Understanding Head Lice: Transmission, Symptoms, and Treatment

Pediculus Humanus Capitis or head lice, is a very common scalp infestation by a parasitic insect. An estimated 6-12 million children are affected in the United States each year. Head lice can infest people of all ages and socioeconomic backgrounds. The scalp infestation is most common in children between the ages of 3-11 and occurs more frequently in females than males. Adult lice have a lifespan up to 30 days on the infested host’s head. However, lice survive by feeding on blood from the scalp and die within one to two days without blood supply.

Transmission most commonly occurs via direct contact with a person already infested, especially head to head contact. Other possible modes of transmission include the following:

- Sharing clothing such as hats, helmets, or scarves recently worn by an infested person.
- Using combs, brushes, or barrettes worn by an infested person.
- Contact with the pillow, couch, bed, carpet, or personal items of an infested person.

Although some infested children are asymptomatic, the most common signs and symptoms include the following:

- Pruritus (itching) which is caused by an allergic reaction to louse salivary and fecal antigens.
- Tickling or tingling feeling of movement in the hair.
- Sores on the scalp.

The diagnosis of head lice is based primarily on finding nits, nymphs, or adult lice in the hair. Diagnosing head lice can be difficult because nymphs and adults move very quickly and easily evade roaming fingers. If crawling lice cannot be identified, finding nits within ¼ inch of the scalp suggests current infestation. Once the diagnosis of head lice is made, immediate treatment is imperative because infestation will not resolve by itself.

There are two essential steps for the successful treatment of head lice: chemical treatment with pediculicides and manual nit (lice egg) removal. Pediculicides have various mechanisms of action that result in nymph (newly hatched lice) and adult lice death.

Ovicidal agents kill lice eggs in addition to nits and adult lice. Nits should be removed at least once daily for up to two weeks. Removal is done by using nit combs. Nit combs should be metal and can be purchased in pharmacies. Metal flea combs found at pet stores are also effective.

(continued on page 5)
(Understanding Head Lice, continued from page 1)

The best method to removing nits is to part the hair (wet) into small sections. A summary of drug treatment options for head lice can be found in Table 1 on page 4.

Pyrethrins (Rid®, A-200®, Pronto®)

Pyrethrins kill head lice by blocking nerve impulse transmissions. These agents are associated with increasing treatment failures due to resistance. Pyrethrins are unstable in heat and light and are contraindicated in patients with allergies to ragweed, chrysanthemums, or permethrin products. These agents are neurotoxic to lice, but are not ovicidal. Therefore, a second treatment seven days after initial therapy is required.

Permethrin (Nix®, Elimite®)

Permethrin products are considered first line therapy. Permethrin 1% (i.e., Nix®) is available over the counter and considered the treatment of choice. Permethrin 5% (i.e., Elimite®) requires a prescription. Although the 5% strength is not FDA approved for treatment of head lice, some physicians prescribe it for resistant cases. Permethrin causes delayed sodium channel repolarization resulting in respiratory paralysis and lice death. Permethrin is heat and light stable, ovicidal, and has residual activity for up to two weeks. Permethrin is considered to be more effective than the pyrethrins and is associated with less allergic reactions.

Lindane

Lindane stimulates the nervous system resulting in convulsions and lice death. Due to safety concerns, this agent should be reserved as second line therapy for patients who cannot tolerate or have failed treatment with safer agents. Lindane carries a black box warning for potential seizures and neurotoxicity. These side effects are mainly associated with excessive or prolonged use. This agent is contraindicated in premature infants, patients with seizure disorders, and patients with skin conditions (i.e., psoriasis) that may increase systemic absorption. Lindane should be used with caution in children, the elderly, and patients less than 110 lbs (50 kg). This agent is pregnancy category C and should not be used while breastfeeding. Lindane is ovicidal and generally safe when used as directed. An FDA-approved medication guide must be provided to patients when dispensed.

Malathion (Ovide®)

Malathion is an organophosphate pesticide. This agent is an irreversible cholinesterase inhibitor that induces respiratory paralysis resulting in lice death. Malathion is ovicidal and has significant residual effects due to binding to sulfur atoms of the hair. This agent is contraindicated in neonates and infants, and is not indicated in children less than 6 years old. Although malathion is a potent pediculicide it is not widely prescribed due to its unappealing odor, the risk of flammability due to its alcoholic vehicle, and the long application time. Resistance has been reported with all topical pediculicides except malathion 0.5% (Ovide®). This agent is reserved for patients who failed previous therapies.

To ensure treatment success the following are some key patient counseling points:

- The use of chemical medications has not been evaluated in children less than 2 years old. In these patients crawling lice and nits should be removed using a nit comb.
- Pyrethrins, permethrin, and malathion are pregnancy category B. Because these drugs are excreted in breast milk caution should be used in nursing mothers.
- When applying these medications to another person wear gloves and wash hands thoroughly after. Avoid contact with mouth and eyes.
- Complete lice treatments should be used for each infested person. The treatment should not be split or portioned.
- Wash clothing and bedding in hot water and dry on the hot cycle for at least 20 minutes. Items that are not washable should be dry cleaned. Lice can only live for one to two days without blood supply so placing stuffed animals and toys in a sealed plastic bag for two weeks will kill lice on these items.
- Boil combs and brushes for at least five minutes or soak them for one hour in alcohol or Lysol®.

Patient education is essential to successfully treating head lice. Appropriate medication administration, nit removal, and proper environmental interventions decrease the likelihood of treatment failure. Over-the-counter permethrin products are considered effective first line therapy. If resistance is suspected, prescription products such as Lindane are a useful second line agent. Ovide® should be reserved for treatment failures of first and second line agents. Due to increasing resistance patterns, prescription products should be used conservatively.

References

## Formulary Update: Additions to the Keystone Mercy Drug Formulary

<table>
<thead>
<tr>
<th>Drug</th>
<th>Indication</th>
<th>Starting Dose</th>
<th>Strength on Formulary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pataday™</strong>&lt;br&gt;(Step Therapy Requirement)</td>
<td>Ocular itching associated with allergic conjunctivitis</td>
<td>One drop into affected eye(s) once daily</td>
<td>0.2% (5 mL) solution</td>
</tr>
<tr>
<td><strong>Neurontin®</strong></td>
<td>Postherpetic neuralgia in adults and adjunctive therapy in partial seizures in patients 3 years of age</td>
<td>Titrate therapy based on indication and patient’s need</td>
<td>100 mg, 300 mg, 400 mg, 600 mg, 800 mg</td>
</tr>
<tr>
<td><strong>Amitiza™</strong></td>
<td>Chronic idiopathic constipation in adults</td>
<td>24 mcg twice daily</td>
<td>24 mcg</td>
</tr>
<tr>
<td><strong>Emend®</strong></td>
<td>Prevention of acute and delayed nausea and vomiting in moderately to highly emetogenic chemotherapy and prevention of postoperative nausea and vomiting</td>
<td>Chemotherapy induced N/V: 125 mg day 1, 80 mg days 2 &amp; 3&lt;br&gt;PONV: 40 mg 3 hours prior to induction of anesthesia</td>
<td>40 mg, 80 mg, 125 mg</td>
</tr>
<tr>
<td><strong>Baraclude™</strong></td>
<td>Chronic Hepatitis B with evidence of active viral replication and either elevated LFTs or histologically active disease</td>
<td>Nucleoside treatment naïve: 0.5 mg daily&lt;br&gt;Lamivudine-resistant viremia: 1 mg daily</td>
<td>0.5 mg, 1 mg</td>
</tr>
<tr>
<td><strong>Miralax® OTC</strong></td>
<td>Occasional constipation in patients 17 years of age</td>
<td>17 grams of powder dissolved 4-8 oz. of beverage once daily</td>
<td>119 gm and 238 gm powder for oral solution</td>
</tr>
<tr>
<td><strong>Coreg CR™</strong></td>
<td>Adjunctive therapy in mild-to-severe heart failure, improvement of post myocardial infarction survival with left EF of 40%, and hypertension</td>
<td>HF: 10 mg once daily&lt;br&gt;LV dysfunction and HTN: 20 mg once daily&lt;br&gt;(for conversion from immediate-release to extended-release, refer to package insert)</td>
<td>10 mg, 20 mg, 40 mg, 80 mg</td>
</tr>
<tr>
<td><strong>Zolpidem (generic for Ambien®)</strong></td>
<td>Short-term insomnia with difficulty of sleep onset</td>
<td>Adults: 10 mg at bedtime&lt;br&gt;Elderly: 5 mg at bedtime</td>
<td>5 mg, 10 mg</td>
</tr>
<tr>
<td><strong>Amlodipine (generic for Norvasc®)</strong></td>
<td>Hypertension, symptomatic chronic stable angina, vasospastic angina, and prevention of hospitalization due to angina</td>
<td>HTN&lt;br&gt;Children 6-17: 2.5-5 mg once daily&lt;br&gt;Adults: 5 mg once daily&lt;br&gt;Elderly: 2.5 mg once daily&lt;br&gt;Angina&lt;br&gt;Adults: 5-10 mg once daily&lt;br&gt;Elderly: 5 mg once daily</td>
<td>2.5 mg, 5 mg, 10 mg</td>
</tr>
</tbody>
</table>

### References
**Safety Alerts:**

**FDA Permits Restricted Use of Zelnorm for Qualifying Patients**
In July, the U.S. Food and Drug Administration (FDA) announced that it has permitted the restricted use of Zelnorm (tegaserod) under a treatment investigational new drug (IND) protocol to treat irritable bowel syndrome with constipation (IBS-C) and chronic idiopathic constipation (CIC) in women younger than 55 who meet specific guidelines. An IND protocol allows patients with a serious or life-threatening disease or condition who are not enrolled in a clinical trial to be treated with a drug not approved by the FDA when no comparable or satisfactory alternative drug or therapy is available. Therefore, the Zelnorm IND protocol will be limited to patients with IBS-C or CIC whose physicians have decided the medication is medically necessary. Patients who have met the IND protocol guidelines must sign consent materials to ensure they were fully informed of the potential risks and benefits of Zelnorm. For more information on the limited use of Zelnorm (tegaserod) visit www.fda.gov/bbs/topics/NEWS/2007/NEW01673.html or www.zelnorm.com.

**Emergency Prescription Database**
An In Case of Emergency Prescription Database (ICERx) has been developed to allow registered health care professionals access to displaced evacuees’ prescription histories in the event of a disaster. Database information is pooled from community pharmacies, pharmacy benefit managers, and state Medicaid programs. For additional information on ICERx or to register go to www.icerx.org or call 1-888-ICERX-50 (1-888-423-7950).

**Omacor (Omega-3-Acid Ethyl Esters) Name Change**
Due to prescribing and dispensing errors between Omacor (Omega-3-Acid Ethyl Esters) and Amicar (Aminocaproic Acid), the manufacturer of Omacor, Reliant Pharmaceuticals, has changed its name to Lovaza™. Along with the name change, the NDC number will also change. The size, strength, and ingredients of Omacor will remain unchanged. For additional information on Omacor’s name change visit www.lovaza.com.

**Product Updates:**

Please be aware the information discussed in this section is to provide the reader with product updates only. It is not indicative of what is currently or will be on Keystone Mercy’s formulary.

A new non-sedating antihistamine, Xyzal (levocetirizine), was recently approved by the FDA. Xyzal is the (R)-enantiomer of Zyrtec (cetirizine). Xyzal is indicated for allergic rhinitis (seasonal and perennial) and chronic idiopathic urticaria in adults and children 6 years of age or older. The dosage for children 6 to 11 years of age is 2.5 mg (1/2 tablet) once daily in the evening, and the dosage for adults and children (>12) is 5 mg once daily in the evening. Dosage adjustments are recommended for adults and children 12 years of age or older with renal impairment (see package insert for recommended renal dosing), and Xyzal is contraindicated in patients with CrCl < 10 mL/min or undergoing hemodialysis. Some common side effects are somnolence, fatigue, nasopharyngitis, dry mouth, and pharyngitis. Xyzal is available in 5 mg immediate release breakable tablets.

Vyanse (lisdexamfetamine) is a new medication for the treatment of Attention Deficit/Hyperactivity Disorder (ADHD) in children ages 6 to 12 years old. Vyanse is a pro-drug of dextroamphetamine. The initial doses for treatment of naïve and experienced patients are 30 mg once daily in the morning. Dose adjustments should be made in increments of 20 mg/day at weekly intervals. The maximum recommended dose is 70 mg/day. Some common side effects of Vyanse are upper abdominal pain, decreased appetite, headache, insomnia, and irritability. Vyanse has a black box warning associated with it, and its Medication Guide must be provided to the patient with each prescription. Vyanse is available in 30 mg, 50 mg, and 70 mg capsules.

Perforomist (formoterol fumarate) is a long-acting beta2-adrenergic agonist for the treatment of chronic obstructive pulmonary disease (COPD). The recommended dose of Perforomist is 20 mcg administered twice daily (morning and evening) via nebulizer. A total daily dose greater than 40 mcg is not recommended. Some common side effects are diarrhea, nausea, nasopharyngitis, dry mouth, dizziness, and insomnia. Perforomist has a black box warning associated with it. It is available as a 20 mcg/2mL sterile solution in unit dose vials for nebulization.

References
Table 1

<table>
<thead>
<tr>
<th>Drug</th>
<th>Age Requirements</th>
<th>Formulation</th>
<th>Administration</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyrethrins 0.33% with piperonyl butoxide 4%</td>
<td>Safety and efficacy have not been established in children less than 2 months</td>
<td>Shampoo</td>
<td>Apply to dry hair and leave on for 10 minutes, then shampoo. Second treatment is recommended 7 days after initial treatment.</td>
<td>Swelling, rash, stinging skin sensation</td>
</tr>
<tr>
<td>(OTC) Rid®, A-200®, Pronto®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permethrin</td>
<td>Safety and efficacy have not been established in children less than 2 months</td>
<td>Cream Rinse and Lotion</td>
<td>Shampoo hair, towel dry and apply medication to scalp, leave on for 10 minutes. Repeat application if lice still present after 7-10 days.</td>
<td>Rash, burning tingling sensation followed by application</td>
</tr>
<tr>
<td>Permethrin 1% Nix® (OTC)</td>
<td></td>
<td>Cream</td>
<td>Apply to dry hair for 8-14 hours, then shampoo.</td>
<td></td>
</tr>
<tr>
<td>Permethrin 5% Elimite® (Prescription)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Only FDA approved for treatment of Sarcoptes Scabiei - scabies)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lindane 1% (Prescription) (generic only)</td>
<td>Must be at least 2 years old</td>
<td>Shampoo</td>
<td>Apply to dry hair and work in thoroughly, allow to remain in place for 4 minutes and then rinse. Do not leave in longer than 4 minutes. DO NOT REPEAT.</td>
<td>CNS stimulation (dizziness, seizures) most often associated with ingestion or misuse</td>
</tr>
<tr>
<td>Malathion 0.5% (Prescription) Ovide®</td>
<td>Must be at least 6 years old</td>
<td>Lotion</td>
<td>Apply to dry hair until the scalp and hair are thoroughly coated, allow hair to naturally dry for 8-12 hours then thoroughly wash hair. If lice present after 7-9 days, repeat application.</td>
<td>Irritation to skin and scalp, mild conjunctivitis if comes into contact with eyes</td>
</tr>
</tbody>
</table>

Table 2: Myth vs. Fact

There are many myths regarding head lice transmission and treatment. These myths are major contributing factors to medication misuses and/or treatment failures. Listed in Table 2 below are some myths and facts about head lice.

<table>
<thead>
<tr>
<th>MYTH</th>
<th>FACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lice can jump from head to head, and live and reproduce in carpets and sofas.</td>
<td>Lice require a blood supply to live and die within 1-2 days after being separated from the host.</td>
</tr>
<tr>
<td>Lice infestation is more likely in dirty hair.</td>
<td>Lice do not have a preference in regards to cleanliness.</td>
</tr>
<tr>
<td>When a child is diagnosed with lice everyone in direct contact with them should be treated.</td>
<td>Only those with diagnosed head lice should be treated.</td>
</tr>
<tr>
<td>Vinegar, mayonnaise, olive oil, and tree oil are effective treatments for lice.</td>
<td>There is no evidence to suggest that these agents can successfully treat lice infestation.</td>
</tr>
<tr>
<td>Lice will die immediately after one treatment.</td>
<td>Lice may take several hours to die and in some cases, after 7-10 days, an additional treatment may be necessary.</td>
</tr>
</tbody>
</table>
We welcome your thoughts, comments and/or suggestions. Do you have an idea for a story? Is there information we can provide to help you?

All correspondence concerning Script Notes should be sent to:
Andrew Maiorini, PharmD
Keystone Mercy Health Plan
200 Stevens Drive
Philadelphia, PA 19113
andrew.maiorini@performrx.com

The Quarterly Pharmacy and Therapeutics Newsletter for Keystone Mercy Health Plan Participating Providers

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Temporary Supply Overrides

All Keystone Mercy members are eligible for a temporary supply of medication. This is especially critical for medications such as behavioral health products (SSRIs, SNRIs, Atypical Antipsychotics).

When a prescription claim is rejected on-line, returning any of the following messages:

- Drug excluded on plan formulary
- Exceeds quantity therapy allowed
- NDC not on plan’s drug list
- Prior authorization not usable for this claim
- Prior authorization required
- Prior drug therapy required by plan
- Use appropriate tab or cap strength for dose

Pharmacies should immediately contact the prescribing physician, and/or the Keystone Mercy Pharmacy Help Desk at 1-800-588-6767 to resolve the issue.

In those instances when the pharmacy is unable to contact either the Pharmacy Help Desk or the prescribing physician to resolve the issue, the pharmacy is required to provide a five (5) day temporary supply of emergency medication to the member. The authorization code for submitting a claim for a five (5) day supply is 888111. This code is to be placed in the prior authorization field. Please note that the temporary supply requirement is not applicable when the dispensing pharmacist determines that providing the temporary supply could be hazardous to the member’s health or when the medication is excluded from the coverage by benefit design. In instances where the medication is a continuation of therapy, the member could be entitled to a 15-day supply of medication. The authorization code required when submitting a 15-day supply is 151515. In the event a DUR error needs to be overridden to process a temporary supply, in addition to the authorization code, the pharmacy needs to submit the appropriate conflict, intervention and outcome codes.

If you have properly entered the temporary supply code, and if applicable, the appropriate conflict, intervention and outcome codes, and are still unable to process the claim, please call the Keystone Mercy Pharmacy Department at 1-800-588-6767.

CDC Early Release 2007-2008 Influenza Antiviral Medication Recommendations

According to the CDC, annual influenza vaccination remains the primary strategy for prevention of influenza virus infections. Antiviral testing of influenza isolates have revealed high levels of adamantane resistance. Based on the increase in viral resistance, the CDC does not recommend using adamantane derivatives, amantadine or rimantadine, for the treatment or prophylaxis of influenza in the United States. Therefore, alternative agents for prophylaxis and treatment of influenza are the neuraminidase inhibitors, Tamiflu® (oseltamivir) and Relenza® (zanamivir). The early release guidelines for prevention and control of influenza can be viewed at www.cdc.gov/mmwr/preview/mmwrhtml/rr56e629a1.htm.

References