IPM for Head Lice in Schools

INTRODUCTION

Few conditions seem to cause as much concern and anxiety in schools and homes as an infestation of head lice in the hair of children. Many people associate head lice with filth, but in reality these insects do not discriminate according to social class or level of personal hygiene.

Lice are parasites of humans. Three types of lice can infest humans: head lice, body lice, and crab lice. This section deals primarily with *Pediculosis humanus capitus,* the head louse.

IDENTIFICATION AND BIOLOGY

Head lice (*Pediculosis humanus capitus*) are wingless insects measuring about $\frac{1}{8}$ inch long. They are flat and gray-brown in color, with special mouth parts for piercing and sucking. Their laterally positioned eyes are small, and the female is generally larger than the male. Adult lice have six legs with large tarsal claws, which enable them to cling to hair shafts of a host.

Lice are unable to jump or leap from victim to victim, but adults and newly hatched nymphs can move rapidly from hair shaft to hair shaft. They live their entire life as an external human parasite. They do not survive for more than one or two days without a blood meal.

Eggs of lice, called nits, are glued to hairs of the head near the scalp, especially near the ears and on the back of the head. A female can lay 8 to 10 eggs per day and a total of 50 to100 eggs during her life. Usually the nits hatch in 7 to 10 days, leaving behind empty shells attached to the hairs. (Unhatched nits are clear in color; hatched or empty nits are milky in color, with a missing top). The young lice must feed within 24 hours, or they die. It takes about a week to 12 days for lice to become adults.

When lice feed on human blood, they inject their saliva into the host to prevent clotting. Meanwhile, they deposit fecal material onto the scalp. People previously unexposed to lice usually experience little irritation from their first bite. After a short time, some individuals become sensitized to the bite and experience a general allergic reaction, which may involve reddening of the skin, itching, and general inflammation.

Body lice (*Pediculosis humanus corporis*) are practically indistinguishable from the head lice.

The chief features distinguishing them are:

- Body lice attach eggs to clothing fibers instead of hair.
- Adults and nymphs spend most of their time on clothing. They move to the skin to feed and are most numerous where clothing is in continuous close contact with the body, such as at the armpits and belt line.
- Clothing plays a greater role in the transmission of body lice. Body lice survive longer off the host (4–10 days) than head lice; eggs also survive longer off the host (up to 30 days).
- Body lice are unlikely to become permanently established on a host who maintains good personal hygiene, including regular changes to clean clothing.

Crab lice (*Phthirus pubis*) are shorter (about $\frac{1}{16}$ inch long) than the other lice, are oval in shape, and have greatly enlarged second and third pairs of legs with large claws.

Other epidemiologic features are:

- Crab lice mainly infest pubic hair; they occasionally infest other coarse hair—axilla, eyelashes, eyebrows, mustache, or beard.
- Eggs are always attached to hair.
- Clothing plays an extremely small role in transmission. When separated from the human host, crab lice die in less than 24 hours.
- Transmission is almost always venereal; on occasion, indirect transmission occurs from clothing, bedding, and towels.

LEGAL BASIS FOR CONTROL OF LICE

Title 28, Health and Safety, Chapter 27, Communicable and Non-Communicable Diseases, Sections 27.71 (11), § 27.71 (12), 27.72, and 27.73 are the legal basis for excluding and readmitting children to school in relation to specified diseases and infectious conditions.

§ 27.71 (11) specifically relates to *Pediculosis humanis capitis* (head lice) and provides for exclusion of students from school (public, private, parochial, Sunday, or other school or college or preschool) who have been diagnosed by a physician or are suspected of having pediculosis by

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Most of the material included in this chapter came from:
Guidelines for a School Based Program for Control of Lice Infestation and Other Related Conditions. Rev. 1986, Reprinted 1999. Pennsylvania Department of Health. H514.028P. 29 pp.
Wisconsin's School Integrated Pest Management Manual, School Pilot Program Draft. March, 1999. 258 pp.

the school nurse. Exclusion from school is for the period of time until the student is judged noninfectious by the school nurse or by the child's physician.

§ 27.71 (12) requirements for body lice (*Pediculosis humanis corporis*) are identical to the requirements for head lice. Pupils are excluded from attending school until judged non-infectious by the nurse in school or by the child's physician.

§ 27.72 provides for exclusion from school of pupils showing symptoms judged noninfectious.

§ 27.73 provides for readmission to school if the nurse is satisfied that the live infestation is noncommunicable, or when the child presents a certificate of noninfectiousness from a physician.

The Pennsylvania Department of Health's Regulations of Communicable and Non-Communicable Disease do not include *Phthirus pubis* (crab lice).

CONTROL OPTIONS

When lice are discovered in a classroom, all children should be inspected for active lice. All members of the family of any child found with head lice also need to be checked for lice activity. Some school districts will adopt a "no nit" policy and not allow students back into the classroom with any nits remaining on the hair. Unless the problem is addressed at home, an infestation may recur.

Because of increased resistance to prescription and nonprescription treatments, head lice have become more difficult to manage, leading to more pressure on schools to provide treatments. *However, schools should not be sprayed to control head lice.*

Nonchemical Control

Treatments of the Classroom

- Vacuum furniture and floor rugs thoroughly. Discard the vacuum bag immediately.
- Clothing (coats, hats, and other items) can be isolated in individual plastic bags for each student.
- Dry clean or wash clothing in hot water and use a hot dryer setting to kill lice.

Personal treatments

- Because treatments do not kill 100 percent of the eggs, it is important to retreat within 7 to10 days for control. **It is important to read and follow the directions on any product used to control lice.**
- Nit combs are designed to remove lice and eggs from the hair and are very effective if used properly.
- The use of oils such as olive oil and coconut oil have shown promise if left on the hair for at least 8 hours. Consult with the school nurse or local public health nurse for more information.

Chemical Control

Chemicals should not be used within schools to control lice. Infestations result from personal contact or the sharing infested articles such as combs, brushes, and hats. School nursing staff can educate parents about proper louse management in the home.

PREVENTION

Prevention is always better than cure. Here are some suggestions that should help prevent an initial infestation of head lice:

- Assign hooks for coats in the cloakroom.
- Have students keep hats in coat sleeves or pockets rather than in piles on shelves or on the floor.
- Resting mats, towels, or pillows for younger children should be permanently assigned and kept separate while in use and in storage.
- Sharing of combs, brushes, or hats should be avoided.

If an infestation should occur, several steps can help prevent a reoccurrence.

- All personal articles that have been in contact with the patient's head should be deloused. Normal laundering with hot, soapy water (125°F for 10 minutes) or dry cleaning will kill lice and nits on clothing, bed linens, and towels.
- Combs and brushes should be soaked for 10 minutes in a pan of very hot water.
- Car seats, furniture, and carpeting touched by infested individuals should be vacuumed. Discard the vacuum bag immediately.
- Avoid close contact with individuals known to be infested.
- Avoid letting others use your personal articles, particularly hats, combs, and scarves.
- Bathe and shampoo frequently with hot water and soap. Many lice are killed or dislodged in the process.

For more information about head lice, contact the Pennsylvania Department of Health, P.O. Box 90, Health and Welfare Building, Harrisburg, PA 17108; call 1-877-PAHEALTH (877-72-432584); or call your district health consultant. Information also is available on the Pennsylvania Department of Health's Web site at **http://www.health.state.pa.us** and on the National Pediculosis Association site at **http://www.headlice.org/**.