

PEDICULOSIS (LICE INFESTATION)

I. DEFINITION:

Infestation of the skin or hair by one or both of the two species of blood-sucking lice capable of infesting the human host.

II. ETIOLOGY:

- A. *Pediculus humanus var. capitis* infests the hair and scalp of humans. Transmission occurs by close personal contact with infested persons and possibly by sharing personal items, such as hats, combs, or brushes. Head lice affect all socioeconomic groups and are not related to poor hygiene. Outbreaks among children are common. Life cycle has 3 stages: (1) Eggs are called nits and are found cemented to the hair shaft near the scalp, if viable. (2) Nymphs hatch 6-10 days after eggs are laid and mature about 1-2 weeks later into adults capable of reproducing. (3) Adult lice can lay up to 8 nits a day and live for up to 30 days on a person's head. Head lice do not survive more than 2 days away from the scalp, and the eggs cannot hatch at ambient temperatures less than that close to the scalp.
- B. *Pediculus humanus var corporis* is the human body louse and, in general, infests persons with poor hygiene, i.e., homeless or transient persons who do not have access to baths and clean clothing. Transmission occurs by close contact with infested persons and by contact with contaminated fomites, i.e., clothing and/or bedding. Life cycle is similar to that of the other human louse species, although body lice can survive up to 10 days off the host making fomites a major source of transmission.
- C. *Phthirus pubis* is the crab louse that infests most commonly the pubic area but may also be found in other hairy areas, including the chest, armpits, abdomen, thighs, or in the eyelashes of children. Adults are most often affected. Transmission occurs by skin-to-skin contact or through sexual contact. Eyelash infestation occurs almost exclusively in children and may be transmitted from other children or an adult. Consideration of other sexually transmitted diseases in infested persons as well as possible child sexual abuse is indicated. Life cycle is the same as other human louse species but more similar to the head louse in that the pubic louse also dies within a couple of days off the host.
- D. All of these lice species feed on human blood. Only the body louse is a known vector for disease, i.e., typhus, trench fever and epidemic relapsing fever caused by *Borrelia recurrentis*.
- E. Human lice do not infest animals so transmission from pets does not occur and treatment of pets is not indicated.

III. CLINICAL FEATURES

A. Head Lice

- 1. Intense itching of the scalp. May feel tickling sensation or something moving in the hair. May be asymptomatic.
- 2. Nits (ova) are translucent, white to yellow 0.5 mm oval objects firmly cemented to the hair shaft. Nits found farther than ¼ inch from the scalp are considered hatched or dead. Nits cannot be knocked off of the hair shaft or moved down the hair shaft, which helps to differentiate them from dandruff or debris from hair products, such as gels, sprays, etc.

3. The nymphs (immature forms) or adult lice may be seen and are most commonly found in the back of the head, behind the ears, and near the nape of the neck. Head lice are tan to grayish-white, 2-4mm in length, and have six legs terminating in claws.
4. Excoriation from scratching may cause weeping sores and matting of the hair.

B. Body Lice

1. Lice are rarely found on skin (only during feeding), but may be present in clothing.
2. Skin lesions are characterized by changes secondary to scratching and resultant lesions or furuncles.
3. Intense itching of the body.

C. Pubic Lice

1. Live lice or nits are found in pubic hair and occasionally in other coarse body hair, i.e., chest, abdomen, armpits.
2. May be found in the eyelashes of children.
3. Intense itching of affected areas.
4. Mild excoriation may occur secondary to scratching.
5. Maculae ceruleae, bluish or slate-gray colored spots, may be found in the pubic area or on the chest, abdomen, or thighs in cases of chronic or heavy infestation.

IV. MANAGEMENT PLAN:

A. Treatment:

1. General
 - a. Inform school authorities/childcare facility infestation has been identified without breaching confidentiality.
 - b. Cleaning of the house and other rooms inhabited by infested persons should be limited to vacuuming. Fumigation of the home or school is not recommended and results in needless risk of chemical exposure to inhabitants.
2. Treatment for Head Lice
 - a. Issue over-the-counter pediculicide or recommend application of an over-the-counter pediculicide for clients 2 years old and older, or refer to physician. Consult with physician on treatment of children less than 2 years old. Instruct in application of over-the-counter pediculicide or medicated shampoo according to package directions (see Appendix 1). Instruct clients to avoid using crème rinse or combination shampoo with conditioner before using the lice shampoo, and to avoid washing the hair 1-2 days following treatment.

- b. Comb the hair thoroughly, with a fine-toothed comb to remove all dead lice and nits. To facilitate nit removal, it may be helpful to apply a 1:1 vinegar to water rinse. Metal fine-toothed combs work best and may be sterilized for future use.
 - c. Have the person put on clean clothing after shampooing.
 - d. If the first treatment was done correctly and live lice are still found 24 hours after treatment, treatment should be repeated in 7-10 days along with aggressive daily combing with a lice comb.
 - e. A note to return to school or childcare may be provided following initial treatment with a pediculicide and no observance of live lice in the hair, if requested by the parent.
 - f. Check hair every 2-3 days after treatment and use the comb to remove any nits or lice present.
 - g. Repeat treatment 7-10 days after initial treatment, only if needed, to kill newly hatched lice.
 - h. Parents should be instructed to comb hair daily with a lice comb to check for lice for 2-3 weeks following treatment of lice.
 - i. Disinfect clothing/bedding as discussed below.
 - j. If parent/guardian chooses to utilize homeopathic treatments, stress the importance of combing daily to remove nits, larvae or live lice. Homeopathic treatments are not recommended by the health department.
3. Treatment of Body Lice
- a. Pediculicide is not indicated in the treatment of body lice. Treatment consists of improving hygiene and regular changes of clean clothes and bedding. Infested materials can be decontaminated by washing clothes in hot, soapy water as described below.
 - b. See consultation/referral section.
4. Treatment of Pubic Lice
- a. The pediculicides used to treat *pediculosis capitis* (head lice) are effective for treatment of pubic lice. A second treatment is recommended 7 to 10 days later.
 - b. Topical pediculicides should not be used for infestation of eyelashes by pubic lice. The recommend treatment is an ophthalmic-grade petrolatum ointment applied to the eyelashes 2 to 4 times daily for 8 to 10 days.
 - c. Lice and their eggs can be removed manually, or the hairs can be shaved to eliminate infestation immediately.
 - d. See consultation/referral section.

5. Screening of Exposed Persons:

All family members and other close contacts should be examined for the presence of lice or active nits and treated, if indicated, at the same time as the affected individual. Those at greatest risk of infestation are persons who sleep with the infested individual.

6. Treatment of Infested Person's Articles:

- a. Machine wash and dry all washable clothing and bed linens that have been in contact with an infested individual during the last 48 hours. Use hot water and detergent. Because heat is lethal to lice and nits, many personal articles can be disinfected by machine washing in hot water and/or drying using the hot cycle of the dryer. Nits and lice are killed at temperatures exceeding 130 degrees Fahrenheit (F) for 5-10 minutes. Home hot water heaters of 30-40 gallon capacity can be set to give this water temperature.

However, when several loads of laundry are processed, plenty of time should be allowed between loads so that the 130 degrees F water temperature can be maintained. **NOTE:** After treatment is completed, a lower setting on the hot water heater should be used to prevent accidental scalding of children.

- b. Personal articles of clothing or bedding that cannot be washed may be dry-cleaned or placed in a plastic bag and sealed for a period of 10 days. The latter method works because head lice die in about 48 hours without a blood meal, and nits kept at room temperature for 10 days do not hatch.
- c. Soak combs and brushes in hot water (at least 130°) for 5-10 minutes.
- d. Do not use fumigant sprays; they can be toxic if inhaled or absorbed through the skin.
- e. All other items that have been in contact with the infested hair in the last 48 hours, such as curlers, headphones, earpieces of glasses, etc. should be thoroughly cleaned. An individual's combs, brushes, clothes, hats, coats, etc. should not be shared with anyone else at home or school.

B. Client Education:

1. Since transmission from one person to another commonly occurs, children and parents must be educated regarding the mode of transmission and procedures to take to prevent further transmission of lice infestation.
2. Lice are not transmitted from animals. Lice cannot jump or fly.
3. Caution parents against the use of pediculicides in the absence of infestation. Emphasize mechanical removal of nits and dead lice. Pediculicides are chemicals that can be harmful when used inappropriately.
4. Children should be taught not to share combs, brushes, or hats with other children.
5. Coats should be hung where they do not touch those of other people.

6. Parents need reassurance and counseling that head lice infestation is a common problem in the school-age group and affects children of all socioeconomic groups.

C. Consultation/Referral:

1. Consult with physician to treat children less than 2 years old.
2. If child has body or pubic lice, refer or consult with private physician for treatment procedures.
3. Contact social services according to OSDH reporting policy if neglect or abuse is suspected.
4. Contact school nurse if indicated to report infestation occurrence.

D. Follow-up:

1. Check school-age children for live lice after treatment to re-enter school and provide note of clearance (if requested) if no live lice are found.
2. Recommend repeat treatment in 7-10 days only if needed. Emphasize daily combing to remove lice and nits.
3. Determine tracking priority utilizing professional judgment.

APPENDIX 1

TABLE 1. MEDICATIONS USED TO TREAT HEAD LICE		
PRODUCT NAME	INGREDIENT	STATUS
Nix Cream Rinse * , +, +++	Permethrin, 1%	OTC
A-200, Pronto, R&C, Rid, Triple X, generic/store brands +, ++, +++	Pyrethrins, 0.3%	OTC
Ovide, Derbac-M, Prioderm, Quellada-M +++++	Malathion 0.5%	Prescription
Ulesfia +++++	Benzyl alcohol lotion 5%	Prescription
Sklice, Heartgard, Stromectol +++++	Ivermectin oral or lotion 0.5%	Prescription
Natroba, Comfortis, Trifaxis +++++	Spinosad 0.9%	Prescription

* A single treatment is usually adequate because of this product's ovicidal activity; nonetheless, some experts advise a second treatment 7-10 days after the initial treatment.

+ Product should not be used by individuals allergic to ragweed.

++ Treatment of choice if used during pregnancy.

+++ Product should not be used if hypersensitive to any synthetic pyrethroid (i.e. Permethrin), pyrethrins, chrysanthemums or ragweed.

++++ Follow package instructions for administration and contraindications.

NOTE: Various other trade name products may be available in certain areas. The pharmacist may be consulted as to availability of listed products as well as comparable products.

PRECAUTIONS AND WARNINGS:

- None of these products are to be taken internally: if swallowed, seek medical attention.
- If products come in contact with eyes, flush with large amounts of water immediately.
- If skin irritation occurs, consult with a physician.

REFERENCES:

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- Heymann, D. ed., Control of Communicable Diseases Manual. 19th Edition. Washington, DC, American Public Health Association, 2008.
- Centers for Disease Control and Prevention. Parasites – Lice webpage, at <http://www.cdc.gov/parasites/lice/>, accessed 28 July 2014.

APPENDIX 2

SAMPLE CERTIFICATION FROM HEALTH PROFESSIONAL

Name of Student: _____

Date of Examination: _____

Result of Examination:
(check one)

Student presented for evaluation for presence of live lice/nits. No nits/lice present.

Student completed initial head lice treatment and found to be free of live lice or nits). Treatment may be repeated in 7-10 days if necessary and the student re-examined at that time.

Student completed subsequent treatment and found to be free of live lice and no nits). No further treatment necessary.

Student completed an initial, or a subsequent treatment, and found to be infested. **Treatment should be repeated in 7-10 days, if needed. Focus on nit removal daily until free of nits.**

Findings:

Name and Title of Health Professional _____