



# Clinical Update

## For Telephone Triage Nurses

May 2016

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#### “Mutant” Head Lice

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#### Triaging “Resistant” Head Lice Calls

### Did You Know...?

- ✓ There are ~ 6 to 12 million cases of head lice annually in children in the US.
- ✓ Peak age: 3 to 11 years old (CDC)
- ✓ Treatment costs: \$ 1 billion annually



### “Mutant” Head Lice Reports Drive Triage Nurses “Buggy”

Since the fall of 2015, there have been media reports of widespread “mutant” head lice or “super lice” in the US resistant to the current OTC lice medicines. So, where did this concern originate? It came from research about the prevalence of a mutant “knockdown resistance” (*kdr*) gene found in head lice (Yoon, 2014). To date, lice samples from 30 states have been collected and 25 states had lice with this specific genetic mutation (N = 104 out of 109 lice samples). It was then speculated that this mutant *kdr* gene might explain resistance to OTC permethrins (e.g., Nix) and pyrethrins (e.g., RID).

It is important to keep this work in perspective. It is not known whether these patients had already been treated with an OTC lice medicine or not. Also, just because a genetic mutation is present, it may not accurately predict the risk of OTC treatment failure. Researchers in Germany (Bialek, 2011) found that 93% of children (N = 112) whose lice carried the mutant *kdr* gene were cured with 0.5% permethrin (half-strength Nix). This finding casts doubt on predictions of widespread Nix resistance.

If indeed there is widespread resistant lice in our communities, our pediatricians should be seeing frequent treatment failures with the OTC meds. When surveyed, pediatricians aren't experiencing this. A 2015 survey of pediatricians in Denver uncovered very few cases of alleged resistance. Most pediatricians felt the main factor was not using the OTC product correctly. The fact is that the frequency of resistance to these OTC products is simply not known, and it may depend on where you live. (Devore, 2015)

### Factors that Contribute to Nix Treatment Failure

Nix treatment failure is defined as the presence of live adult lice (not just nits) after 2 treatments with Nix. In addition to resistance, other causative factors must be considered for first-line Nix treatment failure for head lice. This list includes:

- Lack of adherence to Nix treatment regimen (see Checklist on page 2)
- Inadequate treatment (e.g., not enough product for long hair)
- Re-infestation (lice reacquired after treatment from close contact)
- Not all lice eggs (nits) were killed
- Misdiagnosis (e.g., dandruff, sand, flakes of dried hair products, etc)

### Nix Continues to be Recommended for Primary Treatment

The AAP, CDC, and FDA haven't changed their recommendation to use an OTC product like Nix as the first-line drug for head lice. It's the safest and least expensive treatment available. From the AAP 2015 Clinical Report on Head Lice, "Unless resistance has been proven in the community, 1% permethrin or pyrethrins are a reasonable first choice for primary treatment."

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### Prescription Drug Recommendations

- If a prescription medicine is needed, the AAP recommends malathion 0.5% (Ovide) for children over age 2 and Benzyl alcohol 5% for infants over 6 months old.

### Avoiding Primary Treatment Failure with Nix

Help your callers avoid primary treatment failure with Nix by following these key steps:

Checklist for Preventing Treatment Failures with Nix	
✓	Follow directions exactly.
✓	If shampooed beforehand, rinse hair thoroughly.
✓	Never use a conditioner or combination shampoo-conditioner product beforehand. This will cause treatment failure.
✓	Don't wash hair with any shampoo for 2 days after Nix treatment.
✓	Don't use conditioner (or combo shampoo) for 2 weeks after Nix treatment.
✓	Apply Nix to damp hair (not wet hair).
✓	For hair longer than shoulder length, use 2 bottles.
✓	Leave Nix on hair for at least 10 minutes. Then, rinse hair with water.
✓	Re-treat with Nix in 9 days. Don't miss the second treatment.
✓	Check all close contacts and treat any with symptoms. Also, treat bedmates.

### Proven Widespread Nix Resistance in Community: Triage and Advice

- **Has New-Onset of Lice:** Offer initial treatment with Cetaphil cleanser and a blow dryer. It works by coating the lice and suffocating them. It must be repeated weekly for a total of 3 treatments. See directions in the Lice guideline or at [www.nuvoforheadlice.com](http://www.nuvoforheadlice.com). Can also be referred to the PCP during office hours for their preferred treatment.
- **Fails Primary Treatment with Cetaphil Cleanser:** Refer the patient to the PCP within 24 hours for their preferred prescription lice medicine. Reassure callers that all lice are curable.

### No Widespread Nix Resistance in Community: Triage and Advice

- **Has New-Onset of Lice:** Offer treatment with Nix.
- **Fails Primary Treatment with Nix:** Offer treatment with Cetaphil cleanser as above.
- **Fails Treatment with Nix and Cetaphil Cleanser:** Refer the patient to the PCP within 24 hours for their preferred second-line lice medicine. The PCP will need to take into account the factors discussed previously that contribute to primary Nix treatment failure and decide upon the appropriate treatment.
- **Concerns About "Mutant Lice":** Provide reassurance that resistant lice are uncommon. Educate callers on avoiding common pitfalls that can result in primary Nix failure. This may help prevent future calls about alleged head lice "resistance". To reinforce your education, email your callers an after-call instruction (ACI) handout on how to properly treat lice.

### References:

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Head Louse (Magnified Image)

Source: [www.cdc.gov](http://www.cdc.gov)

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