

HEAD LICE: FINDING THE FACTS

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kpbsd
where kids come first

FACT OR FICTION?

- **Head lice can move from host to host in a variety of ways, including hopping and flying.**

- **FICTION:** Head lice do not hop or fly; instead they move from person to person by crawling from head to head. Indirect spread through contact with personal belongings of an infested individual (combs, brushes, hats, ear phones) is much less likely, but **may occur rarely.**

Burkhart CN, Burkhart CG. Fomite transmission in head lice. *J. Am Acad Dermatol*. 2007; 56 (6): 1044-1047.

FACT OR FICTION?

- **Approximately 6-12 million infestations occur each year in the US, and cost Americans (direct and indirect costs) between 367 million and 1 billion dollars.**

- **FACT:** In the late 1990's costs of lice infestations were estimated to cost Americans $367 million. This included remedies and other consumer costs, lost wages, school system expenses and more. Recently, the costs associated with lice infestation have been identified as closer to $1billion each year.

  Hansen RC, O'Haver J. Economic considerations associated with ***Pediculus humanus capitus*** infestation. *Clin Pediatr (Phila)*. 2004/43 (6):523-527

FACT OR FICTION

- **Head lice infestations are easy to diagnose.**

- **FICTION:** The potential for misdiagnosis and the resulting improper use of pediculicides raise concern about unsafe use of these products, specifically when no lice are present or when products are used excessively. Because lice infestation is so **benign**, treatments must prove safe to ensure that the adverse effects of therapy are not worse than the infestation.

Burkhart CG. Relationship of treatment-resistant head lice to the safety and efficacy of pediculicides. Mayo Clin Proc. 2004:79(5);661-666

Pollack RJ, Kiszewski AE, Spielman A. Over-diagnosis and consequent mismanagement of head louse infestations in North America. Pediatr Infect Dis J. 2000:19(8):689-693.

FACT OR FICTION?

- **Head lice, like body lice, transmit disease.**

- **FICTION:** Unlike body lice, head lice **do not** transmit any diseases. Itching can occur in a sensitized individual, but may not develop for 4-6 weeks with a first case of lice. Rarely, scratching may cause other skin infections.

Gratz NG. *Human Lice: Their Prevalence, Control and Resistance to Insecticides—A Review. 1985-1997*. Geneva, Switzerland; World Health Organization. Division of Control of Tropical Diseases, WHO Pesticide Evaluation Scheme; 1997

Elston DM. Drugs used in the treatment of pediculosis. *J Drug Dermatol*. 2005;4(2):207-211

FACT OR FICTION?

- **Head lice and their eggs will survive for less than 1 day away from the human scalp at room temperature, especially in colder climates.**

- **FACT:** Head lice require warm temperatures (in addition to blood meals every few hours) in order to survive, and their eggs cannot hatch at an ambient temperature lower than that found near the human scalp. In general, eggs found more than 1 cm from the scalp are unlikely to be viable.

  Meinking TA. Infestations. Curr Probl Dermatol. 1999:11:73-120

FACT OR FICTION?

- **All topical pediculicides should be rinsed from the hair over a sink rather than in a shower or bath.**

- **FACT:** Chemicals in current pediculicides are very strong. One must be careful to limit skin exposure and follow label instructions carefully. These treatments should **NOT** be used with children under two or by someone who is pregnant. Rinsing one's hair over the sink rather than in the shower or bath prevents excessive skin exposure. In addition, warm water instead of hot water should be used to minimize absorption attributed to vasodilation.

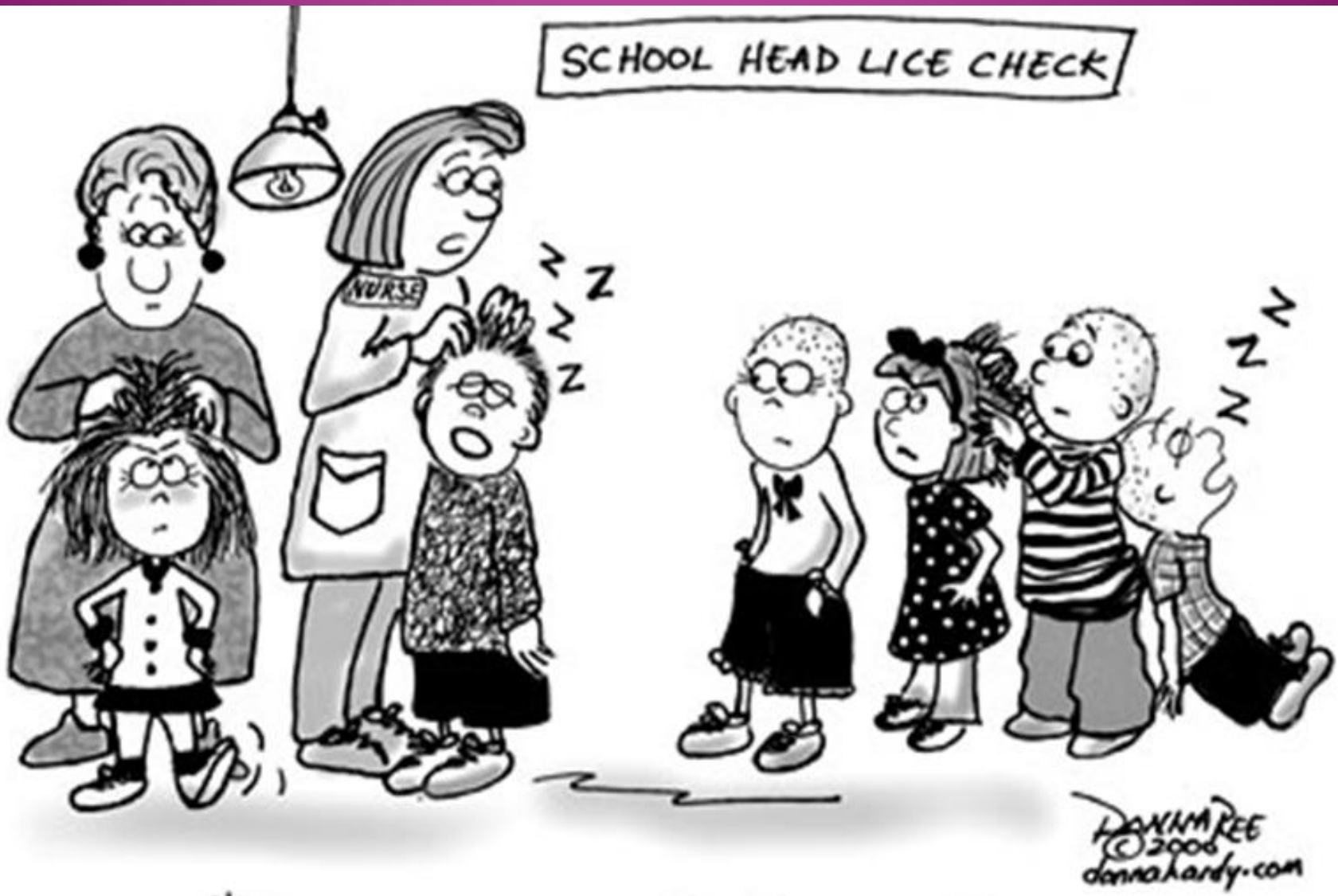
Chesney PJ, Burgess IF. Lice: resistance and treatment. *Contemp Pediatr.* 1998; 15(11):181-192.

FACT OR FICTION?

- **Nix® (Permethrin 1%) and Rid® (Pyrethrins plus Piperonyl Butoxide), popular 'over-the-counter' head lice treatments, work in the same way.**

- **FICTION:** Nix should be applied to wet hair, Rid to dry hair. Nix is a crème rinse, while Rid is available as shampoo or mousse. Both are left on for 10 minutes before rinsing. Nix leaves a residue designed to kill nymphs emerging from the 20-30% of eggs not killed; Rid **requires** a second treatment to kill the same 20-30% remaining nymphs as they hatch in 7-10 days. **Experts recommend retreatment with both on Day 9 for best results**. Resistance to both have been reported.

  Burkhart CG. Relationship of treatment resistant head lice to the safety and efficacy of pediculicides. Mayo Clin Proc. 2004:79(5):661-666



"I THINK SOME PARENTS ARE GETTING FED UP WITH NIT-PICKING."

LIFECYCLE OF A LOUSE

- An adult louse is 2-3mm long (the size of a sesame seed), has 6 legs which grasp hair follicles, and is usually tan to grayish-white in color.
- Females live up to 3-4 weeks. Once mature, they can lay up to 10 eggs per day. Their adult lifespan is about 5 days.
- Eggs are tiny, and attached to the base of the human hairshaft within approximately 4mm of the scalp with a glue-like substance produced by the louse.

LIFECYCLE OF A LOUSE

- Viable eggs camouflaged by pigment are hard to see. Often they are viewed more easily at the posterior hairline.
- Empty eggs are easier to see because they appear white against dark hair.
- Eggs are incubated by body heat and typically hatch in 8-9 days, but can take as long as 7-12 days depending on whether the ambient climate is hot or cold.
- Once hatched, the nymph leaves the empty casing (nit) and passes through 3 nymph stages over 9-12 days before becoming an adult.

LIFECYCLE OF A LOUSE

- Just a day and a half after a nymph reaches adulthood, it can mate and begin laying viable eggs.
- If untreated, the cycle repeats every 3 weeks, approximately.
- The louse feeds by injecting small amounts of saliva and sucking tiny amounts of blood from the scalp every few hours.
- Itching results from sensitization to components of the saliva, but may take 4-6 weeks to develop during an initial exposure.

Pediculosis: Epidemiology

- Highest incidence among children 3 to 12 years old
- About 1 in every 100 U.S. elementary school children will be infested each year
- More frequent in girls
- Not a sign of uncleanliness
- All ages, socioeconomic, ethnic groups affected
- Less frequent in African Americans
  - Oval-shaped hair shaft
  - Lice in U.S. adapted to grasp round hair shaft

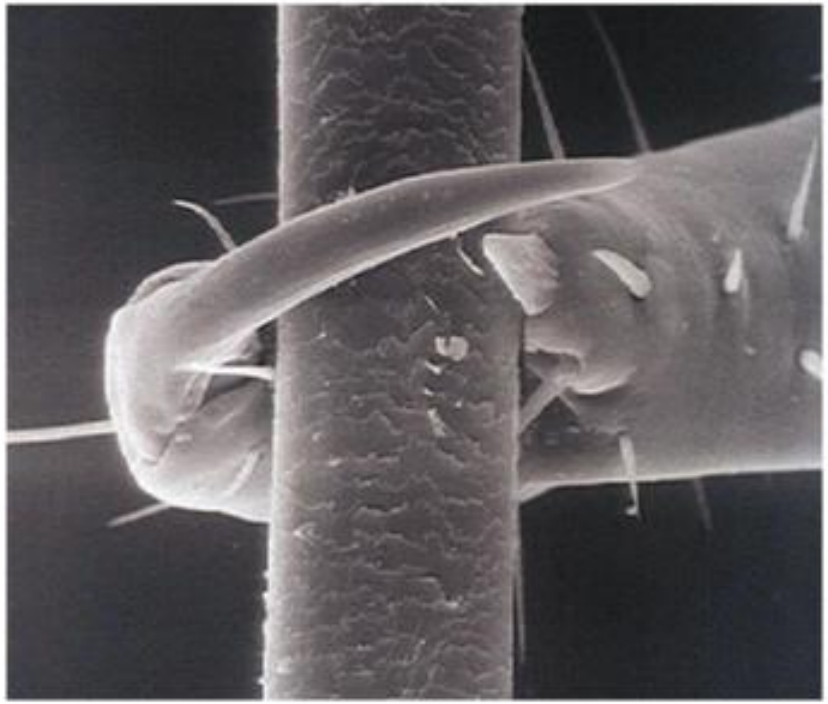


Photo credit: TL Meinking PhD

Louse grasping round hair shaft

Frankowski BL, et al. *Pediatrics*. 2002;110:638-643.

The Louse Family



Photo courtesy of TL Meinking

Relative Size of Louse





Photo courtesy of A. Hebert, MD



Photo courtesy of A. Hebert, MD


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Photo courtesy of A. Hebert, MD

Treatment Comparison



OTC

- Limited controlled clinical data
- Affordable
- Generally safe
- Not 100% ovicidal
- Widespread resistance
- Repeated treatments necessary

Prescription

- Requires definitive evidence of efficacy and safety
- FDA approval
- Possible coverage by insurance
- Not 100% ovicidal

Alternative

- Not regulated by FDA
- Manual removal (combing)
- "Natural" products
  - Tea tree oil
  - Anise oil
  - Not required to meet FDA efficacy and safety standards
- Occlusive agents
  - Petroleum jelly
  - Mayonnaise
  - Margarine
  - Olive oil
- Flammable agents should be avoided
  - Kerosene
  - Gasoline

1. Burkhart CG. *Mayo Clin Proc*. 2004;79:661-666.
2. Meinking TL, et al. *Arch Dermatol*. 2001. 137;287-292.
3. Lebwohl M, et al. *Pediatrics*. 2007;119(5)
4. Ellis EF, et al. *Am J Manag Care*. 2004;10(9Suppl):S283-S286.
5. Jones KN, et al. *Clin Infect Dis*. 2003:36:1355-1361.
6. Frankowski BL, et al. *Pediatrics*. 2002;110:638-643.

IMPACT OF HEAD LICE ON HOME



- Machine wash clothing and bedding from the past two days using HOT setting (130ºF). Be sure to include coats and hats. Machine dry on hot cycle for at least 20 minutes.
- Clothing, stuffed toys and non-washable items should be ironed, dry cleaned or stored in sealed plastic bags for 2 weeks.
- Soak combs, brushes and hair accessories in rubbing alcohol, Lysol® or hot water (130ºF) for 1 hour then wash with warm soapy water and rinse.
- Vacuum carpets, upholstered furniture, car seats, etc. thoroughly. Pediculicidal sprays are **NOT** recommended.

Impact of Head Lice on the Community



- Annually, millions of dollars spent on
  - Treatments and lice combs
  - Physician visits
  - Parental time away from work
- Study of attendance records found 12 to 24 million school days are lost annually in U.S. due to exclusion of students for lice and nits
- Embarrassment and social stigma accompany diagnosis of head lice

National Association of School Nurses Position Statement. Available at: http://www.nasn.org/Default.aspx?tabid=237. Accessed April 9, 2010.

Consequences

Social

- Entire family affected
- School head lice policies (exclusion)
  - Need for alternate childcare
  - Negative effects on learning
  - Embarrassment, social stigma

Psychological

- Caregiver strain
- Shared vulnerability
  - Ostracized
  - Lose integrity of self
  - Struggling with persistence
  - Managing strain

Financial

- Indirect costs
  - Childcare expenses
  - Lost wages
- Direct costs
  - Pediculicides/treatment
  - Doctor visits

1. Hansen AJMC 2004
2. Frankowski BL, et al. *Pediatrics.* 2002;110:638-643.
3. Gordon SC. *J Sch Nurs.* 2007;23:283-292
4. West DP. *Am J Manag Care.* 2004;10(9 Suppl):S277-S282.

NASN Position: NO to "no nits" Policies



- Pediculosis should not disrupt the education process
- Children found with live head lice should be referred to parents for treatment
- Data does not support school exclusion for nits
- Further monitoring of reinfestation is appropriate
- Collaboration with healthcare providers and the community is an important role of the school nurse

National Association of School Nurses Position Statement. Available at: http://www.nasn.org/Default.aspx?tabid=237. Accessed April 9, 2010.

HISTORICAL PERSPECTIVE: KPBSD HEALTH SERVICES POLICY

1990's-2007 **No Nit Policy**

- No live lice
- Nits must be completely removed in order to return to school
- Discovery of nits or live lice = immediate exclusion
- Education of families, school communities in response to lice provided by nurse

1990's-2007 Policy

2007 **No Live Nit Policy**

- Differentiate between empty casings and live eggs (brown 'eye' dot)
- Comb out nits and rate on scale.
- Can return to class with nits but must decrease daily on scale; parent advised to continue to inspect and comb out more nits daily
- Education for all provided

2007 Policy Change

HISTORICAL PERSPECTIVE: KPBSD HEALTH SERVICES POLICY

2007 No Live Nit Policy

- Differentiate between empty casings and live eggs (brown 'eye' dot)
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2010 No Live Lice Policy

- Research shows identifying live and empty casings to be ineffective and often incorrect
- Students with live lice sent home when discovered; nits can remain in school but still must be treated before return to school the following day
- Comb out live lice and nits and rate on scale—nits must decrease daily to stay in school; should be gone in close to one week; recheck in one week once free of nits
- Education provided for school community

2007 Policy

2010 Policy Change

PAST AND CURRENT ISSUES

- **Putting it in Perspective:** World View
  - Australia/Oceania—13% prevalence in schools; range of 0 to 28%
  - Brazil—ranges from 3.6-61.4% prevalence
  - China—14% average prevalence for entire country with range of 0-52%
  - Britain—2% prevalence but 37% annual incidence
  - Asia—0.7-59% prevalence
  - Egypt—0-58% prevalence
  - Typically 1-3% in an industrialized country, but may on occasion exceed 25% in an elementary school N Engl J Med, Vol 346,21. May 23, 2002

PAST AND CURRENT ISSUES

- Lice cases occur in **all** elementary schools each year—they are most common as school starts up and can often be found in places where students spend a lot of time, including clubs and before and after school programs
- Each year, some schools see a greater number of cases than others
- Total numbers have not increased for KBPSD
- Different schools have successfully dealt with the issue in creative ways—almost all have involved community education and active parent involvement

PAST AND CURRENT ISSUES

- **One example: One elementary school has more cases of head lice this year, however:**
  - Unrelated to bus—occurs equally in students who ride bus, walk, or have alternative transportation
  - Unrelated to carpets—vacuumed daily; lice don't live long enough off host to remain viable
  - Interventions: Coats on back of chairs or in bins/ bags; NO use of shared earphones, hats, etc; personal space encouraged; parents asked to check regularly; education of school community
  - Of note: Adults often do not know they are infested
  - Protecting confidentiality remains CRITICAL
  - EDUCATION: identify, treat, comb, check weekly
  - Clubs/after school programs: follow similar plan
  - Numbers naturally drop as temperatures dip

AMERICAN ACADEMY OF PEDIATRICS

AAP OFFERS UPDATED GUIDANCE ON TREATING HEAD LICE

July 26, 2010 Press Release

- Head lice are not a health hazard or a sign of poor hygiene and, in contrast to body lice, are not responsible for the spread of any disease.
- Because head lice are usually transmitted by head-to-head contact, parents should carefully check a child's head before and after attending a sleepover or camp where children share sleeping quarters.

MORE FROM THE AAP

- School 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 acknowledged. Schools should examine any lice related policies they may have with this in mind.

No healthy child should be excluded from or allowed to miss school time because of head lice. "No nit" policies for return to school should be discouraged.

AAP OFFERS UPDATED GUIDANCE ON TREATING HEAD LICE: July 26, 2010 Press Release

NATIONAL ASSOCIATION OF SCHOOL NURSES

- Head lice screening programs have **not** had a significant effect on the incidence of head lice in the school setting over time and have **not** proven to be cost effective (Frankowski & Bocchini, 2010).
- Research data does **not** support immediate exclusion upon the identification of the presence of live lice or nits as an effective means of controlling pediculosis transmission.
  - By the time a child with an active head lice infestation has been identified, he or she may have had the infestation for **one month or more** and, therefore, **poses little additional risk of transmission to others** (Frankowski & Boochini, 2010).

Pediculosis Management in the School Setting (Revised 2011) NASN Position Statement

NATIONAL ASSOCIATION OF SCHOOL NURSES

- The school nurse is in a position to take the lead in eliminating school exclusion policies and, instead, **incorporate evidence-based practices that reduce the stigma associated with head lice, and work to increase classroom time with an emphasis on keeping students in school** (Gordon, 2007).

Pediculosis Management in the School Setting (Revised 2011) NASN Position Statement

CENTERS FOR DISEASE CONTROL

- Students diagnosed with live head lice do not need to be sent home early from school; they can go home at the end of the day, be treated, and return to class after appropriate treatment has begun. Nits may persist after treatment, but successful treatment should kill crawling lice.
- Head lice can be a nuisance but they have not been shown to spread disease. Personal hygiene or cleanliness in the home or school has nothing to do with getting head lice.

The Centers for Disease Control and Prevention, Updated November 2, 2010

MORE FROM THE CDC

- "No-nit" policies that require a child to be free of nits before they can return to schools should be discontinued for the following reasons:
  - Many nits are more than ¼ inch from the scalp. Such nits are usually not viable and very unlikely to hatch to become crawling lice, or may in fact be empty shells, also known as casings.
  - Nits are cemented to hair shafts and are very unlikely to be transferred successfully to other people.
  - The burden of unnecessary absenteeism to the students, families and communities far outweighs the risks associated with head lice.
  - Misdiagnosis of nits is very common during nit checks conducted by nonmedical personnel.

The Centers for Disease Control and Prevention, Updated November 2, 2010

ONLINE RESOURCES

- American Academy of Pediatrics Head Lice Policy and Clinical Report Published online August 2010:

http://aappolicy.aappublications.org/cgi/content/abstract/pediatrics;126;2;392

- Centers for Disease Control and Prevention, Updated November 2, 2010:

http://www.cdc.gov/parasites/lice/head/schools.html

- National School Nurses Organization (NASN) Head Lice (Pediculosis) Position Statement:

http://www.nasn.org/Default.aspx?tabid=237

KENAI PENINSULA BOROUGH SCHOOL DISTRICT

- Thank you to Naomi Walsworth, R.N. BSN, KPBSD Health Services Coordinator, for creating this informational PowerPoint.
- Thank you to every KPBSD school nurse who interacts and cares for students, every day.
- Thank you to all the parent volunteers who spend time in schools and at home caring for children and combing hair.
- Parents: Please check your child's hair (and your own) every seven days as part of normal healthy home practices.

www.kpbsd.k12.ak.us

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where kids come first