

## Quick reference guide

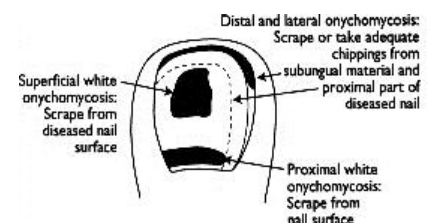
- ☑  Many nail problems can look like fungal infections, eg psoriasis or injury. Always send samples before starting long-term treatment, as only 45% of dermatology samples received are positive for fungal infections.<sup>1B-</sup>
- ☑  Microscopy detects 91% of positives, and provides the most rapid diagnosis.<sup>1B-</sup>
- ☑  Culture distinguishes dermatophyte from non-dermatophyte moulds, which is important as this may alter treatment.

### WHEN SHOULD I TAKE DERMATOLOGICAL SAMPLES FOR FUNGI?

- Samples are not needed for:
  - uncomplicated Athlete's foot (tinea pedis)
  - mild infections of the groin; if samples are not taken, treat as suspected Candida or Erythrasma with topical imidazole<sup>5A-</sup>
  - mild skin ringworm
- Take samples for fungi:
  - when oral treatment is being considered (scalp ringworm or nail disease)
  - in severe or extensive skin fungal infections, eg moccasin-type Athlete's foot
  - skin infections refractory to initial treatment, as occasionally gram negative bacterial infections cause interdigital cracking that looks like tinea pedis<sup>6B+</sup>
  - when the diagnosis is uncertain
- ☑  Ensure clinical details are stated, including treatment, animal contact, and overseas travel.

### HOW SHOULD I TAKE SAMPLES FOR FUNGAL INVESTIGATION?

- Swabs are of little value for dermatophytes, unless there is insufficient material obtained by scraping.
- Wipe off any treatment creams before sampling.
- Keep any samples at room temperature. Do not refrigerate as dermatophytes are inhibited at low temperatures, and humidity facilitates the growth of contaminants.<sup>8C</sup>
- Samples should be collected into folded dark paper squares. Secure dark paper squares with a paper clip and place in a plastic bag, or use commercially available fungal packets, eg Mycotrans; Dermapak.<sup>9D</sup>
- Skin scrapings:
  - scrape skin from the advancing edge of lesion; use a blunt scalpel blade or similar
  - 5mm<sup>2</sup> of skin flakes are needed for microscopy and culture
- Nail samples (better taken by clinicians).<sup>3D</sup>
  - most viable fungi are usually found in the most proximal part of diseased nail; sample with chiropody scissors
  - include full thickness clippings of the diseased nail
  - sample as far back from nail tip as possible, as this is where fungi are usually found; also sample debris from under the diseased part of the nail
  - in superficial infections, scrape surface of diseased nail plate with scalpel blade
- Hair samples:<sup>2A+,21A-</sup>
  - take scalp scrapings, as this often pulls out infected hair stumps, which are critical for successful culture and microscopy; hair plucking does not produce the best samples.
  - a soft toothbrush can be used if scrapings are not possible.<sup>21A-</sup>



## INTERPRETING THE LABORATORY REPORT

- ❑ When to treat:
  - a positive microscopy (fungal elements seen) is sufficient to start antifungals
  - a positive dermatophyte culture with negative microscopy is still significant
  - a negative microscopy or culture does not rule out fungal infection, particularly with kerion and nail infections; if clinical appearance very suggestive of fungal infection, repeat sample and start treatment.
- ❑ Significant fungi isolated and reported:<sup>1B-</sup>
  - the most common dermatophytes from foot or trunk infections are *T. rubrum* (80%) and *T. interdigitale* (15%)<sup>1B-</sup>
  - *Epidermophyton floccosum* and *Microsporum* species are also encountered
  - *T. tonsurans* and *T. violaceum* cause 80% of scalp infections in the UK<sup>1B-</sup>
  - *Scytalidium* spp. are the most common non-dermatophyte moulds that can cause both skin and nail infections<sup>10B+</sup>
  - true nail infections with the yeasts *C. albicans* and *C. parapsilosis* are rare and are more likely to affect the finger nail or finger nail folds; other *Candida* spp. may very rarely cause paronychia<sup>3D,4D,11B+</sup>
- ❑ Fungi of uncertain clinical significance:<sup>12B-</sup>
  - non-dermatophyte moulds (eg *Aspergillus* spp., *Scopulariopsis* spp., *Acremonium* spp.) are very rare causes of nail infection, usually following nail trauma, immunosuppression, or underlying dermatophyte infection; discuss management with a local microbiologist or dermatologist
  - such a diagnosis requires positive direct microscopy, isolation of the organism in pure culture, and ideally, on repeated occasions
  - repeat sample usually requested to confirm significance of non-dermatophyte moulds
- ❑ Antifungal susceptibilities:<sup>4D,13D,14B+,15B+,16A+</sup>
  - susceptibility testing of dermatophytes is not required, as antifungal resistance is rare, and there is no known correlation between antifungal susceptibilities and outcome

## TREATING FUNGAL SKIN AND NAIL INFECTIONS

- ☑ ❑ **For non-dermatophyte moulds other than *Candida* spp. seek the advice of a microbiologist or dermatologist.**
- ❑ Dermatophyte and candida infection of the fingernail or toenail:<sup>17A+,18A+,19A-</sup>
  - treat only if infection confirmed by laboratory; only use topical treatment if superficial infection of the top surface of nail plate; 5% amorolfine nail lacquer; 1-2 times weekly; 6 months on fingers; 12 months on toes
  - for infections with dermatophytes use oral terbinafine; 250mg OD; 6-12 weeks on fingers; 3-6 months on toes; or itraconazole; 200mg BD; 2 courses of 7 days a month for fingers; 3 courses of 7 days a month for toes
  - for infections with candida or non-dermatophyte moulds use oral itraconazole
  - idiosyncratic liver and other severe reactions occur very rarely with terbinafine and itraconazole
  - for children, seek specialist advice
- ❑ Dermatophyte infection of the skin:<sup>17A+,19A-,20A-</sup>
  - take skin scrapings for culture
  - as terbinafine is fungicidal, one week is as effective as 4 weeks azole which is fungistatic; topical 1% terbinafine; 1-2 times daily; 1 week