

FUNGAL NAIL INFECTIONS

WHAT ARE THE AIMS OF THIS LEAFLET?

This leaflet is written to help you understand more about fungal nail infections. It explains what they are, what causes them, how they can be treated, and where to find reliable information.

WHAT IS A FUNGAL NAIL INFECTION?

Fungal nail infection is a long-lasting infection of the fingernails or toenails. Its medical name is onychomycosis. It slowly damages the nail and can make it thick, crumbly, or discoloured.

Fungal nail infections are very common, especially on toenails. About 1 in 4 people can be affected at a given time. Fungal infections are seen most often in:

- older people (although they can happen at any age)
- people with diabetes
- people with poor blood circulation in the hands or feet
- people with weakened immune system due to certain medicines or illnesses

WHAT CAUSES FUNGAL NAIL INFECTIONS?

Most fungal nail infections are caused by a type of fungus called *dermatophytes*. Dermatophytes are a type of mould fungus that also cause athlete's foot (*tinea pedis*), which affects the skin between the toes or on the soles of the feet. Athlete's foot can spread to the toenails.

Less commonly, fungal nail infections can be caused by yeasts, like *Candida*, or non-dermatophyte moulds. Yeast infections often affect fingernails and can happen when fingernails become damaged by excessive hand washing or wet work.

Some things increase the chance of getting a fungal nail infection:

- Warm, moist environments, like sweaty feet in closed shoes or trainers
- Socks made from synthetic materials that trap sweat
- Shared showers, bathrooms, or gym changing rooms
- Repeated nail injuries from sports or fitness activities

ARE FUNGAL NAIL INFECTIONS HEREDITARY?

Fungal nail infections are not directly passed down in families, but living with someone who has an infection can make it easier to catch.

Rarely, fungal nail infections seem to be more common in some families. This might be due to rare genetic differences in the immune system or nail growth, which make fungal nail infections easier to get or harder to treat.

WHAT DO FUNGAL NAIL INFECTIONS LOOK AND FEEL LIKE?

Fungal nail infections usually start at the end of the nail and grow towards the base (the nail matrix; where nails grow from). They can also start at the side of the nail or under the cuticle if it is damaged.

Early signs include:

- Colour changes – parts of the nail may turn yellow, white, or brown
- Thickened nails that grow slowly
- Crumbly or split tips
- Flaky debris under the nail
- Rough or bumpy nails that may hurt when pressed or in shoes

As infections get worse, the nails may become hard, thick, or misshapen. Permanent damage can occur if the nail matrix is affected.

HOW ARE FUNGAL NAIL INFECTIONS DIAGNOSED?

Fungal nail infection can often be suspected by how the nails look. But other nail problems, such as [psoriasis](#), can look very similar to fungal nail infection. Testing is often done to confirm the diagnosis.

The commonest test is done by sending a piece of affected nail to a laboratory for assessment. Results can take several weeks to return, depending on how the testing is performed.

Your healthcare professional may either take a clipping of the nail themselves or ask you to perform this. You may be supplied with a clean container or folded card to put samples in. The steps needed are:

- Wash and dry your hands or feet well. A hair dryer, on a cool, jet, can be used to dry around and under the nail.
- Use clean nail clippers to cut a tiny piece from the part of the nail that looks thick, crumbly, or discoloured. Clip as far back as you can without pain. Infected nails are often lifted up, making clipping easier.
- If there are any flaky bits under the nail, you can gently scrape them off too.
- Place any collected nail pieces into the supplied container or cardboard.

Sometimes, the test does not work, and you may need to have a repeat sample taken. Rarely, a dermatologist may take a biopsy of the nail, if the diagnosis is not confirmed. Some doctors and podiatrists use a rapid testing kit to identify the infection, on the day or within a day, where available.

SHOULD FUNGAL NAIL INFECTIONS BE TREATED?

Fungal nail infections do not always need to be treated. Some people leave them alone if the nail is not painful or causing problems. However, nail infections do not go away by

themselves, and even if successfully treated, it is common for nails to become re-infected.

Treatment should be considered if:

- The appearance of the nails bothers you
- Affected nails are painful or make it hard to walk, wear shoes, or use your hands
- There is a risk of bacterial infection of the deeper layers of the skin ([cellulitis](#)) from cuts or cracks in the skin surrounding the nail or under the nail. Cellulitis can become serious, especially in people with diabetes, poor circulation, nerve problems, or weakened immunity.

CAN FUNGAL NAIL INFECTIONS BE CURED?

Treatment can kill fungus and cure an infection. This, however, does not guarantee any affected nails will return to their past normal appearance. This is particularly true in already badly damaged nails, or where the nail matrix has been infected and damaged by fungus. Despite clearing an infection, some degree of nail change may still be present.

HOW CAN FUNGAL NAIL INFECTIONS BE TREATED?

There are different ways to treat fungal nail infections. Some treatments are put directly on the nail. Others are taken as tablets by mouth. Physical methods can also be used. These can remove infected material and make the nail more comfortable. In some mild cases, they can even clear the infection on their own. For some nail infections, combining all three approaches may help infections clear faster.

Treatment options include:

Treatments applied on the nail (topical treatments)

- These include nail paints and solutions. The most common is amorolfine nail lacquer. This can be purchased over the counter. However, podiatrists may recommend other topical treatments that are available to them.
- Treatments applied directly to the nail work best for early infections. This means less than half the nail is affected and the



infection has not reached the cuticle. They work better in children because children have thinner nails and the solution can get deeper into thinner nails for better effect.

- Clipping away (debulking) infected parts of the nail helps treatments work better.
- Treatments applied directly to the nail are less effective than treatments taken by mouth. Often topical treatments are used in combination with oral treatments to increase the chance of complete clearance.
- Toenail infections may take 12 to 18 months to clear. Fingernails clear faster (9 to 12 months).
- These treatments are safe but can cause redness and irritation.
- Herbal products are promoted for fungal nail infection, but there is no good consistent evidence that they are safe or more effective than standard treatments. This includes mentholated chest ointments, such as Vicks VapoRub®.

Treatments taken by mouth (Oral treatments)

- These need to be prescribed by a doctor. Testing is recommended to confirm infection before starting treatment.
- Terbinafine and itraconazole are the commonest oral medicines used. Fluconazole can be used if terbinafine or itraconazole are not suitable.
- Oral treatments are taken for several weeks to months, until most of the nails growing out are clear, and/or fungus testing is negative.
- Debulking the nail and using topical treatments can improve results.
- Terbinafine directly kills dermatophyte fungi. It is used from the age of 18 and up. Use under 18 is off-licence (meaning it's not officially approved for this age group). It is used once a day and comes as a tablet. For dermatophyte infections, it is the usual first choice agent to use.
- Itraconazole is an alternative to terbinafine. It works well for yeast

infections and can also treat dermatophyte infections, though not as well as terbinafine. Use in children is off-licence. It comes as a capsule or liquid. It can be taken daily or in 'pulses' (daily for one week each month, for several months). Pulsed treatment may cause fewer side effects but may be slightly less effective.

- Fluconazole works similarly to itraconazole. It is less effective than itraconazole but may have fewer risks and is less likely to interfere with other medicines. Like itraconazole, it is used off-licence in children. It comes as a capsule and a suspension.

Physical treatments

- Physical treatments can be used alongside or sometimes instead of medicine to help treat fungal nail infections (depending on how much of the nail is affected).
- Simple treatments such as thinning, trimming, or filing nails remove infected material and make nails more comfortable.
- Nail drilling (also called fenestration) is often performed by podiatrists. Tiny holes or channels are made in the nail. This helps topical treatments reach the deeper layers of the nail, where the fungus lives. It can speed up treatment.
- Other physical approaches, such as laser treatment or light-based therapies (photodynamic therapy), have not shown consistent and reliable benefits, and as such, are not funded by the NHS.
- Surgical removal is sometimes performed if a single nail is affected. The nail is completely removed under local anaesthetic. Risks include pain and discomfort, bleeding and bacterial infection. It can take months for a new nail to grow back. The new nail may grow back abnormally and/or become infected by fungus again. Removing the nail does not cure the fungus. It just removes the nail and treatment to get rid of the fungus is still needed.



- Chemical removal of the nail can be used for badly damaged nails. A solution containing 40% urea is applied and left on the nails to soften them. Treated nails can then be gently removed or trimmed. This can improve the effectiveness of topical and oral treatment. Risks include skin irritation or soreness.

ARE THERE ANY SIDE EFFECTS FROM THE TREATMENTS?

Oral treatments are more likely to cause side effects than topical ones. Oral tablets can sometimes cause mild side effects such as nausea, upset stomach, bloating and headaches.

Some people develop rashes. Most are harmless and disappear when the medicine is stopped. Very rarely, a medicine may cause a severe skin rash. This can be serious and life threatening. Severe rashes spread over the body with skin blistering and peeling, mouth, eye or genital soreness, and a feeling of being very unwell.

Oral treatments can interfere with other medicines. Your healthcare professional will check that any medicines you take are not affected by an oral antifungal.

Oral antifungals rarely affect the liver or bone marrow. Your doctor will usually perform a blood test before treatment to check these tablets can be safely used. Blood tests may need to be performed during treatment, to watch for any concerning changes.

HOW WILL I KNOW IF THE TREATMENT IS WORKING?

Treatment success can be confirmed either by new and unaffected nail growing or, after treatment is completed, repeated nail testing for any remaining fungus. It is important to know that tablet antifungals stay in the nails for several months; testing too soon (within 3 months) of a course can give false results.

SELF-CARE (WHAT CAN I DO?)

- Keep your nails short, dry, and clean. Stick to one nail clipper for the infected nails and another for the normal ones.

- In addition to your nails the affected skin (e.g. athlete's foot) must be treated with antifungal cream or solution as well.
- Avoid cutting the cuticle, either yourself or by a podiatrist or a manicurist, since this increases the risk of nail damage and infection.

For toenail fungal infection:

- Wear well-fitting shoes, without high heels or narrow toes.
- Keep your feet dry. Wear cotton socks and change them daily. Choose breathable shoes.
- Wash affected socks in hot water. You can spray them with antifungal spray before washing for better results. The infection will not spread to other clothes in the wash.
- Do not wear the same shoes two days in a row. Let the shoes dry out between uses.
- Shoes can be treated with antifungal sprays or powders to kill any fungus present. This can be repeated from time-to-time, for prevention.
- Wear clean shower shoes or flips flops when using a communal shower or going to swimming pools.
- Keep affected feet very clean.
- When drying the feet, using a hair-dryer on a cool jet can dry the skin between the toes.
- Consider seeking treatment from a podiatrist if thickened toenails cause discomfort when walking.

WHERE CAN I GET MORE INFORMATION ABOUT FUNGAL NAIL INFECTIONS?

Web links to detailed leaflets:

NHS:

<https://www.nhs.uk/conditions/fungal-nail-infection/>

Patient Info:

<https://patient.info/doctor/fungal-nail-infections-pro>



DermNetNZ:
<http://www.dermnetnz.org/fungal/onychomycosis.html>

NICE: <https://cks.nice.org.uk/topics/fungal-nail-infection/>

Jargon Buster:
www.skinhealthinfo.org.uk/support-resources/jargon-buster/

Please note that the British Association of Dermatologists (BAD) provides web links to additional resources to help people access a range of information about their treatment or skin condition. The views expressed in these external resources may not be shared by the BAD or its members. The BAD has no control of and does not endorse the content of external links.

This leaflet aims to provide accurate information about the subject and is a consensus of the views held by representatives of the British Association of Dermatologists: individual patient circumstances may differ, which might alter both the advice and course of therapy given to you by your doctor.

This leaflet has been assessed for readability by the British Association of Dermatologists' Patient Information Lay Review Panel

BRITISH ASSOCIATION OF
DERMATOLOGISTS

PATIENT INFORMATION LEAFLET

PRODUCED | AUGUST 2004

UPDATED | APRIL 2010, MARCH 2014,
JULY 2017, JUNE 2023, APRIL 2026

NEXT REVIEW DATE | APRIL 2029

