

Fungal Skin Infections

(Dermatomycoses)

Pathogen Detection with Molecular Biological Tests



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Practice stamp

Please note that information regarding reimbursement is only valid for patients who are either members of German statutory or private health insurance.

Statutory Health Insurance Companies:

Statutory health insurances do not cover the costs of molecular biological testing. Hence patients have to bear the costs themselves.

Private Health Insurance Companies:

Private insurance companies cover the costs in accordance with the German Scale of Medical Fees (GOÄ), unless such benefits had been explicitly excluded from a policy.

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What is to be done in case of suspected fungal infections?

- Do not try to treat a potential infection on your own. See a physician or dermatologist, who will provide professional advice.
- Have the agent identified with the help of diagnostic tests. This ensures you are treated with a suitable active substance and increases the therapy's likelihood of success.
- An infection needs to be treated for a sufficiently long period. If you prematurely discontinue your medical treatment, the infection may not heal properly, causing another outbreak.
- Avoid scratching affected areas, because this may lead to further infections. Additionally, there is a risk of spreading fungal spores to other areas of the body.
- In order to impede the infection from spreading, avoid sharing towels with other people. Pay close attention to hygiene in bathrooms and wash worn clothes and towels at high temperatures in order to kill fungal spores.

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How do the diagnostics work?

Mycosis agents can be detected with both conventional and molecular methods. While the conventional method is based on microscopic identification of bacterial cultures, molecular diagnostics prove the existence of pathogenic DNA.

Advantages of the latter method are:

What are the consequences of a negative test result?

- Substantial time savings. Due to the speedy procedure, results are usually available within 2 – 3 days after sample receipt.
- A high degree of reliability and certainty. Smallest amounts of DNA suffice for this test.
- A wide pathogen spectrum. The tests allow for the simultaneous detection of different agents.

What types of material can be analysed?

The following materials can be used for molecular biological detection of fungal infections:

- fingernails and toenails
- skin scales
- hair (including hair roots)



Fungal Infections

Fungal infections (mycoses) are widely spread and extremely communicable. They are among the most common skin conditions. Approximately one in three Germans suffer from an advanced mycosis needing treatment. Men and older people are affected more often than women and younger people.

Fungi require moist body regions and thus grow most frequently between fingers and toes. They also spread on fingernails and toenails, the scalp, hair and beards, but also grow in the genital region and armpits. Filamentous, yeast or mould fungi, with filamentous fungi being the most common, cause mycoses of this sort.

Classic symptoms are strong itching, reddening, blistering and scaling. A discolouration of affected skin areas may occur as well. So-called secondary infections emerge, when bacteria enter micro injuries that were caused by increased scratching.

Athlete's foot and nail fungus are the most common forms of fungal skin infections and often occur simultaneously. Affected nails are thickened, brittle, dull, and of a yellowy-white colour. Despite often trivialised, nail fungus is by no means always harmless. Without proper treatment, the fungus may freely grow through the nail, disintegrate and eventually destroy it. So-called scalp mycoses affect primarily children, diabetic or immunocompromised people and animal owners. In many cases, animals spread pa-

thogens that cause noticeable, flaky infections in various sizes. Stemming from those sources of infection, agents may affect human hair as well. Entering the hair's roots, they then spread further. Consequently, the hair splits, becomes dull and brittle. A complete loss of hair (alopecia) marks a final possible stage.

How are fungi transferred?

Most fungi disperse durable and resilient spores to propagate. Direct or indirect contact helps them migrate either from human to human (anthropophilic), or from animal to human (zoophilic). In zoophilic infections, pets, zoo animals and livestock play a key role. Therefore, these animals should be subjected to tests and treated accordingly in case of a suspected mycosis.

When the agent has settled on a suitable body area, it starts growing from the skin's surface into deeper layers, while developing filamentous outgrowth (hyphae), creating a fungus network (mycelium). During advanced infections, spores stemming from the source are easily distributed to other parts of the body, for example with clothes, towels or by increased scratching.

Certain factors, such as walking barefooted in public baths, using shared showers, saunas and changing rooms, favour fungal infections. Wearing tight shoes and synthetic socks should be avoided, since pressure sores and increased perspiration create ideal growing conditions for fungi. Furthermore, general health conditions play a key role. Thinning aged skin, a weakened immune defence, metabolic diseases (such as diabetes), and circulatory disturbances increase the risk of infection.

Why is a proper diagnosis important?

The earlier a fungal disease is treated correctly, the faster it heals. Thereby, spreading to other body parts or people is impeded. Fungal diseases are, depending on type and degree of infection, often intractable and require lengthy therapies. In order to guarantee successful treatment, the following aspects should be taken into account: Dermatomycoses are often hardly distinguishable from other skin conditions. Another difficulty occurs from the fact that not all fungal infections are to be treated similarly. In order to ensure effective therapy, the correct choice of active substances is as important as their mode of administration (ointments, sprays, nail polish, pills).

Detecting the agent diagnostically does not only distinguish a fungal infection from other causes of disease, but furthermore clarifies whether the infection is of an anthropophilic or zoophilic nature. This safeguards a suitable choice of medication, increases the likelihood of successful treatment and impedes the development of resistances.