

Nail Fungal Testing

- Most prevalent in older adults and patients with HIV, diabetes mellitus, poor peripheral circulation, peripheral neuropathy (sensory loss in the lower extremities), or a weakened immune system.
- The possibility of contracting the infection increases in households and co-habitable areas with infected members and in communal environments.
- According to the American Diabetes Association, studies have shown a higher risk of gangrene and foot ulcers and an increased risk of amputation in diabetics with onychomycosis compared to those without the infection.



A Difficult Diagnosis

- The clinical features of onychomycosis can be confused with and mimic other nail pathologies such as psoriasis, eczema, dermatitis, lichen planus (an inflammatory rash-causing grooves or ridges in nail plate), and malignant melanoma.
- Onychomycosis (tinea unguium), or fungal infection of the nail, causes almost half of all nail pathologies worldwide.
- Leads to problems with physical agility, pain, paresthesia, and difficulty with walking and wearing shoes.

Potassium Hydroxide (KOH) Preparation vs. Molecular Diagnostics

Potassium Hydroxide (KOH) Preparation

- Identifies presence of fungi; however, KOH does not identify genus, species, or the specific pathogen
- Fails to separate yeasts and molds
- Unable to identify pathogen 30 – 50% of the time

Molecular Diagnostics

- Improved sensitivity and specificity for diagnosis of various microorganisms including fungal pathogens
- Amplifies specific DNA sequences of dermatophyte fungus
- Rapid identification as results are returned in 24 hours

Source:

<https://www.aapc.com/blog/48874-molecular-testing-for-nail-fungus-yields-improved-outcomes/>

Microbial Testing Panels

Bacteria

- Bacteroides fragilis
- Escherichia coli
- Fusobacterium necrophorum
- Fusobacterium nucleatum
- Klebsiella pneumoniae
- Peptostreptococcus anaerobius
- Prevotella bivia
- Pseudomonas aeruginosa
- Serratia marcescens
- Staphylococcus aureus

Fungi (Non-Dermatophytes)

- Aspergillus flavus
- Aspergillus fumigatus
- Aspergillus niger
- Aspergillus terreus
- Neoscytalidium dimidiatum
- Candida albicans
- Candida dubliniensis
- Candida parapsilosis
- Candida tropicalis
- Scopulariopsis brevicaulis

Fungi (Dermatophytes)

- Trichophyton interdigitale
- Trichophyton rubrum
- Trichophyton tonsurans
- Epidermophyton floccosum
- Microsporum audouinii

Antibiotic Resistance Markers

- **Aminoglycoside Resistance**
aac(6')-Ib-cr/aac(6')-Ib-cr4
- **Carbapenem Resistance**
blaKPC
blaOXA-48
- **Cephalosporin Resistance**
blaACT
- **Extended Spectrum-Beta-Lactamase Resistance**
blaOXA-1
- **Macrolide Resistance**
ermB
- **Quinolone and Fluroquinolone Resistance**
qnrA
qnrS
- **Tetracycline Resistance**
tetS

Patients Choice Laboratories currently tests for all organisms and antibiotic resistance genes/markers listed above. Other organisms are known to cause urinary tract infections, but are not tested for using this assay. Other antibiotic resistance genes/markers can cause antibiotic resistance, but are not tested for on this assay.