

FAQ: Ringworm

What is a ringworm infection?

Ringworm (also known as tinea or dermatophytosis) is a very common and often highly contagious fungal infection that involves the superficial layers of the skin, hair, and nails. Almost everyone will develop a ringworm infection at some point in their lives. The symptoms of ringworm depend on which part of the body is infected. These can include: itchy skin, a ring-shaped skin rash, red scaly cracked skin, discoloured thickened nails and hair loss. Ringworm on the skin of the feet is sometimes called **athlete's foot**. Ringworm on the skin of the groin is also called **jock itch**.

What causes a ringworm infection?

Ringworm is so named because it can cause red patches on the skin in the shape of rings. But despite its name, a ringworm infection is caused by several types of fungus and not by a parasitic worm. These fungi are collectively called dermatophytes. Their scientific genus names include *Epidermophyton*, *Microsporum* and *Trichophyton*.

How are ringworm infections spread?

Ringworm infections can be spread in three ways:

1. From another person who has an infection. These are often very contagious infections.
2. From animals that have a ringworm infection, including dogs, cats, cows, goats, pigs, horses, etc.
3. From an environment that is contaminated with ringworm fungi, e.g. public showers, locker rooms, children's sand pits

Ringworm fungi sometimes cause outbreaks in communities and schools.

How is a ringworm infection diagnosed and treated?

A doctor or nurse may suspect a ringworm infection by looking at the affected skin, scalp or nails. A small skin scraping or hair/ nail sample can be collected and sent to the laboratory to confirm a diagnosis of ringworm infection.

Most infections are mild and can be treated with over-the-counter topical antifungal creams, ointments, powders or shampoos. However, people with scalp or nail involvement or with extensive skin infections involving the large body areas must be treated with prolonged courses of prescription oral antifungal medicines to clear the infection. Creams, lotions, shampoos or powders do not work for ringworm involving the scalp or nails.

When should you contact your healthcare provider about a ringworm infection?

Contact your local healthcare provider if:

1. The infection involves large parts of your skin, your nails or your scalp because you will need prescription medicines
2. If the infection is very severe, gets progressively worse or does not get better with prescription medicines
3. A group of people have the same or similar type of infection, e.g. in the same household, in the same school, in a shared dormitory or residence

What is an antifungal-resistant ringworm infection?

Over the past 10 years, healthcare providers across the world have reported more cases of severe and antifungal-resistant forms of ringworm infection. These antifungal-resistant ringworm fungi are not killed and continue to grow when treated with first-line antifungal medicines, making them very difficult to treat.

Some of the factors that may be contributing to the emergence of these severe and difficult-to-treat infections include: overuse of over-the-counter topical antifungal creams and inappropriate use of potent topical steroid creams by people with skin rashes, inappropriate prescription by doctors of antifungal medicines, inadequate adherence by patients to their prescribed courses of antifungal medication and finally, global travel and migration from regions where these antifungal-resistant infections are more common.

What causes antifungal-resistant ringworm infections?

Trichophyton indotineae, formerly known as *Trichophyton mentagrophytes* genotype VIII, is a recently-described fungus responsible for ringworm infections that are extensive, disfiguring and difficult to treat. This fungus is often resistant to commonly-used antifungal medicines. This fungus spreads from person-to-person by skin-to-skin contact or by contact with an infected person's contaminated clothing, combs, towels, and personal items. It can cause outbreaks and these have been described particularly on the Indian sub-continent. *T. indotineae* has now spread globally, with cases often linked to travel to the Indian sub-continent or contact with affected individuals from this region.

Extensive and painful skin and genital infections caused by a closely-related type of fungus called ***Trichophyton mentagrophytes* type VII** are possibly spread during sex and have been described in men who have sex with men in Europe.

Are antifungal-resistant ringworm infections a problem in South Africa?

In South Africa, the NICD is only aware of one person with a confirmed diagnosis who has been treated for this severe type of antifungal-resistant infection (as of December 2023). Her husband developed similar skin lesions and was also treated. The NICD confirmed the diagnosis in this particular patient and reported this as a case report in the [Public Health Surveillance Bulletin](#). The lack of a travel history suggests that this infection may be spreading in the community. *Trichophyton mentagrophytes* type VII infection has not yet been described in South Africa.

The true number of antifungal-resistant ringworm cases is difficult to estimate because testing to determine if a case of ringworm can be effectively treated by antifungal medicines is not widely available and reporting of antifungal-resistant ringworm cases is not required in South Africa. At this time, only the NICD is able to confirm the diagnosis.

What are the signs and symptoms of antifungal-resistant ringworm infections?

Signs and symptoms of *T. indotineae* infections mimic those of typical ringworm infections initially but tend to spread rapidly and cover large areas of the body. Infection manifests as inflamed, painful, itchy, and scaly lesions, often recurring or becoming chronic despite treatment. With *T. indotineae*, infections are typically not restricted to a single body site, and may include multiple body areas.

Who can get an antifungal-resistant ringworm infection?

People of all ages and genders can be affected. Those who have a history of using over-the-counter creams or ointments containing a combination of strong steroids, antifungals and antibiotics for an extended period are at higher risk. In addition, people with a travel history to regions with ongoing outbreaks may be at risk. Individuals with weakened immune systems may be at risk for severe or antifungal-resistant infections and recover more slowly.

How are antifungal-resistant ringworm infections diagnosed?

Diagnosis of these infections require confirmatory laboratory testing at the NICD. Patients with ringworm infections who do not respond to therapy or with extensive involvement of the body should consult their doctor. Samples of skin, hair or nails collected by a GP or dermatologist should be sent to a laboratory for fungal culture and molecular testing to confirm *T. indotineae* as the causative agent.

How can it antifungal-resistant ringworm infections be treated?

Treatment of these infections pose challenges, as these fungi are is frequently resistant to terbinafine, a first-line treatment for tinea/ ringworm infections. Itraconazole is often effective, administered for 4-8 weeks and possibly extended to 12 weeks if the infection has not

cleared or reoccurs. Close supervision by healthcare professionals is crucial, as the misuse of skin creams containing a combination of antifungals, antibiotics, and strong steroids may worsen the infection over time. The close contacts (family members, sexual partners) of a patient also need to be treated to prevent the infection being passed back and forth.

How can ringworm infections be prevented?

Prevention measures include maintaining clean and dry skin, wearing breathable shoes, avoiding barefoot walking in communal areas, changing socks and underwear daily, and refraining from sharing personal items with someone infected. People should avoid using self-prescribed medications or medications from the black market containing antifungals, antibiotics and steroids.

Where can I get more information?

Members of the public should please contact their own healthcare providers.

For urgent medical enquiries, healthcare professionals can call the NICD hotline: +27 82 8839920 (this is for healthcare professionals only).

Healthcare or laboratory professionals can refer patient samples for reference diagnostic testing to the Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses(CHARM) at the National institute for Communicable Diseases(NICD): +27 11 386 6278.