 1	<ul style="list-style-type: none"> • Dampen hair (to decrease static electricity that can cause lice to be repelled from the comb). • Bend head over a plain sheet of paper. • Comb hair with a fine toothed comb (teeth about 0.2 mm apart). • Observe for lice to drop. • Part hair and look for moving lice. • Magnifying glass may be useful. • Use illumination, bright light – they scurry to hide making it easier to spot.^{1,13}

Method 2	<ul style="list-style-type: none"> • White hair conditioner may be applied to the dry hair, covering root to tip. Immediately after application, a head lice comb is used and the combings wiped onto tissue paper and examined for lice or eggs.¹⁷ However this conditioner should be thoroughly removed if lice treatment is necessary.
Method 3	<ul style="list-style-type: none"> • Tap head with piece of transparent adhesive tape. If there are lice, they will stick to the tape. It then becomes a convenient coverslip for a microscopic slide.

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Head Lice

COMMUNICABLE DISEASE CONTROL

What are head lice?

Head lice are small insects that live on people's heads. While they may be found anywhere on the head, they are usually found on the scalp, along the neckline and behind the ears. When lice bite the scalp, they cause itching and sometimes redness.

Important things to remember about head lice:

- they do not cause or carry disease;
- they can be easily treated; and
- knowledge can help control their spread.

What do lice and their eggs look like?

Head lice are very small (usually about the size of a sesame seed), but size may vary. They move quickly, so they are difficult to spot. It is easier to look for their eggs (called nits) rather than the insects themselves.

Live nits can be grayish, cream or tan-coloured. Lice lay their nits on the hair very close to the scalp. They can be found anywhere on the head but most commonly behind the ears and at the back of the neck. Each nit is attached to the hair with a hard, waterproof "glue" so they cannot be washed out or brushed off like dandruff.



How can you tell if a person has head lice?

- Frequent scratching of the head.
- Nits found stuck to the hair close to the scalp.
- Small insects noticed on the head.

What is the treatment for head lice?

- **Check all household members.**
- **Treat all infested household members at the same time.**

Children may return to school after the first treatment has been completed, and as many nits as possible removed.

- **Use two treatments, seven days apart.** There are several over-the-counter medicated shampoos or creme rinses that will get rid of the lice and nits such as R&C, Nix, SH-206, and Lindane. (**Note:** The second treatment of SH-206 should be applied 48 hours after the first treatment.) Before applying the lice shampoo, section the hair like corn rows, pouring a stream of the shampoo down each part. Follow package instructions carefully, using lots of shampoo, to ensure lice and nits are completely gone.
- If the initial treatment fails, a second treatment with a different product may be tried.

Treatment Procedure

- Use lice creme rinse or shampoo as directed on the label.
- Apply to wet or dry hair, following the directions for the product you are using.
- Work thoroughly into the hair, according to the directions on the label (usually 4-10 minutes).
- Rinse well with water to remove all creme rinse or shampoo and loosen the nits.

To Remove Nits

- Pull off individual nits by grasping nits between the finger tips and sliding off the end of hair strands.
- Place in bag and dispose.

OR

- Comb hair with a fine-toothed (nit) comb, one small section at a time.
- Position the comb as close as possible to the scalp and pull through to the end of the hair. Wipe nits from the comb frequently using tissues and dispose of tissues in a plastic or paper bag; seal and discard.
- When hair is dry, check the entire head for remaining nits and remove them. Continue checking (and removing) for the next one to two weeks.

Head lice products contain insecticide, which can be dangerous if not used correctly:

- Avoid getting the creme rinse or shampoo in the eyes or the mouth because it can cause irritation.
- These products should be applied to the scalp and hair only. To avoid getting the creme rinse or shampoo on other parts of the body, do not apply or rinse out while showering or bathing.
- They should not be applied to the head after taking a hot bath or shower.
- The person applying the creme rinse or shampoo should avoid unnecessary contact with it, since it can be absorbed through the skin. Breastfeeding or pregnant women should avoid contact by wearing rubber gloves during the procedure.
- **Ensure that all possible contacts are informed, so that other cases can be found and treated.** This may include calling the school principal, coach or child care staff; and/or the parents of your child's close playmates or team members.

Is any other cleaning necessary?

There is no evidence that a major household clean-up will help get rid of head lice. Head lice and their nits do not survive well off the scalp as they feed off humans and survive only in a certain temperature and humidity range.

Eggs will not hatch off the head. Lice rarely move from the scalp so it is unlikely they will spread through casual contact with furniture or carpeting.

The articles most likely to transmit lice are those that come into contact with the head and nape of the neck, such as hats, helmets, furry coat collars, scarves, hair brushes, combs and hair ornaments. Where possible, these items should be washed in hot water and dried in a dryer. Combs and brushes should be soaked in hot, soapy water for 15 minutes. Other items may be sealed in a plastic bag for 10 days, or placed in a freezer for 24 hours.

Who gets head lice?

Anyone can get head lice. Although parents are often embarrassed to find their children have head lice, it is really a common problem throughout society. It is most common in places where people work or play together for long periods of time, such as classrooms and child care centres.

How do you get head lice?

Contrary to popular belief, poor hygiene does not cause head lice. Head lice cannot jump or fly so they are most commonly spread through close head-to-head contact with someone who has head lice. Lice are also spread by sharing personal articles that have touched the head, such as hats, helmets, scarves, combs, brushes, barrettes and ribbons. They cannot be spread from animals or pets.

How can you prevent the spread of head lice?

Head lice can best be controlled through the co-operation of parents, teachers and public health personnel. Once parents learn how to recognize head lice, regular inspection of their children's scalps is the best preventive measure. Teach your children how head lice are spread and how to avoid them.

If you have any concerns or questions, or have difficulty getting rid of head lice, contact your doctor, public health nurse or Health Links-Info Santé, Winnipeg at 788-8200 or toll-free at 1-888-315-9257 or access our website at www.gov.mb.ca/health.

Local Public Health Unit Stamp