



# The Doctor Is In

By Dr. David Hill

## Fellowship of the Ringworm

**W**hat do ringworm and butterflies have in common? You guessed it: misleading names! Butterflies have nothing to do with oleaginous spreads, and ringworm isn't caused by worms. But kids can catch both butterflies and ringworm! I'm a pediatrician, not a lepidopterist, so I'll focus on the infection.

### So if it's not worms, what does cause ringworm?

Fungi! Specifically three genera of fungi: *Epidermophyton*, *Trichophyton*, and *Microsporum*. Collectively these fungi are called *dermatophytes*. They share a secret known to a very few organisms: they can survive by eating keratin, the protein found in skin cells.

### Where does ringworm come from?

Some people think kids catch ringworm from pets. Others think it comes from dirt. Still others blame friends, classmates, even shared combs. Actually they're all right! Different dermatophyte species live on pets, in the soil, and on human hosts, including people without an obvious rash. These organisms are so ubiquitous on human skin that doctors use them to test patients' immune systems. (We assume people who don't react to *Trichophyton* antigen on a skin test have an immune defect.) Bathing doesn't have a significant effect on dermatophyte colonization. An infection is just as likely to come from a family member as from a classmate.

### Who gets ringworm?

It's probably impossible to count the total number of ringworm infections, but we do know they account for around five million physician visits a year; therapy costs around \$200 million annually. Ringworm of the scalp occurs overwhelmingly in children under age ten, peaking between ages three and seven years. Infections of the arms, legs, and trunk also favor children while adults are more likely to get infections of the groin or the feet.

### Are there different kinds of ringworm?

We classify ringworm lesions by what part of the body they affect. Ringworm on the face, body, arms, or legs is called *tinea corporis*. Infections of the scalp are *tinea capitis*. Groin infections ("jock itch") are called *tinea cruris*, and athlete's foot is *tinea pedis*. These may seem like just an excuse to throw around some Latin, but the infecting organism, mode of transmission, and therapy tend to vary by location.

### How do you know a rash is ringworm and not something else?

This would seem easy, and often it is. On

the body, ringworm usually starts as a little red patch then spreads in a circular or oval ring, with a red, bumpy leading edge and a clearing or scaly center. A child may have multiple spots. Ringworm often itches. Other skin conditions can look very similar including eczema, psoriasis, contact dermatitis, pityriasis rosea, granuloma annulare, annular lichen planus, and discoid lupus. When a lesion is questionable your doctor may scrape some flakes of skin from the edge to send for fungal culture or to examine under a microscope with potassium hydroxide.

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### How do I treat ringworm on the body or face?

Over-the-counter topical lotions and creams work great for most cases of *tinea corporis*. Choices include butenafine (Mentax), clotrimazole (Lotrimin), miconazole (Micatin), terbinafine (Lamisil AT), and tolnaftate (Tinactin). When treating, remember to apply the cream twice a day for at least three to four weeks and to treat an inch beyond the visible rash. You should continue treating for two weeks after the rash has disappeared.

### Is there anything I shouldn't do?

There are no folk remedies for ringworm that have been proven to work. And since effective treatment is cheap and widely available there's no need to try bleach (which may burn the skin) or Band-Aids. Most importantly, never put a steroid cream like hydrocortisone on any lesion when you don't know what it is. Steroids weaken the body's immune defenses against fungal

infections and allow ringworm to spread rapidly. They also obscure the typical appearance of the rash, making diagnosis much more challenging. We have another Latin term for lesions obscured by steroids: *tinea incognito*. There are a handful of prescription creams that combine antifungals with steroids, but dermatologists frown on their use.

### What if it doesn't improve?

Routine ringworm lesions should improve within four weeks of starting therapy. Treatment failures should be seen by a doctor for several reasons. First, the lesion may not actually be ringworm. Second, your doctor may choose to use a prescription topical or oral antifungal medicine. Third, severe and resistant fungal infections can be the first sign of a serious immune deficiency.

### How is ringworm in the scalp different?

*Tinea capitis* is the most common cause of hair loss in children. You may notice a growing bald patch, often with fine gray stubble or black dots in the middle. You may see pustules or even large, oozing sores. Combs, brushes, and hats can all transmit tinea to the scalp, and it's not unusual to find an asymptomatic carrier in the family.

### Isn't there some shampoo you can use?

Antifungal shampoos like ketoconazole or selenium may reduce the spread of infection, but the fungi have invaded the hair follicle itself, so the treatment has to come from inside. That means an oral antifungal medicine, usually griseofulvin, given daily for six to eight weeks. Treatment failures may respond to other oral antifungals, including itraconazole, fluconazole, and terbinafine.

### What about ringworm in the groin or the feet?

Treatment of *tinea cruris* and *tinea pedis* is similar to *tinea corporis*. The only thing to add is that moisture in these areas contributes to the infection. Less binding clothing, powder, and better ventilation can improve outcomes. Usually the feet are the source of fungus for the groin rash, so it's best to treat the feet and the groin simultaneously.

The good news about ringworm is effective treatment for most cases is as close as the nearest supermarket. And while it's still pretty icky, at least it's not really a worm.

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