<table>
<thead>
<tr>
<th></th>
<th>DPP</th>
<th>Math</th>
<th>Technology</th>
<th>Science</th>
<th>ELA</th>
</tr>
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<tbody>
<tr>
<td>October 16</td>
<td>October 16</td>
<td>October 9</td>
<td>October 30</td>
<td>December 4</td>
<td>November 20</td>
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<tr>
<td>January 22</td>
<td>December 18</td>
<td>December 18</td>
<td>March 5</td>
<td>May 14</td>
<td>April 16</td>
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<td>April 30</td>
<td>February 12</td>
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<td>May 7</td>
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</tbody>
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CCHS Math Support SY 17-18

Overarching Goal:
To learn about and experience instructional shifts that foster mathematical confidence and competence

Sub Goals:
To collaborate on department SLGs aligned to rich mathematical tasks
To align rich tasks to current curriculum units of study
To engage in peer observation in order to improve and modify rich tasks/lessons

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Trainers</th>
<th>Area of Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct.- Nov. 2017</td>
<td>On site</td>
<td>PLC Leaders</td>
<td>Collaborative planning (SLG, Tasks aligned to units)</td>
</tr>
<tr>
<td>Oct. 21, 2017</td>
<td>Reno, NV North Valley HS</td>
<td></td>
<td>Northern Nevada Math Conference *Paid by NWRPDP</td>
</tr>
<tr>
<td>Dec. 1, 2017 (1/2 day)</td>
<td>Churchill High School</td>
<td>Kathy, Lawrence, Sarah Brown, Patty Fleming</td>
<td>SLG planning Lesson Selection &amp; Planning (incorporating Rich Tasks)</td>
</tr>
<tr>
<td>Feb. 9, 2018 (1/2 day)</td>
<td>Churchill High School</td>
<td>Kathy, Lawrence, Sarah Brown, Patty Fleming</td>
<td>Lesson Planning SLG Mid-point Check (Formative Assessment) Peer Observation Rotations/protocol</td>
</tr>
<tr>
<td>Friday PLC On Site PLC Leaders</td>
<td>Lesson de brief and Discussion</td>
<td></td>
<td>Culminating Discussion – next steps for 4th Q and next year Wrap up SLG</td>
</tr>
<tr>
<td>Mar. 6, 2018 (1/2 Day)</td>
<td>Churchill High School</td>
<td>Kathy, Lawrence, Sarah Brown, Patty Fleming</td>
<td>Peer Observations (roving subs and/or prep sub coverage needed)</td>
</tr>
<tr>
<td>4th Quarter</td>
<td>Churchill High School</td>
<td>PLC Leaders</td>
<td>Peer Observations</td>
</tr>
</tbody>
</table>
Liz Helton LPN
Lahontan Elementary School
(775)423-1999
11/9/2016

Re: Head Lice Education

Dear Parent or Guardian:

We are all excited to be back at school! As we encourage our children to learn and share, they also share things we don't want them to: Like headllice.

As you may know, head lice cases have been on the rise in the United States. An estimated 6 to 12 million infestations occur each year in the United States, most commonly among children ages 3 to 11.¹ I am writing to you to help you learn how to identify lice and provide information on what you can do if lice hit your home.

**What are head lice?**
Head lice are tiny, wingless insects that live close to the human scalp. They feed on blood. The eggs, also called nits, are tiny, tear-drop shaped eggs that attach to the hair shaft. Nits often appear yellowish or white and can look like dandruff but cannot be removed or brushed off. The nymph, or baby louse, is smaller and grow to adult size in one to two weeks. The adult louse is the size of a sesame seed appears tan to grayish-white. An itchy and inflamed scalp is a common symptom of lice. Although not common, persistent scratching may lead to skin irritation and even infection.¹

**Who is affected by head lice?**
Head lice are not related to cleanliness.²³ In fact, head lice often infest people with good hygiene and grooming habits.³ Infestations can occur at home, school or in the community. Head lice are mostly spread by direct head-to-head contact—for example, during play at home, slumber parties, sports activities or camp. Less often, lice are spread via objects that have been in recent contact with a person with head lice, such as hats, scarves, hair ribbons, combs, brushes, stuffed animals or bedding.¹²

**What to do if an infestation occurs?**
If you think your child has head lice, it's important to talk to a healthcare provider to discuss the best treatment approach for your family. Resistance to some over-the-counter head lice treatments has been reported, but the prevalence of resistance is not known.⁴⁵ There are new prescription treatment options available that are safe and do not require nit combing.

As your school's nurse, I want to provide you with the information you need to safeguard your children's health and pave the way for a healthy school year. I hope you find this information useful.

Sincerely,

Liz Helton, LPN

Headfirst Lice Lessons educational initiative is made possible through a collaboration with Sanofi Pasteur.
<table>
<thead>
<tr>
<th>DISEASE</th>
<th>INCUBATION PERIOD</th>
<th>MODE OF TRANSMISSION</th>
<th>PERIOD OF COMMUNICABILITY</th>
<th>CONTROL MEASURES</th>
<th>PUBLIC HEALTH RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS/HIV*</td>
<td>14 days</td>
<td>Person-to-person by sexual contact, exposure to blood, or mother-infant during pregnancy</td>
<td>Persons with HIV should be considered infectious for life; risk of transmission may be higher in first months after infection.</td>
<td>Education of those who are infected, and those who are at risk of becoming infected about how to prevent transmission of HIV (i.e., safer sexual practices, using condoms, needle exchange, etc.).</td>
<td>Patient interview by Public Health (PH); Education and counseling in conjunction with HIV testing; Referral of sexual and needle sharing partners for testing, counseling, and treatment.</td>
</tr>
<tr>
<td>Campylobacter*</td>
<td>1-10 days, average 2-5 days</td>
<td>By ingestion of contaminated food—particularly undercooked poultry, water, or unpasteurized milk; from contact with infected animals or persons by fecal-oral route.</td>
<td>Throughout course of disease; usually several days to up to seven weeks.</td>
<td>Always wash hands thoroughly after bowel movements or diapering, before eating and preparing food. Exclude symptomatic persons from food-handling and child care until diarrhea has ceased. Avoid unpasteurized milk and unpasteurized dairy products. Thoroughly cook all meat, especially poultry.</td>
<td>Education on prevention of spread, including avoiding cross-contamination of foods by washing cutting boards and other food preparation items between raw poultry or meats and other food products such as vegetables.</td>
</tr>
<tr>
<td>Chickenpox: Varicella</td>
<td>10-21 days, average 14-16 days</td>
<td>Person-to-person by droplet or airborne spread of respiratory secretions; direct contact with drainage from blisters or indirectly through articles contaminated by secretions from blisters.</td>
<td>As long as 5, but usually 1-2 days before onset of rash until all blisters are crusted.</td>
<td>Exclude from school or child care and avoid contact with susceptible persons until blisters are crusted.</td>
<td>Recommend vaccination for all appropriate susceptible persons.</td>
</tr>
<tr>
<td>Chlamydia*</td>
<td>1-3 weeks; often asymptomatic, especially in females</td>
<td>Contact with infected person through sexual activity; neonatal infections by contact with birth canal.</td>
<td>Duration of infection. Reinfec tion is common if partners are not treated in a timely manner. Without treatment, infection may persist indefinitely, leading to infections of the upper reproductive tract and other serious, long-term complications in both females and males.</td>
<td>Examine and treat all persons with sexual contact that occurred within the last 60 days, regardless of their test results. Annual screening for sexually active females aged &lt; 25 or at high risk.</td>
<td>For higher priority cases, patient interview with PH and notification of sexual contacts for referral to medical care. Education on abstinence, monogamy, and use of barrier protection such as latex condoms.</td>
</tr>
<tr>
<td>Conjunctivitis, with a fever and behavioral change, purulence or hemorrhage</td>
<td>24-72 hours</td>
<td>Contact with discharges from the eyes, nose, or throat of infected people, from contaminated fingers, clothing, and other articles.</td>
<td>During the course of active infection.</td>
<td>Persons should not attend school or child care during the acute stage.</td>
<td>Education of family and classmates on prevention of spread by practicing good hand washing and not sharing towels or other items soiled with discharge from eyes or nose.</td>
</tr>
<tr>
<td>Enterohemorrhagic E. coli includes E. coli O157:H7 and other Shiga toxin producing E. coli*</td>
<td>2-10 days, average 3-4 days</td>
<td>Ingestion of contaminated foods, directly from person-to-person by fecal-oral route, or contact with infected animals. Linked to eating undercooked, contaminated ground beef, unpasteurized milk and juices.</td>
<td>Duration of excretion of the pathogen in the stool, which is usually 1 week or less in adults but 3 weeks in 1 out of 3 children.</td>
<td>Exclude from high-risk settings (food handling, patient care, child care) until 2 negative stool cultures are obtained.</td>
<td>Patient interview and contact investigation by PH. If high-risk setting involved, contact the Nevada Division of Public and Behavioral Health (DPBH). Education on importance of hand washing and proper disposal of feces and diapers.</td>
</tr>
<tr>
<td>Fifth disease, Human parvovirus B19 infection, Erythema infectiosum</td>
<td>4-20 days</td>
<td>Contact with infected respiratory secretions; also from mother to fetus; and by transfusion of blood and blood products.</td>
<td>Greatest before onset of rash. Probably no communicable after onset of rash. People with aplastic crisis are communicable up to 1 week after onset of symptoms.</td>
<td>Frequency hand washing. Cover nose and mouth with disposable tissue when coughing and sneezing and proper disposal of tissue.</td>
<td>Student, teacher, and family education about hand washing and standard precautions; Susceptible women who are pregnant or who might become pregnant, and have maintained close contact to people with parvovirus B19 infection should consult with their healthcare provider.</td>
</tr>
<tr>
<td>Disease</td>
<td>Incubation Period</td>
<td>Infection Period</td>
<td>Transmission Routes</td>
<td>Precautions</td>
<td>Education/Prevention</td>
</tr>
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</tr>
<tr>
<td>Giardia*</td>
<td>3-25 days or longer, average 7-10 days</td>
<td>Person-to-person spread by fecal-oral route, especially in child care centers. Rarely by ingestion of contaminated food or water, or by contact with infected animals.</td>
<td>Entire period of infection, often months.</td>
<td>Exclude symptomatic persons from food handling and child care until effective treatment has been initiated and diarrhea has ceased. Good hand washing by staff and child after bowel movements or diapering, and before eating or preparing food. Education on prevention of spread to families, teachers and classmates. Surveillance for additional cases.</td>
<td>For higher priority cases, patient interview by PH and notification of sexual contacts for referral to medical care. Education on abstinence, monogamy and use of barrier protection such as latex condoms.</td>
</tr>
<tr>
<td>Gonorrhea*</td>
<td>2-5 days, sometimes longer; often asymptomatic especially in females</td>
<td>Contact with infected person through sexual activity; neonatal infections by contact with birth canal</td>
<td>Duration of infection, re-infection is common if partners are not treated in a timely manner. Without treatment, infection may persist indefinitely, leading to infections of the upper reproductive tract and other serious, long-term complications in both females and males.</td>
<td>Examine and treat all persons with sexual contact that occurred within the last 60 days, regardless of their test results. Annual screening for sexually active women age &lt;25 or at high risk. Prompt hand washing after handling discharges, feces, and soiled articles. Wash or discard articles soiled with nose and throat discharges. Cover nose and mouth with disposable tissue when coughing and sneezing and proper disposal of tissue. Or cough and sneeze into your upper arm.</td>
<td>Education of families, teachers, and classmates about proper hand washing.</td>
</tr>
<tr>
<td>Hand, foot, and mouth disease: Coxsackievirus (Not related to animal foot and mouth disease)</td>
<td>3-5 days</td>
<td>Direct contact with nose and throat discharges and faces of infected people and by droplet spread. During acute stage of illness, perhaps longer; viruses persist in stool for several weeks.</td>
<td>Infectious during late incubation period, clinical disease, and for variable period after recovery (as long as HBsAg positive). Chronic carriers are infectious for life.</td>
<td>Hand washing: Exclude from high-risk situations (food handling, child care, and patient care) for 1 week after onset of jaundice. Give household, child care and other intimate contacts immune globulin (IG) 0.02 mg/kg body weight and or vaccine within 14 days of last exposure. Follow Standard and Blood Borne Pathogen Precautions. Cover open cuts and sores. Wear gloves when in contact with blood or body fluids. Immediate cleanup of objects contaminated with blood or body fluid. For blood or needle exposure to known HBsAg positive persons, and not vaccinated, hepatitis B immune globulin (HBIG) 0.06 mg/kg body weight within 24 hours (no later than 72 hours for perinatal exposure, 7 days for percutaneous exposure, or 14 days for sexual exposure) and HBV vaccine given at 0.1, and 6 months if not previously vaccinated.</td>
<td>Immediate patient interview and assessment by PH. Contact investigation. Counseling. If case is in high-risk situation, contact DPBH immediately. Recommend vaccination to appropriate susceptible persons, including all infants.</td>
</tr>
<tr>
<td>Hepatitis A**</td>
<td>15-50 days, average 28-30 days</td>
<td>Person-to-person spread by fecal-oral route, ingestion of contaminated food or water, or sharing of drug paraphernalia</td>
<td>Approximately 2 weeks before and 1 week after onset of jaundice.</td>
<td>Hand washing: Exclude from high-risk situations (food handling, child care, and patient care) for 1 week after onset of jaundice. Give household, child care and other intimate contacts immune globulin (IG) 0.02 mg/kg body weight and or vaccine within 14 days of last exposure. Follow Standard and Blood Borne Pathogen Precautions. Cover open cuts and sores. Wear gloves when in contact with blood or body fluids. Immediate cleanup of objects contaminated with blood or body fluid. For blood or needle exposure to known HBsAg positive persons, and not vaccinated, hepatitis B immune globulin (HBIG) 0.06 mg/kg body weight within 24 hours (no later than 72 hours for perinatal exposure, 7 days for percutaneous exposure, or 14 days for sexual exposure) and HBV vaccine given at 0.1, and 6 months if not previously vaccinated.</td>
<td>Immediate patient interview and assessment by PH. Contact investigation. Counseling. If case is in high-risk situation, contact DPBH immediately. Recommend vaccination to appropriate susceptible persons, including all infants.</td>
</tr>
<tr>
<td>Hepatitis B*</td>
<td>45-180 days, average 60-90 days</td>
<td>Sexual, IV drug use, close household contact, perinatal mother-to-infant. Rarely occupational percutaneous or mucous membrane exposure to blood, saliva or semen</td>
<td>Blood and other body fluids are infectious during late incubation period, clinical disease, and for variable period after recovery (as long as HBsAg positive). Chronic carriers are infectious for life.</td>
<td>Avoid contact with purulent drainage from lesions. Cover lesions when attending school or child care.</td>
<td>Education on prevention of spread and hand washing.</td>
</tr>
<tr>
<td>Impetigo: Staphylococcal disease</td>
<td>Variable and indefinite</td>
<td>Direct contact with purulent drainage from infected lesion</td>
<td>Until all lesions are healed</td>
<td>Avoid contact with purulent drainage from lesions. Cover lesions when attending school or child care.</td>
<td>Education on prevention of spread and hand washing.</td>
</tr>
<tr>
<td>Disease</td>
<td>Incubation Period</td>
<td>Transmission</td>
<td>Control Measures</td>
<td></td>
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<tr>
<td>Influenza (Flu)</td>
<td>1-4 days, average 2 days</td>
<td>Contact with droplets from the nose and throat of an infected person who is coughing or sneezing.</td>
<td>Vaccination. Stay home while ill. Wash hands often with soap and water. Cover nose and mouth with disposable tissue when coughing and sneezing or cough and sneeze into your upper arm. Avoid close contact with ill individuals. Antiviral drugs, as prescribed.</td>
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</tr>
<tr>
<td>Lice, head</td>
<td>Varies with stage of louse/lice at exposure.</td>
<td>Direct contact with an infected person such as head to head contact; less frequently by contact with contaminated personal articles. Most children catch lice from exposure in the community, not in their school.</td>
<td>Contact DPBH immediately. If IgM is necessary to confirm diagnosis. Counseling. Education on appropriate control measures: If there are barriers for getting treatment, contact PH.</td>
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</tr>
<tr>
<td>Measles: Red measles</td>
<td>About 10 days. Rash usually appears about 14 days after exposure but can be as long as 19-21 days. Fever onset, 7-18 days.</td>
<td>Airborne by a fine mist caused when an infectious person coughs, sneezes or talks. This stays suspended in the air for up to 3 hours.</td>
<td>Exclude from school and child care for 4 days after appearance of rash. Vaccinate appropriate susceptible contacts as soon as possible but within 72 hours of last exposure. IG for appropriate susceptible contacts such as pregnant women as soon as possible but must be within 6 days of last exposure.</td>
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<tr>
<td>Rubella, Hard measles,</td>
<td>Methicillin-resistant Staphylococcus aureus (MRSA)</td>
<td>After colonization, disease may not occur until several months later; or more commonly, never.</td>
<td>Cover open cuts and sores. Good hand washing. Cover nose and mouth with disposable tissue when coughing and sneezing with proper disposal of tissues. Or cough and sneeze into your upper arm. Treatment of MRSA infections, if indicated. MRSA is not grounds for exclusion from child care, school or nursing home. Avoid contact with saliva. Good hand washing, disinfection of articles soiled with nose and throat discharges, proper disposal of tissues, cover nose and mouth with disposable tissue when coughing and sneezing or cough and sneeze into your upper arm.</td>
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<tr>
<td>Mononucleosis Epstein-Barr virus (EBV)</td>
<td>6-8 weeks</td>
<td>Person-to-person by oral-pharyngeal route, via saliva.</td>
<td>Prolonged pharyngeal excretion may persist for months after infection.</td>
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<tr>
<td>Mumps*</td>
<td>12-25 days, average 16-18 days</td>
<td>Droplet or direct contact with saliva and by airborne droplet route.</td>
<td>3 days before to 4 days after day of symptom onset or until symptoms resolve, whichever is longer.</td>
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</tbody>
</table>

*Education on prevention of spread. Recommend annual vaccination for all appropriate persons. Influenza that is known or suspected to be of a viral strain that the Centers for Disease Control and Prevention or the World Health Organization has determined poses a risk of a national or global pandemic is reportable immediately to DPBH. Counseling. Education on appropriate control measures: If there are barriers for getting treatment, contact PH. Counseling, Education on appropriate control measures: If there are barriers for getting treatment, contact PH. Counseling, Education on appropriate control measures: If there are barriers for getting treatment, contact PH. Counseling, Education on appropriate control measures: If there are barriers for getting treatment, contact PH.
### The Epidemiology of Common Communicable Diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>Duration</th>
<th>Transmission</th>
<th>Incubation</th>
<th>Symptoms</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neisseria meningitidis</strong></td>
<td>2-10 days</td>
<td>Direct contact</td>
<td>2-10 days</td>
<td>Direct contact including droplet spread and discharges from nose and throat</td>
<td>Contact DPH immediately. Patient interview and contact investigation. Recommend immunization to appropriate susceptible persons.</td>
</tr>
<tr>
<td><strong>Invasive disease:</strong></td>
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<tr>
<td>Meningococcal</td>
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<tr>
<td><strong>Pertussis</strong></td>
<td>5-20 days</td>
<td>Person-to-person</td>
<td>1-4 days</td>
<td>Person-to-person by breathing in respiratory droplets</td>
<td>Interview investigation by PH. Recommend immunization for appropriate susceptible persons.</td>
</tr>
<tr>
<td><strong>Whooping cough</strong></td>
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<tr>
<td><strong>Norovirus</strong></td>
<td>12-50 hours</td>
<td>Person-to-person and fecal oral transmission. Ingestion of ready to eat food</td>
<td>1-3 days</td>
<td>Communicable during acute stage of disease and up to 48 hours after diarrhea stops.</td>
<td>Education on prevention of spread.</td>
</tr>
<tr>
<td><strong>Viral diarrhea</strong></td>
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</tr>
<tr>
<td><strong>Ringworm (Tinea corporis)</strong></td>
<td>4-10 days</td>
<td>Direct contact with lesions or indirect contact with contaminated surfaces or with infected animals</td>
<td>3-5 days</td>
<td>As long as lesions are present and viable persons persist on contaminated materials</td>
<td>Education to families and patients on prevention of spread.</td>
</tr>
<tr>
<td><strong>Respiratory syncytial virus</strong></td>
<td>2-8 days</td>
<td>Droplet spread through coughing and sneezing or contact with nasal or oral secretions, or with articles contaminated with respiratory discharges.</td>
<td>2-5 days</td>
<td>About 1 day prior to, and throughout, illness.</td>
<td>Education to families, teachers, and classmates on prevention of spread by hand washing, proper use and disposal of tissues.</td>
</tr>
<tr>
<td><strong>Rubella</strong> (German measles)</td>
<td>14-21 days</td>
<td>Person-to-person by droplets and discharges from nose and throat and via articles contaminated by secretions.</td>
<td>2-3 days</td>
<td>About 7 days before and at least 4 days after rash appears. Infants with congenital rubella syndrome may shed virus for months after birth via urine or pharyngeal secretions.</td>
<td>IGM is necessary to confirm diagnosis. Contact investigation by PH. Recommend immunization with MMR for all appropriate susceptible persons.</td>
</tr>
<tr>
<td><strong>Salmonella</strong></td>
<td>6-72 hours</td>
<td>Ingestion of contaminated food (commonly eggs, poultry, and meat); contact with infected animals or person-to-person spread by fecal-oral route.</td>
<td>1-14 days</td>
<td>Variable: usually several days to several weeks. A temporary carrier state may continue for months, especially in infants but transmission from carriers is very uncommon.</td>
<td>Patient interview, assessment, and contact investigation by PH. Education on prevention of spread. Advise no reptiles in classrooms, child care or in homes with children &lt; 5 years of age or with immunocompromised people.</td>
</tr>
<tr>
<td><strong>Scabies</strong></td>
<td>2-6 weeks for first exposure. 1-4 days after re-exposure.</td>
<td>Prolonged direct contact with an infected person, sexual contact. Less frequently indirectly, by immediate contact with contaminated personal articles</td>
<td>2-3 days</td>
<td>Until mites and their eggs have been destroyed through treatment.</td>
<td>Education on appropriate control measures.</td>
</tr>
<tr>
<td><strong>Shigella</strong></td>
<td>12-96 hours</td>
<td>During acute infection and up to 4 weeks after onset of illness.</td>
<td>1-3 days</td>
<td>During acute infection and up to 4 weeks after onset of illness.</td>
<td>Same as E. coli O157:H7.</td>
</tr>
</tbody>
</table>
# The Epidemiology of Common Communicable Diseases

<table>
<thead>
<tr>
<th>Shingles (Varicella)</th>
<th>Shingles (Varicella) virus is dormant in someone who has had chickenpox. Reactivation of virus.</th>
<th>Person-to-person by direct contact with drainage from blisters. Only infectious to persons who have not had chickenpox or chickenpox vaccine. Susceptible contacts get chicken pox, not shingles.</th>
<th>While drainage from blisters is present.</th>
<th>Cover lesions. No exclusion from school or childcare if blisters can be covered.</th>
<th>Education on prevention of spread. Recommend immunization for appropriate persons.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streptococcal infections (Strep throat, Scarlet fever)</td>
<td>1-3 days</td>
<td>Person-to-person by direct or intimate contact with an infected person (case or carrier); rarely by contaminated articles, food or water.</td>
<td>10-21 days in untreated cases: until 24 hours after start of appropriate antimicrobial therapy.</td>
<td>Exclude from school until 24 hours after start of appropriate antibiotic therapy (usually penicillin). Antibiotic prophylaxis of high-risk persons, i.e. those with a history of rheumatic fever. Symptomatic contacts should be tested. Cover nose and mouth with disposable tissue when coughing or sneezing and proper disposal of tissue. Or cough and sneeze into your upper arm.</td>
<td>Education on prevention of spread.</td>
</tr>
<tr>
<td>Tuberculosis (TB) (pulmonary and laryngeal)</td>
<td>2-10 weeks after exposure for skin test (PPD) conversion. 9-10% of persons with latent TB infection (+ skin test but clear chest x-ray) go on to develop disease in their lifetime.</td>
<td>Airborne transmission of tuberculosis bacteria in droplet nuclei from infectious person. Prolonged close contact usually needed for spread.</td>
<td>Probably not communicable after 1-4 weeks on effective drug regimen. Extra-pulmonary TB is not communicable.</td>
<td>If communicable, exclude from school and work until patient meets criteria for non-infectiousness. Evaluate contacts with significant exposure. Prophylactic therapy or treatment as indicated.</td>
<td>Patient interview and contact investigation and follow-up by PH. Directly observed therapy (DOT) by PH. Give personnel recommendations on return to community. Must still be reported even if suspect case.</td>
</tr>
<tr>
<td>Vancomycin-resistant Enterococci (VRE)</td>
<td>Unknown due to carrier state. Same as MRSA.</td>
<td>Same as MRSA.</td>
<td>Same as MRSA.</td>
<td>Same as MRSA plus thorough environmental cleaning.</td>
<td>Same as MRSA plus thorough environmental cleaning.</td>
</tr>
</tbody>
</table>

**Public Health Reporting**

* Disease is reportable the next work day to Nevada Division of Public and Behavioral Health (DPBH), Office of Public Health Informatics and Epidemiology - 775-684-5911

** Disease is IMMEDIATELY reportable to DPBH (After Hours Emergency Duty Officer 775-400-0333)

*** Disease is reportable within 24 hours regardless of whether or not that falls on a work day

Contact public health of any suspected outbreak.
Immediately report any disease when there is reasonable suspicion that it may be the result of a deliberate act such as terrorism.

<table>
<thead>
<tr>
<th>Why should I report?</th>
<th>When should I report?</th>
<th>What should be reported?</th>
<th>Who should I report to?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting of cases of infectious diseases is important in the planning and evaluation of disease prevention and control programs, in the assurance of appropriate medical therapy, and in the detection of common-source outbreaks.</td>
<td>Most disease reports should be submitted within five (5) working days of diagnosis, treatment, or detection. However, some conditions must be reported within 24 hours or only during outbreaks.</td>
<td>Disease or suspected disease, patient's full name, address, telephone number, date of birth (if known), sex, race (if known), occupation (if known), employer (if known), date of disease onset, date of diagnosis, health Care provider's name &amp; contact Information (and any other information required by health department).</td>
<td>Reports should be sent to the local health agency (county or state health department) by telephone, email or fax.</td>
</tr>
</tbody>
</table>

All reported information is confidential.
Physicians, veterinarians, dentists, chiropractors, registered nurses, directors of medical facilities, medical laboratories and blood banks are required to report all cases, suspect cases and carriers within 24 hours. The following individuals should also report: school authorities, college administrators, directors of child care facilities, nursing homes and correctional institutions.

For more information on reportable diseases, see Nevada Revised Statue (NRS) Chapter 441A [http://leg.state.nv.us/nrs/NRS-441A.html] and Nevada Administrative Code Chapter 441 A.

### Carson City Health & Human Services
(Carson City, Lyon County, and Douglas County)
900 East Long St.
Carson City, NV 89706
http://www.carson-city.nv.us
Phone: (775) 887-2190
After-Hours Phone: (775) 887-2008
Confidential Fax (775) 887-2138

### Southern Nevada Health District
330 S. Valley View Blvd.
Las Vegas, NV 89107
http://www.southernnevadahealthdistrict.org/
Phone: (702) 759-1000 (24 hours)
Confidential Fax: (702) 759-1414

### Washoe County Health District
1001 E. Ninth St., Building B
P. O. Box 11130
Reno, Nevada 89520-0027
http://www.co.washoe.nv.us/health
Phone: (775) 328-2447 (24 hours)
Confidential Fax: (775) 328-3764
Confidential E-mail: epicenter@washoe county.us

REMEMBER: HANDWASHING IS THE MOST IMPORTANT ACT A PERSON CAN DO TO PREVENT TRANSMISSION OF DISEASE!

This document has been adapted from the “Epidemiology of Common Communicable Diseases” courtesy of The Center for Acute Disease Epidemiology at the Iowa Department of Public Health.
Demystifying Pediculosis: School Nurses Taking the Lead

Deborah J. Pontius

Consider this scenario common five years ago: Nathan, a second grade student, was sent to the school nurse's office for a "head check" after his teacher noticed him frequently scratching his head. The nurse finds several tiny white objects on Nathan's hair, about an inch from the scalp. The nurse does not see any evidence of nits closer to the head, nor does she find any live lice. Per school policy, the nurse immediately calls his parents and requests they come to pick him up. His belongings are brought to the nurse's office. When his parents arrive, the nurse explains there is evidence that Nathan might have lice, and that he needs to be treated. She also explains the "no-nit" policy, meaning all nits must be removed before he returns to school. The nurse describes a treatment program that includes washing all the linen in the house, washing all of Nathan's clothing, putting all items that cannot be washed, such as stuffed animals, in a plastic bag for 10 days, and spraying an aerosol pediculicide or vacuuming all hard and soft household surfaces. The nurse also recommends the student and all members of the family be treated with a pediculicide. As an alternative, the nurse suggests a regime that includes mayonnaise treatment or a commercial lice removal service. The nurse proceeds to check the heads of all the students in Nathan's classroom and sends a letter home to notify the parents of Nathan's classmates of a case of lice in the classroom. Nathan's teacher asks the nurse to check her head and to sanitize headphones in her classroom.

The problem with the scenario described above is that not one of the health care provider interventions is evidence-based best practice. Many school nurses across the county have successfully advocated their school boards to update their treatment of Pediculosis to reflect the current state of knowledge. Unfortunately, the scenario above is still all too common. This article will evaluate common head lice myths or traditional practices and present current evidence-based Pediculosis practice.

For the school community, Pediculosis capitis, or head lice, is a time consuming, seemingly never-ending problem. School children (presumed to be) with lice have been estimated to lose an average of four days of school per year in schools where "no-nit" policies are enforced (Gordon, 2009). This represents not only a loss of the opportunity for learning, but a loss of funding for schools and loss of parent work days as well. Nationwide, it has been estimated that schools lose between $280 to $325 million in annual funding, and families lose up to $2,720 in wages per active infestation (Gordon, 2009).

Myth #1. Lice Are Easy To Get; They Are Easily Passed via Hats, Helmets, Or Hair Care Items; And Can Jump or Fly From One Person to Another

A head louse is a wingless insect with six legs; therefore, it cannot jump, fly, or even crawl long distances (Centers for Disease Control and Prevention [CDC], 2013a). Lice possess pincher-like grasping structures that allow them to hold on to the hair shaft quite tenaciously. Bathing, shampooing, or simple daily hair brushing cannot easily dislodge them (see Figure 1). The pincher actually adapts to hair shafts. In the U.S., the most common form of head lice species has adapted to the round Caucasian hair shaft (Frankowski & Bocchini, 2010). Lice are much less common among the oval-shaped hair shaft of the African-American child. A louse is mostly readily transmitted via head-to-head contact.

There is a very small theoretical possibility that hair care items may assist in the transmission of lice, although these insects are likely to be dead or injured. Therefore, it is pru-

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dent to recommend not sharing hairbrushes, combs, or hair retainers, such as "scrunchies" or ponytail holders. Slick helmets (e.g., bicycle helmets, football helmets, or baseball hats) pose no risk of transmission (Burgess, Pollack, & Taplin, 2003; CDC, 2013a; Frankowski & Bocchini, 2010; Poutius, 2011). Although bed linens may be a source of transmission, one study found live head lice on only 4% of the pillow cases used by an infected person (Spear, Cahill, & Thomas, 2003). Sharing beds is noted to be a significant risk factor for transmission. The extended time with heads being close to each other when bed sharing presents an opportunity for adult lice to crawl from one head to another (Burgess et al., 2003; Frankowski & Bocchini, 2010; Meinking & Taplin, 2011). 

Symptoms of lice include tickling sensations, difficulty sleeping, sores on the head from scratching, and itching. Pruritus is caused by sensitization to components of the louse's saliva. With a first case, itching may not develop for three to six weeks, but with repeated cases, the pruritus develops much more quickly (Frankowski & Bocchini, 2010).

Myth #2. You Can Get Lice From Your Dog, Guinea Pig, or Other Animal

Human head lice (Pediculosis humanus capitis) are small parasitic insects that live on the scalp and neck hairs of human hosts. Although there are a number of other types of mammalian lice, they are all species-specific. Only humans can spread human lice. Humans can only acquire human lice (CDC, 2013a).

Myth #3. Head Lice Breed In Furniture, Carpets and Other Household Objects; You Must Treat the House To Eliminate Lice

People are infested with head lice, not things or places. A louse's entire existence is dependent upon the human host, and without this host, lice typically die within 24 hours (Meinking & Taplin, 2011). Eggs remain viable a bit longer, but as soon as hatched, they must feed on the human host, or they will die within hours. According to Richard Pollack, PhD, noted expert on parasitology and entomology, "I've seen nothing of an objective nature to suggest that fomites play any significant role in the transmission of head lice" (Burgess et al., 2003, p. 4).

If a child is determined to have a lice infestation, only items that have been in contact with the head of the person with the lice in the previous 24 to 48 hours prior to treatment should be considered for cleaning (Frankowski & Bocchini, 2010). This may include items of clothing worn near the head and possibly carpeting or rugs if the child was lying on them. Washing, soaking, or drying items at temperatures greater than 130°F will kill stray lice or nits. Cloth or carpeted items may be vacuumed. Although the risk is low, it is prudent to not share combs, brushes, or other hair care items. Pediculicide spray in the home is not necessary and should not be used. It provides unnecessary exposure to pediculicides to both infested and uninfested persons in the household, and can be dangerous to infants (CDC, 2013a; Frankowski & Bocchini, 2010). The American Academy of Pediatrics (AAP) finds no benefit in "herculean cleaning measures" (Frankowski & Bocchini, 2010, p. 398).

Myth #4. Poor Hygiene And Low Income Are Associated with Head Lice

Head lice often infest people with good hygiene and grooming habits (CDC, 2013a). There is some evidence that more lice will be found on the head that is shampooed or brushed less often (Frankowski & Bocchini, 2010). However, regular hair hygiene will not eliminate nor prevent head lice, but may remove lice that are probably dead or dying (Pollack, Kiszewski, & Spielman, 2000). All socioeconomic groups are affected, and infestations are seen throughout the world. In the U.S., children in preschool and primary grades are affected more often, as are their caregivers and housemates. This is due to the opportunity for close, head-to-head contact (Burgess et al., 2003).

Myth #5. The Presence Of Nits/Eggs Indicates An Active Case of Lice

The three stages of the louse life cycle are egg/nit, nymph, and adult, and altogether, the life cycle lasts approximately 45 days (CDC, 2013a) (see Figure 2). The adult female louse lays up to 8 to 10 brown to yellowish colored eggs per day, which are cemented to the base of the hair shaft, most commonly found behind the ears or at the nape of the neck (see Figure 3). The color of the eggs may vary to match the color of the hair, making them very difficult to discover (Frankowski & Bocchini, 2010; Meinking & Taplin, 2011). Because of the cement-like attachment, they cannot "fall" off. Nymphs hatch in about one week, leaving behind a white-colored shell or nit. The nymph stage is also about one week in length, going through three molts to achieve adulthood (see Figure 4). The adult is the size of a sesame seed, is brown to gray or whitish in color, and will live for as many as 30 days (CDC, 2013a). Although some authorities refer to the "nit" as the non-viable shell only because it is difficult to ascertain true viability of a nit without microscopic examination, this article will use the more commonly ascribed definition of nit to include both viable eggs and hatched egg shells.

The presence of a live louse is considered the gold standard for an active infestation, not the mere presence of nits (Pollack et al., 2000; Meinking & Taplin, 2011). A viable nit is one that is closer than six millimeters (mm) to the scalp (CDC,
Considering that nits do not move after being laid, that nits hatch in approximately seven days, and that hair grows and average of 13 mm (Caucasian) to 10 mm (African American) per month (Louissouarn, Rawadi, & Genain, 2005), and generously doubling the viability estimate (as it can be longer in warmer climates (Meinking & Taplin, 2011), most experts concur that nits found farther than one-fourth to one-half inches (6 to 12 mm) from the scalp are non-viable (Frankowski & Bocchini, 2010; Mumcuoglu et al., 2007; National Association of School Nurses (NASN), 2011; Pollack et al., 2000). Lice are more common among girls, which may be due to longer hair hiding the infestation or a greater likelihood of playing with heads closer together (Burgess et al., 2003; Frankowski & Bocchini, 2010). By the time a case of lice is found, the child has generally had them for a month or more (Frankowski & Bocchini).

**Myth #6. No-Nit Policies Reduce the Transmission Of Head Lice in Schools**

Over the past decade, there have been important recommended changes in the management of head lice in schools: *No student should ever miss school time because of head lice, and no-nit policies should be eliminated* (CDC, 2013b; Frankowski & Bocchini, 2010; Mumcuoglu et al., 2007; NASN, 2011). Many schools have traditionally had "no-nit" policies, which require the removal of all nits, viable or not, before a child returns to school. To school personnel unfamiliar with the life cycle of the louse, school exclusion for an infestation or for the evi-

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**Figure 2. Lifecycle of the Louse**

Source: CDC, 2013c.

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**Figure 3. Viable Nit**


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**Figure 4. Comparison of Egg, Nymph, and Adult**

dence of nits seems logical. Their rationale may be that by excluding those who have head lice, others will not catch it. However, there is no evidence that these policies reduce the transmission of head lice in schools. Moreover, there is significant evidence that such policies increase absenteeism, shame, stigma, and unnecessary treatment.

The Cost of “No-Nit” Policies

It has been estimated that school children with lice lose an average of four days of school per year in schools where “no-nit” policies are enforced (Gordon, 2009). The loss of the opportunity for learning, funding for schools, and parent/guardian work days results. Our nation’s schools lose between $280 to $325 million in annual funding, and families lose up to $2,720 in wages per active infestation (Gordon, 2009). One study found that while the presence of more than five nits closer than one-quarter inch from the scalp was a risk factor for the development of an active infestation, most of these children did not actually become infected (Williams, Reichert, Mackenzie, Hightower, & Blake, 2001). Just the presence of nits does not indicate the presence of an active case of lice, especially if the nits are more than approximately one half inch (1 cm) from the scalp.

Even viable nits do not transmit lice. Eggs cannot be transmitted from one head to another, nor can they fall off the hair shaft. Even if hair with a viable nit falls off, it will not hatch at temperatures lower than the human head (Meinking & Taplin, 2011). Should environmental temperatures stay warm enough that the nymph actually hatches off the head, as an obligate ectoparasite and blood feeder, it must find a human host or rapidly succumb within 24 to 48 hours (Frankowski & Bocchini, 2010). There is no medical need to eliminate empty egg cases, but removal for esthetic reasons may reduce stigma (Burgess et al., 2003; Gordon, 2007). Additionally, the evidence shows both lay and health care personnel, even school nurses (who generally spend the most time of any health care professional assessing for lice) actually identify hair casts, hair product debris, dandruff, and other items found in the hair erroneously as lice or nits equally as often as they do so correctly (Pollack et al., 2000).

Exclusion for Live Lice

It also is no longer recommended to exclude children immediately for live lice or viable nits, but rather, to wait to notify parents/guardians at the end of the day. In most situations, the child has probably had lice for a month or more and possesses little risk to others (CDC, 2013a; Frankowski & Bocchini, 2010; Mumcuoglu et al., 2007). Any exposure to his or her classmates has already occurred, and immediate exclusion provides no further prevention. No exclusion from any activities is necessary, including riding the school bus or participating in sports.

Shame and Stigma

When a child is called to the nurse’s office and does not return, and then a note goes home at the end of the day to check children for possible lice, it only takes a few questions from parents/guardians to determine which of their child’s classmates has lice. For the child with persistent lice, the shame and stigma can be devastating not only to the child, but to the family as well. Children may be told they cannot play, sit by, or even be friends with the child who had/has lice. Head lice are not a health threat. Unlike body lice, head lice cause no known disease other than the occasional topical infection from persistent scratching, yet can cause a child to be socially ostracized (Gordon, 2007)

The Call for the Discontinuance

The following groups all call for elimination of “no-nit” policies:

- American Pediatrics Association (AAP) (Frankowski & Bocchini, 2010).
- Centers for Disease Control and Prevention (CDC, 2013a).
- International Guidelines for the Treatment of Pediculosis (Mumcuoglu et al., 2007).
- National Association of School Nurses (NASN, 2011).

According to D. Taplin, “If no nit policies were that effective, why do we still have so many head lice?” (Burgess et al., 2003, p. 11). However, eliminating “no nit” policies does not mean eliminating a need to treat the infestation. Whether by chemical or mechanical means, treatment to eliminate the head lice remains a high priority. Although not dangerous, infestation may be uncomfortable and should be managed.

Myth #7. Schools Are a Common Place for Lice Transmission

Surprisingly, schools rarely provide an opportunity for close head-to-head contact, except for very young children, such as preschool and kindergarten students. For that reason, schools are rarely a source for lice transmission. Head lice are most often a community health issue brought into the school setting. Speare, Thomas, and Cahill (2002) found that while 14,000 live lice were found on the heads of 466 children, no lice were found on the carpets of 118 classrooms. Hootman (2002) mapped classrooms of infested students, and found all students in the same classroom with lice shared time together outside of school with relatives, or household members, or had participated in a recent sleepover. Clothing stored next to each other, classroom headphones, riding on the bus together, and playing on the playground or in sports are also not sources of transmission (Burgess et al., 2003). The evidence indicates 1% to 10% of U.S. children (in kindergarten to fourth grade) have an infestation of head lice at any one time (Pollack et al., 2000). It is estimated that 10% of those may actually be transmitted in school. It does not make sense to exclude children when the likelihood of transmission in school is only 1%, far less than the common cold.

Schools often see a spike in cases after a school break, such as the beginning of the school year, after Christmas, and again after spring break. This is often falsely attributed to a return to the school environment, but is actually due to being in the community for an extended period of time (Gordon, 2007). These break times are commonly when children have sleepovers, go to camp, or visit relatives. They then return to school, and the teacher or school nurse who is familiar with the symptoms identifies the infestation. The school, rather than being the proximate cause of infestation, is the location of its identification.

Current recommendations include notifying parents at the end of the school day and providing education on the proper treatment. The child should be checked again the next school day. Should the parents be unable to provide necessary follow
through, further follow up, which may include financial assistance with pediculicides, additional education and how to check and comb out lice and viable eggs, referral for prescription treatment, or as a rare, very last resort, exclusion for non-compliance, may be appropriate (Frankowski & Bocchini, 2010; Pontius, 2011). A child should never lose a day at school because of lice.

Myth #8. Classroom Checks Can Limit Spread Of Head Lice in Schools

It is the position of NASN, the CDC, and AAP that school screenings, either routine or after an identified classroom case, are not productive, cost-effective, or merited, and are wasteful of education time (CDC, 2013a; Frankowski & Bocchini, 2010; NASN, 2011). School screenings are not an accurate way of assessing or predicting which children are or will become infested, and such screenings have not been proven to have a significant effect on the incidence of head lice in a school (Frankowski & Bocchini, 2010; Meinking & Taplin, 2011). One study found that misdiagnosis is so common that non-infested children were excluded from school more often than actually infested children (Pollack et al., 2000). Anecdotally, prior to the elimination of “no-nit” policies and classroom screening in her district, the author had conducted classroom screens whenever one student was found to have head lice. During eight years of such screenings, no further cases of lice were ever found that could not be attributed to close contact outside of school.

Screenings also have significant potential to violate the children’s privacy. In schools, parents or guardians have a right to control access to their child’s body. This could be violated by routinely screening students without parent/guardian permission. The National Pediculosis Association, a lay pediculosis interest group, continues to recommend the strict adherence to “no-nit” policies via nit combing and routine screenings as a way to eliminate the need any pediculicides. There is no published, reviewed evidence to support these claims (R. Pollack, personal communication, May 21, 2014).

It is prudent, however, to check close contacts of a child found to have head lice (Frankowski & Bocchini, 2010). A close contact includes all members of the household; those who have recently spent the night; family members who travel between households in blended families; children who spend large amounts of time outside of school with each other, such as day care, camp, or at babysitters; and preschool and kindergarten children who both sit near each other and play often together.

Myth #9. Letters to Parents Or Guardians When a Case Is Identified at School Are A Good Way to Control The Spread of Head Lice

There is no evidence to support the claim that letters sent home prevent head lice transmission, and they may, in fact, be a violation of privacy and confidentiality (American School Health Association [ASHA], 2000; Frankowski & Bocchini, 2010). There is no known method to prevent lice (other than by shaving the scalp hair). Sending home a letter may, as it should, cause parents to check their students to see if they are currently infested. However, this may also create a false sense of security because parents may believe their child is lice-free. There may be undetected, unhatched viable nits or one pregnant louse in the hair, or the child may spend the next night with a friend who unknowingly has an infestation. Some parents/guardians will treat prophylactically, causing unnecessary use of pediculicides or time-consuming combing and environmental cleaning. Sending letters home often results in panic and emotional distress among caregivers. Letters home not only provoke a crisis situation and unjustified panic, but they perpetuate the myth that lice are transmitted in schools (Mumcuoglu et al., 2007). However, some schools continue to send alert letters because while they may understand head lice are not a public health risk, they are concerned about a public relations dilemma and community backlash (Frankowski & Bocchini, 2010).

Confidentiality Violations

Parents or guardians often insist they have a right to know when a case of head lice is discovered in a classroom. Parents have also insisted they have a right to know when a child has HIV or other communicable condition in school. However, they do not have a legal right to such information. Although no school would send home a letter with a specific child’s name in it, families can easily determine which child is suspected to have lice. This right to confidentiality in schools is protected by the Family Educational Rights and Privacy Act (FERPA), and by state and national ethical health care and education standards.

The Family Educational Rights and Privacy Act

FERPA requires that medical and educational records cannot, without parent/guardian consent, be released to others without a legitimate educational interest. This is regardless of whether the information is written, oral, or electronic (ASHA, 2000; Bergem, 2001). Even without disclosing the actual name, if another person can easily determine the identity of a child, then student privacy and confidentiality has been violated. For example, if the nurse were discussing an issue at school about a child in a wheelchair and only one child is in a wheelchair at school, enough information has been provided to identify that child and breach his or her privacy, without ever mentioning a name. In a pediculosis situation, if after parents receive a lice alert letter they ask their own child who went home from school today and their child knows the answer, a similar breach has occurred.

National Ethical Standards And State Laws

Both the professions of education and nursing have developed codes of ethics that stipulate not disclosing information about students obtained within the course of professional service. For example, provision #3 in the American Nurses Association (ANA) Code of Ethics states “the nurse promotes, advocates for and strives to protect the health, safety and rights of a patient, which includes both privacy and confidentiality” (ANA, 2001, p. 6). Failure to uphold national professional standards can leave the nurse open to charges of malpractice.

Harm vs. Duty to Warn

According to ASHA (2000), when contemplating a disclosure of confidential health information even if by default, two ethical criteria must be met. The criteria and related consider-
Myth #10. If One Member Of the Household Has Lice, Everyone Should Be Treated

Treatment should be initiated only when there is clear evidence of head lice. When lice are identified in one family member, all household members and close contacts should be examined. Treat only those contacts that actually have crawling lice or viable eggs. Prophylactic treatment is unnecessary and time-consuming, and exposes persons to medications unnecessarily. All persons with head lice should be treated at the same time, otherwise they could re-infest each other (CDC, 2013a).

Myth #11. Pediculicides Are Dangerous and Should Be Avoided

Pediculicides, which are safe when used as directed, can be used as an adjunct or to replace combing (Burgess et al., 2003; CDC, 2013a). The safety and effectiveness of home or "natural" remedies, such as olive oil, tea-tree oil, lavender oil, or mayonnaise, are not regulated by the FDA and have not been shown to be effective in any known double-blind studies, and are therefore not recommended (Frankowski & Bocchini, 2010)

Pediculicides

Over-the-counter (OTC) preparations or permethrin (e.g., Nix®) and pyrethrins (e.g., RID®, Clear®, Pronto®) remain as the first line choice for pediculicidal treatment. Even in light of some developing resistance to pyrethrins, they remain very effective. They are inexpensive and have extremely low toxicity. Pyrethrins are a natural chrysanthemum extract, and permethrin is a synthetic pyrethroid. Both are neurotoxic to lice (Frankowski & Bocchini, 2010).

Evidence has shown that many families rely on peers, and increasingly, the Internet, for their treatment information. In addition, families will self-treat an average of five times before seeking the help of a health care professional (Gordon, 2009). The cost of seeing a health care provider, plus the additional cost of a prescription medication and the stigma associated with head lice, are often the reasons many families will initially seek alternative information and treatments. Experts recommend referral to a health care provider after two treatment failures (Burgess et al., 2003). According to the treatment protocol recommended by the American Academy of Pediatrics (2012), "For treatment failures not attributable to improper use of an over-the-counter pediculicide, malathion, benzyl alcohol lotion, or spinosad suspension should be used" (p. 4). Several prescription medications exist, with three new medications receiving FDA approval in the last five years (see Table 1). Each of these pediculicides must be used according to the directions. Some require a second treatment to ensure eradication of newly hatched nymphs. Others require an extended time on the head. The school nurse can help assure treatment success by making sure explanations of options and instructions for use are clear and understood by the caregiver. Finally, there is some evidence that a device that uses hot air to desiccate the insects may be effective (Frankowski & Bocchini, 2010). However, the device is expensive and not readily available.

Lice Removal Services

Delousing/nit picking services have expanded across the country in the last decade. These primarily for-profit businesses espouse to provide relief for families who are either unable or unwilling to do mechanical lice and egg removal, and/or prefer not to use pediculicides. However, unlike barbers and beauticians who also manipulate hair, such businesses are unregulated. Workers are not health care professionals and are generally trained by the establishment (Pollack, 2012). Noted lice expert Richard Pollack (personal communication, May 21, 2014) is unconvinced of the need for such services, and believes when the nature of the business is to sell head lice control services and proprietary supplies, it is not surprising to see these salons aggressively arguing in favor of no-nit policies, and perhaps suggesting that "out-
Figure 5.
Suggested Scheme for Head Louse Infestations

Managing Presumed Head Louse Infestations at Home

1. "Nits" discovered on hair?
   - No
     - Relax! Do NOT treat for lice.
   - Yes
     - Inspect hair for live (crawling) lice.
     - Compare samples to images on our website or submit a sample for evaluation.
     - Inspect all other people in the home for live lice.

2. Periodically reinspect hair for live lice.
   - Do NOT treat.

3. Do live (crawling) lice persist after the second treatment?
   - Yes
     - Consult with your physician.
     - Consider prescription pediculicides that contain an active ingredient different than that of your over-the-counter product.
   - No
     - Treat

4. Is the hair readily combed with a louse comb?
   - Yes
     - Comb hair thoroughly with a louse comb.
     - Use hair conditioner to lubricate and comb. Many lice and eggs should be removed during the first combing session.
     - Repeat every few days. Subsequent combing will remove another portion of the remaining, as well as any new, lice and eggs.
     - Continue periodic combing until no live lice are discovered for an interval of about two weeks.
     - Treatment with pediculicides may supplement or replace combing.
   - No
     - Apply an FDA-registered over-the-counter pediculicide according to label directions.
     - Change or launder pillowcases, pajamas, and towels that were in direct contact with the infested person within the past day.
     - If live (crawling) lice persist, a second application may be needed about 10 days after the first treatment.
     - Consult your physician or pharmacist for advice.

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Table 1.
Medications

<table>
<thead>
<tr>
<th>Age</th>
<th>Medications</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Over-the-Counter Medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permethrin lotion, 1%</td>
<td>2 months and older</td>
<td>• Kills live lice but not unhatched eggs.riba second treatment is necessary on day 9 to kill any newly hatched lice before they can produce new eggs.</td>
</tr>
<tr>
<td>Pyrethrins</td>
<td>2 years and older</td>
<td>• Generally should not be used by persons who are allergic to chrysanthemums or ragweed.riba second treatment is recommended 9 to 10 days after the first treatment to kill any newly hatched lice before they can produce new eggs.</td>
</tr>
<tr>
<td>Prescription Medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzyl alcohol lotion (0.5%)</td>
<td>6 months and older</td>
<td>• Kills lice but not eggs. • A second treatment is needed 7 days after the first treatment to kill any newly hatched lice before they can produce new eggs.</td>
</tr>
<tr>
<td>Ivermectin lotion, 0.5%</td>
<td>6 months and older</td>
<td>• Kills live lice and appears to prevent nymphs (newly hatched lice) from surviving. • It is effective in most patients when given as a single application on dry hair without nit combing. • It should not be used for retreatment without talking to a health care provider.</td>
</tr>
<tr>
<td>Malathion lotion, 0.5%</td>
<td>6 years and older</td>
<td>• Kills live lice and some lice eggs. • A second treatment is recommended if live lice still are present 7 to 9 days after first treatment.</td>
</tr>
<tr>
<td>Spinosad 0.9% topical suspension</td>
<td>4 years and older</td>
<td>• Kills live lice and unhatched eggs. • Retreatment usually not needed and should be given only if live (crawling) lice are seen 7 days after first treatment.</td>
</tr>
</tbody>
</table>

Source: Adapted from CDC, 2013b.

breaks” or “epidemics” of head lice are occurring. The cost can be quite expensive, with a session costing several hundred dollars or more. There is no evidence to support recommending these services.

Myth #12. Head Lice Are Becoming Increasingly Resistant to Pediculicides

Several studies have reported some increase in local resistance to OTC pediculicides in the last 20 years, receiving prominent lay press coverage. However, the prevalence of actual resistance is unknown because clinical trials have used different inclusion criteria, resulting in different conclusions (Frankowski & Bocchini, 2010; Pollack et al., 2000). Most recently, Yoon et al. (2014) found by DNA typing of lice in several locations in the U.S. and Canada, the rate of T1 mutation (the gene mutation most responsible for permethrin resistance) varied between 84.4% and 99%. While this suggests increasing resistance to permethrin and pyrethrins-based pediculicides, one must be careful in extrapolating these results because their study examined a small number of lice from only 12 U.S. states and studied the potential for resistance, rather than a clinical measurement of actual resistance. What matters most is the degree to which head lice have become resistant in each community (Burgess et al., 2003). Studies on resistance and efficacy are ongoing.

Resistance is often branded as the proximate cause of treatment failure when head lice are not eradicated by a pediculicide. However, these treatment failures are more commonly the result of:
- Misdiagnosis (no active infestation, or misidentification).
- Non-compliance (not following treatment protocol).
- New infestation (lice acquired after treatment).
- Lack of ovicidal (egg-killing) or residual properties of the product (Burgess et al., 2003; Frankowski & Bocchini, 2010).

Pollack et al. (2000) found the most common reason for a conclusion of “resistance” was actually misdiagnosis; therefore, it could not be effectively treated with a pediculicide. Of the 555 samples sent in and initially identified as head lice, only 57.5% were correctly diagnosed and confirmed as such by an entomologist. Family identifications were only 47% correct, and physicians had the worst identification rate at 11% correct. The health care provider should consider resistance after assuring oneself the above factors have not contributed to the treatment failure.

Nurses as Change Agents

Pediatric nurses working both in and out of schools can lead the charge to help schools design evidence-based policies that respect the privacy and confidentiality of students yet promote successful treatment of infestations. NASN, in its position statement regarding pediculosis (NASN, 2011), described that school nurses are the key health care professionals in the provision of education and anticipatory guidance in all aspects of the management of pediculosis in the school setting. Additionally, school nurses play an important role in helping local pharmacists, health care providers, and community health districts in updating their knowledge of current state of pediculosis science. Providing education to reduce the stigma of lice, clarify myths, and provide accurate information about effective treatment options, as well as appropriate referrals to health care providers, is important nursing care. Table 2 gives an example of a parent-teaching tool, designed by the author using the principles of health literacy to effectively dispute the common myths of lice management. NASN provides free, professionally produced, evidence-based parent and nurse educational tools in their Lice Lessons program (visit http://www.nasn.org for more information).
### Table 2.
**Lice 101: Myths and Realities about Head Lice**

<table>
<thead>
<tr>
<th>Definitions</th>
<th>Myths</th>
<th>Truths</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lice:</strong> More than one louse.</td>
<td>Lice are spread only mainly by head-to-head contact. They are much harder to get than a cold, flu, ear infection, pink eye, strep throat, food poisoning, or impetigo.</td>
<td>Lice are species-specific. You can only get human lice from another human. You cannot get another animal’s lice.</td>
</tr>
<tr>
<td><strong>Nit:</strong> Eggs, dead or alive, of a louse</td>
<td>Rarely, but possible. Hairbrushes, pillows, and sheets are also uncommon modes of transmission.</td>
<td>School is an unlikely source of transmission. Much more common are family members, overnight guests, and playmates who spent a large amount of time together.</td>
</tr>
<tr>
<td><strong>Louse:</strong> Small insect that lives on the scalp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parasite:</strong> Lives off another, in this case the blood of humans.</td>
<td>Hygiene makes absolutely no difference. You can get lice by close personal head-to-head contact with someone else that has lice, not by being dirty.</td>
<td></td>
</tr>
<tr>
<td><strong>Pediculosis:</strong> Having an infestation of lice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Infestation:</strong> Having an insect present, in this case, in your head.</td>
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</tbody>
</table>

**Additional Information**

Even in light of evidence to the contrary, the lay public, including teachers and school administrators, often remain unconvinced of the need to remove “no-nit” policies and will be unmotivated to do so on their own. Further, some experts believe the only hope for true success is to focus on the children. “Teach them to think, to evaluate conflicting bits of information and to form logical and rational conclusions, and to be compassionate and caring” (R. Pollack, personal communication, May 21, 2014) to help children develop a new reality about head lice. Armed with the evidence, school nurses are the perfect change agent to promote policy improvement to match what the evidence shows about the transmission and treatment of pediculosis. Not only can nurses provide education with every interpersonal encounter, they can lobby their school board. Following the examples set by leaders in school districts such as Oakland Unified, the author did just that (see Figure 6). Because many health care professionals are unaware of the realities of lice and newer lice treatments regimes, school nurses, as well as pediatric nurses in general, are in the ideal position to lead the charge!

### References

Figure 6.
Real Life Application

Using the evidence presented here, the author’s district now allows both nits and live lice, does not send home specific alert letters, informs and educates parents/guardians at the end of the school day, and most importantly, provides copious teaching to families and children. In the four years hence, there has been no increase in infestation incidence, and although there is the occasional upset parent, overall the community has accepted these policies.

Source: Pontius, 2011.

I. COORDINATOR – HIRING
* Laura Malkovich - Early Childhood Education Program Coordinator NELC (new)

II. LICENSED PERSONNEL – APPROVAL FOR ADDITION TO SUB LIST
* Kathleen Williams-Miller - Substitute Teacher

III. CLASSIFIED PERSONNEL – HIRING
* Valerie Summers - Duty Assistant CCMS (R. Evans)
* Chancy Parsons - Duty Assistant CCMS (A. Bice)
* Megan Smith - Library Specialist LES (V. Berg)
* Jennifer Lambert - Duty Assistant CCMS (S. Tipp)
* Rebecca Nuttall - Paraprofessional Instructional Assistant-ECE NELC (D. Grimes)
* Diana Strickland - P/T Paraprofessional Instructional Assistant LES (J. Ebner)
* Andria Kelsey - Family Services Specialist-Indian Education (S. Hooper)

IV. CLASSIFIED PERSONNEL – RESIGNATION
* Shannon Hooper - Family Services Specialist-Indian Education (effective 8/21/17)

V. CLASSIFIED PERSONNEL – APPROVAL FOR ADDITION TO SUB LIST
* Valerie Summers - Substitute Instructional Assistant
* Chancy Parsons - Substitute School Bus Driver
* Julie Martin - Substitute School Bus Driver
* Brittany Deems - Substitute Instructional Assistant
* Rachel Christopherson - Substitute Instructional Assistant

VI. EXTRACURRICULAR ACTIVITIES
* Shanta Sponsler - Head Cheerleader
* LaQuita Pearson - Assistant Cheerleader
* Kim Hamman - Assistant Cheerleader (non-paid)
* Joyce Lund - Assistant Cheerleader (non-paid)
* Nilzara Pietri - Assistant Cheerleader (non-paid)

VII. CURRENT OPEN POSITIONS

Licensed
Early Childhood Teacher NELC (new)
.75 ELL Teacher LES (S. Lawrence)
ELL Teacher CCHS (B. Barton)
Agriculture Science Teacher CCHS (K. Moore)
Professional Development TOSA (P. Fleming) WRPDP
School Psychologist

Classified
Paraprofessional Instructional Assistant-ECE NELC (N. Bolhuis)
P/T Paraprofessional Instructional Assistant LES (R. Kammerer)

*denotes action required

***DISCLAIMER: This Recommended Personnel Action List is for discussion by the Churchill County School District Board of Trustees. It is neither a guarantee of employment nor a guarantee that any individual on the list will be employed.