Dealing with Head Lice in Group Settings

by Jennifer Takagishi

Of the infectious diseases children can come down with, one of the most feared, though least serious, is head lice. It strikes fear in the hearts of parents and child care providers alike, mostly due to concern for stigma that the child or worker is 'unclean' and that 'everyone will know.'

Description and Lifecycle

The head louse itself is 2-3 mm, or about the size of a sesame seed or grain of rice. It has six legs and is usually tan to grayish-white. Although people think it jumps between people, it actually has to have direct contact in order to infect another person. Since the head louse feeds off of blood, once removed from the scalp, it dies within one day. It lays eggs, up to 10 per day, and the eggs are tightly attached to the hair shaft. They may look opaque or may be disguised with pigment matching the hair color of the infested person. The eggs hatch in about 8-9 days. Once hatched, the nymph leaves the shell casing behind then takes 9-12 days to become an adult. The female then mates and can lay eggs about 1.5 days after becoming an adult. Females live up to 3 to 4 weeks. Untreated, the cycle repeats itself about every three weeks. Note that there is some disagreement among experts about the term 'nits' as some use it to describe empty egg casings and use the term 'eggs' to describe the developing nymph, whereas others use the term nits to describe both.

Jennifer Takagishi, M.D., was raised in New Hampshire and graduated from Wellesley College. She attended the Tufts University School of Medicine, and completed her pediatric residency at the Duke University Medical Center. She has co-authored several case reports and articles on pediatric resident education, primarily focused on breastfeeding, advocacy, and the business of medicine. She graduated from the Academic Pediatric Association (APA)'s Educational Scholars Program, Community Cohort in 2010, studying the effects of linking pediatric residents with doulas to learn breastfeeding and cultural competency. She also enjoys her work with children in medical foster care and is the Children's Medical Services Assistant Medical Director for two counties. This is a program that offers nurse care coordination, medical care and Medicaid managed care to children with special health care needs. She has been a member of the executive committee for the American Academy of Pediatrics' Council on Early Childhood since 2012, and co-directs the communication committee.

Itching is caused by becoming sensitized to parts of the saliva that the louse injects into the scalp to help suck the blood. The first time someone gets lice, the itching may not develop for 4-6 weeks because it may take that long for sensitivity to occur.

Diagnosis

Head lice is diagnosed by examination. When looking for lice, small sections of hair should be examined at a time, as the lice are very small, sometimes even requiring a microscope to be seen. They crawl quickly and avoid light. Eggs are easier to spot along the nape of the neck and behind the ears within 1 centimeter (less than a half inch) of the scalp. Caution should be taken, however, as hair products, dandruff, scabs, dirt, or other insects can be confused with lice, and an *over-diagnosis* of infection can lead to over-treatment, removal from child care settings, and unnecessary anxiety.

Photograph by Gilles San Martin from Namur, Belgium

Inclusion/Exclusion Criteria

Once the diagnosis has been confirmed, the child or child care worker does not have to be immediately removed from the setting. This is a newer recommendation, as there is no immediate threat to anyone around the child or worker. The parent of the child or the worker needs to be notified to begin treatment at the end of the program day, and should not return

until treatment has begun. The thought is that unnecessary removal from child care is more detrimental to the child due to missed learning opportunities, missed social experiences, and possible stigmatization. It also puts a financial burden on families to miss work. Child care workers also miss work, another financial burden as well as a load upon other staff members covering the worker's job.

Child care settings may use the standards from *Caring for Our Children, 3rd Edition, National Health and Safety Performance Standards, Guidelines for Early Care and Education Programs* to create their guidelines (see References).

"Temporary exclusion is recommended when the child has any of the following conditions: Head lice until after the first treatment (note: exclusion is not necessary before the end of the program day)" (pp. 132-133).

The standard for staff members states to "exclude from the end of the day of discovery until after the first treatment" (p. 135).

More detailed discussion of this can be found in the book's Infectious Disease section regarding *pediculosis capitis* (head lice), Standard 7.5.8.1: Attendance of Children with Head Lice.

The books suggests the following resources that may be useful to help with education and information about treatment: www.cdc.gov/parasites/lice/ and https://www.healthychildren.org/English/health-issues/conditions/from-insects-animals/Pages/default.aspx

Household Contacts

Once a person has been found to have lice, all household members should be checked for head lice as well, and those with live lice or nits within 1 cm of the scalp should be treated. It may be worthwhile treating family members who share a bed with the infested person, even if no live lice are found. Although it is easier to transmit infection by head-to-head contact than by other means, it is wise to clean hair care items and bedding used by the infested person, along with other items used within the prior 24-28 hours. These items may include clothing, headgear, furniture, carpeting and rugs. Washing, soaking, or drying items at temperatures greater than 130°F will kill stray lice or nits. Furniture, carpeting, car seats, and other fabrics or fabric-covered items can be vacuumed. Lice spray is not necessary and should not be used. Although it is rarely necessary, items that cannot be washed can be bagged in plastic for two weeks, a time when any nits that may have survived would have hatched and nymphs would die without a source for feeding. Exhaustive cleaning measures have not proven to be beneficial.

Helmet Care

For child care settings in which helmets are available for children, the question may come up for how to clean them. In *Caring for Our Children* guidelines noted above, the standard can be found on page 286. Briefly, it states that,

"Concern regarding the spreading of head lice in sharing helmets should not override the practice of using helmets.… If helmets need to be shared, it is recommended to clean the helmet between users. Wiping the lining with a damp cloth should remove any head lice, nits, or fungal spores. More vigorous washing of helmets, using detergents, cleaning chemicals, and sanitizers is not recommended…. The use of these chemicals can also deteriorate the straps used to hold the helmet on the head."

To Screen or Not To Screen

In child care settings and schools, screening for nits alone is not an accurate way of predicting which children are or will become infested. Also, screening for live lice has not been proven to have a significant effect on the incidence of head lice in a child care or school community over time. In addition, such screening has not been shown to be cost-effective; thus routine classroom or schoolwide screening should be discouraged.

Several descriptive studies have suggested that education of parents in diagnosing and managing head lice may be helpful. Parents can be encouraged to check their children's heads for lice regularly and determine if the child is symptomatic. It may be helpful for a trained person (or nurse/health provider) to check a specific child's head if he or she is demonstrating symptoms.

"No Nit" Policies

The "no nit" policy often in place requires that a child or worker be completely lice- and nit-free before returning to child care settings. This recommendation is not supported by the American Academy of Pediatrics or National Association of School Nurses for the above-mentioned reasons. However, it is still frequently enforced by child care settings, schools, and some organizations.

Treatment

There are many treatment options available, and parents should read the instructions carefully before using. Treatment options include over-the-counter medications (OTC) such as the widely used *permethrin* (1%, not 5%) brand name Nix. It has very low toxicity. Another option is the *pyrethrins Plus Piperonyl Butoxide*, which is manufactured from natural extracts from the chrysanthemum, and are formulated with piperonyl butoxide (e.g. RID) and are available OTC. Pyrethrins are toxic to lice nervous systems, but have extremely low toxicity in humans. Resistance to these medications is variable between

communities. It is often recommended to repeat these medications in 7 days to kill any eggs that survived the first treatment, although some newer studies suggest day 9 as the optimal time.

Malathion (0.5%) is an organophosphate, also known as a pesticide, sold under the brand name Ovide. It is available only by prescription as a lotion. Malathion has high ovicidal (killing egg cells) activity, and a single application is adequate for most patients. However, the product should be reapplied in 7 to 9 days if live lice are still seen. The high alcohol content of the product makes it highly flammable; therefore, allow the hair to dry naturally. Do not use a hair dryer, curling iron, or flat iron while the hair is wet; and do not smoke near a child receiving treatment. Safety and effectiveness of malathion lotion have not been established in children younger than 6 years, and the product should not be used in children younger than 24 months.

Benzyl alcohol 5% (Ulesfia) is approved for treatment of head lice in children older than 6 months. The product suffocates the lice. Benzyl alcohol is not ovicidal and should be repeated as stated previously for permethrin 1%. Benzyl alcohol is available by prescription and should not be used in newborns because a version of it has been associated with the neonatal gasping syndrome.

Spinosad (0.9% suspension) is approved for topical use in children 6 months of age and older as it also contains benzyl alcohol. Safety in children younger than 4 years has not been established. Spinosad has a broad spectrum of activity against insects, including many species of lice. Activity appears to be both ovicidal and pediculicidal (kills lice) by disrupting its nervous system, then staying around long enough to affect the developing larvae until they form an intact nervous system. Spinosad is available by prescription and a second treatment is given at 7 days if live lice are seen.

Ivermectin is a widely used anti-parasitic worm agent, that is approved in a lotion form for children 6 months or older for head lice, under the product name Sklice. The medication causes paralysis and death of the lice. It is available by prescription. Only 1 application is required, because when the treated eggs hatch, the lice are not able to feed as a result of muscle paralysis and, therefore, are not viable. Adverse effects are rare.

Families not wanting to use medications may want to try 'natural' products. Essential oils such as Andiroba oil, Quassia vinegar, melaleuca oil (tea tree oil), and lavender oil have been widely used in traditional medicine for the eradication of head lice. However, their production can be variable, so the effects may not be consistent. In addition, these oils may cause a contact reaction which limits their use. As natural products, they are not required to meet FDA efficacy and safety standards for medications. Although many plants naturally produce insecticides for their own protection that may be chemically created for use by humans, some of these insecticidal chemicals produce toxic effects as well. Until more data are available regarding safety, their use in infants and children should be avoided.

Occlusive agents, such as 'petrolatum shampoo,' mayonnaise, butter or margarine, herbal oils, and olive oil, applied to suffocate the lice are widely used but have not been evaluated for effectiveness in randomized controlled trials. To date, only anecdotal information is available concerning effectiveness.

A newer treatment option involves using hot air to dry out, or dessicate, lice. The AirAllé device is a custom-built machine that uses one 30-minute application of hot air in an attempt to dessicate the lice. The machine is expensive, and the operator requires special training in its use. A regular blow dryer should not be used in an attempt to accomplish this result, because investigators have shown that blow dryers can cause live lice to become airborne and, thus, potentially spread to others in the vicinity.

Summary of Key Points

- Head lice cause much anxiety, but are not dangerous.
- No healthy child should be excluded from child care/school or allowed to miss time because of head lice or nits. "No-nit" policies for return to child care or school should be abandoned.
- Child care personnel involved in detection of head lice infestation should be appropriately trained. The importance and difficulty of correctly diagnosing an active head lice infestation should be emphasized.
- Head lice screening programs have not been proven to have a significant effect over time on the incidence of head lice in the child care and school settings and are not cost-effective. Parent education programs may be helpful in the management of head lice in these settings.
- If treatment is needed, several medical and non-medical treatment options are available and should be decided upon by the parent in concert with their health care provider as needed.

References

Caring for Our Children, 3rd Edition, National Health and Safety Performance Standards, Guidelines for Early Care and Education Programs: http://cfoc.nrckids.org/

Devore, C. D., & Schutze, G. E. (2015). Head lice. *Pediatrics, 135*(5), e1355–e1365.

http://pediatrics.aappublications.org/content/early/2015/04/21/peds.2015-0746

Resources

Head Lice articles from HealthyChildren.org
www.healthychildren.org/English/health-issues/conditions/from-insects-animals/Pages/Head-Lice-Treatment-Myths-Realities.aspx

Photo of head louse reference by Gilles San Martin from Namur, Belgium (Male human head louse uploaded by Jacopo Werther) CC-BY-SA-2.0: http://creativecommons.org/licenses/by-sa/2.0
via Wikimedia Commons. Downloaded from www.healthline.com/health-slideshow/what-do-head-lice-look-like on December 28, 2015.

—■—