8. Golovko L, Lyons LA, Liu H, Sørensen A, Wehnert S, Pedersen NC. Genetic susceptibility to feline infectious peritonitis in Birman cats. Virus Res. 2013;175:58–63. https://doi.org/10.1016/j.virusres.2013.04.006
9. Kuehner KA, Marks SL, Kass PH, Sauter-Louis C, Grahn RA, Barutzki D, et al. *Tritrichomonas foetus* infection in purebred cats in Germany: prevalence of clinical signs and the role of co-infection with other enteroparasites. J Feline Med Surg. 2011;13:251–8. https://doi.org/10.1016/j.jfms.2010.12.002

Address for correspondence: Fernando Laguna, Department of Ophthalmology, Puchol Veterinary Hospital, 8th Sauceda St, 28050, Madrid, Spain; email: ferlagu@gmail.com

# Spread of Antifungal-Resistant *Trichophyton indotineae*, United Kingdom, 2017–2024

Alireza Abdolrasouli, Richard C. Barton, Andrew M. Borman

Author affiliations: King's College Hospital, London, UK (A. Abdolrasouli); Leeds Teaching Hospitals National Health Service Trust, Leeds, UK (R.C. Barton); Southmead Hospital, Bristol, UK (A.M. Borman); University of Exeter, Exeter, UK (A.M. Borman)

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We describe 157 cases of *Trichophyton indotineae* infection in the United Kingdom, mostly in patients linked to southern Asia. *T. indotineae* is spreading in the United Kingdom and accounts for 38% of dermatophyte isolates referred to the UK National Mycology Reference Laboratory. Clinicians should suspect *T. indotineae* in tinea corporis cases.

Outbreaks of superficial skin infections caused by the emergent dermatophyte *Trichophyton indotineae* (*Trichophyton mentagrophytes* genotype VIII) were reported in southern Asia starting in 2014 (*1*–*4*). Typically, *T. indotineae* infections initially involve the groin (tinea cruris) and respond poorly to treatment, resulting in widespread lesions affecting multiple body sites. Many isolates exhibit in vitro resistance to terbinafine, and most infections are clinically resistant to that drug (*1*–*5*). Infections spread easily from person to person (*1*–*8*), and some reports suggest sexual transmission (*9*).

*T. indotineae* is endemic across Asia, but cases have been reported worldwide (*4*), including in Europe (*5*–*7*), Canada (*8*), and the United States (*9*). Mounting evidence suggests infection acquisition and transmission outside original areas of endemicity (*5*,*7*,*9*,*10*). Occasional cases of *T. indotineae* infection have been reported from the United Kingdom (*10*). We describe all cases of *T. indotineae* identified at the UK National Mycology Reference Laboratory (MRL) during a 7-year period.

We reviewed laboratory records from August 2017–July 2024 for dermatophytes identified as *T. indotineae*. When available, we extracted clinical and epidemiologic data from requisition forms. Dermatophyte identification was determined by whole-genome sequencing (WGS) or internal transcribed spacer sequencing, combined with phenotypic identification (Appendix Table, https://wwwnc.cdc.gov/EID/article/31/1/24-0923-App1.pdf). Isolates received after 2021 were identified using phenotypic features alone. A key defining microscopic feature was abundant fusiform to clavate, thin smooth-walled macroconidia with an acute apical tip, as well as other macroscopic and microscopic characteristics (Appendix Figure 1). We performed susceptibility testing by broth microdilution according to Clinical and Laboratory Standards Institute standards (Appendix). In the absence of an established clinical breakpoint for terbinafine, we used an MIC of ≥0.5 mg/L to identify non–wild-type isolates.

The first WGS-confirmed case we noted was from October 2018. In nearly half (42.7%, 67/157) of identified cases, the groin, buttocks, and thighs were directly involved, and neighboring body sites (abdomen and back) were implicated in another 18 cases (Table 1). Most (84.7%) patients had links to endemic areas, including South Asian ethnic background (n = 97), recent travel to the Indian subcontinent or Middle East (n = 41), or both (n = 36). Household spread was noted in 5 cases (Appendix Table).

Before 2023, most (27/36) cases were identified in London, which was the most affected city according to total case numbers. Since 2023, increasing numbers of cases were found in an additional 27 cities in the United Kingdom and Ireland, and isolate numbers outside London exceed those in London (Appendix Figure 3). From 2018 to 2019, the prevalence of *T. indotineae* in the United Kingdom increased from 2% to

7% of all dermatophyte isolates referred to the MRL. This prevalence remained largely stable during 2019–2023 (range 5%–12%). Of note, *T. indotineae* comprised 38% of all dermatophyte isolates received by the MRL in 2024 up to July (Figure).

Antifungal susceptibility data for terbinafine were available for 124/157 isolates, and in vitro resistance (MIC ≥0.5 mg/L) was documented in 92/124 (74.2%) cases, in keeping with previous reports (*1*,*2*,*4*,*5*). Of the 108 isolates in our study, 14% displayed MICs ≥0.5 mg/L to itraconazole; however, a breakpoint for itraconazole with *T. indotineae* is lacking. Fifty (31.8%) of 157 cases had documented treatment failure, 34 (21.7%) cases had terbinafine failure, and 7 (4.5%) cases had poor response to itraconazole.

**Table.** Characteristics of the 157 proven cases of in an investigation of spread of antifungal-resistant *T. indotineae* infection, United Kingdom, 2017–2024*

| Characteristics | No. (%), n = 157 |
|---|---|
| Patient age range, y | |
| 1–10 | 4 (2.5) |
| 11–20 | 13 (8.3) |
| 21–30 | 37 (23.6) |
| 31–40 | 42 (26.8) |
| 41–50 | 26 (16.6) |
| 51–60 | 18 (11.5) |
| 61–70 | 13 (8.3) |
| 71–80 | 4 (2.5) |
| Anatomic site affected† | |
| Buttock, groin, gluteal fold, perineum, thigh | 67 (42.7) |
| Back, abdomen, torso, trunk, breast, chest | 18 (11.5) |
| Legs, feet, knee, toenail | 14 (8.9) |
| Arms, hands, axilla | 6 (3.8) |
| Face, neck, head | 6 (3.8) |
| Unknown | 53 (33.8) |
| Geographic location | |
| London | 73 (46.5) |
| England outside London | 54 (34.4) |
| Wales | 8 (5.1) |
| Scotland | 19 (12.1) |
| Republic of Ireland | 3 (1.9) |
| Travel history‡ | |
| Yes | 41 (26.1) |
| No or unknown | 116 (73.9) |
| Patient links to endemic area | |
| Yes | 133 (84.7) |
| No | 12 (7.6) |
| Unknown | 12 (7.6) |
| Identification method | |
| Phenotypic only | 114 (72.6) |
| Molecular ITS or WGS | 43 (27.4) |
| Antifungal susceptibility testing | |
| Terbinafine, ≥0.5 mg/L | 92 (58.6) |
| Terbinafine, <0.5mg/L | 32 (20.4) |
| Terbinafine, not tested | 33 (21.0) |
| Itraconazole, ≥05 mg/L | 16 (10.2) |
| Itraconazole, <0.5 mg/L | 92 (58.6) |
| Itraconazole, not tested | 49 (31.2) |

*Detailed case listings and definitions are provided (Appendix Table, https://wwwnc.cdc.gov/EID/article/31/1/24-0923-App1.pdf).
†Multiple sites reported in some cases; therefore, total >157 cases.
‡Travel to India, Bangladesh, Pakistan, Sri Lanka, UAE, Nepal.

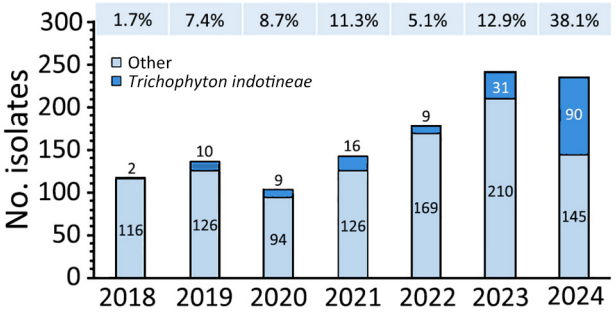


**Figure.** Numbers and percentages of isolates per year in study of spread of antifungal-resistant *Trichophyton indotineae*, United Kingdom, 2017–2024. Numbers of isolates of *T. indotineae* and all other dermatophyte species annually are referred to the UK National Mycology Reference Laboratory. Numbers above bars indicate percentages of all referrals that were *T. indotineae*.

In this study, London had the highest caseloads before 2023, likely because of absolute population numbers, comprehensive travel links to the Asian subcontinent through major London airports, and enhanced access to private dermatology clinics. The largely stable prevalence from 2019 through 2023 is probably because of COVID-19 prevention measures, which reduced population mixing and subsequent spread of *T. indotineae*. Our findings suggest that infections were acquired either directly in southern Asia and imported into the United Kingdom or from contacts with recent travel to such areas.

The first limitation of this study is underestimation of *T. indotineae* prevalence because of limited awareness among medical practitioners and microbiology laboratorians, likely misidentifications in routine laboratories, lack of commercial methods for rapid and accurate identification, and difficulties in obtaining skin scrapings from patients impeding laboratory identification of causative agent. Second, probable regional differences exist in awareness and identification capacity driven by regional prevalence and likelihood of prior encounter. Third, we do not have clinical information on dose or duration of terbinafine therapy for most patients with reported treatment failures; thus, we are unable to link treatment failure to elevated MIC values. Finally, only a proportion of *T. indotineae* isolates had genetic confirmation of identity. Despite our confidence in our methods, the identification of some cases by phenotypic methods alone could lead to some misidentification of species within the *T. mentagrophytes* species complex.

In conclusion, we show that *T. indotineae* was introduced into the United Kingdom from endemic areas and is spreading substantially. On the basis of current trends, we predict *T. indotineae* will rapidly

become the predominant cause of tinea corporis in the United Kingdom. Clinicians and microbiology laboratorians should recognize this fungus as a predominant cause of tinea corporis.

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### About the Author

Dr. Abdolrasouli is a clinical scientist in medical mycology at King's College Hospital, London, United Kingdom. His primary research interests include emerging pathogens, antifungal resistance, and laboratory diagnosis of fungal infections.

### References

1. Singh A, Masih A, Monroy-Nieto J, Singh PK, Bowers J, Travis J, et al. A unique multidrug-resistant clonal *Trichophyton* population distinct from *Trichophyton mentagrophytes/Trichophyton interdigitale* complex causing an ongoing alarming dermatophytosis outbreak in India: genomic insights and resistance profile. Fungal Genet Biol. 2019;133:103266. https://doi.org/10.1016/j.fgb.2019.103266
2. Kano R, Kimura U, Kakurai M, Hiruma J, Kamata H, Suga Y, et al. *Trichophyton indotineae* sp. nov.: a new highly terbinafine-resistant anthropophilic dermatophyte species. Mycopathologia. 2020;185:947–58. https://doi.org/10.1007/s11046-020-00455-8
3. Chowdhary A, Singh A, Kaur A, Khurana A. The emergence and worldwide spread of the species *Trichophyton indotineae* causing difficult-to-treat dermatophytosis: a new challenge in the management of dermatophytosis. PLoS Pathog. 2022;18:e1010795. https://doi.org/10.1371/journal.ppat.1010795
4. Dellière S, Jabet A, Abdolrasouli A. Current and emerging issues in dermatophyte infections. PLoS Pathog. 2024;20:e1012258. https://doi.org/10.1371/journal.ppat.1012258
5. Brasch J, Gräser Y, Beck-Jendroscheck V, Voss K, Torz K, Walther G, et al. "Indian" strains of *Trichophyton mentagrophytes* with reduced itraconazole susceptibility in Germany. J Dtsch Dermatol Ges. 2021;19:1723–7. https://doi.org/10.1111/ddg.14626
6. Dellière S, Joannard B, Benderdouche M, Mingui A, Gits-Muselli M, Hamane S, et al. Emergence of difficult-to-treat tinea corporis caused by *Trichophyton mentagrophytes* complex isolates, Paris, France. Emerg Infect Dis. 2022;28:224–8. https://doi.org/10.3201/eid2801.210810
7. Siopi M, Efstathiou I, Theodoropoulos K, Pournaras S, Meletiadis J. Molecular epidemiology and antifungal susceptibility of *Trichophyton* isolates in Greece: emergence of terbinafine-resistant *Trichophyton mentagrophytes* type VIII locally and globally. J Fungi (Basel). 2021;7:419. https://doi.org/10.3390/jof7060419
8. Posso-De Los Rios CJ, Tadros E, Summerbell RC, Scott JA. Terbinafine resistant *Trichophyton indotineae* isolated in patients with superficial dermatophyte infection in Canadian patients. J Cutan Med Surg. 2022;26:371–6. https://doi.org/10.1177/12034754221077891
9. Spivack S, Gold JAW, Lockhart SR, Anand P, Quilter LAS, Smith DJ, et al. Potential sexual transmission of antifungal-resistant *Trichophyton indotineae*. Emerg Infect Dis. 2024;30:807–9. https://doi.org/10.3201/eid3004.240115
10. Abdolrasouli A, Borman AM, Johnson EM, Hay RJ, Arias M. Terbinafine-resistant *Trichophyton indotineae* causing extensive dermatophytosis in a returning traveller, London, UK. Clin Exp Dermatol. 2024;49:635–7. https://doi.org/10.1093/ced/llae042

Correspondence: Andrew M. Borman, Mycology Reference Laboratory, UK Health Security, Science Quarter, Southmead Hospital, Bristol BS10 5NB, UK; email: andy.borman@nbt.nhs.uk

# Identification and Characterization of Vancomycin-Resistant *Staphylococcus aureus* CC45/USA600, North Carolina, USA, 2021

Jennifer K. MacFarquhar, Anumita Bajpai, Teresa Fisher, Chad Barr, Alyssa G. Kent, Susannah L. McKay, Davina Campbell, Amy S. Gargis, Rocio Balbuena, David Lonsway, Maria Karlsson, Maroya Spalding Walters, D. Cal Ham, William A. Glover

Author affiliations: Centers for Disease Control and Prevention, Atlanta, Georgia, USA (J.K. MacFarquhar, A.G. Kent, S.L. McKay, D. Campbell, A.S. Gargis, R. Balbuena, D. Lonsway, M. Karlsson, M.S. Walters, D.C. Ham); North Carolina Department of Health and Human Services, Raleigh, North Carolina, USA (A. Bajpai, T. Fisher, W.A. Glover); Caldwell County Health Department, Lenoir, North Carolina, USA (C. Barr)

Vancomycin-resistant *Staphylococcus aureus* (VRSA) is a rare but serious public health concern. We describe a VRSA case in North Carolina, USA. The isolate from the case belonged to the USA600 lineage and clonal complex 45. No transmission was identified. Confirmed VRSA cases should include a thorough investigation and public health response.

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# Spread of Antifungal-Resistant *Trichophyton indotineae*, United Kingdom, 2017–2024

## Appendix

## Methods

### Clinical Dermatophyte Isolates and Case Definitions

For isolate selection, we reviewed our laboratory electronic records. All dermatophyte isolates submitted to the UK Health Security Agency National Mycology Reference Laboratory between August 2017 and May 2024 for identification and/or antifungal susceptibility testing were included in this study. The majority of isolates originated from 3 centers in the United Kingdom: the National Mycology Reference Laboratory (MRL) in Bristol, southwest England; the Regional Mycology Reference Centre at Leeds Teaching Hospitals, northern England; and the Medical Microbiology Department at King's College Hospital, London, serving an ethnically diverse population in south and southeast London.

In “confirmed” cases (Appendix Table), dermatophytes were identified as *Trichophyton indotineae* by using a combination of molecular and/or phenotypic characteristics. For the additional 10 “likely” cases, we included dermatophyte isolates that were phenotypically identified as *Trichophyton mentagrophytes* complex but had increased terbinafine MIC causing tinea cruris/corporis and were isolated from chronic/recurrent infections. These isolates were not available for species-level identification, precluding formal confirmation that they were *T. indotineae*.

### Data Collection

We collected patient demographic data (age range, ethnic background) from laboratory requisition forms submitted with clinical isolates. When available, we retrieved clinical and epidemiologic data including affected body site(s), disease duration, previous antifungal

treatment(s), ethnicity, and recent travel history from laboratory request forms or from conversations with referring physicians. All information on requisition forms was provided by requesting clinicians as part of the routine standard of care for their patients. In this study, we considered *T. indotineae* infection endemic to the Indian subcontinent (*1*). A link to the endemic area was defined as South-Asian ethnicity.

### Phenotypic Identification

All dermatophyte isolates received at MRL were initially subcultured onto Sabouraud glucose peptone agar supplemented with chloramphenicol (Oxoid) and incubated at 28°C–30°C for 7–14 days before identification. Cultures were examined for macroscopic features and microscopic characteristics. For identification of *T. indotineae*, the presence of abundant fusiform to clavate, thin and smooth-walled macroconidia measuring 6–8 × 20–50 μm with 3–5 septa and an acute apical tip was used as a key defining feature (Appendix Figure 1). Some macroconidia showed narrow attachment bases. Occasionally, shorter club-shaped macroconidia were present. In addition, isolates identified as *T. indotineae* displayed clusters of spherical microconidia arranged around differentiated hyphae. Numerous subspherical and pyriform microconidia were along undifferentiated hyphae. Spiral hyphae and chlamydoconidia (single or in chains) were present in some cultures.

Colonies of *T. indotineae* were flat with a granular, powdery to floccose texture. Most isolates showed a fast to moderate growth rate. Surface of colonies remained white, beige, or suede-like in color. Reverse pigmentation was variable, and most isolates displayed light brown, cream, or yellow colors (Appendix Figure 2).

### Internal Transcribed Spacer (ITS) Sequencing

Fungal DNA extraction, PCR amplification and sequencing of the ITS1 region and BLASTN alignments against sequences in public reference databases were performed exactly as previously described (*2*). All ITS1 sequences generated in this study were identical to each other and shared 100% homology with reference *Trichophyton indotineae* sequences in the public databases including the sequence for the type strain LC508024. A representative ITS1 sequence from the current study was deposited in GenBank under accession no. PQ279401.

### Antifungal Susceptibility Testing

Terbinafine and itraconazole antifungal susceptibility testing was determined according to the CLSI M38-A2 broth microdilution method (*3*). All isolates were initially subcultured onto Sabouraud glucose peptone agar supplemented with chloramphenicol (Oxoid) and incubated at 28°C–30°C for 7–14 days before antifungal susceptibility testing. Antifungal drugs were obtained from their respective manufacturers as standard powders. To prepare stock solutions, terbinafine (Sigma Chemical Co.) was dissolved in dimethyl sulfoxide (DMSO). Itraconazole powder (Janssen Research Foundation) was dissolved in PEG400 by heating at 70°C. Serial 2-fold dilutions of both drugs were prepared in RPMI 1640 (Sigma Chemical Co.) buffered with 0.165 M MOPS with 0.2% glucose and phenol red, without bicarbonate. Final testing concentrations were 0.03 to 16 mg/L for both terbinafine and itraconazole. MICs were read at 80% inhibition of growth compared with the drug-free growth control after ≥96 hours of incubation. All assays included the control *Aspergillus fumigatus* strains NCPF 7097 and NCPF7100. In the absence of CLSI-established clinical breakpoint for terbinafine, we adapted tentative MIC value of ≥0.5 mg/L to identify non–wild-type (WT) isolates.

### Whole-Genome Sequencing and Analysis

Genomic DNA (gDNA) was extracted as previously described (*4*). Briefly, fungal isolates were subcultured on Sabauroud glucose agar (SGA) plates supplemented with chloramphenicol and incubated at 28°C –30°C for 7–10 days. Stock conidial suspensions were prepared by washing the surface of the SGA plates with 10 mL of sterile water containing 0.05% Tween 20. The conidial suspensions were filtered by using Miracloth (EMD Chemicals) to remove fungal hyphae, transferred to 50-mL sterile conical tubes, and centrifuged at maximum speed (10,000 × *g*) for 10 minutes. The supernatants were discarded, and the pellets were resuspended in 5 mL of sterile distilled water. The concentrations of the suspended conidial stocks were determined by counting the conidia by using a hemocytometer chamber at ×400 magnification. Harvested conidia at concentrations of $2 \times 10^8$/mL were subjected to DNA extraction. High-molecular-weight DNA was extracted with an optimized MasterPure Complete DNA and RNA purification kit (Lucigen) with an additional bead-beating step included. Harvested conidia were homogenized by using 1.0-mm-diameter zirconia/silica beads (BioSpec Products) in a FastPrep-24 system (MP Biomedicals) at 4.5 m/s for 45 seconds. After a purification and concentration step using a DNeasy Blood and Tissue kit (Qiagen), gDNA was

quantified by using a Qubit 2.0 fluorometer and dsDNA BR (double-stranded DNA, broad-range) assay kit (Life Technologies). Quality control of extracted gDNA samples before library preparation was performed by using the TapeStation 2200 system (Agilent) and gDNA ScreenTape assays. gDNA libraries were constructed, normalized, and indexed at Earlham Institute and run on a NovaSeq 6000 SP v1.5 flow cell to generate 150-bp paired-end reads.

Whole-genome data were analyzed at Imperial College London, United Kingdom, as part of a multicenter international study. In brief, a custom bioinformatics pipeline was used to analyze the sequencing data. The bioinformatics pipeline included first mapping the raw reads to the *T. indotineae* reference genome (GenBank GCA_023065905.1; strain TIMM20114) by using the Burrows Wheeler Aligner (BWA) MEM algorithm v0.7.17 (H. Li, unpub. data). All raw genomic data are available under the Project Accession no. PRJEB75499.

## References


1. Ebert A, Monod M, Salamin K, Burmester A, Uhrlaß S, Wiegand C, et al. Alarming India-wide phenomenon of antifungal resistance in dermatophytes: a multicentre study. Mycoses. 2020;63:717–28. PubMed https://doi.org/10.1111/myc.13091

2. Borman AM, Desnos-Ollivier M, Campbell CK, Bridge PD, Dannaoui E, Johnson EM. Novel taxa associated with human fungal black-grain Mycetomas: *Emarellia grisea* gen. nov., sp. nov., and *Emarellia paragrisea* sp. nov. J Clin Microbiol. 2016;54:1738–45. PubMed https://doi.org/10.1128/JCM.00477-16

3. Clinical and Laboratory Standards Institute. Reference method for broth dilution antifungal susceptibility testing of filamentous fungi (C38), 3rd edition. Wayne (PA): The Institute; 2017.

4. Shelton JMG, Rhodes J, Uzzell CB, Hemmings S, Brackin AP, Sewell TR, et al. Citizen science reveals landscape-scale exposures to multiazole-resistant *Aspergillus fumigatus* bioaerosols. Sci Adv. 2023;9:eadh8839. PubMed https://doi.org/10.1126/sciadv.adh8839

**Appendix Table.** Clinical details for isolates of *Trichophyton indotineae**

| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| Confirmed isolates | | | | | | | | | | |
| 1 | 10.09.2018 | 31–40 | Buttock | London | NA | Yes | India | **1.0** | — | Phenotypic/WGS |
| 2 | 14.01.2019 | 41–50 | Groin | London | NA | Yes | India | **4.0** | — | Phenotypic/WGS |
| 3 | 17.01.2019 | 51–60 | Back | London | 10-mo intractable tinea corporis, no response to itraconazole, itraconazole and terbinafine combination | Yes | India | **>16.0** | — | Phenotypic/WGS |
| 4 | 04.02.2019 | 51–60 | Torso | London | NA | Yes | India | **4.0** | — | Phenotypic/WGS |
| 5 | 16.05.2019 | 31–40 | Groin | London | NA | No | | <0.03 | — | Phenotypic/WGS |
| 6 | 03.10.2019 | 51–60 | Buttock | London | 6-mo rash, high dose prednisolone | Yes | | 0.125 | — | Phenotypic/WGS |
| 7 | 20.01.2020 | 51–60 | Groin | London | 3mo rash | Yes | | 0.06 | — | Phenotypic/WGS |
| 8 | 21.02.2020 | 61–70 | Groin | London | Rash | Yes | | **2.0** | — | Phenotypic/WGS |
| 9 | 11.11.2020 | 1–10 | Left arm | London | 8-mo tinea corporis, no improvement with daktacort, elocon, terbinafine, canesten, locoid | Yes | Bangladesh | **8.0** | — | Phenotypic/WGS |
| 10 | 09.12.2020 | 1–10 | Right leg, foot | London | NA | Yes | UAE | **2.0** | — | Phenotypic/WGS |
| 11 | 23.12.2020 | 31–40 | Buttock, groin | London | NA | Yes | Sri Lanka | **2.0** | — | Phenotypic/WGS |
| 12 | 08.01.2021 | 41–50 | Unknown skin | London | NA | Yes | | 0.125 | 0.125 | Phenotypic/WGS/ITS |
| 13 | 12.02.2021 | 41–50 | Groin | London | 6-mo extending scaly rash, well demarcated | Yes | Bangladesh | **2.0** | — | Phenotypic/WGS |
| 14 | 26.02.2021 | 41–50 | Buttock | London | Tinea incognito, widespread confluent annular lesions | Yes | India | **2.0** | — | Phenotypic/WGS |
| 15 | 08.03.2021 | 41–50 | Axilla | London | Persistent axillar rash | Yes | India | **4.0** | — | Phenotypic/WGS |
| 16 | 01.04.2021 | 21–30 | Leg | Dublin | NA | Yes | | **4.0** | 0.06 | Phenotypic/WGS |
| 17 | 03.04.2021 | 41–50 | Thigh | London | >1-y scaly erythematous lesions, response to itraconazole but recurred | Yes | India | **8.0** | — | Phenotypic/WGS |
| 18 | 21.05.2021 | 1–10 | Left arm | London | Annular rash | Yes | | **8.0** | 0.125 | Phenotypic/WGS |
| 19 | 26.05.2021 | 61–70 | Unknown skin | London | NA | Unknown | | 0.03 | 0.125 | Phenotypic/WGS |
| 20 | 03.06.2021 | 21–30 | Groin | Oxford | 3-mo rash, no response topical and oral terbinafine | Yes | | **4.0** | — | Phenotypic/WGS |
| 21 | 07.07.2021 | 31–40 | Unknown skin | London | Failed 2 courses oral terbinafine over 3 mo | Yes | | **8.0** | 0.25 | Phenotypic/WGS |
| 22‡ | 26.07.2021 | 11–20 | Unknown skin | Leeds | Terbinafine-resistant tinea corporis | Yes | India | **2.0** | 0.125 | Phenotypic/WGS/ITS |
| 23 | 20.08.2021 | 71–80 | Unknown nail | Leeds | Terbinafine failure | Unknown | | **1.0** | <0.03 | Phenotypic/WGS |
| 24 | 17.09.2021 | 71–80 | Unknown nail | Edinburgh | NA | Unknown | | **2.0** | 0.25 | Phenotypic/WGS |
| 25 | 07.10.2021 | 31–40 | Unknown skin | London | Recalcitrant tinea | Yes | | **4.0** | 0.06 | Phenotypic/WGS |

| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 25.10.2021 | 21–30 | Unknown skin | London | NA | Yes | India | **2.0** | — | Phenotypic/WGS |
| 27 | 24.11.2021 | 61–70 | Torso | London | 3-y history of widespread rash | Yes | | **1.0** | 0.5 | Phenotypic/WGS |
| 28 | 01.02.2022 | 41–50 | Unknown nail | Liverpool | NA | Unknown | | **2.0** | 0.5 | Phenotypic |
| 29 | 18.02.2022 | 21–30 | Unknown skin | London | Tinea corporis | Yes | | **2.0** | 0.25 | Phenotypic |
| 30 | 17.03.2022 | 21–30 | Groin, legs | Leeds | Annular rash, partner traveled to India | Yes | India | **2.0** | 0.06 | Phenotypic/ITS |
| 31 | 29.03.2022 | 21–30 | Abdomen | Leeds | Extensive hyperpigmented rash on abdomen | Yes | | <0.03 | 0.25 | Phenotypic/ITS |
| 32 | 31.05.2022 | 31–40 | Buttock | London | NA | Yes | India | <0.03 | 0.125 | Phenotypic/WGS |
| 33 | 06.09.2022 | 31–40 | Abdomen | Edinburgh | NA | Yes | | **4.0** | 0.06 | Phenotypic |
| 34 | 03.10.2022 | 11–20 | Genitals, face | Leeds | Failed terbinafine and fluconazole | Yes | | **4.0** | 0.06 | Phenotypic/ITS |
| 35 | 22.11.2022 | 31–40 | Groin | Leeds | Tinea cruris, pregnant on topical treatment | Yes | | <0.03 | <0.03 | Phenotypic/ITS |
| 36 | 25.11.2022 | 21–30 | Gluteal fold | London | Tinea cruris now extensive tinea corporis, failed terbinafine, partial response to itraconazole | Yes | India | 0.06 | <0.03 | Phenotypic |
| 37 | 25.01.2023 | 31–40 | Back | Leeds | NA | Yes | | <0.03 | 0.25 | Phenotypic/ITS |
| 38 | 03.04.2023 | 21–30 | Groin | Leeds | Tinea cruris | Yes | | **1.0** | 0.125 | Phenotypic/ITS |
| 39 | 13.06.2023 | 11–20 | Unknown skin | London | NA | Yes | | **0.5** | <0.03 | Phenotypic |
| 40 | 29.06.2023 | 51–60 | Groin | Leeds | Annular eruption groin, umbilicus, sub-mammary, abdomen | Yes | | — | 0.25 | Phenotypic/ITS |
| 41 | 17.07.2023 | 21–30 | Buttock | London | 3-y history of rash, no response to antifungals | Yes | Nepal | **2.0** | 0.06 | Phenotypic/ITS |
| 42 | 21.07.2023 | 61–70 | Finger | London | NA | Yes | | — | — | Phenotypic |
| 43 | 01.08.2023 | 21–30 | Thighs | Glasgow | Fungal infection both inner thighs, not responding | Yes | India | **2.0** | 0.06 | Phenotypic |
| 44 | 02.08.2023 | 31–40 | Groin | Leeds | Tinea cruris, recent travel | Unknown | Bangladesh | **0.5** | <0.03 | Phenotypic |
| 45 | 14.08.2023 | 21–30 | Unknown tissue | London | NA | Yes | | — | — | Phenotypic |
| 46 | 06.09.2023 | 61–70 | Groin | London | Rash in groin | Yes | | <0.03 | 0.06 | Phenotypic |
| 47 | 07.09.2023 | 21–30 | Thigh | Glasgow | Tinea corporis involving thighs | Yes | | **2.0** | 0.06 | Phenotypic |
| 48 | 10.09.2023 | 21–30 | Groin | Durham | NA | Yes | | — | — | Phenotypic |
| 49 | 10.10.2023 | 71–80 | Unknown skin | Coventry | Itchy rash, no response to 2.5 mo of terbinafine | Unknown | India | **0.5** | 0.125 | Phenotypic |
| 50 | 17.10.2023 | 11–20 | Back | Leeds | Scaly rash upper back for 10 mo, parents have similar | Yes | | **0.5** | <0.03 | Phenotypic |
| 51 | 20.10.2023 | 21–30 | Right Leg | London | Progressive extensive tinea for >6 mo, minimal response to terbinafine | No | South America | **2.0** | 0.25 | Phenotypic |

| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| 52 | 25.10.2023 | 21–30 | Unknown skin | Leeds | Tinea cruris not responding to terbinafine | Yes | | **2.0** | 0.25 | Phenotypic/ ITS |
| 53 | 26.10.2023 | 51–60 | Unknown skin | Blackpool | Rash | Yes | Bangladesh | — | — | Phenotypic/ ITS |
| 54 | 30.10.2023 | 21–30 | Unknown | Coventry | Antifungal resistant tinea | Yes | | **0.5** | 0.25 | Phenotypic |
| 55 | 30.10.2023 | 31–40 | Leg | Leeds | Tinea | Yes | | **1.0** | 0.25 | Phenotypic |
| 56 | 07.11.2023 | 41–50 | Perineum | Cardiff | Itchy rash, no response to terbinafine | Yes | India | 0.25 | <0.03 | Phenotypic |
| 57 | 14.11.2023 | 31–40 | Groin | Edinburgh | Recurrent tinea | Unknown | | **4.0** | 0.125 | Phenotypic |
| 58 | 14.11.2023 | 31–40 | Groin | Edinburgh | Recurrent thrush | Unknown | | **4.0** | 0.125 | Phenotypic |
| 59 | 16.11.2023 | 31–40 | Groin | Edinburgh | NA | Unknown | | **2.0** | 0.25 | Phenotypic/ ITS |
| 60 | 18.11.2023 | 51–60 | Unknown skin | London | Fungal skin infection | Yes | | — | — | Phenotypic |
| 61‡ | 21.11.2023 | 11–20 | Groin | Leeds | Recurrent tinea cruris | Yes | India | **1.0** | 0.06 | Phenotypic |
| 62 | 06.12.2023 | 51–60 | Groin | Blackpool | Tinea cruris | Yes | Bangladesh | — | — | Phenotypic |
| 63 | 06.12.2023 | 41–50 | Buttock | Cardiff | Rash, no response to topical terbinafine | Yes | | 0.25 | <0.03 | Phenotypic |
| 64 | 13.12.2023 | 41–50 | Thigh | Glasgow | Tinea cruris, children same, failed 2 courses of terbinafine | Yes | | **2.0** | 0.25 | Phenotypic |
| 65 | 18.12.2023 | 31–40 | Abdomen | Southampton | Tinea of abdomen and arm | Yes | | **0.5** | 0.125 | Phenotypic |
| 66 | 19.12.2023 | 21–30 | Knee | Leeds | Extensive tinea cruris and corporis | Yes | | **2.0** | 0.06 | Phenotypic |
| 67 | 28.12.2023 | 41–50 | Chest | Leeds | Rash on forearm and chest | Unknown | Bangladesh | **0.5** | 0.06 | Phenotypic/ ITS |
| 68 | 02.01.2024 | 11–20 | Abdomen | Bristol | Ongoing skin rash | Yes | | — | — | Phenotypic/ ITS |
| 69 | 09.01.2024 | 61–70 | Groin | Newcastle | 1-y history tinea cruris, no response to 3 mo of terbinafine, partial response to itraconazole | Yes | Pakistan | — | 0.125 | Phenotypic |
| 70 | 17.01.2024 | 41–50 | Thigh | London | Recurrent tinea corporis, no response to antifungals | Yes | | **0.5** | 0.25 | Phenotypic |
| 71 | 19.01.2024 | 31–40 | Unknown skin | Glasgow | Fungal skin infection, not resolved with oral terbinafine | Yes | | <0.03 | 0.125 | Phenotypic |
| 72 | 31.01.2024 | 51–60 | Groin | Cambridge | NA | No | | — | — | Phenotypic |
| 73 | 01.02.2024 | 11–20 | Thigh skin biopsy | Poole | Fungal rash | No | | — | — | Phenotypic |
| 74 | 05.02.2024 | 21–30 | Leg | London | Widespread scaly lesions on legs | Yes | | — | — | Phenotypic |
| 75 | 07.02.22 | 31–40 | Unknown skin | London | Skin infection not responding to antifungals | Yes | | <0.03 | 0.125 | Phenotypic |
| 76 | 16.02.2024 | 41–50 | Buttock | Glasgow | Tinea cruris, multi-drug resistant | Yes | | **1.0** | 0.5 | Phenotypic |
| 77 | 20.02.2024 | 51–60 | Unknown skin | London | Fungal rash on body | Yes | | — | — | Phenotypic |
| 78 | 22.02.2024 | 51–60 | Unknown | Glasgow | Severe/widespread dermatophyte | Yes | | **1.0** | 0.06 | Phenotypic/ ITS |

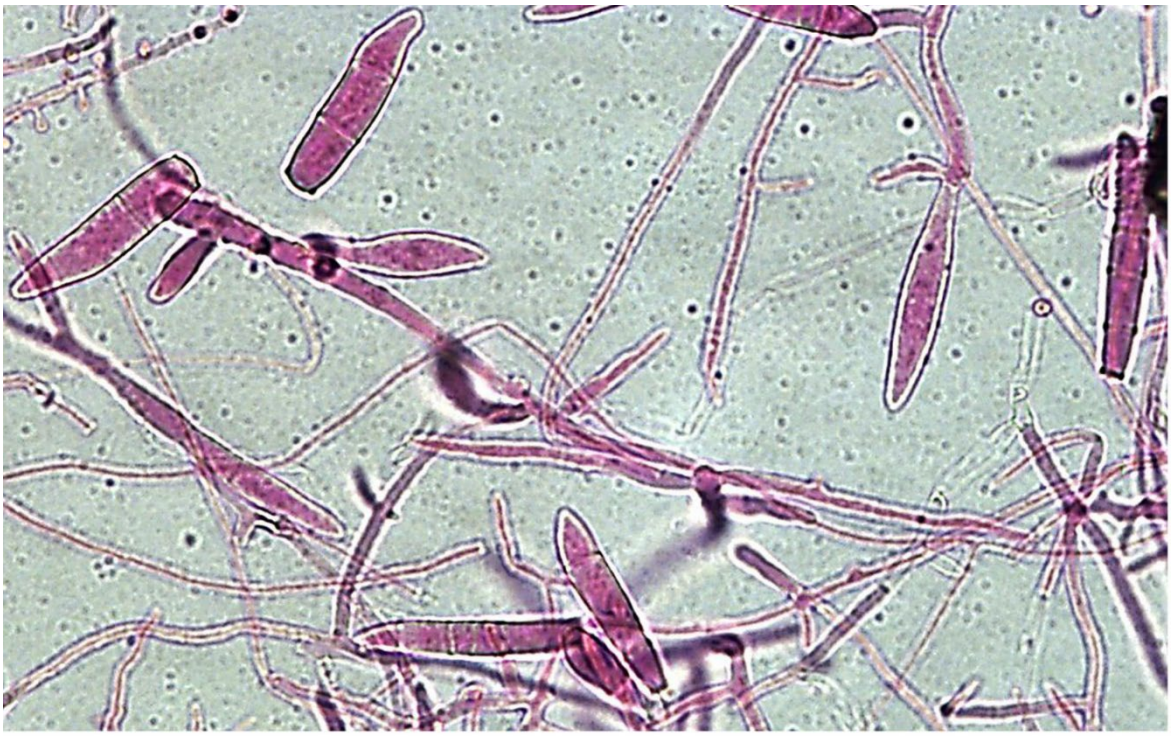
| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | infection, terbinafine failure | | | | | |
| 79 | 22.02.2024 | 41–50 | Unknown skin | London | Extensive tinea corporis | Yes | | **1.0** | 0.125 | Phenotypic |
| 80 | 23.02.2024 | 21–30 | Unknown skin | London | Resistant tinea corporis, no response to 6w oral terbinafine | Yes | | **1.0** | 0.06 | Phenotypic |
| 81 | 26.02.2024 | 51–60 | Groin | Glasgow | Tinea cruris | Yes | | <0.03 | 0.06 | Phenotypic |
| 82 | 26.02.2024 | 41–50 | Thigh | London | Recurrent tinea corporis, not responding to antifungals | Yes | | **0.5** | 0.25 | Phenotypic |
| 83 | 27.02.2024 | 31–40 | Buttock | London | Persistent tinea of buttocks despite 6w oral terbinafine | Yes | | **1.0** | 0.06 | Phenotypic |
| 84 | 27.02.2024 | 21–30 | Thigh | Ireland | Extensive tinea corporis involving groin and thighs now spread to hands and face. No response to 6 wk of antifungals | Yes | Bangladesh | **0.5** | 0.25 | Phenotypic |
| 85 | 01.03.2024 | 31–40 | Abdomen | Bristol | Large annular patches groin and abdomen | Unknown | | — | — | Phenotypic/ ITS |
| 86 | 04.03.2024 | 61–70 | Groin | Glasgow | 5-y history of treatment-resistant pruritic rash to the groin | Yes | | <0.03 | <0.03 | Phenotypic |
| 87 | 05.03.2024 | 41–50 | Unknown skin | Glasgow | Widespread tinea corporis | Yes | | 0.125 | <0.03 | Phenotypic |
| 88 | 07.03.2024 | 41–50 | Groin | London | Recalcitrant tinea corporis | Yes | | **1.0** | 0.5 | Phenotypic |
| 89 | 11.03.2024 | 21–30 | Buttocks | Cardiff | Persistent tinea of buttocks for 2 y, incomplete response to fluconazole and miconazole | Yes | | **1.0** | 0.125 | Phenotypic |
| 90 | 12.03.2024 | 61–70 | Groin/Thigh skin | Warwick | Dermatitis affecting groin and upper thigh not responding to treatment | Yes | | **1.0** | 0.25 | Phenotypic |
| 91 | 13.03.2024 | 21–30 | Unknown skin | London | Widespread tinea corporis | Yes | Bangladesh | 0.03 | 0.06 | Phenotypic |
| 92 | 14.03.2024 | 31–40 | Unknown skin | London | Ringworm, no response to terbinafine and itraconazole; partner also has lesions | Yes | Bangladesh | — | — | Phenotypic |
| 93 | 18.03.2024 | 31–40 | Buttock | Glasgow | Large patch of ringworm on buttock despite canesten treatment | Yes | | <0.03 | 0.06 | Phenotypic |
| 94 | 18.3.2024 | 11–20 | Legs | London | Tinea incognito | Yes | | — | — | Phenotypic |
| 95 | 19.03.2024 | 31–40 | Thigh | London | Tinea corporis affecting thighs | Yes | | — | — | Phenotypic |
| 96 | 22.03.2024 | 11–20 | Unknown skin | Durham | Large eruption on lower abdomen for 1 y, not responding to antifungal treatment | Yes | | <0.03 | 0.06 | Phenotypic |
| 97 | 26.03.2024 | 01–10 | Head | London | Persistent scaling on head, tinea | Yes | | — | — | Phenotypic |
| 98 | 04.04.2024 | 31–40 | Groin | London | Tinea cruris | Yes | | **2** | 0.5 | Phenotypic |

| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| 99 | 04.04.2024 | 61–70 | Back | Bristol | Fungal rash since travel to India, not responding to clotrimazole, terbinafine or itraconazole | No | India | **2** | 1.0 | Phenotypic |
| 100 | 05.04.2024 | 41–50 | Abdomen | London | 4.5-y recalcitrant tinea corporis/cruris affecting abdomen, legs, buttocks. Repeated oral and topical treatment (incl. terbinafine) failures | Unknown | | **1.0** | <0.03 | Phenotypic |
| 101 | 05.04.2024 | 41–50 | Groin | Bristol | 1-y history of tinea cruris now involving axilla, no response to topical terbinafine, partial response to itraconazole | Yes | India | — | — | Phenotypic |
| 102 | 05.04.2024 | 11–20 | Foot | London | NA | Yes | | — | — | Phenotypic |
| 103 | 09.04.2024 | 31–40 | Wrist | London | Scaly patch on wrist | No | | 0.125 | 0.06 | Phenotypic |
| 104 | 11.04.2024 | 21–30 | Unknown skin | Newcastle | Widespread rash for 2.5 y, not responding to multiple topical treatments including terbinafine | Yes | India | **1.0** | <0.03 | Phenotypic |
| 105 | 12.04.2024 | 11–20 | Trunk | Bristol | Spreading rash for 5 mo, no response to 14 d of terbinafine | Yes | | — | — | Phenotypic |
| 106 | 12.04.2024 | 61–70 | Unknown skin | Southampton | Rash, all family members affected | Yes | | — | — | Phenotypic |
| 107 | 13.04.2024 | 31–40 | Thigh | London | Tinea incognito involving gluteus, thighs, and upper arm | Yes | | **0.5** | 0.06 | Phenotypic |
| 108 | 16.04.2024 | 21–30 | Thigh | London | NA | Yes | | **2.0** | <0.03 | Phenotypic |
| 109 | 17.04.2024 | 31–40 | Unknown skin | London | NA | Yes | | — | — | Phenotypic |
| 110 | 19.04.2024 | 31–40 | Toenail | London | NA | Yes | | — | — | Phenotypic |
| 111 | 19.04.2024 | 21–30 | Groin | London | Tinea cruris | Yes | | — | — | Phenotypic |
| 112 | 23.04.2024 | 31–40 | Thigh skin | Birmingham | Thigh lesions, terbinafine-resistant treatment failure | Yes | | **0.5** | 0.125 | Phenotypic |
| 113 | 24.04.2024 | 41–50 | Thigh | Glasgow | NA | Yes | | 0.25 | 0.25 | Phenotypic |
| 114 | 25.04.2024 | 41–50 | Unknown skin | Newcastle | Multiple annular rashes | Yes | Bangladesh | **0.5** | 0.125 | Phenotypic |
| 115 | 27.04.2024 | 21–30 | Thigh | London | Recurrent inner thigh infection | Yes | | — | — | Phenotypic |
| 116 | 02.05.2024 | 21–30 | Skin back | London | Fungal infection involving buttocks and back, resistant to terbinafine | Yes | | **1.0** | 1.0 | Phenotypic |
| 117 | 14.05.2024 | 21–30 | Unknown skin | Edinburgh | Resistant fungal infection | Yes | | **1.0** | 0.25 | Phenotypic |
| 118 | 15.05.2024 | 51–60 | Unknown skin | London | Rash | Yes | | **1.0** | 0.25 | Phenotypic |
| 119 | 17.05.2024 | 41–50 | Unknown skin | London | Rash | Yes | | **4.0** | 1.0 | Phenotypic |
| 120 | 20.05.2024 | 21–30 | Forehead | Cornwall | Itchy rash, ringworm/kerion | No | | — | — | Phenotypic |

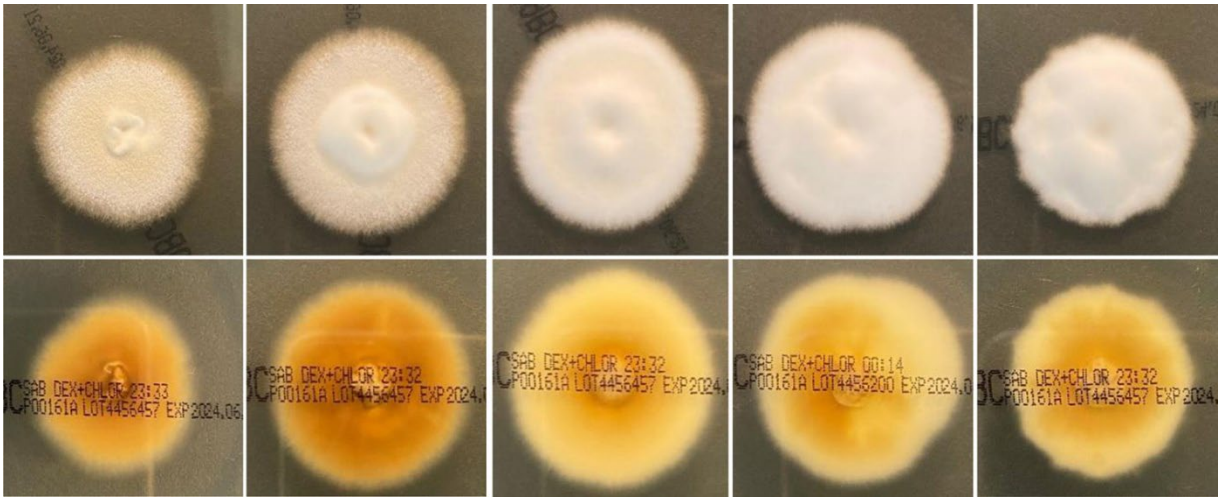
| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| 121 | 20.05.2024 | 21–30 | Unknown skin | London | Extensive tinea, now on fluconazole as resistance concerns | Yes | | **2** | 0.125 | Phenotypic |
| 122 | 20.05.2024 | 21–30 | Unknown skin | London | Fungal rash on body | Yes | | **4.0** | 0.25 | Phenotypic |
| 123 | 22.05.2024 | 51–60 | Groin, wrist | Somerset | Skin rash | Yes | India | — | — | Phenotypic |
| 124 | 23.05.2024 | 31–40 | Unknown | Cardiff | 3-y tinea corporis | Yes | | **2.0** | 0.5 | Phenotypic |
| 125 | 24.05.2024 | 41–50 | Groin | London | NA | Yes | | **4.0** | 0.125 | Phenotypic |
| 126 | 28.05.2024 | 11–20 | Buttock | London | Tinea corporis affecting buttocks | Yes | Bangladesh | **4.0** | 0.25 | Phenotypic |
| 127 | 08.06.2024 | 61–70 | Unknown skin | London | Tinea corporis | Yes | | **2.0** | 0.5 | Phenotypic |
| 128 | 10.06.2024 | 71–80 | Unknown tissue | Ireland | None given | No | | — | — | Phenotypic |
| 129 | 13.06.2024 | 31–40 | Unknown skin | Cardiff | Tinea corporis lower legs buttocks, no response to 4 wk of oral and topical terbinafine | Yes | | **2.0** | <0.03 | Phenotypic |
| 130 | 20.06.2024 | 21–30 | Leg/neck | Middlesborough | Skin infection, treatment failure | Yes | | **2.0** | 0.25 | Phenotypic |
| 131 | 24.06.2024 | 31–40 | Legs, buttocks | Leeds | Tinea lesions | Yes | | <0.03 | <0.03 | Phenotypic |
| 132 | 26.06.2024 | 21–30 | Unknown skin | London | Scaly lesions, not responding to topical treatments | Yes | | <0.03 | 0.25 | Phenotypic |
| 133 | 27.06.2024 | 31–40 | Unknown skin | London | NA | Yes | | 0.06 | 0.25 | Phenotypic |
| 134 | 27.06.2024 | 41–50 | Skin | Leeds | Annular scaly rash buttocks, back groin and abdomen | Yes | | **1.0** | 0.06 | Phenotypic |
| 135 | 28.06.2024 | 51–60 | Unknown | Coventry | NA | Yes | | **1.0** | 0.125 | Phenotypic |
| 136 | 01.07.2024 | 31–40 | Unknown | Coventry | NA | Yes | | — | — | Phenotypic |
| 137 | 01.07.2024 | 41–50 | Unknown | London | 9-mo history of dermatophyte infection | Yes | | **0.5** | 1.0 | Phenotypic |
| 138 | 08.07.2024 | 51–60 | Foot | Milton Keynes | Diabetic surgical wound | Yes | | — | — | Phenotypic |
| 139 | 08.07.2024 | 11–20 | Breast | Leeds | 8-mo intermittent scaly rash left breast, had used steroid antifungal cream | Yes | India | 0.125 | 0.25 | Phenotypic |
| 140 | 10.07.2024 | 21–30 | Unknown skin | London | 5-mo history of rash post travel | Yes | Bangladesh | **4.0** | 0.5 | Phenotypic |
| 141 | 11.07.2024 | 31–40 | Unknown | London | Persistent fungal rash | Yes | | **2.0** | 0.125 | Phenotypic |
| 142 | 15.07.2024 | 41–50 | Nail | Bournemouth | Post chemotherapy | No | | 0.125 | — | Phenotypic |
| 143 | 16.07.2024 | 21–30 | Leg | Leeds | NA | Yes | | <0.03 | <0.03 | Phenotypic |
| 144 | 16.07.2024 | 31–40 | Unknown skin | Cardiff | NA | Yes | | **1.0** | 0.25 | Phenotypic |
| 145 | 17.07.2024 | 61–70 | Buttock | Warwick | NA | Yes | | **2.0** | 0.125 | Phenotypic |
| 146 | 18.07.2024 | 31–40 | Buttocks/ face | Cardiff | Tinea corporis for 6 mo, not cleared after 2 × 1 mo oral terbinafine | Yes | | **2.0** | 0.25 | Phenotypic |
| 147 | 19.07.2024 | 31–40 | Chin | Warwick | Fungal rash | No | | — | — | Phenotypic |

| Isolate no. | Sample date | Age, y | Sample site | Location | Clinical history | Link to endemic area† | Recent travel | TERB MIC, mg/L | ITR MIC, mg/L | Identification method |
|---|---|---|---|---|---|---|---|---|---|---|
| 148 | 25.07.2024 | 61–70 | Groin/abdomen | Leeds | Tinea | Yes | | <0.03 | 0.06 | Phenotypic |
| 149 | 25.07.2024 | 31–40 | Groin swab | London | Tinea cruris with scaly rash | Yes | | 0.125 | 0.125 | Phenotypic |
| 150 | 27.07.2024 | 51–60 | Groin | London | No improvement with fluconazole, terbinafine, miconazole | Yes | Pakistan | **1.0** | 0.5 | Phenotypic |
| 151 | 30.07.2024 | 31–40 | Unknown skin | London | Tinea corporis, not responding to terbinafine | No | | **4.0** | 2.0 | Phenotypic |
| 152 | 30.07.2024 | 21–30 | Buttock | Leeds | 9 mo of itraconazole and steroids | Yes | Pakistan | **1.0** | 0.25 | Phenotypic |
| 153 | 31.07.2024 | 21–30 | Unknown skin | London | Terbinafine unresponsive | Yes | | **2.0** | 0.25 | Phenotypic |
| 154 | 02.08.2024 | 31–40 | Back | Glasgow | No improvement on oral terbinafine | Yes | Bangladesh | **2.0** | 0.5 | Phenotypic |
| 155 | 14.08.2024 | 51–60 | Thigh | Glasgow | 5-mo rash not responding to topical antifungals or oral fluconazole | Yes | | **2.0** | 0.5 | Phenotypic |
| 156 | 16.08.2024 | 31–40 | Unknown skin | Cardiff | Fungal rash | Yes | | 0.06 | 0.25 | Phenotypic |
| 157 | 04.09.2024 | 31–40 | Groin | Bristol | Tinea cruris failed to respond to 2 mo of terbinafine, spreading to legs | No | Iran | — | — | Phenotypic |
| Additional likely isolates | | | | | | | | | | |
| 1 | 07.08.2017 | 31–40 | Groin | London | Tinea cruris | Unknown | | **16.0** | <0.03 | Provisional identification |
| 2 | 31.12.2018 | 51–60 | Legs | London | Deep infiltrative nodules on legs | Yes | | **4.0** | 0.125 | Provisional identification |
| 3 | 27.02.2019 | 51–60 | Back | London | Tinea corporis of back, no response to terbinafine | Yes | | **>16.0** | 1.0 | Provisional identification |
| 4 | 27.02.2019 | 61–70 | Arm | London | Tinea corporis of arm | No | | **8.0** | 0.5 | Provisional identification |
| 5 | 27.03.2019 | 21–30 | Thigh | London | Recurrent tinea cruris | Yes | | **2.0** | 0.5 | Provisional identification |
| 6 | 16.12.2019 | 11–20 | Unknown skin | Oxford | 18-mo history of treatment-resistant tinea corporis | Unknown | | **1.0** | 0.5 | Provisional identification |
| 7 | 15.01.2020 | 11–20 | Abdomen | Norwich | Extensive tinea corporis | Yes | | **2.0** | 0.5 | Provisional identification |
| 8 | 17.01.2020 | 51–60 | Unknown skin | Sheffield | Chronic tinea | No | | **4.0** | 0.5 | Provisional identification |
| 9 | 21.02.2020 | 61–70 | Groin | London | Groin fungal infection | Yes | | **2.0** | 0.25 | Provisional identification |
| 10 | 12.08.2020 | 61–70 | Unknown skin | London | Deep infiltrative nodules on legs | Yes | | **2.0** | 0.125 | Provisional identification |

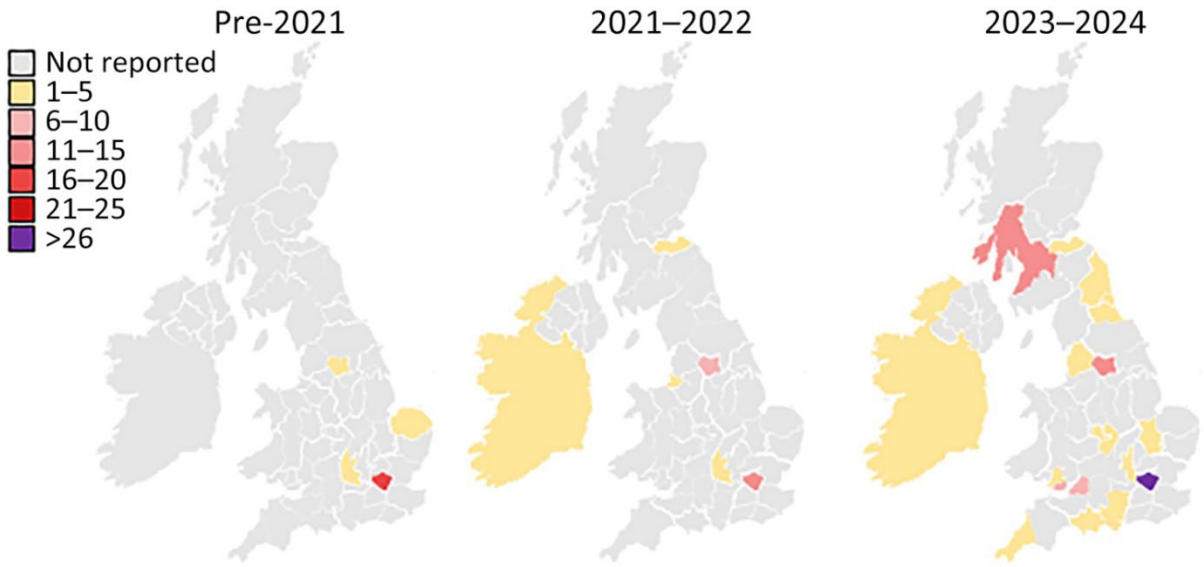
*Bold MIC values for terbinafine are equal to or higher than the suggested clinical break point (0.5 mg/L). ITR, itraconazole; ITS, internal transcribed spacer; NA, not available; TERB, terbinafine; WGS, whole-genome sequencing; —, not tested.
†Link to endemic area was defined as South Asian ethnic background (Appendix).
‡Isolates 22 and 61 were collected from the same patient 2 years apart.



**Appendix Figure 1.** Microscopic feature of *Trichophyton indotineae* macroconidia, United Kingdom, 2017–2024. Sellotape preparation stained with lactofucshin (original magnification, ×400).




**Appendix Figure 2.** Macroscopic characteristics of 5 clinical isolates of *Trichophyton indotineae*, United Kingdom, 2017–2024. Top row, surface; bottom row, reverse of the same colony after a 14-day incubation at 28°C–30°C.




**Appendix Figure 3.** Geographic distribution and numbers of cases of *T. indotineae* across the United Kingdom at various time points between 2017 and mid-2024. Data for the 157 proven and 10 additional likely cases included here are provided in the Appendix Table.