

Microbiology and Specialist Virology Services User Handbook



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About our services

The department of infection provides a full clinical service for the diagnosis of infection, which includes bacteriology, virology, serology, parasitology, mycology, molecular epidemiological studies to UHS, other NHS Trusts, general practitioners and local authorities.

Specialist sections include:

- Antimicrobial chemotherapy, carrying out antibiotic assays and sensitivity tests on clinical isolates
- Mycology, providing diagnostic mycology, medical parasitology and fungal serology services
- The molecular diagnostics unit provides rapid identification of bacterial and viral pathogens directly from various patient specimens, by detection of pathogen DNA or RNA.
- Microbiological and epidemiological information, advice and support to consultants in communicable disease control and their colleagues in Public Health Medicine; local surveillance and special studies in infectious disease
- Laboratory expertise for the control of infections including investigations in the community and during national outbreaks of infection.
- The Southampton specialist virology centre (SSVC) offers specialist virology diagnostic molecular and serological testing for hospital and community patients

Core Service Hours

Monday to Sunday including bank holidays, 09:00 to 17.30. During normal laboratory hours please telephone urgent requests to the main enquiry number and the call will be directed to the appropriate member of staff in the laboratory to ensure priority processing. Either bring the specimen to the laboratory reception yourself or arrange urgent transport. Details of the out of hours service may be found below.

Out of hours service

- There is a small team of staff on site to process some clinically urgent samples
- Urgent specimens can be processed if requested and agreed criteria satisfied, depending on availability of competent staff
- These requests need to be phoned and discussed directly with the laboratory on a case-by-case basis



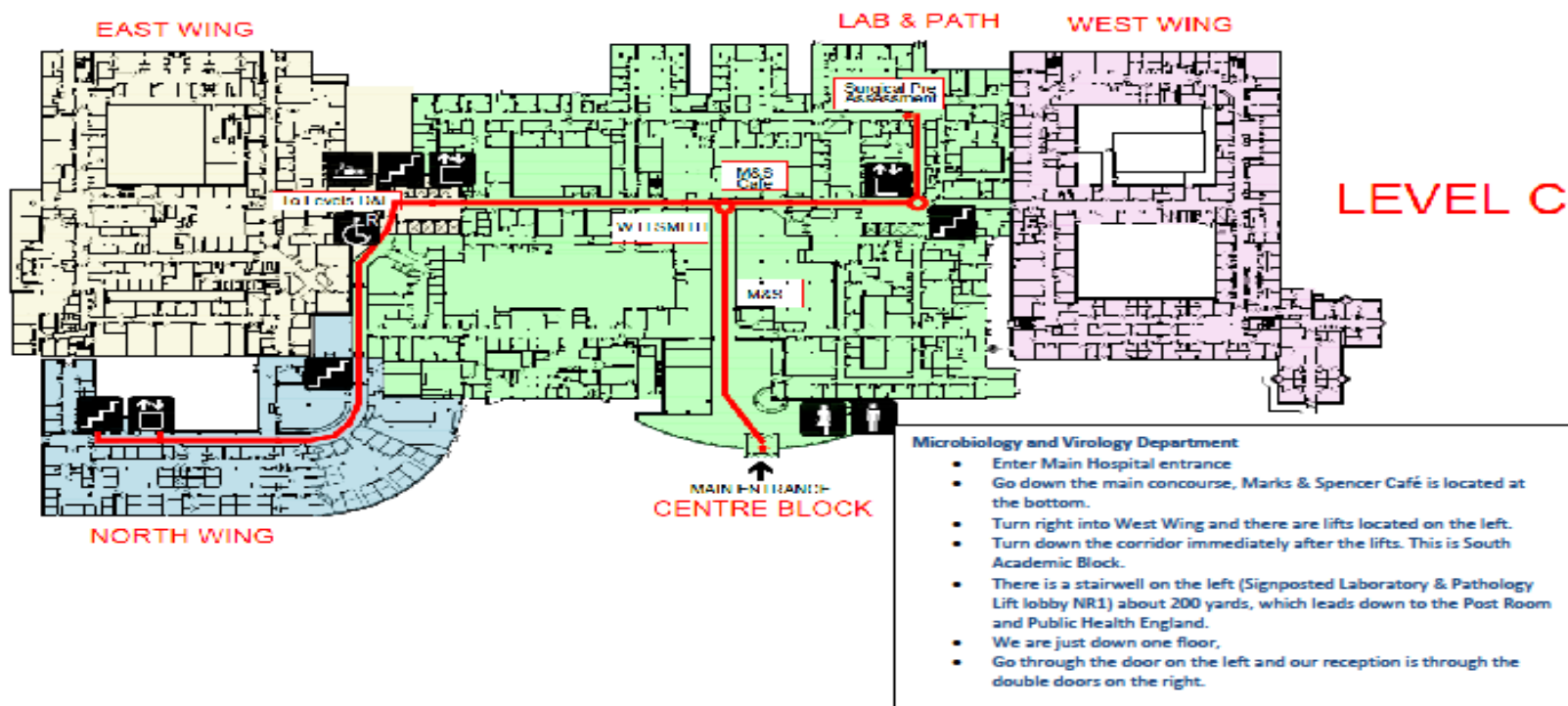
Location

of

laboratory

C LEVEL HOSPITAL MAP

University Hospital Southampton **NHS**
NHS Foundation Trust



Key contacts:

All Enquiries: **023 8120 6408**

UHS clinical services lead for the department of infection / consultant medical microbiologist & infectious diseases / microbiology/ID training programme director for Wessex.	Dr Julian Sutton
Laboratory manager	Rebecca Allen
Laboratory lead for bacteriology / consultant medical microbiologist / deputy infection control doctor	Dr Kordo Saeed
Consultant medical microbiologist	Dr Sarah Glover
Consultant medical microbiologist / Infection control doctor	Dr TatShing Yam
Consultant medical microbiologist & infectious diseases	Dr Andrew Rosser
Consultant medical microbiologist	Dr Nitin Mahobia
Consultant medical microbiologist & infectious diseases	Dr Tom Cusack
Consultant medical microbiologist & Associate Professor UoS	Dr Adam Dale
Consultant medical microbiologist & infectious diseases	Dr Nicholas Norton
Laboratory lead for Virology/Consultant medical virologist	Dr Emanuela Pelosi
Consultant medical virologist	Dr Eleri Wilson-Davies
Consultant medical virologist	Dr Adhyana Mahanama

Availability of Clinical Advice

Consultation about investigation and management of infection is welcomed.

- For advice on diagnosis and the interpretation of microbiology results and antimicrobial use contact the main enquiry number

- A senior member of medical staff is always available
- Outside normal hours of service medical staff may be contacted through the hospital switchboard

Completion of the request form

Microbiology and virology tests can only be carried out when the appropriate request forms are used. N.B. Additional tests in other disciplines, e.g. for histological testing, require that a separate sample and the appropriate form are sent for that purpose.

A request form must accompany all specimens sent to the laboratory and should clearly state the following information:

- NHS number
- Patient name and full address
- Date of birth
- Sex
- GP/Consultant code (preferred) or name
- Surgery/Ward code (preferred) or name
- Type of specimen
- Date and time specimen taken
- Tests required
- All relevant clinical details including any antimicrobial treatment (recent, current and intended) and foreign travel. Also, indicate if patient is pregnant and if so provide EDD
- Risk status of patient should be clearly stated
- Date of onset and duration of illness, particularly for serology
- Signature of requester
- For antimicrobial assays: provide date of last dose of antimicrobial and time given and dose
- For wound specimens: detail anatomical site from which "wound" specimens were taken
- Supply useful epidemiological information e.g. with children and? shigella sonnei: give the name of the school with adults and? salmonella -give the place of work and occupation
- ? Campylobacter, Giardia, Cryptosporidium: state if contact with livestock or external water sources e.g. recreational or work related

Specimen collection

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

Guidelines on specific samples may be found in **A to Z of diagnostic tests and investigations (Appendix A)**, but in general:

- Do not send specimens in non-sterile containers
- Containers should be leak-proof and CE marked

- Specimens should be obtained before antimicrobial agents have been administered
- An adequate quantity of material should be obtained for complete examination
- Always send pus rather than a swab of the pus
- 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 micro-organisms on the skin than would material obtained by curettage or biopsy of the base of the tract
- 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
- Please contact the laboratory if there is any doubt about the best specimen to take or concerning the availability of a test
- Occasionally further tests are required on samples that have already been received by the laboratory. The laboratory uses 'The Retention and Storage of Pathological Records and Specimens (6th Edition 2025)' for guidance on retaining samples for testing. However, depending on the nature of the sample and its viability after storage some clinically important samples are kept for longer e.g. CSF. Serum samples are stored for a period of two years since collection, thus allowing retrospective testing whenever it is clinically required.

Tests - key responsibilities

1. Ensure the appropriate test has been requested for the suspected infection
2. Ensure the correct amount of the correct specimen in the correct container is sent for any given test (see A-Z of Tests)
3. Ensure the patient details on request form and specimen correspond
4. Ensure prompt transportation of specimen to laboratory
5. Ensure high risk specimens are appropriately marked and transported
6. Ensure that the laboratory is notified in advance about urgent specimens
7. Ensure the specimen request form contains all appropriate information, full clinical details and correct contact details
8. Ensure that where multiple specimens are collected from the same patient at the same time, each specimen is individually labelled with the appropriate patient identifiers. The collection site and/or specimen sequence must be clearly recorded on both the specimen container and the request form, as applicable, to ensure accurate identification, full traceability, and correct interpretation of results.
9. Ensure tests are not requested in duplicate
10. It is the responsibility of the requestor to check results in a timely fashion

High risk specimens and safety

- a. Specimens are regarded as HIGH RISK if taken from patients known to be affected by a serious infectious disease such as tuberculosis or typhoid, or 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.

- b. The appropriate yellow sticker 'DANGER OF INFECTION' must be used. The specimen must be placed in a biohazard bag.
- c. Great care must be taken in obtaining specimens. Equipment such as needles and blades must be immediately disposed of safely in approved sharps boxes.
- d. Should a spillage occur of blood, fluids, tissues, or other specimens, this should be made safe and disposed of no matter what the risk status of the patient is.
- e. Specimens should be transported to the laboratory as rapidly as possible after collection to allow for the most accurate generation and interpretation of results
- f. Ensure appropriate action is taken for abnormal results and, if unsure, seek advice in interpretation of test results and treatment from senior biomedical scientists and medics.
- g. Turnaround times will vary depending on the test
- h. For best results, please ensure the correct type of specimen is sent in the correct container
- i. Please note that availability for some tests is restricted and requires prior discussion/ authorisation by a microbiologist/ virologist
- j. If unsure as to how to interpret a result, contact us. Please be ready with a full clinical history, up to date clinical data and recent antimicrobial treatment details before you call

Why has my specimen been rejected?

Specimens are only rejected for valid reasons:

- Inadequately labelled/unlabelled specimen
- Labelling error/discrepancy (for example, between specimen and request form)
- Unsuitable specimen or unsuitable specimen container
- Leaked specimen
- Contaminated specimen
- Lack of/no relevant clinical information on request form

Transportation of samples

- Specimens should be placed in the appropriate container which must be securely fastened. This must be placed in a clear plastic bag and sealed and transported to specimen reception in an approved secondary container together with absorbent material
- Hand-written request forms should be placed in the side compartment with the card folded inwards to help preserve request confidentiality
- Request forms must not be placed in the same compartment as the sample
- All high-risk specimens should be placed in a biohazard bag

- If a specimen is to be posted the packaging must comply with postal regulations <https://www.hse.gov.uk/biosafety/blood-borne-viruses/transportation-of-infectious-substances.htm>
- Specimens are transported to level D pathology reception before being distributed to the microbiology/virology laboratory
- Specimens may not be suitable for testing if they are so inadequately labelled that the patient's identification is in doubt, or if they have leaked, been contaminated or if no relevant clinical information is given with the request
- Rapid inpatient e.g. respiratory samples for viral pathogens may need to be brought directly to the laboratory or sent to Pathology Specimen Reception using the POD system

Results reporting

- Validated results are reported electronically to results server at UHS.
- Electronic reports are produced for GP sources every hour for delivery via EDI PMIP services.
- Hard copy reports for valid locations are printed and dispatched every working day, including Saturdays. Apart from negative urines which can be reported after one working day, most bacteriology culture results are reported after 2-5 days, depending on the investigation. Serology/immunology, virology reporting depends on the frequency of testing and the urgency of the request.
- To provide the most clinically beneficial, operationally efficient and cost-effective service, the laboratory employs several multiplex assays and it is normal practice to use these even when not all tests within the multiplex panel are requested. It is our policy to report all results along with those requested to provide as much information as possible to aid diagnosis.

Telephoning of Urgent and Significant results

Results of urgent requests and results which may aid the immediate patient management will be telephoned. This includes all likely true positive blood cultures and CSFs. Certain results may be rapidly available, and to aid the management of certain infections will be telephoned when they become available. Examples are:

- Gram stain on CSF, pus from abscesses or empyema
- Ziehl-Neelsen or phenol-auramine stain for acid and alcohol-fast bacilli
- Positive PCR results in lower respiratory tract samples for *Pneumocystis jirovecii*.
- Positive HSV PCR results in blood and surface swabs of neonates
- CSF: Positive PCR results from patients with encephalitis clinical suspicion of meningitis/encephalitis

CSF/fluid/tissue/pus etc referred for bacterial culture

- At the time of request, the requester will be informed that the result will be on the computer system as soon as possible after receipt. No results will be telephoned. The result will be entered onto the computer and the following laboratory comment will be added: 'Sample processed on-call. Please refer to

empiric guidelines if treatment required. If unsure what action to take please consult a senior member of your clinical team in the first instance. A senior member of the clinical team should contact an infection/microbiology doctor via switchboard if they require further advice.'

- For advice on diagnosis and the interpretation of microbiology results, antimicrobial use, infection control including the use of containment facilities, contact the duty NHS medical microbiologist via the Southampton General Hospital switchboard

Quality assurance

Samples from National Quality Assurance schemes are analysed routinely within the department.

The laboratory is assessed by UKAS to ISO15189:2022 accreditation number: 8403, Full scope of accredited activities can be viewed on the UKAS website <https://www.ukas.com/find-an-organisation/>

There is a quality management system in place and the department participates fully in this process.

The microbiology laboratory is accredited for the training of biomedical scientists by the Institute of Biomedical Science (IBMS).

Patient confidentiality

All staff working for Pathology have a legal duty to keep information about patients and staff members confidential and to protect the privacy of individuals. All staff adhere to the Trust's data protection and confidentiality policy and are mandatorily required to perform annual Information governance training.

Complaints handling procedure

University Hospital Southampton complaints team, comprised of a complaints manager and complaints coordinators, can be contacted via email at complaints@uhs.nhs.uk or via email at pals@uhs.nhs.uk. Contact telephone number is 02381206325 or write to Patient advice and liaison service (PALS), Mailpoint 81, Southampton General Hospital, Tremona Road, Southampton, SO16 6YD

A to Z of diagnostic tests and investigations (Appendix A)

- This is an alphabetical listing of all the diagnostic tests offered by the laboratory
- This consists of tests performed onsite and tests that are referred to a reference laboratory
- Reference tests stated turnaround times referred to are working days

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Acanthamoeba	Intraocular fluid/contact lenses and corneal scrape	Sterile universal	Intraocular fluid >5ml, Contact lenses & case, Corneal scrape in 200ul sterile water	SGH	10 days	Please state clearly if fungal/ mycobacterial or viral investigations required
Adenovirus PCR (Qualitative assay)	Respiratory secretions (NPA, Throat Swabs, BAL), Eye swabs, Blood(serum)	Sterile Universal	Minimum 200 µl	SGH	3 days	
AFB (acid-fast bacilli)	See under Mycobacteria					
Amikacin assay	See under Antibiotic Assays					
Amoebic serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	28 days	
Ano-genital ulcer PCR	Swab	Swab in VTM		SGH	3 days	
Antenatal Screening:(Full screen consists of: Syphilis total antibodies, Hepatitis B surface antigen (HBsAg), HIV antigen/antibody)	Blood (serum)	Clotted blood (red-top)	5-10 ml	SGH	8 days	eQuest ordering: Select [Partial Antenatal screen] for patients declining HIV test. Select [Minimal Antenatal] for patients declining HIV and HBsAg



Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Anthrax (serology/ isolation/ PCR)	Blood (serum)	Clotted blood (red-top)	5-10 ml (blood)	Reference	5 days	Consult microbiology to arrange & discuss request
Antibiotic Assays	• Please HANDWRITE on the request form, the exact time that blood is drawn. • Vancomycin, gentamicin and tobramycin levels are processed in biochemistry 24 hours-a-day. • Other antibiotic assays are NOT performed on-call [2000-0900 hours].					
Amikacin pre-dose (trough) & post-dose (1 hour after drug has been given)	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	5 days	Conventional 2-3 times daily dosing: aim for a pre-dose of <10mg/l, post-dose of <30mg/l. Once daily dosing: aim for a pre-dose of <5mg/l
Teicoplanin pre dose. Post-dose and random levels are NOT routinely needed. Loading dose regimen essential and wait for one week before testing level.	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	5 days	Aim for pre-dose of 20-25mg/l but <60mg/l. Typical dosing not less than 6-8mg/kg daily.
Antibiotic Assay (OTHER)- not listed above	Blood	Clotted blood (red-top) or Sodium Oxalate Tube (Grey Top) for Isoniazid	5-10 ml	Reference	5 days	Consult microbiology to arrange & discuss request. For Isoniazid sampling <u>please refer to guidelines</u>
Anti streptolysin O titre]	Blood (serum)	Clotted blood (red-top)	5-10 ml	SGH	3 days	Please state date of onset.
Antral washings	Washings	Sterile Universal	1 ml minimum	SGH	3 days	Please specify if fungal culture needed.
Ascaris microscopy	See under Faecal Parasitology/ OCP					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Aspergillus PCR/ antigen (galactomannan)	Blood (serum)	EDTA blood (purple top)	5-10 ml	Reference	5 days	Consult microbiology to arrange & discuss request
Beta D Glucan	Blood (serum)	Clotted blood (red-top)	5-10 ml	SGH	3 days	
Aspirates (e.g. joint)	Aspirate/ fluid	Sterile Universal	1 ml minimum	SGH	3 days for MC&S	Please specify if mycobacterial investigations needed.
Arboviral serology and PCR: Includes Alphaviruses Barmah Forest, Chikungunya, Ross River, Sindbis, Western, Eastern & Venezuelan equine encephalitis Flaviviruses Yellow fever, Dengue, Japanese encephalitis, St Louis encephalitis, Murray Valley encephalitis, West Nile, Tick-borne encephalitis complex Reoviruses Colorado tick fever Phleboviruses Rift Valley fever, Sandfly fever Bunyaviruses California encephalitis	Blood (serum) +/- CSF	Clotted blood (red-top) Sterile Universal	5-10 ml Minimum 200 µl	Reference	10 days	A full travel history and immunisation details is essential for test interpretation. Please discuss cases with a virologist.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Arenavirus serology and PCR (Lassa Fever virus & LCMV)	Lassa Haemorrhagic Fever: See under Viral Haemorrhagic Fever Lymphocytic Choriomeningitis virus Meningitis/Encephalitis: Discuss with Virology					
Babesia serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	21 days	.
Bacterial vaginosis	See under Vaginal swabs					
Bilharzia	See under Schistosomiasis					
BK virus (PCR)	Urine/EDTA blood/ tissue	N/A	5-10 ml	Reference	4 days	Discuss request with virologist
Blastomycosis serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	7 days	.
Blood cultures Blood culture & sensitivity (No need for separate requests for aerobic and anaerobic bottles)	Blood	BD Bactec Anaerobic/Aerobic culture vials	8-10 ml	SGH	2 days	Take before antimicrobials are given if possible. Transportation to the laboratory within 2 hours. Stored at room temperature. Refer to blood culture sampling guidance
Blood culture (multiples)]	Use only if taking only more than one set e.g. different lumens					
Blood cultures Paediatric	Blood	BD Bactec Peds Plus culture vial	4 ml	SGH	2 days	Take before antimicrobials are given if possible. Transportation to the laboratory within 2 hours. Stored at room temperature Refer to blood culture sampling guidance
Bone for MC&S	See under Fluids					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Bordetella isolation	Pernasal swab on flexible shaft		N/A	SGH	4-7 days	
Bordetella PCR	Pernasal swab, NPA (child), throat swab	Green topped tubes with VTM for swabs or Universal if NPA	N/A	SGH	3 days	Only performed on urgent requests from PICU.
Bordetella serology? recent infection [not for assessment of immunity]	Blood (serum)	Clotted blood (red-top)	5-10 ml	SGH	2-3 days	For individuals with chronic cough for >2 weeks.
<i>Borrelia</i> serology/ PCR	See under Lyme disease					
Botulism toxin Bioassay/ PCR	Blood (serum)-collect before antitoxin given	Clotted (red top) 10 ml		Reference	11 days	Consult microbiology to arrange & discuss request
Broncho-alveolar lavage (BAL) or washings	BAL/ washings	Sterile Universal	1 ml minimum	SGH	3 days for standard MC&S	Please specify if TB, fungal, viral or other test required (eg PCP
Brucella serology/	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	14 days	.
Campylobacter serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	14 days	.
Carbapenamase screen	Rectal swab	Sterile swab in Amies transport medium	N/A	SGH	2 days for negative, 3 days for presumptive positive	Specimens are rejected if >48 hrs as sub optimal for the isolation or organism
Candida auris Screen	Swab	Sterile swab in Amies transport medium		SGH	2 days for negative 3 days for positive	

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Cerebrospinal fluid (CSF) MC&S For cell count, Gram staining and culture send 2 - 3ml of CSF in each of 3 sterile universal containers	CSF	Sterile Universal 30ml	2-3 ml	SGH	2-4 hrs (Microscopy) 2-3 days (Culture)	If meningitis/ encephalitis is suspected contact the laboratory and send the specimens immediately. Send separate specimens for glucose and protein analysis to the appropriate departments
CSF for virological investigations	CSF	Sterile Universal 30ml	2-3 ml	SGH	2 days	Provide a date of onset, symptoms and travel history. Routine PCR testing includes: HSV, VZV, Enterovirus, parechovirus, Neisseria meningitidis If additional tests are required, contact virology
CSF for Mycobacteria/ Fungal investigation [CSF for MC&S] and specify additional tests in clinical details	CSF	Sterile Universal 30ml	2-3 ml	SGH	Up to 8 weeks	Send a separate sample for mycobacteria/ fungi
Chagas' disease	Send blood films for diagnosis of acute infection, otherwise see Trypanosomiasis serology					
Chickenpox	See under Varicella					
Chlamydia trachomatis/ NAATS	Urine/genital/HVS/ pharyngeal/rectal/ eye swab	Alinity m collection tube	As specified in collection kit	SGH	2 days	Contact laboratory if information regarding Alinity m collection kits are required.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Chlamydia serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	7 days	
Clonorchis serology	See under Fasciola serology					
Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
<i>Clostridium difficile</i> PCR ribotyping	Faeces			Reference	14 days	
<i>Clostridium difficile</i> toxin testing	Faeces	Universal 30 ml faecal pot	1-2 gm With the spatula provided transfer a plum-sized portion of faeces or equivalent volume of fluid	SGH	1 day	Initial screening performed by PCR.
CMV serology (IgM, IgG, IgG avidity)	Blood	Clotted blood (red-top)	5-10 ml	SGH	2 days	.
CMV PCR (Quantitative assay)	Blood	EDTA blood	1-5 ml (minimum 200µl/assay)	SGH	3 days	Discuss interpretation of results with virologist.
Coccidioides serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	7 days	Discuss with microbiologist if suspected.
Cold agglutinins (Mycoplasma)	Test performed by Haematology- consult Haematology for advice.					
Corneal scrape	Corneal scrape	SGH			10 days	Please state clearly if fungal/ mycobacterial or viral investigations required

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
<i>Coxiella burnetii</i> serology	Blood (serum)	Clotted blood (red-top)	5-10 ml	Reference	14 days	Discuss with microbiologist if suspected.
Coxsackie virus serology	See under Enterovirus IgM					
Cryptococcal antigen	Blood (serum) CSF	Clotted blood (red-top)	5-10 ml (blood) 1 ml minimum (CSF)	SGH	2 days	.
<i>Cryptosporidium spp.</i> (see Enteric Pathogens PCR)	Faeces	Universal 30 ml faecal pot	1-2 gm With the spatula provided transfer a plum-sized portion of faeces or equivalent volume of fluid	SGH	1 day	.
CVP tips	See under Vascular Access Devices					
Cystic sputum	See under Sputum (cystic)					
Cysticercosis	See under Taenia/ Tapeworms					
Dengue serology	Refer to Arboviral serology					
Dermatophytes	See under Mycology					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Diphtheria isolation	Swab	Swab in Amies transport medium with charcoal	N/A	SGH	3 days	Discuss with microbiologist if suspected.
Diphtheria antibody for determination of immune status.	Blood (serum)	Clotted blood (red-top)	5-10ml	Reference	21 days	
Ear swab	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	4 days	
Ebola virus	See Viral Haemorrhagic Fever					
EBV PCR	Blood	EDTA blood (purple top)	1-5 ml	SGH	2 working days	
EBV serology VCA IgG, VCA IgM, EBNA IgG, EBV VCA IgG avidity	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2 days	
Echinococcal (Hydatid) microscopy	Cyst fluid	Sterile Universal	N/A	SGH Reference	1 day 14 days	Please discuss with laboratory
Echinococcal (Hydatid) serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	14 days	
Ehrlichia (Anaplasma) serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	14 days	
Endotracheal aspirate (ETA)	Respiratory secretions	Sterile Universal	N/A	SGH	3 days	
<i>Entamoeba histolytica</i>	See under Amoebic serology & Send Faecal parasitology/ OCP					
<i>Enterobius vermicularis</i>	See under Threadworms					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Enterovirus/Parechovirus (Qualitative RT-PCR)	Faeces, CSF, EDTA blood or clotted blood Mouth, Eye, Skin Swabs in viral transport medium)	Sterile Universal, EDTA or clotted blood tubes or Swab in viral transport medium	1-2 gm faeces 1 ml CSF	SGH	2 days	Minimum required volume for assay: 200µl
Enterovirus IgM	Blood (serum)	Clotted blood (red top tube)	1-5 ml	Reference	15 days	(includes Coxsackie viruses)
<i>Escherichia coli</i> (E.coli) O157 serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	15 days	See also Faeces MC&S
ESBL Screening	Swab	Swab in Amies transport medium		SGH	2 days for negative 3 days for presumptive positive	
Eye swab for MC&S	Swab	Swab in Amies transport medium with charcoal.	N/A	SGH	4 days	Send a separate chlamydia swab if this is suspected.
Eye swab for virological investigations (HSV, VZV and adenovirus PCR)	Swab	Swab in Viral Transport Medium	N/A	SGH	3 days	
Eye fluids (intraocular fluids - vitreous and aqueous) for retinitis & uveitis panel (HSV, VZV, CMV, Syphilis and Toxoplasma gondii)	Intraocular fluids in syringe	Intraocular fluids in syringe	At least 0.25 mL	SGH	3 days	Advised to inform virology if expedite turnaround time is needed clinically

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Faecal parasitology/ ova, cysts and parasites (OCP)	Faeces	Universal 30 ml faecal pot	1-2 gm With the spatula provided transfer a plum-sized portion of faeces, or equivalent volume of fluid	SGH	7 days	3 specimens taken within a 5 day period-please give clinical details.
Faeces for Viral Pathogens (Adenovirus/ Rotavirus/ Norovirus/Sapovirus/ Astrovirus)	Faeces	Universal 30ml faecal pot	With the spatula provided transfer a plum-sized portion of faeces, or equivalent volume of fluid	SGH	1 day	
Norovirus	Vomit samples	Universal		SGH	1 day	This is an unverified sample type, testing is available on request.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Faeces for Enteric Pathogens PCR (includes Giardia & Cryptosporidium) <i>Salmonella</i> spp (inc typhoid, paratyphoid), <i>Shigella</i> spp, <i>E.coli</i> 0157 PCR positives confirmed by culture. <i>N.B.Yersinia</i> spp, <i>Vibrio</i> spp (inc Cholera) confirmed by culture only	Faeces	Universal 30ml faecal pot	1-2 gm With the spatula provided transfer a plum-sized portion of faeces, or equivalent volume of fluid	SGH	2 days	Please do not request for patients who have been in hospital for over 3 days
Faeces Swab for Rapid G I panel PCR	Swab	Caryblair media	N/A	SGH	4-6 hours	
Fasciola & other intestinal fluke serology (Clonorchis/ Paragonimus)	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	14 days	
Filarial serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	14 days	
Fish & Shellfish Poisoning	Please call to discuss. [Scombroid/ Ciguatera/ PSP/ NSP/ ASP/ DSP]					
Flavivirus serology & PCR	See under Arboviral serology					
<i>Fransicella tularensis</i>	See under Tularaemia					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Fluids, tissues, biopsies for microscopy and culture (includes aspirates, biopsies, tissue samples/ curettage, heart valves)	Fluid/ tissue [If biopsy is small add 0.5ml of Ringers or sterile saline to prevent it from drying out. Ensure there is NO preservative or formalin]	Sterile Universal	Dependant on specimen type	SGH	3 days	Please specify if culture for fungi, mycobacteria or other fastidious organisms is required.
General comment	For EQuest serology tests when unable to find specific tests- enter request under clinical details					
Genital herpes	See under Herpes Simplex Virus					
Genital swab for MC&S	HVS, LVS, Vulval, Vaginal, Penile	Swab in Amies medium with charcoal	N/A	SGH	3 days	Send ECS/URE for PID or STD Specimens are rejected if >48 hrs as sub optimal for the isolation of organisms.
Genital swab for MC&S	Urethral, Cervical, Endocervical	Swab in Amies medium with charcoal	N/A	SGH	3 days	Specimens are rejected if >48 hrs as sub optimal for the isolation of organisms.
Gentamicin levels	See under Antibiotic Assays					
Giardia	See under Faeces Enteric Pathogens PCR					
Gonococcal NAATS	Urine/Genital swab	Specific collection tube dependent upon sample type	As specified in collection kit	SGH	2 days	Contact laboratory if information regarding specific collection kits is required.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
HACEK organism isolation <i>Haemophilus aphrophilus/paraphrophilus;</i> <i>Actinobacillus actinomycetecomitans;</i> <i>Cardiobacterium hominis;</i> <i>Eikenella corrodens;</i> <i>Kingella kingae</i>	Blood cultures	BD Bactec culture vials	8-10 ml	SGH	Fastidious organisms require up to 14 days incubation	Please specify HACEK organisms on request form.
<i>Haemophilus ducreyi</i>	Genital swab		N/A	Reference	12 days	Discuss with Microbiologist
Hantaviruses- serology and PCR H F with renal syndrome (Hantaan v, Puumala v) Hantavirus pulmonary syndrome(Sin Nombre v)	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	10 days	Discuss with a virologist
Heart valves/ tissue for MC&S	See under Fluids					
Helicobacter faecal antigen	Faeces	Universal 30ml faecal pot	> 1 gram should be sent in standard sealed specimen containers.	SGH	7 days	Patients MUST NOT have taken any antibiotics or proton pump inhibitors for a minimum of 2 weeks prior to specimen collection for testing. Samples should be sent within 3 days of collection
Helicobacter serology	Faecal antigen testing is now the recommended test for the diagnosis of Helicobacter infection.					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Hepatitis A serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2 days	This is for testing for immunity. Please state on form if you suspect acute infection.
Acute Hepatitis serology (Hepatitis B surface antigen, Hepatitis C IgG, Hepatitis A IgM, Hepatitis E IgM & IgG, CMV IgM, EBV)	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2-3 days	
Hepatitis (past history) serology (Hepatitis B core antibody, Hepatitis A IgG, Hepatitis C IgG)	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2-3 days	
Hepatitis B: send a request for HBsAg and HBV core antibodies. In case of positive results, additional investigations to assess HBV status will be added as reflex tests.	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2-3 days	Send a surface antibody for post-immunisation check.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Hepatitis B DNA/ viral load (Only for use on hepatitis B surface antigen positive patients)	Blood (serum)	Clotted blood (red top tube)	5-10 ml (min. vol 200 µl)	SGH	7-10 days	HBV VL monitoring is requested by Hepatology
Hepatitis C serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2 days	
Hepatitis C RNA/ viral load	Blood (serum)	Clotted blood (red top tube)	5-10 ml (min. vol 200 µl)	SGH	7-10 days	
Hepatitis C genotype	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	5 days	
Hepatitis D serology (IgM/ IgG) & PCR To be requested ONLY for patients who are HBsAg positive	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	28 days	Requested restricted to patients who are HBsAg positive
Hepatitis E serology (IgM/ IgG) Hepatitis E PCR	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH REF	2 days 14 days	

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Herpes simplex virus PCR (HSV1 & HSV2) PCR] see Ano-Genital screen	CSF Swabs	Sterile universal Swab in Viral Transport Medium	1 ml CSF	SGH	2 days	
Herpes Simplex virus (HSV 1/2) resistance testing	Swabs	Swab in Viral Transport Medium	N/A	Reference	14 days	
Herpes simplex virus (HSV 1/2) serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	3 days	
HHV6 & HHV7 Serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	4 days	
HHV6 & HHV7 PCR	Blood and CSF	EDTA (purple top) CSF in universal	1-5 ml	Reference	4 days	
HHV8 PCR	Blood	EDTA (purple top)	1-5 ml	Reference	15 days	
Histoplasma serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	Reference	7 days	
HIV1/2 antigen/ antibody	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2 days	
HIV-1 or HIV-2 resistance testing	Blood (plasma)	EDTA	10 ml	Reference	14 days	Please specify if patient is positive for HIV-1 or HIV-2

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
HIV-1 Viral load	Blood	EDTA blood (purple top)	5-10 ml (min 1 ml)	SGH	7-10 days	Please note that the viral load assay is time critical. Freshly drawn specimens (whole blood) may be held at 2-30°C for up to 6 hours prior to centrifugation in the laboratory. After this time there may be degradation of nucleic acid with a resultant reduction of the viral load value.
HIV-2 viral load	blood	EDTA blood (purple top)	5-10 ml (min 1 ml)	Reference	14 days	
Hookworms	Send Faecal Parasitology/ OCP					
HTLV 1&2 serology	Blood (serum)	Clotted blood (red top tube)	5-10 ml	SGH	2 days	PCR: Contact virology
Human Papillomavirus (HPV) testing	Tissue	Sterile Universal	N/A	Reference	4 days	
Hydatid reference test	See under Echinococcal serology					
Influenza A/B PCR	See under Respiratory virus PCR/ NPA					
Interferon assays for TB	See under Mycobacteria					
Intestinal flukes	See under Fasciola					
Intrauterine infection serological tests	See under TORCH screen (mother)					
Itraconazole levels	See under Antibiotic Assays					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
IVF screen Includes: HIV Ab/Ag Hepatitis B surface Ag Hepatitis B Core antibody Hepatitis C IgG Syphilis total antibodies	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	Pre-treatment IVF screen. (Rubella and chlamydia need to be requested separately if required.)
Japanese B encephalitis	See under Arboviral serology					
JC virus PCR	CSF	Sterile Universal	1 ml min	Reference	7 days	Discuss with a virologist
Kala-azar	See under Leishmania					
Lassa fever virus	See under Viral Haemorrhagic Fever					
Legionella serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	
Legionella antigen	Urine	Sterile Universal	20 ml	SGH	2 days	Needs prior discussion with microbiologist
Leishmania reference test (serology)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	Please state travel history and date of exposure. Discuss cases with microbiology
Leprosy	Tissue biopsy	Consult a microbiologist				
Leptospira PCR	CSF/ /Urine/Blood	Sterile Universal/	8-10 ml	Reference	7 days	Discuss cases with microbiology

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Leptospirosis reference test] (serology)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	10 days	Take sample 5-7 days after onset of symptoms. Please state date of onset or exposure and travel/ risk factors.
Lyme disease serology] (Borreliosis) (screening test)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	Please provide clear history including risk factors and date of symptom onset.
Lyme Immunoblot	Blood (serum)/CSF	Clotted Blood (red top tube) or Sterile Universal (CSF)	5-10 ml 1-2 ml	Reference	10 days	
Lyme (Borreliosis) PCR	CSF	Sterile Universal	1 ml	Reference	14 days	Discuss with microbiology
Lymphadenopathy/ sore throat] serology screen	Blood	Clotted Blood (red top tube)	5-10 ml	SGH	3-4 days	Consider, EBV, CMV IgM, Toxoplasma gondii, Syphilis and HIV serological investigations
Lymphocytic chorio-meningitis virus (LCMV) serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	Discuss with a virologist
Lymphogranuloma venereum (LGV) serovars of Chlamydia trachomatis	Rectal swab	Swab in Alinity m transport medium	N/A	Reference	6 days	Discuss with a virologist or Sexual Health

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Malaria detection	Blood	EDTA (purple top tube)	5-10ml	SGH-Haematology		Test performed by haematology
Malaria reference test	Not useful for diagnosis of acute infection. Discuss with microbiologist if requested.					
Marburg virus	See under Haemorrhagic Fevers					
Acute measles serology (IgM)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	15days	
Measles IgG	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	
Measles PCR	Discuss with a virologist					
Melioidosis investigations	Discuss with a microbiologist					
Meningococcal PCR	Blood	EDTA (purple top tube)	5-10 ml	SGH	3 days	
Meningococcal PCR If meningitis/ meningococcal sepsis is suspected contact the laboratory and send the specimens immediately.	CSF	Sterile Universal	2-3 ml	SGH	3 days	Send separate specimens for glucose and protein analysis to appropriate departments
Meningococcal serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	28 days	Discuss with a microbiologist
Microscopy	Dependant on specimen type	Dependant on specimen type	Dependant on specimen type	SGH	same day	
Microsporidia serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	21 days	Discuss with a microbiologist

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Milk bank serology screen	Blood (serum)	Clotted Blood (red top tube)	5-10 mls	SGH	3-4 days	Consists of: HIV-1/-2 Ab/ Ag HTLV 1+2 Ab Hep B surface Ag Hep C IgG Syphilis IgG
Mouth swab	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	3 days	
MSSA Screen	Swab	Swab	N/A	SGH	2 days negatives (>3 days if culture positive).	Specimens are rejected if >48 hrs as sub optimal for the isolation or organisms
MRSA screen	Swab	Swab	N/A	SGH	2 days negatives (>3 days if culture positive).	Specimens are rejected if >48 hrs as sub optimal for the isolation or organisms
Acute mumps serology IgM Mumps IgM reference test For clinical cases of mumps	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	15 days	Please state date of onset and contact history.
Mumps IgG [Mumps immunity]	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	
Mumps PCR	Discuss with a Virologist					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Mycobacteria/ AFB (Tuberculosis & Atypical/ non- tuberculous): Microscopy (Ziehl-Nielsen/ auramine), Isolation Please state clearly on request form that Mycobacterial/ TB/ AFB investigation required.	Sputum	Sterile Universal (send 3 sputa for suspected pulmonary TB)	Min required vol (fluids) = 3 ml	SGH/ Reference	6 -8 weeks	Samples are monitored continuously. Any flagging positive are communicated to clinicians as an urgent result. Mycobacterial investigations are not performed on-call (from 2000hrs to 0900hrs)
	BAL/ gastric aspirates	Sterile Universal				
	CSF/ fluids/ tissue	Sterile universal (send early morning urine on 3 consecutive days)				
	Urine	Inoculated to BD Bactec Myco/F Lytic Culture Vials	N/A			
Mycobacterium tuberculosis immunoassays (QuantiFERON)	Blood	QuantiFERON kit	N/A	SGH	2 days	Discuss with a microbiologist See also QuantiFERON-TB Gold Guidelines Please note this is a time critical assay. Samples must be received in the laboratory within 16 hours of collection. Failure to adhere to this may compromise the validity of the result.
Mycobacterium tuberculosis PCR (fast-track)/ Rifampicin probes (MDR suspected)	BAL/Sputum/Tissue	Sterile Universal	3 ml minimum	SGH	Same day testing once approved by microbiologist	Discuss with a microbiologist.



Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Mycology micro and culture (Systemic mycoses)	Tissue, fluids, systemic	Sterile Universal	N/A	SGH	Microscopy 2-3 days culture up to 6 weeks	Please state clinical history and if not E-request state clearly on request form that fungal culture is required.
Mycology micro and culture] (Dermatophytes) Skin, nail & hair	Skin, nail and hair	Sterile Universal or Dermapaks	N/A	SGH	Microscopy 2-3 days culture 3 weeks	
Mycoplasma genitalium PCR Request restricted for the following syndromes: . Women with query PID . Men with urethritis . Their sexual partners	High vaginal swabs for women Urine for men: min volume 3 ml	Abbot Alinitym collection tube	Urine for men: min volume 3 ml	SGH	3 days	Follow kit instructions to collect the correct volume of urine for men: if tubes are underfilled or overfilled will be rejected.
Mycoplasma pneumoniae serology IgM and IgG	Blood (serum)	Clotted Blood (red top tube)	5- 10ml	SGH	2 days	
Nasal swab	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	3 days	

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Needlestick donor serology Consists of Hep B surface Ag, Hep C IgG, HIV-1/-2 ag/antibody, serum store	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	It is your responsibility to consent the patient.
Needlestick recipient serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	Hepatitis Bs Ab, serum store
Neonatal Viral Sepsis Screen	EDTA blood, CSF, Eye/Rectal/Throat Swab.		Minimum volume for EDTA or CSF 500 ul	SGH	2 days	
New leukaemic serology screen	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	7 days	Consists of: CMV IgG EBV HIV-1/-2 ag/ab Hep B surface Ag Hep C IgG Syphilis total antibodies Toxoplasma IgG, IgM Varicella IgG HTLV-1/-2

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Norovirus PCR	See Faeces for Viral Pathogens					
Occupational Health Screen	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	7-10 days	
Ova cysts and parasites	See under Faecal parasitology .					
Pacemaker tips/ leads & other cardiac prostheses	Device	Sterile Universal	N/A	SGH	3 days	Will NOT be processed routinely. Only where line sepsis is suspected.
Parainfluenza virus	See under respiratory viruses/ NPA					
Parvovirus serology IgM & IgG	Blood (serum) Blood (serum)/ amniotic fluid	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	Please state date of onset and if patient is pregnant.
Parvovirus B19 PCR	Liver samples in cases of miscarriage or IUD			Reference	7-14 days	Discuss with Consultant Virologist
Pernasal Swab	Use specific pernasal swab, see under Bordetella pertussis					
Pertussis investigations	See under Bordetella pertussis					
Pinworms	See under Threadworms					
Plague	See under Yersinia pestis . Contact a Microbiologist urgently.					
Pneumococcal antigen	Urine/ CSF	Sterile Universal	10-20 ml	SGH	2 days	Needs prior authorization by a microbiologist
Pneumococcus PCR	Discuss with a Microbiologist					



Test	Specimen	Container	Required volume		Laboratory	Turnaround time	Additional information
<i>Pneumocystis jiroveci</i> (PCP) PCR	Lower respiratory secretions (sputum/ BAL/ETS)	Sterile Universal	1 ml minimum		SGH	3 days	
Polio serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml		Reference	14 days	Discuss with a virologist
Polio PCR	Faeces/ CSF	Sterile Universal	N/A		Reference	14 days	Discuss with a virologist
Polyomaviruses (BK/ JC virus) PCR	Urine (BK)	Sterile Universal			Reference	7 days	Discuss with a virologist
	CSF (JC)						
	EDTA blood (BK)	EDTA (purple top tube)					
Postnasal swab for MC&S	Swab in Amies transport medium with charcoal.	N/A	N/A		SGH	3 days	
Pus	See under Fluids						

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
[Q fever reference test]	See under Coxiella burnetii					
Rabies investigations	Discuss with a virologist					
Rash (viral serology screen) Rash non-vesicular Parvovirus IgM, IgG Rubella IgM, IgG	Blood (serum) for parvovirus and rubella virus	Clotted Blood (red top tube)	5-10 ml	SGH	2-3 days	Please state type and distribution of rash- this dictates which tests are performed. Please state if patient is pregnant.
Rash vesicular Varicella zoster PCR HSV PCR Enterovirus PCR	Lesion swab	Lesion swab in Viral Transport Media				
Respiratory syncytial virus (RSV) IF/ PCR	See under Respiratory viruses PCR/ NPA					
Respiratory virus PCR Influenza A&B/ Parainfluenza viruses/ RSV/SARS-CoV2, Adenovirus/Metapneumovirus/Rhinovirus and Enterovirus]	Respiratory secretions NPA, BAL, Sputum, Nose and throat swab in viral transport medium.	Sterile Universal	2 ml (min vol 200µl)	SGH	3 days	
Respiratory virus Rapid PCR Influenza A&B/RSV/SARS-CoV-2	Nose and throat swab in viral transport medium	Swab in viral transport medium	1ml	SGH	4 hours	Testing is seasonal only, October-March

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Respiratory virus Rapid PCR (Qiasat) Extended Panel	Nose and throat swab in viral transport medium	Swab in viral transport medium	1 ml	SGH	4-6 hours	
Rickettsial serology- Typhus or Spotted Fever	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	10 days	Discuss with microbiology. Provide a full travel history.
Ross River virus serology	See under Arboviral serology					
Rotavirus	See under Faeces Virology investigations					
Rubella serology (acute)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	1-2 days	Please state if patient is pregnant.
Rubella serology (immunity)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	1-2 days	
Salmonella serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	17 days	Requires prior discussion with a microbiologist

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Schistosomiasis microscopy	Faeces	Sterile Universal	1-2 gm With the spatula provided transfer a plum-sized portion of faeces	SGH	7 days	3 specimens on 3 consecutive days – give clinical details
	Urine (3 consecutive terminal urine samples collected at midday)	Sterile Universal	10 ml			
Schistosomal serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	Send at least 6 weeks post-exposure.
Sellotape slide	See under Threadworms					
Seminal fluid for MC&S	Seminal fluid	Sterile Universal	N/A	SGH	1-2 days	
Shigella serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	Requires prior discussion with a microbiologist
Shingles	See under Varicella					
Sleeping sickness	Send blood films for diagnosis of acute infection, otherwise see Trypanosomiasis serology					
Sputum/ ETA/ BAL/ NBL	Respiratory	Sterile Universal	5-10 ml	SGH	2-3 days	Please refer to Mycobacteria for TB investigation.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Sputum (Cystic) Cystic Sputum/cough swab)	Respiratory	Sterile Universal	5-10 ml	SGH	6-8 days	Please refer to Mycobacteria for TB investigation.
Staphylococcal serology Staphylococcal reference test	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	15 days	Requires prior discussion with a microbiologist
Staphylococcal (MSSA/ MRSA) PCR	Tissue/ Pus/ Swabs/ Fluids	Requires prior discussion with a microbiologist				
Stem cell transplant screen	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	7 days	Consists of: CMV IgG EBV (EBNA IgG) HIV Ab/Ag HTLV 1+2 Ab Hepatitis B Core Ab Hepatitis BsAg Hepatitis C IgG Syphilis IgG Toxoplasma IgM, IgG Varicella IgG
Streptococcal serology (ASOT, Anti DNase B)	See under ASO titre/ Anti Streptolysin O and Anti DNase B titre					
Strongyloides microscopy	See Faecal Parasitology/ OCP (may need up to 6 samples as is insensitive)					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Strongyloides serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	
Supra-pubic aspiration (SPA)	See under Urine MC&S					
Swabs for MC&S (skin/ wound etc)	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	4 days	Do not request MRSA swabs unless screening.
Syphilis serology (blood)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	
or Syphilis antibody (CSF)	CSF (VDRL, TPHA)	Sterile Universal	1-2 ml	Reference	6 days	
Tapeworms / <i>Taenia</i> spp	See Faecal Parasitology/ OCP					
<i>Taenia</i> (cysticercal) serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	For diagnosis of cysticercosis.
TB investigations	See under Mycobacteria					
Teicoplanin levels	See under Antibiotic Assays					
Tetanus toxin serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	21 days	Collect before antitoxin given. Discuss with microbiology if suspected.
Tissue/ Biopsy for MC&S	See under Fluids					
Thread worms	Place sellotape over perianal region	Transfer to clean microscope slide	N/A	SGH	1-2 days	Best taken early morning



Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Throat swabs for MC&S	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	4 days	
Tobramycin levels	See under Antibiotic Assays					
Congenital infection screen (infant)] For serological investigation of suspected congenital infection. Toxoplasma gondii, CMV, Rubella Syphilis, parvovirus	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	1-2 days	
Congenital infection screen (mother)] For serological investigation of suspected intrauterine infection. Toxoplasma gondii, CMV, Rubella Parvovirus Syphilis.	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	1-2 days	If not requesting via e-QUEST please state, "suspected intrauterine infection" and give clinical details including gestational age and any relevant exposures.



Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Toxocara serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	
Toxoplasma serology (past exposure)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	Please state if patient is pregnant.
Toxoplasma serology (acute/ current/ recent infection) Toxoplasma IgM]	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	SGH	2 days	Please state date of onset/ exposure. Please state if patient is pregnant.
Toxoplasma PCR	Discuss with Virologist/ Microbiologist					
Trichinella serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	
Trichomonas vaginalis PCR				SGH	3 days	
Trypanosomiasis serology (Chagas' disease/ Sleeping sickness)	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	Send blood films for diagnosis of acute infection.
Tularaemia (<i>Francisella tularensis</i>) serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	10 days	Requires prior discussion with a microbiologist
Typhus serology	See under Rickettsial serology					

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Urine antigens (<i>Pneumococcus</i> / <i>Legionella</i>)	Urine	Sterile Universal	10 –20ml	SGH	2 days	Needs prior authorisation by a microbiologist.
Urine MC&S (MSU, CSU, Clean-catch, Bag Urine, Supra-pubic aspiration) Specimens will be rejected if there are inadequate clinical details.	Urine	Sterile Universal	10 –20ml	SGH	2 days	Specimens are rejected if >24 hrs as sub optimal for the isolation of organisms. They may be refrigerated overnight but not on Fridays, unless there is a Saturday collection.
Vaginal swabs MC&S (HVS/ LVS)	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	2-3 days	
Vancomycin levels	See under Antibiotic Assays					
Varicella zoster (VZV) IgG Not for diagnosis of acute infection- send vesicle fluid for isolation/ PCR.	Blood (serum) CSF in case of clinical suspicion of VZV CNS vasculopathy	Clotted Blood (red top tube)	5-10 ml	SGH	1-2 days	Please state if the patient is pregnant and exposed to VZV as will need urgent testing
Varicella zoster (VZV) PCR (chickenpox/ shingles) Varicella zoster PCR	CSF	Sterile Universal	2 ml	SGH	1-2 days	VZV PCR is part of the anogenital ulcer PCR panel since it can cause genital shingles
	Blood	EDTA blood	2 ml			
	Lesion/ Vesicle Swab	Swab in Viral Transport Medium	N/A			
	Vesicle fluid	Capillary tube	Min 200µl			



Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Vascular access device tips CVP/ Hickman/ cannula/ peripheral lines/ vascath etc]	Device	Sterile Universal	N/A	SGH	2-3 days	Will NOT be processed routinely. Only where line sepsis is suspected.
<i>Vibrio cholerae</i> & other species.	Faeces	Universal 30ml faecal pot	1-2gm	SGH	2-3 days	Please give travel history
Viral eye swab HSV, VZV and Adenovirus PCR	Eye swab in VTM	Swab in Viral Transport Medium	N/A	SGH	1-2 days	
Viral Haemorrhagic Fevers (VHF)	Discuss with a Virologist/ Microbiologist urgently					
Viral meningo-encephalitis studies Viral Meningitis/encephalitis. Includes: HSV, VZV, Enterovirus, parechovirus, Meningococcal PCR dependent on clinical details	CSF	Sterile Universal	2 ml	SGH	3 days	Please give date of onset and any travel history.

Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Viral swabs (anogenital ulcers, skin vesicles)	Lesion swab	Swab in Viral Transport Medium		SGH	2 days	Give full clinical details. Please note that in case of anogenital ulcers the following PCR assays are performed: syphilis, HSV, VZV. For skin vesicles/ulcer in other body sites syphilis is added only if the clinical details indicate that the patient is at risk of contracting STIs.
Vitreous biopsies/ tap	Vitreous fluid			SGH	2 days	Please state clearly if fungal infection suspected.
VRE screen	Rectal swab	Sterile swab in Amies transport medium	N/A	SGH	2 days for negative, 3 days for presumptive positive	Specimens are rejected if >48 hrs as sub optimal for the isolation or organism (patients from intestinal failure unit)
Weil's disease	See under Leptospirosis					
West Nile virus	Please discuss with virology					
Whipples PCR	Please discuss with microbiology					
Whipworm (<i>Trichuris trichiura</i>)	See under Faecal Parasitology/ OCP					
Wound swab for MC&S (Do not request for unless sending screening swabs) Wound/ear/nose/throat]	Swab in Amies transport medium with charcoal.	N/A	N/A	SGH	2-3 days	Specimens are rejected if >48 hrs as sub optimal for the isolation or organisms. May be stored overnight at room temperature if necessary.
Yellow fever virus serology	See under Arboviral serology . Discuss with a virologist.					
<i>Yersinia pestis</i> isolation (plague)	Discuss with a microbiologist urgently					



Test	Specimen	Container	Required volume	Laboratory	Turnaround time	Additional information
Yersinia serology	Blood (serum)	Clotted Blood (red top tube)	5-10 ml	Reference	14 days	
Ziehl-Nielsen (ZN) stain	See under Mycobacteria .					