

A Public Health Guide For The

PREVENTION, CONTROL AND TREATMENT OF HEAD LICE INFESTATIONS IN SCHOOLS



Communicable Disease Section
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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
II.	DEVELOPMENTAL STAGES OF HEAD LICE	2
III.	SPREAD OF HEAD LICE	3
IV.	SYMPTOMS OF HEAD LICE INFESTATION.....	3
V.	HEAD LICE TREATMENT.....	4
	A. Lice killing medication (pediculicides).....	4
	B. Other Anti-ectoparasitic and Anti-parasitic agents.....	5
	C. Antibiotics	6
	D. Alternative treatments	6
	E. Recommendations for head lice treatment.....	7
	F. Screening and manual removal of head lice and nits.....	7
	G. Treatment failures	9
VI.	THE ROLE OF THE LOCAL HEALTH DEPARTMENT.....	10
	A. Consultation and support to school officials.....	10
	B. Assessment of students with chronic or recurrent head lice infestations.....	11
	C. Corrective actions.....	11
VII.	PREVENTION AND CONTROL OF HEAD LICE IN THE HOME.....	12
	A. When head lice are confirmed on a family member.....	12
	B. Who should be treated	12
	C. Cleaning the home environment	12

VIII.	PREVENTION AND CONTROL OF HEAD LICE IN THE SCHOOL SETTING....	13
	A. Preparation for screening	13
	B. Screening of students	14
	C. When head lice are confirmed on a student.....	14
	D. Return to school	15
	E. Cleaning the school environment	16
	F. Preventing the spread of head lice in schools	17
IX.	REFERENCES.....	18
X.	ACKNOWLEDGEMENTS.....	19

APPENDIX

- A. Head Lice Fact Sheet

**PREVENTION, CONTROL AND TREATMENT
OF HEAD LICE INFESTATIONS
IN SCHOOLS**

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INTRODUCTION

I. INTRODUCTION¹

The head louse (*Pediculus humanus capitis*) is a flat, wingless insect with three pairs of legs, each ending in a claw. Head lice feed on human blood and live on human hair, where females lay 7-10 nits (eggs) a day and as many as 60-100 nits in their 30 day lifetime. The nits are attached to a hair follicle with a fixative cement secreted by the louse, which makes them difficult to remove. Adult head lice move very quickly from hair-to-hair on the infested person (2.5-12 inches per minute) and may be difficult to observe.

Head lice infestations (pediculosis) are not a reportable condition in Wisconsin or at the national level. While exact numbers cannot be tabulated, head lice infestations are very common with an estimated 6 million people in the United States being infested annually. Anyone who has close contact with an infested person or the contaminated clothing or personal belonging of someone infested is at risk of contracting head lice.

Pre-school and elementary children, ages 3-10, and their families are infested most often. The higher incidence of head lice among young children may be due to their increased physical contact with each other and the sharing of objects that had contact with human hair infested with head lice. There are more cases of head lice infestation among school-age children than there are of all other communicable diseases combined, except for the common cold.

Females have a higher incidence of head lice compared to males most likely because they have more physical contact with young children. In the United States, African-Americans rarely get head lice due to the inability of the louse to grasp the oval-shaped hair shaft characteristic in this population.

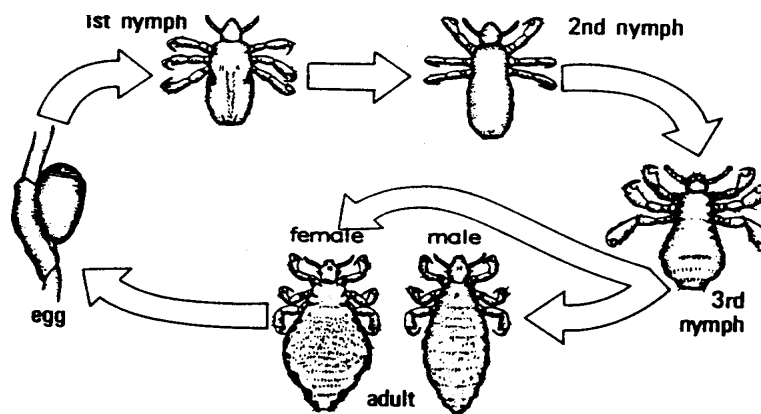
II. DEVELOPMENTAL STAGES OF HEAD LICE¹

Table 1. The developmental stages of the head louse.

Stage	Identification	Optimum Temperature	Survival Time Away from Host	Miscellaneous Information
NIT (egg) ↓	<ul style="list-style-type: none"> • Yellow, tan or gray • Tear drop/oval shape • 0.8 mm long • Become white and disfigured when no longer viable <p>Differentiate nits from hair care product residues and dandruff. All of the latter substances can be removed from the hair by blowing, rubbing or brushing. Nits can only be removed by picking or using a fine tooth nit</p>	82-95° F	NA	<ul style="list-style-type: none"> • 7-10 day incubation period • Viable nits are usually found within 1/4 inch of the head mainly on the nape of the neck and behind the ears • Nits may not hatch at temperatures less than 82° F, but may remain viable and hatch if returned to optimum temps
NYMPH (3 stages) ↓	<ul style="list-style-type: none"> • Transparent until first blood meal then brownish-red • 6 legs with claws 	87-95° F	<ul style="list-style-type: none"> • Range 6-24 hours * • Mean 12-15 hours • Need a blood meal within 5 hours of hatching to survive 	<ul style="list-style-type: none"> • 7-12 days until becoming adult lice
ADULT	<ul style="list-style-type: none"> • Tan, or grayish-white • 6 legs with claws • 2-3 mm long • Can lay nits, usually 7-10 each day. 	87-95° F	<ul style="list-style-type: none"> • Range 6-24 hours * • Mean 12-15 hours 	<ul style="list-style-type: none"> • 23-30 day life span as adult lice

* In rare circumstances adult lice and nymphs may survive off the host for as long as 48 hours.

Figure 1. The life cycle of the head louse²



Source: U.S. Department of Health and Human Services

III. SPREAD OF HEAD LICE ^{1, 3}

Direct transfer: Head-to-head contact may be responsible for most lice transfer.

Indirect transfer: Sharing objects (e.g., brushes, hats, head phones or head bands) that had contact with human hair infested with head lice within the previous 2 days, may allow transfer of live lice.

Facts on the spread of head lice:

- Head lice cannot jump or fly from head to head.
- Head lice can crawl very quickly from hair-to-hair and from the head of an infested person to the head of a non-infested person if their heads are touching.
- Adult head lice and nymphs can be spread from person-to-person or from a contaminated object-to-person; nits cannot be spread person-to-person or from a contaminated object-to-person.
- Pets do not spread head lice. Head lice feed on human blood only.
- Head lice do not spread disease.
- Head lice are not an indication of poor personal hygiene or living in an unclean environment.
- Shaving the head of an infested person is not recommended. Use discretion when cutting long hair or thick hair to assist in nit removal.
- Head lice cannot live without a blood meal from a human host for more than 48 hours, usually not more than 24 hours.^{4,5}

IV. SYMPTOMS OF HEAD LICE INFESTATION

Persons infested with head lice develop itching on the scalp. Repeated scratching may lead to inflammation, and may create a mode of entry into the scalp for germs or lice feces resulting in secondary infections on the scalp. Persons with secondary infections may develop a mild fever and irritability.

The itching associated with head lice infestation is caused by an allergic reaction to the anticoagulant saliva of the head louse. Allergic reactions to the saliva are not immediate, and may take several weeks to appear. Therefore it is important to realize that a person who develops symptoms has probably been infested with head lice for several weeks.

V. HEAD LICE TREATMENT

The Department of Health and Family Services and the Department of Public Instruction do not make specific recommendations on the type of medications used for treating head lice infestations. Those who recommend specific head lice treatment should be aware of contraindications and potential treatment failures of the products they recommend.

A. Lice Killing Medication (Pediculicides)^{1,6,7,8}

Table 2 describes the four lice-killing medications currently available in the United States: permethrin, pyrethrin, malathion and lindane. Carbaril, an effective pediculocide used in the United Kingdom, is not available in the United States and will not be addressed.

Table 2. Lice killing medications available in the United States.

Pediculicide	Brand Name	Killing Time	Ovicidal Activity	Advantages	Disadvantages
Permethrin 1%	NIX™	10-15 minutes	High	<ul style="list-style-type: none"> • Low toxicity • Residual ovicidal activity • Non prescription • Crème rinse available 	<ul style="list-style-type: none"> • Some resistance
Pyrethrin	RID® Clear™ R&C® Pronto®	10-23 minutes	Low	<ul style="list-style-type: none"> • Low toxicity • Non prescription 	<ul style="list-style-type: none"> • Some resistance • No residual ovicidal activity • Not recommended for persons allergic to ragweed
Lindane 1%	Kwell®	Several hours	Low	None	<ul style="list-style-type: none"> • Available by physician or Advanced Practice Nurse Prescriber Prescription only • High toxicity if not used appropriately • Known resistance • No residual ovicidal activity • Not to be used on pregnant or nursing women
Malathion 0.5%	Ovide®	5-10 minutes	High	<ul style="list-style-type: none"> • Residual ovicidal activity • Very effective • Usually effective in one treatment 	<ul style="list-style-type: none"> • Strong odor • Long application time • Flammable • Alcohol base may sting irritated skin • Expensive

Lice-killing medications should be used according to the manufacturers’ instructions. Misuse or over use of these products may be dangerous. In addition to the manufacturers’ instructions, the following precautions should be given to those people using a lice-killing medication:

- Do not treat the infested individual with the same lice-killing medication more than once every seven days. If live lice are discovered on the infested person within 12 hours of treatment evaluate the reason for the treatment failure (page 8, section II, part G) and consult with a health care provider regarding the use of other lice-killing medications or alternative treatments.
- Do not treat an infested person more than three times with the same lice-killing medication.
- Do not use more than the recommended amount of lice-killing medication.
- Do not mix lice-killing medications in a single treatment.
- Do not treat children under two years old with lice-killing medication. For children under two years old, remove lice and nits manually (section II, part F).
- Do not re-wash hair for 1-2 days after treatment.
- The infested person should remove all clothing prior to being treated and put on clean clothing after the treatment.
- Prior to using a pediculicidal treatment do not use a shampoo that contains a conditioner or a non-pediculicide containing creme rinse because it may decrease the absorption of the medication making it less effective.

B. Other Anti-ectoparasitic and Anti-parasitic Agents^{7,8}

These products are not marketed as pediculicides, but have been used to treat head lice infestations. The efficacy of these products to kill head lice and nits has not been studied and is not known. These products can only be obtained with a prescription from a physician or an Advanced Practice Nurse Prescriber.

Permethrin 5% (Elimite®): The primary use of this product is as a full body treatment for scabies. The Food and Drug Administration (FDA) has not approved 5% permethrin for use in treating head lice infestations. Several clinical studies have shown Elimite left in the hair overnight under a shower cap to be an effective treatment for head lice infestations.^{7,9} Use of a shower cap is not advisable for young children. If resistance to 1% permethrin is suspected, this product may not be effective.

Ivermectin (Stromectol®): An oral anti-parasitic drug approved by the FDA for treatment of strongyloidiasis and onchocerciasis (river blindness) in humans. Ivermectin is effective in treating scabies, especially Norwegian scabies and is now recognized by the Medical Letter as an alternative treatment for head lice.^{7,10}

C. Antibiotics

Antibiotics, such as TMP/SMX (Bactrim, Septra) are NOT an effective treatment for head lice. Head lice feed on human blood and not bacteria found on the skin. The use of antibiotics to treat head lice is *strongly discouraged*. Indiscriminate use of antibiotics may lead to antibiotic resistant bacteria or antibiotic-related colitis (*Clostridium difficile* infection). Antibiotics may be used at the discretion of the physician to treat secondary infections resulting from head lice infestation.

D. Alternative Treatments

This section addresses the use of non-pediculicide treatments, which are sometimes referred to as “natural treatments” for treating head lice infestations. None of these treatments have been scientifically evaluated for their efficacy in killing head lice, and some may be unsafe for use on humans. The use of these alternative treatments on persons who fail to respond to pediculicides should be discussed with a health care provider prior to beginning treatment.

Tub butter, mayonnaise, olive oil, petroleum jelly (Vaseline®):¹¹

While these “natural alternatives” to pediculicides will theoretically smother lice and nits, no scientific evidence is available to assess the efficacy of these products. The use of these treatments can also be aesthetically unpleasant to the infested person and their removal from the hair (especially Vaseline®) may be difficult. Grease cutting shampoos or dish soap may be used to remove these products from the hair. To avoid accidental inhalation, the use of powders (especially those that contain talc) to remove these products from the hair is *strongly discouraged*.

Note: Use of regular mayonnaise is preferred, avoid light or fat-free mayonnaise or salad dressing.

Kerosene, gasoline:¹²

The use of flammable products for treating pediculosis is dangerous and is *strongly discouraged*. The efficacy of these and other flammable fuels to kill lice and nits has been demonstrated by some physicians, although there is no scientific data to support this treatment. In addition to being flammable, these products can be toxic if absorbed through the skin or inhaled and may dry the scalp that may lead to infection.

Animal shampoo:¹²

The use of animal shampoo for treating human pediculosis is *strongly discouraged*. Some animal shampoos contain active ingredients similar to pediculicide treatments used for humans, but their efficacy in treating head lice infestations and their safety for use on humans has not been documented.

Alcohol, bleach:¹³

Alcohol and bleach are not recommended for treating human pediculosis. Though alcohol is used as a base ingredient in malathion pediculicides, there is no evidence that alcohol or bleach, used alone, are effective treatments for head lice infestations. Alcohol, in addition to being flammable, is a drying agent

that may lead to skin irritation. The chlorine in bleach is inactivated by organic matter and will quickly lose its potency when applied to the hair. Chlorine is corrosive, and when applied non-diluted bleach to the scalp may lead to irritation of the skin.

Shower caps, plastic wraps and hair dryers: ¹¹

While these items will theoretically kill head lice by generating heat, their efficacy in treating head lice infestations has not been documented. Because shower caps and plastic wraps act as an occlusive dressing, they should not be used in combination with pediculicides whose safety has not been demonstrated when used in this manner. To avoid possible choking or accidental asphyxiation, shower caps and plastic wraps must be used with discretion only on older children and adults and should never be used on young children.

E. Recommendations for Head Lice Treatment

Table 3. Recommended head lice treatment by various resources.

Authority	Recommended Treatment	Alternate Recommendation	Comments
National Pediculosis Association ¹	1% permethrin	Manual removal of lice and nits	Strongly discourages the use of lindane
American Academy of Pediatrics ²	1% permethrin	None given	Lindane may be used on patients who fail to respond or are intolerant of other approved therapies.
“Drugs for Head Lice” printed in <i>The Medical Letter</i> . ^{7,8}	1% permethrin	pyrethrin <u>OR</u> a single dose of ivermectin 200 <u>ug</u> /kg <u>OR</u> malathion, <u>OR</u> 5% permethrin	

F. Screening and Manual Removal of Head Lice and Nits¹⁴

The following recommendations should be given to those persons who screen and manually remove head lice and nits following treatment with a pediculicide or an alternate treatment.

1. Work under good light such as the natural sunlight by sitting near a window or going outdoors. A strong lamp can also be used. If eyesight is a problem, a magnifying glass can be used.
2. Use a grooming comb or hair brush to remove tangles, make sure combs and brushes are cleaned before being used again. Combs and brushes should be cleaned by immersion in water hotter than 130° F, Lysol®, rubbing alcohol or a pediculicide for one hour.
3. To aid in the removal of nits, the hair should be wet. Effective nit removal can be accomplished following the use of a conditioner, however use of a conditioner within 2-3 days following the use of permethrin or malathion may reduce the residual ovicidal capabilities of these products. Hair can be soaked in a white vinegar solution (3% to 5% acetic acid) followed by application of a damp towel soaked in the same solution for 30-60 minutes to aid in nit removal.⁹

4. Divide the hair into sections and fasten off the hair that is not currently being screened.
5. Although it is not necessary to wear gloves while screening a head for head lice or nits, disposable gloves or other disposable screening tools, (i.e., wooden sticks, tongue depressors or cotton applicators) may be used so screening personnel do not have to have direct contact with a child's hair. Because the risk of spreading head lice from the head of an infested person to the head of a non-infested person on gloves of the person doing the screening is extremely small, it is not necessary to change gloves between screening the heads of different persons. However, if a person has a visible secondary bacterial infection on the scalp, the person screening the head may wish to change their gloves and wash their hands before screening the head of another person.
6. Comb through the same section of hair and look for attached nits (lice eggs). Nits are generally laid close to the head but can be found anywhere on the hair shaft.
7. Using a nit removal comb, go through a section of hair starting at the scalp and proceeding to the end of the hair shaft. Dip the comb into a cup of water or use a paper towel to remove any lice, nits, or debris from the comb between passings. (If debris builds up, use an old toothbrush to clean the comb and discard the toothbrush after use.) Several clinical studies have shown the LiceMeister® nit comb (National Pediculosis Association, Newton, MA; Patent DES353915) to be very effective in nit removal.¹⁰
8. If the lice comb does not remove the nits, use your fingernails or safety scissors to snip off the individual hair strands with attached nits.
9. Go to the next section of hair until all sections have been completed.
10. After the screening and nit removal has been completed, search the head for live lice. A second person to assist in the search will be helpful since head lice crawl quickly. Head lice can be caught using tweezers, your fingernails, or can be stuck with double sided tape.
11. Even under the best of conditions, a few nits may be missed. Check the infested person every 1-2 days for at least two weeks until all signs of the infestation are gone. Finding a nit or two the next day does not necessarily mean reinfestation. Being consistent and diligent about manual lice removal will help.
12. If additional nits are discovered, live lice may still be on the head. Another thorough manual search should be done.

G. Treatment Failures

Treatment failures are commonly blamed on head lice becoming resistant to pediculicidal shampoos (permethrin, pyrethrin, and lindane). While resistance may be a factor in treatment failures, other factors including the misuse of pediculicides, failure to remove nits after use of pediculicides, and recontamination from other infested persons or from the environment need to be examined to determine the cause of the treatment failure.¹²

Resistance of head lice to pediculicides

Current data regarding the resistance of head lice to pediculicides are incomplete. Resistance to lindane has been well documented throughout the world including Canada, Israel, Denmark and Malaysia.¹⁵

A study conducted by Harvard University suggests head lice in the United States have a higher resistance to permethrin than those found in Borneo.⁵ Results of this study must be interpreted cautiously as many of the infested subjects had chronic infestations and had been previously treated for their infestation. Few susceptible lice would remain in a sample that consists of persons with chronic or repeated head lice infestations. Infested subjects from Borneo had not been previously treated with a pediculicide and the study showed that head lice had significantly less resistance to permethrin than those from the United States.⁵ A study in Israel also suggests an increased resistance of head lice to permethrin.¹⁶

Except when using lindane, treatment with a pediculicide will kill adult lice and nymphs within several minutes (see section A, Table 2). When determining if resistance is the reason for a treatment failure, it should be determined if any lice have been killed by the treatment. If some lice die and some remain alive, there is a good chance that resistance is not the cause of the treatment failure.

Misuse of pediculicides

Pediculicides should be used according to manufacturer's recommendations. Washing hair with shampoos that contain conditioners or a non-pediculicide containing creme rinse prior to the application of the pediculicide can leave a coating on the hair that may protect the nits and decrease the absorption of the pediculicide making it less effective.¹ The application of the pediculicide should concentrate on the back of the head where lice and especially nits are most prevalent, and be worked in as close to the scalp as possible.

Failure to manually remove nits

No pediculicide is 100% effective in killing nits, and none will remove nits. Following treatment with pediculicides nits should be removed manually (see section F). Failure to remove nits may result in chronic head lice infestation.

Recontamination from an infested person or the environment

Permethrin and malathion are the only pediculicide that will remain active on the hair for several days after application. Persons who receive treatments other than permethrin or malathion remain susceptible to head lice reinfestation as soon as the pediculicide is removed from the hair.

VI. THE ROLE OF THE LOCAL HEALTH DEPARTMENT

It is the role of the local health department to provide consultation to school officials, and support the health program of each school district in their jurisdiction. While no state statute or administrative code is specific to the issue of head lice in schools, authority for local health department involvement in school health programs can be found in Wisconsin Statute 251.06 (2)(a).

“A level I health department shall provide at least surveillance, investigation, control and prevention of communicable diseases, other disease prevention, health promotion and human health hazard control.” Wisconsin Statute 251.06 (2)(a)

“A local board of health shall assure that measures are taken to provide an environment in which individuals can be healthy.” Wisconsin Statute 251.04 (7)

A. Consultation and Support to School Officials

The objective of the local health departments is to prevent and control head lice in their community.

The primary role of the local health department is to provide parents of students, school officials and the public with the most current information available on the prevention, control and treatment of head lice infestations. To do this, health department staff should review current scientific literature, be aware of news stories relating to head lice, and have regular contact with the school officials and staff.

Prior to the beginning of classes in the fall, staff from the local health department should meet with representatives from each school district to review and, if necessary, revise the policy of the school district for controlling head lice in the schools. The policy should include a protocol for the exclusion of students with head lice and when they may return to the classroom, and a protocol for the notification and request for additional assistance from the local health department. Health department staff and school officials should have a clear understanding of each others role in preventing and controlling head lice infestations in the school.

The local health department should develop a health department protocol and provide training to staff from school districts to assure that each school district has established a team of properly trained staff and volunteers whose role may include:

- The accurate identification of head lice and nits; and
- Providing current information for the safe, effective treatment of head lice to the parents of infested students.

B. Assessment of Students With Chronic or Recurrent Head Lice Infestations

A student who has been treated for head lice, but continues to miss class time because of a chronic or recurrent head lice infestation, should be assessed by school officials to determine a possible cause of the treatment failure (see section V, G) and identify possible environmental sources of reinfestation. If the actions taken to correct the situation fail, and the student continues to be absent from class, school officials may ask the local health department for assistance in reassessing the student.

The assessment of the student by the local health department should involve the parents of the infested student, and may include the following issues:

- Do the parents and the student understand how head lice are spread, treated and controlled?
- Do the parents have a physical or mental condition that will prevent them from implementing prevention, control and treatment recommendations? (i.e., poor eyesight, cognitive impairment, arthritis, speech or language deficit, illiteracy)
- Is the family financially able to purchase lice-killing medication?
- Have all environmental sources of head lice been investigated and ruled out as a potential source of reinfestation.

C. Corrective Actions

When the assessment identifies problems that may result in chronic or recurrent infestation of the student, the local health department may recommend actions to correct the problem and assist school officials and the parents in implementing those recommendations. These corrective actions may include the following:

- Consultation with physicians, an Advanced Practice Nurse Prescriber or others who make recommendations regarding the treatment of head lice infestations
- Assistance through county social services, for families who cannot afford to purchase lice-killing medication or other supplies and equipment necessary to control head lice infestations.
- Explaining, in a manner that can easily be understood, the appropriate use of lice-killing medication, and how the environment should be cleaned to prevent and control head lice in the home.

VII. PREVENTION AND CONTROL OF HEAD LICE IN THE HOME¹

The prevention and control of head lice begins in the home. Remember, schools and daycare centers do not spread head lice, people do! After a member of the family is diagnosed with head lice, the following recommendations may help prevent the spread of head lice in the home.

A. When Head Lice are Confirmed on a Family Member

- Check every household member for lice and nits.
- Anyone with whom the infested person has recently had physical contact or may have shared lice-carrying objects should be notified that they may have been exposed to head lice.
- If the infested person is a student, their school should be notified.

B. Who Should be Treated

- Treat only those persons with confirmed head lice or nits with a pediculicide.
- It is generally not recommended to do a preventive treatment of contacts of an infested person. One possible exception may be bedmates of an infested person.
- Following any treatment, nits should be removed manually following the recommendations found in section III, part F.
- Persons treated for head lice or nits should be checked for lice and nits every 1-2 days for at least two weeks even if a second application of the treatment is planned.

C. Cleaning the Home Environment¹

- Floors, rugs, pillow and upholstered furniture should be thoroughly vacuumed. There is no need to discard the vacuum bag after cleaning, except for aesthetic purposes.
- Clothing, linen and cloth toys worn or handled by the infested individual during the 2 days before diagnosis should be washed in water hotter than 130° F, or machine dried at the hottest setting for at least 20 minutes.
- Other articles may be dry-cleaned or sealed in plastic bags for at least 10 days to kill nits.
- Combs and brushes used on infested persons should be immersed in water hotter than 130° F, Lysol®, rubbing alcohol or a pediculicide for one hour.
- It is not necessary to hire an exterminator to treat the home.
- **Spraying or fogging homes with insecticides or pediculicides is not recommended, and maybe harmful if used in a poorly ventilated area.**

VIII. PREVENTION AND CONTROL OF HEAD LICE IN THE SCHOOL SETTING

The proper education of students, parents, school and health care personnel, along with the commitment and cooperation from school, public health and human service officials is vital to the success of a pediculosis screening program. It is important for nurses to be up-to-date about the efficacy and risks of the available head lice treatment options and available community resources to assist families and enforce the communicable disease policies in their district.

Newspapers, school newsletters, presentations at parent-teacher organizations, community education classes and health fairs are examples of opportunities to educate parents and other community members about handling head lice, treatment options, environmental cleanup and head lice prevention strategies.

It is important for school district personnel to clearly communicate communicable policy issues regarding the prevention and control of head lice, to the community.

A. Preparation for Screening

Staff from the school district should implement the following recommendations prior to screening students:

- Review current literature on the spread, prevention and treatment of head lice infestations.
- Prepare informational handouts for parents on the identification, transmission and prevention of head lice. This information should be written in a way that will be easily understood, and answer frequently asked questions about head lice. For an example see the attached fact sheet on pediculosis in Appendix A (head lice infestation) prepared by the Wisconsin Division of Public Health.
- Review and, if necessary, revise the policy of the school district regarding exclusion of students with head lice or nits and when these students will be allowed to return to the classroom.
- Prepare a letter to notify parents that a classmate of their child has been diagnosed with head lice. This letter should be written in an informative way that will not result in unnecessary anxiety for the parents.
- Provide proper training regarding the screening procedures and record-keeping process for all school personnel or volunteers who will conduct pediculosis screening.

B. Screening of Students

It is the decision of each school district to determine the need for regular screening of students for head lice. Those school districts that choose not to do regular screening of students should be prepared to screen all close contacts or possibly all classmates of an infested student. Those districts that choose to establish a regular screening schedule should implement their screenings after students return from scheduled breaks in the school year, for example:

- After the start of the school year
- After winter break
- After spring break

C. When Head Lice are Confirmed on a Student

- Promptly contact the parents to pick up the student at school. Authority to send a student home is found in Wisconsin Administrative Code HSS 145.06 (1) **Schools:**

“Any teacher, principal or nurse serving the school may send home, for the purpose of diagnosis and treatment, any pupil suspected of having a communicable or of having any other disease or condition having the potential to affect the health of other students and staff including but not limited to pediculosis or scabies.”

- In a sensitive manner, separate the infested student from other students while s/he waits to go home, being careful to avoid public isolation.
- Be prepared to spend time talking with the parent about treatment options and school district policy for returning the student to school.
- Make current literature available to the parent. Emphasize that other family members should be screened, and demonstrate how that is done.
- If the infested student has siblings in the same school, have them screened for head lice. Alert the sibling’s teacher, as appropriate.
- Classmates of identified elementary school aged students should be screened. In middle and high school grades, screening may only be necessary for locker-mates or close friends, unless the infested student is involved in a team activity where head gear may be shared (e.g., baseball or wrestling team).
- To convince parents that their child is infested with head lice, show them the lice and/or nits found on their child’s head. This will enable the parents to identify lice and nits when checking their child’s hair.
- Reassessment is a crucial component of the screening process as students return to school. An infested student should report to the health room upon return to school with a note describing treatment. If the school district has a “No-nit” policy, and nits are found on the child’s hair

shafts, the child should be returned home until PREVENTION AND CONTROL IN THE SCHOOL

D. Return to School

It is the decision of each school district to determine when a student who was infested with head lice or nits can return to school. “No-lice” ,“no-nit” and "modified no-nit" policies are addressed below.

“No-lice policy”

- A head lice infestation must be treated with an effective lice killing treatment and removed from the hair before the student returns to the classroom. Under this policy, it is assumed that any nits that may remain on the head have been killed by the treatment or will be killed during the second treatment.
- A “No-lice” policy allows students to return to the classroom the day after being treated with an effective lice killing treatment.
- Staff from the school, either the school nurse or a trained volunteer, must check infested students **before** they are allowed to return to the classroom.

"No-nit" policy

- All head lice and nits (eggs) must be removed from the head before the student returns to the classroom, regardless of the treatment used to kill live lice.
- Staff from the school, either the school nurse or a trained volunteer, must check infested students **before** they are allowed to return to the classroom.
- The National Pediculosis Association strongly recommends that schools adopt a “No-nit” policy, although this policy has not been demonstrated to be effective in controlling head lice transmission³.
- Because of the difficulty in determining if a nit is viable or has been killed by a lice killing treatment, a “No-nit” policy can lessen the chance of diagnostic confusion that may result in inappropriate retreatment of the infested person.
- Because nits can often be confused with hair care residue or dandruff on the head, a “No-nit” policy may lead to unnecessary student absenteeism from school. It is important that each person who examines students’ heads for head lice infestation and nits are properly trained to identify nits (see section I).
- It is important that staff and volunteers who reassess returning students who have been diagnosed with head lice fully comply with the policy of their school district regarding the return of these students to the classroom.
- It is important to educate parents to insure they understand their responsibility under the “No nit” policy.

PREVENTION AND CONTROL IN THE SCHOOL

"Modified no-nit policy"

- An infestation must be treated with an effective lice killing treatment and head lice must be removed from the hair before the student returns to the classroom
- Staff from the school, either the school nurse or a trained volunteer, must check infested students for live lice **before** they are allowed to return to the classroom.
- The school district designates a period of time (usually 5-10 days) after which the student must be completely nit-free.
- After the designated time period, staff must check infested students for nits **before** they are allowed to return to school.
- At any time during the designated time period if the child is known or suspected of having live lice, the student should be excluded until the live lice are removed.
- The modified "no-nit" policy allows the student to remain in class, and allows parents time to remove nits from their children's hair.
- It is important that staff and volunteers who reassess returning students who have been diagnosed with head lice fully comply with the policy of their school district regarding the return of these students to the classroom.

E. Cleaning the School Environment

- Floors, rugs, pillow and upholstered furniture should be thoroughly vacuumed. There is no need to discard the vacuum bag after cleaning, except for aesthetic purposes.
- Combs and brushes used on infested persons should be immersed in water hotter than 130° F, Lysol®, rubbing alcohol or a pediculicide for one hour.
- Clothing, linen and cloth toys worn or handled by the infested individual within 2 days before diagnosis should be washed in water hotter than 130° F, or machine dried at the hottest setting for at least 20 minutes.
- Other articles may be dry-cleaned, or sealed in plastic bags for at least 10 days.
- It is not necessary to hire an exterminator to treat the school.
- **Spraying or fogging schools with insecticides or pediculicides is not recommended, and may be harmful if used in a poorly ventilated area.**

PREVENTION AND CONTROL IN THE SCHOOL

F. Preventing the Spread of Head Lice in Schools

School nurses in conjunction with administration and custodial staff may wish to initiate facility inspection and prevention procedures at school, which may include:

- Storing each child's possessions in individual cubbies, lockers or even individual plastic bags;
- Teaching children to hang coats separately--placing hats/gloves in sleeves of coats/jackets;
- Teaching children not to share clothing, hats/caps, helmets, headsets or personal grooming articles; individual combs should be distributed on picture day;
- Storing towels, smocks and gym clothing brought from home in separate cubbies and encouraging students to bring these articles home frequently for washing;
- Shared headgear should be cleaned and disinfected with Lysol® or rubbing alcohol before being used by other students.

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X. ACKNOWLEDGMENTS

18

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Pediculosis (head lice infestation)

Disease Fact Sheet Series

What is pediculosis (head lice)?

Pediculosis is an infestation of head lice on the hair of the head. The lice feed on human blood which can cause severe local itching.

Who gets pediculosis?

Anyone may become infested with head lice, regardless of age, sex, race, or standards of personal hygiene. Head lice are frequently found in schools and day care centers, and are easily spread from person-to-person.

How are head lice spread?

Head lice are spread through direct head-to-head contact with an infested person or indirect contact with lice-carrying objects such as combs, brushes, hats or scarves. Since nits (louse eggs) must be laid by adult lice, the chances of nits being spread from person-to-person are minimal.

Do animals spread head lice?

No. Lice from animals do not infest humans.

What are the symptoms of pediculosis?

The first indication of an infestation is usually itching at the back of the head and around the ears. Itching in these areas should lead to an examination of the scalp for louse nits (eggs). Severe scratching may result in secondary bacterial infection in these areas. Head lice do not carry or spread disease.

How soon do symptoms appear?

It may take 2 to 3 weeks for a person to notice the intense itching associated with pediculosis.

How long is a person able to spread head lice?

Lice can be spread as long as they remain alive on the infested person or their clothing.

How long do head lice live away from the body?

Unattached to the body and without a blood meal, head lice survive for approximately 6-24 hours (averaging about 12-15 hours).

What can be done to prevent the spread of head lice?

Avoid physical contact with infested individuals and their belongings, especially clothing, headgear, brushes, combs and bedding. Combs and brushes used on infested persons should be immersed in hot water (>130°), Lysol®, rubbing alcohol or a lice-killing chemical for 1 hour. Floors, rugs, pillows and upholstered furniture should be thoroughly

vacuumed, and the vacuum bag discarded when complete. Clothing, linen and cloth toys worn or handled by an infested individual within 2 days of being diagnosed with head lice should be washed in hot water (>130° F) or machine dried at the hottest setting for 20 minutes. Other articles may be dry cleaned or sealed in plastic bags for at least 10 days to destroy lice and eggs. In addition, parents should perform regular lice checks on the scalp of children who attend school and day care centers, especially when excessive itching is noticed. Fogging with insecticides or spraying the environment with lice-killing chemicals is not recommended.

What is the treatment for pediculosis?

There are several medicated shampoos commonly used to treat head lice. Shampoos or creme rinses that contain 1% permethrin have the fastest killing time against adult lice and the highest nit-killing capability. Permethrin has a residual effect that will continue to kill nits for several days after the first application. While one application should be sufficient to kill lice and nits, some experts suggest a second treatment one week after the first. Although resistance to permethrin has been reported from other countries, no resistance has been reported in the United States.

Shampoos which contain pyrethrin kill lice quickly but do not leave a residual that will continue to kill nits, resulting in a less effective treatment. Two applications of these types of shampoos 7-10 days apart are recommended to kill nits.

Shampoos containing lindane are available by prescription only. Lindane has the slowest killing time for head lice (up to several hours) and lowest nit killing capability. Lindane is not recommended for young children, or pregnant or nursing women, and should only be used if other approved therapies did not work or cannot be tolerated. Misuse or overuse of lindane may be toxic. There are widespread reports from countries other than the United States of lice being resistant to lindane.

Alternate treatment methods such as the use of tub butter or margarine, mayonnaise, Vaseline® and olive oil, designed to smother head lice and nits can be used with discretion for those persons for whom lice-killing medications have failed. The effectiveness of alternate treatments is unclear. Kerosene, gasoline and other flammable products should never be used to treat head lice. Avoid using powder to remove alternate treatments from the hair. Grease cutting shampoos or dish soap may be used to remove alternate treatment. Avoid wearing plastic wrap and shower caps when using lice-killing medication. Lice-killing medications have not been safety-tested for use with plastic wrap or shower caps. Such devices should never be used on young children, and used with discretion on older children and adults when alternate treatments are used.

Manual removal of nits with a nit comb, fingernails, or by cutting strands of hair that contain nits is essential following treatment with pediculocides or alternate treatments. To aid in the removal of nits, hair can be soaked in a 3% to 5% white vinegar solution followed by application of a damp towel soaked in the same solution for 30-60 minutes before attempting nit removal.