

Head Lice and Scabies

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Head Lice

- Blood feeding ectoparasites associated with the scalp.
- More commonly found in school age students (3-11 years old) and girls.
- **Transfer can occur due to**
 - **Physical head-to-head contact.**
 - **Slumber parties!**



What was really behind the “selfie”?

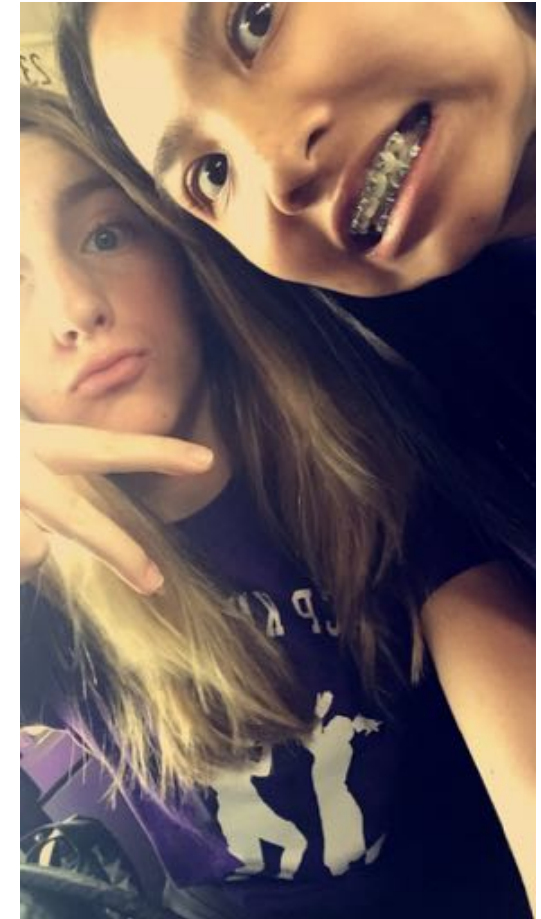
- More than a million selfies are taken each day, according to research by TechInfographics.com.



President Obama with
Malaysian Prime Minister Najib Razak



The Holy Father
Pope Francis



What was really behind the “selfie”?

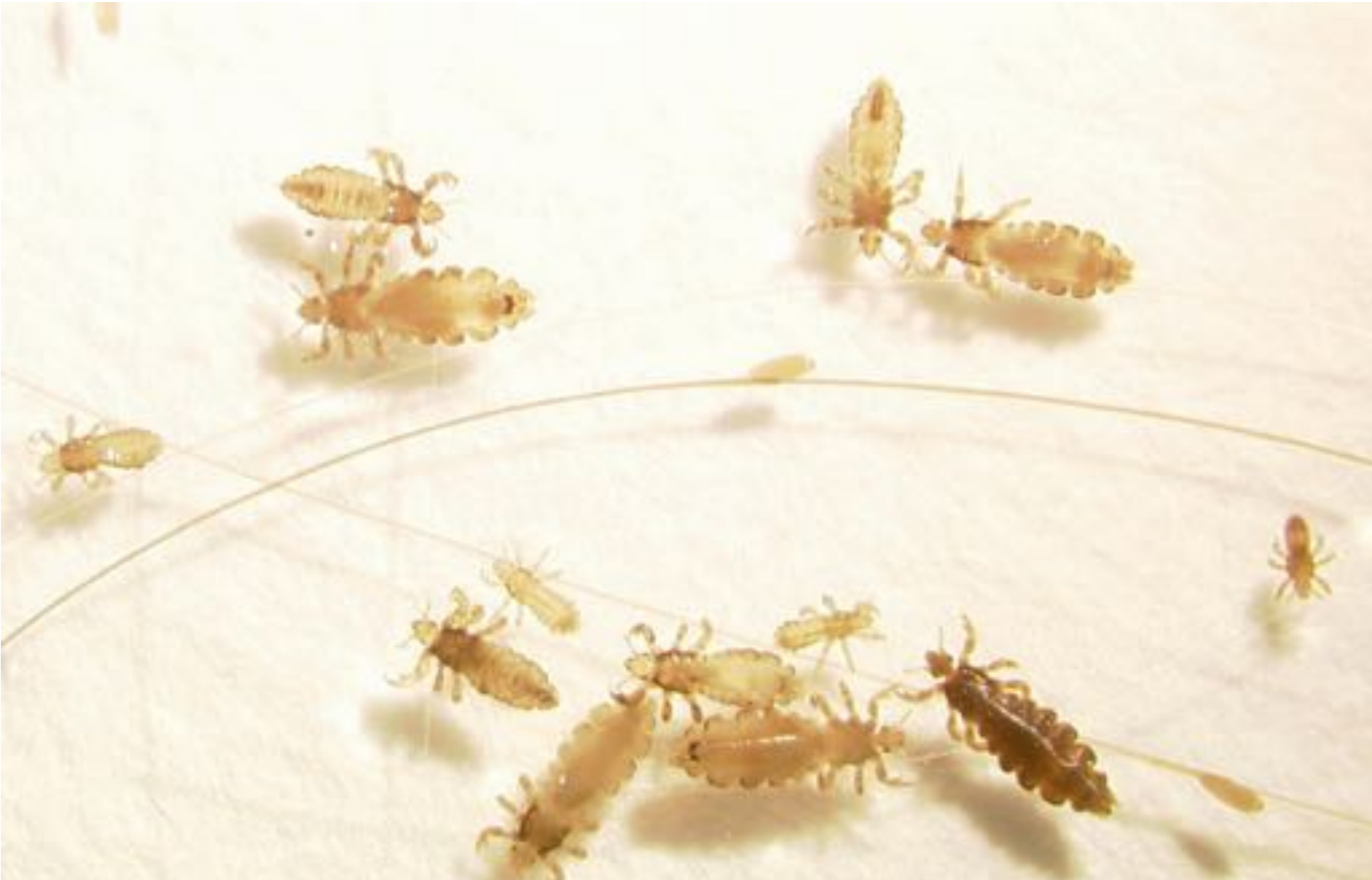
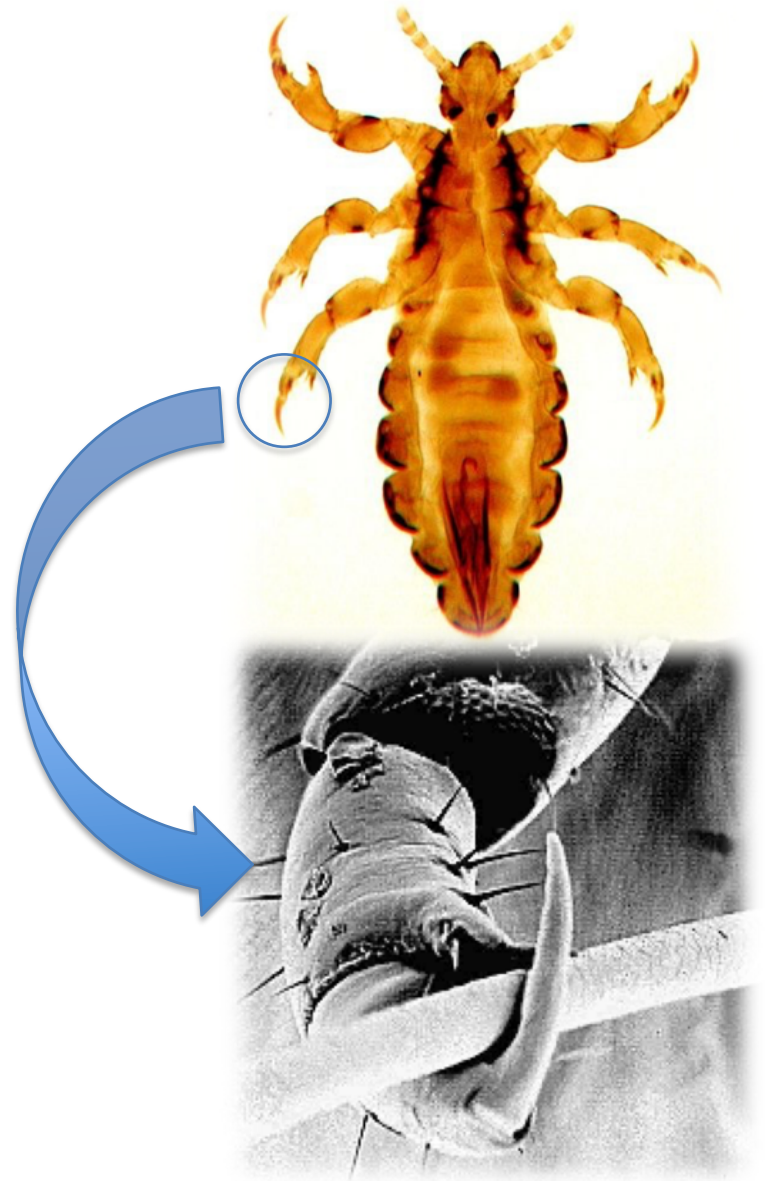


Image: Shujuan (Lucy)Li

- Size of a sesame seed (2-3 mm long).
- Tan in color.
- Crawl rapidly using claw-like legs across the scalp.
- Die off scalp within 2 days.
- 1% of students affected.
- Schools are not good transition zones.
- \$1 billion US cost.





Images: Shujuan (Lucy) Li

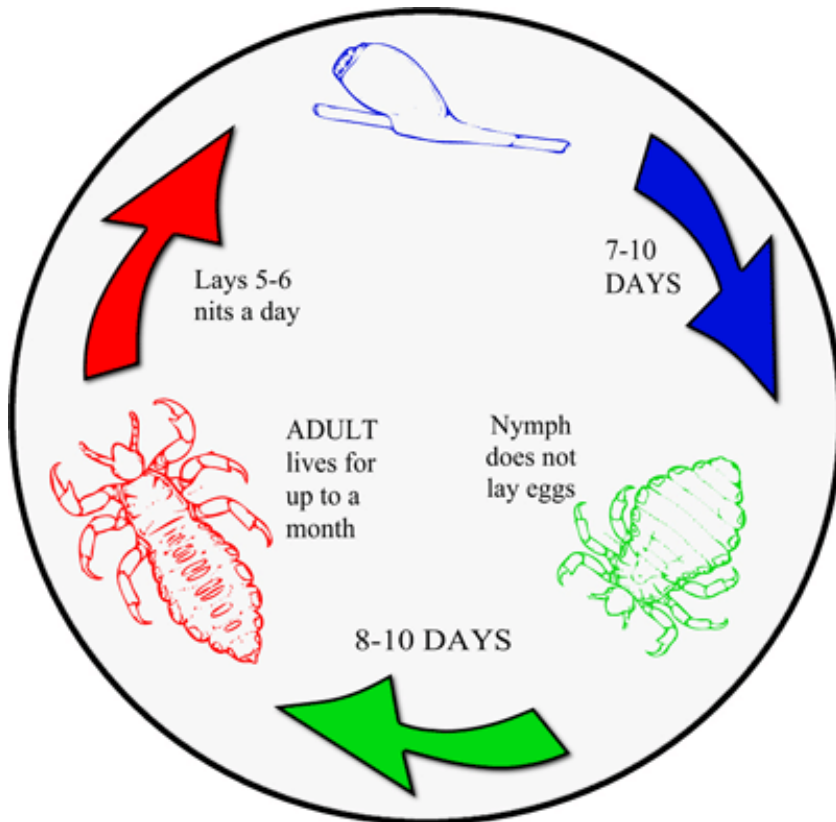
- Lice feed many times each day.
- Do not transmit disease causing pathogens.
- Cause itching and sleeplessness.
- Scratching may lead to secondary skin infections.
- If not treated, life cycle may repeat itself every 3 weeks.



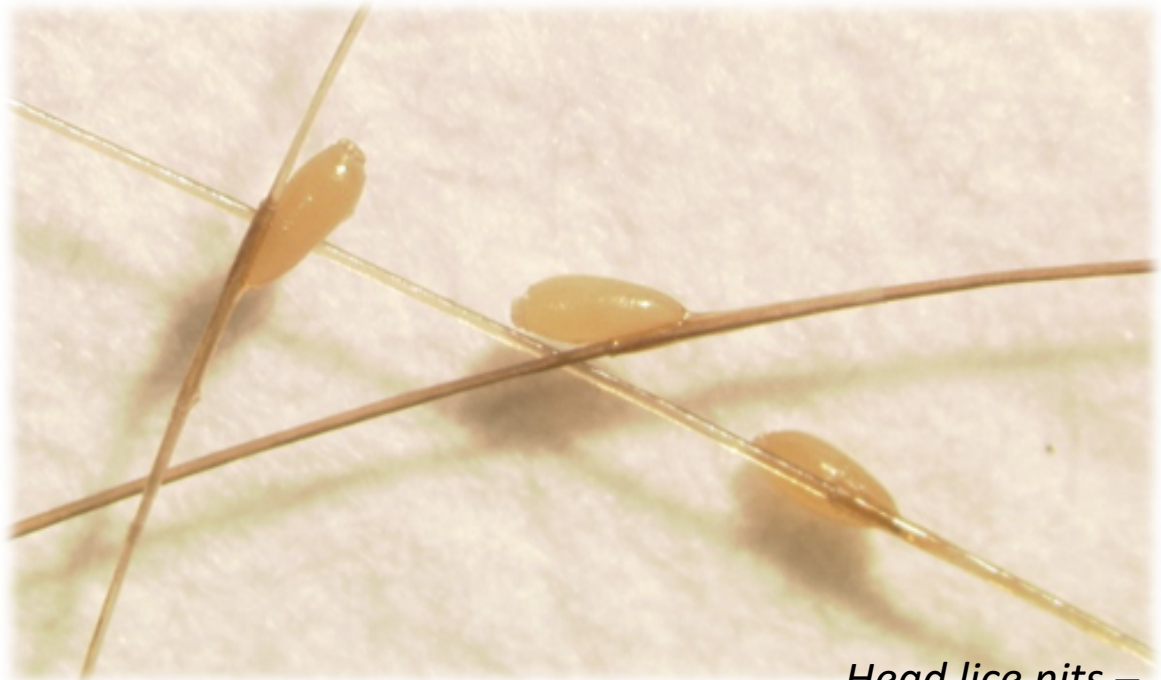
Head lice feeding causes itching

Life Stages of Head Lice

- Lice have three different life stages: egg (or nit); nymph; adult.

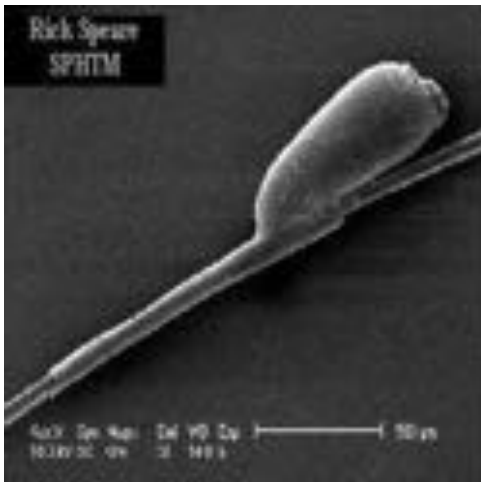


- Females attach nits to hair 1 mm from the scalp.
- Nits need body warmth.
- Unhatched eggs are not obvious.
- Nits are easily seen at the hairline.
- Nits >1cm – hatched.



*Head lice nits –
Shujuan Li, University of Arizona*

- Eggs that have died or hatched, remain firmly attached to the hair; but will never again produce another louse.



Lice eggs have curved walls and will pop when squeezed



Dead eggs have collapsed sides



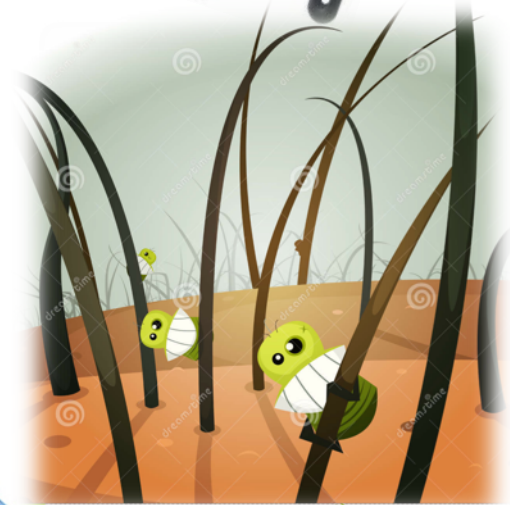
Hatched eggs have a flat top in profile

- Finding nits alone is not a reason to treat.
- Discourage head-to-head contact.
- Discourage pillow sharing.



Transmission (Spread) of Head Lice

- Head-to-head contact with an infested person and sleepovers are the BIG transfer risks.
- Only **LIVING LICE** can transfer from one person to another.
- The transmission from hats, combs, pillows, etc. is possible, but unlikely.
- Nits cannot be passed onto someone else.



Checking for Head Lice

- Periodic inspections for early detection of head lice are far easier than dealing with advanced infestations.
- During the early fall months (August to November) children should be inspected weekly.
- *Prevention (screening) is the way to reduce the spread of lice infestation.*



Nurse checking for head lice

- To look for nits, part hair in small sections, moving from one side of the head to the other. Check carefully, looking close to the scalp.



- **Eggs more than ½ inch away from the scalp are nearly always hatched or dead and **do not**, by themselves, indicate an active infestation or a need for treatment.**
- Also check everyone in the household.





<https://www.youtube.com/watch?v=o4BJ065nLwY>

A comparison of head, body and crab/pubic lice



Head Louse



Body Louse



Pubic Louse

Found lice?



Treatment is recommended only for individuals found with [live lice](#)

Treatment of Head Lice

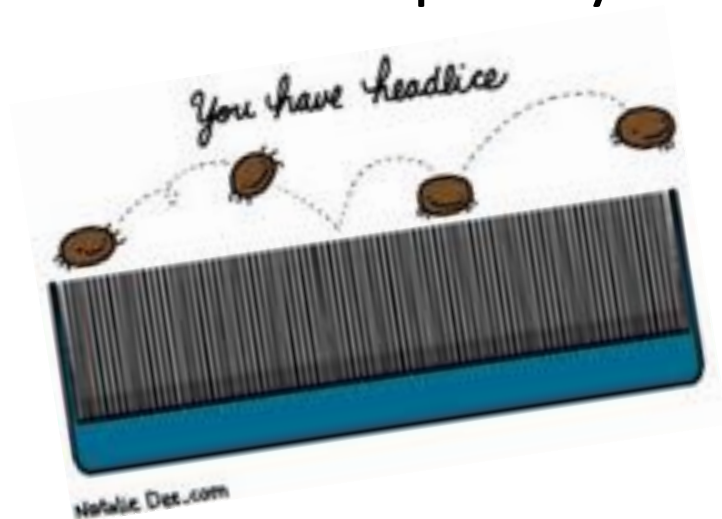
Pediculicides

- Chemical treatments
- Natural products
 - mayonnaise, petroleum jelly, vinegar, olive oil, tea tree oil, or aromatherapy
- Alcohol
 - benzyl alcohol
- Never use gasoline or spray insecticides to treat lice.



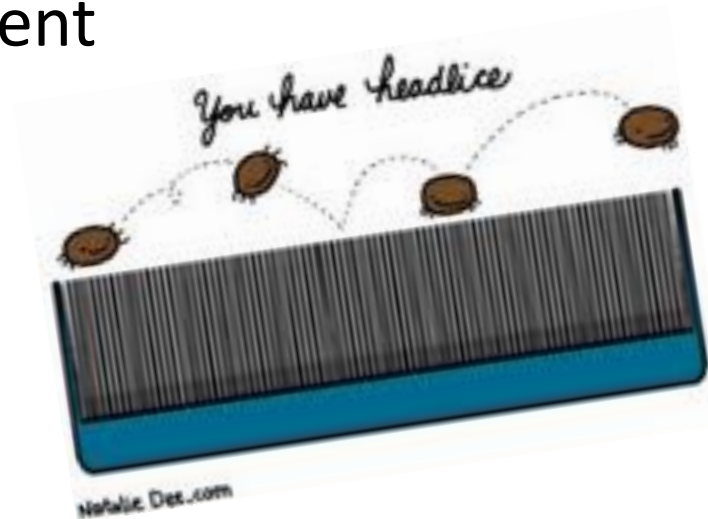
Lice shampoos (Pediculicides)

- Contain insecticides (Pyrethrins, Permethrin, Lindane, Malathion, etc)
- Be cautious when applying treatments
- Never apply treatments to children in the bath or shower
- Always read and follow label directions completely and carefully

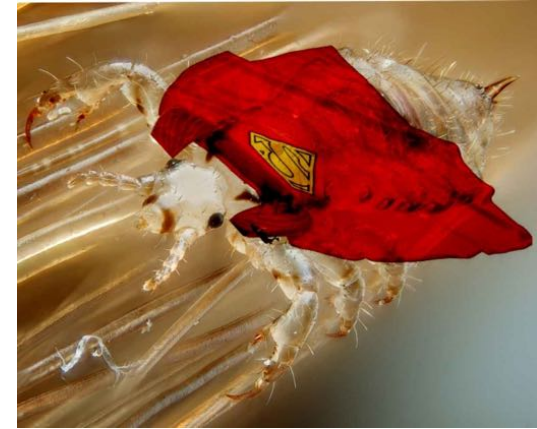


Lice shampoos

- Susceptible lice should die within 10 to 30 min after treatment
- A second treatment may be required in 10 to 14 days
- Resistance may be occurring
- Switch to a different kind of product that does not contain the same active ingredient



Head lice are resistant to OTC pediculicides



Head lice are highly resistant to OTC pediculicides





Product name

Active ingredient



Product names mentioned are registered trademarks. Any products, services, or organizations that are mentioned, shown, or indirectly implied in this publication do not imply endorsement by The University of Arizona.

Prescription lice treatment options

- Resistant lice may need prescription treatment.
- **Benzyl alcohol (Ulesfia, 5% solution):** non-neurotoxic, highly effective lotion.
- Kills the live lice.
- Not ovicidal (doesn't kill eggs).
- 2 treatments are necessary.
- Consult your doctors before using it.
- No resistance reported.



- **Natroba Topical Suspension** (spinosad 0.9% + benzyl alcohol)
 - Does not require nit combing.
 - Not use on newborns and infants younger than 6 months.
- **Sklice Lotion** (ivermectin 0.5%)
 - On hair and scalp only.
 - FDA approved as a 10-min head lice treatment for people older than 6 months.
 - Adult supervision is required.
 - Avoid contact with eyes.
- 2 treatments are commonly needed.



Prescription treatments for head lice

Active ingredient	Mode of action	Product example
Ivermectin	Disrupts nervous system	Stromectol and generics Sklice
Spinosad*	Disrupts nervous system	Natroba™
Benzyl alcohol*	Suffocates lice	Ulesfia
Pyrethroid-based ^{1,2}	Disrupts nervous system	Elimite, Permethrin, etc.
Malathion ²	Disrupts nervous system	Ovide and generics
Lindane ²	Disrupts nervous system	Kwell

¹Although there are pyrethroid-based products available over-the-counter, medical professionals still prescribe these to caregivers bringing infested patients for evaluation.

²Widespread head lice resistance has been documented. Medical professionals may not be aware.









*Benzyl alcohol is flammable, keep away from open flames. Allergic reaction is very rare but seek emergency medical help if a treatment causes symptoms.

Alternative treatments

- Home remedies, *such as mayonnaise, petroleum jelly, olive oil, tea tree oil, vinegar, or aromatherapy*, have been shown to make it hard for lice to breath. No evidence suggests it effectively kills all nits or lice.
- **Standard hair conditioner is as effective.**
- **Kill lice mechanically:** hair drying and brushing. Combing and brushing wet hair damages lice. Hair drying injures adults and nymphs.



Non-Prescription treatments for head lice

Active ingredient or strategy	Mode of action	Product example
<p>Dimethicone (dimeticone)</p>	<p>Disruption of water homeostasis and suffocation</p> 	<p>Dimethicone LiceMD gel, Rapunzel's Lice neutralizer, Hedrin 4% Dimeticone Head Lice Lotion, KaPOW! Lice Attack Solution</p>  
<p>Natrum Muriaticum (sodium chloride) (in benzyl alcohol*)</p>	<p>Dehydrates or suffocates lice</p>	<p>Vamousse Lice Treatment, Licefreee!</p>  
<p>Pyrethroid-based¹</p>	<p>Disrupts nervous system</p>	<p>Nix, Pronto, Rid, etc.</p>
<p>Enzymes (vegetable extracts)</p>	<p>Helps to dissolve or soften the glue that attaches the nit to the hair shaft</p>	<p>LiceLogic, Lice B Gone, Safe Solutions Lice R Gone[®]</p>  
<p>Heat</p>	<p>Desiccates lice and nits</p>	<p>AirAllé[®]</p> 



Manual Removal

1. None of the pediculicides are 100% ovicidal.
2. Manual removal of nits after treatment with any product is recommended.
3. Special, fine-toothed “nit combs” are needed (LiceMeister™ combs).
4. Nit removal aids are designed to loosen the attachment of the nit to the hair shaft.





<https://www.youtube.com/watch?v=KnqpY4PTUiw>



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- Combing is critical to control head lice.
- Comb daily until no live lice are discovered (2 weeks).
- Recheck in 2-3 weeks after you think they are gone.



Home disinfection

1. Wash items in hot soapy water and dry in a hot dryer for 15 minutes.
2. Launder and dry on a high heat, 130 degree F.
3. Store items in plastic bags for 2 weeks.
4. Vacuum the surfaces where heads may have rested (sofas, helmets, car seats, etc).



Clothes dryers kill lice

Check regularly

1. Daily head checks and nit removal until infestation is gone.
2. Followed by weekly head checks to detect re-infestation.
3. Continue weekly head checks of the whole family.



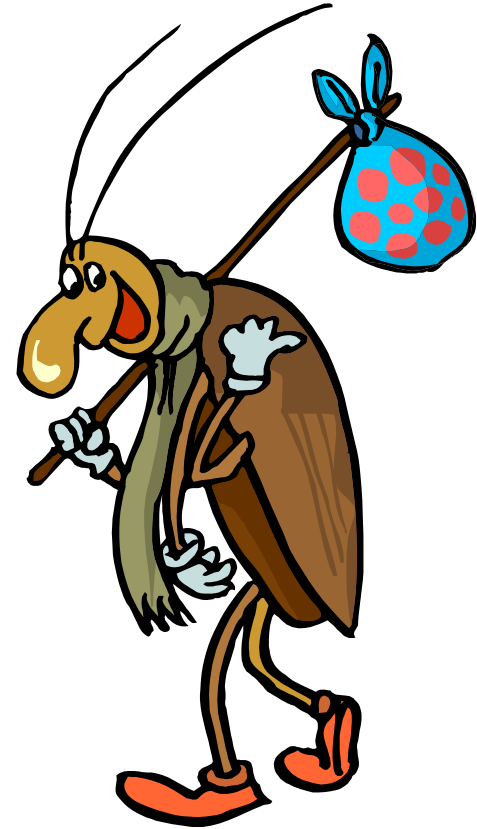
Hygiene and Sanitation



- Students with head lice should not be excluded from school.
- Transfer occurs through head-to-head contact.
- No-nit policies are pointless.
- Head-checks are valuable opportunities for the nurse to interact with students.

Please Remember

- Only **living lice** transfer from person to person.
- Head lice don't fly or jump.
- They don't transmit infectious disease.
- Head lice can't survive more than 48 hours away from the host.
- Head lice can't live within rugs, carpets, or school buses.
- No need to exclude infested kids from school.



Itchy “bugs”

– Top 14

- Scabies
- Ringworm
- *Clostridium difficile*
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Impetigo (Strep/Staph)
- Bacterial conjunctivitis
- Pertussis
- Meningococcal meningitis
- Hand, foot and mouth
- Chickenpox
- Measles
- Mumps
- Fifth disease
- “Flu” Influenza
- “Stomach flu” Norovirus



Biology and Behavior - Scabies Mites

- Human scabies is an infestation of the skin by the human itch mite *Sarcoptes scabiei* var. *hominis*.
- The female scabies mite burrowes into the upper layer of the skin where it lives and lays its eggs.



Spread by direct, prolonged,
skin-to-skin contact

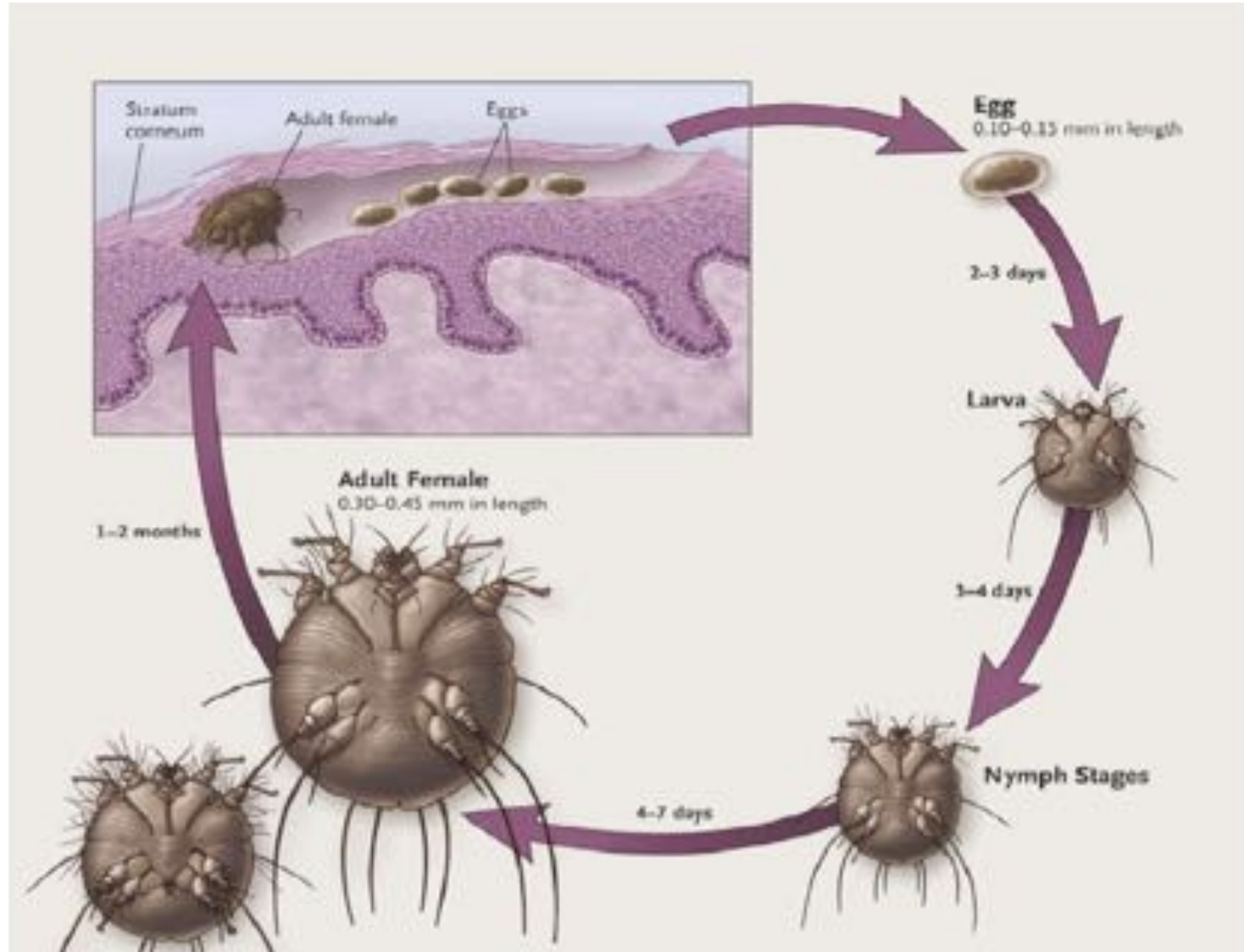


Intensely itching skin infection

- ❑ Moderately contagious
- ❑ Adults 1/3 millimeter long
- ❑ Inactive below 20°C (68°F)
- ❑ At 20°C mites can persist for 2 weeks



Infestation occurs due to the direct transfer of a single fertilized female



Life cycle 10-17 days

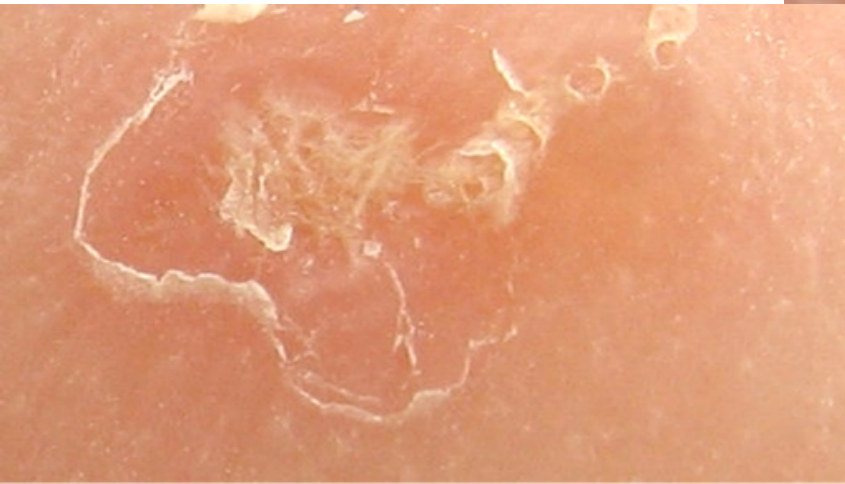
- Remain viable for 3 days on inanimate objects (>22°C, 72°F)



- Transmission via articles is possible, but **unlikely**

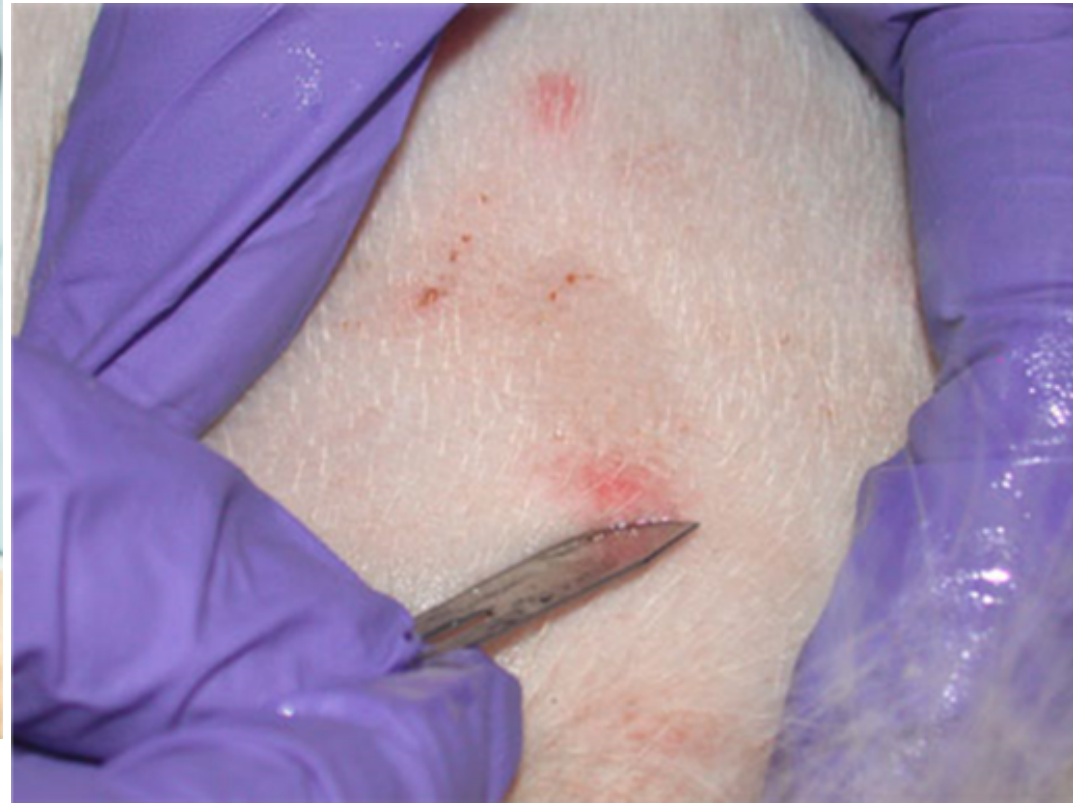
Burrows and malformed fingernails may or may not be evident

Burrows are often not seen but check in the webbing of fingers or on the inside of wrists



An affected host harbors only 10-15 adult mites – typical infestation

- Skin scrapes are the only way to positively identify mites



Hypersensitivity reactions to the mites, molts, eggs, or scybala occurs about 30 days after infestation



Disproportionately affects women and children

- Secondary bacterial infection is common
Staphylococcus aureus
Streptococci
Peptostreptococci

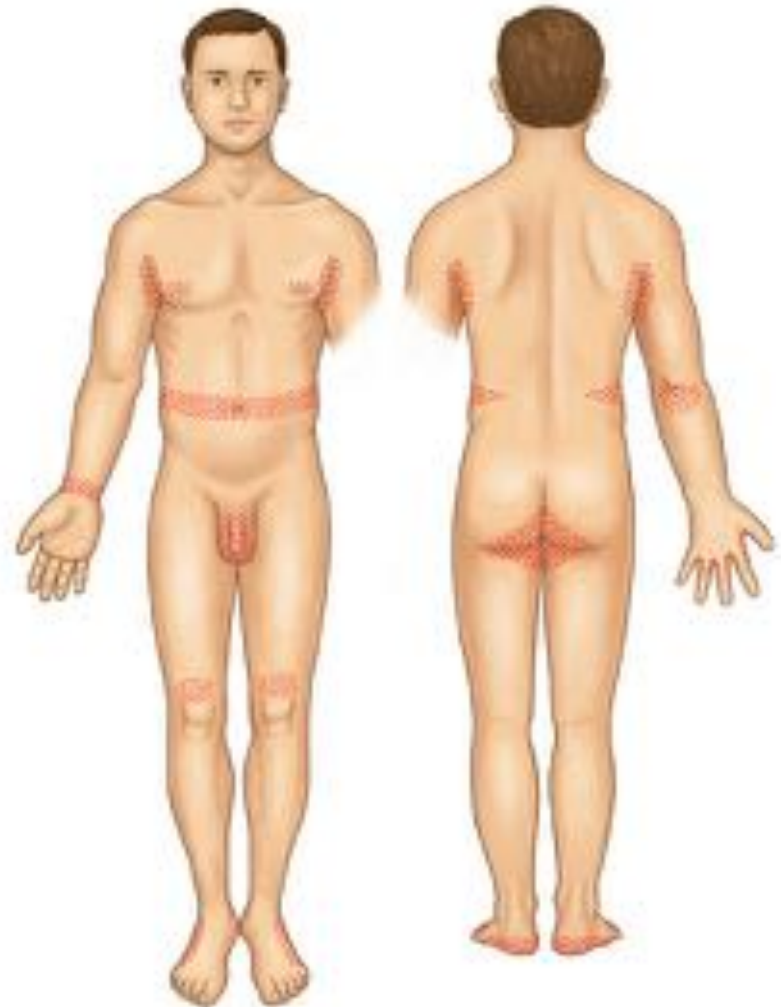


Immunocompromised prone to
develop crusted scabies



Usually below the neck - adults

- Fingers, flexor surfaces of the arms, wrists, axillae, and the waistline
- Umbilicus, nipples, penis, and scrotum



Infection eliminated using prescription treatments



- Once treatment starts individuals are not infectious

Treatments

- Permethrin (e.g. Elimite)
- **Lotion applied over body from neck down**
- **Left on for 8-12 hours, then rinsed off**
- **Reapplication
1 week later**
- **Clothes dryer
will kill mites**



Treatments

- Crotamiton (e.g. Eurax; Crotan) frequent treatment **failure** has been reported
- **Lindane lotion is NOT recommended**



Relief from itching

- Antihistamine diphenhydramine
- **Itching becomes worse after mites die**

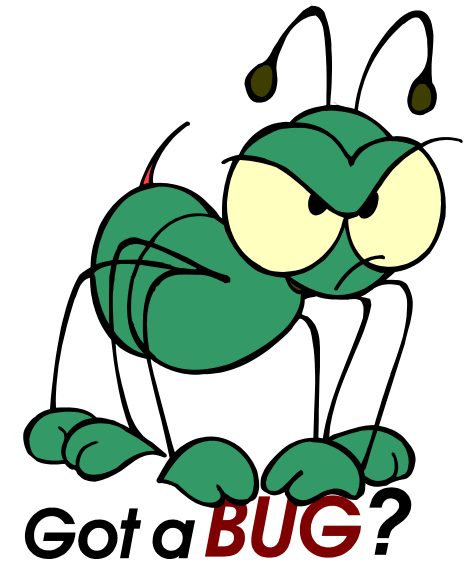


Inappropriate things

- OTC pesticides applied to rooms or buses
- Incorrect use of sterilants or disinfectants applied to room surfaces



Questions?



Thank You