Few things bring as much frustration to physicians and patients as emerging resistance to previously effective treatment agents. Unfortunately, treatment resistance is the challenge dermatologists currently face in the management of Pediculosis humanus capitis. Twenty years ago, pyrethrin- and permethrin-based OTC agents such as RID (piperonyl butoxide, pyrethrin, Pfizer) and Nix (permethrin 1%, Insight Pharmaceuticals) provided a simple and effective way for school nurses and parents to treat head lice; resistance wasn’t an issue. However, recent studies have shown that these OTC products’ efficacy rates have dropped in recent years, which has led to the search for new treatment options.1,2,3

“It used to be that Nix and RID worked great. There wasn’t any need for other products,” states head lice expert Craig G. Burkhart, MD, MPH, Clinical Professor of Dermatology at the Medical College of Ohio who is also in private practice in Sylvania. However, recent studies have shown that these OTC products’ efficacy rates have dropped in recent years, which has led to the search for new treatment options.1,2,3

Resistance: Who and What to Blame

The fact that lice have become resistant to certain pediculicides is not all that surprising, according to Dr. Burkhart. “These insects have a certain amount of DNA that’s reserved for environmental needs,” explains Dr. Burkhart. “They are capable of slowly producing ammunition to counteract the different agents we use.”

However, a number of factors have assisted these insects in acquiring the “ammunition” needed to resist certain agents, and recognizing these factors may help prevent development of resistance to currently effective agents. Two factors to blame include misdiagnosis and subsequent overexposure to pediculicides. In fact, a recent study revealed that misdiagnosis of head lice is quite common, inevitably resulting in children being unnecessarily exposed to pediculicides, which can lead to resistance over a period of time.4 Even children who do have a true case of head lice are at risk for overexposure from the residual effects associated with pediculicides.5 On the other hand, suboptimal doses, dilution of pediculicides, and alterations in packing and formulations are also to blame for resistance.5

Despite reports of resistance to pyrethrin- and permethrin-based OTC agents such as Nix and RID, 1% permethrin remains the recommended first-line treatment for head lice.6 And, for some children, permethrin-based products continue to work effectively. It’s worthwhile to note that certain pyrethrin-based agents also remain effective for children, such as A-200 (piperonyl butoxide, pyrethrin, Hogil Pharmaceutical). In fact, studies show that A-200 has retained efficacy over the past 20 years, with recent studies showing A-200 capable of killing 82 percent of head lice with a one hour application.3,7

However, for those children who appear to be unresponsive to treatment, it may be challenging at first to determine whether the child is experiencing pediculicide resistance or is simply experiencing the consequences of noncompliance. The possibility of re-infection also deserves consideration. If a child fails to respond to two treatments spaced seven to 10 days apart, the child is most likely experiencing an authentic case of resistance.8 The question then becomes: which alternative agent will work safely and effectively?
Narrowing Your Options
The agent that has received the most attention in recent months is without doubt Nuvo Lotion, a non-toxic, dry-on, suffocation-based, pediculicide lotion developed by dermatologist Dale Lawrence Pearlman, MD. Nuvo’s “non-toxic” ingredients include stearyl alcohol, propylene glycol, sodium lauryl sulfate, cetyl alcohol, water, methyl 4-hydroxybenzoate, propyl p-hydroxybenzoate, and butyl p-hydroxybenzoate.

In his open trial study of 133 patients published in Pediatrics, Dr. Pearlman reports that an application of at least eight hours resulted in an overall cure rate of 96 percent, with a 94 percent remission rate.

Despite these positive findings, Dr. Burkhart emphasizes caution in making this agent your treatment of choice. “He hasn’t shown anything except what I would call a testimonial choice. He hasn’t shown anything ing this agent your treatment of.

Tried and True
Dr. Burkhart’s first choice for children who experience pediculicide resistance is malathion, which he finds to be consistently effective and relatively safe. In fact, a recent study shows Ovide (0.5% malathion, Taro Pharmaceuticals) kills head lice 10 times faster than Nix.2

Although the drug’s label calls for an eight to 12 hour application time, recent studies suggest a 20 minute application time has a 98 percent efficacy rate.10

Typically Dr. Burkhart has patients combine nit combing with malathion treatment. “I like to use combs in treatment, but they’re not the solo treatment,” he cautions, noting that some advocate combing alone as an effective treatment. “If you treat someone with just a comb, you have to take about nine hours to adequately comb out a person with a lot of head lice,” notes Dr. Burkhart, “And, you still might have to comb again.”

With the increasing use of malathion, some are concerned that resistance to this agent may develop. Reports of resistance to malathion already exist in the United Kingdom.11 However, Dr. Burkhart points out the malathion-based product found in the United Kingdom is different than the product found in the United States. “The malathion used here has an additional insecticide from pine tree oil,” he explains. “When you put on Ovide, you actually have two insecticides in it. That’s why we haven’t found resistance yet in America to the product.”

If resistance should occur in the future, ivermectin may become the treatment of choice. “Experimentally we’ve treated some patients with 1% ivermectin, and that’s very effective as well,” he states. “I’ve done enough work with ivermectin to know that it would be a good alternative if we start getting resistance to the Ovide we make in this country.”

A Realistic View
From all “natural” OTC products to prescription agents, options for treatment-resistant head lice continue to grow. Unfortunately, many of these newer agents lack sufficient studies proving claims of efficacy and safety. Malathion, however, remains a proven and effective treatment that can satisfy both you and your patient.

References
10. Meinking TL et al. Efficacy of a reduced application time of malathion, Taro Pharmaceuticals) kills head lice 10 times faster than Nix.2