The Leeds Teaching Hospitals NHS
NHS Trust

Mycology Reference Centre, Leeds
Information for Service Users 2026-27

Contents

The Mycology Reference Centre
The Mycology Reference Centre is situated in the Centre for Laboratory Medicine within the Leeds Teaching Hospitals NHS Trust (LTHT) Department of Microbiology.

Accreditation
The MRC service is accredited by UKAS for ISO 15189:2022 as part of pathology (Medical Laboratories – UKAS ref 9862). There are a few tests which are out of scope of this accreditation which are indicated below.

Contact Details
Mycology Reference Centre
Centre for Laboratory Medicine
St James University Hospital
Beckett St
Leeds, LS9 7TF
Tel: 0113 2069405
www.pathology.leedsth.nhs.uk/Mycology
Hayes DX address: DX 6281504, Exchange LEEDS 90 LS.

Clinical and Laboratory Staff Contact Details
Principal Clinical Scientist: Richard Barton, Tel 0113 2069452 or email Richard.Barton2@nhs.net
Clinical Scientist: Claire Berry
Tel 0113 2069437
Claire.Berry2@nhs.net
Advanced Biomedical Scientist: Andrew Walukiewicz Tel: 0113 2069405 or email andrew.walukiewicz@nhs.net

Opening Hours
The laboratory is open from 09:00-17:00 Monday to Friday. It may be possible to organise specific testing outside these times after discussion with senior staff.

Clinical / Laboratory Advice and Report Interpretation

Advice is available from the staff members listed. Staff may also be able to advise on mycological issues that do not relate to samples submitted to the Mycology Reference Centre.

Request Forms

Request forms should be filled in for every specimen sent to the laboratory. They should contain as much information as possible, as this may aid interpretation of test results. The minimum information required is: patient name, hospital number, date of birth, the place from which the specimen is being sent e.g., hospital, GP surgery, ward, specimen type, site of isolation (for cultures) and the tests requested. Request Forms may be downloaded from the website or obtained by email from andrew.walukiewicz@nhs.net

Specimen Transportation

Specimens should be sent by established transport networks. Specimens from within the Leeds Teaching Hospitals NHS Trust should be sent either via the air tube system or specimen shuttles from other sites. Specimens should be sent via the postal system or Hayes DX and be appropriately packaged according to UN3373 regulation. Specimens (tube or packet) must be clearly labelled with the patient's name, and where appropriate a referring laboratory number.

Telephone Reporting of Results

The results of the following investigations will be phoned by the laboratory staff routinely:

i) Requests marked "Urgent"

ii) Positive *Aspergillus* antigen result and any new or rising cryptococcal antigen titre

iii) Antifungal resistance in clinically significant isolates

iv) Azole assay results that are potentially toxic.

v) Beta D glucan results where this is not done electronically (see below)

Electronic Reporting

Emailed reports can often been arranged if the sender can supply one or more email addresses. Please contact Richard.Barton2@nhs.net to request. We also encourage use of NPEX for serology test results, again contact Richard Barton to discuss.

Microscopy and Culture Fungal & Clinical Specimens

Use(s): Isolation and identification of relevant fungi from skin, hair and nail specimens; oral and vaginal swabs; urine; peritoneal dialysis fluid; CSF; sputum; broncho-alveolar lavage fluid and other sites. For sample types other than skin, nail and hair, we advise referring laboratories to process the primary sample and then send resultant fungal cultures for identification or further testing (See below).

Description: Microscopy for yeasts, mycelium, arthrocondia and other fungal elements; culture of any viable fungi present and identification of any clinically significant species. Antifungal susceptibility testing is undertaken where appropriate or requested (see below)

Specimens: Skin, nail and hair should be sent in Dermapaks or similar card packs designed for the purpose. Wet specimens are best processed locally.

Results: Microscopy is reported as "No fungus seen" or positive with a description of the fungal cells seen.

Culture is reported as the identity of any significant fungi isolated, estimation of amount of fungal growth (+, ++, +++) where relevant.

Limitations: Negative fungal culture does not exclude a diagnosis of fungal infection but reduces its likelihood. Depending on the fungus isolated, positive results may indicate contamination. Clinical correlation of results is required.

95% Turnaround Time: Microscopy: 7 days; Culture: 24 days (Positive cultures may take longer to report than negatives).

Identification and Antifungal Susceptibility Testing Yeast Identification and Sensitivity

Use(s): Identification of yeasts and assessment of susceptibility to antifungals

Description: Identification, usually to species level using MALDI-TOF. Molecular identification is carried out for those isolates which cannot be identified using phenotypic tests.

Susceptibility testing by CLSI M44A disc diffusion (fluconazole) or microbroth dilution (fluconazole, itraconazole, voriconazole, posaconazole, amphotericin B, flucytosine, caspofungin, anidulafungin and micafungin). Specific antifungal(s) tested depend on the identity and source of the isolate and the clinical details supplied. Microbroth dilution testing is undertaken where indicated by isolate identity, disc diffusion results, or where requested specifically. The identity of the yeast isolate is always confirmed or carried out on isolates sent for sensitivity testing.

Specimens: Culture of yeast, ideally on a Sabouraud's agar slope in a bijou or universal.
Results: Susceptible; Intermediate/Susceptible-dose dependent; Resistant/Non-susceptible (where breakpoints have been established). If microbroth dilution testing is carried out, a Minimum Inhibitory Concentration (MIC) can be reported on request.
Limitations: In vitro susceptibility to an antifungal agent does not guarantee clinical success with that agent, but makes clinical success more likely.
95% Turnaround Time: 10 days

Mould Identification

Use(s): Identification of moulds
Description: Identification, usually to species level on the basis of macroscopic and microscopic morphology. Molecular identification is carried out for those isolates which cannot be identified using phenotypic tests.
Specimens: Culture of mould, ideally on a Sabouraud's agar slope in a bijou or universal.
Results: Identity of the mould.
Limitations: If insufficient phenotypic and/or genotypic information is available for species identification moulds may be identified to genus level only.
95% Turnaround Time: 14 days

Identification of Environmental Fungi

Identification of yeasts and moulds from environmental sources can be carried out after discussing your requirement with the laboratory. Please contact Dr Richard Barton to discuss.
Note: Culture of environmental specimens is carried out by prior arrangement and on medical or environmental health referral only. Costs are dependent on the extent and complexity of the investigations.

Aspergillus fumigatus, Avian and Farmer's Lung Antibodies

All the above antibody tests are processed and reported by Immunology (0113 2069460). Please contact the MRC if further information or clinical advice is required.
Note: For antibody tests, please send serum or clotted blood in a plain tube; EDTA blood is not suitable.

Histoplasma, Coccidioides, Paracoccidioides and Blastomyces Antibodies

These tests are currently not performed at the MRC. Specimens received from within Leeds Teaching Hospitals trust are referred to UKHSA Mycology Reference Laboratory, Bristol for testing. Please contact the laboratory if further information or advice is required.

External users should send specimens and requests directly to Bristol.

Antigen Testing

Note: For the following tests, please send serum or clotted blood in a plain tube; EDTA blood is not suitable.

Aspergillus Antigen (Galactomannan)

Use(s): Diagnosis of invasive aspergillosis usually in immunocompromised patients.
Description: Determination of the presence of *Aspergillus* galactomannan in serum or BAL by ELISA.
Specimens: Serum or BAL 700 µl minimum or 5 mL clotted blood. NB: For BAL samples, the referring laboratory must confirm that the sample has been tested and is negative for acid & alcohol-fast bacilli.
Results: Negative; Positive with the index value (indicating the relative concentration of galactomannan)
Limitations: A negative *Aspergillus* antigen result does not exclude a diagnosis of aspergillosis. False positive results have been associated with some batches of beta-lactam antibiotics (e.g., piperacillin-tazobactam) and with testing babies in the neonatal period. Cross-reactive positive results may occur in patients with fungal infections other than aspergillosis (*e.g.,* histoplasmosis). There is no universal agreement about appropriate cut off levels for BAL samples, though the MRC applies a cut-off of >1.0 to attribute significance.
95% Turnaround Time: 3 days
Note: Positive results are confirmed before reporting by re-testing the specimen submitted. To improve specificity positives should be confirmed by submission of a second specimen.

Cryptococcal Antigen (CRAG)

Use(s): Diagnosis of cryptococcal meningitis, systemic cryptococcosis in both immunocompetent and immunocompromised patients.
Description: Determination of the presence of cryptococcal antigen and (if requested specifically) antigen titre titre, by lateral flow immunochromatography.
Specimen: Serum or CSF, 300 µl minimum or 3 mL clotted blood.
Results: Negative, Positive (No titration required), Positive (Titration to follow), Positive (Titre).

Limitations: The lateral flow test has been found to be as diagnostically accurate as other CRAG test types and is therefore highly sensitive and specific. However, accurate data on test sensitivity and specificity are currently limited.
95% Turnaround Time 1 day

Beta-D-Glucan Testing

Use(s): Diagnosis of fungal infection, exclusion of fungal infection (if negative).
Description: Determination of the presence of 1-3 β - D- glucan (fungal cell wall antigen) in serum by kinetic enzyme assay.
Specimens: Serum only 200ul or 3ml clotted blood.
Results: <31 to 59 pg/L Negative, 60-80 pg/L Indeterminate, >80pg/L Positive.
Limitations: Positives may be due to contaminating substances such as surgical gauze, IV Immunoglobulins or translocation across the gut lumen. Positives may represent several different fungal disases including Candidosis, Aspergillosis and Pneumocystis and further testing is usually indicated. Samples from patient s with Cryptococcosis and Mucoromycosis are not positive for BDG.
95% Turnaround Time 3 days

Antifungal Drug Assays

Antifungal agents are assayed by liquid chromatography-tandem mass spectroscopy (LC-MS-MS). The results are highly specific and are not influenced by the use of antifungal combination therapy.
Itraconazole, Posaconazole, Voriconazole
Use(s): Confirmation of adequate levels and alerting to toxic levels in patients receiving antifungal azoles for treatment or prophylaxis of fungal disease.
Specimens: Predose serum 250µl minimum or 3 mL clotted blood
Results: Predose drug concentration in mg/L, with advice on target levels.
95% Turnaround Time: Itraconazole 8 days, voriconazole 8 days, posaconazole 8 days.
Limitations: Adequate antifungal drug levels do not guarantee response to treatment with the antifungal agent in question, but are considered to increase the likelihood of clinical response. High levels may be associated with toxicity.
Note: The assay is currently carried out twice weekly on Monday and Thursday, although specimens need to be received the preceding day for processing. Specimens are very stable and samples can be sent at any time for the next assay run.

External Quality Assurance

The Mycology Reference Centre participates in the following EQA schemes: UKNEQAS Fungal Identification; UKNEQAS Antifungal Susceptibility; UKNEQAS scheme for anti-fungal drug assay, UKNEQAS scheme for fungal biomarkers (galactomannan). UKNEQAS Cryptococcal antigen detection.

Index code	**MIC-QM-POL-21**
Title	**Mycology Reference Centre: Information for Service Users**
Area of application	**Mycology Reference Centre: all users**
Issue No.	**7.0 (replaced Issue No 6.0)**
Author	**Dr R Barton**
Date of issue	**14/04/2026**