Lancashire Teaching Hospitals
NHS Foundation Trust

# MICROBIOLOGY USER GUIDE
# Directorate of Pathology

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| **TITLE** | | **Microbiology User Guide** | |
| **FILE NAME** | | **REFMI- 234 Pathology User Guide 24_1.doc** | |
| **VERSION** | **24.1** | **IQM Reference** | |
| **REPLACES VERSION** | | New | |
| **DATE OF ISSUE** | | **13/11/24** | |
| **Internet version** | | | |

## November 2024

Find us: ROYAL PRESTON HOSPITAL
Department of Pathology, Royal Preston Hospital, Sharoe Green Lane, Fulwood, Preston PR2 9HT
Tel: 01772 – 522607

**FROM THE MAIN ENTRANCE**
Go past the Main Outpatients Reception Desk down the long corridor. Turn right at the second crossroad. Pathology is clearly signposted ¾ way down this corridor on the right.

## Introduction

Pathology Services are offered at laboratory sites on Royal Preston Hospital and Chorley & South Ribble Hospital and are part of the Lancashire Teaching Hospitals NHS Foundation Trust. www.lancsteachinghospitals.nhs.uk

The laboratories provide a range of analytical and advisory services for The Trust, both inpatients & outpatients, General Practitioners and offer diagnostic services to a range of other health care providers. As would be expected of a large hospital, the service is backed up with training and research designed at improving patient care.

Apart from Point of Care Testing & Andrology, all departments in the laboratory are accredited by UKAS to standard ISO 15189: 2012. Users may use the links provided on the individual department sections of this guide to access the accredited test schedules on the UKAS website.
Any subsequent changes will be communicated via the GP Share Point or updates to this User guide.
The UKAS logo is not used on reports but will appear on letters & communications as appropriate.

Turnaround times, which are set by The Royal College of Pathologists or according to clinical requirements, are monitored and reviewed regularly at departmental quality meetings. There is regular clinical audit, and the Pathology Laboratory is proactive in continual improvement.

**The Microbiology department at Lancashire Teaching Hospitals** provides testing in:

- Virology and Serology including services in support of the IDPS (Infectious diseases in pregnancy screening)
- Bacteriology
- Molecular Testing
- Outpatient Parenteral Antimicrobial Therapy (OPAT)
- Andrology (Infertility and Post -Vasectomy Investigations)

## LABORATORY HOURS

Routine specimens are accepted between 8.30 a.m. and 5.00 p.m. on Monday to Friday, 8.30 a.m. to 12.00 p.m. on Saturdays. On Sunday urgent in-patient specimens will be accepted until 12.00 p.m. Outside normal laboratory hours, urgent in-patient specimens will be handled by the Biomedical Scientist (BMS) on call, who must be contacted directly via the hospital switchboard on telephone 01772-716565.

PLEASE DO NOT LEAVE AN ANSWERPHONE MESSAGE FOR THE ON-CALL MICROBIOLOGY BMS, we cannot guarantee these will be responded to in a timely manner.

On-call Consultant advice is available 24 hours a day via the Royal Preston Hospital switchboard.

## USEFUL TELEPHONE NUMBERS

| | |
|---|---|
| Preston Pathology Reception | 01772 522 607 |
| **GP - Results Enquiry Line** | 01772 523 200 |
| Royal Preston Hospital Switchboard | 01772 716 565 |

## TEST RESULTS ACCESS

**The directorate will only issue out results to healthcare staff who are involved in the care of the patient.** Patients and/or relatives of patients are requested to contact their GP or consultant to get information, updates and results

GPs can view Microbiology results for patients registered at their surgery via their clinical system or the Sunquest ICE system. For access to ICE, please contact the Pathology IT department pathologyit@lthtr.nhs.uk

Identified critical results will be phoned to GP locations during routine hours and out of hours results will be passed onto to out of hours primary care service for review and action.
It is the responsibility of the requesting consultant/GP in charge of the patient to review, acknowledge and take appropriate action following issue of results.
Analytical methodology is stated within the UKAS schedule for the department and a link is embedded in the relevant section of this guide.

## SPECIMEN COLLECTION AND TRANSPORT

All users are expected to transport samples and requests to the laboratory as soon as possible. Timely transportation to keep the time between collection and receipt in the laboratory will prevent deterioration of sample integrity and provide reliable results.

### From General Practitioners

Transport is provided for all General Practitioners served by the laboratory for the collection of specimens and delivery of reports

When the laboratory is closed, specimens can be delivered to the specimen hatch situated at the front door of the RPH laboratory on Main Street corridor and the bell(siren) operated. The bell should be pressed briefly to alert staff. Transport boxes from other sites may be delivered to switchboard out of hours. These will be collected by a porter & delivered to the Pathology Reception desk.

### Public Holidays

Information regarding arrangements is provided by Pathology prior to each holiday period.

## REQUESTING PATHOLOGY WORK

### Within the hospital

Whenever possible, requests for Pathology tests should be made electronically. In the event of Harris Flex downtime **only**, white downtime forms can be used. The sample collector, date and time of collection is recorded electronically when Harris Flex is used and must be provided on the request form during downtime.

### General Practitioners

For General Practitioners, the ICE electronic requesting system should be used wherever possible. The sample collector & date/time of collection MUST be supplied on ICE forms. If not available, there is a single request form for all routine Clinical Biochemistry, Haematology, Immunology, Histology and Microbiology Services
There are minimum data sets required for all specimen submissions and relevant clinical details should be added to ensure appropriate test selection. 3 patient identifiers are required on the request form, 2 of which must be present on the specimen label. Failure to fill in the form correctly may result in delays and may result in the specimen not being processed.

a. Patient's full name
b. Date of birth
c. NHS number (Where available)
d. Date & time of collection
e. Patient's Consultant/G.P. code
f. Test requirements
g. Relevant Clinical Details
h. Valid signature

i. Location

For the supply of request forms please complete the appropriate order form and send to Pathology Specimen Reception at Preston.

**All specimens should be placed in a sealed bag prior to transporting to the laboratory.**

**High Risk Specimens**
The sender **MUST** ensure that clinical details supplied on specimen and request forms contain clear information regarding the nature of test being requested. Sufficient detail should be included to inform laboratory staff upon the safety precautions they need to take in order to process the specimen without risk of infection.
**Medical staff should ensure that appropriate information, including relevant travel history, is provided in order to alert laboratory staff of potential dangers.**

**Specimen Volume**
It is important to ensure that, wherever possible, sufficient specimen is supplied for all of the tests requested.
General advice for blood tubes is to collect the volume indicated on the Sarstedt Monovette tube.
If insufficient volume is present for all tests requested to be performed, the laboratory will usually determine which shall be reported.
For advice, please contact the laboratory.

**Specimen Rejection**
Failure to comply with the requirements above may result in the request not being processed.
When a request is rejected prior to analysis, in the case of labeling errors or minimum data set failure, either an electronic report is issued to the requester as soon as is practically possible or the requesting location will be contacted verbally where feasible. When the specimen is precious or unrepeatable the responsible department will make every effort to contact the requesting physician to determine whether the specimen may be safely analysed. Other rejected requests will be reported via the Pathology reporting processes.
For more information, please refer to the Pathology Specimen Rejection policy available on the intranet.

# Microbiology Department

| Enquiries | 01772 522 105 |
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UKAS MEDICAL

8545

## GENERAL INFORMATION

Bacteriology and Virology services are provided by the Microbiology Department in the Pathology Laboratory at Royal Preston Hospital.

**The Department is UKAS accredited to ISO 15189:2012 Medical Laboratory No. 8545**, the schedule of accreditation & analytical methodology can be found using the link: Microbiology Schedule of Accreditation

All specimens should be delivered to the Pathology Reception.
Requests for examinations on hospital patients should be made electronically on FLEX and for GP patients via ICE

The following general notes cover routine use of the Microbiology Laboratory but are not intended to be exhaustive. Advice is readily available from the Consultant Medical Microbiologists at Preston Microbiology

Consultation is always welcome and is essential in the investigation of cross-infection, in the assessment of possible hazards from patients admitted with infectious diseases, management of immuno-suppressed patients and those unresponsive to antimicrobial therapy.

The Trust Antibiotic Guidance can be accessed by using the Microbiology Smartphone based App, 'Tap on the Bugs', available for both Android and i-Phone platforms. It can also be found on the Trust intranet and is available in booklet form for community prescribers distributed by the local CCG.

**Transmission of results**
Telephone reports of the following will be made on the day of isolation or the following working day to the requesting clinician or location:

- ALL positive CSF, blood cultures and CAPD specimens
- Group A streptococci (in-patients)
- Salmonella species (in-patients)
- Shigella species (in-patients)
- Campylobacter species (in-patients)
- E.coli O157
- Cryptosporidium species (in-patients)
- Corynebacterium diphtheriae
- Giardia lamblia (in-patients)
- Clostridium difficile Toxin POSITIVE

Other telephone reports will be made at the discretion of the Consultant Microbiologist.

## URGENT AND EMERGENCY INVESTIGATIONS

**During normal laboratory hours**
Please inform the department directly on Bacteriology Ext 3116; Virology Ext 2117 and arrange for the specimen to be delivered immediately to the laboratory.

## OUT OF HOURS SERVICE

The on-call microbiology BMS is only authorised to examine and culture:

- CSF by Lumbar Puncture, **only,** in suspected meningitis –Not EVD or shunts
- Tissue or pus (including sterile fluids) collected at operation
- Paediatric urines - **infants <3 months old**
- Corneal scrapes/eye kits- The on-call BMS **MUST** be called when these are collected out of hours
- CAPD **Up to 21.00** - cloudy dialysate bags **only** – Sterile tube collection method.

To activate this service, you must contact the on-call Microbiology BMS via the Royal Preston Hospital switchboard on 01772 716565.

PLEASE DO NOT LEAVE AN ANSWERPHONE MESSAGE FOR THE ON-CALL MICROBIOLOGY BMS, we cannot guarantee these will be responded to in a timely manner.

Requests for **Emergency and Urgent** examination of any other specimen types must be discussed with the on-call **Consultant Microbiologist** prior to activation of the service.

Other specimens can be collected out of hours and held in a specimen refrigerator until the laboratory opens, with the exception of blood cultures and QuantiFERON tests. Blood Cultures should be sent directly to Pathology to allow timely loading onto the analyser - there is no need to alert the on-call BMS in this instance. Empirical antibiotic therapy can then be started if required, pending receipt of the laboratory results.
Specimens of pus or infected tissue collected at operation are best cultured **as soon as possible** after collection. If the specimen misses the last collection round, please contact the duty BMS on-call for Microbiology, and arrange transport via a porter.

The on-call BMS service is operated from home on a call out basis; it is not a results line. There is no access to results from outside the hospital.

**Clinical Support Services**
A Consultant Microbiologist is available for advice relating to matters of microbiological analysis, patient management, suspected outbreak of infection and infection control. Within normal laboratory hours callers from within the Trust seeking medical advice from the clinical team can use the electronic notification system – Microbiology Oncall Logging E-System (MOLES) available on the intranet:

*Intranet homepage->Department directory->P->Pathology->Antibiotic guidelines->MOLES button*.

Urgent calls and callers from outside the Trust should contact the laboratory on 01772 522104.

Outside normal hours of service, they may be contacted for urgent in-patient advice via the switchboard on 01772 716565.

The Infection Control Nurses (ICN) provide advice on infection control. Contact the Infection Control Office or Bleep the ICNs through switchboard. An 'on call' advisory service is available Mon – Friday 5pm - 8am and at weekends through switchboard.

## SPECIMEN COLLECTION – BACTERIOLOGY AND VIROLOGY

**Which specimen?**
Brief guidelines on how and when to collect specimens are set out for each specimen type below. More detailed advice is available during normal working hours from the microbiology department.

**Good specimens for good results**
The quality of results depends as much on the quality of the specimen as the accuracy and precision of the laboratory work. A poorly collected specimen can lead to the wrong bacteriological diagnosis and the choice of the wrong antibiotic. A well collected specimen can be ruined by leaving it standing around in a warm environment.

The most accessible sites for sampling are unfortunately the sites that have a rich and varied normal bacterial flora (e.g. skin, sputum (which usually contains bacteria from the mouth) and the early part of the urine stream which may be heavily contaminated with skin bacteria). Where possible **tissue** is the most valuable specimen, **pus** is the next most useful specimen – “swabbing” the pus is a poor substitute. Gram stain is not available if a swab is supplied.

**Clinical information**
Good quality clinical information on the electronic request form is vital. Correct processing and interpretation of results depends on the information supplied. Clinical details including date of onset of symptoms, any foreign travel & the location, pregnancy & recent surgery are all **essential** where relevant.

Antibiotics prescribed should always be stated. This ensures that organisms isolated will be tested against those prescribed.
The date and time of collection must be stated on all specimens.

## ADDING FURTHER TESTS ON TO AN EXISTING REQUEST

Occasionally the laboratory will be asked to add further tests onto samples already received. Consideration should be made to the stability of microbiological samples and the viability of target organisms.

Time limits for requesting additional serology examinations: Routine blood samples - 12 months; HIV /Hep C/Hep B PCR - 3mths; CSFs - 12months.

Bacteriology do not routinely accept additional tests unless requested by a member of the microbiology medical team and reported with an appropriate comment to acknowledge potential limitation to this testing.

Any verbal requests for additional serology tests must include:

- Specimen located on the LIMS using 3 patient identifiers (2 for GUM patients).
- Staff member repeats identifiers back to the requester to confirm correct patient selected.
- Additional tests added to LIMS.
- Name of requester and their location added to LIMS.

If you have an queries relating to additional testing please contact the microbiology laboratory.

## LABELLING AND TRANSPORT OF SPECIMENS

All samples submitted to Microbiology should be sent to the laboratory as soon as possible to prevent degradation. The laboratory should be alerted to the submission of urgent samples either via a telephone call or contacting the on-call Biomedical Scientist out of hours (see page 6 of this guide). Microbiology samples should be refrigerated if there is a delay in transport with the exception of blood cultures and QuantiFERON bloods.

### Safety

The users of laboratory services have obligations in law to collect and transport specimens safely and to dispose of clinical waste, including “sharps” in a responsible manner. It is important that care is taken when collecting and handling laboratory specimens to ensure that the risk of infection to staff is kept to an absolute minimum.

Dispose of potentially infectious materials used in specimen collection safely, especially needles and other sharps. If you have used a needle or other sharps you are responsible for disposing or retaining it (e.g. trochar) in a manner which will not present a hazard.

Contamination of the outside of the container with the specimen must be avoided. If it is contaminated please wipe clean with alcohol wipes **after** it has been sealed.

**Please inform the laboratory if you suspect that hazardous pathogens are present by always including appropriate, relevant clinical information including the location of any foreign travel.** Avoid using colloquialisms for infections. E.g. If you suspect Typhoid do not use “enteric fever”

No separate specific handling procedures for known Hepatitis and HIV positive specimens are required. See “High Risk” specimens below.

The enclosure of the container must be correctly and adequately sealed to prevent leakage. Leaking or contaminated containers may have to be destroyed at the discretion of a senior member of the laboratory staff. It is important to use the correct container/swab for the specimen being submitted.

**If the integrity of a sample has been compromised and there is a health risk a DATIX should be completed to ensure correct follow up including preventative actions.**

The specimen container should be labelled appropriately & placed in the polythene bag. Please check that the patient and specimen details on the request form (if present) and specimen are correct.

Specimens must never be carried to the laboratory in the primary container in the open hand, left standing around the ward or department (other than in the collection area) or placed in a refrigerator used for storing food or medicines.

## HIGH RISK SPECIMENS

The sender **MUST** ensure that clinical details supplied on specimen requests / request forms contain clear information regarding the nature of test being requested and sufficient detail to inform laboratory staff upon the safety precautions they need to take in order to process the specimen without risk of infection.

Medical staff should ensure that appropriate information, including relevant travel history is provided in order to alert laboratory staff of potential dangers. In particular, if a patient is known or suspected of having the following infections, this **MUST** be included in the request

- Tuberculosis (TB/AFB/AAFB)
- *E.coli O157*
- Typhoid or paratyphoid

Specimens from patients suspected/confirmed with the following infections **should not** be taken without first seeking the advice of the Medical Microbiology Consultant:

- Viral haemorrhagic fevers including Ebola, Marburg and Lassa and Congo-Crimea fevers
- Rabies
- Anthrax
- Plague
- Transmissible Spongiform Encephalopathies e.g. Creutzfeld-Jacob Disease

High risk specimens MUST NOT be transported via the air tube facility.

If the patient may be infected with a Containment Level 3 pathogen not listed above, please contact the microbiologist for advice.

## PRECAUTIONS FOR HANDLING BIOLOGICAL HAZARDS

Despite the above instructions to users on high-risk specimen labelling, all specimens are considered potentially high risk, and the following minimum precautions must be taken to minimise that risk.

**General Precautions**

1. Store upright in leak proof containers
2. Avoid direct bodily contact with specimen.
3. Wear appropriate protective clothing.
4. Wash all splashes from the body with soap and water following the instructions in the Trust “Hand Hygiene Guidance”. If eyes or mucous membranes are contaminated, irrigate thoroughly with saline solution or water, and seek medical advice.
5. Cover broken skin with waterproof dressing.
6. Mop up large spillage after decontaminating with a suitable disinfectant e.g. Chemgene for 10 minutes following LTHTR document “Spillage of Body Fluid Procedure”.
7. Dispose of all waste into yellow bags for incineration unless other specific disposal procedures exist e.g. glass, sharps, etc.
8. Report all incidents via DATIX.
9. Before performing any maintenance or repair, decontaminate parts which have been in contact with specimens using a suitable disinfectant e.g. Chemgene unless otherwise specified in the instrument decontamination protocol.

# GUIDE TO WHEN AND HOW TO COLLECT SPECIMENS FOR MICROBIOLOGY

## ANTIBIOTIC ASSAYS

Please refer to the Trust Procedure for Prescribing Antimicrobials

Please **ensure** that microbiology request on FLEX is completed with following data i.e.

- Gentamicin dose in mgs
- Time and date of dose given before specimen for assay
- Time and date of specimen for assay collection

The dosage instructions and guidance protocols are managed by the medical microbiologist consultants, and they should be contacted with regards to any guidance requirements.

### Gentamicin

Gentamicin assays are tested by biochemistry and the biochemistry department itself should be contacted regarding urgent specimens and results.

### Vancomycin

Vancomycin assays are tested by biochemistry and the biochemistry department itself should be contacted regarding urgent specimens and results.
**Please note these analyses are performed by the Biochemistry Department for further information.**

### Other antibiotics

Assays for other antibiotics are sometimes indicated. Please discuss with Consultant Microbiologist prior to collection of any specimens.

## BLOOD CULTURE

### When to collect blood for culture

Blood cultures should be collected from patients with suspected endocarditis, meningitis, clinical septicaemia, pneumonia, febrile illnesses associated with infection at inaccessible sites (e.g. osteomyelitis, deep abscesses, epiglottitis, septic arthritis), fever in presence of foreign bodies, investigation of any fever of unknown cause and from the ill, afebrile patient. The value of the test is enhanced if the specimen of blood is collected before starting antibiotic therapy, but this **must not** delay very prompt administration of antibiotics when clinically indicated.

Blood specimens should be regarded as potentially infective and care should be taken to avoid contamination of hands, bed, clothes, or the outside of containers. **Guidance for taking Blood Cultures is available in each ward area.**

Blood culture collection packs are available from pathology reception during normal working hours using the appropriate order form.

NHS England and NHS Improvement recommend the collection of two sets of blood cultures (two aerobic and two anaerobic bottles) from patients with suspected sepsis. These two sets should provide a volume of 8- 10mL per bottle.

Bottle should be transported to the laboratory as soon as possible. For each hour delay to loading on the blood culture analyser there is both a loss of viability of organisms and an incremental delay to obtaining a result. When collecting specimens outside the regular specimen collection times, please **ensure** that the cultures are delivered to the laboratory as soon as possible. (Do not place them in the specimen fridges).

**Do not fill a set of blood culture bottles with blood collected from more than one site**. If these guidelines are not adhered to, interpretation of any growth may not enable discrimination between infection and contamination.

Blood specimens should be regarded as potentially infective and care should be taken to avoid contamination of hands, bed, clothes, or the outside of containers. **Guidance for taking Blood Cultures is available in each ward area.**

Blood culture collection packs are available from pathology reception during normal working hours using the appropriate order form.

NB: LTHTr **Phlebotomists are <u>not</u> trained to collect blood cultures** and must not be asked to do so on the wards or patients asked to attend blood test clinics.

## FAECES

For microbiological diagnosis of enteric infections culture of faecal specimens is required. Specimens of faeces collected on bacteriological swabs (including rectal swabs) are unsuitable.
How to collect a specimen: -

- (Hospital staff) Wearing disposable polythene gloves, take the bedpan containing faeces into the sluice.
- Using the spoon provided with the specimen container, scoop a small quantity of faeces into the container -a specimen the size of a grape is adequate (overfilled containers can be explosive when opened!)
- Screw the lid of the container down firmly. Wash the outside of the container if it is soiled.
- Label the container and put into the sealable polythene bag attached to the request form.
- Remove and discard your gloves, then wash and dry your hands thoroughly.

Hospital staff should complete FLEX electronic request. GPs should complete an ICE request form. It is important that a full clinical history and relevant clinical details, especially any recent foreign travel and the location, are entered, as this may affect which examination(s) are carried **out.**

QuantiFERON-TB Gold Plus (QFT-Plus)
The QuantiFERON-TB Gold Plus (QFT-Plus) assay is an indirect test for M. tuberculosis infection (including disease) and is intended for use in conjunction with risk assessment, radiography, and other medical and diagnostic evaluations.

The assay consists of four specific QuantiFERON-TB Gold Plus (QFT-Plus) tubes. These are available in a pack which also contains instructions for use from microbiology for distribution to Chest Consultants, Occupational Health, Paediatrics, Rheumatology, Minerva and blood test clinic. For all other locations please seek advice from the medical microbiologist.

Whole blood is dispensed into each of four specific sample tubes which include
Nil tube (grey cap),
TB1 tube (green cap)
TB2 tube (yellow cap)
Mitogen tube (purple cap)

Each tube must be appropriately labelled as per the specimen acceptance policy

The tubes are pre-coated with additives and it is essential to fill the tubes accurately to the fill line marked on each tube. Tubes must be incubated within 16 hours of collection, it is essential therefore that QuantiFERON-TB samples are transported to Microbiology before 16.30 Monday to Friday only.

Samples which are incomplete or short filled will not be processed.

QuantiFERON-TB turnaround times are up to 14 days. Please note: Analysis is performed at East Lancashire Teaching Hospitals

## SEMINAL ANALYSIS AND INVESTIGATIONS FOR POST VASECTOMY AND INFERTILITY

The microbiology department performs two kinds of investigations on semen. To ensure that the appropriate investigations is carried out please specify “Post-vasectomy” or “Infertility” on the request form.

**Information sheets for seminal analysis for infertility and post vasectomy**

Leaflets giving instructions to patients are available from the pathology laboratory reception. These should be supplied to the patient with the request form by the requesting physician.

The Andrology section within the Microbiology department performs seminal analysis for infertility and post vasectomy investigations **by appointment only**.

Patients should contact the department at least 1 week before the intended day of production to arrange an appropriate appointment time.

Appointments are available Monday to Friday between 09:30 and 15:30
Andrology Laboratory Hours: Monday to Friday: **09:00 – 16:30**, Saturday & Sunday: **Closed**

Phone number – 01772 522104

Patients should be advised to abstain from intercourse/ ejaculation for a period of 2-7 days before the specimen is produced to allow the sperm to reach maturity. The longer the abstinence, the better the quality of specimen.
Post vasectomy samples must be submitted at least 12 weeks after the procedure and after a minimum of 20 ejaculations.
Samples should be produced no longer than 1 hour prior to the appointment as a delay in transit over 1 hour can affect the validity of the results.

NB: Bacterial culture of prostrate fluid/semen should be requested separately from seminal analysis.

## SPECIMEN TYPES

**Wound, genital, nose, throat, mouth, skin, and eye**

Where appropriate, infected tissue, pus or fluid is a better specimen than a swab of the site. Use swabs with a black handle (if swabs must be used). Swabs should be collected taking care only to specimen the infected area. If a discharge is present the cotton wool swab should be rotated in the material, it is important to position the patient so that the specimen can be collected under direct vision. The use of a tongue depressor for collecting throat swabs and a speculum for cervical and high vaginal swabs is essential. After collection the cap of the transport tube is removed and discarded, and the swab placed into the medium. Label the specimen clearly & carefully.

**Ear swabs**

Use swabs with orange handle. It is important that these swabs are collected through a speculum under direct vision to prevent damaging the tympanic membrane. Place swab in transport tube and label.
(These are usually only used by the ENT department within the hospital)
For most swabs taken in the community a usual black topped charcoal swab is the preferred choice.

**Urine**

Specimens should preferably be cultured within 1 hour of collection unless they are refrigerated whilst awaiting delivery to the laboratory.

**Diagnosis of acute urinary tract infection**

A specimen of urine collected at micturition is likely to be contaminated by bacteria present in the anterior urethra. To reduce the number of contaminating organisms a mid-steam specimen of urine (MSU) (see below) should be collected. This enables the laboratory to quantify the organisms present and use the concept of “significant bacteriuria’. A bacterial count equal to or greater than 100,000,000 ($10^8$) colony forming units (CFU) per litre is generally interpreted as indicating that genuine bacteriuria is present, particularly if a pure culture, or no more than two different bacterial species are present. Bacterial counts between ($10^7$) and ($10^8$) cfu/l are equivocal although a pure growth of a common uropathogen associated with relevant symptoms and with pyuria suggests genuine bacteriuria. (Counts below $10^6$ cfu/l are usually reported as not significant). The presence of micro-organisms in the urine does not necessarily warrant treatment with antibiotics.

These interpretations are not absolute and reliance on the bacterial count result alone is unwise. The presence of leucocytes and red blood cells may indicate infection. The type of micro-organisms and purity of growth are additional relevant factors. Clinical symptoms and the laboratory findings should be considered together. The presence of squamous epithelial cells is suggestive of introital and/or vaginal contamination.

**Screening for urinary tract infection**
Midstream or 'clean catch' specimens of urine from pregnant women attending for routine ante natal examination are cultured for significant bacteriuria as it is recognised that there may be asymptomatic infection. **It is advisable to submit a second specimen from patients found to be positive on an initial screening specimen as false positive results on a single specimen may occur.**

**Collection of mid-steam specimen (MSU)**
**Please use Sarstedt urine Monovette containers (KTH124) or yellow lidded Sarstedt universal containers (75.9922.745)**

A little time spent telling patients how to collect a clean specimen of urine will reduce the number of equivocal or false positive reports.

**Females** - The labia must be separated and the interlabial area washed and dried. The patient voids and discards a small quantity of urine and then collects a specimen from the mid-stream into the container supplied. A clean paper towel or tampon can be placed in the vagina prior to collecting the urine if there is a vaginal discharge.

**Males** - Circumcised patients; meatal cleansing is not required. Uncircumcised patients: following retraction of the prepuce the glans is washed and dried. The patients collect a mid-stream specimen by voiding and discarding a small quantity of urine, then collecting a specimen from the mid-stream into the container supplied.

**Collection of urine specimens from catheterised patients**
All catheter drainage systems should have specimen ports. The following protocol should be followed: -

- Wash your hands and assemble equipment, put on a pair of clinical gloves.
- Clean the specimen port of the drainage system with an alcohol swab for 30 seconds, allow to dry
- Using a Sarstedt Urine Monovette insert the luer tip into the cleaned specimen port, withdraw 6mls of urine, recap & label appropriately.

**NB Using Sarstedt Urine Monovette eliminates the need for using sharps as the system can be used to collect urine from the catheter port. This is the preferred method. Order code KTH124**
Clean the specimen port again with an alcohol wipe for 30 seconds and allow to dry.

- Send the specimen of urine to the laboratory with a microbiology form giving details of clinical history and antibiotic therapy.
- If there is to be a delay in sending the specimen to the laboratory it must be refrigerated.
- In patients with chronic indwelling catheters, the bladder urine is almost always infected. Antimicrobial treatment does not eradicate this infection and is not indicated unless the patient has evidence of systemic infection or severe local problems.

In patients with catheters recently introduced, and where they are to be removed (e.g. peri-operative catheters, acute retention, etc.) a single dose of an appropriate antimicrobial to 'cover' the removal of the catheter may be advisable, if a new prosthetic device is in place. This reduces the chances of septicaemia. A mid-steam specimen of urine from such patients 3-5 days following removal of the catheter should be considered. Please indicate the circumstances on the request form.

**Suprapubic aspiration of urine**
This technique may be indicated for neonates and young infants, in patients in whom catheterisation is contraindicated. All growth is regarded as significant. It is essential that urines are clearly labelled 'Suprapubic aspirate.'

**Examination of urine for Chlamydia (and Neisseria gonorrhoeae) by molecular methods**
Chlamydia & N. gonorrhoeae bacteria infect the cells lining the cervix or urethra. For the molecular method of detection, a first-catch specimen should be collected, preferably an early morning specimen or a specimen collected 2 hours after the patient last passed urine. A mid-stream specimen or catheter specimen collected for bacteria culture is not suitable and will not be examined.

**Examination of urine for Bacterial Antigens**
Patients with suspected severe community acquired pneumonia with a CURB-65 score of 3 or more, or requiring ITU admission should be considered for antigen detection for *Strep. pneumoniae* (pneumococcus) or Legionella. Send 10-20 ml urine and state antigen for detection on electronic request.
NB: urinary antigen testing is not routinely performed on specimens from the community. Please contact the laboratory for advice

**Cerebrospinal fluid**
Specimens of cerebrospinal fluid must be collected using fully aseptic procedures. Specimens from patients with suspected meningitis are treated as urgent and should be delivered to the laboratory immediately after collection.

**Peritoneal dialysis fluid**
This fluid type should **only** be submitted when cloudy dialysate is observed. Examination packs are available from pathology reception. A green capped blood culture bottle inoculated with 10ml fluid, and 2 universal containers of fluid should be sent for examination.

**Pleural, peritoneal, joint, or other fluid**
Fluids should be collected aseptically (by syringe) and a representative specimen placed into a sterile plastic screw top container. Gram stain and routine bacterial culture will be performed. Mycobacterial culture should be specifically requested if required and a separate aliquot submitted
NB: Joint fluid examination for crystals is not a Microbiology test, this is performed by the Immunology department during normal working hours. A separate request for "fluid microscopy" should be made with an aliquot of the specimen

**Skin, Hair, and Nail clippings for Mycology**
Skin: skin and nails can be swabbed with 70% alcohol prior to collection of the specimen, this is especially important if creams, lotions or powders have been applied. The edges of skin lesions yield the greatest quantities of viable fungus. Lesions should be scraped with a blunt scalpel.

Nails: Good nail samples are difficult to obtain. It should be specified whether the sample is from the fingernails or toenails. Material should be taken from any discoloured, dystrophic or brittle parts of the nail. The affected nail should be cut as far back as possible through the entire thickness and should include any crumbly material. Nail drills, scalpels and nail elevators may be helpful but must be sterilized between patients. When there is superficial involvement (as in white superficial onychomycosis) nail scrapings may be taken with a curette. If associated skin lesions are present samples from these are likely to be infected with the same organism and are more likely to give a positive culture. Samples from associated sites should be sent in separate packets.

Hair: Samples from the scalp should include skin scales and hair stumps. Cut hairs are not suitable for direct examination as the infected area is usually close to the scalp surface. Plastic hairbrushes, scalp massage pads or plastic toothbrushes may be used to sample scalps for culture where there is little obvious scaling, but such samples do not replace a scraping for direct examination.

For investigation of fungal infection of the ear, scrapings of material from the ear canal are preferred, although swabs can also be used.

Specimens should be collected into a Dermapak envelope available from Pathology reception which is a commercially available specimen container designed specifically for the collection and transport of skin, nail and hair samples. Nail, hair and other clinical specimens be transported in an appropriate leakproof sterile container.

All specimens should then be placed in a sealed plastic bag for transportation to the laboratory.

Specimens should be transported and processed as soon as possible; specimens should be kept at room temperature and provided skin scrapings and nail specimens are kept dry, the fungus will remain viable for several months.

Specimens should be taken before antimicrobial therapy if possible

**Intravascular Catheter (line) tips**
Before removing the catheter, the exit site should be cleaned with alcoholic chlorhexidine to reduce the risk of contamination. Using aseptic techniques the tip (3-5cms) should be cut off and placed into a sterile plastic screw top container. Tips should only be submitted when line infection is suspected. 'Routine' sampling is not helpful clinically.

**Chlamydia & N. gonorrhoeae (GC) infections**
Diagnosis is achieved by molecular methods. Following specimen types are recommended:

(a) Women – endocervical swab or self-taken vulvovaginal swab. If cervical examination is not taking place a first-catch urine may be examined but is less sensitive.
(b) Men – urethral swab or first-catch urine

Swabs should be placed in chlamydia transport medium and sent to the laboratory. Bacterial transport medium is not suitable. Chlamydia specimen kits are available from the laboratory. Urine specimens should be first-catch specimens, preferably early morning specimens, or collected after the patient has not passed urine for a minimum of 2 hours. The first 10-50 ml of the first stream of urine should collected and then transferred into the Cobas tube until the fill line is between the two black lines.

Eye, throat and rectal swabs can also be examined, according to clinical condition, NOTE: these sample types are not currently UKAS accredited for Chlamydia/ GC PCR. Chlamydia collection kits should be used.

Advice on 'Test of cure' may be obtained by contacting the laboratory

**Sputum**
**When to collect sputum for culture**
Sputum culture is useful in the diagnosis of pneumonia particularly if the specimen has been collected before the start of antibiotic therapy. Cultures of sputum from patients already on antibiotics will often grow coliform bacilli and pseudomonas which are of little pathogenic significance, (except in patients with bronchiectasis, cystic fibrosis or on a ventilator).
Sputum culture is less useful in the management of infective exacerbations of chronic constructive airways disease. Empirical antibiotic therapy seems to be as effective as therapy guided by the results of microbiological culture.

**Induced sputum** - induction of sputum by the use of nebulised saline is of use in the diagnosis of *Pneumocystis jirovecii* pneumonia.

**Pertussis Detection**
PCR requests on naso-pharyngeal aspirates or pernasal swabs (or dry throat swabs if no alternative) can be sent on patients of all ages if within 21 days of onset of cough.
Pertussis serology can be used for older children and adults if the onset of cough is greater than 14 days ago. Serology is not appropriate if pertussis containing vaccine has been given with 12 months.
**Examination of sputum for mycobacteria**
**If Pulmonary TB is confirmed or suspected, this information MUST be supplied to the laboratory on the request for analysis**
Routine sputum specimens submitted to this laboratory are **not** screened for evidence of tuberculosis. Please specifically request testing for mycobacteria when clinically indicated.

Patients with clinical or radiological signs compatible with tuberculosis and all patients with AIDS who have pulmonary disease should have three early morning sputum specimens (taken on different mornings) cultured for mycobacteria.

Patients who are sputum smear positive are likely to be infectious and require isolation until they have had **at least two weeks** anti tuberculosis chemotherapy.

If culture for conventional bacteria is also required, please send a separate specimen as the two specimen types are processed differently.

**Lumps in the neck**
The possibility of mycobacterial infection must be considered in patients with cervical lymphadenopathy or where pus is found in operation on the neck.

A small portion of the lymph node and/or pus should be placed in a dry, sterile container and clearly labelled for bacteriology. Swabs are not a satisfactory substitute. The specimen must be accompanied by a request for Mycobacterium culture and appropriate clinical details.

**Surgical specimens**
Operations to drain abscesses, biopsy lymph nodes, debride necrotic infected tissue or remove sequestrated bone provide an invaluable opportunity to make a specific microbiological diagnosis.

Infected tissue is the most valuable specimen. Please collect into a dry, sterile container. Please take positive steps to ensure that formalin in not added to specimen for microbiology.

Pus is the next most valuable specimen and should be sent neat whenever it is available. If pus is drained from an abscess, draw some up with a syringe, transfer it into a sterile specimen container and send it to the laboratory. A swab of pus is a relatively unsatisfactory substitute.

**Helicobacter pylori**
This organism is associated with chronic gastritis and peptic ulceration.

Helicobacter antigen detection test is available. Send a walnut-size specimen of faeces to the laboratory. This is the most convenient method to establish a diagnosis of active infection. However, PPIs can render the test unreliable, and should be stopped for 2 weeks before testing.
Please contact the laboratory if you intend to submit a gastric biopsy specimen for culture.

**Post infection (reactive) arthritis**
Many different infections are associated with a reactive arthritis developing after the acute illness.
Discussion with the Consultant Microbiologist is advisable before submitting a specimen to optimise test panel.

**Other Serological Tests**
Test for antibodies to many infectious agents are available. Please supply a serum gel tube (10ml clotted blood). It is essential for interpretative purposes to have good clinical details including date of onset of illness and details of any recent foreign travel.

**Antenatal Blood for Infectious Diseases (IDPS)**
The Microbiology department supports the screening of all antenatal pregnant women who are offered screening for HIV, hepatitis B and syphilis in accordance with NHS Infectious diseases in pregnancy screening (IDPS) programme.
Users are requested to order requests using Flex where possible using the Antenatal panel rather than individual tests. Where Flex is unavailable, please use the specific Antenatal Serology request form rather than a Microbiology or Virology request form.
Please re-offer testing at any time in pregnancy if the woman has a new exposure risk or develops relevant symptoms.

## MEASUREMENT UNCERTAINTY

Some results are subject to a degree of measurement uncertainty. This may be due to a range of factors including:

- Pre-analytical factors
- Biological variation within an individual
- Analytical measurement imprecision

If you require further information on the measurement uncertainty of an individual test, please contact the Microbiology department.

**This guide cannot cover all circumstances.**
**If you are in doubt as to the correct specimens to collect, please do not hesitate to contact a Consultant Microbiologist or Senior Biomedical Scientist**

# EXPECTED TURNAROUND TIMES

## Molecular Testing:

| Investigation | Specimen/ Container | Frequency of testing | Usual time From receipt to Result | Comment |
|---|---|---|---|---|
| Blister swab for herpes simplex PCR | Copan M™-swab | Twice weekly | 6 days | |
| Chlamydia trachomatis/ N. gonorrhoea detection by PCR | Chlamydia specimen collection kit | Daily | 4 days | Genital swab is preferred for GC PCR in females. |
| Viral meningitis/encephalitis | CSF | Daily | 2-4 days | Referred to Reference lab |
| Hepatitis B Viral Load | Serum Gel Tube or 7.5ml EDTA | 10-14 days | 2 weeks | |
| Hepatitis C PCR | Serum Gel Tube or 7.5ml EDTA | 3 x week | 5 days | |
| Hepatitis C Genotyping | Serum Gel Tube or 7.5ml EDTA | Weekly | 7 days | |
| HIV viral load | 7.5ml EDTA | Twice weekly | 7 days | |
| Rotavirus antigen detection in Faeces | FECON™ container | Three times per week | 4 days | |
| Meningococcal PCR | 3.4ml EDTA | Daily | 2-8 days | Referred to reference lab |
| Pertussis PCR | Naso-pharyngeal swab/NPA | Daily | 4-6 days | Referred to reference lab |
| Other PCR tests | Contact laboratory | | | Referred |

## Antimicrobial Therapy Drug Level Monitoring

| Drug | Specimen/ Container | Frequency of testing | Usual time From receipt to Result | Comment |
|---|---|---|---|---|
| Gentamicin | Serum Gel Tube | Daily | Same Day | Tested by Biochemistry LTHTr |
| Vancomycin | Serum Gel Tube | Daily | Same Day | As above |
| Amikacin | Serum Gel Tube | On request | Same Day | As above |
| Tobramycin | Serum Gel Tube | On request | Same Day | Tested at ELTH |
| Other drugs | Serum Gel Tube | On request | 1-3 days | Referred to reference lab |

## Specimens for culture & other tests (Bacteriology):

| Specimen type | Specimen Container | Usual time from receipt to result | Special investigations available |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Urine for C&S | Urine Monovette or 70ml Sarstedt universal container | 1-3 days | Mycobacterium tuberculosis |
| Legionella/Pneumococcal antigen | 70ml Sarstedt universal container | 1 day | Positive results phoned to ward |
| Sputum for C&S | 70ml Sarstedt universal container | 2-4days | Legionella Pneumocystis carinii, Burkholderia |
| Sputum for Mycobacteria | 70ml Sarstedt universal container | 6 -8 weeks | |
| Wound/pus swabs for C&S | Bacteriological transport system+ | 2-4 days | Actinomyces |
| Pus & fluid e.g. Joint, pleural peritoneal, | Clear sterile dry container | 2-6 days | Mycobacterium Tuberculosis |
| Eyes | Bacteriological transport system+ | 2-4 days | Amoebae |
| Cervical/urethral/vaginal swab | Bacteriological transport system+ | 2-4 days | Trichomonas |
| Faeces for C. diff only | FECON™ container | 1-2 days | |
| Faeces for C&S | FECON™ container | 2-5 days | Vibrio sp, Cl perfringens, Yersinia sp, Bacillus cereus, Staph aureus |
| Helicobacter pylori antigen | FECON™ container | 2-8 days | |
| Blood culture | Paired (blue top & cerise top) blood culture bottles | 2-6 days | |
| C.S.F. | Clear sterile universal container | Microscopy; Usually same day Culture; 2-6 days | Yeasts, fungi |
| Skin/hair/nail | Dermapak™ | 2-4 weeks | |
| MRSA Screen | Bacteriological transport system | 1-3 days | |
| Carbapenemase Producing Enterobacteriaceae (CPE) screen | Bacteriological transport system | 1-3 days | |
| Post vasectomy Seminal analysis | 70ml Sarstedt universal container | 2 weeks | |
| Infertility Seminal analysis | 70ml Sarstedt universal container | 2 weeks | |
| Threadworms | Collection kit; Available from Laboratory | 2-5 days | |
| Corneal Scraping etc. | Eye Kit available from laboratory | 2-5 days | Amoebae |

## Serology (Virology & Bacteriology)

| Investigation | Specimen | Frequency of testing | Usual time from receipt to result | Comment |
|---|---|---|---|---|
| Human immunodeficiency virus (HIV) screen | Serum gel tube | Daily | 1-4 days | Urgent testing performed by arrangement. Result phoned if new positive. |
| Hepatitis B surface antigen screen | Serum gel tube | Daily | 1-4 days | As stated above. Clinically significant results phoned. |
| Hepatitis B serology for diagnosis of past, recent or current infection | Serum gel tube | Mon-Fri | 2-4 days | |
| Hepatitis A IgM for recent infection | Serum gel tube | Mon-Fri | 1-4 days | As stated above |
| Hepatitis A total antibody for immunity | Serum gel tube | Mon-Fri | 1-4 days | |
| Hepatitis B surface antibody for immunity | Serum gel tube | Mon-Fri | 1-4 days | |
| Hepatitis C antibody | Serum gel tube | Mon-Fri | 1-4 days | As stated above |
| Hepatitis E IgM for recent infection | Serum gel tube | Mon-Fri | 1-4 days | As stated above. |
| Rubella IgM for recent infection | Serum gel tube | Mon-Fri | 1-4 days | Confirmatory testing referred. |
| HTLV I/II Screen | Serum gel tube | Mon-Fri | 1-3 days | Urgent testing on request |
| Parvovirus B19 serology | Serum gel tube | Mon-Fri | 1-4 days | |
| Syphilis serology | Serum gel tube | Mon-Fri | 1-4 days | |
| Borrelia burgdorferi (Lymes) serology | Serum gel tube | Weekly | 2-8 days | Further confirmatory tests may be referred. |
| Toxoplasma antibodies | Serum gel tube | Mon-Fri | 1-4 days | Positive results may be referred |
| Anti-streptolysin O titre | Serum gel tube | Mon-Fri | 3 days | |
| Rubella IgG | Serum gel tube | Mon-Fri | 1-4 days | |
| Varicella zoster IgG | Serum gel tube | Mon-Fri, | 1-3 days | Contact laboratory for urgent testing on request |
| Measles IgG/IgM | Serum gel tube | Mon-Fri | 1-4 days | Urgent IgG testing on request |
| Mumps IgG/IgM | Serum gel tube | Mon-Fri | 1-4 days | |
| EBV serology | Serum gel tube | Mon-Fri | 1-4 days | |
| CMV serology | Serum gel tube | Mon-Fri | 1-4 days | |

# REFERRED TESTS

In instances where specific tests are not available within the department it is necessary to refer out to specialist laboratories. The Microbiology department regularly monitors the performance and accreditation status of the referral laboratories it uses.

Turnaround times for referred specimens will vary depending on frequency of testing

## VIROLOGY/SEROLOGY REFERRAL TESTS

| TEST REQUESTED | TESTING SITE | OTHER INFORMATION. SERUM OR PLASMA UNLESS STATED OTHERWISE | EXPECTED TAT (Referral Laboratory) |
|---|---|---|---|
| Amoebiasis serology | Liverpool School of Tropical Medicine | | 7 days |
| Antibiotic / Antiviral levels e.g. teicoplainin, rifampicin etc. | Severn Pathology, Infection Sciences, Southmead Hospital, Bristol | Check website for other levels tested | < 2 days Teicoplanin < 3 days others |
| Antifungal e.g. Beta D glucan, Galactomannan | Mycology Reference Unit, Wythenshawe Hospital, Manchester | Beta D glucan and galactomannan samples must be clotted blood (NOT EDTA), sent unopened and unspun, in the original clot as aliquoting may result in false positives. Sputum also accepted for Galactomannan | 95 % within 1 day |
| Antifungal levels e.g. Itraconazole, voriconazole | Wythenshawe Hospital, Manchester | Voriconazole levels and other anti-fungal levels. Send whole, unspun | 1 – 2 days |
| Antiviral sensitivity testing (HIV) Or HIV Tropism | Cambridge Clinical Laboratories | VL >500copies/ml send >=2ml plasma, <500 copies/ml send >= 2ml whole EDTA, VL unknown send >=2ml whole EDTA. | 14 days |
| Antiviral sensitivity testing (HIV) Or HIV Tropism | UKHSA Birmingham | Only send if request form received is for this location. | 22 days |
| Arbovirus serology | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days Serology 2-4 days |
| Blastomyces serology | UKHSA Mycology Reference Laboratory National Infection Services UKHSA South West Laboratory Science Quarter Southmead Hospital Bristol BS10 5NB | 1-2ml Serum | No stated TAT |

| TEST REQUESTED | TESTING SITE | OTHER INFORMATION. SERUM OR PLASMA UNLESS STATED OTHERWISE | EXPECTED TAT (Referral Laboratory) |
|---|---|---|---|
| Borrelia burgdorferi serology (Lyme's Disease confirmation) | UKHSA Porton Down | If CSF MUST be accompanied by serum. | Serology and Immunoblot 5 days Other sample types: Not stated |
| Borrelia recurrentis serology | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days<br><br>Serology 2-4 days |
| Brucella serology | Royal Liverpool and Broadgreen University Hospitals NHS Trust, Virology 8th floor | Serum | 7 days |
| Candida serology | Severn Pathology, Infection Sciences, Southmead Hospital, Bristol | | 3 days |
| Chikungunya | UKHSA Porton Down | Whole EDTA for PCR.<br>Serum for serology.<br>Must have clinical details and full travel history, including dates of travel, type of location stayed in. | PCR 1-2 days<br><br>Serology 2-5 days |
| Coccidiomycosis | UKHSA Mycology Reference Laboratory<br>National Infection Services<br>UKHSA South West Laboratory<br>Science Quarter<br>Southmead Hospital<br>Bristol<br>BS10 5NB | 1-2ml Serum | No stated TAT |
| Cryptococcal antigen | Royal Liverpool and Broadgreen University Hospitals NHS Trust, Microbiology 7th Floor | Serum or CSF | No stated TAT |
| Cystecercosis (Taenia solium) | Department of Clinical Parasitology, HSL Analytics LLP, Hospital for Tropical Diseases, Mortimer Market, Capper Street Centre, Mortimer Market, London WC1E 6JB | Serum | 8 days |
| Dengue Fever serology | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days<br>Serology 2-5 days |
| Diphtheria antibodies | UKHSA Colindale | >= 200 ul Serum | 21 days |
| Fasciola serology | Liverpool School of Tropical Medicine | | 7 days |
| E.coli VTEC antibodies | UKHSA Colindale | Serum | No stated TAT |
| Enterovirus typing | UKHSA Colindale | Write on form 'FOR EPIDEMIOLOGY PURPOSES ONLY' | No stated TAT |
| Filiarial serology | Liverpool School of Tropical Medicine | | 7 days |

| TEST REQUESTED | TESTING SITE | OTHER INFORMATION. SERUM OR PLASMA UNLESS STATED OTHERWISE | EXPECTED TAT (Referral Laboratory) |
|---|---|---|---|
| Hantavirus serology | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in. | PCR batched 6 weekly<br>Serology 2-4 days |
| HLAB* 5701 | Cambridge Clinical Laboratories | Whole EDTA | 5 days |
| Hepatitis A IgM epidemiology | UKHSA Colindale | Serum. Write on form 'FOR EPIDEMIOLOGY PURPOSES ONLY' | 14 days |
| Hepatitis B typing | UKHSA Colindale | Serum | 28 days |
| Hepatitis B surface antigen quantitation | Micropathology, Coventry | Serum preferred or plasma<br>Minimum of 600µl | 4 days |
| Hepatitis C genotyping | Micropathology, Coventry | 600 ul minimum<br>Serum or Plasma<br>Only if unable to obtain genotype result in house (log>3.0) | 3 days |
| Hepatitis C Resistance | UKSHA Colindale<br>ONLY at request of Consultant Gastro-Hepatologist. | MUST use specific request form, fully completed.<br>2ml plasma or serum | 15 days |
| Hepatitis D (Delta) serology | UKHSA Colindale | Only send if patient is HBsAg positive. | Serology 15 days<br>RNA – 28 days |
| Hepatitis E confirmation | UKHSA Colindale | Serum or plasma. Select 'serology' box on PHE request form. MUST state if pregnant. | 14 days |
| Hepatitis E RNA | NHSBT, Colindale | ≥2ml plasma from EDTA blood. Potential organ/tissue/stem cell donors only. | 14 days |
| HHV8 PCR | Micropathology, Coventry | Whole EDTA, CSF | 1 day |
| Histoplasmosis serology | UKHSA Mycology Reference Laboratory<br>National Infection Services<br>UKHSA South West Laboratory<br>Science Quarter<br>Southmead Hospital<br>Bristol<br>BS10 5NB | 1-2ml Serum | No Stated TAT |
| HIV Incidence testing (RITA) | UKHSA Colindale | Serum or plasma | No Stated TAT |
| HIV 1 pro-viral DNA | UKHSA Colindale | EDTAs from baby and mother send together. This applies to baby's EDTA initial sample taken within 3 days of birth and any follow up samples insufficient for HIV | 8 days |

| TEST REQUESTED | TESTING SITE | OTHER INFORMATION. SERUM OR PLASMA UNLESS STATED OTHERWISE | EXPECTED TAT (Referral Laboratory) |
|---|---|---|---|
| | | PCR without diluting at RPH. Please see a consultant or clinical scientist to discuss when these cases arrive in the lab. | |
| HIV 2 confirmation | UKHSA Colindale | Serum | 8 days |
| HIV 2 Quantitative RNA | Barts Health NHS Trust | EDTA Plasma | 10 days |
| Hydatid cyst serology (Echinococcus) | Department of Clinical Parasitology<br>HSL Analytics LLP<br>Hospital for Tropical Diseases<br>Mortimer Market<br>Capper Street Centre<br>Mortimer Market, London WC1E 6JB | Serum | 8 days |
| HTLV I / II Confirmation | UKHSA Colindale | Serum | 8 Days |
| HTLV I / II PCR | UKHSA Colindale | Whole, unspun EDTA | No stated TAT |
| Leptospirosis serology | UKHSA Porton Down | Acute and convalescent preferred.<br>Only send urine sample if a previous referral report has requested it | PCR 1-2 days |
| Leishmania serology | Liverpool School of Tropical Medicine | Whole blood/EDTA | 7 days |
| Lymphogranuloma venereum (LGV) | UKHSA Colindale | Only if requested by GUM | 6 days |
| Malaria | Liverpool School of Tropical Medicine | Whole Blood | 7 days |
| Mumps PCR | UKHSA Colindale | Swab MUST be put in viral transport media. Throat swab, Urine, CSF (min.150ul), NPA | 10 days |
| Mycoplasma genitalium | Royal Lancaster Infirmary<br>Rectal swabs only - UKHSA Colindale | Hologic tube<br>4800 Cobas tube | TAT not stated<br>5 days |
| Paracoccidiodes serology | UKHSA Mycology Reference Laboratory<br>National Infection Services<br>UKHSA South West Laboratory<br>Science Quarter<br>Southmead Hospital<br>Bristol<br>BS10 5NB | 1- 2 ml<br>Serum | No stated TAT |
| Pertussis serology | Severn Pathology, Infection Sciences, Southmead Hospital, Bristol<br>NOT for immunity | MUST include date of onset in clinical details field (>14 days) | 3 days |
| Polio serology | UKHSA Colindale<br>Contact VRD before sending serum Tel: 02083277872 | >200ul. Polio testing NOT for immunity unless travelling to an overseas area that has an active polio outbreak. | No stated TAT |
| Q fever serology | UKHSA Porton Down | Must include full clinical history and any animal contact. Send spun, whole blood. Do not open. | PCR 1-2 days<br>Serology 2-5 days |

| TEST REQUESTED | TESTING SITE | OTHER INFORMATION. SERUM OR PLASMA UNLESS STATED OTHERWISE | EXPECTED TAT (Referral Laboratory) |
|---|---|---|---|
| Rabies antibodies | Animal and Plant Agency, Weybridge, Surrey | | Tested twice weekly |
| Rare and Imported Pathogens UKHSA Colindale will select tests dependent upon clinical information and travel history. | UKHSA PortonDown | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days Serology 2-5 days |
| Rickettsial serology | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days Serology 2-5 days |
| Rubella confirmation | UKHSA Colindale | Send with booking blood, if available. | 10 days |
| Schistosomiasis serology | School of Tropical Medicine, Liverpool | Serum | 7 days |
| Strongyloides serology | School of Tropical Medicine, Liverpool | Serum | 7 days |
| Tick Borne Encephalitis | UKHSA Porton Down | Must have clinical details including any tick bites and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days Serology 2-4 days |
| Therapeutic drug monitoring | Cambridge Clinical Laboratories | Spun plasma | 14 days |
| Toxoplasma serology | Swansea NPHS | Confirmation only(minimum 200ul neonates, 1ml other patients) | 10 days |
| Toxocara serology | Infection Sciences Department, St Thomas' Hospital, North Wing – 5th Floor, Westminster Bridge Road, London SE1 7EH | Serum | 14 days |
| Trypanosomiasis serology | School of Tropical Medicine, Liverpool | Serum | 7 days |
| Ureaplasma PCR | UKHSA Colindale | Minimum 200µl of respiratory sample.<br><br>Do not send urine. | PCR 5 days |
| West Nile Virus | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days Serology 2-5 days |
| Whipples Disease | Leeds General Infirmary, Great George Street, Leeds LS1 3EX | Gastric biopsy, CSF or EDTA | 5 days |
| Yellow Fever virus serology | UKHSA Porton Down | Must have clinical details and full travel history, including dates of travel, type of location stayed in | PCR 1-2 days Serology 2-4 days |
| Zika serology | UKHSA Porton Down | Serum only, not plasma, to be sent. If >21 days after onset sample do not send as will be rejected. | No Stated TAT |

| TEST REQUESTED | TESTING SITE | OTHER INFORMATION. SERUM OR PLASMA UNLESS STATED OTHERWISE | EXPECTED TAT (Referral Laboratory) |
|---|---|---|---|
| | | Must have clinical details and full travel history, including dates of travel, type of location stayed in. | |