Squashing the Common Head Lice Myths: Update on Eradication and Resistance Patterns

EDUCATIONAL OBJECTIVES

Upon completion of this activity, participants will be better able to:

1. Describe current U.S. data on head lice resistance patterns and the implications of resistance on pediculosis treatment effectiveness in the community.
2. Apply current approaches to head lice management using the latest scientific knowledge about diagnosis, spread, and eradication.
3. Identify FDA-approved pediculicides and discuss their dosage, administration, safety issues, and rationale.
4. Describe clinical data and appropriate administration of newly introduced treatments for head lice.
5. Educate interested audiences and debunk common myths about head lice prevention, proliferation, and eradication.

Post-Test/Rationale

1. The annual cost of head lice management (direct plus indirect costs) in the U.S. ranges from:

   A. $1 million to $5 million
   B. $10 million to $20 million
   C. $100 million to $300 million
   D. $300 million to $1 billion***

Correct answer: D

An estimated 6 to 12 million infestations of head lice occur in the U.S. each year. Many people require multiple repeated treatments. Lost wages contribute to direct costs and have been estimated at over $2,700 per family with each infestation.

2. The American Academy of Pediatrics (AAP) policy with respect to limiting spread of head lice in schools can be best summarized as:

   A. Children with any remnant suggesting lice activity, including a single egg casing or “nit” should be excluded from school until a clean examination can be confirmed.
   B. Children with more than 3 nits found on the hair should be excluded from school.
   C. Children with live lice infestations should receive treatment, but “no-nit” policies are exclusionary and unnecessary.***
   D. Children who are treated with lice are unlikely to have any remaining nits on the hair.

Correct answer: C

Many schools, summer camps, and other programs have “no nit” policies that exclude children even if a single nit is found. The current AAP guideline points out that many fragments thought to be nits really are not, that nits far from the scalp are unlikely to hatch, and that focusing on
eliminating nits in a previously treated child is likely to detract attention from another who has an active case.

3. According to AAP and CDC guidelines, the recommended first-line agents for treatment of head lice are:

A. Over-the-counter agents containing permethrin or pyrethrin***
B. Nonpharmacologic approaches that remove or smother live lice
C. Any topical shampoo or lotion that will kill lice
D. Prescription lotions/shampoos that kill both lice and eggs

Correct answer: A

Despite reported resistance to these pediculicides, the current guideline statements recommend OTC permethrin or pyrethrin agents as first-line, with the prescription agents ivermectin, benzyl alcohol, and spinosad as second-line. Malathion and lindane are recommended only when other agents cannot be used.

4. The main difference between permethrin- and pyrethrin-based pediculicide agents is:

A. Permethrin is available only via prescription
B. Pyrethrin does not kill eggs so retreatment 7–10 days later is needed***
C. These are two names for the same chemical compound
D. Permethrin is used primarily for the treatment of scabies

Correct answer: B

Both permethrin and pyrethrin are available OTC. Permethrin is a synthetic form of the naturally occurring substance pyrethrin. Permethrin is indicated for use in both head lice and scabies (at higher dose for scabies). However, because pyrethrin does not kill eggs, retreatment is recommended in the labeling (answer B).

5. Prescription-only head lice preparations indicated for children over age 6 months that kill lice and eggs (negating need for retreatment or combing) include:

A. Spinosad, ivermectin, and malathion
B. Spinosad, ivermectin, and benzyl alcohol
C. Ivermectin, malathion, and benzyl alcohol
D. Spinosad and ivermectin***

Correct answer: D

Both spinosad and ivermectin are available in topical forms, Rx-only, that kill both lice and eggs. In the case of benzyl alcohol, this agent does not kill eggs but “smothers” the live lice. Malathion is generally not recommended for use in children.

6. The key safety concerns associated with lindane are:

A. risk of toxicity in the case of accidental ingestion
B. flammability if the agent comes in contact with heat or flame
C. neurotoxicity with topical exposure***
D. behavioral problems associated with use in young children

Correct answer: C
Neurotoxicity has been shown to occur with topical exposure to lindane. This risk is greater if the product is left on the head too long, so care must be taken to follow directions exactly. Flammability and behavioral problems are concerns associated with malathion.

7. Lice with genetic mutations that confer resistance to permethrin and/or pyrethrin have been found:

A. Mainly in the Southwestern U.S. states
B. Mainly in the Northeastern U.S. states
C. In about 10 or 20 states across the country
D. In nearly all of the 50 states***

Correct answer: D
Two recent studies of lice sampled from sites across the country showed high rates of resistant alleles; in the study by Gellatly et al 132 of 138 (95%) of collection sites had 100% resistance allele frequencies.

8. Comparative data from head-to-head clinical studies in humans are available for:

A. Spinosad versus permethrin/pyrethrin agents***
B. Ivermectin versus permethrin/pyrethrin agents
C. Spinosad versus ivermectin
D. All of the approved pediculicides

Correct answer: A
Most of the pivotal studies of pediculicides are versus placebo (lotions or shampoos containing no pediculicidal agent). The available comparative data are for spinosad versus permethrin/pyrethrin agents, and suggest that resistance affects efficacy in the latter.

9. Which of the following statements about head lice is a myth?

A. An egg found attached to hair shaft close to the scalp may be viable for hatching into a live louse
B. The complete life cycle of a louse repeats after a 3-week period
C. A nit found anywhere on the hair shaft can hatch into a live louse and cause reinfection***
D. Head lice are spread when lice crawl from an infected person’s head to another head in close proximity

Correct answer: C
The most likely eggs to hatch are those attached closest (within 6 mm) to the scalp. A nit is actually an empty egg casing left over after the egg has hatched; its presence does not confer an infestation, so (C) is a myth. B and D are correct.

10. Household cleaning steps recommended by the Centers for Disease Control and Prevention (CDC) in cases of head lice infestation include:

   A. Machine washing and drying clothing and bedding of all family members
   B. Machine washing and drying clothing and bedding that came in contact with the affected person’s head
   C. Machine washing and drying clothing and discarding any stuffed toys the child may have touched
   D. A professional fumigation service with expertise in lice extermination

**Correct answer: B**

The CDC recommends washing and drying clothing and bedding the infected person may have touched, but also advises against “spending time and money on housecleaning activities.” Fumigation is not needed since lice and eggs do not survive away from the human scalp. (Teddy does not need to be thrown away.)