Microbiology User Handbook

North Kent Pathology Service

and the Pathology Directorate of

Dartford and Gravesham NHS Trust

Timely, Accurate Results; Providing Effective Care

INTRODUCTION

The Microbiology Department at Darent Valley Hospital has produced this Laboratory Handbook to enable users to gain the maximum possible benefit from our service. The Department is part of North Kent Pathology Service which was formed following an integration of the Pathology services from Dartford & Gravesham NHS Trust and Medway NHS Foundation Trust.

The aim is to raise awareness of the tests available (those performed 'in-house' and those that are referred on to specialist Reference Laboratories), the factors associated with specimen collection and transport that may affect the quality of the results of investigations. There is also information about the turn round times for tests, the methods by which results are provided and the specialist advisory service offered by the Department.

The information is accurate at time of issue, but is reviewed and updated as appropriate. We welcome your comments or suggestions so that we are aware of and can consider your requirements.

UKAS accreditation

****The laboratory UKAS accreditation for full scope of activities is currently under suspension pending a reassessment of the service in three months, with a view of reinstating UKAS accreditation for the service.****

****NKPS Microbiology Department aim to maintain the service, producing quality assured results during this period and suspension should not have any impact on the diagnostic services delivered by the laboratory.****

The Microbiology Department includes five distinct areas: general microbiology, serology, andrology, One Step Nucleic Acid Amplification (OSNA) and Molecular (Covid 19 testing). The Department is currently UKAS accredited to ISO 15189 standards for general bacteriology and selected tests within serology.

The laboratory currently processes specimens for the investigation of *Mycobacterium* species using a method based on the national standard. However, we have not fully evaluated the additional methods recommended in the national standard and have recently introduced a plan to test those additional recommendations. Our plan will allow us to gather sufficient evidence to determine whether or not our automated system is able to detect all species of non-tuberculous mycobacteria (e.g. *Mycobacterium bovis*) or isolates associated with non-respiratory specimens (such as tissue from superficial lesions).

Blood cultures are processed on an analyser called VIRTUO Bact/ALERT – this analyser is currently not validated for the enrichment of fluids from normally sterile sites, however these samples are considered precious as they are difficult to repeat, therefore samples received in blood culture bottles will be processed and reported with suitable clinical comments.

General Microbiology - investigates specimens for clinically significant bacteria, fungi and parasites. The laboratory performs microscopy and culture on urine, faeces, swabs from body sites and orifices, sputum, fluids, skin, hair, nails and blood. This section also

performs investigations for the detection of *Mycobacterium* species and antimicrobial susceptibility testing. The laboratory also performs tests for the detection of Helicobacter pylori, *Clostridium difficile* toxin and GDH

Serology - performs ante-natal screening according to Government guidelines and serological testing for a range of antigens, antibodies and nucleic acids that indicate infection with or immunity to viruses, bacteria and fungi.
This service is not yet UKAS accredited for antenatal screening but is in the process of working towards UKAS ISO 15189:2012 accreditation.

OSNA - the OSNA test is performed on sentinel lymph node biopsies as part of the investigation of breast cancer.
This service is not yet UKAS accredited but is in the process of working towards UKAS ISO 15189:2012 accreditation.

Andrology – a service is provided for investigation of infertility and post-vasectomy analysis. There is an appointment system for patients to bring their sample to the laboratory. The test is carried out Tuesdays and Thursdays 8.30am to 4pm.There is no on-site facility for producing semen samples. Complete instructions are available at the end of this document.
This service is not UKAS ISO 15189:2012 accredited.

Molecular – This includes the detection of Covid 19, Flu A, Flu B and RSV.

Diagnostic laboratory work is undertaken by Biomedical Scientists (BMSs) who are state registered, with assistance from the support staff, the Associate Practitioners and Healthcare Science Support Workers (HSSWs).

Some specialised investigations are sent to Reference Laboratories when necessary. Information concerning test availability and estimated turn round times is described in Laboratory Investigations (below).

The Microbiology Department participates in External Quality Assessment Schemes for all assays where schemes are available.

The laboratory is located on the third floor, East Wing of Darent Valley Hospital. Entry is for authorised personnel only. Appointments can be made to visit the department and all personnel must report to Pathology Reception.

The laboratory complies with the Trust Information Governance procedures and has an internal Policy for Management of Data and Information (Pathology 2887) to ensure protection of personal information.

The complaints procedure for the laboratory is to make a formal complaint to the PALS office which is forwarded to the General Manager of Pathology or Designated Individual to investigate and respond to the Trust Complaints office within the required timescale; for further information refer to Pathology 2889 Complaints Assessment Policy.
This service is not yet UKAS accredited but is in the process of working towards UKAS ISO 15189:2012 accreditation.

GENERAL INFORMATION

Contact Details

Address
Microbiology Department
Pathology Directorate, 3rd Floor
Darent Valley Hospital
Darenth Wood Road
Dartford
Kent
DA2 8DA

Telephone	Darent Valley Hospital switchboard	01322 42 8100
	Main lab Results / Enquiries	01322 42 8100 Ext 4895
	Serology results/ Enquiries	01322 42 8100 Ext 4996
	Andrology appointments/Enquiries	01322 42 8100 Ext 4344

Key personnel

Dr Vasile Laza-Stanca	Lead Consultant Microbiologist	01634 83000 Ext 5223
Dr Sandiya Theminimulle	Locum Consultant Microbiologist	Ext 4875
Dr Luis Cotter	Associate Specialist Microbiologist	Ext 8836
Mrs Rachael Jeremiah	Head of Microbiology	Ext 8733
Ms Shirley Wicks	Advanced Biomedical Scientist	Ext 4899
Mr Graham Fagg	Advanced Biomedical Scientist	Ext 8476/4895
Ms Vanessa Ball	Advanced Biomedical Scientist	Ext 8476/4895
Ms Nirali Shah	Acting Advanced Biomedical Scientist	Ext 4895
Mrs Holly Rowden	Advanced Biomedical Scientist	Ext 4895
Mr Nicholas Broadley	Advanced Biomedical Scientist	Ext 4895
Mrs Tina Bailey	Director of North Kent Pathology Service	Ext 8499

Routine opening hours

Monday to Saturday 8 am to 9 pm
Sunday 8am to 16:30

During routine hours

- **Darent Valley** Microbiology Consultant can be contacted on extension 8836 direct dial 01322 428836 or extension 8732 direct dial 01322 4288732

- **Medway** Microbiology Duty Consultant can be contacted on extension 5236 or direct dial 01634 825236. Non-urgent enquiries can be emailed to medwayft.microdutydoctor@nhs.net

Outside of routine hours
- **Biomedical Scientist** on call can be contacted via the Hospital switchboard (01322 42 8100). This also applies to the on call Microbiology Consultant for **Darent Valley** Hospital
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- **Medway** on call Microbiology Consultant can be contacted via the Hospital Switchboard on 01634 830000

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Users may visit the department by prior arrangement by contacting the Pathology Office Manager on 01322 428100 ext 8490.

1. TEST REQUESTS

Requesting procedure

Requests for laboratory tests must be made using Electronic Order Comms where available.

If electronic requesting is not possible then requests must be submitted using a recognised microbiology request form, available from the Pathology Department. Any specimens received without a valid request (either electronic or paper) will not be processed.

Trust Order Comms systems for both Darent Valley Hospital and Medway Maritime Hospital have been developed for pathology requesting along with equivalent systems for GP practices.

The information on all Order Comms request, forms and accompanying specimens must correspond and meet minimum acceptance criteria as described in Specimen Labelling (see below).

Incomplete requests may cause delays in availability of results as specimens may be delayed or not processed. Incorrectly or incompletely labelled specimens may be discarded.

All unlabelled specimens will be discarded.

Whether a request is made via Order Comms or a form it must include the following:

1. Patient data – name (surname and Forename), hospital number/NHS number, date of birth, gender
2. Specimen type – for example, blood, faeces, wound swab (stating site of wound). If urine, state whether MSU, CSU, clean catch, etc.
3. Test required – please be specific and do not ask for “viral titres.” Please request “viral serology” and state in the clinical details field which viruses you require, or if in doubt, discuss it with the laboratory first. This also applies to autoantibody screens.

4. Clinical information - include information relevant to the specimen and investigation e.g. type of infection, travel history, anatomical site from which specimen was taken, potential exposure to illness, date of onset and duration of illness and any other information that may be clinically relevant. Serology samples may not be processed without relevant clinical details and will be stored for 3 months awaiting details to be provided. If not received within this period, the sample will be discarded.
5. Antimicrobial therapy – include all recent, current or intended antimicrobials
6. Ward, clinic or GP practice and Consultant / GP's name - essential for the report to be returned to the relevant place and the doctor to be contacted if the result is urgent. Please write the consultants name clearly and include a contact number
7. Contact / bleep number for urgent results.

Where possible please organise routine specimens to arrive by 16:00hrs Monday to Friday.

Adding additional tests to a request

If further Microbiology tests are required on a specimen already received by the laboratory the requestor must contact the laboratory first to discuss the additional requests and to check if there is sufficient specimen available. If agreed with the laboratory such requests must be accompanied by a new order for the extra test(s). Do not place an 'Add-on' request for extra microbiology tests as these cannot be processed; place a new order for the test required. Requests for additional **Microbiology tests to be added to a Biochemistry sample are not accepted**. The laboratory will advise if a new specimen must be collected.

Requesters **MUST** ensure that blood culture samples are sent <u>separately</u> from samples for blood sciences.

Urgent requests

During normal laboratory hours please telephone urgent requests to extension 4895 (internal) or 01322 428100 and ask for extension 4895 (external), or speak to the Darent Valley medical staff on extension 8732 or 8836 or for Medway medical staff extension 5236.

It is the responsibility of the person taking the specimen to contact the laboratory to discuss sending urgent specimens and then to contact portering services to arrange delivery.

Out of hours

1. All tests that need to be performed out of hours must be requested by the clinician looking after the patient by contacting the Biomedical Scientist (BMS) on call for Microbiology via Switchboard. The BMS is on call from home and only attends the department if called in. Do not call Switchboard until the specimen has been taken.
2. A porter must be contacted to take the specimen to the laboratory at the same time as the BMS is called. Do not send unrepeatable specimens (e.g. CSF) via the pneumatic tube system.
3. Tests sent outside of normal working hours without contacting the on-call BMS will not be processed until the next day.
4. Only send urgent specimens when the test will affect the immediate management of the patient.

5. Non-urgent specimens taken out of hours must be sent to the laboratory for refrigeration. These include urines and swabs taken immediately prior to starting antibiotic therapy. It is not necessary to telephone about these.

6. Blood cultures taken out of hours must be sent via a porter to Pathology Reception at either Darent Valley Hospital or Medway Maritime Hospital. It is not necessary to telephone the BMS on call.

7. Specimens that can be examined out of hours are:

   - Cerebrospinal fluids
   - Joint fluids
   - Ascitic fluids querying spontaneous bacterial peritonitis
   - Suprapubic aspirates from infants <3 months
   - HIV and HBsAg on women in labour without a booking blood

Requests for other investigations outside of normal working hours need to be discussed with the Consultant Microbiologist who is available via switchboard.

2. Specimen containers

Please contact the laboratory if a test is not listed within this handbook or you are unsure about which specimen container to use. Unless specified, one specimen is sufficient for each test. Types of specimen containers are detailed in the table of laboratory investigations (see below).

If a blood specimen is taken with a syringe and needle do not push the needle through the septum of the blood tube as this is likely to cause significant haemolysis of the specimen, which may invalidate results for some tests. In this case, the cap of the blood tube must be removed as well as the needle from the syringe in order to fill the tube. Plastic caps to seal the blood tube are available from the laboratory.

3. Specimen collection

The best results are obtained when an appropriate, well-taken specimen and in the proper container, is delivered to the laboratory promptly. Please contact the laboratory if there is any doubt about the best specimen to take or you have questions about any test. In the case of urgent investigations please contact the laboratory.

General guidelines on specimen collection

1. Take care 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. Instructions for patients can be found in appendix i at the end of this document.

2. Send specimens in the correct containers (see table)

3. Collect specimens from the actual site of suspected infection. Please do not send just blood specimens for ‘viral serology’ if there are more suitable specimens such as vesicular fluid, throat swab or CSF

4. Take specimens that are representative of the disease process. For example, respiratory specimens are more appropriate than blood for serology in cases of acute respiratory infection
5. Obtain an adequate quantity of material
6. All swabs or material from swabs for virology must be immersed in virus transport medium (VTM) obtained from the laboratory and transported promptly back to the laboratory; please ensure that caps are firmly screwed on. Viruses may not survive prolonged storage at room temperature or may be overgrown by bacteria or fungi.

Factors affecting specimen quality and interpretation of results

Causes of misleading results relating to specimen collection
○ Physical activity (including fast walking) within 20 minutes ○ Smoking ○ Stress ○ Dehydration ○ Drugs or dietary supplement administration within 8 hours ○ Time (diurnal variance) ○ Posture (lying, standing or sitting) ○ Haemoconcentration from prolonged tourniquet pressure ○ Excessive negative pressure when using syringe ○ Incorrect tube type ○ Capillary or venous blood ○ Insufficient or excess anticoagulant ○ Inadequate mixing of specimen ○ Inadequate specimen storage conditions (temperature) ○ Delay in transit to the laboratory
Factors which may affect laboratory results
○ Please note false negative blood culture results can occur due to the use of the following antibiotics – ceftazidime, cefepime and ceftriaxone ○ Specimen quality (under filled, over filled, clotted including fibrin clots) ○ Labile properties of assayed components ○ Interference (lipaemia, icteria, haemolysis) ○ Centrifugation ○ Interactions with anticoagulants (eg platelet clumping in EDTA) ○ Pregnancy
It may be necessary under certain circumstances for the laboratory to request a repeat specimen for confirmation of abnormal or equivocal results

Storing and transporting specimens

Samples are transported from GP surgeries, Queen Mary's Hospital and Medway Hospital to the Pathology reception each day by regulated couriers. Samples need to be stored in appropriate conditions prior to transportation. A delay in transportation may affect the validity of the results if not stored correctly.

Potentially infectious specimens and high risk specimens

If a patient is in a particularly high risk group e.g. viral haemorrhagic fever, SARS, anthrax, the laboratory must be contacted for further advice prior to taking specimens.

4. Specimen labelling

All specimens must be labelled with the same patient details as those on the request.

When Order Comms is used to place a request labels are automatically printed for patient specimens. Labels must be attached along the specimen tube, not around it, as the bar codes may not be read by laboratory analysers.

For OSNA specimens:

The specimen must be labelled with patient's full name, date of birth and numbered according to the order of removal (number 1 will be the sentinel lymph node). Theatre staff must telephone the laboratory when the specimen is on its way.

For all other specimens:

Specimen containers must not be pre labelled before a specimen is obtained.

All specimens and request forms, if used, must have the following patient information:

- Patient surname
- Patient first name
- Patient date of birth
- Patient NHS number or Hospital (PAS) registration number
- Date and time of sampling
- Location (Ward, GP name and address)
- Identifier of the person taking the specimen (this is auditable proof of location and phlebotomist i.e. the use of Order Comms traces the member of staff who printed the labels which in Trust policy is the person who takes the blood and details the location the specimen was taken. For non-order comm requests, the initials of the staff member who took the blood must be on the specimen alongside the location).

NHS numbers or Hospital (PAS) numbers must always be used when available – this ensures a single patient file is maintained on the laboratory computer system.

Positive patient identification is essential and in-patients must have their wristbands checked.

5. Sending specimens to the laboratory

All specimens for investigation must be sent to the laboratory as soon after collection as possible in order to minimise specimen degradation or possible over growth by commensal organisms. Specimen containers must be securely capped and placed in a sealed specimen transport bag.

Specimens and or requests which do not contain the required patient information as described above, or are in the incorrect specimen container, will not be processed.

It is the responsibility of the sender to ensure that the specimen is labelled, packed appropriately and is accompanied by the relevant documentation.

Specimens from within Darent Valley Hospital

Specimens for the laboratory must be sent via the portering service as soon as possible. Outside of routine hours a porter must be bleeped for any urgent specimen that requires processing.

In addition to sending specimens via portering services all specimens for Microbiology, except blood culture bottles and known high risk specimens (e.g. viral haemorrhagic fever cases) or suspected emerging diseases, may be sent to the department by the pneumatic air tube delivery system from a variety of locations in the hospital at Darent Valley Hospital including:

- Phlebotomy Outpatients
- Accident and Emergency (A/E)
- Intensive Care Unit (ICU)
- Tambootie Ward (SCBU)
- Rosewood Ward
- Delivery Suite
- Redwood Ward
- Cherry Ward
- Pine Therapy Unit

The pneumatic air tube system is operated by Serco – if it breaks down please phone 8888.

Specimens from Medway Maritime Hospital

Specimens collected at Medway Maritime Hospital are taken by porters to Pathology in Medway Maritime Hospital and transported to Pathology in Darent Valley Hospital via Delta couriers provided by Dartford and Gravesham NHS Trust.

Specimens from Queen Mary's Hospital, Sidcup

Specimens are collected for Pathology at QMH and transported via Delta courier provided by Dartford and Gravesham NHS Trust.

Specimens from General Practices

While the laboratory will accept patients delivering their specimens direct to the laboratory during normal opening hours, patients must be encouraged to return their specimens to their GP practice. The laboratory provides a courier service to all GP practices in the service area for collection of specimens. In this way specimens are transported to the laboratory in the appropriate transport containers and in a timely manner.

Transport times of specimens

Acceptable transport times (see table below) are stated by the laboratory as the maximum time within which specimens are acceptable for processing. Specimens that are received later than these maximum transport times may be rejected if there is a likelihood that the result may have been affected.

Process	Optimal stability time before processing
Investigation of faeces	48 hours

Investigation of blood cultures	11 hours
Investigation of throat swabs	48 hours
Investigation of urine	24 hours
Investigation of ear swabs	48 hours
Investigation of nose swabs	48 hours
Investigation of eye swabs	48 hours
Investigation of wound swabs and associated specimens	48 hours
Investigation of bile	48 hours
Investigation of sterile fluids	24 hours
Investigation of cerebrospinal fluid	1 hour
Investigation of genital tract and associated specimens	48 hours
Investigation of MRSA screening swabs	48 hours
Investigation of specimens for Mycobacterium species	48 hours
Investigation of sputum and associated specimens	48 hours
Detection of Helicobacter pylori antigen in faeces	48 hours
Detection of Clostridium difficile toxin in faeces	48 hours
Investigation of samples for dermatophytes	48 hours
Investigation of parasites	72 hours
Detection of hepatitis B surface antigen (HBsAg)	72 hours
Detection of hepatitis B antibody (anti HBs)	72 hours
Detection of hepatitis B core antibody (anti HBc)	72 hours
Detection of hepatitis C antigen / antibody	72 hours
Detection of HIV antigen / antibody	72 hours
Detection of hepatitis E IgG and IgM	72 hours
Detection of rubella IgG antibody	72 hours
Detection of syphilis total antibodies	72 hours
Detection of rheumatoid IgM antibody	72 hours
Detection of hepatitis A IgM antibodies	72 hours
Detection of EBV IgG and IgM antibodies	72 hours
Detection of VZV IgG antibody	72 hours
Detection of Borrelia burgdorferi IgG and IgM antibodies	72 hours
Detection of parvovirus IgG and IgM antibodies	72 hours
Detection of CMV IgG and IgM antibodies	72 hours
Detection of Toxoplasma IgG and IgM	72 hours
Detection of HBc IgM, HBeag, anti-HBe ab	72 hours
Detection of Measles IgG	72 hours
Detection of ASO	72 hours
Detection of RSV	72 hours
Detection of Legionella pneumophila antigen	72 hours
Detection of pneumococcal antigen	72 hours
Chlamydia and Gonorrhoea testing using the Cobas 4800	72 hours
Detection of rotavirus	72 hours
Detection of adenovirus	72 hours
Detection of Flu A/B	24 hours
Detection of SARS COV2 (Covid 19)	24 hours

Spillages and leaks

Specimen bags containing leaking specimens will be discarded and the sender notified. If the leak has contaminated the inside or outside of the air tube carrier, the carrier will be taken out of service and decontaminated.

All areas with an air tube station will be notified by Serco to ensure other arrangements for specimen transport can be put in place.

Once the decontamination process is complete and the air tube system is working, users will be notified by Serco.

6. Specimen rejection

Specimens may be rejected for the following reasons:

- The specimen is insufficient for testing
- The specimen labelling requirements are not met
- The specimen is haemolysed
- The specimen is too old to process
- The specimen type is incorrect
- There is doubt over the specimen origin
- There are no or inappropriate clinical details
- The test requested is inappropriate – in some cases the relevant test will be selected by the laboratory
- The specimen does not meet testing requirements, e.g. formed stools for *C. difficile*
- The specimen is received leaking

The requestor will be informed via the electronic reporting system. In some cases, e.g. *C. difficile* or RSV, the laboratory will phone to request another specimen.

Specimens are not immediately discarded so please contact the laboratory to discuss the request in case the specimen can still be used.

7. Specimen referral

Specimens for referral to another laboratory must always be sent via Pathology. This will ensure they are correctly packaged and can be tracked.

8. Report availability

Reports are issued after analysis of the specimen and authorisation. Please refer to tables later on in this handbook that detail expected turnaround times for the different assays and take into consideration the potential need for secondary testing.

Advice on interpretation of reports can be sought from the medical microbiologists.

All authorised results are available on the Web Browser for hospital wards and available via the GP electronic link for GP surgeries – this is dependent upon the time individual practices call off results into their systems.

9. Information governance

Receipt of a recognised test request assumes that the patient has agreed that the test may be carried out, together with any follow-on tests required, and that information may be shared with healthcare professionals and statutory bodies as required. In accordance with legal requirements the department adheres to the Data Protection Act 1998 for all patient information and follows the guidelines laid out by the Royal College of Pathologists for the retention and disposal of laboratory records and specimens (5th edition 2015). Further information on this topic is available from the department upon request.

10. Visitors to the laboratory

Doors to the Pathology Department are locked at all times. Entry is for authorised personnel only. All visitors to Pathology must report to Pathology Reception. Pathology Reception staff are responsible for meeting and greeting all visitors and will inform laboratory personnel of the arrival of the visitors. All visitors must sign in the visitors' book on arrival and will be issued with a visitor's badge. On departure visitors must sign out the visitors' book and return the badge to the Reception staff. Laboratory personnel will escort visitors at all times.

11. Consultant guidelines

These can be found on the DVH Trust website www.dgt.nhs.uk and the intranet site ADAGIO. For MFT they can be found at www.medway.nhs.uk and the intranet site The Clocktower.

12. Complaints

Complaints regarding the service must be made in the first instance to any of the personnel listed on page two. If you feel the need to take any matter further a written complaint must be made to Complaints Manager, Darent Valley Hospital or via email to dgn-tr.complaints-dvh@nhs.net.

13. Laboratory investigations

Stated turnaround times are calculated from the time samples are received within the laboratory to the time an authorised report is available. Our objective is to have results available up to the stated turnaround time for 95% of requests. Some results will be available earlier than the stated turnaround times.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Microbiology in-house tests					
Bile	Bile collected into a 30mL white capped universal and placed in a sealed plastic bag. Minimum volume required is 1mL.	Isolation and identification of bacteria, fungi and yeasts of clinical significance.		2 days for negative culture, up to 3 days for a positive.	Collect specimens before antimicrobial therapy where possible.
Blood culture ***<u>Please Note:</u> Blood culture bottles have not been validated in-house for inoculation with sterile fluids.*** ***A minimum volume of 10mls of sterile fluid is required.***	**Adult**: Aerobic culture bottle (colour coded green FA PLUS). For the recovery of aerobic micro-organisms (bacteria and fungi). Anaerobic culture bottle (colour coded orange	Isolation and identification of bacteria, fungi and yeasts of clinical significance.		Interim negative at 48hrs, complete negative at 5 days. Positive cultures are telephoned immediately. Some cultures are extended	Collect specimens before antimicrobial therapy where possible. Although blood can be sampled at any time, drawing blood at or as soon as possible after a fever spike is optimal, except in endocarditis where timing is less important.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
	FN PLUS). For the recovery of anaerobic and facultative anaerobic micro-organisms (bacteria). **Paediatric**: Paediatric culture bottle (colour coded yellow PF PLUS). For the recovery of aerobic and facultative anaerobic micro-organisms (bacteria and yeast) where only a small volume of blood is available. A minimum volume of 0.5mL of blood is required.			for up to 21 days, e.g. endocarditis and brucellosis.	Post mortem blood cultures have been shown to be associated with higher positive rates than blood cultures sampled during life. Results of post mortem blood cultures and their clinical significance must be interpreted with caution.
Candida auris	Swabs from nose, throat, groin, perineum, wound. Urine, sputum.	Isolation of candida auris		2 days for negative culture, up to 3 days for a positive	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Carbapenemase Resistant Enterobacteriaceae (CRE)	Rectal swab. All swabs must be transported to the laboratory using Amies transport medium with or without charcoal.	Isolation and identification of CRE.		48 hours for negative culture, All positive cultures are sent to referral laboratory for confirmation, up to 7 days for a referral report	Rectal swabs are described in the Infection Control Policy as the recommended specimens for screening.
Cerebrospinal fluid	Ideally a minimum volume of 1mL. For *Mycobacterium* species, at least 10mL where possible. CSF is normally collected sequentially into three or more separate containers which must be numbered consecutively. Collection of an additional specimen in a container with fluoride for glucose	Isolation and identification of bacteria, fungi and yeasts of clinical significance.	Neonates (<28 days) WBC: 0-30 cells/mm^3 Infants (1 to12 months) WBC:0-15 cells/mm^3 Children (> 1 yr.)/Adults WBC: 0-5 cells/mm^3 No RBCs should be present in normal CSF	Microscopy available within 2 hrs, culture result up to 3 days.	Collect specimens before antimicrobial therapy where possible, but this must not be delayed unnecessarily pending lumbar puncture and CSF culture. Samples must be collected in 30ml sterile white capped universal container.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
	estimation(Biochemistry) is also recommended, although such tubes must be filled last because they may contain environmental bacteria which might contaminate specimens for culture. Common practice is to send the first and last specimens taken for microbiological examination and the second specimen for protein.(Biochemistry)				
Clostridium difficile	Faeces collected using a clean, dry, disposable bedpan or similar container, and transferred into a 30mL capped universal container with spoon.	Detection of *Clostridium difficile* glutamate dehydrogenase (GDH). Detection of *Clostridium difficile* toxin.		2 days	Not tested if positive within previous 28 days. Only tested on Bristol Stool chart 5-7.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Faeces	Faeces collected using a clean, dry, disposable bedpan or similar container, and transferred into a 30mL capped universal container with spoon. A minimum of 5mL is required.	Isolation and identification of bacteria of clinical significance.		2 days for negative culture, up to 14 days for a positive.	Collect specimens soon as possible after onset of symptoms. Collect specimens before antimicrobial therapy where possible. All presumptive Salmonella sp , Shigella (Not sonnei), E,coli 0157 and Vibrio Cholera are sent to reference lab for confirmation.
Genital tract specimens	High vaginal swab, urethral swab, cervical swab, pelvic fluid, pelvic pus and fluid from Bartholin's abscess / cyst. Unless otherwise stated, swabs for bacterial and fungal culture must be transported to the laboratory using Amies transport medium with charcoal.	Isolation and identification of yeasts and fungi of clinical significance.		2 days for negative culture, up to 3 days for a positive.	Collect specimens before antimicrobial therapy where possible. Cervical and high vaginal swabs must be taken with the aid of a speculum. It is important to avoid vulval contamination of the swab. The posterior fornix, including any obvious plaques must be swabbed. If pelvic infection, including

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
	Fluid or pus must be collected in a 30mL white capped universal.				gonorrhoea, is suspected, the cervical os must be swabbed.
Hair, nail and skin	Hair, nail and skin specimens may be collected into folded paper squares, secured and placed in a plastic bag or in commercially available packets. Alternatively, use a 30mL white capped universal or 70mL yellow capped container.	Isolation and identification of yeasts and fungi of clinical significance.		Microscopy 2 days, culture up to 21 days if negative.	Collect specimens before anti-fungal therapy where possible.
Helicobacter pylori	Faeces collected using a clean, dry, disposable bedpan or similar container, and transferred into a 30mL capped universal container with spoon.	Detection of *Helicobacter pylori* antigen.		3 days	Collect specimens before antimicrobial therapy where possible. The specimen is unsatisfactory if any residual soap, detergent or disinfectant remains in the pan.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Methicillin resistant Staphylococcus aureus (MRSA)	Screening swabs including nose swab, groin swab, throat swab, wound swab and urine as per MRSA screening policy. All swabs must be transported to the laboratory using Amies transport medium with or without charcoal.	Isolation and identification of MRSA.		1 day for negative culture, up to 3 days for a positive.	Nose and groin swabs are described in the Infection Control Policy as the recommended specimens for screening.
Mycobacterium	Sputum, bronchoalveloar lavage, pleural fluids, aspirates, washings and brushings, cerebrospinal fluid, pus, urine, swabs, tissues and biopsies. Whole of early morning urine collected into 250ml containers- 3 consecutive specimens must be sent. Bone marrow in a 3mL lithium heparin tube.	Isolation and identification of *Mycobacterium* species of clinical significance.		TB microscopy 1 day, negative culture result up to 8 weeks. Positive results released as available.	Collect specimens before antimicrobial therapy where possible. Single swabs will be rejected as unable to process for both microscopy and culture Discuss with Consultant Microbiologist before taking a Bone Marrow

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Parasites	Faeces, liver aspirate, duodenal / jejunal aspirate, urine, other body fluids, peri-anal swabs, skin and hair. Whole parasites and arthropods. Faeces in a 30mL capped universal container with spoon. Peri-anal swabs in sterile saline in 30mL white cap universal. All other specimens in a 30mL white-capped universal container. Take 3 faeces samples over a 2 week period.	Detection and identification of helminths, nematodes, flukes, parasitic larvae, protozoa, ectoparasites, ova, eggs and cysts.		Up to 3 days. .	Peri-anal swab for threadworm ova - between 10pm and midnight, or early in the morning, before defecation or bathing. Peri-anal swab must be taken first thing in the morning, before washing and broken off in to container. For *Schistosoma* the last few drops of urine passed must be collected in to a container over a 24hr period. Please give relevant clinical details including any history of foreign travel.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Pus, wound swabs, drain swabs, abscess swabs, tissues and biopsies	Skin swab, swab from superficial wound, swab from non-surgical wound. Abscess pus, abscess swab, deep-seated pus swab, post-operative wound swab, wound exudates. Tissue and biopsy. IUCDs, vulval, labial and genital ulcer swabs. All swabs must be transported to the laboratory using Amies transport medium with charcoal.	Isolation and identification of bacteria, fungi and yeasts of clinical significance.		2 days for negative culture, up to 3 days for a positive. Extended enrichment result may take up to 7 days.	Collect specimens before antimicrobial therapy where possible. Specimens of pus/exudate, if present, are preferred to swabs. Sample a representative part of the lesion. Swabbing dry crusted areas is unlikely to yield the causative pathogen. If specimens are taken from ulcers, the debris on the ulcer must be removed and the ulcer cleaned with saline. A biopsy or, preferably, a needle aspiration of the edge of the wound must then be taken.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Sputum and associated specimens	Sputum, bronchoalveloar lavage, pleural fluid, aspirates, washings and brushings. Sputum - ideally, a minimum volume of 1mL in a 70mL yellow capped specimen container. BAL - it is difficult to be specific on volume required; in principle, as large a volume as possible is preferred. For all specimen types, numbers and frequency of specimen collection are dependent on clinical condition of patient.	Isolation and identification of bacteria, fungi and yeasts of clinical significance.		2 days for negative culture, up to 3 days for a positive.	Collect specimens before antimicrobial therapy where possible.
Sterile fluids	Body fluids including joint fluids, bursa fluids, ascitic fluid, peritoneal fluid and continuous	Isolation and identification of bacteria, fungi and yeasts of clinical		Microscopy available same day, culture result up to 3	Collect specimens before antimicrobial therapy where possible.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
	ambulatory dialysis fluid. Ideally at least 1mL collected in a 30mL white capped universal container	significance. Joint fluids - identification of birefringent crystals (scope only to state if present/ absent).		days.	
Swabs - Ear	Ear swab - any pus or exudate. All swabs must be transported to the laboratory using Amies transport medium with charcoal.	Isolation and identification of bacteria, fungi and yeasts of clinical significance.		2 days for negative culture, up to 3 days for a positive.	Collect specimens before antimicrobial therapy where possible.
Swabs - Nose	Nose swab. All swabs must be transported to the laboratory using Amies transport medium with charcoal.	Isolation and identification of bacteria of clinical significance.		2 days for negative culture, up to 3 days for a positive.	Collect specimens before antimicrobial therapy where possible.
Swabs – Throat	Throat swab. All swabs must be transported to the laboratory using Amies	Isolation and identification of bacteria of clinical significance infections.		2 days for negative culture, up to 3 days for a	Collect specimens before antimicrobial therapy where possible. Throat swab taken from

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
	transport medium with charcoal.			positive.	the tonsillar area and/or posterior pharynx, must be taken avoiding the tongue and uvula.
Urine	Urine and suprapubic aspirate in a 10mL red capped boric acid urine tube.	Isolation and identification of bacteria, fungi and yeasts of clinical significance.		Microscopy available on day of receipt. Culture results available at 24hrs - final report may take up to 3 days if further work required.	Collect specimens before antimicrobial therapy where possible. Microscopy will not be carried out on pad urine specimens. Culture may not be carried out if microscopy does not indicate possible infection.
Vancomycin Resistant Enterococcus (VRE) also known as Glycopeptide Resistant Glycopeptide (GRE)	Rectal swab Faeces	Isolation and identification of VRE		48 hours for negative culture 72 hours for positives	Only sent to referral laboratory if requested by Consultant Microbiologist

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Serology in-house tests-(*Currently performed on Liaison XL platforms. This process is not yet UKAS accredited)*					
Adenovirus	Faeces in a 30mL capped universal container with spoon.	Adenovirus antigen		1 day	
Antenatal booking blood	Blood in a 5mL red top (with yellow insert) vacutainer blood bottle.	HIV Hepatitis B surface antigen Syphilis		2 days for negatives Positives up to 8 days	If positive or equivocal HIV/Syphilis specimen sent to Reference Laboratory for confirmation. Late bookers (after 16 weeks) – 24 hr TAT In labour – (unbooked) 4 hours TAT
Anti-streptolysin O	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of anti-streptolysin O. Used to indicate recent infection with group A β-haemolytic streptococci and can be an aid in the diagnosis of acute rheumatic fever and post-streptococcal glomerulonephritis.	'Upper limit of normal' in pre-school children = <100IU/ml School age children & young adults = 166 – 250 IU/ml Average 'Upper limit of normal' = 200IU/ml	2 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Borrelia burgdorferi	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of Borrelia burgdorferi IgG and IgM for Lymes disease.		6 days	If positive or equivocal, specimen sent to referral laboratory for confirmation. Details of date of tick bite and travel history required.
Cytomegalovirus (CMV)	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of CMV IgG and IgM antibodies.		2 days	
CMV avidity	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Indication for detecting primary CMV infection in pregnancy		6 days	Only tested on stored antenatal booking blood if CMV IgG is positive on Torch screen.
Epstein Barr (EBV)	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of EBV IgG and IgM antibodies.		2 days	
Hepatitis A	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of hepatitis A IgM antibody.		2 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Hepatitis B	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of hepatitis B surface antigen and Hepatitis B core antibody.		Urgent tests are processed and available on the same day, routine screens 2 days. Hepatitis B markers 5 days.	If positive surface antigen, hepatitis B markers (HBeAg, anti-HBe, HBc IgM) will be tested.
Hepatitis B surface antibody	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of hepatitis B surface antibody.		3 days	To check immunity
Hepatitis C	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of hepatitis C antigen and antibody.		2 days. If positive a confirmation will take up to 7 days	If positive, specimen sent to referral laboratory for confirmation, RNA and genotyping.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Hepatitis E	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of Hepatitis E IgG and IgM		6 days If positive a confirmation will take up to 10 days	If positive IgM specimen sent to referral laboratory for confirmation, RNA and genotyping.
Human immunodeficiency virus (HIV)	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of HIV antigen and HIV antibody.		Urgent tests are processed and available on the same day, routine screens 2 days if negative. If positive or equivocal a confirmation from a referral laboratory will take up to 14 days.	If positive or equivocal, specimen sent to referral laboratory for confirmation and typing.
Legionella	Urine in a 30mL white capped universal container or in a 10mL red capped boric acid urine tube.	Detection of Legionella pneumophila antigen.		1 day If positive a confirmation will take up to 10 days	If positive, specimen sent to referral laboratory for confirmation

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Measles IgG	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of Measles IgG		2 days	For immunity
Needle stick injury	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of HIV, Hepatitis B and Hepatitis C		1 day	Please state if sample is from donor or recipient. Sample from Donor will be tested HIV, Hepatitis B &C and stored for 2 years. Sample from recipient will be stored for 2 years.
Parvovirus	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle	Detection of parvovirus IgG and IgM		5 days	If positive, sample will be sent to referral laboratory for PCR
Pneumococcal antigen	Urine in a 30mL white capped universal container or in a 10mL red capped boric acid urine tube.	Detection of pneumococcal antigen.		1 day	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Rheumatoid Factor	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of Rheumatoid IgM antibody.	= / >6 IU/ml Positive	5 days	
Rotavirus	Faeces in a 30mL capped universal container with spoon.	Detection of rotavirus antigen.		1 day	
Rubella	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle	Detection of rubella IgG antibodies.		5 days	To check immunity.
Syphilis	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle	Detection of syphilis total antibodies.		2 days. If positive a confirmation will take up to 7 days	If positive/equivocal , specimen sent to referral laboratory for confirmation.
Toxoplasma	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of *Toxoplasma* IgG and IgM.		2 days If positive a confirmation will take up to 14 days.	If positive IgM specimen sent to referral laboratory for confirmation.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Varicella zoster virus (VZV)	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	VZV IgG antibody for immunity		If urgent 1 day Routine 2 days	State suspected date of contact if appropriate.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Molecular Testing					
SARs Cov-2 (Covid 19 testing)	Combined Nose and Throat swabs in viral transport media	Covid 19 RNA		1 day	Sputum samples /Bronchial washings Sent to referral lab.
Chlamydia trachomatis / Neisseria gonorrhoeae	Urine in Cobas PCR urine collection kit. Genital, throat and rectal specimens in Cobas PCR dual swab collection kit.	Detection of Chlamydia trachomatis / Neisseria gonorrhoeae DNA.		Negative:5 days Chlamydia trachomatis Confirmed positive:7 days Neisseria gonorrhoeae: Confirmed positive:10 days.	Patient should not urinate for 1 hour prior to specimen collection. Positive rectal sent for LGV investigation. Samples positive for Neisseria gonorrhoeae sent to referral laboratory for confirmation.
Flu A/Flu B	Combined Nose and Throat swabs in viral transport media. Nasopharyngeal aspirate	Detection of Flu A/ Flu B RNA		1 day	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
RSV	Combined Nose and Throat swabs in viral transport media. Nasopharyngeal aspirate collected in a 15mL screw capped conical tube.	Detection of RSV RNA		1 day	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
OSNA					
One step nucleic acid amplification (OSNA) *(This test is not yet UKAS accredited).*	Skeletonised lymph nodes in a 70mL yellow screw cap container, placed on ice. DO NOT add fixative. Lymph nodes must be placed in individual specimen pots and numbered.	Detection and quantitation of Cytokeratin 19 (CK 19).	A result of ++ (>5000 copies/mL) macrometastic tumour will cause the surgeon to carry out an axillary node clearance.	30 minutes – 1 hour depending on size and number of nodes	Only lymph nodes taken intra-operatively are suitable for this assay. This test must be pre-booked with the laboratory in advance as the specimen must be tested immediately. Telephone laboratory to inform that specimens are in transit. Send on ice direct to laboratory, immediately after collection. Process performed on Wednesdays and Fridays unless prior arrangements have been made.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Other tests – sent to Reference Laboratories. The below list contains the more common tests requested and is not a complete list of all tests performed. Further information for less common tests is available from the Laboratory.					
Immunology including: ACR ANCA, ANA, CCP Aquaporin-4 CASPR2 Diabetes abs DPPX, GAD, GPC IGLON5 Intrinsic factor LG1I LKM, MAG Mitochondrial MOG, MUSK Neuronal antibodies Smooth muscle TTG, VGCC	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Various referred tests	ACR 0-0.25 nmol/L Anti-CCP 1-7 U/mL TTG <7U/mL negative, 7-10U/mL equivocal, >10U/mL positive	Up to 28 days	Further immunology tests are available on request. Auto-antibody tests are sent to a referral laboratory who will carry out tests based on clinical information, so accurate clinical details are essential. Some positive tests result in further investigations.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Adenovirus PCR	Respiratory samples CSF in a 30mL white capped universal container. Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Adenovirus DNA		4 days	
Antimicrobials	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Amikacin Ethambutol Itraconazole Posaconazole Rifampicin Teicoplanin Tobramycin Ganciclovir Voriconazole		3 days 4 days 4 days 4 days 4 days 3 days 3 days 4 days 4 days	
	Blood in 4ml grey Fluoride oxalate vacutainer	Isoniazid		4 days	
	1-2ml separated serum in gold top vacutainer	Moxifloxacin		3 days	Severn Pathology (North Bristol)

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Aspergillus Antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Aspergillus IgG		10 days	
Aspergillus Antigen		Galactomannan		5 days	
Avian antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Avian IgG		10 days	
Bartonella antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Bartonella IgG/IgM for Cat Scratch disease		10-14 days	
B- D Glucan	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Fungal marker		5 days	
Brucella antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Brucella IgG/IgM		10-14 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
BK and JC Polyoma viruses PCR	Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. CSF 30mL white capped universal container.	BK and JC DNA		4 days	Serology no longer available
Broad Range PCR	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle OR Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. CSF, sterile fluid or tissue in a 30mL white capped universal container.	Bacterial/fungal detection 16s Bacterial PCR 18s Fungal PCR		5-10 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
CJD	CSF in a 30mL white capped universal container.	TSE agents		10 days.	Discuss with Consultant Microbiologist before contacting Edinburgh Laboratory. Do not send sample out of core hours, weekends, Bank Holidays. Send in orange bag to alert CSR staff. Telephone laboratory when sample has been taken. Results will be returned directly to requesting Clinicians from referral laboratory.
CMV PCR	Urine Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. CSF in a 30mL white capped universal container.	CMV DNA		4 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Coxiella burnetii antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Coxiella burnetii IgG/IgM		10 days	
Cryptococcus	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. CSF in a 30mL white capped universal container.	Cryptococcal antigen		4 days	
Dengue, chikungunya, tropical screen	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Dengue and chikungunya IgG, IgM and PCR. Plus other organisms as appropriate to travel history		10 days	Please give relevant clinical details including any history of foreign travel as other tests are performed based on this information.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
EBV PCR	Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. CSF in a 30mL white capped universal container.	EBV DNA		4 days	
Enterovirus PCR	CSF in a 30mL white capped universal container. Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. Viral swab, NPA	Enterovirus PCR		4 days	
Farmers lung	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Saccharopolyspora rectivirgula		10-14 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Helicobacter pylori	Gastric biopsy in 3mL saline in a 30mL white capped universal container.	Helicobacter pylori Culture and sensitivity		10-14 days	The sample must be received in the laboratory before 15:00pm on the day of collection (Monday to Thursday only).
Hepatitis A virus	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Detection of hepatitis A IgG antibody.		10-14 days	Post vaccination only
Hepatitis B DNA	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. Plasma from a 4mL EDTA purple top vacutainer or 1.3mL EDTA purple top vacutainer.	Detection of Hepatitis B DNA		4 days	
Hepatitis B genotype	Plasma from a 4mL EDTA purple top vacutainer or 1.3mL EDTA purple top vacutainer.	Identification of Hepatitis B genotype		30 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Hepatitis C RNA/genotype	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. Or plasma from a 4mL EDTA purple top vacutainer or 1.3mL EDTA purple top vacutainer.	Detection of Hepatitis C RNA and identification of genotype		5 days	
Hepatitis D	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Hepatitis D IgG and IgM		18 days	Only performed on known Hepatitis B positive patients
Herpes simplex virus (HSV) antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	HSV 1 & 2 IgG		10-14 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Herpes simplex virus (HSV) PCR	CSF in a 30mL white capped universal container. Genital and oral swabs in viral transport medium. Fluid from infected vesicle lesions from oral and genital areas can be collected using a sterile polyester/ flocked swab.	HSV PCR.		4 days	
HIV Viral load	Blood in a 4mL EDTA purple top vacutainer	HIV viral load		6 days	
HIV Pro-viral / maternal transmission	Blood in 1.3 mL EDTA purple top vacutainer	Detection of Pro-viral HIV DNA.		10 -14 days	According to paediatric protocol
Hydatid antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Hydatid antibodies		10-14 days	
Latent TB	Whole blood in 2x 5mL lithium heparin tubes.	Interferon Gamma Release Assay (IGRA)		4 days	Specimens must be received in laboratory before 3pm on the day specimen is collected.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Leptospira	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle. Urine	Detection of Leptospira IgM/16s DNA		7 days	State details of possible exposure to rat's urine
Measles IgM	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Measles IgM		7 days	For confirmation of measles. State suspected date of contact if appropriate
Measles PCR	CSF in a 30mL white capped universal container. Oral swab in viral transport media. Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle	Measles RNA		4 days	
Meningococcus PCR	Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. CSF in a 30mL white capped universal container.	Meningococcal DNA plus Pneumococcal DNA		5 days	Positive results are telephoned by the Reference Laboratory to the Consultant Microbiologist

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Mumps serology	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Mumps IgG for immunity and mumps IgM for acute infection		10-14 days	State clearly if Mumps is suspected or immunity testing is required.
Mumps PCR	Oral fluid, throat swab in viral transport media, CSF in a 30mL white capped universal container.	Mumps RNA			
Mycoplasma PCR	CSF in a 30mL white capped universal container. Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. Sputum or BAL in a 70mL yellow capped specimen container			7 days	
Norovirus	Faeces in a 30mL capped universal container with spoon.	Norovirus		2 days	Only performed if agreed with Consultant Microbiologist.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Parasite serology	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Amoeba Cysticercosis Filaria Hydatid *Leishmania* *Schistosoma* *Strongyloides* *Toxocara* *Trichinella* *Trypanosoma*		10-14 days	Please state clearly which parasite is being investigated
Parechovirus PCR	CSF in a 30mL white capped universal container. Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Parechovirus RNA		4 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Parvovirus PCR	Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle. CSF in a 30mL white capped universal container.	Parvovirus DNA		4 days	
PCP PCR	Sputum or BAL in a 70mL yellow capped specimen container	Pneumocystis jiroveci pneumonia DNA		4 days	
Pertussis antibodies	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Bordetella IgG		10-14 days	Ideally sample should be taken after two weeks of coughing.
	Nasopharyngeal swab or aspirate.	Bordetella PCR		5 days	

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Post vaccination screen	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Haemophilus influenzae b (Hib), pneumococcal, meningococcal, diphtheria and tetanus antibodies		Up to 6 weeks	Please state which antibodies require testing
Respiratory viruses (Extended screen)	Upper respiratory swabs in virus transport medium. Sputum or BAL in a 70mL yellow capped specimen container	Respiratory viruses PCR – Flu A/Flu B/RSV/Parainfluenza/ Metapneumovirus/ Rhinovirus/Enterovirus/ Adenovirus/Bocavirus/ Coronaviruses/SARS-CoV-2		4 days	MERS requests must be discussed with the Consultant Microbiologist
Rickettsia (spotted fever & epidemic typhus)	Blood in a 5mL gold top vacutainer or 1.3mL yellow top paediatric blood bottle.	Rickettsia IgG/IgM/PCR		10 days	Please give relevant clinical details including any history of foreign travel because other tests may be performed based on this information.

Test	Specimen type and method of collection	What test is used for	Reference Range	Turnaround times (TAT) (Working days)	Comments/ Referral Laboratory
Varicella zoster virus (VZV) PCR	CSF in a 30mL white capped universal container. Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle Skin swabs in viral transport medium. Fluid from infected vesicle lesions can be collected using a sterile polyester/ flocked swab.	VZV PCR		4 days	
Whipples PCR	CSF in a 30mL white capped universal container. Tissue in a 30mL white capped universal container. Blood in a 4mL EDTA purple top vacutainer or 1.3mL purple top paediatric blood bottle	Tropheryma whipplei DNA		10 days	

Referral Laboratories

A number of specialist tests are referred to other Laboratories (see below) and these may change from time to time considering service provided.
Specimens must be sent to Microbiology for referral - we cannot accept responsibility for specimens sent directly to Referral Laboratories by users.

Referral Laboratory	Address	UKAS reference number
Anaerobic Reference Laboratory	Public Health Wales Microbiology Division Microbiology University Hospital of Wales Heath Park Cardiff CF14 4XW	9510
Animal & Plant Health Agency	New Haw Addlestone Surrey KT15 3NB	1769
Antimicrobial Reference Laboratory, Severn Pathology	Antimicrobial Reference Laboratory Southmead Hospital Westbury-on-Trym Bristol BS10 5NB	8099
Brucella Reference Unit	Liverpool Clinical Laboratories Royal Liverpool & Broadgreen University Hospitals NHS Trust Duncan Building Prescot Street L7 8XP	9755
Cardiff Toxicology	The Academic Centre University Hospital Llandough Penarth Vale of Glamorgan CF64 2XX	8989
CJD Surveillance Unit	NHS Lothian University Hospitals Division Western General Hospital Edinburgh EH4 2XU	1378
East Kent Hospital	Microbiology William Harvey Hospital Kennington Road Willesborough Ashford TN24 0LZ	9399
Great Ormond Street	Camelia Botnar Laboratories Great Ormond Street Hospital Great Ormond Street	8675

	London, WC1N 3JH	
Heartlands Hospital	Microbiology / Immunology Heart of England Trust Bordesley Green East Birmingham B9 5SS	8213
UKHSA Meningococcal Reference Unit	Clinical Science Building Central Manchester University Hospital NHS Foundation Trust Manchester Royal Infirmary Oxford Road Manchester M13 9WZ	8393
Micropathology Ltd	University of Warwick Science Park Venture Centre Sir William Lyons Road Coventry CV4 7EZ	9622
UKHSA National Mycobacterium Reference Laboratory	NMRS South National Infection Service 61 Colindale Avenue London NW9 5HT	10080
Oxford Diagnostic Laboratories	94C Milton Park Abingdon Oxfordshire OX14 4 RY	4066
Hospital for Tropical Diseases	Department of Clinical Parasitology UCL Hospitals NHS Foundation Trust Mortimer Market London WC1E 6JB	9362
Infection Sciences, Severn Pathology (UKHSA South West)	Pathology Sciences Building Science Quarter Southmead Hospital Bristol BS10 5NB	8043
UKHSA Virus Reference Department	Virus Reference Department 61 Colindale Avenue London NW9 5HT	8825
UKHSA Bacteriology Reference Department	Bacteria Reference Department 61 Colindale Avenue London NW9 5HT	8197

UKHSA Rare and Imported Pathogens Laboratory (RIPL)	Rare and Imported Pathogens Laboratory Manor Farm Road Porton Down Salisbury Wiltshire SP4 0JG	9304
University Hospital Southampton	Department of Microbiology Southampton General Hospital Southampton Tremona Road SO16 6YD	8403
Royal Brompton Hospital	Immunology Royal Brompton and Harefield NHS Foundation Trust Sydney Street London SW3 6NP	8826
The Royal London	Virology Clinical Group Pathology and Pharmacy Building Barts Health NHS Trust 80 Newark Street London E1 2ES	8285
St George's Hospital	Department of Microbiology St George's University Hospitals NHS Foundation Trust Blackshaw Rd Tooting London SW17 0QT	9810
The Doctors Laboratory	The Halo Building 1 Mabledon Place London WC1H 9AX	8812
Toxoplasma Reference Laboratory	Microbiology Division Public Health Wales NHS Trust Public Health Wales Singleton Hospital Swansea SA2 8QA	9510
Synovis, King's College Hospital	South London Specialist Virology Centre King's College Hospital NHS Foundation Trust Department of Liver Pathology Cheyne Wing, 2nd Floor Denmark Hill London SE5 9RS	9863

INSTRUCTIONS FOR PATIENTS

How to collect urine for culture

Collect urine sample using the collection cup provided (preferably mid-stream, DO NOT collect first or last part of urine).

Remove cap from tube and pour urine from collection cup into tube.

Replace cap on tube securing tightly, dispose of collection cup.

Ensure that the container is correctly labelled with forename, surname, date of birth, NHS number / hospital number and the date that the sample was taken. Please ensure if request form is required, that this is completed with all patient identifiers and accompanies sample.

Return sample in tube to your GP / Hospital as soon as possible. The GP will then forward the sample to the Pathology laboratory for analysis.

How to take a sample for threadworm (*Enterobius vermicularis*)

It is important that the sample is taken first thing in the morning and before washing.

Lightly moisten the swab in saline.

Swab around the perianal area which is just at the entrance of your anus.

Break off the swab into the container and replace cap finger tight.

Ensure that the container is correctly labelled with forename, surname, date of birth, NHS number / hospital number and the date that the sample was taken. Please ensure if request form is required, that this is completed with all patient identifiers and accompanies sample.

Return the labelled container to your GP practice. The GP will then forward the sample to the Pathology laboratory for analysis.

How to collect urine for TB

If your Doctor has requested a urine test for TB, the laboratory requires 3 consecutive early morning samples of urine (EMU).

1. **Collecting urine**

Your doctor may provide you with the necessary containers and labels, if not these are available from the Microbiology Department at Darent Valley Hospital.

Collect the whole of the first urine of the day – first thing in the morning when you get up.

You may pass the urine directly into the plastic container provided, but if this is difficult then you may do the following:

Thoroughly clean a wide-necked container (a jam jar for example) with detergent and rinse well with boiling water to remove any environmental bacteria. Allow the empty container to dry, if you can put a lid on this then it can be prepared the night before the sample collection. Make sure that the container has cooled down before you use it.

Pass the whole of first urine of the day into this container

Pour the collected urine into the plastic container provided for the test.

2. **Labelling containers**

Each of the plastic specimen containers MUST have the provided labels stuck onto them (sellotape is fine but make sure that they are stuck down firmly)

Complete the information required on the labels fully, writing clearly your surname, forename, date of birth, either your NHS number or hospital number (these are available from your GP) and the date the sample was collected.

3. **Storing and transporting samples**

The samples may be taken to the laboratory or your GP surgery each day or the samples may be kept refrigerated and taken all together.

How to collect urine for *Schistosoma*

Either collect the total urine between 10am and 2pm or collect the terminal portion of urine, each time you pass urine, over a 24 hour period. Sterile containers are available from your GP or the Microbiology Department at Darent Valley Hospital. Once a specimen has been collected it must be taken the Microbiology Department as soon as possible.

How to collect samples for *Chlamydia*

Urine – when you start to pass urine collect the first portion in the container provided by your GP. This must be at least 2 hours after the last time you passed urine.

Self-taken vaginal swabs must be collected using the kit provided by your clinic or GP surgery. Try to avoid external skin contact as much as possible.

Samples must be transported to the Microbiology Department at Darent Valley Hospital as soon as possible for Chlamydia and Gonorrhoea testing. The laboratory uses the Roche Cobas test kits.

Instructions to Patients for Infertility and Post-Vasectomy Analysis

1. You should abstain from sexual intercourse or masturbation for a minimum of two days and no more than seven days before production of the sample. This will ensure the best quality sample is produced for testing.

2. The sample should be produced by masturbation into a sterile toxicity tested container - this is provided by your GP/Consultant for infertility analysis. No other container is suitable for this test. It is important not to use either a condom or any type of lubricant as these will seriously affect test results.
It is important the whole sample is collected in the sample container. If any sample is spilt then it will not be suitable for assessment and a further sample will be required on another occasion. If this is the case please contact the laboratory on the telephone number below.

3. The container must be labelled with:
Your full name
Your date of birth
Your NHS number and / or Hospital number (if known)
The Date and Time of production of sample
The laboratory will not accept unlabelled or incompletely labelled specimens.

Please ensure the lid is properly secured to stop leakage of sample from the sample container.
Care should be taken when transporting the specimen container to the hospital. Excessive heat or excessive cold must be avoided as either will affect the test results.

Arranging Semen Analysis: We now operate an appointment system for semen analysis. Please phone and book an appointment date and time on
01322 428100 x4344 between: 8:30 am – 4 pm (analysis is performed on Tuesday and Thursday only).

For Infertility Analysis:
The form and pot should be brought, **via appointment ONLY**, to the **Pathology Reception on Level 3 Unit 2 Darent Valley Hospital, Darenth Wood Road, Dartford, Kent DA2 8DA within 1 hour of production.**
The samples will only be accepted on the **date and time slot** allocated to the patient.

Post-Vasectomy Analysis:
The form and pot should be brought, **via appointment ONLY**, to the **Pathology Reception on Level 3 Unit 2 Darent Valley Hospital, Darenth Wood Road, Dartford, Kent DA2 8DA within 1 hour of production.**
The samples will only be accepted on the **date and time slot** allocated to the patient.

Location
Enter the hospital through the main entrance and take the stairs, directly opposite the entrance to Level 3. At the top of the stairs turn left into East Block Level 3 and continue to Junction 2 where Pathology is on the left side of the building.

4. Please note there are no facilities at the hospital site to produce semen samples.