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Medical Microbiology

Laboratory User's Handbook

Department of Medical Microbiology
(Bacteriology, Mycology & Parasitology)

King's College Hospital NHS Foundation Trust

September 2018

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1. General Information

1. General information

Our laboratories are based at the Denmark Hill site of Kings College Hospital NHS Foundation Trust. We provide an extensive consultant-led clinical microbiology service and specialist advice in microbiology, virology, parasitology and mycology to hospitals and General Practitioners. The Medical Microbiology department (Bacteriology, Mycology and Parasitology) is located on the third floor of the Cheyne (Pathology) wing at King's College Hospital.

All our laboratories are accredited by the Clinical Pathology Accreditation (CPA) scheme and participate in National Quality Assurance Schemes.

1.1 Key personnel and contact details

Postal address

Viapath Department of Medical Microbiology King's College Hospital NHS Foundation Trust Cheyne Wing, 3rd Floor Denmark Hill London SE5 9RS	DX address: South London (PHL) Kings DX 6570200 Peckham 90SE

Website contacts: www.viapath.co.uk www.clinical-virology.org

Results service: 0203 299 3567 / 4353; general enquiries: 0203 299 3213 / 3565; Fax: 0203 299 3404

Telephone Number 020 3299 + extension		
Designation	**Name**	**extension**
Consultant Microbiologist (CMM)	Dr Ian Eltringham	33766
Consultant Microbiologist	Dr Amanda Fife	33095
CMM and antimicrobial stewardship lead	Dr Dakshika Jeyaratnam	32569
CMM and Infection Control Doctor	Dr Surabhi Taori	34361
Consultant Microbiologist (hepatology)	Dr Anita Verma	34364
CMM / Clinical Lead	Dr Jim Wade	33033
Infection Control Surveillance / R&D	Nergish Desai	34369
Service Delivery Manager	Fearghal Tucker	33549
Quality Manager	Craig Smith	36140
Lead Biomedical Scientist (Microbiology)	Michelle Graver	31579
Lead BMS H&S (Microbiology)	Callan Strydom	37662
Departmental secretary	Roxanne Landell	33565
Laboratory Administrator	Linda Akkad	36260
MICROBIOLOGY ADVICE	**SPECIALIST REGISTRARS**	**4358 / 4360**

Notification of infectious diseases: please see page 20

2. Use of the Laboratory

2.1 Normal laboratory opening times

Routine specimens are accepted at Medical Microbiology during the following hours:

Monday to Friday: **9.00 to 5.00 pm**
Saturday: **until 10.30 am**

Urgent specimens: during normal laboratory hours please telephone urgent requests direct to the laboratory to ensure priority processing. Either bring the specimen to the Medical Microbiology laboratory reception yourself, or arrange urgent transport. Staff delivering critical or unrepeatable specimens to the laboratory will be asked to sign them in.

All preliminary or final results deemed clinically significant are 'phoned to the requesting clinician; completed results, once authorised, are available on the EPR system.

2.2 Saturdays, Sundays and Bank Holidays

On Saturdays the Medical Microbiology laboratory is open in the morning for essential work only. **All specimens should reach the laboratory by 10.30 AM**. Samples arriving after 10:30 AM will be processed only if prior arrangement has been made directly by the requesting doctor with the laboratory or with the on-call Biomedical Scientist (BMS).

2.3 Outside normal hours of service (on-call)

There is an out-of-hours (weekdays: 17.00 – 09.00; weekend: Sat 12.00 to Mon 09.00) on-call service: the on-call BMS is available on bleep 272 through the hospital switchboard. Specimens will only be processed outside normal laboratory hours if agreed criteria are satisfied and the on-call BMS has been consulted. Out-of-hours specimens should be left at the entrance to the Medical Microbiology laboratory. Urgent specimens should be left in the fridge: **it is essential that the on-call BMS is contacted about urgent specimens once they have been delivered to the department**. Blood cultures should be left in the incubator (processing will commence the following morning; there is no need to 'phone) and other specimens placed in the refrigerator. Urgent Gram stains are not performed on blood cultures (until growth is detected automatically).

Appropriate specimens for urgent examination on-call include:

- Cerebrospinal fluid (CSF)
- Aspirates and fluids from normally sterile sites
- Post-operative specimens such as biopsies or pus including drainage of empyema
- Urine microscopy in children where it may influence the decision for acute abdominal surgery

2.4 Specimen collection

2.4.1 Completing the request form

Other than requests made via the EPR system, a request form must accompany all specimens sent to the laboratory. It should clearly state the following information for unequivocal identification of the patient and specimen:

- **Patient name**
- **Ward/GP name and number/address for report or your bleep number** (or that of an appropriate on-call colleague available to receive the results)
- Unit number/NHS number
- Age (date of birth preferred)
- Sex
- Type of specimen

- Date and time specimen taken

  NB: it is **ESSENTIAL** that the laboratory knows the date on which a specimen is taken: processing delayed specimens can yield unhelpful or frankly misleading results and they may be discarded (eg urine samples dated 2 days prior to day of receipt). When patients are given a request form and asked to provide a specimen **they should be asked to ensure that the date on which the specimen was collected is given on the container and the form**.

- Tests required (specify 'TB' if appropriate)
- All relevant clinical details including any antimicrobial treatment (recent, current and intended)
- History of foreign travel including return dates
- Risk status if applicable

  If the clinical presentation or travel history suggest that a specimen may pose a potential risk to ward staff or laboratory staff - eg brucellosis, typhoid, viral haemorrhagic fever - then discuss the patient with the on-call Microbiologist or Virologist
- Date of onset and duration of illness, particularly for serology
- In the case of antimicrobial assays, date of last dose of antimicrobial and time given
- Specify anatomical site from which "wound" specimens were taken
- Key epidemiological information, eg for faeces:
  - Children with ?*Shigella sonnei* - give the name of the school
  - Adults with ?*Salmonella* - give the place of work, work in industry, farmer
  - Any patient with ?*Campylobacter, Giardia, Cryptosporidium* - cattle farmer, exposure to water through recreation or work
  - request 'OCP' (ova, cysts and parasites) if appropriate

If uncertain about the exact test and terminology, please give a detailed clinical history as this can help the medical staff to decide the most appropriate investigations.

If the laboratory cannot unequivocally identify the sample and match it to a form, then it will be discarded after recording any details available.

2.4.2 Specimen labelling

- The specimen must be labelled with the patient details as on the request form and hazard label if appropriate
- **The specimen must be labelled with the date of collection.**
- Please note that unlabelled specimens cannot be processed and will be discarded.

EPR barcode stickers: please try to ensure that the sticker is placed on the specimen container in such an orientation that it can be read by a bar code reader.

2.4.3 Specimen collection

The best results are obtained when an appropriate, well-taken specimen iin the proper container, is delivered to the laboratory promptly and relevant clinical information provided on the request form.

General guidelines on specimen collection are:

- Do not send specimens in non-sterile containers
- Collect specimens from the actual site of suspected infection. Please do not send blood samples with very general requests such as 'viral serology' when the best sample may be vesicular fluid, throat swab or CSF.
- The specimen taken should be representative of the disease process. For example, material swabbed from the opening of a sinus tract is more likely to yield commensal skin micro-organisms the skin than would material obtained by curettage or biopsy of the base of the tract
- Specimens should be obtained before antimicrobial agents have been administered wherever possible
- An adequate quantity of material should be obtained for complete examination. Always send pus rather than a swab of pus, if possible. Swabs should always be in transport medium rather than dry.

- Care must be taken to avoid contamination of the specimen by micro-organisms normally found on the skin and mucus membranes. Sterile equipment and aseptic technique must be used for collecting specimens, particularly for those from normally sterile sites.
- Material must be transported promptly to the laboratory. Fastidious organisms may not survive prolonged storage or may be overgrown by less fastidious organisms before culturing
- Other factors affecting results (bacterial serology and PCR)
    - inherent (age, gender, nutritional status, pregnancy, congenital immunological defects)
    - acquired (passively acquired antibody, immune response to immunisation, immunosuppression)
    - biological (lipaemic, haemolysed, high bilirubin content e.g. Liver ITU patients)
    - collection (use of correct blood collection tubes – e.g. serum from clotted blood may underestimate HIV-1 RNA load when compared to EDTA plasma).
    - Sample volume, collection and transportation.

Please contact the laboratory if there is any doubt about the best specimen to take or if you have questions about the availability of a test.

2.4.4 Specimen containers

Leaking specimens, or those received in inappropriate containers, may not be processed (although the laboratory will try to recover leaking unrepeatable samples).

The following are the usual containers used to collect specimens. These are ordered by clinical areas: the laboratory only holds a small stock of pernasal swabs.

- BacT/ALERT Blood culture sets: keep bottles of a set together and return any unused bottles. Ensure the stock is used in turn and always within its expiry date. Please do not detach the barcode labels on the bottles.
- Black card for superficial fungal specimens (scraping, hair *etc*)
- Faeces pots
- Pernasal swab for whooping cough
- Sputum pots - 60ml wide mouth plastic container
- Swabs with bacteriological transport medium - store at room temperature
- Bacteriology swab for diagnosis of STIs should be kept at 4^{o}C if delayed transport to lab. expected
- Universal containers (sterile and empty); these must be Sterilin containers

2.5 Transport to the laboratory

2.5.1 General Health & Safety requirements

Please note:

- specimens must only be submitted to the laboratory in approved containers
- needles and other sharps must never be sent to the laboratory
- the outside of containers must be free from contamination by potentially infectious material
- each specimen container should be sent in a sealed plastic specimen bag
- see below (2.5.2) for details of the air tube system at King's

2.5.2 Pneumatic Air Tube Transport System (PATTS)

The King's NHS Trust policy for use of the PATTS can be viewed on the King's p:/ drive; instructions are available at each station.

The following 'microbiology' specimens must **not** be sent via the air tube:

- any respiratory tract specimen (sputum, pleural fluid, bronchoalveolar lavage, aspirates *etc*)
- any specimen sent for mycobacterial (TB) culture
- any specimen from patients know to have, or thought to have:
    - transmissible spongiform encephalopathy (CJD, GSS *etc*)
    - a viral haemorrhagic fever (eg Lassa, Ebola *etc*)

- any unrepeatable specimen of any type
- blood culture sets

2.5.3 Receipt of specimens

During normal working hours, all specimens should be taken to central specimen reception or to the Medical Microbiology reception. Staff delivering critical / unrepeatable specimens directly to the Microbiology laboratory will be asked to sign them in: the date and time will be recorded and the entry countersigned. Specimens that require urgent processing should be discussed with the duty Specialist Registrar.

2.5.4 High risk specimens

Although all clinical specimens should be handled with care, Health & Safety legislation requires that we should regard as high risk samples taken from patients known to 1) be infected with a blood-borne virus such as HBV or HIV; 2) have other serious communicable infectious diseases (eg TB or typhoid; 3) to have a prion infection and 4) from those at risk of being infected by one of these agents. **These specimens must be labelled as High risk on the container and the request form. The appropriate yellow sticker "DANGER OF INFECTION" must be used. The specimen must be placed in a Biohazard bag.**

Great care must be taken in obtaining specimens. Equipment such as needles and blades must be immediately disposed of safely in approved "sharps" boxes and **never sent to the laboratories**.

For pyrexial patients presenting within 3 weeks of arriving from a viral haemorrhagic fever endemic region, malaria should be excluded as *per* policy and then the case discussed with a Consultant Virologist (*via* King's switchboard out-of-hours) before submitting any further samples to any laboratory or admitting the patient.

Specimens should be transported to the laboratory as rapidly as possible after collection to allow for the most accurate interpretation of results.

2.5.5 Courier and postal deliveries

When sending samples from an external laboratory, it is the responsibility of the requesting laboratory to ensure that the samples are packed in accordance with the current postal regulations, contain appropriate paperwork and are labelled correctly (sender and recipient). Refer to Health & Safety Executive guidance: *'Safe working and the prevention of infection in clinical laboratories and similar facilites'*

2.5.6 Requesting additional tests

The microbiological value of specimens - especially those from non-sterile sites - usually deteriorates with time as significant bacteria may die-off, or be overgrown by clinically insignificant contaminants. Generally, requests for additional tests on a specimen should be made to the laboratory on the day the specimen is submitted. Although most specimens are kept for approximately 48 hours, for easily collected material (eg urine, superficial swab *etc*) it is better to send a fresh specimen and request the additional investigation(s).

However, specimens of sterile fluids (eg CSF, ascites, synovial fluid *etc*) and tissues are refrigerated and kept for 14 days. Additional investigation of such specimens may be warranted and clinically helpful: additional tests should be discussed with the Microbiology SpR or Consultant.

2.6 Results and reports

2.6.1 Telephoned results

Results of urgent requests - and results where the clinical information suggests that they may immediately impact on patient management - will be telephoned to the requesting doctor or, in some cases, to the senior ward or clinic nurse. This includes **all** positive blood cultures and positive CSF results.

Results of public health epidemiological importance are telephoned whenever possible

Telephoning SOP:

IN-PATIENTS

1. **Significant samples**

All **sterile fluids / tissues** if cell count raised (for fluids) and/or organisms seen on Gram stain.

All growth from **sterile fluids / tissues / deep abscesses,** except for:

- skin flora ie CNSt / diphtheroids / propionibacteria are usually contaminants and are only phoned when recovered from sterile fluids / tissues if one or more of the following apply:
  - post surgery / prosthetic implant in place eg (eg orthopaedic / shunts / pacemakers / EVDs *etc*).
  - conflicting microbiology results (DNAase, S/tec, tube coag).
  - immunosuppressed patient (haem-onc. / LICU /Todd / PICU / NICU).
  - several samples yield apparently indistinguishable isolates

All growth from **sterile products** eg stem cell harvests; islet cells, hepatocytes; also positive Gram stain of islet cell or hepatocyte preparations

Any growth from **explanted prosthetic material** where infection is suspected.

Any positive **corneal scrape** or **vitreous** Gram, regardless of bacterial morphology.

2. **Significant organisms**

Infection Control 'alert organisms'

Out-of-hours only new in-patient alert organisms from screens (or from clinical specimens deemed significant) need to be 'phoned: otherwise alert organism results will be 'phoned through by the ICNs.

MRSA and glycopeptide intermediate or resistant *S. aureus*
Glycopeptide-resistant enterococci
ESBL +ve *Enterobacteriacae*
Gentamicin-resistant *Klebsiella* sp.
Potential or proven carbapenemase-producing Gram-negatives
Meropenem-resistant *Acinetobacter* sp.

Others

Group A streptococci.
Listeria sp.
Clostridium sp including new *C. difficile* toxin positives
All new Zn or culture positive specimens for *Mycobacterium* sp.
New *Salmonella* sp. (NB: *S. typhi** and *S. paratyphi **)
New *Shigella* sp (NB: *S. dysenteriae**)
New *Campylobacter* sp.
New *E. coli* 0157*
Vibrio sp*
Plesiomonas sp. / *Aeromonas* sp.
*Neisseria meningitidis** / *Haemophilus influenzae* type b*
Brucella sp.
Legionella sp* (including urinary antigen +ve)
New presumptive *B. cepacia* in CF patients
Cryptosporidium sp.
New positive cryptococcal antigen from serum or CSF
Dimorphic fungi
Rarities: ? *B. anthracis* / *C. diphtheriae* / *Burkholderia pseudomallei etc**

- **Notifiable: inform PHE Health Protection Unit PU as well**

3. Significant organisms depending on site / patient context

Group B streptococcus in neonates.

Group B streptococcus in pregnant women **if**:

- sent from labour ward
- sent from MAU
- clinical details indicate:
    - premature rupture of membranes, or PROM
    - patient in labour
    - intra-partum maternal fever
    - patient is a late booker

Please refer to Group B streptococcus guide
Group C and G streptococci from wounds (not throats) if clinical details suggest cellulitis.

S. aureus if from abscess, line tip or pus from surgical wound (see sterile sites above) or if clinical details suggest toxic shock. If the isolate is MSSA and clinical details indicate patient is on cefuroxime, flucloxacillin, co-amoxiclav or vancomycin - and that there is no deep or severe infection - may consider not telephoning.

Yeasts from intravascular line tips: request further blood cultures if clinically indicated.

Ps. aeruginosa from neonate eye swabs

Bacillus cereus in heavy growth from traumatic wound or any eye specimen.

N. gonorrhoeae (culture or NAAT) or *C. trachomatis* NAAT results (NB: see *N. gonorrhoeae* under Out-patient below).

Any heavy pure growth from vascular, sternotomy or prosthetic implant wound.

Any heavy or pure growth from bronchoalveolar lavages on high-dependency or immunocompromised patients.

Any pure growth $>10^5$ cfu/mL from MSU if: clinical features suggest upper tract infection or sepsis (ie not uncomplicated UTI); or if renal transplant patient, or clinical details suggest inappropriate or inactive antimicrobial prescribed.

OUT-PATIENTS: clinics, primary care *etc*

- stool results:
    - infective diarrhoea in the under 2y's
    - *E. coli* O157
    - *Shigella* spp.
    - Possible *Entamoeba histolytica* and more unusual parasites / helminths when GP is likely to require advice.

- Group B streptococci from pregnant women: as for in-patients above.

- All *N. gonorrhoeae* except those from GUM, RSH, Caldecott Clinic *etc*

- Group A streptococci from sites other than throat or superficial skin swabs in the absence of clinical details suggesting serious infection **AND** from throat if details suggest possibility of scarlet fever

2.6.2 Printed results

All positive results are authorised for printing / release by a Consultant Medical Microbiologist. Reports for Primary Care are printed and dispatched every working day, Monday to Friday. Written reports are not produced for specimen requests made through the King's Electronic Patient Records system. Apart from negative urines, which can be reported after one working day, most Microbiology culture results are reported after 2-5 days, depending on the investigation.

Copies of printed reports can be obtained upon request. Reports are never faxed.

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3. Out-of-hours clinical advice

A Medical Microbiologist is available from 9:00 to 17:00, Monday to Friday on extension 4358 or 4360.

Advice on prophylaxis and treatment of infections – and therapeutic monitoring of antimicrobials - is available in the 'Infections' app (KingsWeb), the Antimicrobial Pocket Guide and the British National Formulary.

Out of hours (17.00 – 09.00 weekdays and at weekends), a Specialist Registrar in Medical Microbiology and Consultant Medical Microbiologist are available *via* KCH switchboard to discuss clinical, diagnostic and therapeutic problems with doctors at any time.

During the day, infection control advice can be obtained from the Infection Control Nurses. Out-of-hours service is available from the Medical Microbiologist Specialist Registrar or Consultant.

Trust guidelines for Denmark Hill and Orpington can be found here:
http://kweb/kwiki/Antibiotic_Treatment_And_Prophylaxis_Guidelines/KCH_and_Orpington

Ward reports of antimicrobials:
http://eprreports/ReportServer/Pages/ReportViewer.aspx?%2fDevelopment%2fPrescribing%2fAntimicrobial+reports%2fAntimicrobial+Drugs+%28ALL%29+%5Bward+specific%5D&rs:Command=Render

The free antimicrobial App called 'Infections' available for Apple and Android devices from www.ubqo.com/infections (password for contacts is 'infection').

4. Antimicrobial assays

Antimicrobial assays (aminoglycosides and vancomycin) are performed in the Blood Sciences Laboratory, (BSL) not in Microbiology.

Please send clotted blood for testing.

Other antimicrobial assays

Under certain circumstances it may be desirable to measure the levels of other antimicrobial agents such as streptomycin (eg TB), trimethoprim (eg renal failure), chloramphenicol (neonates), teicoplanin (prolonged therapy of serious, deep or complicated infections), colistin, and certain antifungals (eg flucytosine, itraconazole, voriconazole and posaconazole). Chloramphenicol peak levels should be taken 2 hours after the dose is given.

Itraconazole, voriconazole and posaconazole assays are performed in Toxicology at King's. Other assays are only available at reference laboratories so the result will be delayed compared to 'in house' assays.

5. Specimen collection methods

Antral washings
Ideally an ENT surgeon should collect the specimen. Transfer to a sterile universal container. Ensure the cap is tightly screwed on.

Aspirates and fluids from normally sterile sites
Collect the specimen with a sterile syringe. Transfer a maximum of 20ml into a sterile universal container. Ensure the cap is tightly screwed on. Ascitic fluids may also be inoculated in to a blood culture set (but a sample in a sterile container is required for microscopy).

Blood cultures
An adult blood culture set consists of 2 BacT/ALERT bottles**.** Although considered a low risk procedure, proper decontamination of the skin prior to venepuncture will minimise the risk of local infection through the introduction of the patient's skin flora and reduce culture contamination. Hands must be decontaminated before collecting and assembling the equipment for undertaking the procedure and before and after putting on non-sterile gloves. The skin at the venepuncture site must be decontaminated with Chlorhexidine 2% and alcohol 70% wipe for 30 seconds and allowed to air dry for at least 30 seconds prior to the procedure. Do not repalpate the site. Whenever possible, use Safety Engineered sharps devices and dispose at the point of use. Flip the plastic caps off the 2 blood culture bottles and disinfect the rubber diaphragms with 70% isopropyl alcohol. Allow to dry. Inoculate through the rubber diaphragm adding up to, but no more than, 10ml *per* bottle. For a paediatric bottle (paediatric blood culture set = one bottle only) add up to 4mL. During normal laboratory opening hours the bottles should be transported to the laboratory for incubation as soon as possible. Out of normal hours, the bottles should be placed in the 37^0C incubator located outside the microbiology laboratory. It is not necessary to contact the on-call BMS for blood cultures taken out-of-hours.

Bronchial washings
After collection remove the cap and the tubing of the sterile suction container and apply the screw cap to the container.

Cerebrospinal fluid
? Meningitis: an adequate amount is essential - send at least 2-3ml. This is particularly important if *Mycobacterium tuberculosis* infection is suspected where small numbers of organisms may be present: send 10mL in such cases. The results of microscopy and any positive cultures are always telephoned, but will be available on EPR immediately.

? Subarachnoid haemorrhage (SAH): if there is a clinical suspicion of SAH and the specimen is bloodstained send the 1st and 3rd samples so that differential red blood cell counts may be performed. The results of microscopy and any positive cultures are always telephoned. Always inform the laboratory that SAH is a possibility by providing the differential diagnoses.

NB: we do not offer a spectrophotometric assay for xanthochromia: these are performed in biochemistry.

Programmed Investigation Unit_ CSFs from patients other than those thought to have an infective aetiology (eg degenerative diseases) are not processed out-of-hours.

Ear swab
Place the swab in the ear canal. Rotate gently. Place the swab in the plastic transport sheath.

Eye swab
Microbiology (bacteriology): Gently evert the lower eyelid to expose the conjunctival membrane. Rub the swab gently over the conjunctival membrane avoiding the cornea. Place the swab in the plastic transport sheath.

Virology and *Chlamydia trachomatis*: see Virology Laboratory User's manual (molecular tests)

Faeces
Send a "plum-sized portion" or 5-10ml if liquid. Ask the patient to defecate into a clean bedpan or other convenient container if at home. Use the plastic spoon to transfer a portion of faeces into the pot. For liquid faeces use a plastic medicine spoon. Take care not to contaminate the outside of the faeces pot.

Amoebic dysentery - for examination of amoebic trophozoites the specimen must reach the laboratory within 1 hour of its production. It is advisable to arrange this examination with the laboratory in advance. For all investigations, if more than one specimen is to be submitted, ensure that these are obtained on successive days.

Sellotape slide For the investigation of threadworm. Carry out the procedure first thing in the morning. Cut a 4-inch strip of sellotape, press the middle 1-2 inches firmly against the perianal skin. Stick the sellotape onto the microscope slide. Put the slide into the slide box.

Genital tract swabs
Microbiology: Cervical and high vaginal swabs must be taken with the aid of a speculum. It is important to avoid vulval contamination of the swab. For *Trichomonas*, swab the posterior fornix. If there are obvious candida plaques swab the lesions. If pelvic infection, including gonorrhoea, is suspected, swab the cervical os. For *Chlamydia trachomatis* investigation a self-taken vaginal swab, cervical swab or mid-stream urine specimen should be sent for NAAT testing using the appropriate transport medium.

Cervical swabs: Microbiology: introduce the speculum; roll the swab in the endocervix. Place the swab in the plastic transport sheath containing the black charcoal-containing Amies medium. For *Chlamydia trachomatis* investigation a self-taken vaginal swab, cervical swab or mid-stream urine specimen should be sent for NAAT testing using the appropriate transport medium.

High vaginal swabs: Introduce the speculum. Roll the swab firmly over the surface of the vaginal vault. Place the swab in the plastic transport sheath containing the black charcoal-containing Amies medium.

Urethral swabs : Avoid contamination with micro-organisms from the vulva or the foreskin. Small swabs are available for this purpose. The patient should not have passed urine for at least 1 hour. For males, if discharge is not apparent attempt to "milk" it out of the penis. Pass the swab gently through the urethral meatus and roll around. Place the swab in the plastic transport sheath containing the black charcoal-containing Amies medium. *Chlamydia*: Take this specimen after the Microbiology swab. Pass the swab through the urethral meatus and gently but firmly roll it over all the surfaces of the urethral epithelium for 1-2 seconds then withdraw. Place the swab in chlamydia transport medium, snip off the shaft and screw the cap on.

Helicobacter
Stool antigen testing has replaced serology for diagnosis of Helicobacter infection . Detection of antigen in stool provides direct evidence of current infection with reported sensitivities and specificities of >90%. However, it should be noted that there is insufficient evidence at present to recommend the use of the stool antigen test as a test-of-cure.

Intrauterine contraceptive devices (IUCDs)
Send the entire device.

Intravascular devices
Line infection is confirmed by semi-quantitative culture of a removed line. After removing a possibly infected line from a patient, cut off the intravascular portion using sterile scissors and place it in a sterile universal container. If infection is suspected in a long line send the intravascular portion immediately adjacent to the exit site and the tip in separate sterile universal containers.

Mouth swabs
Sample pus if present otherwise sample any lesions or inflamed areas. A tongue depressor or spatula may be helpful to aid vision and avoid contamination from other parts of the mouth. Place the swab in the plastic transport sheath.

Nasal – anterior nares - swab
Nasal swabs are usually taken to detect staphylococcal or meningococcal carriage. Moisten the swab before swabbing with sterile saline. Swab the anterior nares by gently rotating the swab in each nostril. Place the swab in the plastic transport sheath.

Pernasal swabs
Pernasal swabs are used for the diagnosis of whooping cough by culture. Pass the swab gently along the floor of the nose. Place the swab in pertussis transport medium. Taking these samples in patients with whooping cough may precipitate a paroxysm of coughing and cause obstruction of the airways.

Resuscitation equipment must be available if whooping cough is suspected. The specimen collector should avoid direct coughs from the patient.

Note: a rapid diagnostic test – **The Biofire Film Array** - is available for the diagnosis of whooping cough in children in whom there is a strong suspicion of this diagnosis. The test can be requested by the attending consultant contacting the on-call Medical Microbiologist.

Postnasal swabs
These are taken to investigate meningococcal carriage. The procedure is the same as for throat swabs but rub the swab over the posterior wall of the pharynx only, not the tonsils.

Peritoneal dialysis fluid
Using a fine needle and syringe, aspirate fluid from the peritoneal dialysis bag. Transfer 20ml into a sterile universal container.

Serology ('antibody tests': bacteriology, mycology, parasitology and virology)
Collect 5-10ml of blood in a blood collection tube (usually red topped, but refer to the Virology User's Manual for appropriate tubes).

Skin, nail and hair for mycology
Skin scrapings should be taken by gently shaving off material from the active edges of the lesion using a scalpel blade. Send material to the laboratory in a Dermapak, if these are unavailable, place sample into a sterile universal. At least 5 mm^2 of skin scrapings are required.

Nails and hair - clippings should include the full thickness of the nail and extend as far back from the edge as possible. Hairs should be plucked from affected areas together with skin scrapings from associated scalp lesions. As with skin, these specimens may be sent in a Dermapak.

Sputum
Expectorated sputum and not saliva is required. Do not collect shortly after the patient has been eating, drinking or cleaning their teeth. Ask a physiotherapist to assist if a patient has difficulty in producing satisfactory specimens.

Surface swabs and skin swabs
Rotate the swab on or in the required site. Place the swab in the plastic transport sheath.

Throat swabs
Diagnosis of bacterial (eg *Streptococcus pyogenes*) pharyngitis depends on the culture of a throat swab. Sample the posterior portion of the pharynx, tonsillar areas and areas of ulceration, exudation or membrane formation. Depress the tongue with a spatula. Try not to touch the lips, tongue, mouth or saliva. Place the swab in the plastic transport sheath.

Tissues and biopsies
Under aseptic conditions transfer material to a sterile universal container that does not contain formalin as this inactivates pathogens very rapidly. Send in 0.5ml of sterile saline. Please specify which virus is being investigated for virology.

Urine
NB: if transport of urine specimens to the laboratory is delayed they should be refrigerated.

Clean-voided midstream urine is preferred for bacterial and fungal cultures. The reliability of microscopy and culture results depends on the avoidance of contamination and prompt transport.

Detection of red blood cells (haematuria) and casts can help to diagnose other conditions of the urinary tract not caused by microorganisms.

It is recommended that in females the hands and the perineal area are washed with soap and water prior to specimen collection. Part the labia and clean the area around the urethral meatus from front to back. Spread the labia with the fingers of one hand.

In males retract the foreskin, if present, and clean the skin surrounding the urethral meatus.

To avoid contamination with urethral organisms the patient must be instructed not to collect the first part of the urine. Start passing urine into the toilet, bedpan or urinal. When the urine is flowing freely collect urine in a clean sterile container. If a preservative (boric acid) is used pour urine up to the 20ml mark on the label.

Schistosomiasis: In patients with haematuria, eggs may be found trapped in the blood and mucus in the terminal portion of the urine specimen. Peak egg excretion occurs between noon and 3pm. Therefore collect a terminal specimen of urine at around midday in a sterile container. Preservatives must not be used.

Catheter specimens of urine should be obtained aseptically with a sterile syringe and needle following disinfection of the catheter specimen port with alcohol. Clamp tubing below the sampling cuff. Clean the sampling cuff with a mediswab. Aspirate urine using a syringe and transfer to a sterile universal container. Unclamp the tubing. Patients with long-term catheters are often colonised with one or more microorganisms. NB: inappropriate attempts to sterilise the urine in asymptomatic patients with urinary catheters may result in the selection of resistant bacteria.

For investigation of mycobacterial infection send 3 early morning urine specimens (when the urine is most concentrated) taken on consecutive days.

Urine - ileal conduit Open the dressing pack. Remove the stoma appliance. Clean the area around the stoma. Dry thoroughly. Gently insert a urinary catheter into the stoma to a depth of 2.5-5cm. Drain sufficient urine into a receiver. Remove the catheter and pour urine into a sterile universal container. Attend to the stoma.

Wounds and ulcers

Always state the site and nature of the wound. This is essential, as the laboratory may need to interpret findings against a background of normal flora present in a given part of the body.

If copious pus or exudate is present, aspirate with a sterile syringe and transfer to a sterile universal container. If insufficient to aspirate rotate a swab in the centre of the infected area and place the swab in the plastic transport sheath.

6. Quick Guide Table

Specimens should be transported and processed as soon as possible

Specimen / investigation	Container and comments
Antral washings	Sterile universal container
Aspirates and fluids from normally sterile sites (joint, ascites, peritoneal and pleural fluids)	Sterile universal container
Beta-D-glucan (panfungal marker)	10mL clotted blood (tested in Virology)
Blood cultures	Take before antimicrobials are given if possible Disinfect skin with 70% isopropyl alcohol for 30 seconds. Place 8-10ml in each blood culture bottle for adults, 4ml in one paediatric bottle for paediatric patients
Bronchial washings	Sterile container; e.g.: 30ml sterile container or sterile universal container
Bronchoalveolar lavage	Sterile container; e.g.: 30ml sterile container or sterile universal container
Cervical swab	For the investigation of gonorrhoea use a Microbiology swab in Amies transport medium with charcoal, and transport to the laboratory immediately or store at 4ºC if there is a delay. Urethral, rectal and throat swabs may also be collected and sent. For the investigation of *Chlamydia* in females a self-taken vaginal or cervical swab should be sent for NAAT testing using the appropriate transport medium. This test is performed in Virology.
Cerebrospinal fluid (CSF)	For cell count, Gram staining and culture send at least 2-3ml of CSF in each of 3 sterile universal containers. If meningitis is suspected contact the laboratory and send the specimens immediately. Send separate specimens for glucose and protein analysis to the Biochemistry department.
Clostridium difficile testing	Send a stool specimen in sterile container. NB: Only very loose or liquid stools (eg those that adopt the shape of the container) need be sent for testing
Culture for bacterial infections	Pus is the ideal specimen or a biopsy of the infected tissue. Send in a sterile universal container. If only a small sample of tissue is available, add a few drops of sterile normal saline to prevent drying. If swabs are taken, send in Amies transport medium with charcoal.
Ear swab	Send a swab in Amies transport medium with charcoal
Eye swab	For investigation of *Chlamydia trachomatis* infection, send a swab in NAAT transport medium.
Faeces	With the spatula provided transfer a plum-sized portion of faeces, or equivalent volume of fluid, into a sterile universal container
Galactomannan (aspergillus marker)	10mL clotted blood
Helicobacter (antigen)	With the spatula provided transfer a plum-sized portion of faeces, or equivalent volume of fluid, into a sterile universal container
High vaginal swab (HVS)	Use Amies transport medium with charcoal for investigation of *Candida*, *Trichomonas vaginalis* and vaginosis. For PID,

Specimen / investigation	Container and comments
	gonorrhoea and *Chlamydia* investigations send specimens for Chlamydia and gonococcus NAAT.
Intrauterine contraceptive device – IUCD	Send the device in a sterile universal container
Mouth swab	Send a swab in Amies transport medium with charcoal for Microbiology. For virology send the swab in virus transport medium.
Nasal swab	Send a swab in Amies transport medium with charcoal for Microbiology. For virology, send the swab in virus transport medium.
Nasopharyngeal aspirate	Traps containing a specimen should be sealed using lid.
Pernasal swab	Use a pernasal swab and transport immediately to the laboratory
Postnasal swab	Send a swab in Amies transport medium with charcoal
Pus	Transfer into a sterile universal container. Only use Microbiology swabs in Amies transport medium with charcoal if pus cannot be obtained
Screening swabs and surface swabs	Send swabs in Amies transport medium with charcoal
Seminal fluid	Sterile universal container
Skin, nail and hair for mycology	For skin, nail and hair clippings use black card, Dermapaks or sterile universal. Routine Microbiology swabs in Amies transport medium with charcoal are used for the investigation of *Candida* infections
Sputum	Sputum from deep expectoration and not saliva is required. Send specimen in a 30ml sputum container or universal
Throat swab	For Microbiology investigations send a swab in Amies transport medium with charcoal. For virology send the swab in virus transport medium.
Tissues and biopsies	Sterile universal container. If biopsy is small add 0.5ml of sterile saline to prevent it from drying out. Ensure there is NO formalin or other preservative
Tuberculosis	Best specimens are early morning sputum, urine, pus or tissue. For sputum and urine send 3 early morning specimens taken on consecutive days
Sellotape slide	Press Sellotape around the perianal region and transfer to a clean microscope slide. Place this in a slide box
Urine	Collect urine in a sterile universal container. For *Chlamydia trachomatis*. Send a first-catch specimen.
Catheter specimen of urine (CSU)	Transfer urine to a sterile universal container (containing boric acid). If less than 15ml do not use boric acid
Clean-voided midstream specimen of urine	Collect in sterile container and transfer to a sterile universal container (containing boric acid). If less than 15ml do not use boric acid
Early morning urine for tuberculosis	Sterile large volume container
All other urine specimens	Sterile universal container
Urethral swab	For the investigation of gonorrhoea by culture use a Microbiology swab in charcoal-containing Amies transport medium transport to the laboratory immediately. If there is likely to be a delay, keep

Specimen / investigation	Container and comments
	at 4°C if possible.
Vesicles, ulcers and genital lesions	Send a swab in virus transport medium.
Wound and ulcer swabs	Send a swab in Amies transport medium with charcoal

7. Typical turn-around times for common specimens

Urine	negative: 1day; positive: 2-3 days
High vaginal swab	3 days
Eye swab	3 days
Wound swab	3 days
Throat swab	3 days
Faeces	4 days
Sputum	4 days
MRSA / CRE / VRE screen	4 days
Fluids	5 days
Mycology	21 days
TB	6 weeks

Blood cultures are monitored continuously and all positives telephoned to the requesting clinician as soon as they are available. If there is no growth after 48 hours (of processing, not 48 hours after collection), a report to that effect is sent out automatically, but specimen processing continues for a total of five days. Blood cultures with appropriate clinical details (eg 'endocarditis') are monitored for 14 days.

8. Specialist laboratory services used

The PHE provides a comprehensive range of microbiological tests and services as indicated below. The request form you should use is provided as a link against each test/service. Further information regarding these or other tests can be obtained from the laboratory's user handbooks or direct from the laboratory. Links to both the relevant user manual and laboratory webpage (where you will find contact details) are provided against each test/service.

Services	Test type	Unit
Achromobacter	Species identification, molecular typing and antimicrobial resistance	AMRHAI
Acinetobacter	Species identification, molecular typing and antimicrobial resistance	AMRHAI
Actinomycetes (Aerobic)	Antimicrobial susceptibility	AMRHAI
Actinomycetes (Aerobic)	Identification and confirmation	AMRHAI
Amoebae	Detection, identification and confirmation, serodiagnosis	NPRL
Anaerobes (*Bacteroides*, *Clostridia*, *Fusobacteria*, *Actinomyces* spp., other closely related genera)	Identification	ARU
Anthrax	See *Bacillus anthracis*	
Antibiotic resistance surveys	European antibiotic resistance surveillance scheme (EARSS) and surveillance of resistance	AMRHAI
Antibiotic susceptibility testing	New antimicrobials, susceptibility testing service, beta-lactamases, endocarditis	AMRHAI
Bacillus anthracis	Identification and confirmation, PCR, serology, characterisation (phage, penicillin sensitivity)	RIPL
Bacillus (other than *B.anthracis*)	Identification	GBRU
Bacillus (other than *B.anthracis*)	Molecular typing	GBRU
Bacillus (other than *B.anthracis*)	Detection of emetic toxin gene by PCR	GBRU
Bacillus (other than *B.anthracis*)	Antimicrobial susceptibility	AMRHAI
Bacterial Identification Service (BIDS) - isolates	Isolate identification (unknown, atypical, fastidious, emerging bacteria)	AMRHAI
Bacterial Identification Service (BIDS) - clinical samples	Bacterial detection and species identification for culture-negative, unknown clinical samples from normally sterile sites	AMRHAI
Blastomyces dermatidis	Serology, identification and confirmation	MRL
Bordetella spp.	Identification	RVPBRU
Bordetella spp.	Antimicrobial susceptibility	AMRHAI
Bordetella pertussis	Serology: anti-PT IgG antibodies. Not suitable for immune status	RVPBRU
Bordetella pertussis	Oral fluid: anti-PT IgG antibodies. NOT suitable for immune status	RVPBRU
Bordetella pertussis	qPCR	RVPBRU
Brucella spp.	Serodiagnosis	BRU
Brucella spp.	Speciation and characterisation	BRU
Burkholderia spp.	Species identification, molecular typing and antimicrobial resistance	AMRHAI
Burkholderia pseudomallei	Identification and antimicrobial	AMRHAI

	resistance	
Candida spp.	Identification and confirmation	Mycology RL
Campylobacter	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Campylobacter	Identification	GBRU
Chlamydia (respiratory)	Only available after discussion and prior agreement with RVPBRU C. pneumoniae, *C. psittacci*, *C. abortus*: PCR assay	RVPBRU
Chlamydia trachomatis	*C. trachomatis*: LGV multiplex PCR	STBRU
Clostridium difficile	16S/23S PCR ribotyping, antibiotic susceptibility testing and toxin A and B assay on isolates	ARU
Clostridium botulinum	Detection and identification of *C. botulinum* from clinical, food or environmental samples by PCR and culture	GBRU
Clostridium botulinum	Detection of botulinum neurotoxins in clinical specimens or food	GBRU
Clostridium perfringens	Identification of enterotoxigenic *C. perfringens* by PCR	GBRU
Clostridium perfringens	Molecular typing	GBRU
Clostridium perfringens	Detection of *C. perfringens* enterotoxin in faeces by ELISA	GBRU
Clostridium perfringens	*C. perfringens* Toxin (lethal toxins) typing by PCR	GBRU
Clostridium tetani	Detection and identification of *C. tetani* by PCR and culture	GBRU
Clostridium tetani	Detection of *C. tetani* neurotoxin in serum (note: serum will be first tested for tetanus antibody levels by RVPBRU)	GBRU
Clostridium tetani	Tetanus immunity: serum antibodies	RVPBRU
Coccidioides immitis	Serology, identification and confirmation	Mycology RL
Corynebacterium	Molecular typing and antimicrobial resistance	AMRHAI
Corynebacterium diphtheriae	*C. diphtheriae* and other potentially toxigenic Corynebacteria: identification and toxin testing by PCR and Elek	RVPBRU
Corynebacterium diphtheriae	Diphtheria immunity: serum antibodies	RVPBRU
Corynebacterium jeikeium	*C. jeikeium* antimicrobial sensitivity	AMRHAI
Cronobacter	*C. sakazakii*: confirmation of identification, molecular typing and antimicrobial resistance	AMRHAI
Cystic Fibrosis (CF) pathogens	Identification and molecular typing	AMRHAI
Cystic Fibrosis (CF) pathogens	Antimicrobial susceptibility	AMRHAI
Cryptococcus spp.	Identification and confirmation	Mycology RL
Cryptosporidium spp.	Detection, identification and confirmation, typing	CRU
Dermatophytes	Identification, confirmation	Mycology RL
Diphtheria (see *Corynebacterium diphtheriae*)		
Ebola virus	Serology, PCR. Please contact lab before sending samples.	RIPL
Elizabethkingia.spp	Identification, molecular typing and antimicrobial resistance	AMRHAI
Enterobacter spp.	Molecular typing and antimicrobial	AMRHAI

	resistance	
Enterococcus spp.	Species identification, molecular typing and antimicrobial resistance	AMRHAI
Escherichia	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Escherichia	*E. coli* (ACDP HG 2 only): molecular typing and antimicrobial resistance	AMRHAI
Escherichia	Identification and typing	GBRU
Escherichia	*E. coli* O157: serodiagnostic service	GBRU
Escherichia	Detection and isolation from faeces	GBRU
Francisella spp., including tularensis	PCR, serology, isolation	RIPL
Gram-negative bacteria non fermenter and fastidious organisms	Molecular typing and antimicrobial resistance	AMRHAI
Gram-positive bacteria (except *C. diphtheriae*)	Molecular typing and antimicrobial resistance	AMRHAI
Haemophilus	*Haemophilus* spp. (excluding *H. ducreyi*): identification	RVPBRU
Haemophilus	*H. influenzae*: sero typing and capsular genotyping of *H.influenzae*	RVPBRU
Haemophilus spp. and *Aggregatibacter* spp.	Antimicrobial susceptibility	AMRHAI
Helicobacter	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Helicobacter	*H. pylori* identification and antibiotic susceptibility	GBRU
Histoplasma capsulatum	Serology, identification and confirmation	Mycology RL
Histology slides	Examination for the presence of fungi	Mycology RL
Hydatid disease or Echinococcosis	Serology	NPRL
Identification of bacterial isolates with no national reference facility (unknowns, atypical, fastidious, emerging	MALDI-TOF-MS, 16s ribosomal sequence analysis	AMRHAI
Klebsiella spp.	Molecular typing and antimicrobial resistance	AMRHAI
Legionella	*L.pneumophila*: in-house urinary antigen EIA assay (confirmation of sending lab testing results only)	RVPBRU
Legionella	*L pneumophila* PCR (from urinary antigen positive patients only)	RVPBRU
Legionella	Identification and epidemiological typing of clinical or outbreak associated isolates	RVPBRU
Leuconostoc spp.	Antimicrobial susceptibility	AMRHAI
Leptospira spp	Isolation and confirmation, identification, serology	NLS
Listeria spp.	Identification, serotyping and molecular typing of *L.monocytogenes*	GBRU
Listeria spp.	Species identification of Listeria	GBRU
Listeria spp.	Antimicrobial susceptibility	AMRHAI
Lyme disease	Serology, PCR	RIPL
Malaria	Blood film diagnosis, antigen detection, PCR, drug resistance markers	Malaria RL
Molluscum contagiosum	Electron microscopy	HPHCU
Moulds	Identification and confirmation, susceptibility testing	Mycology RL
Meticillin-resistant *S. aureus* (MRSA) (see Staphylococcus)		

Mycobacterium spp.	Identification, genotyping, drug susceptibility, molecular diagnosis (e.g. PCR for rapid species identification and detection of resistance genes), molecular epidemiological studies, QuantiFERON®-TB Gold test	NMRS-South
Mycoplasma	*M.hominis* and *Ureaplasma* spp.: PCR and/or culture	RVPBRU
Mycoplasma	Mycoplasma and ureaplasma: biochemical characterisation and molecular methods	RVPBRU
Mycoplasma	*M. pneumoniae*: PCR	RVPBRU
Mycoplasma	*M. genitalium*: molecular detection of the adhesion MgPa gene	AMRHAI
Mycoplasma	Other species: culture, PCR and sequencing when relevant	RVPBRU
Neisseria spp.	*N.gonorrhoeae*: confirmation of identification by phenotypic and molecular methods	AMRHAI
Neisseria spp.	Susceptibility testing for third-generation cephalosporin and azithromycin antibiotics	AMRHAI
Neisseria spp.	Molecular confirmation of GC NAAT result	STBRU
Neisseria spp.	Programme: Gonococcal resistance to antimicrobials surveillance programme (GRASP)	AMRHAI
Neisseria meningitidis	Culture identification, molecular epidemiological studies, PCR, serology	MRU
Nocardia spp.	Antimicrobial susceptibility	AMRHAI
Opportunistic Pathogens	Molecular typing and antimicrobial resistance	AMRHAI
Pandoraea spp.	Molecular typing and antimicrobial resistance	AMRHAI
Parasites, intestinal protozoa and helminths, blood and tissue protozoa and helminths		NPRL
Penicillium marneffei		Mycology RL
Plasmodium spp.		NPRL
Pseudomonas spp.	*P. aeruginosa* antibodies (serodiagnosis)	AMRHAI
Pseudomonas spp.	Molecular typing and antimicrobial susceptibility	AMRHAI
PVL (see Staphylococcus)		
Q fever (*Coxiella burnetii*)		RIPL
Ralstonia spp.	Molecular typing and antimicrobial resistance	AMRHAI
Resistance mechanisms	Molecular detection and confirmation	AMRHAI
Salmonella	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Salmonella	Identification and typing	GBRU
Serratia	Molecular typing and antimicrobial resistance	AMRHAI
Shigella	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Shigella	Identification and typing	GBRU
Staphylococcus	*S.aureus*: molecular typing	AMRHAI
Staphylococcus	Staphylococcus, coagulase negative: species identification and molecular	AMRHAI

	typing	
Staphylococcus	Antimicrobial susceptibility testing	AMRHAI
Staphylococcus	Resistance gene detection	AMRHAI
Staphylococcus	Toxin gene detection (including PVL)	AMRHAI
Staphylococcus	Detection of staphylococcal enterotoxins A, B, C, D or E in foods or beverages.	GBRU
Stenotrophomonas	S.maltophilia: molecular typing and antimicrobial resistance	AMRHAI
Streptococcus	Streptococcus spp. and related genera or Gram positive cocci: identification	RVPBRU
Streptococcus	*S.pyogenes* (Lancefield Group A) typing	RVPBRU
Streptococcus	*S.agalactiae* (Lancefield Group B) typing	RVPBRU
Streptococcus	Lancefield Group C and G typing	RVPBRU
Streptococcus	*S. pneumoniae*: serological typing	RVPBRU
Streptococcus	Antimicrobial susceptibility	AMRHAI
Tetanus	Tetanus immunity: serum antibodies	RVPBRU
Toxoplasma gondii	Isolation, identification, culture collection, serology (for active infection) molecular diagnostics by PCR	TRL
Treponema	*T. pallidum* (syphilis): serological	STBRU
Treponema	*T.pallidum*, *Haemophilus ducreyi*, Herpes Simplex Virus (HSV) complex (Genital ulcer disease): PCR	STBRU
Ureaplasma	Refer to mycoplasma	RVPBRU
Vibrio (including *Plesiomonas shigelloides*)	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Vibrio (including *Plesiomonas shigelloides*)	Identification and typing	GBRU
VTEC O157 (See *Escherichia coli*)		
Yeasts	Serodiagnosis	Mycology RL
Yersinia	Antibiotic susceptibility testing for gram negative GI pathogens	GBRU
Yersinia	Identification	GBRU

Bacteriology reference department (BRD) Public Health England, 61 Colindale Avenue London NW9 5EQ. Comprising of: **AMRHAI, GBRU, RVPBRU**

BRU Brucella reference unit, Liverpool Clinical Laboratories, Virology Department, Royal Liverpool and Broadgreen University Hospital NHS Trust, Prescott Street Liverpool L9 8XP

CDRN Clostridium difficile ribotyping network (CDRN) service, Public health laboratory Cambridge, Clinical Microbiology and Public Health Laboratory (CMPHL), CMPHL Level 6, Box 236 Addenbrooke's Hospital, Cambridge CB2 0QW

Myc Mycology reference laboratory (Mycology RL) Bristol, Public Health England, South West Laboratory, Myrtle Road, Kingsdown Bristol BS2 8EL

NMR-S National mycobacterium reference service-South (NMRS-South), National Infection Service 61 Colindale Avenue London NW9 5EQ

ARU Anaerobe reference unit (ARU) Cardiff, Public Health Wales Microbiology Cardiff, University Hospital of Wales, Heath Park Cardiff CF14 4XW

MenRU Meningococcal reference unit (Men RU) Manchester, Clinical Sciences Building 2, Manchester Royal Infirmary, Oxford Road Manchester M13 9WL

NPRL National Parasitology Reference Laboratory, Faculty of Infectious and Tropical Diseases, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT

9. Notification of infectious diseases

NOTIFICATION OF INFECTIOUS DISEASES

The following infections are notifiable and should be reported to:

South London Health Protection Team

Public Health England, 3rd Floor, Skipton House, 80 London Road, London SE1 6LH
Tel: 0344 326 2052 (Daytime and Out of Hours)
Fax: 0344 326 7255

E-Mail: slhpt.oncall@phe.gov.uk
phe.slhpt@nhs.net (secure e-mail if sending from an nhs.net)

The King's Infection Control Team must be notified of inpatients with these infections.

- Acute encephalitis
- Acute poliomyelitis
- Anthrax
- Cholera
- Diphtheria
- Dysentery
- Food poisoning
- Leptospirosis
- Malaria
- Measles
- Meningitis
  - *meningococcal*
  - *pneumococcal*
  - *Haemophilus influenzae*
  - *viral*
  - *other specified*
  - *unspecified*
- Meningococcal septicaemia
- Mumps
- Ophthalmia neonatorum
- Paratyphoid fever
- Plague
- Rabies
- Relapsing fever
- Rubella
- Scarlet fever
- Smallpox
- Tetanus
- Tuberculosis
- Typhoid fever
- Typhus fever
- Viral haemorrhagic fever
- Viral hepatitis
  - *Hepatitis A, B & C*
  - *other hepatitis*
- Whooping cough
- Yellow fever