NHS
North West
London Pathology

NWL Pathology User Guide

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North West London Pathology Laboratories are committed to delivering an accredited, efficient, user friendly and responsive Pathology Service. Our aim is to support all users to deliver top quality patient care and to aid excellent education and world-class research.

INTRODUCTION

What is North West London Pathology (NWL Pathology)?
The partnership between Imperial College Healthcare NHS Trust, Chelsea and Westminster NHS Foundation Trust and The Hillingdon Hospitals NHS Foundation Trust has created an innovative and sustainable Pathology service that delivers outstanding quality to users and patients alike. This innovative approach allows the service to better managing demand, standardise operations, improve value for money and make use of new technologies. The modernisation of pathology services represented by NWL Pathology also provides a great opportunity to drive translational research in all aspects of pathology, as well as supporting training for medical and scientific staff.

NWL Pathology is based on a 'hub and spoke' structure; the majority of routine, specialist and non-urgent, activity is centred at Charing Cross Hospital. Urgent tests required for immediate patient management and treatment will be performed in 24/7 essential service laboratories based on-site in the other hospitals in the group.

The hospitals included within the NWLP partnership are: Imperial College Healthcare NHS Trust, which comprises St Mary's Hospital, Charing Cross Hospital, Hammersmith Hospital, Queen Charlotte and Chelsea Hospital, and the Western Eye Hospital; Chelsea & Westminster NHS Foundation Trust, which comprises Chelsea & Westminster Hospital and West Middlesex University Hospital; and Hillingdon Hospitals NHS Foundation Trust, which comprises Hillingdon Hospital and Mount Vernon Hospital.

NWL Pathology User Guide
The transition of services from previous owner Trusts to North West London Pathology includes the harmonisation of services and implementation of new equipment and IT systems. IT systems have been harmonised with the exception of Blood Transfusion LIMS. The final stages of equipment harmonisation are in progress.

The information contained in this User Guide has been developed in conjunction with our users in order to meet their needs and requirements. This booklet provides information about the diagnostic pathology service provided by NWL Pathology and we hope that it will enable you to make the most efficient use of the service. If you have any questions or require information about the service provided by a specific laboratory, please contact the laboratory directly and ask for advice from a Pathologist or a Senior Healthcare Scientist as appropriate. Alternatively email your questions to ICHC-tr.pathologyqueries@nhs.net

The NWL Pathology Website www.NWLPathology.nhs.uk is an excellent resource for Pathology information. The website provides up to date news, test directory (including sample requirements and TAT), contact details and frequently asked questions.
For any additional information regarding specimens (including collection), paediatric guidance, specific departmental enquiries and / or clinical advice, please refer to the individual departments.

Within North West London Pathology, the following accreditation references apply to the services provided from Imperial hospitals and Chelsea and Westminster hospital:

- Infection & Immunity Sciences (including Microbiology) (UKAS Ref: 8659)
- Clinical Biochemistry (UKAS Ref: 8673)
- Haematology & Blood Transfusion (UKAS Ref: 8674)
- Cellular Pathology (UKAS Ref: 9615)

Services provided from the Hillingdon and West Middlesex University Hospital laboratories are not yet accredited.

PATHOLOGY ADMINISTRATION OFFICES (Including Pathology IT)

LOCATIONS:

Main Pathology Administration Office - Charing Cross Hospital

The NWL Pathology Call Centre, Quality Offices and IT Offices are located at Charing Cross Hospital, on the 2nd Floor of the Laboratory Block, Charing Cross Hospital.

SERVICE:

The Pathology Administration Office at Charing Cross Hospital is the central management and collection point for GP consumables which are delivered to the General Practices served by Pathology, at regular intervals. Couriers collect specimens from GP surgeries at regular intervals which are delivered to the laboratories for analysis.

The Pathology Call Centre at Charing Cross Hospital is the central point for communications to and from Pathology users for pathology enquiries.

The IT offices at Charing Cross Hospital are responsible for the Laboratory Information Management System and associated interfaces for North West London Pathology. This includes the electronic result distribution to all users including GPs. Any queries regarding Electronic Results can be directed to the Pathology IT offices on ext 17600 or via email to Imperial.pathologyit@nhs.net

PATHOLOGY RESULTS:

The Pathology Call Centre at Charing Cross has dedicated phone lines which provide pathology results for all Pathology laboratories across NWLP. The staff in the Pathology Call Centre will be able to provide information regarding all services offered and appropriately direct any query regarding initiating service improvements for both internal and external users of the service. If a result is not available when expected please phone the Call Centre for assistance.

KEY PATHOLOGY PERSONNEL / CONTACT NUMBERS:

Pathology Enquiries/Results	020 331 35353/5386
Pathology IT enquiries	020 331 17600
Saghar Missaghian-Cully, Managing Director, NWL Pathology	020 331 21674
Angela Jean-Francois, Director of Operations, NWL Pathology	020 331 26494
Allen Widdowson, Director of Finance, NWL Pathology	020 331 25559
Matthew Connell, Associate Director of IT	020 331 15246
Mike Lyall, Deputy Divisional Manager Blood Sciences	0203 31 15142
Lorry Phelan, Deputy Divisional manager Blood Sciences	0203 31 21039
Panos Pantelidis, Divisional Manager I&I Sciences	020 331 17262
Danya Cohen, Divisional Manager Cellular Pathology	020 331 15196
Soma Pillay, Cancer Services Manager Cellular Pathology	020 331 35902
Helen Hobson, NWL Pathology Quality & Governance Manager	020 331 17846
Edwin Turner, Pathology IT Operations Manager	020 331 21290
Gareth John, NWLP Point of Care Testing Manager	020 331 17077
Rupinder Gill, GP Engagement Manager	07917 059 8563
Claire Kennedy, Communications Manager	020 331 26261

COMPLAINTS or CONCERNS

Should you have the need to lodge a complaint related to Pathology, please contact Helen Hobson, the NWL Pathology Quality & Governance manager via telephone on 020 3311 7846 or via email ICHC-tr.pathologyqueries@nhs.net. All concerns / complaints will be promptly responded to in line with Trust and Pathology policies and procedures.

CONFIDENTIALITY AND THE PROTECTION OF PERSONAL INFORMATION

North West London Pathology is committed to deliver a first class confidential service ensuring that all patient information is processed fairly, lawfully and transparently. Confidential information about patients can only be used for healthcare and relevant business purposes. All staff follow the ICHNT Trust Information Security Policy, Data Protection, Confidentiality and Information Sharing Policy. In addition to this all HCPC registered staff follow the HCPC confidentiality guidance for registrants and code of conduct.

CLINICAL TRIALS AND PRIVATE PATIENTS

The Pathology Call Centre coordinates all private work for North West London Pathology. If you would like prices or advice regarding any non-NHS Pathology please contact Sonia De Castro, Business Support Coordinator on 020 331 26140 or email at sonia.decastro@nhs.net.

CONTRACTS

If you are interested in establishing a contract with or have a query regarding contracts, please contact Nigel Weatherhead on nigel.weatherhead1@nhs.net and copy in Sonia De Castro (as above).

CLINICAL GOVERNANCE:		Ext.
NWL Pathology Quality & Governance manager	Helen Hobson	17846
Clinical Director	Dr Corrina Wright	10279

Department Quality & Governance Managers:		
Cellular Pathology	Michael Donovan	15171
Clinical Biochemistry	Varsha Patel	15170
Haematology & Blood Transfusion	Gillian Lynam	15171
Infection & Immunity Science	Nicola Mandikate	15175
Point of Care Testing	Gareth John	21343
IT Quality / Health & Safety Manager	Florence Ejiofor	15174

USEFUL INFORMATION:

DEPARTMENT	SITE	ENQUIRIES EXT	LABORATORY MANAGER	ON-CALL BLEEP
Blood transfusion	CXH	17112	17116	8160
	C&W	58207	55155	0360
	HH	34772	34774	9122
	SMH	21157	22203	1611
	THH	01895 279 293	01895 279033	5627
	WMUH	02083215515	02083216947	0208 560 2121blp 238
Cellular Pathology				
Histology	CXH	17132/17139	17131/30560	N/A
Electron Microscopy	CXH	17147	17147	N/A
Molecular	HH	32179	32179	N/A
Cytogenetics	HH	32169	32179	N/A
Immunophenotyping	HH	31505	32179	N/A
Clinical Biochemistry	CXH	35353	17062/35924	8161
	C&W	35353	58094	0143
	HH	35353	32109	9022
	SMH	21268	21687	1022
	THH	01895 279 292	01895 238282 Ext 2237	5602
	WMUH	0208 321 5930	0208 321 5928	0208 560 2121blp 175
Andrology	HH	34680	34682	-
Haematology	CXH	30520	17116	8160
	C&W	55206	58213	0360
	HH	32453	33293	9079
	SMH	26540	22490	1611
	THH	01895 279 292	01895 238282 Ext 2237	5627
	WMUH	0208 321 5991	0208 321 5928	0208 560 2121blp 238
Infection & Immunity Science				
Microbiology	CXH	35353	17883	0248
Virology	CXH	10130	10130	N/A
Immunology	CXH	10130	10130	N/A
H&I Lab	HH	38211	38211	Contact via Hammersmith hospital switchboard
Point of Care Testing (POCT)				
	CXH	17077 (Mob:07342 062 382)	21343	8161
	C&W	55135 (bleep 0143)	21343	0143
	HH	32446 (bleep 9606)	21343	9022
	SMH	21320 (bleep 1021)	21343	1022
	THH	01895 279209	21343	5602
	WMUH	0208 321 5930	21343	337
Virology-related POCT (e.g. POCT HIV, RSV etc.)	CXH	10173	21343	N/A

FOR ALL RESULTS (MONDAY – FRIDAY 9am to 5pm)

PLEASE CALL: Pathology Call Centre on 020 331 35353
Or
Email: ICHC-tr.ImperialPathologyResults@nhs.net

MAKING A PATHOLOGY REQUEST

Hospital Patients including Out Patients - All Pathology requests should be made via the local electronic ordering system. In the unusual event that the electronic ordering system is not available please refer to downtime procedures on page 13 of this document.

The information provided below should be read in conjunction with the agreed Trust policy on the information required by the laboratory for blood transfusion requests.

It is imperative that the correct patient is selected on the local electronic ordering system to ensure that the correct result is being issued on the correct patient. If you do make an error, contact Pathology Queries ICHC-tr.pathologyqueries@nhs.net as soon as possible.

It is the responsibility of the requesting clinician completing the paper request form or the electronic request to ensure that sufficient information is provided and all information is correct even if these duties are delegated. The onus is not on the laboratory to make assumptions about the origins or nature of specimens or the accuracy of any given details. If the information given is inadequate to process the request, delays may occur or the request may be rejected/returned to the sender. Every effort will be made to ensure that specimens are processed correctly and that vital specimens are not discarded, but in the event of doubt as to the integrity of the information provided or the source of a specimen it will be destroyed.

Clinical staff are reminded to ensure that sufficient and relevant clinical details are completed on the local electronic ordering system (or paper forms where applicable). Providing sufficient clinical information is crucial as it may influence any reflex tests as well as guide staff towards and enhanced personal protective equipment or special handling requirements. Clinical details should also include the travel history of the patient if known.

When requesting tests on known high risk samples clinical staff are asked to convey details of known high risk samples to laboratory staff prior to sending samples to the laboratory.

Each specimen must be collected in the correct container, if you do not have details or are unsure of which container to use, please contact extension 35353 at Charing Cross Hospital. We will be happy to arrange for colour posters/cards to be sent to you.

Cerner and Sunquest ICE are the Hospital order communications system (OCS) in use at Imperial, Chelsea (Cerner) and Hillingdon (ICE) Trusts. The OCS provides labels for containers, except for Blood Transfusion requests which must still be hand-written. It is essential to carefully note that the container printed on the label matches the container type and the patient name on the label is correct. For Cerner requests, there is no request form required (except samples for Cellular Pathology and Blood Transfusion where a printed Order Communications Systems (OCS) request form is required to be sent with the specimen).It is essential to check the quality of the barcode printing on the label - both print quality and the text position must be checked. Barcode printers which are not printing properly must not be used until ICT have rectified the fault (call Imperial ICT helpdesk on 5555, CW ICT helpdesk on 8888 or Hillingdon ICT helpdesk on 4400 to report printer faults urgently). Specimens labelled with printed labels where the patient identifiers are not clear and legible may be rejected.

For haematological molecular diagnostics requests, complete the form available on the Pathology website.

PROTOCOL FOR SPECIMENS and REQUEST FORMS:

Both specimens and specimens that are accompanied by request form (e.g. blood transfusion, cellular pathology, Hillingdon and GP requests) must EACH have a minimum of three patient identifiers:

1. Patient's full name (first name and surname) or unique alternative identifier e.g. Clinic number prefix for GUM patients, donor ID number for H&I deceased donor cross match samples.
2. Date of Birth
3. Hospital/NHS number*

(Note: NHS number can only be used as the third identifier if patient name is provided therefore cannot be used as the third identifier with GUM clinic numbers. *For samples referred from external laboratories the hospital number may be replaced by the referring laboratory number)

All samples, in addition to the above identifiers, should be labelled with the sample collection date and signature of phlebotomist.

The Blood Transfusion laboratory will NOT accept samples that do not include these additional labelling requirements.

Samples labelled with a Cerner label (not Blood Transfusion samples) should be labelled using a sample label printed at time of the sample being collected and NOT PREVIOUSLY printed/provided, this is to ensure that the dates match the sample collected).

Staff should check that the Cerner or ICE label has printed correctly with the relevant patient details clearly identifiable. The labels should be correctly aligned.

Samples must be sent to the laboratory in one bag per patients' samples. This is required to enable the work flow and to reduce booking errors in the laboratory. It has also been noted that when a mixture of patients' samples are received in a single bag it is often later detected that these specimens have been mislabelled.

Where samples are received for multiple patients in one bag, samples will be processed however Pathology staff will raise a Datix incident against the clinical area to ensure an investigation into why this has occurred is carried out.
Samples may be rejected if sample mislabelling is suspected following analysis.

Specimens from A&E:

Specimens sent to the laboratory for an A&E patient should follow the above protocol; however where the patient's identity cannot be confirmed both specimens and forms must each have the following three minimum identifiers:

1. A&E number
2. "Unknown Female" or "Unknown Male" (instead of name)
3. "Unknown DOB"

**NB At St. Mary's trauma centre the patient will have an alias instead of "Unknown Female/male" These Patients are given names which would never normally be names (elements, railway stations, phonetic alphabet) and so should be recognisable, examples include Chlorine Zeta and Caesium Quebec. DOB for unknown adult patients is 01.01.1900. DOB for unknown paediatric patients is today's date. Please refer to specific Trauma centre naming protocol.

Specimen acceptance criteria

Specimens will be accepted for analysis provided:

- ❑ The specimen is adequately identified

- The specimen is appropriate (i.e. correct blood tube, expiry date etc.)
- The investigation required is clearly indicated on the sample label or request form.
- The sample type identified on the label matches the sample received.
- Sufficient volume of sample has been collected

Refer to the Pathology Specimen Labelling and OCS Downtime Policy for further information

Each request accepted by the laboratory is considered an agreement to provide Pathology Services. Pathology is responsible for the provision of the requested investigation. It is the responsibility of the person (doctor, nurse, phlebotomist) collecting the sample from the patient to ensure that the specimen container is correctly labelled after filling. Please double check the patient identity especially when using only OCS labels (with no form). See the Trust Positive Patient Identification policy for further details. If the laboratory suspects a sample has been mislabelled the sample will be rejected and results cancelled. Additionally the following information must be provided, when clinically appropriate, to ensure appropriate interpretation and timely reporting of results.
NB Many tests require the age and sex of patients to interpret appropriate reference ranges*.

Cellular Pathology all specimens must be accompanied by a request form. Histopathology and Cytology require the printed OCS request form, for SIHMDS samples a referral note to include all relevant clinical information must be sent, along with the SIHMDS request form with the sample.

In addition to the minimum requirements for patient identification, please include the infection status of the specimen if known and relevant, plus a brief outline of the clinical history, if diagnostically relevant. Include any other patient identifiers deemed relevant by the sender (address, gender, etc.). If the specimen is urgent, state this on the request form. When the patient is private rather than NHS, this must be clearly indicated with an address for billing (unless billing is through the 15th Floor at Charing Cross, the Sainsbury Wing at Hammersmith or the Lindo Wing at St. Mary's) on the request form.

Blood Transfusion all specimens must be accompanied by the printed OCS request form (the details on the specimen must be handwritten) If the patient has any special transfusion requirements, these must be included on the request form.

At all Imperial and Chelsea & Westminster Hospital sites pathology requests are made electronically via Cerner Order Communications Systems (OCS). Cerner OCS systems are supported by the respective NHS Trust and Trust IT staff. Hillingdon ICE order communication system is also supported by the Hillingdon Trust ICT team. Each organisation is responsible for ensuring system users follow correct requesting procedures and for the provision of an alternative requesting procedure to be followed during downtime.

GP Surgeries (including other community based services):

Each specimen must be collected in the correct container and be labelled with the patient's surname, patient's forename, date of birth, and NHS number, collection date and specimen type. If you do not have collection container details or you are unsure of which container to use, please contact the Pathology Call Centre on extension 35353. We will be happy to arrange for colour posters/cards to be sent to you. You can also use the specimen container guide and test directory on the Pathology Website www.NWLpathology.nhs.uk

The *request form* must be completed in full to show the patients' full name, date of birth and NHS number. Patient address and contact details should also be stated, in case critical results need to be passed to the GP 'out of hours service'. Time and date of sampling, the type of specimen and investigation(s) required including any relevant clinical details and information related to drug therapy

must also be included as these may affect the way in which the specimen is processed and the interpretation of the results.
The name of the requesting doctor must be clearly identified on all request forms. Doctors and nurses from General Practices who regularly make Pathology requests will have been allocated a code which uniquely identifies the requestor. Please ensure that this code along with the practice address is clearly shown on the request form. Note: If a test request is ‘’urgent’ please mark the request form as so and provide a contact number for enquiries.
Specimens that do not meet sample acceptance criteria may not be processed.

GENERAL PRACTICE ELECTRONIC REQUESTING:

A web based electronic ordering system is available for GPs which has been integrated into SystmOne, EMIS and IPS practice systems, supported by the CCGs for implementation and training. All general pathology and most common radiology requests can be made on this system.

Electronic requesting vastly reduces the number of errors in patient identification and subsequent matching when results are received.
The CCGs across North West London and Imperial College Healthcare NHS Trust have been working together to establish the Diagnostic cloud. This allows GPs to access all patient results for both Radiology and Pathology wherever they are processed in North West London. The Diagnostic Cloud is available to reduce time and resources for staff, faster diagnostic turnaround and reduced test request duplication and stress for patients. Diagnostic results from Imperial college Healthcare NHS Trust secondary care, North West London, West Middlesex and Hillingdon hospitals are available based on matching patients by NHS number. The Diagnostic Cloud is supported by Sunquest ICE and Opennet, both systems can be accessed directly from the patient administration system, allowing electronic orders to be placed and access to results from Pathology providers across North West London.

For any further information please contact your network relationship manager or put your query in an email to the IT Projects Team with the subject heading: ‘Diagnostic Cloud’

Central London: CLCCG.ITprojects@nhs.net

TRANSPORT OF SPECIMENS

Also see GEN-MP-048-NWL Transportation of Pathology Specimens for information regarding Transport across Imperial Pathology sites.

There are routine locally arranged specimen collection rounds for wards and departments within all customer hospitals. There is also a pneumatic tube system available for sending specimens to all Pathology laboratories. Where there is no pneumatic tube station, specimens should be transported to the laboratories using porter services.

The pneumatic tube system provides a rapid delivery system for urgent specimens; please use it in preference to the portering system, especially out of hours (see next page for details) and at weekends.
**NB at CWH there is only one pneumatic tube delivery from A&E.*

The pneumatic tube system must *not* be used for:
1. Samples for blood gas measurement
2. Transfusion and Haematology for a patient who is bleeding

3. Histology specimens in formalin
4. Blood culture bottles
5. Specimens infected with known or suspected Hazard Group 3 or 4 organisms (consult Microbiology lab if in doubt)
6. Specialised coagulation tests or any test for platelet function studies
7. Specimens on dry ice
8. Leaking or broken sample containers
9. Large volume samples e.g. 24-hour urine collection, EMU samples
10. Return of blood component packs via tube system
11. CSF spectrophotometry samples should be delivered to the lab by hand and protected from the light as transport by pod (PTS) may cause degradation and affect the result.

It is the responsibility of the requesting doctor to ensure that the specimen reaches the laboratory. If delivering an urgent specimen to the laboratory by hand please ensure that the specimen reception staff are notified of the urgent status of the specimen and the urgent sample log is completed.

Specimens from GP practices are either collected by Pathology couriers or posted to the laboratory directly.

All Gynaecological cytology samples need to be placed inside the transport bag for CSL. No cervical screening is performed at NWLP. All queries regarding cervical screening need to be directed to CSL.

Patients may also deliver specimens to the reception area situated in the QEQM Wing at St Mary's or the central specimen receptions at Charing Cross, Chelsea & Westminster, West Middlesex, Hillingdon and Hammersmith Hospitals.

OUT OF HOURS SERVICE

Only use the out-of-hours service for genuine emergencies. Tests requested under this system are far more costly than the equivalent performed during the day. Abuse of the system for carrying out routine work causes delays in processing genuinely urgent work and may limit the range of service in the future. Contact the appropriate duty Healthcare Scientist directly when requiring this service.

Hospital Site	Department	Contact	Time of OOH Service
Charing Cross	Microbiology	Bleep 0248	20:00-08:00
	Clinical Biochemistry	Bleep 8161	17:30-0900
	Haematology/Transfusion	Bleep 8160	17:30-0900
Chelsea & Westminster	Clinical Biochemistry	Bleep 0143	17:30-0900
	Haematology/Transfusion	Bleep 0360	17:30-0900
Hammersmith	Clinical Biochemistry	Bleep 9022	17:30-0900
	Haematology	Bleep 9079	17:30-0900
	Blood Transfusion	Bleep 9122	17:30-0900
St Mary's	Clinical Biochemistry	Bleep 1022	17:00-0900
	Haematology/Transfusion	Bleep 1611	17:00-0900
Hillingdon	Clinical Biochemistry	Bleep 5602	17:30-0900
	Haematology/Transfusion	Bleep 5627	17:30-0900
West Middlesex	Clinical Biochemistry	Bleep 175	17:30-0900
	Haematology/Transfusion	Bleep 238	17:30-0900

CASE NUMBERS
The Pathology information systems rely on LEGIBLE, ACCURATE patient CASE NUMBERS for reliable processing of results.

Failure to supply the case number on request forms:
1) Introduces the *possibility of confusion* between patients with similar names
2) Undermines the potential of computer systems to provide *accurate and rapid retrieval of patient results.*

Please print all patient information on the request forms if not requesting tests electronically.

POTENTIALLY INFECTIOUS SAMPLES

Patients with fever/rash who have recently returned from countries where Viral Haemorrhagic Fevers are endemic (e.g. Africa, S. America, rural Asia) need to be considered as potentially infected. No samples should be taken from such patients without permission from the duty Infectious Disease SpR/Consultant, or duty Diagnostic Virology consultant.

ACTIONS IN THE EVENT OF ELECTRONIC ORDERING DOWNTIME (HOSPITAL PATIENTS ONLY)

ALL IMPERIAL SITES

For Ordering Pathology tests

Downtime forms will only be processed when there is OCS downtime

In the Event of either Planned or Unplanned OCS down time the IT help desk will ensure that a message is available on all hospital terminals.

- Note due to the possibility of network/ Intranet failure a stock of downtime forms should be kept. Please use a photocopy if the IT systems are unavailable and the stock is running low.

- Paper request forms must be kept in a controlled location accessible to all ward staff. (Generally it is expected that there will be a single location for each clinical area) Each area should review where forms are kept and ensure that staff are kept informed of their location. This location should be easily accessible in the event that there is an emergency and staff need to use hand written request forms. Should these supplies run out, or at the end of the downtime new forms can be printed via the hospital intranet The Intranet: Cerner downtime procedures. Following any down time it is good practice for clinical areas to replenish their stock of forms.

- Paper forms can only be used; in any of the following circumstances below:
  - When there is a total network failure i.e. no PC can be accessed
  - When OCS is down
  - Emergency situations (e.g. delivery suite) where patient is not registered not A&E

- The downtime operational procedure needs to be part of training and Clinical Managers need to know where the forms are kept.

- Each ward/location is responsible for informing staff of the downtime operational procedure and ensuring that the policy is followed accordingly and most importantly ensuring patient safety.

For Pathology Results
Contact the Pathology Call Centre on ext 35353 or via email at: ICHC-tr.ImperialPathologyResults@nhs.net during business hours (09:00am to 5:00 pm). During out of office hours, users should contact the laboratory staff directly through the Trust's pager service.

CHELSEA & WESTMINSTER HOSPITALS NHS FOUNDATION TRUST

For Ordering Pathology tests

For planned downtime, messages are sent out by email and daily notice board to inform users of the expected time and length of the downtime. In the event of unplanned problems users should contact the IT helpdesk ext 58899 to confirm the downtime.

If electronic ordering downtime is confirmed, Pathology ordering should be carried out by fully completing a written request form.

This should include the patient's hospital number, their full name, D.O.B., Location and physician. It should also clearly indicate what requests are required. Electronic ordering downtime forms are available on the intranet and copies of these forms can also be found at the main reception desk on the ground floor. These forms will only be accepted during the downtime period.

For Pathology Results

- Contact the Pathology Call Centre on ext 35353 during business hours (9:00am to 5:00 pm).
- Pathology Reports generated during the down time period, will be printed in the laboratory and clinically significant and abnormal results will be 'phoned through to the requesting clinician, ward, etc.
- Pathology Reports for A&E will be sent via the "POD" system if available.
- Prolonged downtime (>1 day) effect on Pathology Reports: providing that the laboratory systems are not affected, reports will be printed and reported back on paper.

THE HILLINGDON HOSPITALS NHS FOUNDATION TRUST

For Ordering Pathology tests

For planned downtime, messages are sent out by email and daily notice board to inform users of the expected time and length of the downtime. In the event of unplanned problems users should contact the IT helpdesk ext 4400 to confirm the downtime.

If electronic ordering downtime is confirmed, Pathology ordering should be carried out by fully completing a written request form.

This should include the patient's hospital number, their full name, D.O.B., Location and physician. It should also clearly indicate what requests are required. Electronic ordering downtime forms are available on the intranet and copies of these forms can also be found at the Pathology Specimen Reception and on clinical wards. These forms will only be accepted during the downtime period.

For Pathology Results

- Contact the Pathology Call Centre on ext 35353 during business hours (9:00am to 5:00 pm).

- Pathology Reports generated during the down time period, will be printed in the laboratory and clinically significant and abnormal results will be ‘phoned through to the requesting clinician, ward, etc.

- Pathology Reports for A&E will be sent via the “POD” system if available.

- Prolonged downtime (>1 day) effect on Pathology Reports:
  providing that the laboratory systems are not affected, reports will be printed and reported back on paper.

CELLULAR PATHOLOGY

LOCATIONS

The Cellular Pathology Departments incorporate Cytopathology, Histopathology, Electron Microscopy, and Specialised Integrated Haematological Malignancies Diagnostic Services (incorporating molecular, immunophenotyping and cytogenetics).

St. Mary's Hospital (SMH) site:
There is no on-site service (pre-booked frozen sections to be couriered to CXH site)

Hammersmith Hospital (HH) site:
Histopathology (pre-booked frozen section service only) – 1st floor 'G' Block
Specialised Integrated Haematological Malignancies Diagnostic Services (SIHMDS) – 2nd floor 'G' Block

Charing Cross Hospital (CXH) site:
Electron Microscopy – 6th floor laboratory block
Histopathology – 3rd floor laboratory block
Cytology – 3rd floor laboratory block

Chelsea and Westminster (CW) site:
Pre-booked frozen sections
Pre-booked Moh's frozen section service

Hillingdon Hospital site:
Pre-booked Moh's frozen section service

DESCRIPTION OF SERVICE

The Cellular Pathology laboratories provide a comprehensive diagnostic service including frozen sections and a rapid service for urgent biopsies and fine needle aspirates. Electron microscopy is available at Charing Cross. The Specialised Integrated Haematological Malignancies Diagnostic Services (SIHMDS) operates on the Hammersmith site.

Tests are accredited as identified on the UKAS schedule of accreditation (9615) and hold current and appropriate HTA licenses. The laboratories participate in the appropriate UKNEQAS schemes, and other external quality assurance schemes, and have comprehensive internal quality assurance and control procedures.

KEY CONTACT TELEPHONE NUMBERS CXH

Reception and Enquiries	020 331 30554
Laboratory Manager	020 331 11377
Electron Microscopy	020 331 17147

KEY CONTACT TELEPHONE NUMBERS HH

Molecular Diagnostics	020 331 32179
Cytogenetics	020 331 32169
Immunophenotyping	020 331 31504
SIHMDS laboratory Manager	020 331 32179

KEY PERSONNEL TELEPHONE NUMBERS

Divisional Manager Cellular Pathology: Danya Cohen – 020 331 15196

Cancer Services Manager: Soma Pillay – 020 331 35902

Divisional Clinical Lead for Cellular Pathology: Dr Mike Osborn – 020 331 10237

Cellular Pathology Quality & Governance Manager: Michael Donovan – 020 331 15171

Extension numbers in the tables below are listed prefixed with an x.
These can be called directly from outside of the Trust by prefixing with 020 331 and then the five digit number.

Cellular Pathology Consultant Pathologists

Specialty Area	Consultant Pathologist	Extension Number
Breast & Dermatopathology	Dr. Faiza Rashid	x10451
Breast & GI	Dr Ian Chandler	x10447
Gastrointestinal/Breast	Dr. Kevin Lessey	x15176
Breast/Upper & Lower GI	Dr Anne Thorpe	x35904
Non-Gynae Cytopathology/GI	Dr. Priya Mairembam	x10450
Upper & Lower GI/Gynae/Urology	Dr Sidhika Dandona	x30569
HIV/Hepatobilary/Upper & Lower Gastrointestinal	Prof. Rob Goldin	x30570
Upper & Lower Gastrointestinal	Dr. Panagiota Mavrigiannaki	x17081
Gastrointestinal/Pancreatobiliary	Dr. Pat Cohen	x17100
Post Mortem/Breast/Lower Gastrointestinal	Dr. Mike Osborn	x10237
Hepatobilary/Urology/Upper & Lower Gastrointestinal	Dr. Jo Lloyd	x17144
Upper & Lower Gastrointestinal, Dermatology	Dr Priscilla Anketell	x10449
Head & Neck, Breast, Endocrine, Placenta	Dr Suchana Mukhopadhyay	x17150
Head & Neck/Dermatopathology/Endocrine	Dr. Justin Weir	x17265
Renal Pathology	Dr. Candice Roufosse	x10425
Gynaecological Pathology	Prof. Mona El-Bahrawy	X33442
Trophoblast/Gynaecological Pathology	Dr. Baljeet Kaur	x10426
Gynaecological Pathology/Non-Gynae Cytology & Respiratory	Dr. Nandita Gupta	x10414
Gynaecological Pathology/ Non-Gynae Cytology & Respiratory	Dr. Patrizia Viola	x10419
Haematopathology/ Respiratory/ Gynaecological Pathology	Dr. Saral Desai	x10430
Cytopathology/Pancreatobiliary/ Haematopathology	Dr. Raida Ahmad	x10423
Haematopathology/Endocrine/Cardiac	Dr. Rashpal Flora	x10420
Neuro-muscular	Dr. Clara Limback-Stanic	x10411
Renal Pathology	Prof. Terry Cook	x10428/10429
Urology	Dr. Ethna Mannion	x10413
Cytopathology/ Gynaecological Pathology/Placental Pathology	Dr. Priya Bhagwat	x10410
Urology/renal/PMs	Dr. Andrew Smith	x10415

Specialty Area	Consultant Pathologist	Extension Number
Urology/ Gynaecological Pathology	Dr Rana Asakra	x10417
Urology/ Gynaecological Pathology/Germ Cell	Dr. Maidie Yeung	x10412
Non-Gynae Cytopathology	Dr. Corrina Wright	x10279
Dermatology/Breast	Dr. Rathi Ramakrishnan	x35909
Dermatology/Urology	Dr. James Carton	x35906
Dermatology	Dr Ophelia Dadzie	x35918
Dermatology/HIV/Paediatric GI	Dr. Nick Francis	x15494
Dermatology	Dr Alexandra Ruiz Sierra	x10448
Neuropathology	Dr. Javier Alegre	x17284
Morphology/ MDT Lead	Dr Sasha Marks	x31505
Immunophenotyping	Dr. Elisabet Nadal-Melsio	x31505
Trophoblast	Prof. Neil Sebire	Email only
Gastrointestinal/Dermatopathology/PM	Dr Mark Wilsher	x17041
Breast/Urology/PM	Dr Anna Silvanto-Dodd	x30560
Haematopathology/Cytology , Thyroid	Dr Mufadil Moonim	x10422
General	Dr Raluca Guran	TBC
GI/BCSP	Dr Vilma Simanskaite	TBC
Gynae/Trophoblast	Dr Jacqueline McDermott	TBC

The service has specialty lead Pathologists as identified below:

Cellular Pathology - Specialty Leads report to Chief of Service - Dr. Mike Osborn

- Dermatopatholoy - Dr. Orphelia Dadzie
- Neuromuscular - Dr. Clara Limback-Stanic
- Uropathology - Dr. Jo Lloyd
- Haematopathology (including Haematological Molecular Diagnostics) -Dr Rashpal Flora - (Haematopathology), Dr Elisabet Nadal – Melsio (Haematology)
- Cytology - Dr. Priya Bhagwat
- Training & Education (junior medics) - Dr. Rathi Ramakrishnan & Dr. Rashpal Flora
- Breast -Dr. Ian Chandler
- ENT, Head and Neck & Musculoskeletal - Dr. Justin Weir
- Renal & Electron Microscopy - Dr. Candice Roufosse
- Lung - Dr. Saral Desai
- Endocrine & Cardiovascular - Dr. Rashpal Flora
- Gynaecology - Prof. Mona El-Bahrawy
- GI, Liver & Pancreas - Prof. Rob Goldin
- Adult Autopsies - Dr. Mike Osborn

Key Contact Numbers – Frozen section booking

Frozen section bookings	Clearly state the site when booking	x17143

Key Contact Numbers - Charing Cross Site

Laboratory Manager	Nymeth Ali Alpana Vithal	x11377
Immunocytochemistry Manager	Gail Valentine	x11377
Cancer Services Manager	Soma Pillay	x35902
Duty Registrars – 2nd floor		x17131
Duty Registrars – 3rd floor		x17690
Duty Registrars – 6th floor		x15217
General Enquiries Histopathology		x17132/x17139
Electron Microscopy	Dr Linda Moran	x17147

Key Contact Numbers - Hammersmith Site

Frozen section lab (not constantly attended)	Call x17143 in advance to book	x32289
Laboratory Manager (SIHMDS)	Nuha Abdellatif	x32179
Molecular		x32167
Immunophenotyping	Dr. Elisabet Nadal-Melsio	x31505
Cytogenetics	Dr Udayakumar Achandira	X31503

LABORATORY HOURS

The laboratories are open for inquiries between 9am and 5pm. There is no out of hour's service except for renal pathology. Please discuss out of hours renal pathology requirements with either Prof. Terry Cook (ext: 32009) or Dr. Candice Roufosse (ext: 33280).

SMALL URGENT SAMPLES – RAPID PROCESSING

Any specimen requiring an urgent result must be discussed with the Histology laboratory or the relevant consultant in advance.

On all sites, urgent specimens must be received by 12:00 for same day results. For rapid renal biopsies, specimens must be received by 13:30.

Please be aware that rapid processing can only be performed on small biopsies and tru-cut needle cores. Discuss cases with the laboratory prior to sending specimens.

USE OF SERVICE

Please refer directly to p7 of this guide for instruction on how to make a Pathology request.

CLINICAL ADVICE

Medical advice is available if you uncertain about a particular test or the significance of any result. Contact the duty SpR or relevant consultant or clinical scientist by referring to the individuals listed in the key personnel telephone number section above.

If seeking clinical advice and interpretation on a post mortem, contact the mortuary at St. Mary's in the first instance (x21191), they will then put you in touch with the relevant Pathologist presiding over the case.

For advice on a result from the Specialised Integrated Haematological Malignancies Diagnostics Service (SIHMDS) laboratories please contact x32167 with molecular queries, Dr Udayakumar Achandira (x31503) with cytogenetic queries and Dr Elisabet Nadal - Melsio (x31505) with Immunophenotyping queries.

For clinical advice regarding solid tumour results including (NTRK Fusion Panel and BRCA testing) please contact Royal Marsden on rmh-tr.moleculardiagnostics@nhs.net. All initial request forms have to be sent to Charing Cross Histology via email at imperial.copath@nhs.net. Please ensure molecular pathology are copied for this request at imperial.moleculardiagnostics@nhs.net.

TECHNICAL ADVICE

For technical advice from a Biomedical Scientist, please contact the Histopathology & Cytology main laboratory on x30560.

For advice from a member of the SIHMDS team please contact (Cytogenetics x32169, Immunophenotyping x31504, Molecular x32179)

REPERTOIRE, SAMPLE REQUIREMENTS AND TURNAROUND TIMES

The following repertoires are for all sites unless specified otherwise.

All specimens are to be transported in a sealed, leak proof container to the appropriate site or department as a matter of urgency according to the trusts transport guidelines. Specimens, particularly fresh specimens (including cytological preparations) should be taken with haste to the appropriate department as delays can have a detrimental effect on diagnosis.

If samples are being sent from an outside institution a suitably reputable courier company should be used and every effort made to ensure that the correct personnel have been informed of the specimens impending arrival.

Gynaecological Cytopathology

Cervical samples

No cervical screening is performed within NWLP. All of these screening samples are now handled by CSL (HSL).

Non-Gynaecological Cytopathology

Fine needle aspirates (FNA's)

The department offers a consultant performed FNA service for in-patients and patients attending OPD. A provisional report can be available immediately and a definitive diagnosis is usually available within

3 working days. Image guided FNA's submitted from radiology should be accompanied with a request form bearing the name and contact bleep number of the requesting clinical team.

Clinical FNA's

There are occasions where FNA's will be performed by clinicians. Material obtained should be spread as thinly as possible onto 2 clean, clearly labelled glass slides. The remainder of the material should be washed into sterile saline or cytolyt solution available from the appropriate Cytology laboratory (x30560). It is important to note that submission of some material in a fluid base facilitates special stains and immunocytochemistry.

Advice on the best method of preparation is available by telephoning the laboratory (x30560) if you are unsure.

Slides produced from clinical FNA preparations must be clearly labelled. Write IN PENCIL on the slides the following patient identifiers: Patient Surname, Patient Forename, Date of Birth and Hospital Number or NHS Number.

Any questions or queries should be directed to the laboratory (x30560)

Urines

Samples would not be rejected on the basis of small volume; however at least 1ml of *freshly voided mid-morning* urine is sufficient. The sample should be sent in a sterile container as soon as possible after collection. If a catheter specimen is taken or instrumented urine, this must be stated clearly on the request form. Mid-stream urine samples are not ideal for cytology investigation. If there is a delay in dispatch, store the sample at 4°C.

Sputums

Sputum specimens collected on three consecutive days should be sent to the laboratory immediately on production, or placed into a universal containing cytolyt for fixation. Avoid contamination with food, saliva, tobacco or toothpaste. Specimens after physiotherapy are particularly useful.

Bronchioalveolar Lavage (BAL)

BAL samples should be in saline if test requires differential count if not whole sample should be in cytolytes.

Any urgent PCP request must be discussed with the reporting Consultant and received in the laboratory no later than 15:00.

**Please note – where a differential count is included as part of the report, this is not a UKAS accredited test.

Serous cavity effusions, cerebrospinal fluid (CSF) and synovial fluids

Send all available material in a sterile container without fixative as soon as possible.
Urgent samples must be discussed with the reporting Consultant and received in the laboratory no later than 15:00.

Turnaround times for non-gynae cytology - The department aims to have 80% of results available in 7 calendar days and 90% of all results in 10 calendar days in accordance with guidance issued by the

Royal College of Pathologists (RCPath). The TAT target for CSF samples is to have 80% of results available in 48 hours.

Time limits for requesting further tests – Non-gynae cytology specimens are retained for a minimum of three working days. After this time the samples are discarded due to the natural process of cellular degradation that occurs over time. Samples processed for West Middlesex are returned to West Middlesex two weeks after receipt.

Histopathology

Routine Histopathology

Specimens must be placed in an adequately sized container, containing sufficient 10% neutral buffered formalin (NBF) to cover the specimen. GP surgeries can obtain supplies by using the Pathology GP supplies form, call x35353 with queries. If you are unclear how to obtain NBF call the laboratory managers on x11377 and they will advise.

Certain biopsies are better preserved using alternative fixatives e.g. testicular biopsies or phaeochromocytomas. These are available if required by contacting the laboratory (x30560).

Clinical teams are advised against slicing in to specimens unless they have received specific guidance from the relevant Pathologist. Slicing into specimens may disturb critical margins and this has the potential to impact adversely on the results obtained histologically.

All specimen pots must be fully labelled with patient identity and nature of specimen or site of biopsy.

CXH breast specimens - Breast specimens are preferably sent fresh in a clearly labelled plastic bag, with a completed request form. If the specimen is likely to arrive outside of the laboratories normal opening hours the specimen should be placed into formalin and sent the next day, following discussion with either the lab staff or the relevant consultant. Further information can be obtained by telephoning the cut up room directly on x30554.

Turnaround times for histology specimens (excluding cases requiring decalcification, referral or other additional investigations) – The department aims to have 80% of results available in 7 calendar days and 90% of all results in 10 calendar days in accordance with guidance issued by the Royal College of Pathologists (RCPath).

Within the NHS Bowel Cancer Screening Programme (BCSP) requires 90% of lesions to be reported within 7 days in accordance with NHS BCSP Publication No 1.

Due to the complex interpretive nature of histopathology specimens these targets may not always be achievable.

Time limits for requesting further tests – There is no time limit for requesting further tests in Histology, but additional requests must be discussed with relevant consultant.

Products of conception (Including all pregnancy loss prior to 24 weeks gestation and surgical evacuations)

Written consent is required by the laboratory from a parent before histological examination can take place. An appropriately completed consent form (SD1 for under 13wks OR SD2/3 for 13-23wks

available on all relevant wards and locations) MUST accompany the sample. If the form is not provided or is erroneous the specimen will be delayed in the laboratory while a resolution is sought. The statement of pre-viability must be signed by a doctor or midwife in order to allow the remaining material to be cremated.

Rapid frozen sections

This service offers an immediate diagnosis on specimens from patients who are under anaesthetic.

Frozen sections are booked as far in advance as is reasonably practicable by calling x17143. It is important that you state the site at which the frozen section will be performed as scientific staff will be required to travel to that site to perform the procedure.

At the time of booking, the reason for the frozen section must be given along with the patient's name, an approximate time of when the laboratory should expect the specimen to arrive, the surgeon and a contact telephone number to call when the result becomes available.

All frozen sections must be arranged 24 hours in advance to ensure both laboratory and Pathologist staff are available.

When the specimen is taken it must be sent immediately in a dry container with a secure lid. Ensure to send the specimen with a properly completed request form with sufficient clinical details. Do not put any fixative (i.e. formalin) on the tissue. Results are telephoned to the contact number provided at the time of booking.

If the patient is in a high risk group this must be stated when booking the frozen section as frozen sections are not undertaken on certain high risk cases, e.g. TB and hep C. A frozen section will only be performed on HIV positive patients if their viral load is below 40 copies/ml. This result must have been on at least two consecutive occasions with the latest being within 1 month of the date of the frozen section. Proof of these results must be submitted in writing before the frozen section is to be undertaken. If you have any queries, contact the laboratory on x17143 to discuss.
If, at any time during surgery, it is decided that a frozen section is not after all required, please inform the laboratory immediately.

A result should be available within 30 minutes of receipt into the laboratory, although this will depend on case complexity.

Immunofluorescence (IMF)

Skin biopsies from bullous lesions for immunofluorescence should be sent to the laboratory in special transport medium obtainable from the laboratory (x30554/30560).

Please do not affix the patient label over any label which has been applied by the laboratory.

For renal biopsies at Hammersmith, Nunc tubes filled with Transport Fixative are obtained from Histopathology (x30554/30560) and must be used.

In all cases, IMF specimens must not be placed in any other fixative than that provided by the laboratory. The request form should be clearly marked for immunofluorescence/IMF.

Immunofluorescence is not undertaken on high risk specimens.

For high risk, refer to frozen section advice above.

Electron Microscopy

The Electron Microscopy (EM) Unit: located on the 6th floor (Laboratory block) at Charing Cross Hospital (CXH). The Unit is staffed Monday to Friday from 06:00 – 18:00, excluding bank holidays. There is no "out of hours" service but every attempt is made to meet urgent clinical requirements upon discussion with the Clinical Scientist. Tissue biopsies are generally processed daily although samples which arrive at the end of the day or require further fixation will be stored overnight in a fridge (4°C) before processing.

Tissue biopsies: small tissue samples (no greater than 1mm in one dimension) should be sent to the EM Unit (Histopathology Department) in pre-dispensed EM fixative (EM Fix: 3 % glutaraldehyde in 0.1M sodium cacodylate buffer) in labelled vials (with a minimum of three patient identifiers) and accompanied by the Patient Request form which contains patient demographics i.e., Patient's full name, date of birth, Unique hospital/NHS number, nature of specimen/site of biopsy and date and time that the sample was taken.

EM Fix: pre-dispensed EM fixative containers are available from the Specimen Reception at Hammersmith Hospital (x32148 or x32287), the Histopathology Department Charing Cross Hospital (x30554 and x30560) and at Chelsea and Westminster Hospital (Preps [laying-up] Room between Theatres 3 & 4; Main Theatre x58339). EM fixative containers are also available directly from the EM Unit in advance on request (x30571/x17147/x30587/x10429/x10428).

Ultrastructural diagnostic examination: the most commonly handled surgical biopsies are renal core biopsies. For any other surgical specimens, please contact the EM Unit for advice from the Clinical Scientist Dr Linda Moran.

Time limits for requesting further tests: there is no time limit for requesting further tests in EM, but additional requests must be discussed with the Clinical Scientist in the EM Unit.

Turnaround time: 95% of all renal native biopsies are to be reported within 7 working/calendar days; for other surgical specimens this may not always be achievable due to the complex interpretive nature of the EM specimens

All enquires to the Clinical Scientist: Head of EM Unit Dr Linda Moran PhD (e-mail: linda.moran1@nhs.net or Telephone: 0203 311 7147 or 020 331 10428).

Muscle Biopsies

A piece of saline-soaked gauze (NOT WET) should be jammed part way down a sterile disposable universal tube and the piece(s) of muscle (0.5-1cm maximum dimension) placed on the inside of the tube where it will stick. The muscle should not come into contact with the damp gauze or any drops of liquid on the side of the tube. The muscle biopsy MUST NOT be placed in formalin or any other solution. It should be sent as quickly as possible so that it arrives before 4pm on the same day. The histopathology department at Charing Cross should be informed both a day in advance and also on the day sent, to give the time the courier will arrive.

Bone Marrow Trephine (BMT)

A correctly labelled sample needs to be placed into a universal container filled with Aceto-Zinc Formalin (AZF). This is available from Histopathology, call x32284.

Nerve Biopsies

A correctly labelled piece of nerve tissue, 1-2cm in maximum length should be sent fresh with a suture marking one end. This should be marked for the urgent attention of the Histopathology department, Charing Cross (x30560/x17131).

Renal Biopsies

Renal biopsies are accepted into the lab in 10% Neutral Buffered Formalin, with additional pieces sent in transport medium for Immunofluorescence, and in Glutaraldehyde fixative for EM. (See above sections for Immunofluorescence and Electron Microscopy).

Research

All the above services are available to provide Cellular Pathology support for research projects. This service is chargeable and should be arranged with the laboratory managers x11377.

Mortuary Services

Pathology no longer manages or governs the mortuary service. Please direct all Imperial mortuary queries to Guy Young (guyyoung@nhs.net) and Christine Dorsett (christine.dorsett@nhs.net). Alternatively, call the mortuary at St. Mary's on 020 331 21191.

REFERENCE LABORATORY DETAILS

At times, it may be necessary to refer work to other laboratories or consultants. The following organisations are periodically used:

Reference Laboratory
Viapath Analytics LLP, King's College Hospital - Alpha globin gene sequencing, PML, RARA, TCR delta, UGT1A1, Red Cell Panel, G6PD mutation analysis, Alpha globin, MLPA Alpha, MLPA Beta, CBFB-MYH11, P53 mutation studies, Braf mutation, MYD88, IgVH status, Membranophathy analysis, HBA2 and HBA1 sequencing, Delta globin, Diamond-Blackfan Anaeimia
Newcastle NHS Highly Specialised Service for Rare Mitochondrial Disorders - Mitochondrial Genetic Disorders & Histology Muscles
HSL-Advanced Diagnostics – Ad-hoc Molecular & ICC tests
Eurofins Biomnis France - Cytogenetics (gliomas)
National Hospital for Neurology & Neurosurgery, UCLH, Queen Square - Muscle/Neuropathology
Wessex Regional Genetics Laboratory - c-Kit, PDGFR mutation analysis (FIP1L1-PDGFRA, KIT D816V, MPL W515), ETV6 PDGFRB mutation analysis
Barts Health NHS Trust - SIHMDS (Myeloid panel & Histology 2nd opinions)
Royal National Orthopaedic Hospital NHS Trust - Histopathology
Oxford John Radcliffe Hospital – Neuropathology, Muscle, Nerve Histopathology
Royal Marsden Hospital - Histopathology 2nd opinions
Unilabs Ltd - Histopathology 2nd opinions
St George's Healthcare NHS Trust - Cardiac and miocardial bx Histopathology
Limb Girdle Muscular Dystrophy Muscle Immunoanalysis Unit - Limb Girdle Muscular Dystrophy
St John's Institute of Dermatology (Viapath) - Histopathology 2nd opinions
Addenbrookes Hospital - FIP1L1-PDGFRA
Guy's Hospital - NPM1
Source Bioscience Nottingham - Lynch testing, KRAS, BRAF
St. Thomas Hospital (Viapath) - VWF-A1 domain Exon28

Please refer to the United Kingdom Accreditation Service (UKAS) for details of accreditation. The laboratory periodically reviews the referral centres to ensure they are appropriate and meeting the needs and requirements of the service user.

In addition to the above it is sometimes necessary to seek a second opinion from a Consultant Pathologist external to the Trust for particularly complex cases. In this respect the department follows the cancer network guidelines. The details of the source of the specialist opinion are included in the final report.

If a service user has any queries about any aspect of a report please liaise with the Pathologist attending the MDT, or contact Pathology Queries (ICHC-tr.pathologyqueries@nhs.net) and the query will be forwarded to the relevant staff member.

INCOMING REFERRALS FOR PRIMARY, NETWORK OR SECOND OPINION IN HAEMATOPATHOLOGY

Referrals can be sent in the following forms:

1) Fresh tissue, or tissue in formalin or aceto-zinc formalin (only in the case of bone marrow trephine biopsies). Specimens should be properly identified by appropriate labels. If the specimen is being sent fresh, each case needs to be discussed and notified prior to sending and the sample should be received in our laboratory within 60 minutes of excision. Specimens in fixatives should be sent in appropriate amount of fixative and in a suitable container.
2) A H&E slide from each paraffin block and one representative paraffin block from the specimen
3) A H&E slide from each paraffin block and 15-20 unstained paraffin sections on coated slides (suitable for immunohistochemistry) made from one representative paraffin block of the specimen.

Please note that the referral note should include all relevant clinical information and available results of relevant investigations. Please also mention the contact details of the referring histopathologist, haematologist or physician with phone number and e-mail contacts.

Material should be addressed to:
Histopathology Department (for the attention of Dr Rashpal Flora)
3rd floor Laboratory Block
Charing Cross Hospital
Fulham Palace Road
London
W6 8RF

SPECIALISED INTEGRATED HAEMATOLOGICAL MALIGNANCIES DIAGNOSTICS SERVICE (SIHMDS) - Hammersmith Hospital

The Specialised Integrated Haematological Malignancies Diagnostic Service (SIHMDS) at Hammersmith Hospital provides a comprehensive diagnostic service in molecular genetics, cytogenetics, morphology and immunophenotyping. Scientific and clinical interpretation is provided for all cases. The specialty lead for the SIHMDS is Dr Elisabeth Nadal - Melsio (interim).

The department is part of the London North GLH led by Great Ormond Street Hospital for Children NHS Foundation Trust.

The laboratory operates within the professional guidelines of the Association for Clinical Genomic Science (ACGS) and the Royal College of Pathologists (RCPath) and participates fully in relevant external quality assurance schemes (performance data available on request).

The laboratory offers the following:

- A national service for patients with Chronic Myeloid Leukaemia (CML), for the monitoring of minimal residual disease. This involves a range of tests including the monitoring of molecular levels of BCR-ABL1 during the course of TKI treatment which is a first line treatment for CML
- A donor-chimerism monitoring service for bone marrow transplant patients
- A haemoglobinopathy genetics service which includes testing for the sickle cell and thalassaemia antenatal screening programme
- An MPN targeted NGS panel used for prognostic and predictive testing in myeloproliferative neoplasms
- A rapid FLT3 ITD and TKD and NPM1 service for AML
- A Myeloid targeted NGS panel used for prognostic and predictive testing in AML and MDS
- A karyotyping and molecular cytogenetic (FISH) service for haematological malignancies and solid tumour samples
- A Paroxysmal Nocturnal Haemoglobinuria (PNH) screening and follow-up service
- A flow cytometry service for haematological malignancies

Laboratory Opening Hours:
The laboratory is staffed Monday to Friday from 9:00am – 17:00, excluding bank holidays. There is no out of hours service but every attempt is made to meet urgent clinical need. For same day processing samples must arrive by 15:30. Samples arriving after this, unless already agreed in advance with the laboratory will be processed on the following working day. Samples arriving out of hours should be taken to the Central Specimen Reception area on the ground floor. Samples that have been taken and will be sent to the laboratory on the following day should be stored in a fridge at 4^{o}C overnight.

Contact Details:
Molecular Diagnostics testing enquiries: imperial.moleculardiagnostics@nhs.net
Cytogenetic testing enquiries: imperial.cytogenetics@nhs.net
Immunophenotyping testing enquiries: imperial.immunophenotyping@nhs.net

Telephone Enquiries:
Molecular Diagnostics: 020 3313 2179
Cytogenetics: 020 3313 2169
Immunophenotyping: 020 3313 1504

Departmental Contacts:
SIHMDS Clinical Consultant Lead (HH-interim): Dr Elizabeth Nadal- Melsio (interim).
Molecular Pathology Service Lead: Currently vacant
Cytogenetics Service Lead: Dr Udayakumar Achandira
Immunophenotyping Service Lead: Dr Elisabet Nadal-Melsio
Morphology Sevice Lead/MDT Lead: Dr Sasha Marks
SIHMDS Laboratory Manager: Nuha Abdellatif

Sending samples:
Please send samples to Molecular Pathology Laboratory/SIHMDS, 2nd Floor, G-Block, Hammersmith Hospital, Imperial College Healthcare NHS Trust, Du Cane Road, London, W12 0HS. Samples sent by Royal Mail or courier must comply with PI 650 for category B substances. The package should be clearly labelled 'diagnostic specimen UN3373'.
N.B. Samples that have been taken near the end of the day and will be sent to the laboratory the next morning should be stored in a fridge at 4°C overnight.

Sample Requirements:
It is the responsibility of the referring clinician to ensure that all requests meet testing criteria, samples are correctly labelled and that request forms are completed to an appropriate standard. All samples must have a minimum of 3 matching identifiers both on the sample and the request form. If samples do not meet these identification criteria, they will be rejected.

Minimum sample labelling criteria:
- Patient's full name (surname/family name and first/given name or initials for trial patients)
- Date of birth
- Unique hospital/NHS number or trial ID for trial patients
- Date and time that the sample was taken

These are minimum labelling criteria and it is highly recommended to also provide the patient gender

Request Forms:

The SIHMDS has its own referral forms that are available on the NWLP website.

All requests for solid tumour requests are to be completed using the Royal Marsden request form, available on the NWLP website.

CYTOGENETICS

The cytogenetics section processes samples from bone marrow and peripheral blood from referrals with haematological malignancies. Both conventional cytogenetic and molecular cytogenetic (FISH) analysis performed to test for acquired chromosomal abnormalities in order to establish a diagnosis, monitor treatment and provide prognostic information. FISH testing on FFPE tissue sections is also offered on a range of haematological malignancy and solid tumour referrals.

DISEASE	KARYOTYPE	FISH PROBE
Chronic myeloid leukaemia (CML) at diagnosis	✓	Rapid FISH for *BCR-ABL1*; t(9;22)(q34;q11)
CML at follow up	Done until remission confirmed then only if evidence of relapse/transformation/ by special request	*BCR-ABL1*; t(9;22)(q34;q11)
Acute Myeloid Leukaemia (AML) at diagnosis	✓	As required to confirm cytogenetic abnormality or morphology/ immunophenotyping findings *BCR-ABL1*; t(9;22) *RUNX1T1-RUNX1*; t(8;21) *CBFB/ CBFB-MYH11*: inv(16)/t(16;16) *MECOM*; inv(3)/t(3;3) *KMT2A*: 11q23 Failed Cases: All probes listed above as well as del 5q/-5, del(7q) Normal Cases: CBFB, MECOM, KMT2A
Acute promyelocyticleukaemia (APML)	✓	Rapid FISH for *PML-RARA*; t(15;17) then *RARA*; (17q21) if indicated
AML follow-up	Only at first remission if abnormal at diagnosis. All samples with suspected relapse/transformation	If abnormal at diagnosis
Myelodysplastic syndromes (MDS)	✓	Failed specimens : FISH for del 5q/-5, del(7q), -7, 8,20q12/20qter
Myeloproliferative neoplasms (MPN), myelofibrosis and CMML	✓	*BCR-ABL1* on request *PDGFRB* (5q32) on CMML cases with eosinophilia and a normal karyotype
Eosinophilia (HES/CEL)	X By request on cases with abnormal FISH results	*FIP1L1-PDGFRA*; 4q12 *PDGFRB*; 5q32 *FGFR1*; 8p11 *BCR-ABL1*; t(9;22)(q34;q11) by request
ITP	X	X
Bone marrow Failure Syndromes (Aplastic Anaemia, Fanconi anemia, dyskeratosiscongenita, Diamond Blackfan anemia, and Shwachman Diamond syndrome.	By request if evidence of disease transformation	By request

DISEASE	KARYOTYPE	FISH PROBE
Sex mis-matched BMT	Only if the % of recipient cells is significant by FISH	XY
B-cell precursor lymphoblastic leukaemia	✓	*BCR-ABL1*; t(9;22)(q34;q11) *KMT2A*; 11q23 *ETV6-RUNX1*; t(12;21) *TCF3*; 19p13 Hyperdiploid/Hypodipoid panel for enumeration of chromosomes 4,14, 18, 8 and 21 *PDGFRB* (5q32) if other probes negative and poor response to therapy
T-cell lymphoblastic leukaemia	✓	*BCR-ABL1*; t(9;22)(q34;q11) *KMT2A*; 11q23
T-PLL	✓	*TCR* alpha/delta (TCRA/D); 14q11 *ATM*; 11q22.3, *CEP 8*
High-grade Non-Hodgkin's lymphoma	✓	*MYC*; 8q24 *IGH*; 14q32 *BCL2*; 18q21 *BCL6*; 3q26 *IGH*-MYC;t(8;14)
CLL	X	*ATM/TP53*; 11q22.3/17p13 *DLEU/LAMP*; 13q 14/13q34 *CEP* 12
Follicular lymphoma	X	*IGH-BCL2; t(14;18)*
Multiple Myeloma (Sequential FISH is performed on CD138+ purified plasma cells) (confirmed diagnostic/relapse referrals) Not MGUS or monitoring samples	X	*CDKN2C (1p32.3)/CKS1B(1q21)* *TP53;* 17p13 *IGH;* 14q32 *IGH-FGFR3;* t(4;14) *IGH-MAF;* t(14;16) *IGH-MYEOV/CCND1;* t(11;14) Ploidy for chromosomes 9, 5 and 15
Lymphoma FFPE	X	*MYC;* 8q24 *BCL2;* 18q21 *BCL6;* 3q26 *IGH;* 14q32 *IGH-CCND1*

Sample requirements and turnaround times:

TEST	Sample requirements	Turnaround Time	COMMENT
Karyotype/FISH	1-2mls Bone marrow in lithium heparin 3-5mls peripheral blood in lithium heparin (if disease cells are present in sufficient numbers to allow cell culture and/or FISH studies, as appropriate)	Urgent (rapid) FISH: up to 3 calendar days. AML FISH panel - 5 calendar days MPN (non-urgent) Karyotypes - 28 calendar days Urgent karyotype: 14 calendar days Routine diagnostic samples: 21 calendar days Follow-up samples/remission: 21 calendar days	The date and time the sample was taken must be legible Samples should arrive within 24 hours Samples not dispatched on the same day should be refrigerated at 4°C overnight
FFPE FISH on tissue sections	4 to 6 slides (1~2µm thick) with an H&E marked slide (essential in cases where only part of the tissue is infiltrated, or only part of the tissue is appropriate for screening) 6 slides for lymphoma cases	14 calendar days	Tumour content and block ID must be provided on the request form.

IMMUNOPHENOTYPING (FLOW CYTOMETRY) LABORATORY

The immunophenotyping section provides comprehensive flow cytometric analysis for a wide variety of disorders which are listed below. The laboratory performs investigation of fluid specimens including peripheral blood, bone marrow, cerebrospinal fluid (CSF), pleural/ascitic fluids, endobronchial ultrasound (EBUS), bronchoalveolar lavage (BAL), fine needle aspirates (FNA), rare fluids (for example vitreous) and whole lymph nodes/biopsies. The flow cytometry panels selected are based on the clinical details provided. It is therefore of paramount importance to provide this information.

Disease Investigations
Acute Myeloid Leukaemia (AML)
Acute Lymphoblastic Leukaemia (ALL)
Myeloproliferative Disorders (MPD)
Myelodysplastic Syndromes (MDS)
Aplastic Anaemia and other pancytopenias
Chronic Lymphocytic Leukaemia (CLL)
Lymphocytosis and Plasma Cell Disorders
Paroxysmal Nocturnal Haemoglobinuria (PNH) screening and follow-up

Sample requirements:

Cell Markers (Immunophenotyping)

For optimal results:

Peripheral blood/bone marrow	1mL – 2.5mL (bone marrow) or 5mL (peripheral blood) in EDTA (lavender top). Samples delayed in transit for more than 24 hours may yield poor quality results especially in myeloid panels.
Cerebrospinal fluid/plural effusion/ascetic fluid/tissue biopsy	Fluid specimens should be sent in a sterile universal. Biopsies should be sent in saline in a sterile container. Fluid or biopsy samples delayed in transit for more than one day may yield poor quality results, therefore it is important to transport to the laboratory on the day of collection for arrival before 15:00pm. For CSF samples due to arrive after 15:00pm, please preserve them with TransFix® (cellular antigen stabilising reagent), refrigerate overnight and transport on the following day (pre-prepared tubes are available for collection in the laboratory upon request).

Paroxysmal Nocturnal Haemoglobinuria (PNH)

For optimal results:

Peripheral blood	For Paroxysmal Nocturnal Haemoglobinuria (PNH) screening and follow-up, please send 1ml-5ml peripheral blood in EDTA. Samples must arrive in the laboratory within 48 hours of collection and before 15:00pm on Fridays. Samples older than 48 hours will be rejected.

Samples will not be rejected on the basis of small volume. Specimens should be labelled with at least 3 patient identifiers and the sample taken date and time. A HMDS request form must be sent with the sample.

Delayed transport:

Samples should arrive in the laboratory as soon as possible after sampling, ideally samples need to arrive at the laboratory by 15:00.Samples delayed in transit for more than 3 days may yield poor quality results, or be rejected as unsuitable.

Please note that the laboratory is closed Bank Holidays and over the weekend, so if sending a sample on the last day of the working week, please ensure it reaches the laboratory by the late afternoon.

Reporting times:

Urgent referrals – 95% within 1 calendar day

Routine - 95% within 7 calendar days

MOLECULAR PATHOLOGY LABORATORY

MOLECULAR GENETIC TESTS:

TEST	SAMPLE REQUIREMENTS	TURNAROUND TIME	COMMENT
PCR at diagnosis to determine BCR-ABL1 transcript type.	Container: EDTA (purple) 20ml of peripheral blood OR 2.5-5 ml bone marrow MUST be received within 72 hours from collection. Nb. The lab is not open at weekends *The date and time the sample was taken must be legible.*	10 working days	All new samples are tested by multiplex PCR to identify the transcript type.
Monitoring of BCR-ABL1 by Q-PCR.		10 working days	Expressed as a ratio of *BCR-ABL1* to *ABL1* copy numbers determined by Q-PCR. Interpretation is dependent on identifying the transcript type at diagnosis.
Mutation analysis of the BCR-ABL1 tyrosine kinase domain		20 working days	Sanger Sequencing to identify possible causes of resistance to *BCR-ABL1* tyrosine kinase inhibitor treatment.
Monitoring of rare BCR-ABL1 transcripts by Q-PCR		20 working days	Expressed as a ratio of *BCR-ABL1* to *ABL1* copy numbers determined by Q-PCR. Interpretation is dependent on identifying the transcript type at diagnosis.
Monitoring of e1a2 BCR-ABL1 transcripts by Q-PCR		10 working days	
Factor V Leiden and Prothrombin gene mutation Genotyping	>1ml EDTA blood If sample cannot be delivered to the laboratory on the same day as it is being taken, please store at 4°C until it is transported.	10 working days	Genotyping is offered by real time PCR for polymorphic thombophilic risk factors.
ApoE genotyping	>1ml EDTA blood	10 working days	A TaqMan FAST-PCR genotyping assay is used to determine the presence of the APOE 112T>C and 158C>T mutations.
MPN Panel	>1ml EDTA blood or bone marrow	21 working days	Targeted NGS is performed for 13 genes implicated in MPNs. The panel covers sequencing of *Jak2* Exon 12 and 14; MPL Exon 10; and CALR1 Exon 9 and hotspots in another 10 genes important for the diagnosis and treatment of MPN patients.
Myeloid Panel	>1ml EDTA blood or bone marrow	21 calendar days	To be added
FLT3 and *NPM1*	>1ml EDTA blood or bone marrow	5 calendar days	Detection of these mutations is used in the diagnosis and prognostic classification of MDS/AML patients. Mutation analysis is performed by PCR and gene-scanning.

TEST	SAMPLE REQUIREMENTS	TURNAROUND TIME	COMMENT
Gene rearrangement (clonality) studies for *TCRγ* (gamma) and *IgH*	3ml blood; >1ml bone marrow MUST be received within 72 hours from collection. Nb. The lab is not open at weekends FFPE tissue	10 working days	Abnormally large lymphocyte clones can be detected by the presence of their rearranged immunoglobulin or T cell receptor genes. Clonality analysis is performed by Genescan analysis in peripheral blood/bone marrow and FFPE samples.
Chimerism studies (including T cell lineage (CD3+)	>3ml EDTA blood or 5 ml bone marrow MUST be received within 72 hours from collection. Nb. The lab is not open at weekends	10 working days	For the monitoring of bone marrow transplant patients. The proportion of donor DNA in post-transplant samples is detected by semiquantitative amplification of informative microsatellites in whole blood and T cell selected samples using PCR and Genescan. Repeat chimerism tests should not be requested until 20 days between tests has elapsed to ensure the result is useful and meaningful in confirming relapse. Early testing will result in misleading results.

N.B. - If the blood counts are abnormal (high or low white cell count) the volumes of blood requested should be adjusted accordingly.

Samples for BCR-ABL1, chimerism, gene rearrangement and Myeloid panel must be received within 72 hours from collection.

Delayed samples:
Samples should arrive in the laboratory as soon as possible after sampling. Samples delayed in transit may yield poor quality results and may be rejected as unsuitable.

Consent:
All genetic testing requires consent. The laboratory assumes that provision of a clinical sample, along with a completed referral form, implies that consent has been obtained by the referring clinician. This also includes consent for DNA storage where appropriate, including storage of DNA from patients where no genetic test is currently available/required, unless the referral form specifically indicates that this consent has not been given.

CLINICAL BIOCHEMISTRY, BLOOD SCIENCES DEPARTMENT

DESCRIPTION OF SERVICE

Clinical Biochemistry is a service within the Blood Sciences Department.
Core Clinical Biochemistry laboratories providing both routine and out of hours services are located on each of the six sites. Specialist services including Metabolic, Specialist Endocrinology, Oncology, Trace Elements, Renin and Aldosterone, and Bone Marker services are provided from Charing Cross Hospital. The Gut Hormone Laboratory and the Andrology diagnostic service are located at the Hammersmith Hospital site.

LOCATIONS

Charing Cross Hospital
The main automated Clinical Biochemistry laboratory and Specimen Reception are located on the first floor of the Laboratory Block.
Specialist services and the Oncology laboratory are located on the 8th and 12th floor of the laboratory block.
The Trace Element services operate from the ground floor of the Oncology block.

Hammersmith Hospital
The Clinical Biochemistry Laboratories and Specimen Reception are located in the Pathology Centre, Area G, Hammersmith Hospital.
The Gut Hormone Lab is located on the 6th floor of the Commonwealth Building.
The Andrology Laboratory is located in Area C on the ground floor of the hospital.

Chelsea & Westminster
Clinical Biochemistry and Specimen Reception are located on the 2nd floor (Lift Bank D).

West Middlesex University Hospital
Clinical Biochemistry and Specimen Reception are located on the 1st floor

St Mary's Hospital
Clinical Biochemistry and Specimen Reception are located on the 2nd floor of the Mint Wing.

Hillingdon Hospital
Clinical Biochemistry and Specimen Reception are located on the 1st floor.

KEY PERSONNEL/CONTACT NUMBERS

Blood Sciences Department		
Divisional Manager	Michelle Martin	35908
Deputy Divisional manager (MDAL)	Mike Lyall	15142
Deputy Divisional manager (spoke sites)	Lorry Phelan	21039
Central Administration Office		35906/07

Clinical Biochemistry Contacts	Bleep	Extension
Charing Cross Laboratory	8161	17062/35924
Hammersmith Laboratory	9022	32109
Chelsea and Westminster Laboratory	0143	58094
St Mary's laboratory	1022	21687
Hillingdon Hospital	5602	01895 238282 Ext 2237
West Middlesex University Hospital	238	0208 321 5928
Clinical advice (09:00-17:30, Mon-Fri)		30348
Call Centre Results (09:00-17:00, Mon-Fri)		35353

Consultants		Contact details
Prof Tricia Tan (Clinical Biochemistry Clinical lead)	38038	tricia.tan@nhs.net
Mrs Sophie Barnes (Consultant Clinical Scientist)	15183	sophiebarnes@nhs.net
Dr Emma Walker (Endocrinology)	35921	emma.walker15@nhs.net
Nicholas Martin (Trace Elements)	33644	nicholas.martin1@nhs.net
Dr Edmund Wilkes (Oncology)	11400	edmund.wilkes@nhs.net
Dr Jaimini Cegla Dr Shivani Misra	26832	j.cegla@nhs.net s.misra@nhs.net

Key information for each site

Charing Cross Routine Service- 1st floor, Lab Block

	Name	Extension	Bleep
Deputy Divisional Manager - MDAL	Mike Lyall	15142	
Clinical Biochemistry Lead		17062	
Laboratory		17004	8161

Hammersmith- G Block, North Corridor

	Name	Extension	Bleep
Site Manager	Andy Osei-Bimpong	31946	
Laboratory		32113	9022
Andrology Laboratory Manager	Lia Joannou	33598	
Gut Hormone Enquiries		33949	

Chelsea and Westminster- Level 2, Pathology

	Name	Extension	Bleep
Site Manager	Dunstan Vincent	58094	
Laboratory		55133	0143

St Mary's-2nd floor Mint Wing

	Name	Extension	Bleep
Site Manager	Daniel Pelling	22490	
Laboratory		21309	1022

Charing Cross Specialist Service-8th/12th floors, Lab Block

	Name	Extension	Bleep
Laboratory Manager	Vijay Ramanaidoo	33696	

Hillingdon Hospital, Pathology

	Name	Extension	Bleep
Site Manager	Linda Wildridge	01895238282 EXT 2237	
Laboratory		01895279288	5602

West Middlesex University Hospital, Pathology

	Name	Extension	Bleep
Site Manager	Jyoti Panesar	02083215928	
Laboratory		02083215930	175

Information on repertoire, reference ranges and turnaround times is listed on the Pathology website:
www.NWLPathology.nhs.uk

CLINICAL INTERPRETATION

Advice and interpretation is available during working hours from the Duty Biochemists (0203 313 0348). Senior clinical and scientific staff are available in the laboratories at all times by bleep, telephone (see key contacts above) or direct contact.

Requests for clinical advice emailed to ICHC-tr-biochemistryadvice@nhs.net or through the Pathology Queries form on the website, are monitored during working hours and answered or forwarded to clinical specialists for assistance.

LABORATORY HOURS

Routine Service 09:00 - 17:30 Monday to Friday

In and out patient samples requesting common tests are resulted the same day. Samples from GPs are resulted within 24 hours of receipt. Requests for specialised tests may take longer.

Out-of-hours Service

17:30 - 09:00 Monday - Friday

Saturday, Sunday and Bank Holidays

Note: A restricted range of tests is available out of hours. Additional tests may be performed after discussion with the on-call consultant.

Poisoning:
Paracetamol and Salicylate. Samples for paracetamol must be drawn at least 4 hours after ingestion.

If you are a healthcare professional and need emergency advice, please access TOXBASE® or contact the National Poisons Information Service using the telephone number listed on TOXBASE®.

Urgent Service

Charing Cross, Hammersmith Hospitals and St Mary's Hospitals

Urgent requests must be clearly identified as urgent (red bag/urgent label) and should be limited to those required for immediate patient management. It is not necessary to inform the laboratory of urgent work sent between 9am and 5:30pm however if there is something particular you wish to convey to the lab about an urgent sample then telephone the laboratory.
Please note a sample with an OCS 'UI' label will not be treated as urgent unless a call regarding the sample is received.

Chelsea & Westminster and West Middlesex University Hospitals

Urgent requests must be clearly identified as urgent (red bag/urgent label) and should be limited to those required for immediate patient management. It is not necessary to inform the laboratory of urgent work sent between 9am and 5:30pm however if there is something particular you wish to convey to the lab about an urgent sample then telephone the laboratory.
Please note a sample with an OCS 'UI' label will not be treated as urgent unless a call regarding the sample is received.

Hillingdon Hospital

09:00 - 17:30 Monday – Friday
Apart from A&E, all urgent requests must:
1. Be notified to the laboratory by telephone
2. Be requested as STAT on EPR
3. Have a bleep number on the request form.
4. Be put into the specimen bag so that the STAT message is visible.

REPERTOIRE, SAMPLE REQUIREMENTS AND TURNAROUND TIMES

See Pathology website for specific test information www.NWLPathology.nhs.uk

URGENT AND OUT-OF-HOURS INVESTIGATION

This service is provided only for situations where investigations are urgently required to aid the immediate management of the patient. This will apply to acute admissions and forward patients whose condition has deteriorated. The investigations available for this service are listed below. Any other request may be referred to the Special Registrar (SpR)/Consultant on duty with whom you can discuss the investigation of your patient. Additional non-urgent requests can be provided later on the same sample submitted for urgent investigations if this requirement is indicated at the time of the initial request.

Alanine Transaminase (ALT)	Digoxin	Potassium
Albumin	Ferritin	Protein (Total)
Alkaline Phosphatase	Gamma glutamyl transferase (GGT)	Salicylate
Ammonia	Globulin	Sodium
Amylase	Glucose	Theophylline
Aspartate Transaminase (AST)	HCG (pregnancy)	Thyroid function tests
Bicarbonate (TCO2)	HDL Cholesterol	Transferrin saturation
Bile acids (total)	Immunoglobulins G,A,M	Triglyceride
Bilirubin	Iron	Troponin
Blood gases	Lactate	Urate
B-Natriuretic Peptide (BNP)	Lactate dehydrogenase (LDH)	Urea
C-reactive protein (CRP)	LDL Cholesterol	
Calcium	Magnesium	
Chloride	Oestradiol	
Cholesterol	Paracetamol	
Cortisol	Phenobarbital	
Creatine Kinase (CK)	Phenytoin	
Creatinine	Phosphate	

Urgent Osmolalities:

The Laboratory must be notified by bleep to arrange for serum or urine osmolalities to be run as urgent samples.

Additional tests may be added to requests by arrangement with the lab depending on analyte stability and sample availability. Routine samples are normally discarded after 72 hours.

NOTES ON SPECIFIC INVESTIGATIONS

For information on specialised assays please contact the Duty Biochemist on 30348 or visit the North West London Pathology website here.

- CSF Analysis Specimens heavily contaminated with blood will not be analysed.
- CSF spectrophotometry is available out of hours on Saturday, Sunday and Public Holidays between 09:00 and 14:00. The SpR/Consultant on call should be contacted to arrange analysis outside these times.
  Please note: these samples should be delivered to the lab by hand as transport by pod (PTS) may cause degradation and affect the result.
- CSF Glucose: For evaluation of CSF glucose, plasma glucose analysis should be requested on a specimen collected at about the same time.
- CSF Oligoclonal Proteins: To enable interpretation it is imperative that serum levels should be assayed concurrently. It is then possible to distinguish increased IgG production within the nervous system from increases due to leak from the circulation. CSF samples without corresponding serum samples will not be sent for immunoglobulin analysis.

- Pleural Fluids The samples should all be treated as high-risk samples. Requests for glucose and protein levels should be sent in a fluoride and heparin sample respectively. pH will not be analysed in the laboratory but samples will be centrifuged for collection and analysis on a Blood Gas Analyser.

Monitoring therapeutic drugs

1. ANTICONVULSANTS AND THEOPHYLLINE (Carbamazepine, Phenobarbitone, Phenytoin).
   - Routine monitoring of Valproate therapy is not appropriate.
   - All assays use serum (yellow top tube)
   - Samples are best taken just before an oral dose
   - Please give details of:
     THERAPY: Drugs, Dose, Frequency, Date & Time of last dose; Time of sample taken
     CLINICAL: Patient's weight (Kg); Type of fit & frequency; Toxic side effects, etc
     Following a change in therapy it is essential to allow time for re equilibration at the new dose - for Phenytoin this is about 3 weeks.
2. DIGOXIN - collect specimen at least 6 hrs after last dose.
3. LITHIUM - collect specimen 12 hrs post dose

Investigation of drug abuse

Whenever a patient is admitted suspected of suffering from the effect of a drug, the appropriate specimens should be collected for medico-legal purposes in addition to those required for patient management and sent to the laboratory for storage for 2 weeks. LABEL CLEARLY 'CORONERS SAVE'.

These specimens are:

1. 50 mLs of first urine obtained.
2. First gastric washings (if available)
3. 10 ml of heparinised blood

The Clinical Biochemistry laboratory screening test for drugs of abuse is not suitable for medico-legal purposes. The Laboratory does not provide chain of custody.

Coroner and Police requests for samples

If you are contacted by the coroner's office (or police) about saving patient specimens or think that specimens may be required for this purpose, please obtain the name(s), date(s) of birth and hospital number(s) used by this patient during this hospital visit.

Please contact all laboratories to which samples have been sent. Provide them with the above details making it clear that samples are to be saved for the Coroner.

The laboratory must be contacted within 72 h of receipt of routine samples for guaranteed sample retrieval and storage. Any samples identified will be saved at 2-8°C for one month. If there is no further contact from the requesting authority within this time, the sample will be destroyed.

Specialised paediatric/metabolic investigations

Clinical staff should consult the Duty Biochemist before embarking on these (30348). A variety of blood specimens may be required. White cell enzymes require 5-10 mL heparinised blood and due to preparation necessary prior to analysis, samples cannot be accepted by the Laboratory after 1pm on a Friday. Lactate/pyruvate ratio and CSF dopamine metabolites require the presence of laboratory staff at the bedside. This must be arranged in advance by bleeping the Point-of Care team on 9611 or 9606 (Hammersmith Hospital) or 5942 (Charing Cross Hospital).

Analyses performed on Urine

24 hour collection containers, plain and acidified are available from the laboratories.

Analyses performed on other Fluids

Many of the tests listed above are also performed on other fluids, please contact the Laboratory to confirm turn-around times and reference ranges.

Pre-analytical Factors that may affect Clinical Biochemistry results

Pre-analytical Factor		**Analytes affected**
Haemolysed sample		Potassium, urate, magnesium, LDH, total protein, ammonia (Please note; the level of the haemolysis may affect individual analytes to different extents.) Xanthochromia (CSF)
Delay in separation/ receipt in laboratory	4 hrs	PTH, renin
	6 hrs	BNP
	8hrs	Potassium, phosphate, bicarbonate
	24hrs	Sodium, chloride, magnesium, creatinine AST, LDH, iron
	48hrs	Urea
	72hrs	Bone profile (total protein, calcium, albumin, alkaline phosphatase) Liver function (ALT, albumin, alkaline phosphatase, bilirubin, total protein) GGT, amylase Lipid profile (LDL-cholesterol, triglyceride) Uric acid Iron, transferrin CK
Particular collection requirements	Protect from light	Porphyrins (plasma and urine) Vitamin A, Vitamin E Xanthochromia (CSF)
	Avoid transport by Pod (PTS)	Xanthochromia (CSF)
	On ice, rush to lab	Ammonia, calcitonin, gut hormones, insulin, C-peptide, ACTH, PTHrP, Plasma metanephrines
	Special sample tube	Aluminium, zinc
	Acidified (pH<3.0) urine collection	Catecholamines, metadrenalines, calcium, oxalate, phosphate, 5-HIAA
	Keep warm (37 C)	Cryoglobulins
Dietary requirements	Fasting	Gastrin
	Various influences	5-HIAA (urine) please contact Duty Biochemist for full details
Diurnal variation		Cortisol, ACTH, bone markers, testosterone
Sampling time post event	>4 hrs	Paracetomol (post ingestion). See CHM 2012 Guidelines for use of acetylcysteine
	> 6 hrs	Digoxin (post dose)
	>12hrs	Troponin I (post onset of chest pain) Lithium (post dose)

WHO (1999) guidelines for the diagnosis of diabetes mellitus: (venous plasma samples)

Random Glucose: <6.1 – DM excluded. >11.0, with symptoms - DM confirmed.
Fasting Glucose: <6.1 – DM excluded. >6.9 - DM confirmed. 6.1-6.9 – impaired fasting glucose.
OGTT 2hr sample:<7.8 – no IGT. >11.0 – DM confirmed. 7.8 - 11.0: Impaired Glucose Tolerance (IGT)

Type 1 DM: NICE CG15. Target HbA1c 59 mmol/mol without frequent disabling hypoglycaemia, consider ≤ 48 mmol/mol where there is high arterial risk.
Type 2 DM: Diagnosis WHO: ≥ 48 mmol/mol with second indicator (either symptomatic or laboratory).
Type 2 DM: Treatment NICE CG66: Target 48-59 mmol/mol

Reference Laboratory Details:

At times, it may be necessary to refer work to other laboratories or consultants. The department routinely sends work to the following organisations:

City Hospital Birmingham	Birmingham B18 7QH
Great Ormond Street Hospital	London WC1N 3JH
Guy's Hospital	London SE1 9RT
Health and Safety Laboratory	Harpur Hill Buxton, SK17 9JN
Sheffield Northern General Hospital	Sheffield S5 7YT
Institute of Child Health	London WC1N 1EH
King's College Hospital	London SE5 9RS
Bristol Genetics Laboratory, Southmead Hospital	Bristol BS10 5NB
Royal Liverpool University Hospital	Liverpool L7 8XP
Norfolk and Norwich University Hospital	Norwich NR4 7UY
Queen Elizabeth Hospital Birmingham	Birmingham B15 2WB
Institute of Neurology	London WC1N 3BG
Rotherham NHS Foundation Trust	Rotherham S60 2UD
Royal Brompton Hospital	London SW3 6NP
Royal Devon & Exeter NHS Foundation Trust	Exeter EX2 5DW
Royal Free and University Medical School	London NW3 2PF
Royal Surrey County Hospital	Guildford, Surrey GU2 7XX
Royal Sussex County Hospital	Brighton BN2 5BE
Royal Victoria Infirmary	Newcastle upon Tyne, Tyne and Wear NE1 4LP
St Helier's Hospital	Surrey, SM51AA
Sheffield Children's NHS Foundation Trust	Sheffield S10 2TH
St. George's University of London	London SW17 0NH
University College London Hospital	London W1T 4EU
Freeman Hospital	Newcastle Upon Tyne, NE7 7DN
Leicester Royal Infirmary	Leicester, LE1 5WW
University College London Hospital	London W1T 4EU
St Thomas' Hospital	London SE1 7EH
Llandough Hospital	Penarth, CF64 2XX
Bart's Health NHS Trust	London, E1 2ES
North Middlesex University Hospital	London, N18 1QX

Blood Gas Analysis:

This service is not available from the laboratory at St Mary's. There are a number of blood gas analysers across the Trust. Following training and issue of a password, users must take the sample using the specialist heparinised blood gas sampling devices.

The Standard Operating Procedure (SOP) for the safe use of the blood gas analyser POCT-LP-014-IMP is available on the "Point of Care Testing" page of the Trust Intranet and can be accessed via this link http://source/prdcont/groups/intranet/@clinical/@poct/documents/doc/id_023603.pdf

Hard copies of the SOP are also available in the Red POCT folder by the Nursing stations in designated clinical areas. The locations of Blood Gas Analysers are listed in POCT-LF-014-IMP.

The Diagnostic Andrology (seminology) Service

Opening hours
The service is a walk in service from 08:30 – 13:00 each week-day (Excluding bank and NHS holidays).

Other services
The Andrology laboratory provides a sperm freezing service for patients undergoing treatments that may impair fertility particularly due to chemotherapy, radiotherapy and some surgery. Appropriate hospital consultants usually arrange these services, however occasionally general practitioners may be involved.

Contact Telephone
Reception: 020 3313 4680
Email: imperial.andrology.queries@nhs.net

The department has a 2 week turn around time for release of its results, however it must be realised that any advice / interpretation is dependent on the clinical information provided. Please see reference values. The most important additional information for most interpretations is the length of time couples have been trying to conceive and the age of the female partner. Any requests for clinical interpretation of results should be made to the clinical lead for the department via emailing channa.jayasena@nhs.net

Advice for producing samples
As samples for fertility investigation should be analysed within 1 hour of collection it is recommended that patients attend the Laboratory to use the facilities provided.
Samples must only be collected into toxicity tested sample pots issued by the Laboratory. Samples collected into any other container will be rejected. Toxicity tested containers can be collected from the main reception desk.
If the sample is collected at home it must be brought to the laboratory within 30 minutes of it being produced. The date and time of collection must be clearly written on the sample pot & and must be accompanied by a completed request form. If samples are not analysed within 60 minutes results will be reported with a comment that indicates extended period between ejaculation and analysis.

NB: The sample should not be exposed to extremes of temperature since both cold and heat can seriously damage sperm. Room to body temperature (25-37^{o}C) is best.

Post-vasectomy samples

The Andrology service follows the guidelines published in 2016 by the Association of Biomedical Andrologists, British Andrology Society & British Association of Urological Surgeons which state that: “Post vasectomy semen analysis should take place a minimum of 12 weeks after surgery and after a minimum of 20 ejaculations. Samples should also be assessed within 4 hours of production and if non-motile sperm are observed, further samples must be examined within 1 h of production. Assessment of a single sample is acceptable to confirm vasectomy success if all recommendations and laboratory methodology are met and no sperm are observed. Clearance can then be given.”

As a consequence the Laboratory does not accept any Post vasectomy sample collected off site.

Semen diagnostic reference values are available on the Pathology website .

HAEMATOLOGY& BLOOD TRANSFUSION, BLOOD SCIENCES DEPARTMENT

LOCATIONS

At St Mary's Hospital, the Haematology and Blood Transfusion laboratories are located on the 2nd floor of the Mint Wing.

At Charing Cross Hospital, the Haematology and Blood Transfusion laboratories are located on the 1st floor of the Laboratory Block.

At Hammersmith Hospital, the Haematology and Blood Transfusion laboratories are located on the ground floor of G Block.

At Chelsea and Westminster Hospital, the Haematology and Blood Transfusion laboratories are located on the 2nd floor by lift block D.

At West Middlesex University Hospital the Haematology and Blood Transfusion laboratories are located on the 1st floor.

At Hillingdon Hospital the Haematology and Blood Transfusion laboratories are located on the 1st floor.

DESCRIPTION OF SERVICE

A full routine diagnostic service and out-of-hours emergency service is provided from the Haematology laboratory at all 6 hospitals, including full blood count, clotting factors and blood transfusion.

KEY PERSONNEL/CONTACT NUMBERS

North West London Pathology Haematology Clinical Lead - Dr Abdul Shlebak

	TEL.NO.	BLEEP
St Mary's Hospital		
ENQUIRIES	21157 (BT), 21130 (Haem)	
RESULTS ENQUIRIES	35353 (9am –5pm)	
URGENT REQUESTS	21764 or individual lab number	
MAIN HAEMATOLOGY LAB	21130	
COAGULATION LAB	26132	
BLOOD TRANSFUSION	21157	
MICROSCOPY	21059	
SPECIAL HAEMATOLOGY	21084	
Charing Cross Hospital		
ENQUIRIES	30520	
RESULTS ENQUIRIES	35353 (9am –5pm)	
URGENT REQUESTS	17158	
MAIN LAB	30520	
COAGULATION	17158	
BLOOD TRANSFUSION	17112	
MICROSCOPY	30547	

Hammersmith Hospital	**TEL.NO.**	**BLEEP**
RESULTS ENQUIRIES	35353 (9am – 5pm)	
URGENT REQUESTS	32454	
MAIN LAB	32454	
COAGULATION	32449	
BLOOD TRANSFUSION	34772	
SPECIAL HAEMATOLOGY	32448	

Chelsea and Westminster Hospital		
CW Switchboard	0203 315 8000	
RESULTS ENQUIRIES	0203 313 5353 (call centre)	
URGENT REQUESTS		bleep 0360
HAEMATOLOGY LAB	55206	
COAGULATION	58213	
BLOOD TRANSFUSION	58214	
MICROSCOPY	58205	

West Middlesex University Hospital	**TEL.NO.**	**BLEEP**
WMUH Switchboard	0208 560 2121	
RESULTS ENQUIRIES	0203 313 5353 (call centre)	
URGENT REQUESTS (OOH)		238
MAIN LAB	0208 321 5991	
BLOOD TRANSFUSION	0208 321 5515	

The Hillingdon Hospital	**TEL.NO.**	**BLEEP**
THH Switchboard	01895 238 282	
RESULTS ENQUIRIES	0203 313 5353 (call centre)	
URGENT REQUESTS (OOH)		5627
MAIN LAB	01985 279 292	
BLOOD TRANSFUSION	01895 279 293	

Clinical advice and Interpretation (CXH, HH and SMH)
During routine hours (09.00-17.30h, Monday to Friday) call hospital switchboard and ask the operator to bleep the Haematology Registrar as outlined dependent on the query (See below)

Speciality	**Bleep**
Coagulation	9072
General Haematology	9071
Blood Transfusion	9070
Haematological Malignancy	9077/9068
Paediatric Haematology (SMH)	2261 or 2262

A consultant or specialist registrar is always available to give advice. The medical staff can be contacted by bleep if not in the laboratory. Out of hours the medical staff can be contacted via the SPR mobile phone and the Consultant mobile phone (number available through switchboard).

Clinical advice and interpretation (CWH)
In the first instance external callers should bleep the Haematology SPR via switchboard and ask them to bleep number 0902. Failing that contact the Haematology Secretary on 020 331 58211 who will take a message.
Outside routine hours (17.30 – 09.00h, weekends and Bank Holidays) callers should call switchboard on 020 331 26666 (or dial "0" if calling internally) and ask the operator to page the Haematology Registrar on call for Chelsea & Westminster Hospital.

CONSULTANTS	TEL.NO.	BLEEP
Dr Laffan	32178/31320	5134
Dr Matthey (Chelsea and Westminster)	58211	
Dr Shlebak	21179	Air call: 4622083
Dr Marks	27908	1692
Dr Layton	22391/32173/31320	4080
Prof Apperley	33237/34017	
Dr Cooper	35182	
Dr Chowdhury	22391	
Dr Dazzi	32134/31709/34017	5094
Dr Kanfer	31407/35030	5981
Dr Karadimitris	38438/38117	
Dr MacDonald	35100/38117	
Dr Marin	31627/35038	
Dr Millar	32153/31320	
Dr Milojkovic	35101/34017	
Dr Pavlu (Locum Consultant)	38172	
Dr Rahemtulla	33236/34017	
Dr Fateha Chowdhury (Blood Transfusion SMH)	33234/31320	07659593374
Dr Yee Hui (Blood Transfusion HH & CXH)	02083831320	
Dr Rezvani	32175/34017	07958772262
Dr Salooja	35151	
Medical Secretary (St Mary's)	26806	

DIVISIONAL MANAGEMENT TEAM		TEL.NO.	BLEEP
Divisional Manager, Blood Sciences			
Michelle Martin	michelle.martin31@nhs.net	35909	
Deputy Divisional managers, Blood Sciences			
Ms Lorry Phelan, Deputy Divisional Manager, spoke sites		21039	
Mr Mike Lyall, Deputy Divisional Manager, MDAL, CXH		15142	

QUALITY & GOVERNANCE MANAGER

Gillian Lynam 15171

LABORATORY MANAGEMENT

St Mary's			
Mr Dan Pelling	Blood Sciences Site Manager	22490	
Mr David Johnson	Blood Transfusion Lead	22203	
Mrs Amanda Hann	Trust Lead Special Haematology	22203	
Anticoagulant nurses		26033	Bleep 1239
Hammersmith			
Mr Andrew Osei-Bimpong	Blood Sciences Site Manager	31946	
Ms Amanda Hann	Special & Routine Haematology	32448	
Mr Saravanan Vinayagam	Special & Routine Coagulation	32449	
Mr Athif Rahman	Blood Transfusion	34774	
Charing Cross			
Mr Matt Kent	Haematology & Coagulation	17116	
Ms Linda Chapple	Blood Transfusion	17128	

Chelsea and Westminster

Mr Dunstan Vincent	Blood Sciences Site Manager	58094
Mr Brian Robertson	Blood Transfusion (Interim)	55155
Ms Rhain Gartland	Haematology & Coagulation	21130

Imperial Transfusion Practitioners	Bleep
Ms Denise McKeown	5626/2033/9237

Chelsea & Westminster Transfusion Practitioner	
Ms Jan Gordon	0193
Mrs Gillian Rattenbury	0193

Site	**Bleep**
Chelsea and Westminster Out of hours BMS	0360
Hammersmith Out of hours BMS	Haem 9079/ BT 9122
Charing Cross Out of hours BMS	8160
St Mary's Out of hours BMS	1611

LABORATORY HOURS

Monday to Friday - Routine service (9.00-17.30h)
Specimens must be received by 11.00h for a report to be issued the same day.
Saturday & Sunday – 9:00 – 20:00h (SMH) core tests only. Specimens must be received by 11am.
Saturday& Sunday –9:00-17:30h (HH, CW and CXH) restricted routine service.
Out of hours - Urgent work only

USE OF LABORATORY

When OCS is not available, follow the downtime procedures.
Always use the Order Communications System to order tests when available. Always fill in all areas of request. Clinical details are essential and requests for malaria must have full details on areas of travel and any prophylaxis taken. Patients on anticoagulation must have the type of anticoagulation entered in the clinical details section of the request form.

NB: Please note that when ordering haematology tests via Cerner no request form is generated. Blood Transfusion requests always generate a request form and must be sent with samples to the laboratory.

SPECIAL COAGULATION TESTS -

- All ADULT special coagulation tests (except APAS and Anti-Xa) must be approved by the Haematology Registrar.
- All PAEDIATRIC special coagulation must be approved by the Paediatric Haematology registrar. Note at CWH there is no Paediatric Haematology registrar to provide approval so contact the Haematology Registrar for approval.
- All urgent requests must be discussed with the coagulation laboratory.
- Requests for Thrombophilia Screen, Antiphospholipid antibody Screen should be delivered to the laboratory as quickly as is possible as ideally they should be spun and frozen for storage before testing within an hour of being taken.

- HITT Screen requests must be approved by the Haematology Registrar and must be accompanied by a completed HITT Request Form

- Samples for platelet function assays should be taken to the laboratory as quickly as is possible due to the extremely short life of these samples.

- Platelet Agregometery must be pre-arranged with the coagulation laboratory

- All the above tests/screens must not be transported to the laboratory in the pneumatic tube system and must not be delayed in their delivery to the laboratory

URGENT AND OUT OF HOURS REQUESTS -

Where a result is required urgently during routine hours, telephone the laboratory when sending the specimen. Remember it is your responsibility to ensure the specimen arrives in the laboratory. Requests for Factor Assays and monitoring of Low Molecular Weight Heparin (LMWH) or DOACs must be approved by the out of hours Haematology registrar who will inform the laboratory of the request if approved.

Out of hours requests must be preceded by bleeping the duty BMS (numbers for different sites above) to arrange the test. These tests are expensive and must be restricted to those important for immediate management of the patient. The duty BMS is likely to be very busy and must not be slowed down by unnecessary requests and calls. If the need for a test is unclear the duty consultant will be contacted. Results will be available on the computer.

TESTS AVAILABLE OUT OF HOURS -

The following emergency investigations from Accident and Emergency and ITU before midnight do not have to be bleeped. All other departments must bleep to explain reason for urgency:

- Full blood counts.
- Clotting Screens.
- INRs, APTTR (For anti-coagulation monitoring)
- FVIII, FIX and FXI
- Anti-Xa for patients on UFH

Results will be available within an hour.
Note: This turnaround time cannot be guaranteed, as it is dependent on what emergency work is being performed in transfusion.

The following tests must be bleeped from all departments at all times (incl. A&E, RAU and ITU):

- D-Dimer (for PE & DVT) not available for inpatients– inpatients only available for DIC (clinical details must state query PE/DVT). Note: At CWH D-Dimer requests are accepted from all areas.
- Malaria screens.
- All transfusion requests.
- Sickle Screens (only done if patient is going to theatre)
- HbS % will be done if urgent and by prior arrangement.

Note: results will not be telephoned and will be available on Cerner.

LABELLING OF SPECIMENS
The laboratory will not perform tests on inadequately identified samples.
(See Blood Transfusion section for their labelling policy).

Please see below for the departmental test repertoire.

REPERTOIRE, REFERENCE RANGES, CRITICAL DECISION VALUES AND TURNAROUND TIMES

TEST	CONTAINER	VOLUME	Turnaround Time	COMMENT	Add on time limit
Full Blood Count	EDTA (purple)	4ml	Routine 4 hours ========= Urgent 1 hour	4ml FBC includes an automated differential. A manual film will only be done if requested or indicated.	<24 hrs.
Sickle screen	EDTA (purple)	4ml	Routine 24 hours ========= Urgent 1 hour	Can be performed on the same sample as FBC. URGENT pre-op only.	5 days spoke sites, 3 days MDAL
Infectious Mononucleosis	EDTA (purple)	4ml	Routine 24 hours ========= Urgent N/A	Can be performed on the same sample as FBC.	2 days (whole blood)
Reticulocytes	EDTA (purple)	4ml	Routine 4 hours ========= Urgent 1 hour	Can be performed on the same sample as FBC.	<24 hrs.
Malaria parasites	EDTA (purple)	4ml	3 hours	Can be performed on the same sample as FBC. Full clinical details, prophylaxis and area of travel are essential.	8 hrs. for films. 3 days for RDT
Hb electrophoresis	EDTA (purple)	4ml	Routine 24 hours (1 working day) ========= CWH & CXH Routine 2- 3 days ========= Urgent same day (lab must be informed of sample)	Can be performed on the same sample as FBC.Ethnic origin essential.	5 days spoke sites, 3 days MDAL

TEST	CONTAINER	VOLUME	Turnaround Time	COMMENT	Add on time limit
HPLC Abnormal ANC patient's interim report	-	-	3 working days	Ante-natal patients' guidelines	N/A
Ham's Test	NA. Contact department				
ESR	EDTA (purple)	4ml	Routine 4 hours ========= Urgent 2 hours	If sending for bothe FBC & ESR ensure tube is filled correctly	Only CW & CX – 8hrs
G6PD	EDTA (purple)	4ml	Routine <5 days ========= Urgent 4 hr.	Urgent requests for patients starting on rasburicase must be approved by Haematology Registrar out of hours	5 days spoke sites, 3 days MDAL
Pyruvate kinase Assay, Quantitation of Glutathione and GSH Stability.	EDTA (purple) or ACD	4ml Adult or 2ml Paediatric	Routine within 21 days if sample is stored at 25ºC	External samples must include a travel control, FBC, blood film and Retic count	HH 5 days at 25ºC or 21 days at 4ºC
Glucose phosphate isomerase Assay	EDTA (purple) or ACD	4ml Adult or 2ml Paediatric 4ml	Routine within 21 days if sample is stored at 25ºC	External samples must include a travel control, FBC, blood film and Retic count	HH 5 days at 25ºC or 21 days at 4ºC
Hexokinase assay	EDTA (purple) or ACD	4ml Adult or 2ml Paediatric 4ml	Routine within 21 days if sample is stored at 25ºC	External samples must include a travel control, FBC, blood film and Retic count	HH 5 days at 25ºC or 21 days at 4ºC
Met-haemoglobin reductase, Assay,	EDTA (purple) or ACD	4ml Adult or 2ml Paediatric 4ml	Routine within 21 days if sample is stored at 25ºC	External samples must include a travel control, FBC, blood film and Retic count	HH 5 days at 25ºC or 21 days at 4ºC
Glutathione peroxidase Assay,	EDTA (purple) or ACD	4ml Adult or 2ml Paediatric 4ml	Routine within 21 days if sample is stored at 25ºC	External samples must include a travel control, FBC, blood film and Retic count	HH 5 days at 25ºC or 21 days at 4ºC
Quantitation of Glutathione and GSH Stability.	EDTA (purple) or ACd	4ml	Routine within 21 days if sample is stored at 25ºC	External samples must include a travel control, FBC, blood film and Retic count	HH 5 days at 25ºC or 21 days at 4ºC
Pyrimidine 5 Nucleotidase Screen	EDTA, Heparin or ACD	4ml	<24 hours	External samples must include a travel control, FBC, blood film and Retic count	Fresh samples with prior

TEST	CONTAINER	VOLUME	Turnaround Time	COMMENT	Add on time limit
					arrangement
Heinz Bodies	EDTA (purple)	4ml	48 hours		48 hrs
Heat instability /isopropanol precipitation test	EDTA or any other anti-coagulated blood	4ml	24 hours	External samples must include a travel control, FBC, blood film and Retic count	24 hrs
Osmotic Fragility	Lithium Heparin	2 x 6 ml	24 hours	Samples must be sent with a normal control	Fresh samples with prior arrangement
Dye Binding	EDTA (purple)	4ml	48 hours	External samples must include a travel control, FBC, blood film and Retic count	</= 48 hrs stored at 4^0C
Urinary haemosiderin	Universal container	10ml	Routine 5 days ========= Urgent N/A	Early morning urine	N/A
Prothrombin time	Citrate (blue)	2.7ml	Routine 4 hours ========= Urgent 1 hour	Underfilled/Overfilled bottles cannot be accepted as results are inaccurate.	4 hrs
INR (warfarin control)	Citrate (blue)	2.7ml	Routine 4 hours ========= Urgent 1 hour	Underfilled/Overfilled bottles cannot be accepted as results are inaccurate.	Can be added at any time as long as PT has been performed
APTT APTTR (Heparin ratio)	Citrate (blue)	2.7ml	Routine 4 hours ========= Urgent 1 hour	Underfilled/Overfilled bottles cannot be accepted, as results are inaccurate.	4 hrs for APTT. For APTTR see INR above)
Thrombin time	Citrate (blue)	2.7ml	Routine 4 hours ========= Urgent 1 hour	Underfilled/Overfilled bottles cannot be accepted, as results are inaccurate.	4 hrs
Coagulation screen: (PT, APTT, Fibrinogen)	Citrate (blue)	2.7ml	Routine 4 hours ========= Urgent 1 hour	Underfilled/Overfilled bottles cannot be accepted, as results are inaccurate.	4 hrs.

TEST	CONTAINER	VOLUME	Turnaround Time	COMMENT	Add on time limit
D-Dimer	Citrate (blue)	2.7ml	Routine 4 hours ========= Urgent 1 hour	Underfilled/Overfilled bottles cannot be accepted as results are inaccurate.	4 hrs.
Antiphospholipid antibodies screen	These investigations require special collection procedures, contact laboratory for details 3 x 2.7ml Citrate (blue) required				4 hrs. post draw (1 month if frozen)
DRVVT (DRVVT is part of lupus screen)	Citrate	3 x 2.7ml	14 days	Refer to laboratory for sample bottle & volume	4 hrs. post draw (1 month if frozen)
Thrombophilia Screen	These investigations require special collection procedures, contact laboratory for details 4 x 2.7ml Citrate (blue) and 1 x 4.0 ml EDTA required				4 hrs. post draw (1 month if frozen)
Protein C Activity / Antigen	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Antithrombin Activity / Antigen	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Free Protein S Antigen	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Prothrombin gene mutation	EDTA	4 ml	28 days	Must be approved by Haematology Registrar	Indefinitely but routine samples may only be stored for 5days
Factor V Leiden	EDTA	4 ml	28 days	Must be approved by Haematology Registrar	Indefinitely but routine samples may only be stored for 5days
Bleeding disorders These investigations require special collection procedures, contact laboratory for details					
Single Assay Factor	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)

TEST	CONTAINER	VOLUME	Turnaround Time	COMMENT	Add on time limit
vWF Ag & vWF Ricof	Citrate	3 x 2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Collagen Binding Assay	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Platelet Function Assay	Citrate	2.7ml	4 hours	Must be approved by Haematology Registrar	N/A
Platelet Aggregation	Citrate	2.7ml (6-8 samples)	4 hours	Must be approved by Haematology Registrar and pre-arranged with the laboratory	N/A
Inhibitor Screen	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Inhibitor Assay	Citrate	2.7ml	14 days	Must be approved by Haematology Registrar	4 hrs. post draw (1 month if frozen)
Heparin induced thrombocytopenia (Screen & Quantitation)	Citrate	2.7ml	Routine 4 hours	Must be approved by Haematology Registrar	2 hrs.
Heparin dose monitoring (LMWH or UFH)	Citrate	2.7ml	4 hours		4 hrs.
Rivaroxaban, Apixaban, Fondaparinux, Dabigatran monitoring	Citrate	2.7ml	4 hours		4 hrs.
Test referred to external laboratories					
vWF Multimers	Contact laboratory for more information				
ADAMTS13	Contact laboratory for more information				
Platelet nucleotides	Contact laboratory for more information				
PAI & TPA	Contact laboratory for more information				
Factor 8 binding	Contact laboratory for more information				

Note: Malaria Rapid Diagnostic Tests used in the Haematology Departments are able to distinguish Plasmodium falciparum infections from non-falciparum infections. The test method is not intended to distinguish non-falciparum species from one another. Species identification is determined from blood film examination. Both of these analysis techniques have limits of sensitivity and as such where the sample is reported as negative, if the index of clinical suspicion of malaria remains high, it may be necessary to consider urgent re-testing especially if the patient has visited Southeast Asia and Plasmodium knowlesi infection is possible.

PLEASE REFER TO BLOOD TRANSFUSION SECTION					
TEST	**CONTAINER**	**VOLUME**	**Turnaround Time**	**COMMENT**	**Add on time limit**
Baby Group & IgG (0-120 days old)	EDTA (pink)	1 mL	Routine 4 hours, Urgent 45 min	This is a different bottle to the FBC on no account will it be shared	N/A
Group & Antibody Screen (>120 days old)	EDTA (pink)	4mL or 6mL	Routine 4 hours, Urgent 45 min (Excludes Positive antibody screens)	This is a different bottle to the FBC on no account will it be shared	N/A
Cross match	EDTA (pink)	6ml 4ml for paediatric patients 1ml for > 4 months old	N/A – dependent on circumstances contact laboratory	A minimum of 24hrs preferably 48 hours is required for non-urgent transfusion. Must have 2 valid Group and Save samples for electronic issue.	Up to 72 hours from sample time provided no recent transfusion Contact the lab for clarity.
Kleihauer	EDTA (purple)	3 or 4ml	Routine 48 hours		Up to 7 days from sample time
DAT	EDTA (pink)	6 ml	Routine 24 hours		Up to 7 days from sample time
Cell Free Foetal DNA	EDTA (pink)	6mL	10 days from receipt at IBGRL*	Sample sent to International Blood Group Reference Laboratory*	N/A
Cold Agglutinins	Special bottles	Please contact Individual laboratory for further advice			

Note: If additional tests are required after the specimen has been sent, the laboratory must be contacted to ascertain if specimen is still viable.

REFERENCE RANGES FOR HAEMATOLOGY AUTOMATED FBC

Adults	MALES(n=100)	FEMALES(n=100)
WBC ($x10^9$/L)	4.2-10.6	4.2-11.2
RBC ($x10^{12}$/L)	4.23- 5.46	3.73-4.96
HB(g/L)	130-168	114-150
HCT (Ratio) (L/L)	0.390-0.500	0.350-0.450
MCV (fl)	83.5-99.5	83.5-99.5
MCH (pg)	27.5-33.1	27.5-33.1
MCHC (g/L)	315-350	315-350
RDW	10.0-16.0	10.0-15.9
PLATELETS x(10^9/L)	130-370	135-400
NEUTS ($x10^9$/L)	2.0-7.1	2.0-7.1
LYMPHS ($x10^9$/L)	1.1-3.6	1.1-3.6
MONOs ($x10^9$/L)	0.3-0.9	0.3-0.9
EOSINs ($x10^9$/L)	0.0-0.5	0.0-0.5
BASOs ($x10^9$/L)	0.0-0.2	0.0-0.2
RETIC#	20.0-92.0	12.0-96.0

REFERENCE RANGES FOR HAEMATOLOGICAL VARIABLES IN CHILDREN

Red cell variables (all ethnic groups)

Age	RBC x 10^{12}/L	Hb g/L	HCT (Ratio) (L/L)	MCV fl	MCH pg
0-1 day	4.00-5.50	130-200	0.420-0.600	97.0-115.0	31.0-39.0
1-7 days	3.90-5.40	130-190	0.360-0.600	95.0-112.0	31.0-37.0
7 days - 1 month	3.40-6.30	100-215	0.300-0.660	85.0-110.0	29.0-36.0
1 month -3 months	3.00-5.30	90-183	0.270-0.550	82.0-97.0	25.0-32.0
3 months – 6 months	3.30-5.00	95-135	0.270-0.400	70.0-88.0	23.0-30.0
6 months- 1 year	3.90-5.30	N/A	0.310-0.410	70.0-85.0	25.0-35.0
6 months- 6 years	N/A	105-135	N/A	N/A	N/A
1 – 2 years	4.10-5.30	N/A	0.330-0.410	71.0-84.0	23.0-31.0
2-6 years	4.2-5.00	N/A	0.340-0.400	73.0-86.0	24.0-30.0
2-12 years	N/A	N/A	N/A	N/A	N/A
6-12 years	3.1-5.1	111-147	0.320-0.430	75.0-89.5	25.6-30.9

White cells (babies, infants and children)

Age	WBC x 10^9/L	Neutrophils x 10^9/L	Lymphocytes x 10^9/L	Monocytes x 10^9/L	Eosinophils x 10^9/L	Basophils x 10^9/L
0-1 day	9.0-30.0	2.0-23.5	2.0-10.0	0.2-2.0	0.0-0.8	0.0-0.1
1-7 days	6.0-16.0	2.0-9.0	2.0-8.0	0.2-2.2	0.0-0.8	0.0-0.1
7 days - 1 month	6.0-18.4	1.2-9.0	2.0-9.0	0.2-2.0	0.0-0.8	0.0-0.1
1 month -3 months	6.0-19.5	1.2-9.0	2.0-9.0	0.2-2.0	0.0-0.6	0.0-0.1
3 months - 6months	6.0-16.0	0.7-4.7	1.5-10.5	0.2-2.0	0.0-0.4	0.0-0.1
6 months- 1 year	5.9-16.6	1.1-5.6	3.2-11.3	0.2-1.0	0.1-1.0	0.0-0.1
1-2 years	6.0-17.5	1.5-8.0	4.0-10.0	0.2-1.0	0.1-1.0	0.0-0.1
2-6 years	5.0-14.0	1.5-8.0	1.5-7.0	0.2-1.0	0.1-0.4	0.0-0.1
6-12 years	4.0-13.5	1.5-7.0	1.5-4.0	0.2-1.0	0.1-0.4	0.0-0.1

Platelets (babies, infants and children)

Age	Count x 10^9/L
0-1 day	150-350
1-7 days	150-450
7 days-1 month	150-500
1 - 3 month	150-550
3 months – 12 years	200-450

Adult FBC reference ranges: established from Healthy donor blood A. Osei-Bimpong *et al*, Hammersmith Hospital (2008 - updated June 2013)
Paediatric FBC reference ranges: variable published data sources, ratified for Imperial College Healthcare NHS Trust by Professor Irene Roberts (Technidata project 2012). Ranges applicable to XE, XT and Abbott hq analytical platfoms

Reference ranges for other Harmonised Haematology Tests

TEST	RANGE
G6PD (U/gHb)	6.3 – 11.2
Hb A_2 (%)	2.3-3.4
HbF (%)	0.2 – 1.2
ESR (mm/hr)	0-17 (male)
	0-23 (female)

Note: G6PD reference ranges locally derived by evaluation of normal population across sites, L. Robertson et al, 2017
HbA_2 and HbF reference ranges: established from– BCSH Guidelines 2010 Blackwell Publishing Ltd, British Journal of Haematology, 149, 35–49 and confirmed using the Sickle cell and Thalassemia handbook for laboratories October 2012
ESR reference range locally derived by evaluation of normal population, L Robertson et al 2017

Note: Due to the complexity of collecting blood samples for analysis on normal neonates and paediatric patients, the reference ranges for use on patients up to 6 months of age have been taken from published data, from a research study using comparable methodology and equipment as that currently employed in our organisation

Harmonised Reference Ranges for Coagulation for use in Patients greater than 16 years old

Test	Reference Range	Reportable Unit
Prothrombin Time (PT)	12.8 - 17.4	Seconds
International Normalized Ratio (INR)	Use Therapeutic Ranges	
Activated Partial Thromboplastin Time (APTT)	25.0 – 35.0	Seconds
Activated Partial Thromboplastin Time Ratio (APTR)	Use Therapeutic Ranges	
Fibrinogen	1.9 – 4.3	g/L
Thrombin Time	14.4 – 18.4	Seconds
D-Dimer	<500	Fibrin Equivelent Units (FEU)
Factor 2 (II) Assay	0.78 – 1.38	IU/mL
Factor 5 (V) Assay	0.78 – 1.52	IU/mL
Factor 7 (VII) Assay	0.61 – 1.99	IU/mL
Factor 8 (VIII) Assay	0.52 – 2.90	IU/mL
Factor 9 (IX) Assay	0.59 - 2.54	IU/mL
Factor 10 (X) Assay	0.96 - 1.71	IU/mL
Factor 11 (XI) Assay	0.67 – 1.96	IU/mL
Factor 12 (XII) Assay	0.38 – 1.89	IU/mL
Factor 13 (XIII) Assay	0.64 – 1.76	IU/mL
Heparin Assay (Anti Xa)	Use Therapeutic/Prophylactic Ranges	
HITT Quantitation	Positive = > 1.00 is highly suggestive of HIT	U/mL
Antithrombin Activity Assay	0.66 – 1.24	IU/mL
Antithrombin Antigen Assay	0.79 – 1.11	IU/mL
Protein C Activity Assay	0.74-1.64	IU/mL
Protein C Antigen Assay	0.70 – 1.40	IU/mL
Protein S Free Antigen Assay	0.74 – 1.20	IU/mL
von Willebrand Factor Antigen Assay	0.45 – 1.80	IU/mL
von Willebrand Factor Activity Assay (RICOF)	0.45 – 1.80	IU/mL
Collagen Binding Assay	0.45 – 1.50	IU/mL
Platelet Function Test - Collagen/Epinephrine	75 – 165	Seconds
Platelet Function Test - Collagen/ADP	60 – 120	Seconds
Plasminogen Assay	0.75 – 1.35	IU/mL
Alpha 2 Antiplasmin Assay	0.80 – 1.20	IU/mL
PAI Antigen Assay	11.0 – 69.0	ng/mL
tPA Antigen Assay	1.0 – 12.0	ng/mL
Fibrinogen Clot Weight	1.9 – 4.3	g/L

Note: The reference ranges for use on patients over the age of 16 years, has been locally verified through evaluation on representative normal individuals across the sites to reflect our patient population.

Note: Due to the complexity of collecting blood samples for analysis on normal neonates and paediatric patients, the reference ranges for use on patients up to 16 years of age have been taken from published data, from a research study using comparable methodology and equipment as that currently employed in our organisation. Please contact the laboratory for coagulation paediatric ranges.

Communication of Haematology results. Critical Decision values:

Results falling into this category are to be telephoned to the relevant clinician/GP/Consultant

Test	All sites (Including GP samples)
Hb (new/unexpected)	<70
Hb (new/unexpected)	>200
Hb	unexpected drop of >30g/l
Neutrophils	< 0.5 where new/unexpected
Neutrophils	> 30.0 where new/unexpected
Lymphocytes	NA
Platelets	<50 where new/unexpected
Platelets	>1000 where new/unexpected
IMST	All positive results
Malaria	All first time positive results including RDT to ID consultant
Sickle Screen	All results whether positive or negative if requested as urgent.
ESR	>40 If ? Temporal Arteritis
PT	>23.5
INR	>5.0
APTT	>40.0 ≥ 50 to haem/coag registrar
APTTR	>2.5
Fibrinogen	<1.0
G6PD	If deficient
Factor Assays	All abnormal levels

REFERENCE LABORATORY DETAILS:

At times, it may be necessary to refer work to other laboratories or consultants. The department routinely sends work to the following organisations:

Reference Laboratory
Haemophilia Reference Centre St Thomas' Hospital, Lambeth Palace Rd, London, SE1 7EH
Haemophilia Reference Centre Royal Free Hospital, Pond Street, London, NW3 2QG
Red Cell Reference NHSBT Colindale, Charcot Road, Colindale, London NW9 5BG
H&I NHSBT Colindale, Charcot Road, London NW9 5BG
IBGRL NHSBT Bristol, 500 North Bristol Park, Northway, Filton, Bristol, BS34 7QH
Red Cell Reference NHSBT Bristol, 500 North Bristol Park, Northway, Filton, Bristol, BS34 7QH
H&I NHSBT Bristol, 500 North Bristol Park, Northway, Filton, Bristol, BS34 7QH
Haematology Great Ormond Street Hospital, Great Ormond St, London WC1N 3JH
Haematology, St Thomas' Hospital, Lambeth Palace Rd, London, SE1 7EH
National Haemoglobinopathy Reference Laboratory Molecular Haematology Level 4, John Radcliffe Hospital, Oxford 0X3 9DU.
Haematology- Central Middlesex Hospital Acton Lane, Park Royal NW10 7NS
Special Haematology- Kings College Hospital Denmark Hill, London SE5 9RS
The Royal Marsden Hospital, Section of Haemato-Oncology, Brookes Lawley Building Cotswold Road, Sutton Surrey SM2 5NG
N.W. Thames Regional Genetics Centre Northwick Park Hospital, Watford Road, Harrow, Middlesex, HA1 3UJ
The Bone Marrow Laboratory CameliaBotnar Laboratories Great Ormond Street Hospital, Great Ormond St, London WC1N 3JH
London School of Hygiene and Tropical Medicine Keppel Street,WC1E 7HT
Haematology Department, Special Section, 3rd Floor Accident and Emergency Building, University College Hospital, Grafton Way, London, WC1E 6DB (Globin Chain Biosynthesis)
Membrane Biochemistry, International Blood Group Reference Laboratory, NHS Blood and transplant North Bristol Park, Northway, Filton, Bristol, BS34 7QH (Red Cell Membrane Protein Analysis)
Purine Research Laboratories, Guy's Hospital, 5th Floor, Thomas Guy House, London Bridge, London, SE1 9RT.(Red Cell Nucleotide Profile (& P-5'-N)
Department of Medicine, University College London, Rayne Building, University Street, London, WC1E 6JF (Intracellular Cation (& Flux) Studies)
Wessex Regional Genetics Laboratory – Salisbury District Hospital Odstock Road, Wiltshire, SP2 8BJ.

Please refer to UKAS website for details of accreditation

BLOOD TRANSFUSION

Requests for Blood Transfusion and Collection of Blood Samples for Pre-Transfusion Testing
Doctors should complete the transfusion request forms generated from OCS. If this task has been delegated then the person completing the form must put their identity on the form so that they can be contacted to discuss any issues if required.

The request form must contain full patient identification details i.e. surname, first name, date of birth and the hospital identification number. The request form must also give:

- The location of the patient at the time of request.
- Information about past obstetric and transfusion history including details of known red cell antibodies or previous transfusion reactions if applicable.
- The patient's diagnosis.
- The reason for the request.
- The name and contact bleep or phone number of the doctor making the request.

If a transfusion is requested the number and type of blood or blood components, including any special requirements and the time and date required must be included on the request form.
Note: Non – OCS request forms will be refused unless OCS is down

Emergency Transfusions

All emergency requests for blood and blood components must be discussed with the scientific staff in the Blood Transfusion Laboratory and, if necessary, the Haematology Specialist Registrar (see telephone requests section).

Bleeding patients should be managed by the patient's clinical team following assessment of patient. The Major Haemorrhage Protocol should be activated if required (algorithms on display in clinical areas and available in the blood transfusion guidelines).

Collection of Blood Samples

Staff that collect samples for pre-transfusion testing must have undergone appropriate training. The Blood Transfusion Laboratory is able to supply blood at short notice (approximately 10 minutes) by electronic crossmatch provided there are no clinically significant antibodies present. In order for the electronic crossmatch to be carried out it is mandatory that the Blood Transfusion Laboratory should have a minimum of two independently taken blood samples, which are grouped and screened for alloantibodies. It is desirable that the latter sample be submitted between 24 and 48 hours prior to the surgery. However, provided that the first sample has shown no alloantibodies, it would be permissible for the second sample to be submitted at the time of admission for the surgery.

Patient Identification

Positive identification of the patient is essential based on:

- Questioning the patient by asking their surname, first name and date of birth, in the case of patients who are judged capable of giving an accurate, reliable response. The information given should be checked to ensure it matches exactly that on the request form.
- On the ward, checking that the details on the patient's identification wristband match those on the request form and the answers to the questions above.
- Ask the patient to positively identify themselves against the label for Group & Save against the written label on the blood bottle.

NB.If the wristband is removed, for example to insert a cannula, it is the responsibility of the person removing the wristband to replace it.
All patients receiving a blood transfusion MUST wear an identification wristband.

Sample Labelling

The sample tube must be labelled immediately after the blood has been added, by the person taking the sample:

- Sample tubes *must not* be pre-labelled.
- Addressograph labels *must not* be used for sample labelling.

For Blood transfusion all samples sent to NWL Pathology laboratories must have four identifiers- forename or unique alternative, surname or unique identifier, Date of Birth and Hospital number. In addition to the identifiers the sample must also be labelled with the sample collection date and initials or signature of collector if it is to be accepted by the laboratory.

In the situation of an unconscious patient, the patient should be registered as unknown male/female, DOB NK, and a request made via OCS.

Note: At St. Mary's trauma centre the patient will have an alias instead of "Unknown Female/male" comprised of a place name and phonetic alphabet character. DOB for unknown adult patients is 01.01.1900. DOB for unknown paediatric patients is today's date. Please refer to specific Trauma centre naming protocol.

Telephone Requests

Telephone requests for crossmatches *should* be made by the doctor involved. If in an emergency situation this is not possible this task can be delegated. The identity of the person making the request and the doctor who authorised them to do so will be recorded by the laboratory. The person to whom the task has been delegated must be able to provide the following required information.

1. Patient identification number, patient's surname and first name
2. Location
3. The number and type of blood and / or blood components required, including any special requirements
4. The reason for the request
5. The time and date the blood and / or blood components are required

Notice Required for Provision of Blood

Samples for elective surgery must be delivered to the Blood Transfusion Laboratory no later than 17.30pm on the day prior to surgery or 11.00 on a Sunday for Monday morning lists. Between 17.30 and 9.00 on weekdays and on Saturday, Sunday and Bank Holiday afternoons, ONLY emergency work will be accepted.

If requesting blood at short notice, please contact the Blood Transfusion Laboratory directly on the extensions listed above or, if out of hours, bleep out of hours staff (numbers listed above).

PROTOCOL FOR COLLECTION OF BLOOD AND / OR BLOOD PRODUCTS FROM THE BLOOD ISSUE FRIDGE

The person collecting the blood and / or blood products (usually a porter, a nurse or a doctor) must be trained and familiar with this procedure. This is particularly important out of hours when the laboratory staff may not be available to help.

ADMINISTRATION OF BLOOD AND BLOOD COMPONENTS

Prescription of Blood and Components

The prescription of blood and blood components is the responsibility of *the doctor.* The prescription should be written on the "continuous or intermittent intravenous therapy" section of the drug chart and it is essential that this sheet should contain the patient identification details.

The prescription must specify:

- The blood or blood component to be administered, including any special requirements e.g. irradiated, CMV seronegative, Hep E negative. (Form in Blood Transfusion on Intranet)
- The quantity to be given, for paediatrics the rate and the volume in mls must be written
- The duration of the transfusion (usually 3 hours for red cell concentrate and 30 minutes for an adult pool of platelets or a unit of FFP)
- Any special instructions including any medication required before or during the transfusion e.g. diuretic cover.

NB. Blood transfusions must be treated like any other prescription. Patients (or relatives) should be informed of the indication for the transfusion, its risks and benefits. Signed consent is not required. An information leaflet is available from Blood Transfusion. It is strongly recommended that the indication for the transfusion is stated in the hospital notes. For patients undergoing invasive procedures the blood transfusion statement on the consent form must be highlighted.

THE CARE AND MONITORING OF TRANSFUSED PATIENTS

Patients receiving blood transfusions should be monitored for signs of the potential complications of transfusion and any suspected problems dealt with swiftly and efficiently.

Severe reactions are most likely to occur during the first 15 minutes of the start of each unit and patients should be most closely observed during the period.

- Only staff appropriately trained should be responsible for the care and monitoring of transfused patients
- Patients should be instructed to report any adverse effects such as shivering, rashes, flushing, shortness of breath and pain in the extremities or in the loins
- Transfusions should only be given in clinical areas where patients can be readily observed by members of the clinical staff and where resuscitation facilities are available
- The start and finish times of the infusion of each unit should be clearly indicated on the observation charts
- The guidelines for the Management of Transfusion Reactions can be found on the hospital Intranet.

ANTICOAGULANT CLINIC

Referrals to the anticoagulant clinic: (St Mary's Hospital ONLY)

An appointment will be made according to the degree of urgency when the referral form is received. Please ensure that it includes all the essential information. All patients will first be seen in St Mary's then depending upon their post code, they will be followed up in either St Mary's Hospital (Mon am or Thurs pm), St Charles Hospital (Tuesday all day), or Queens Park Clinic (Wed pm).

If the patient is to be referred to the Anticoagulant clinic, please take the following steps:

Complete the appropriate referral form for the anticoagulant clinic, completing all the required information (to avoid delay in allocating anticoagulant clinic appointment) and fax it to 23386, for the attention of the anticoagulant nurse specialist.

1. Make sure that an anticoagulant clinic appointment has been obtained prior to discharge (phone X 26033). If an appointment is not available, it is your team's responsibility to continue monitoring the INR until such an appointment is secured.
2. Before discharge, ensure the patient knows what the warfarin tablets are, and the dose he/she is taking.
3. Issue a yellow anticoagulant booklet in which you have written the last INR result, date and the Warfarin dose on discharge.
4. The Ward Pharmacist, as part of the normal daily ward Pharmacy visit, will check that the yellow anticoagulant booklet is completed and counsel the patient on points to remember when taking Warfarin.
5. Instruct the patient to bring the yellow anticoagulant booklet to the clinic.

THE MANAGEMENT OF PATIENTS NEWLY STARTED ON WARFARIN

Note: This procedure is not applicable to patients at Chelsea & Westminster Hospital. Separate guidelines for starting anticoagulation with warfarin are available on the Chelsea & Westminster intranet.

If the patient is on Heparin (UFH or LMWH) allow at least 3 days overlap and do not stop the heparin until warfarinisation is adequate.
Day 1 of warfarin: Prescribe 5mg
Day 2 of warfarin: Prescribe 5mg
Day 3 of warfarin: Request INR on a blood sample taken at 10am (together with APTT for UFH control). Prescribe the third dose of 5mg warfarin for 6pm
Day 4 of warfarin: Request INR on a blood sample taken at 10am.
Prescribe maintenance dose according to the following schedule:

INR	WARFARIN DOSE
<1.4	10.0mg
1.4	8.0mg
1.5	7.5mg
1.6 1.7	7.0mg
1.8	6.5mg
1.9	6.0mg
2.0 – 2.1	5.5mg
2.2 – 2.3	5.0mg
2.4 – 2.6	4.5mg
2.7 – 3.0	4.0mg
3.1 – 3.5	3.5mg
3.6 – 4.0	3.0mg
4.1 – 4.5	Miss out one dose then give 2mg
<4.5	Miss out 2 doses then give 1mg

Warn the patient not to take aspirin or Ibuprofen

PATHOLOGY POINT OF CARE TESTING SERVICE

DESCRIPTION OF SERVICE

Pathology Point of Care Testing (POCT) specialty provides support for POCT services across Imperial College Healthcare NHS Trust and at Partnership Trusts (e.g. Chelsea and Westminster NHS Foundation Trust).

Pathology is mainly involved in the management and support for POCT services. The scope of Pathology POCT service provision includes (though not exclusively) advice on appropriateness of POCT, POCT device procurement, POCT device evaluation/verification, clinical advice, quality assurance, staff training and competency, production of POCT policies and procedures in line with relevant standards, auditing and overall implementation of the POCT quality management system.

The Pathology POCT team works with clinical staff to ensure the POCT quality management system is implemented and embedded across all clinical areas. The POCT team provides regular reports to the relevant Trusts' POCT Committee which is the POCT management group with overall responsibility for POCT.

KEY PERSONNEL/CONTACT NUMBERS

The POCT Specialty is consultant-led and the POCT Manager is responsible for the operational management and safe delivery of the service. The POCT Manager is supported by five POCT Site Leads.

Position	Name& Email	Tel No	Bleep
POCT Specialty Lead	Prof. Tricia Tan tricia.tan@nhs.net	020 838 38038/ 33380	-
POCT Manager	Gareth John gareth.john4@nhs.net	020 331 17077	-
POCT Lead, St. Mary's (Blood Sciences)	Somia Janjua Somia.janjua@nhs.net	020 331 21320	1021 (09:00-17:30) 1022 (17:30-09:00)
POCT Lead, Charing Cross (Blood Sciences)	Sultana Hoque Sultana.hoque@nhs.net	020 331 17077	(mob) 07342 062382
POCT Lead, Hammersmith (Blood Sciences)	Vacant	020 331 32446	(mob) 07342 062470
POCT Lead, Chelsea and Westminster (Blood Sciences)	George Yartey gyartey@nhs.net	020 331 55135	0143
POCT Lead (Infection and Immunity)	Hitesh Mistry hitesh.mistry2@nhs.net	020 331 10173	-
POCT team	imperial.nwlp.poct@nhs.net		

ROUTINE SUPPORT

Routine hours – 09:00-17:30* Monday to Friday
*core hours are 09-15:30 please contact site POCT lead to confirm.

Routine support for POCT services is coordinated by a team of POCT Site Leads and a POCT Manager (see Key Contacts above).

OUT OF HOURS SUPPORT

Out of hours:
17:30 – 09:00 Monday-Friday
Saturday, Sunday and Bank Holidays

Limited support (via telephone) is provided out of hours via the Duty BMS in Biochemistry Laboratories across all sites. Contact details tabulated below:

Site	Tel No
St. Mary's Hospital	Duty BMS – 020 331 23752 or bleep 1022
Charing Cross Hospital	Duty BMS – 020 331 17004 or bleep 8161
Hammersmith Hospital	Duty BMS – 020 331 32113 or bleep 9022
Chelsea and Westminster Hospital	Duty BMS – 020 331 55133 or bleep 0143
West Middlesex University Hospital	Duty BMS – 0208 321 5930 or bleep 337
The Hillingdon Hospital	Duty BMS – 01895 279288 or bleep 5602

GENERAL ENQUIRIES

All general enquiries regarding POCT should be directed to the relevant POCT Site Lead (see Key Contacts above). Alternatively, please contact the POCT team email address imperial.nwlp.poct@nhs.net

CLINICAL ADVICE

Clinical advice for POCT is available from Prof. Tricia Tan, POCT Specialty Lead and Consultant in Metabolic Medicine and Endocrinology.

Clinical advice for Virology-related POCT devices is available from Dr David Muir, Consultant Virologist (ext. 10134).

ADDITIONAL INFORMATION

More information on POCT is available on the 'Point of Care Testing' page of the Trust Intranet and in POCT equipment standard operating procedures (SOPs). Important information regarding procurement, training, operation, health and safety and quality assurance aspects of POCT devices including the key responsibilities of pathology staff and clinical users are detailed in the Trust POCT Policy which is also available on the intranet.

INFECTION & IMMUNITY SCIENCES – Immunology, Virology and Microbiology

DESCRIPTION OF SERVICES

Infection & Immunity Sciences at North West London Pathology consists of three laboratories, Microbiology, Infection & Immunity (I&I, consisting of the specialities of Clinical Immunology, Virology/Microbiology Serology) and Histocompatibility & Immunogenetics (H&I).

Infection & Immunity Laboratory

The Department provides a comprehensive, consultant led service for both Clinical Immunology and Virology. The Immunology service assists in the investigation, diagnosis and monitoring of patients with allergies, immunodeficiency and autoimmune diseases; the monitoring of patients about to and receiving immunosuppressive therapies. It also provides a wide range of Virology and Microbiology Serology diagnostic services including serological investigation and virus detection including molecular and antigen detection methods.
A comprehensive service for HLA typing, HLA cross-matching and HLA antibody screening is provided for renal and stem cell transplant patients and donors, as well as HLA disease association at the Hammersmith Laboratory.

Microbiology Laboratory

The Microbiology Service is provided from laboratories based on the 4th Floor Laboratory Block, Charing Cross Hospital while the Microbiology Serology service, while co-managed by Microbiology, is provided from the Department of Infection & Immunity as stated above.

The department provides a full range of diagnostic services including bacterial culture, parasite identification, mycological services and TB microbiology.

Clinical and Specialty Leads

The Clinical Lead for Infection and Immunity Sciences is Dr. Peter Kelleher who is also the specialty lead for Immunology. Dr. Hugo Donaldson is the specialty lead for Microbiology while Dr. David Muir is the specialty lead for Virology.

Additional Information

See the following individual specialty sections for additional information including contact details of key personnel within each department, the repertoire of tests and requirements and expected turnaround times.

INFECTION & IMMUNITY LABORATORIES: IMMUNOLOGY, VIROLOGY& MICROBIOLOGY SEROLOGY

LOCATION

The Infection & Immunity laboratory is mainly based on the 9th floor Laboratory Block, Charing Cross Hospital where the Clinical Immunology, Virology and Microbiology Serology services are provided. The Histocompatibility and Immunogenetics laboratory (H&I) is located on the 1st and 2nd Floor of the G Block Laboratories at Hammersmith Hospital.

DESCRIPTION OF SERVICE

The laboratory provides a comprehensive, consultant led service for both Clinical Immunology and Virology. The Immunology service assists in the investigation, diagnosis and monitoring of patients with allergies, immunodeficiency and autoimmune diseases; the monitoring of patients about to and receiving immunosuppressive therapies. It also provides a wide range of Virology and Microbiology Serology diagnostic services including serological investigation and virus detection including molecular and antigen detection methods.
A comprehensive service for HLA typing, HLA crossmatching and HLA antibody screening is provided for renal and stem cell transplant patients and donors, as well as HLA disease association at the Hammersmith Laboratory

Clinical advice for Immunology is available from Dr Peter Kelleher, Clinical Senior Lecturer and Honorary Consultant Immunologist and from Dr David Muir for Virology. H&I Consultant advice is available from Dr Peter Kelleher as above.

For clinical advice on Microbiology Serology tests, please contact the site specific Microbiology consultants (See the Microbiology key personnel/contact numbers section.)

The main work streams of the department are: -
1. Histocompatibility and Immunogenetic (H&I) testing.
2. Autoimmunity and immunochemistry
3. Immunodeficiency and immune monitoring.
4. Viral Serology.
5. Microbiology Serology
6. Molecular Virology testing.

The Laboratory Service is accredited through the UKAS and the H&I laboratory is also accredited through EFI. The laboratory participates in NEQAS and other external quality assurance schemes and it has a comprehensive internal quality assurance and control procedures.

The routine service laboratory is backed by active research programmes into allergy, HIV infection, immune deficiency, vaccine responses, immune function, cytokine regulation, and transplantation. HISS and the Immunology Requests display the range of common tests requested. Reports will quote age- and sex-related reference ranges where appropriate. Please note that it is necessary to pre-arrange certain highly specialised tests.

KEY PERSONNEL / CONTACT NUMBERS

NWL Pathology Clinical lead & Clinical Immunology Specialist lead is Dr Peter Kelleher. Virology Specialist Lead is Dr. David Muir. The H&I Laboratory Director is Dr Arthi Anand.

Site	Contact	Name	Tel No.	Other
Cross Site	Divisional Manager	Dr. Panos Pantelidis	17262 / 10136	via Switchboard
	Lead Clinician Infection & Immunity / Consultant Immunologist	Dr Peter Kelleher	10131 / 10149	
Charing Cross *(Clinical Immunology & Virology)*	General Laboratory Enquiries		10130	
	Consultant/ Virology Speciality Lead	Dr. David Muir	10134	via Switchboard
	Consultant Virologist	Dr. Paul Randell	10135	
	Consultant Clinical Scientist	Dr. Mary Guckian	10136	
	Specialist Scientist	Dr. Alison Cox	10141	
	Specialist Scientist	Graham Pickard	10147	
	Specialist Scientist	Dipti Patel	10145	
	Infection and Immunity Sciences Governance & Quality Manager	Nicola Mandikate	15175	
Hammersmith *(H&I)*	H&I Consultant Clinical Scientist, Lab Director	Dr Arthi Anand	37139	
	Specialist Scientist	Eva Santos	33226	
	Specialist Scientist	Rachel Smith	38211	

LABORATORY HOURS

Monday to Friday 9am to 5.30pm. There is no Saturday or emergency (on-call) service for Clinical Immunology at Charing Cross. See below for out of hour's service for Virology. The Hammersmith H&I laboratory provides a 24 hour on call service for the renal transplant programme and can be contacted through switchboard. The consultant for each speciality is available for advice on further investigation, interpretation of results and management. If not in the department the consultant can be contacted through switchboard.

TEST REQUESTING

Requests must be made using electronic ordering where available. The name and bleep number of the requesting doctor must also be completed. Ward Order Entry should ensure that these requirements are met. The inclusion of brief clinical details greatly assists with interpretation of results. Also, knowing if the Immunology tests are being used for diagnosis or monitoring of the patient helps.

Label the specimens carefully and completely – Unlabelled specimens will NOT be tested.

ADDITIONAL/ADD-ON TESTS

If additional Virology tests are required after the specimen has been sent, a Medical Virologist must be contacted on extensions 10134, 10135,10138, 10139, or via switchboard. Samples are stored according to Royal College of Pathology guidelines and local policy and additional tests can only be added within these standard retention times. These are currently 6 weeks for plasma and serum (two years for antenatal booking blood and needle stick sera), 6 weeks for body fluids and aspirates and one month for swabs.
If additional Immunology tests are required, please note that all serum samples are retained for approximately one month. Further tests may be requested by contacting the laboratory.

If a sample has been sent as a serum save request, this will be retained for one year unless the laboratory is contacted by the requestor and informed otherwise.

TRANSPORT AND STORAGE

If samples cannot be transported to the laboratory the same day, they should be stored at +4^{o}C to avoid deterioration EXCEPT for TB ELISPOT, quantiferon, lymphocyte subsets (LSS) and T cell subsets (TSS) T cell activation (TMARK) and primary immunodeficiency panel (TMEM and BMEM) and Neutrophil/Lymphocyte Function Tests, and complement genetics (CGENA) which should be send immediately to the laboratory and should not be stored at +4^{o}C. Please see comments under specific Immunology test heading below and in the table of Virology tests repertoire for any additional requirements

URGENT REQUESTS AND RESULTS

Please contact Dr. Alison Cox (10130) at the centralised immunology laboratory to discuss requirements for urgent Immunology samples or for the H&I Hammersmith laboratory, Dr. Arthi Anand (37139) or Eva Santos-Nunez (33226).

If there is a clinical indication for urgent Virology testing, then it can be arranged via a medical virologist. Simply ring the medical virologist AT THE TIME OF REQUESTING with a valid clinical indication for urgent testing, so that an accurate availability and further arrangements can be discussed.

All urgent results will be telephoned to the wards. When requesting results by telephone please give your name and position, have the patient's unit number and date of birth available and indicate when the sample was taken. The requesting MO should clearly write their name and extension/bleep/pager number so they can be contacted easily when results are available, or if further information is required to select the most appropriate tests. When required, results can be emailed using nhs.net account to encrypted email address.

ON-CALL / OUT OF HOURS SERVICE FOR VIROLOGY

Out of hours service for Virology is by special arrangement with the Consultant Virologist and is performed off site. Following agreement with the duty Consultant Virologist, certain on-call virology tests will be provided by the King's College Hospital Virology Department,

1. Discuss case with duty Consultant Virologist who will provide a contact number for the King's Virology Service.
2. Arrange for a courier to transport the sample to:

   South London Specialist Virology Centre
   Health Protection Agency London Regional Laboratory
   King's College Hospital NHS Foundation Trust
   2nd floor, Cheyne Wing
   Bessemer Road
   Denmark Hill, London SE5 9RS
   Tel: ++44 203 299 6155

The request should contain, relevant clinical information and *a contact telephone and/or bleep number for the result*

CLINICAL ADVICE

Clinical advice for Immunology is available from Dr Peter Kelleher, Clinical Senior Lecturer and Honorary Consultant Immunologist. H&I Consultant advice is available from Dr Peter Kelleher as above and from Dr David Muir for Virology.

Get clinical help early by contacting a Medical Virologist, or by contacting the Infectious Diseases team. Advice is available on differential diagnosis, specimens required, and treatment and control of infection measures.

IMMUNOLOGY TEST INFORMATION

For specimen requirements see the pages below. Most serological tests can be performed on 5-10ml of clotted blood with gel separator, *which should be taken separately from samples for chemistry and protein tests*. Please call the laboratory for instructions on taking samples for lymphocyte and T cell subset analysis (usually taken into EDTA tubes), lymphocyte and neutrophil function tests (usually taken into heparin), and functional complement tests (need to avoid rapid decay of complement). *Some tests are only performed after consultation, may require special instructions and may need to be pre-booked into the laboratory to ensure personnel and reagents are available. If in doubt – please ask.* Senior staff screen requests and lack of clinical information may result in delays or test requests being rejected.

St Mary's Site Specialist Immunology tests

All samples should be delivered to Clinical Biochemistry. The following labile tests will be forwarded on for processing to the Immunology section of the Department of Infection & Immunity, Charing Cross.

(1) Flow cytometry : T cells, T cell activation T/B/NK cells. PID panels
(2) Lymphocyte proliferation
(3) Neutrophil function tests
(4) C1 inhibitor tests
(5) CH50 and AP50.
(6) T-Spot-T (IGRA) assay
(7) Quantiferon (IGRA) assay

Arrangements for the delivery of Immunology specimens to the laboratory are as follows:

Lymphocyte subset analysis

- Samples must be sent to Specimen Reception at Clinical Chemistry for onward transport to Charing Cross.
- Samples cannot be processed if received after 13.00 on Fridays to be transported to the processing lab.
- Samples should be sent immediately to the laboratory and be kept at room temperature until transportation.

TB ELISPOT

- Tests are run Monday to Friday but those taken on Fridays *must* be received in Specimen Reception at Clinical Chemistry on non-Charing Cross sites before 12:15 to ensure transportation to the Immunology lab at Charing Cross by 14.00. This is a two day assay that needs to be performed on freshly taken blood samples; hence Friday samples cannot be processed if received after 14.00 in Immunology.
- Samples should be sent immediately to the laboratory and be kept at room temperature until transportation.
- Samples must be received in Immunology at Charing Cross within 24 hrs. of venesection.

Quantiferon

- For Quantiferon test, please take 2 x lithium heparin samples.
- Samples must be received in the Infection & Immunity lab at Charing Cross by 16.30 on Monday to Friday.
- Ensure enough time for transportation, see local transport times.
- Samples should be sent immediately to the laboratory and be kept at room temperature until transportation.

Cellular function assays

- These must be agreed with consultant immunologist
- They need to be pre-booked into the laboratory so that personnel and reagents are available to process
- Samples must be received in the lab by 13.30 on days agreed with the laboratory.
- Please telephone extension 10130to arrange these tests

Routine immunology samples

- All other samples for immunology should be sent to clinical chemistry at SMH where they will be couriered to the centralised immunology laboratory

Other Imperial Sites (Hammersmith, Charing Cross)

Samples should be delivered to the shared Specimen Reception areas (Client Service Units)

Lymphocyte subset analysis

- Samples cannot be processed if received in Client Service Units after 13.00 on Fridays
- Samples must be received in Immunology on day of venesection
- Samples should be sent immediately to the laboratory and be kept at room temperature until transportation.

TB ELISPOT

- Tests are run Monday to Friday but those taken on Fridays *must* be received in Specimen Reception at Clinical Chemistry on non-Charing Cross sites before 12:15 to ensure transportation to the Immunology lab at Charing Cross by 14.00. This is a two day assay that needs to be performed on freshly taken blood samples; hence Friday samples cannot be processed if received after 14.00 in Immunology.
- Please ensure enough time for samples to be couriered to the centralised Immunology laboratory.
- Samples must be received in Immunology at Charing Cross within 24 hrs. of venesection.
- Samples should be sent immediately to the laboratory and be kept at room temperature until transportation.
- Contact Immunology on extension 10130if blood tubes are required

Quantiferon

- Samples must be received in Infection & Immunity laboratory at Charing Cross by 16:30 on Monday to Friday.
- Please ensure enough time for samples to be couriered to the centralised Infection & Immunity laboratory.
- Samples should be sent immediately to the laboratory and be kept at room temperature until transportation.
- Samples must be received in Infection & Immunity on day of venesection.

Cellular function assays

- These must be agreed with consultant immunologist
- They need to be pre-booked into the laboratory so that personnel and reagents are available to process
- Samples must be received in Immunology on days agreed with the laboratory.
- Please telephone extension 10130to arrange these tests

Routine immunology samples

- All other samples for immunology should be sent to the client service units on each site where they will be couriered to the centralised immunology laboratory

INTERPRETATION OF RESULTS

The consultants and senior laboratory staff are available to answer queries and assist in the interpretation of results. If you are unsure of the most suitable tests to be performed, please discuss BEFORE taking the sample.

Immunodeficiency

Diagnosis of immunodeficiency requires a low clinical threshold and specialist investigations. Basic first line tests include FBC (neutrophil and total lymphocyte counts) and serum immunoglobulins (IgG, IgA and IgM). In an adult with recurrent infections and low immunoglobulins, perform a serum electrophoresis to rule out secondary causes for hypogammaglobulinaemia such as myeloma.

In patients with recurrent infections, the nature of the organism can hold clues about the nature of the underlying defect. In cases where opportunistic infections such as pneumocystis, non-tuberculous mycobacteria or disseminated viral or fungal infections are present, a cellular immunodeficiency should be suspected. Secondary causes such as HIV and medications should always be ruled out before considering a primary immunodeficiency. Monitoring T cell subsets in HIV positive patients is

performed in immunology. In cases where the patient is HIV negative, please discuss with the immunology lab and perform T, B and NK subsets (not T cell subsets).

A child under 2 years of age with a low T cell count should be considered to have a severe combined immunodeficiency until proven otherwise. For these cases only CMV negative irradiated blood products should be given and all live vaccines should be avoided. Further specialist tests on these cases should be discussed with the immunology consultant Dr Peter Kelleher 58246.
In cases where there are encapsulated organisms such as Haemophilusinfluenzae (HIB), Neisseria meningitides or Streptococcus pneumoniae causing infection, both serum immunoglobulins, functional antibodies (to tetanus and HIB) and CH50/AP50 (classical and alternative complement pathways) should be tested. In addition, patients who do not respond appropriately to anti-microbial agents may need further investigation. Other presentations such as hepatic abscesses or deep-seated staphylococcal or fungal infection should be tested for neutrophil function after discussion with the immunology consultant Dr. Peter Kelleher.

Functional antibodies (such as anti-Hib and anti-tetanus) antibodies give information about the response to immunisation. If low the patient should be immunised and the post-immunisation levels checked after a minimum of four weeks.

Angioedema

Some patients develop angioedema without urticaria. In these cases where medications have been excluded as a cause, another possible underlying cause is C1 inhibitor deficiency, which may be inherited (called hereditary angioedema or HAE) or acquired (usually secondary to lymphoproliferative conditions or autoimmunity). A good screening test is to check the C4 level, which will be low. In cases where the C4 is low, C1 inhibitor deficiency should be ruled out. For this, please telephone the laboratory (X58243) to arrange C1 inhibitor testing.

SUGGESTED PROFILES FOR IMMUNOLOGY - Immune Deficiency

HIV Infection Monitoring	T cellsubsets (CD3 / CD4 / CD8) *
Antibody Deficiency	IgG, IgA and IgM [Chemical Pathology Test] Serum protein electrophoresis [Chemical Pathology Test] Vaccine-specific antibodies (Tetanus, Hib, Pneumococcal)
Hereditary Angioedema (C1 inhibitor deficiency)	C3 and C4 C1 inhibitor (antigenic and functional) ** [only, if C4 low]
Other Complement Deficiencies (e.g. C1q, C2, C5-C9)	C3 and C4 CH50 *** and AP50 *** Individual complement proteins (e.g. C1q, C2, C5-9) can be measured if the CH50 and/or AP50 results are abnormal
Other Immunodeficiencies Direct Request	Investigations for possible defects of: : B cell memory/T cell memory, Antibodies, T cells, Phagocytes, Complement, IL12-IFN gamma pathway etc - Discuss with the Consultant Immunologist for the appropriate test selection for individual patients

*Samples can only be processed within 24 hours of collection.
** Samples can only be processed within 8 hours of collection. If the C4 level is normal C1 inhibitor levels will not be tested unless discussed with consultant immunologist
*** Samples can only be processed within 1 hour of collection.
For the tests in bold font, please ensure prompt delivery directly to the Immunology Laboratory.

Connective tissue diseases

The immunology laboratory has a useful part to play in the diagnosis (and in some cases monitoring) of patients with connective tissue diseases. ANA (anti-nuclear antibodies) are classically positive in SLE, but can also be seen in other connective tissue diseases such as scleroderma, Sjogren's and mixed connective tissue diseases. The significance of the results of these tests however depends on the pre-test probability of a connective tissue disease being present and it is important to remember that a positive ANA alone does not give a diagnosis. In a healthy population up to 5% of adults have a positive ANA, and the incidence of such non-specific ANAs rises with age. ANA can be positive in infections, autoimmune liver disease and can become positive as a result of medications (e.g. anti-TNF therapy). If the patient has features of a connective tissue disease and has a positive ANA then further testing should be done. These include antibodies to ENAs (extractable nuclear antigens) and dsDNA (double-stranded DNA). High levels of dsDNA are seen in SLE (often accompanied by Lupus Anticoagulant and anti-cardiolipin antibodies).

Disease associations with the common ENAs are shown below

Ro (SS-A) and La (SS-B)	SLE, Sjogren's syndrome, congenital heart block or neonatal lupus
Sm	SLE
RNP	Mixed connective tissue diseases
Scl-70	Systemic sclerosis and pulmonary fibrosis
Jo-1	Polymyositis/dermatomyositis

Once a patient develops antibodies to ENAs, these are unlikely to change unless the patient has a major change in clinical features.

Organ-specific autoimmune hepatitis

For patients with suspected autoimmune hepatitis an LKS screening test should be performed. Positive sera will be reflex tested to classify the disease. For patient with B12 deficiency the GPC (gastric parietal cell) antibodies will be present in the majority, although GPC antibodies can be found in other autoimmune conditions. The more specific test is anti-IFA (Intrinsic Factor antibody), which can be found in 60% of patients with pernicious anaemia.
Anti-mitochondrial antibodies are seen in Primary Biliary Cirrhosis, and other liver antibodies such as smooth muscle and anti-LKM (liver kidney microsome) are seen in autoimmune hepatitis.

Rapidly progressive renal failure and vasculitis

In acute renal failure that may be secondary to vacuities, tests that should be performed are ANCA (anti-neutrophil cytoplasmic antibody) and anti-GBM (anti-glomerular basement membrane antibody). Other tests that should be considered include rheumatoid factor, C3, C4, ANA and cryoglobulins.

- Anti-GBM antibodies are positive in almost all cases of Goodpastures syndrome and anti-GBM disease.
- ANCA positive vasculitis can be either cANCA (with anti-PR3 antibodies) or pANCA (with antibodies to MPO). These positive results are associated with Wegener's granulomatosis (cANCA and PR3 positive) or small vessel vasculitis (pANCA and MPO).

It is important to contact the laboratory in cases where an underlying vasculitis is suspected, as this will enable the laboratory to prioritise these samples, thereby guaranteeing rapid results. Please note a negative ANCA cannot exclude an underlying vasculitis.
As with ANAs the usefulness of an ANCA result depends on a high pre-test probability of a vasculitis being present. ANCAs can be seen in infection and are very common in inflammatory bowel disease. In these non-vasculitic settings, the ANCA can be either apANCA (most commonly), pANCA or an atypical ANCA, and can be MPO or PR3 positive.

Coeliac Disease

Anti-tTG (anti-tissue transglutaminase) and anti-endomysial antibodies are the serological tests for coeliac disease and dermatititisherpetiformis. These antibodies are of the IgA isotype and therefore false negatives can occur in IgA deficiency (IgA <0.07 g/L). In IgA deficiency (1/700 of the population), a negative anti-tTG result is unhelpful and biopsy is recommended.

Thyroid Disease

Autoantibody testing in thyroid disease is used to predict those patients who will go on to develop overt thyroid disease. The detection of such antibodies in asymptomatic patients should therefore lead to a high index of suspicion for thyroid disease, and a low threshold for requesting thyroid function tests when the patient presents with symptoms. It may be worth screening the thyroid annually.

Autoimmune thyroid disease is strongly associated with pernicious anaemia and vice versa. More rarely, thyroid disease may be associated with Addison's disease in addition to pernicious anaemia.

SUGGESTED PROFILES IMMUNOLOGY - Autoimmune / Connective tissue Disorders

Rheumatoid Arthritis	Rheumatoid Factor CCP
Connective Tissue Diseases (SLE, Sjogrens, MCTD etc)	C3 and C4 Rheumatoid Factor Anti nuclear antibodies ds DNA antibodies ENA antibodies
Vasculitis	C3 and C4 Rheumatoid Factor Anti nuclear antibodies Anti neutrophil cytoplasmic antibodies
Liver Autoimmunity	Anti nuclear antibodies Mitochondrial antibodies Smooth muscle antibodies Liver-Kidney-Microsomal Antibodies
Renal Autoimmunity	C3 and C4 [Chemical Pathology test] Anti nuclear antibodies Anti neutrophil cytoplasmic antibodies Glomerular Basement Membrane antibodies C3 Nephritic factor where indicated
Coeliac disease	Tissuetransglutaminase (IgA) Total IgA
Thyroid disease	Thyroid peroxidase antibodies Thyroid hormone stimulating antibodies

Allergy tests

These tests should be used as an adjunct to skin prick tests. For IgE-mediated allergy a detailed history should be taken to guide the clinician as to which tests to request. In the case of peanut, egg white and cow's milk, specific IgE tests are useful, but for some allergens such as wheat, soya, fruits and drugs (e.g. penicillin), specific IgE tests are not very useful. Requests for multiple allergens and "rare" allergens are discouraged, as the tests are expensive and the results can be very difficult to interpret. False positive specific IgE results can occur in patients with very high total IgE levels (such as eczema patients with IgE>5000KUA/L). Therefore low positive specific IgE results in such patients should be interpreted with caution.

The most useful of these are:

Aeroallergens	House dust mite Grass Pollen (Timothy Grass) Mixed Trees (Box-elder, Silver Birch, Hazel, Oak, London Plane) Cat dander Dog dander Aspergillusfumigatus
Common foods	Peanuts (ground nuts) Fish (cod) Milk Egg Wheat
Insect Venom	Bee Wasp
Drugs	Penicillin G & V
Occupational	Latex

Anaphylactic/Anaphylactoid Reactions (including Anaesthetic Reactions)

Contact the Immunology Laboratory immediately. If outside laboratory hours, collect 5-10ml of Clotted blood with gel separator (gold topped tube) for serum tryptase level, the first within one hour of the reaction, and further samples at 3 and 24 hours after the reaction. Label each tube clearly with the *time taken*. In addition, EDTA samples taken at the same time should be sent for routine haematology. Send full details of the agents used and relevant previous drug history, type of operation, symptoms and signs, management and outcome.

Interferon-Gamma Release Assays (IGRA).

These assays can be used to help determine if a person has a latent infection with Mycobacterium tuberculosis. Two assays are currently available, the Quantiferon test and T-Spot (TB Elispot) assay. Both of these assays have special sample requirements; please ring the laboratory to discuss prior to bleeding the patient.

H&I TEST INFORMATION

Tests performed at the Hammersmith Laboratory include:
HLA CLASS I TYPE (HLA1)
HLA CLASS II TYPE (HLA2)
HLA Antibody Identification (CABS/HLA ABS/lymphocytotoxic antibodies)
HLA B27 (HLAB27)
HLA B*57:01 (HLAB57)
HLA Crossmatching (HLAXM)
Urgent samples by prior arrangement with the lab.

HLA CLASS I TYPING
HLA1
4ml blood in EDTA (purple top).
HLA typing is carried out at high resolution using Next Generation Sequencing (NGS) for HLA -A, -B and -C, for renal and haematology patients and their respective donors, in addition to looking at disease association.

HLA CLASS II TYPING
HLA 2
4ml blood in EDTA (purple top)
HLA typing is carried out at high resolution using Next Generation Sequencing (NGS) for HLA -DR, -DQ and –DPB1, for renal and haematology patients and their respective donors, in addition to looking at disease association.

In unrelated donor bone marrow transplantation, HLA matching must be to the highest level possible. High Resolution typing for HLA -A, -B and -C (Class I) or HLA -DR, -DQ (and -DP) (for Class II) resolves specificities to the allelic level. In certain situations it may be appropriate to type for the presence or absence of one or more specific HLA alleles. In particular, the possession of certain alleles is known to predispose individuals to various conditions and autoimmune diseases. In these cases, where HLA typing is used prognostically, or as a tool to aid diagnosis, it is essential that the request includes information on the suspected condition(s). High resolution typing is normally performed after basic or low-resolution HLA typing, and the cost is therefore additional to the cost of basic typing. There is no test request code for high resolution typing; the test is performed based on clinical relevance or specific request as discussed with the laboratory.

LYMPHOCYTOTOXIC ANTIBODY (HLA antibodies)
CABS/HLA Abs/DSAbs
10ml clotted blood (red top)
Please provide HIV and hepatitis B status.

Used for the detection and characterisation of lymphocytotoxic antibodies in patients awaiting renal or pancreas transplant, or those who have received a transplant. Also used in the investigation of transfusion reactions. For renal/pancreas recipients, patient antibody profiles are maintained by the laboratory. Results are held with the patient history, and are not routinely reported for individual samples. The laboratory employs a number of alternative assay systems with varying sensitivity and clinical significance. In most cases, routine screening will be performed using Luminex technology. Post transplant monitoring is usually performed using Luminex Single Antigen (SA) analysis. a powerful technique used to detect the presence of donor-specific antibodies (DSA). It is important to record the sample date when requesting these tests.

HLA B*27
HLAB27
4ml blood into EDTA (Purple top).

Although HLA B27 is present in approximately 10% of the normal population, it if found in 88-96% of patients with ankylosing spondylitis (AS). It is also associated with other rheumatological disorders, including Reiter's syndrome and is a strong diagnostic indicator for AS. A positive result indicates the presence of this antigen.

HLA B*57:01
HLAB57
4ml blood in EDTA (Purple top).

HLA-B*57:01 Screening for Abacavir Hypersensitivity
Most patients can safely take abacavir; however, a small number of patients experience a severe side effect known as abacavir hypersensitivity. The most common symptoms are skin rash, fever, nausea, vomiting and diarrhea. About 5% of patients who take abacavir experience abacavir hypersensitivity. This reaction can sometimes be very serious and in some cases can cause death. Patients who are HLA-B*57:01 are much more likely to have this reaction than patients who do not. Therefore, patients with the HLA-B*57:01 gene should not take abacavir. Approximately 5-8% of Europeans, 1-2% of Asians, and 2% of Africans have this gene.

HLA CROSSMATCH
HLAXM
4ml EDTA blood (purple top) from donor
10ml clotted blood (red top) from recipient
BOTH samples must be <24 hrs old.

HLA Crossmatching tests recipients' serum for the presence of anti-donor antibodies which may represent a risk or contraindication to transplantation, particularly in solid organ grafts. Preformed IgG, or occasionally IgM antibodies, in the recipient, directed against donor HLA antigens, are a cause of hyperacute or accelerated allograft rejection. This is a two-part test, performed by complement dependent cytotoxicity (CDC) and flow cytometry.

CDC detects IgG and IgM complement fixing antibodies that are likely to cause antibody-mediated rejection. FCXM does not rely on complement dependent cytotoxicity and can therefore detect non-complement fixing IgG1 and IgG3 antibodies as well. It is significantly more sensitive than the CDC crossmatch and is of particular benefit prior to transplantation of sensitised recipients or recipients of second or subsequent allografts. It is important in these tests to provide very clear clinical details, including the relationship of the potential donor to the recipient.

TEST REPERTOIRE, REFERENCE RANGES & TURNAROUND TIMES (Immunology, Virology, Microbiology Serology)

General Notes on Infection & Immunity tests requirements

1. For additional information on test background and clinical indications, please also refer to the test repertoire on the Pathology website on http://nwlpathology.nhs.uk/
2. For all written and printed requests, sample& form labelling must match for surname, forename, hospital/NHS number and date of birth where applicable. Forms must carry legible requesting doctor, consultant and location details.
3. Please supply relevant clinical details.
4. Please use the tube type specified below. Serology tests, unless specified otherwise, require a 5 ml Gel SST Rust Top tube. See the Pathology tube guide for further guidance.
5. If samples for Serology tests cannot be transported to the laboratory the same day, they should be stored at +4^{o}C to avoid deterioration. See specific tests for other test specific storage and transport requirements.
6. Turnaround times are given in working days and exclude weekends and bank holidays
7. Reference ranges do not normally apply to Virology and Microbiology serology tests on serum. Most are qualitative. Thus they are normally negative unless there has been previous infection or vaccination. Where they are quantitative, reference ranges will be given.
8. Findings for virus detection tests should be discussed with the Consultant Virologist or other Medical personnel.
9. Both swabs and viral transport media (VTM) used for virus detection MUST be in date; please check before use. Out of date samples may be rejected.
10. Please use and separate containers for samples requiring both Virology tests and Microbiology culture tests e.g. CSFs and Bronchoalveolar Lavage (BAL).
11. Please make sure ensure bags are sealed correctly to prevent either samples or forms from falling out and that tops of universal containers are tightened securely to prevent leakage.
12. All referred Microbiology serology requests are vetted by the Microbiologist and may not be referred if relevant clinical details are not supplied. Some requests may only be referred after discussion with the Microbiologist.
13. Virology and Immunology samples to be performed urgently must be discussed with the I&I laboratory (in the case of Virological investigations, with a Medical Virologist on ext. 10138 or 10139) and if eligibility for same day testing is agreed, these must be in the laboratory at Charing Cross by 12:00 for respiratory virus PCR testing and by 14:00 for viral serology tests and immunology tests such as LSS, ANCAS and TB Elispot.

Immunology Service Test Repertoire (see also General Notes on Infection & Immunity tests requirements in previous section)

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Acetylcholine receptor (ACR) antibodies	1 mL Serum	5ml GEL SST (Rust Top)	0-5 x 10^{-10}mol	28 days	Not currently performed in house; this test is referred.
Adrenal cortex antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	14 days	
Allergen Specific IgE (PhadiaImmunocap) (See also Total IgE)	Minimum 5ml.	5ml GEL SST (Rust/Yellow top)	Negative 0 - 0.34 kUA/L	14 days	• Please note additional tubes are required if more than 10 allergens are requested. • For component resolved diagnostics testing 1 mL per allergen is required. • Also referred to Sheffield Protein Reference Unit or Biomnis if the specific IgE request is not in our repertoire
Antinuclear antibody screen	1 mL Serum	5ml GEL SST (Rust Top)	Negative	4 days	From March 2020 this test will be unaccredited due to a change in platform
Anti - Neutrophil cytoplasmic antibodies (ANCA)	1 mL Serum	5ml GEL SST (Rust Top)	Negative	5 days	See Neutrophil cytoplasmic antibodies
Aquaporin Antibody	1 mL Serum (Can also be performed on CSF)	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	Negative	28 days	Not currently performed in house; this test is referred
Basal ganglia antibodies (ABGA)	1 mL Serum (Can also be performed on CSF)	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	Negative	28 days	Not currently performed in house; this test is referred.
Beta 2-glycoprotein 1 IgG antibodies	1 mL Serum	5ml GEL SST (Rust Top)	<20 GPL U/mL	days	This test is currently unaccredited due to a change in platform

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Beta 2-glycoprotein 1 IgM antibodies	1 mL Serum	5ml GEL SST (Rust Top)	< 20 MPL U/mL	days	This test is currently unaccredited due to a change in platform
Cardiac muscle antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Cardiolipin IgG antibodies	1 mL Serum	5ml GEL SST (Rust Top)	< 20 GPL U/mL	7 days	This test is currently unaccredited due to a change in platform
Cardiolipin IgM antibodies	1 mL Serum	5ml GEL SST (Rust Top)	< 20 MPL U/mL	7 days	This test is currently unaccredited due to a change in platform
Centromere antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	4 days	
Coeliacantibodyscreen					See under Tissue transglutaminase antibodies
Complement C1 esterase inhibitor – antigenic	1 mL Serum	5ml GEL SST (Rust Top)	0.22-0.38g/L	21 days	Separate and freeze immediately Transport frozen
Complement C1 esterase inhibitor – functional	1 mL Serum	5ml GEL SST (Rust Top)	0.7-1.3 g/L	21 days	Separate and freeze immediately Transport frozen
C1Q antibodies	1 mL Serum	5ml GEL SST (Rust Top)	0-10 U/ml	21 days	Not routinely available. Please discuss with lab prior to taking sample.
Complement C3 and C4 components	1 mL Serum	5 mL SST (Gold top)	C3 : 0.7-1.7 g/L C4 : 0.16-0.54 g/L	4 days	This test is currently unaccredited due to a change in platform

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Complement C3 nephritic factor	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Separate and freeze immediately Transport frozen
Complement genetics	Whole blood (Clearly labelled with surname, forename, hospital / NHS number and date of birth)	1 x 10 mL (or 2 x 6 mL) EDTA (lavender top)		90 days	This test is no longer performed at NWLP. All requests for complement genetics tests must be accompanied by a fully completed GOSH genetic referral form for onward transport. Please contact Great Ormond Street Hospital directly for further information/request form as required If samples are not accompanied by fully completed form – the sample will be discarded'
Complement, total alternative pathway	1 mL Serum	5ml GEL SST (Rust Top)	50-125 % of normal	21 days	Separate and freeze immediately Transport frozen
Complement, total classical pathway (THC)	1 mL Serum	5ml GEL SST (Rust Top)	50-125 % of normal	21 days	Separate and freeze immediately Transport frozen
Cyclic citrullinated peptide (CCP) antibodies	1 mL Serum	5 mL SST (Gold top)	<5 AU/mL	4 days	This test is currently unaccredited due to a change in platform
DNA double stranded antibodies, quantitative	1 mL Serum	5ml GEL SST (Rust Top)	Negative < 4IU/mL Borderline 5 – 9 IU/mL Positive >10 IU/ml	10 days	This test is currently unaccredited due to a change in platform

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Endomysial IgA antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	14 days	From March 2020 this test will be unaccredited due to a change in platform
Enterocyte antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Extractable nuclear (ENA) antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	10 days screen (14 days specificities)	ENA now includes Ro52, Ro60, SS-B. Sm, SmRNP, RNP-A, RNP-68, Scl-70, Jo-1, ribosomal P, and centromere B. This test is currently unaccredited due to a change in platform
Factor H and factor I	1 mL Serum	5ml GEL SST (Rust Top)	Antigenically present	28 days	
GAD (glutamic acid decarboxylase) antibodies	1 mL Serum	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	<5.0 AU/mL	21 days	he laboratory is not accredited for CSF for this test
Gangliosideantibodies [includesGM1, GM2, GM3, GD1a, GD1b, GT1b, GQ1b]	1 mL Serum(Can also be performed on CSF)	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	<500 = negative	28 days	Not currently performed in house; this test is referred.
Gastric parietal cell antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	7 days	
Glomerular basement membrane (GBM) antibodies	1 mL Serum	5ml GEL SST (Rust Top)	<7 U/mL = Negative 7 – 10 U/mL = Equivocal >10 U/mL = Positive	5 days	

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Haemophilus antibodies	1 mL Serum	5ml GEL SST (Rust Top)	0.15 mg/L (minimum protective level) 1 mg/L (optimum protective level)	28 days	Not currently performed in house this test is referred.
Histone antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
IA2 antibody ELISA *(Tyrosine Phosphatase / Insulinoma-associated Antigen 2)*	1 mL Serum	5ml GEL SST (Rust Top)	<10 IU/ml	14 days	Transported at room temperature. Once serum has been extracted, sample is stored at 4-6oC
Immunoglobulin-g subclasses (IgG1-4)	1 mL Serum	5ml GEL SST (Rust Top)	Age related. See additional comments field.	14 days	Reference Range Adults IgG 1 : 3.2-10.2 g/L IgG 2 : 1.2-6.6 g/L IgG 3 : 0.2-1.9 g/L IgG 4 : 0-1.3 g/L Please note, values for children vary according to age .
Insulin antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Intrinsic factor antibodies	1 mL Serum	5ml GEL SST (Rust Top)	NEGATIVE	14 days	This test is currently unaccredited due to a change in platform
Islet cell antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	14 days	

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Jo-1 antibodies (Included in ENA screen)	1 mL Serum	5ml GEL SST (Rust Top)	Negative	14 days	
Liver autoantibodies immunoblot	1 mL Serum	5ml GEL SST (Rust Top)	Negative	14 days	[includes M2, PML, GP210, LKM1, LC1, SLA and SP100]
Liver kidney stomach set	1 mL Serum	5ml GEL SST (Rust Top)	Negative	7 days screen (14 days confirmation)	From March 2020 this test will be unaccredited due to a change in platform
Liver kidney microsomal antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	7 days screen (14 days confirmation)	
Lymphocyte functions	Whole blood	Adults 10-20 mL Lithium Heparin (green top) Children 5-10 mL Lithium Heparin (green top)	See report	10 days	samples should be accompanied by blood from a healthy control
Lymphocyte subsets	Whole Blood	4 ml EDTA (lavender top) Note: Other volumes can be accommodated including smaller volumes for Paediatric samples	See additional comments section for Adult ranges (>18 years) NB: values for children vary according to age	3 days	Lymphocyte subpopulations Adults CD3+ T lymphocytes % 55-83 CD3+ T lymphocytes Absolute 700-2100 CD3+/CD4+ T lymphocyte % 28-57 CD3+/CD4+ T lymphocyte Absolute 300-1400 CD3+/CD8+ T lymphocyte % 10-39 CD3+/CD8+ T lymphocyte Absolute 200-900 CD19+ B lymphocyte % 6-19 CD19+ B lymphocyte Absolute 100-500

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
					CD3-/CD16-CD56+ NK cells % 7-31 CD3-/CD16-CD56+ NK cells Absolute 90-600 Absolute Lymphocytes 1000-2800
Mannose-binding lectin	1 mL Serum	5ml GEL SST (Rust Top)	See report	28 days	Not currently performed in house; this test is referred.
Mitochondrial antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	7 days screen (14 days confirmation)	
MuSK antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Myelin sheath antibodies	1 mL Serum(Can also be performed on CSF)	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	Negative	28 days	Not currently performed in house; this test is referred.
Myeloperoxidase antibodies	1 mL Serum	5ml GEL SST (Rust Top)	See addition al comment field	5 days	Reference Range: <3.5 IU/mL = Neg 3.5 – 5 IU/mL= Equivocal >3.5 IU/mL = Pos
Myositis antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	[includes Mi2, PMScl, Ku, PL7,PL12, SRP, OJ and EJ]
Neuronal antibodies	1 mL Serum(Can also be performed on CSF)	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	Negativ	14 days	[includes Hu, Yo, Ri, Ma2, CV2, Amphiphysin and GAD67] From March 2020 this test will be unaccredited due to a change in platform

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Neutrophil cytoplasmic antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	5 days	See also ANCA From March 2020 this test will be unaccredited due to a change in platform
Neutrophil function	Adults:10-20 mL whole blood. Children:5-10 mL whole blood	Adults: 10-20 mL Lithium heparin (green top) Children: 5-10 mL heparin (green top)	See report	7 days	Do not separate or refrigerate Test within 24 hours
NMDA-R ANTIBODY	1 mL Serum(Can also be performed on CSF)	5ml GEL SST (Rust Top) (Sterile Universal if CSF)	Negative	28 days	Not currently performed in house; this test is referred.
Ovarian antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	14 days	
Parathyroid antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Pneumococcal antibodies	1 mL Serum	5ml GEL SST (Rust Top)	See additional comments	14 days	Adult reference value Good level >39 U/ml Paediatric reference value *0-1 year Good level >14 U/ml 1-<2 years Good level >14 U/ml 2-<3 years Good level >19 U/ml 3-<4 years Good level >29 U/ml 4-<10 years Good level >44 U/ml 10-<18 years Good level >39 U/ml

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
					This test is currently unaccredited due to a recent change in platform.
PLA2R antibodies (M-type-phospholipase A2 receptor)	1 mL Serum	5ml GEL SST (Rust Top)	See additional comments	14 DAYS	Negative (normal) Range: <14 RU/ml Weak Positive Range: ≥14 to <20 RU/ml Positive Range: ≥20 RU/ml It is acceptable for serum samples to be sent by post as autoantibodies are stable for 2-3 days at room temperature. This test is currently unaccredited due to a change in platform
Pneumococcal serotype	1 mL Serum	5ml GEL SST (Rust Top)	See report	28 days	Not available to order on Cerner. Must be consultant request Not currently performed in house; this test is referred.
PR3 antibodies	1 mL Serum	5ml GEL SST (Rust Top)	See additional information field	5 days	<2 IU/mL = Neg 2 – 3 IU/mL = Equivocal >3 IU/mL = Pos
Primary Immune Deficiency (PID) panel.	Whole blood	4 ml EDTA (purple top)	See report	14 days	
QuantiFERON®-TB Gold	Whole blood	2 x 6 mL Lithium heparin (green top)	Non-reactive	7 days	Samples must be received in the laboratory (Charing Cross) by 16:30 Monday to Friday for the test to be performed. Samples must be < 24 hours old on receipt in the lab
Rheumatoid factor (RF)	1 mL Serum	5 mL SST (Gold top)	<20 IU/ml	3 days	This test is currently unaccredited due to a change in platform
Salivary gland antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Scl-70 antibodies (included in the ENA screen)	1 mL Serum	5ml GEL SST (Rust Top)	Negative	5 days	

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Skin antibodies – pemphigus and bullous pemphigoid	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Smooth muscle antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	7 days screen (14 days confirmation)	
Specific IgE					See under Allergen Specific IgE
Striated muscle antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Negative	28 days	Not currently performed in house; this test is referred.
Total IgE	Minimum 5ml.	5ml GEL SST (Rust/Yellow top)	Age dependent	14 Days	• Please note additional tubes are required if more than 10 allergens are requested. • For component resolved diagnostics testing 1 mL per allergen is required. • See also Allergen Specific IgE
T-cell activation markers	Whole Blood	4 ml EDTA (purple top)	See report	3 days	Do not separate or refrigerate Test within 10 hours
TB ELISPOT	Whole blood	6 mL Lithium heparin (green top)	Non-reactive	4 days	Samples must be received in the laboratory (Charing Cross) by 2pm Monday to Friday for the test to be performed
Tetanus antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Minimum protective level >0.15IU/mL	14 days	This test is currently unaccredited due to a recent change in platform.

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Thyroid peroxidase (TPO) antibodies	1 mL Serum	5ml GEL SST (Rust Top)	0 – 5 IU/mL	7 days	his test is currently unaccredited due to a change in platform
Thyroid stimulating hormone receptor (TSHR) antibodies	1 mL Serum	5ml GEL SST (Rust Top)	<0.4 U/L	21 days	
Tissue transglutaminase IgA	1 mL Serum	5ml GEL SST (Rust Top)	< 15 U/mL	7 days	This test is currently unaccredited due to a change in platform. Additional Confirmatory tests: turnaround time 14 days
Tissue transglutaminase IgG *(if IgA deficiency indicated)*	1 mL Serum	5ml GEL SST (Rust Top)	< 15 U/mL	7 days	This test is currently unaccredited due to a change in platform
Anti-TNF drug levels Anti- TNF drug neutralising antibodies	5 ml Serum	5ml GEL SST (Rust Top)	N/A	Drug levels = 2 weeks Neutralising antibodies = 4 weeks	(Infliximab IFX, Adalimumab ADA, Etanercept ETA, Vedolizumab VEDL) Perform venesection BEFORE next drug infusion
Serum Tryptase	Minimum 5ml.	5ml GEL SST (Rust/Yellow top)	2 – 14µg/L	14 days	See here
Vaccine-specific ab					See individual Haemophilus, pneumococcus and Tetanus test information
Vedolizumab Trough level	1 mL Serum	5ml GEL SST (Rust Top)	Results are reported between 0.8µg/ml and 96.0µg/ml.	4 weeks	Samples should be taken just before the next infusion of drug (trough) Transportation at room temperature/ first class post is adequate. Storage at 4 degrees or -20 for long term

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
					In the induction phase of the Entyvio© clinical trials week 6 trough levels were higher in responders than non-responders and higher trough levels were associated with increased mucosal healing in UC patients
Voltage gated calcium	1 mL Serum	5ml GEL SST (Rust Top)	0-45 pM	28 days	Not currently performed in house; this test is referred.
Voltage gated potassium channel antibodies	1 mL Serum	5ml GEL SST (Rust Top)	Normal 0 - 69 Equiv: 70 – 130 Positive: >130 (pM/L)	28 days	Not currently performed in house; this test is referred.

H&I Hammersmith Test Repertoire (see also General Notes on Infection & Immunity tests requirements in previous section)

Test	Sample Type & Volume	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
HLA antibody identification	10 ml Serum	Red top preferred, SST (gold top) acceptable	N/A	Please consult the laboratory	• Samples must be sent via first class post or courier. • It is important to record the sample date when requesting these tests. • Please provide HIV and hepatitis B status. • Results are held with the patient history, and are not routinely reported for individual samples
HLA crossmatch (wet crossmatch)	Donor samples: 40ml EDTA 10 mL serum (Recipient)	Donor samples: 40ml EDTA (lavender top) Recipient samples: 10 mL Clotted Sample (red top) + 4ml EDTA (lavender top) if HLA typing is also required.	Interpretive report provided	Please consult the laboratory	BOTH samples must be <24 hours old The laboratory is accredited for the flow cytometry crossmatch test by the European Federation of Immunogenetics (EFI), however UKAS accreditation for the most recently acquired analyser is pending.
HLA typing	4 mL Whole Blood	4ml EDTA (lavender top	Interpretive report provided	30 days	Renal/ pancreas patients and donors -30 days HSCT patients and donors - 30 days Disease association and HLA-B57 testing- 14 days Samples must be sent via first class post or courier HLA Typing is performed by Next Generation Sequencing. Awaiting UKAS accreditation under extension to scope.
HLA virtual Crossmatch	Donor samples: 4ml EDTA 10 mL serum (Recipient)	Donor samples: 4mL EDTA (lavender top) Recipient samples: 4ml EDTA (lavender top) + 10 mL Clotted Sample (red top)	Interpretive report provided	Please consult the laboratory	
HLA-B*27 Typing	4mL Whole Blood	EDTA (4ml purple / 6 ml pink top)	Negative	14 days	Samples must be sent via first class post or courier
HLA-B*57:01	4mL Whole Blood	EDTA (4ml purple / 6 ml pink top)	Negative	14 days	Samples must be sent via first class post or courier

Virology Test Repertoire (see also General Notes on Infection & Immunity tests requirements in previous section)

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Atypical pneumonia screen	Serum	5 ml GEL SST (Rust Top)	See comment	7 days	Significant antibody titres will be > 16 or 32, depending on infective agent
Coronavirus	Refer to entry for SARS CoV-2 (COVID-19, novel coronavirus)				
CMV IgG antibodies by EIA	Serum	5 ml GEL SST (Rust Top)	Negative	3 days	This test is currently unaccredited due to a change in platform
CMV IgM antibodies by EIA	Serum	5 ml GEL SST (Rust Top)	Negative	5 days	Please give detailed clinical information, including date of onset/contact with the suspected infection. This test is currently unaccredited due to a change in platform
CMV Quantitative PCR	Whole blood	6 ml EDTA (Pink Top)	N/A	3 days	10 ml EDTA tubes also accepted The laboratory is not currently accredited for this test due to a change in platform
Rotavirus/adenovirus /norovirus antigen	Performed by Microbiology laboratory. See Microbiology repertoire				
EBV DNA quantitative PCR	Whole Blood	EDTA Blood (pink top)	N/A	4 days	10 ml EDTA tubes also accepted
Epstein-Barr virus (EBV) VCA IgG antibodies by EIA	Serum	5 ml GEL SST (Rust Top)	See report	7 days	Past or recovery phase of infectious mononucleosis This test is currently unaccredited due to a change in platform
Epstein-Barr virus (EBV) VCA IgM antibodies by EIA	Serum	5 ml GEL SST (Rust Top)	Negative	7 days	Suspected Acute Infectious mononucleosis infection This test is currently unaccredited due to a change in platform

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Epstein Barr virus (EBV) EBNA IgG	Serum	5 ml GEL SST (Rust Top)	N/A	7 days	This test is currently unaccredited due to a change in platform
Hepatitis A IgM antibodies, hepatitis A serology	Serum	5 ml GEL SST (Rust Top)	Negative	3 days	Acute infection – jaundice with ALT >300 µ/L and/or raised bilirubin. Please give detailed clinical information, including date of onset/contact with the suspected infection This test is currently unaccredited due to a change in platform
Hepatitis B core total antibodies (IgG/IgM)	Serum	5 ml GEL SST (Rust Top)	Negative	3 days (Confirmation: non-negatives up to 10 days)	Indicates past infection - requested alongside hepatitis B surface antigen to rule out current or previous infection in non-responders to hepatitis B vaccine
Hepatitis B antibodies, hepatitis B surface antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	3 days	Post vaccination check for seroconversion This test is currently unaccredited due to a change in platform
Hepatitis B surface antigen, hepatitis B serology, HBV testing	Serum	5 ml GEL SST (Rust Top)	Negative	3 days (Confirmation: non-negatives up to 10 days)	Acute/Chronic Hepatitis B Infection. The Hepatitis B Surface Antigen assay is currently unaccredited due to change in platform
Hepatitis B Quantitative DNA(Hepatitis B viral load)	Whole Blood	6 ml EDTA (Pink Top)	Negative	5 days	10 ml EDTA tubes also accepted
Hepatitis C Quantitative RNA (Hepatitis C viral load)	Whole Blood	6 ml EDTA (Pink Top)	N/A	7 days	10 ml EDTA tubes also accepted
HCV Genotyping	EDTA whole blood	6 ml EDTA (Pink Top)	N/A	7 days	10 ml EDTA tubes also accepted
Hepatitis D virus	Serum	5 ml GEL SST (Rust Top)	Negative	14 days	Not currently performed in house; this test is referred.

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Hepatitis E virus	Serum	5 ml GEL SST (Rust Top)	Negative	14 days	Serology for IgM and IgG, Current or Past Infection. This test is currently unaccredited due to a recent change in platform.
Herpes simplex virus IgG	Serum	5 ml GEL SST (Rust Top)	Negative	7 days	Due to a change in platform, this test is currently unaccredited.
HIV 1/2 antibodies EIA	Serum/Saliva	5 ml GEL SST (Rust Top) / 250ul Saliva Sponge	Negative	3 days (Confirmation: non-negatives up to 10 days)	Screening test for HIV antibodies : Please give detailed clinical information, including the date of onset/contact with the suspected infection. The HIV screening test is currently unaccredited due to a change in platform.
HIV-1 Resistance (Integrase)	10 ml Whole blood	6 ml EDTA (Pink Top)	Contact Laboratory	14 days	Must have quantifiable HIV-1 viral load. 10 ml EDTA tubes also accepted. Sequencing previously performed externally now done in-house
HIV-1 Resistance (Protease & reverse transcriptase)	1 ml Plasma or Serum	6 ml EDTA (Pink Top) OR 5 ml GEL SST (Rust Top)	Contact Laboratory	14 days	Must have quantifiable HIV-1 viral load. 10 ml EDTA tubes also accepted
HIV-1 Tropism testing	10 ml Whole blood	6 ml EDTA (Pink Top)	Contact Laboratory	14 days	Must have quantifiable HIV-1 viral load. 10 ml EDTA tubes also accepted
HIV-1 VIRAL LOAD	Whole Blood	6 ml EDTA (Pink Top)	N/A	5 days	Specimens for HIV viral load must be received in the laboratory within 4 hours of collection or if taken out of hours, refrigerated overnight at and transported the next day. 10 ml EDTA tubes also accepted
HSV PCR	Virology swabs	Universal transport medium	N/A	5 days	

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
HTLV 1 and 2 antibodies by EIA	Serum	5 ml GEL SST (Rust Top)	Negative	3 days (Confirmation: non-negatives up to 10 days)	This test is currently unaccredited due to a change in platform
Measles virus IgG antibodies	Serum	RST (Rust top) 5 mL	See report	5 days	Detection of IgG antibodies to measles virus to determine immunity status. This test is not routinely available for confirmation of immunity/vaccine uptake. If there is no history of vaccination or past infection, MMR should be offered in preference. Due to a change in platform, this test is currently unaccredited.
Measles virus IgM antibodies	Serum	RST (Rust top) 5 mL	See report	5 days	Suspected measles. ease give detailed clinical information, including date of set/contact with the suspected infection. ue to a change in platform, this test is currently unaccredited.
Mumps virus IgG antibodies	Serum	5ml GEL SST Rust Top	See report	5 days	Past infection or vaccination.
Mumps virus IgM antibodies	Serum	5ml GEL SST Rust Top	Negative	5 days	Please give detailed clinical information, including date of onset/contact with the suspected infection Due to a change in platform, this test is currently unaccredited.
Mycoplasma pneumoniae EIA	Serum	5ml GEL SST (Rust Top)	Negative	7 days	Requests for Mycoplasma pneumoniae, Chlamydia psittaci and Coxiellaburnetii are to the Biomnis laboratories. Testing will be performed by a combination of enzyme immunoassay and immunofluorescence assays,
Parvovirus IgG & IgM	Serum	5ml GEL SST (Rust Top)	See report	10 days	Recent/past infection. Due to a change in platform, this test is currently unaccredited.

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Rapid Influenza Virus Panel	NPA, throat swabs	White topped Sigma MMTM tubes	N/A	2 hrs (See note)	Rapid test for the detection of influenza A, influenza B and RSV. Only the Sigma MMTM Molecular Medium tubes can be used so that the virus is inactivated. Samples received in the red top viral transport media should not be used for rapid flu testing and if sent, the sample will be transferred to the Infection & Immunity laboratory at Charing Cross for respiratory PCR testing. The laboratory is not currently accredited for this test.
Respiratory PCR	Nose and throat swabs NPA, BAL, ETA	Universal transport medium Sterile Universal	N/A	2 days (See note)	Turnaround time is 3 days for CMV PCR and PCP.
Rubella virus IgG antibodies by EIA /Rubella immunity screen	Serum	5ml GEL SST (Rust Top)	>10 IU/mL	3 days	Antibody levels below 10 IU/mL may be insufficient to provide protection from clinical illness upon exposure to rubella virus. This test is currently unaccredited due to a change in platform
Rubella virus IgM antibodies by EIA	Serum	5ml GEL SST (Rust Top)	See comment	7 days	Please state gestation period, date and nature and ?pregnant The presence of antibody levels of at least 10 IU/mL of sample is indicative of past exposure to rubella virus. This test is not currently accredited due to a change in platform
SARS CoV-2 Detection (COVID-19, novel coronavirus)	Respiratory samples (NPA, nose and throat swab, BAL and ETTs)	Virology swab or 0.5 ml in universal container	Detected or NOT detected	Up to 3 days	PCR test for the new coronavirus, the disease is known as COVID-19. Apply recommended Infection Prevention and Control precautions This test is fully validated for clinical use. However, the laboratory is not yet UKAS accredited for this test

Test	Sample type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
SARS CoV-2 antibody (COVID-19, novel coronavirus)	Serum	5ml GEL SST (Rust Top)		24 hrs	The laboratory is not yet UKAS accredited for this test as it is newly launched.
Varicella zoster IgG antibodies	Serum	5ml GEL SST (Rust Top)	See report	3 days	Past Infection.
Viral Detection (PCR)	CSF,	Sterile universal	Not detected	3 days	Includes: HSV-1, HSV-2, VZV, Enterovirus, Parechovirus, HHV-6, CMV, EBV, Adenovirus
Viral Detection (PCR) Eye	Swab	Swab in VTM	Not detected	5 days	Includes: HSV-1, HSV-2, VZV, Enterovirus, Adenovirus
Viral Detection (PCR) vesicle / ulcer	Swab	Swab in VTM	Not detected	5 days	Includes: HSV-1, HSV-2, VZV, Enterovirus
Viral Detection (PCR)	Plasma	5ml EDTA	Not detected	5 days	Includes HHV6, HHV8, BK virus, Parvovirus, Parechovirus, Enterovirus, HSV. Not currently performed in house; this test is referred to Micropathology, Coventry
Viral Detection (PCR) JC virus	CSF, Plasma	EDTA if plasma. CSF in sterile universal.	Not detected	5 days	Not currently performed in house; this test is referred to Micropathology, Coventry

Microbiology Serology Test Repertoire (see also General Notes on Infection & Immunity tests requirements in previous section)

Test	Sample Type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
5-flucytosine levels	5-flucytosine levels and other antifungal assays Voriconazole, Posaconazole, Itraconazole and Hydroxy-Itraconazole are no longer managed by NWL Pathology. This service is now performed by the Leslie Brent Laboratory at Hammersmith Hospital who should be contacted regarding any enquiries for these tests. Questions or information requests about the service provided should be directed to the Brent lab by email: leslie.brentlab@imperial.nhs.uk or by contacting the laboratory on 020 331 36637.				
Amoebic antibodies	Serum	5 ml GEL SST (Rust Top)	See report	21 days	Not currently performed in house; this test is referred.
Ascaris Antibodies	Serum	5 ml GEL SST (Rust Top)	See report	21 days	Not currently performed in house; this test is referred.
Anti-staphylococcal antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Aspergillus precipitins	Serum	5 ml GEL SST (Rust Top)	See report	21 days	Not currently performed in house; this test is referred.
Anti-streptolysin-O	Serum	5 ml GEL SST (Rust Top)	See Report	4 days	
Avian precipitins	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Bartonella serology	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Bordetella pertussis antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred to Public Health England, Colindale
Botulinum toxin	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Contact the laboratory to discuss the appropriateness of the investigation. Not currently performed in house; this test is referred.
Brucella antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	14 days	Not currently performed in house; this test is referred.
Coccidioides Abs	Serum	5 ml GEL SST (Rust Top)	See report	21 days	Not currently performed in house; this test is referred.

Test	Sample Type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Cystercercosis antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Entamoebahistolytica Abs	Serum	5 ml GEL SST (Rust Top)	See report	21 days	See Amoebic antibodies
Fasciola Antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Filarial Antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Histoplasma antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Hydatid antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Legionella antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Preferred test is the *Legionella* antigen test.
Leishmania antibodies	Serum	5 ml GEL SST (Rust Top)	See report	21 days	Not currently performed in house; this test is referred.
Leptospira antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Lyme or Borrelia antibody screen	Serum	5 ml GEL SST (Rust Top)	Negative	8 days (Non Negative Results 10 - 14 days)	Positive Samples are referred Please review new guidance on *Borrelia* testing This test is currently unaccredited due to a change in platform.
Meningococcal PCR	Serum	6 ml EDTA (Pink Top)	Negative	3 days	Not currently performed in house; this test is referred.
Rickettsial antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.

Test	Sample Type	Container	Ref Ranges	Turnaround time	Additional requirements and other comments
Schistosomal antibodies	Serum	5 ml GEL SST (Rust Top)	See report	21 days	Not currently performed in house; this test is referred.
Strongyloides antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
RPR (Rapid Plasma Reagin)	Serum	5 ml GEL SST (Rust Top)	Negative	7 days	Usually performed as part of Syphilis screening test.
Syphilis screen	Serum	5 ml GEL SST (Rust Top)	Negative	3 days	This test is currently unaccredited due to a change in platform
Toxocara Antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Toxoplasma screen	Serum	5 ml GEL SST (Rust Top)	Negative (<1:16)	7 days	Samples giving a positive screening test result will be reported as such and sent to a reference laboratory for further tests.
Trichinella antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Trypanosomal Antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.
Weil's disease					(please also see Leptospira antibodies)
Whipples PCR	Whole Blood	6 ml EDTA (Pink Top)	Negative	21 days	Not currently performed in house; this test is referred.
Yersinia antibodies	Serum	5 ml GEL SST (Rust Top)	Negative	21 days	Not currently performed in house; this test is referred.

REFERENCE LABORATORY DETAILS

At times, it may be necessary to refer work to other laboratories or consultants. The department routinely sends work to the following organisations: Please refer to the UKAS website http://www.ukas.com/search-accredited-organisations/ for UKAS accredited laboratories

List of Reference Laboratories used

Reference laboratory Name and Address	Phone Number if available
Dr Elizabeth M. Johnson, Director PHE Mycology Reference Laboratory, Curator National Collection of Pathogenic Fungi, National Infection Service, PHE South West Laboratory, Science Quarter, Southmead Hospital, Bristol BS10 5NB	0117 4146222 option 5 mycology
Micropathology Ltd. University Of Warwick Science Park, Barclays Venture Centre, Sir William Lyons Road, Coventry, West Midlands, CV4 7EZ	02476 323222
Virus Reference Division, Centre For Infections, Health Protection Agency, 61 Colindale Avenue, London NW9 5EQ	020 7679 9490
Rare and Imported Pathogens Laboratory, (RIPL), PHE, Manor Farm Road, Porton Down, Wiltshire, SP4 0JG	01980 612100/01980 612348
Microbiology, Epsom and St Helier Hospital	Epsom:- 01372 735 994 St Helier:- 020 8296 2841
Meningococcal / Pneumococcal Reference Laboratory, PO Box 209, Clinical Science Building, Manchester Royal Infirmary, Oxford Rd, Manchester M13 9WZ	0161 276 6757
Antimicrobial Assay Reference Laboratory, Dept Of Medical Microbiology, Lime Walk Building, North Bristol NHS Trust, Southmead Hospital, Westbury on Trym, Bristol BS10 5NB	0117 414 6220 / 6269
BIOMNIS, 17/19 Avenue Tony Garnier, 69007 Lyon, France	+33 4 72 80 10 10 0117 414 6220 / 6269
Respiratory and vaccine preventable bacteria reference unit (RVPBRU), 61 Colindale Avenue London NW9 5HT	0208 200 4400
Sexually transmitted bacteria reference unit (STBRU)), 61 Colindale Avenue London NW9 5HT	020 7679 9490
Gastrointestinal bacteria reference unit (GBRU) , 61 Colindale Avenue London NW9 5HT	020 7679 9490
Antimicrobial resistance and healthcare associated infections reference unit (AMRHAI) Public Health England, 61 Colindale Avenue, London, NW9 5EQ	020 8327 7887
Clinical Microbiology and Virology, UCLH NHS Foundation Trust, 60 Whitfield Street, London, W1T 4EU	02073077373 02039120294 203 447 8964
Toxoplasma Reference Laboratory, Department of Microbiology (PHE) Singleton Hospital, Swansea SA2 8QA	01792 285058
Department of Immunology, Churchill Hospital, Headington , Oxford OX3 7LG	01865 225995
Clinical Immunology Laboratory, Level 4, Camelia Botnar Labs, Great Ormond Street Hospital for Children, Great Ormond Street, London WC1N 3JH	020 7829 8835
Bone Marrow Laboratory, Level 2, Camelia Botnar Labs, Great Ormond Street Hospital for Children, Great Ormond Street, London WC1N 3JH	020 7829 7901
Clinical Immunology Laboratory, Level 4, Camelia Botnar Labs, Great Ormond Street Hospital for Children, Great Ormond Street, London WC1N 3JH	020 7829 7901

Reference laboratory Name and Address	Phone Number if available
Regional Molecular genetics Laboratory, Level 6, York House, Great Ormond Street NHS Trust, 37 Queen's Square, London WC1N 3BH	020 7405 9200 ext 6888
Supraregional Protein Reference Unit & Department of Immunology, PO Box 894, Sheffield S5 7YT.	0114 271 5552
Department of Immunology, Churchill Hospital, Headington , Oxford OX3 7LG	0121 507 4258
Microbiology Department St Helier Hospital Wrythe Lane Carshalton SM5 1AA	01372 735 994, 020 8641 4011
Neuro immunology and CSF Laboratory, Institute of Neurology (NHNN) Box 76, Queen Square, London WC1N 3BG	020 33483814
Neuro immunology and CSF Laboratory, Institute of Neurology (NHNN) Box 76, Queen Square, London WC1N 3BG	020 33483814 0141 354 9010/9023
The Glasgow Neuroimmunology Laboratory, Level 1B, Laboratory Medicine & Facilities Building, Queen Elizabeth University Hospital, 1345 Govan Road GLASGOW, G51 4TF	
Molecular Diagnostics Unit Imperial College, St Mary's Hospital	
Addenbrookes Hospital Cambridge, Clinical Immunology, Box 109, Level E4, Addennbrooke's Hospital, Hills Road, Cambridge CB2 0QQ	01223 348145 (x 58145)
Rainer Doffinger, Addenbrookes Hospital Cambridge, Clinical Immunology, Box 109, Level E4, Addennbrooke's Hospital, Hills Road, Cambridge CB2 0QQ	01223 217441 (x3441)
Immunodermatology laboratory, St John's Institute of Dermatology, St Thomas' Hospital, Westminster Bridge Road, London SE1 7EH, 020 7188 6408)	0114 271 5552
Clinical Immunology Laboratory, Level 4, Camelia Botnar Labs, Great Ormond Street Hospital for Children, Great Ormond Street, London WC1N 3JH.	
Dr Helen Lachmann, National Amyloidosis Centre, Royal Free and University College London Medical School Dept of Medicine, Royal Free Campus, Rowland Hill Street, London NW3 2PF	020 7433 2725
Cardiff Toxicology Laboratories, The Academic Centre, University Hospital Llandough, Penarth, Vale of Glamorgan CF64 2XX	029 2071 6894
Viapath, London Specialist Virologist Centre, Health Protection Agency London, , King's College Hospital NHS Foundation Trust, 2nd Floor Cheyne Wing, Bessemer Road, Dulwich, SE5 9RS	020 3299 6155
Centre For Virology, Royal Free Hospital, Hampstead Site, Rowland Hill Street, London, NW3 2PF	020 344 78994
Dept Of Virology, Public Health Laboratory, Birmingham Heartlands Hospital, Bordesley Green East, Birmingham B9 5SS	
Dept Of Virology, Public Health Laboratory, Birmingham Heartlands Hospital, Bordesley Green East, Birmingham B9 5SS	
Rabies Diagnostic Unit, Veterinary Laboratories Agency, New Haw, Addlestone, Surrey, KT15 3NB.	
Dr Abid Karim, Neuroimmunology, The Medical School, University of Birmingham, Edgbaston, Birmingham B15 2TT	0121-415-8797
RCI Laboratory NHSBT Barnsley Centre Capitol Way Junction 37 M1 Barnsley South Yorkshire S75 3FG *(formerly Longley Lane, Sheffield)*	

Note: Anti-fungal Assays:
5-flucytosine levels and other antifungal assays Voriconazole, Posaconazole, Itraconazole and Hydroxy-Itraconazole are no longer managed by NWL Pathology. This service is now performed by the Leslie Brent Laboratory at Hammersmith Hospital who should be contacted regarding any enquiries for these tests. Questions or information requests about the service provided should be directed to the Brent lab by email: leslie.brentlab@imperial.nhs.uk or by contacting the laboratory on 020 331 36637.

MICROBIOLOGY LABORATORY

LOCATION

The Microbiology Service is provided from laboratories based on the 4th Floor Laboratory Block, Charing Cross Hospital.

The Microbiology Serology service is provided from laboratories based on the 9th Floor Laboratory Block as part of the Department of Infection & Immunity.

For information on Microbiology Serology test repertoire and turnaround times, please see additional information under the Department of Infection and Immunity pages above.

DESCRIPTION OF SERVICE

The department provides a full range of diagnostic services including bacterial culture, parasite identification, mycological services and TB microbiology.

LABORATORY HOURS

Monday to Friday	08.00 – 20.00 (normal service)
Sat/Sun	08.00 – 20.00 (reduced service)

Out-of-hours service covering

Mon – Sun	20.00 – 08.00 (*Emergency specimens only*)

KEY PERSONNEL/CONTACT NUMBERS

The NWL Pathology Infection & Immunity Clinical Lead is Consultant Immunologist Dr Peter Kelleher and the Microbiology specialist Lead is Dr. Hugo Donaldson. Dr. Panos Pantelidis is the Divisional Manager for Infection & Immunity Sciences.

See following page for a full list of personnel and contact names. All telephone extension numbers given can be called directly from outside of the Trust by prefixing with 020 331 and then the five digit extension number.

MICROBIOLOGY CONTACT NUMBERS

(5 digit extensions prefixed by 020 331 if calling externally)

Site	Contact	Name	Tel No.	Bleep / Mobile	Other
Cross Site	Results/Enquiries		35353		
	Divisional Manager	Dr. Panos Pantelidis	17262		via Switchboard
	Deputy Divisional Manager	Monica Rebec	15157		
	Consultant (Speciality Lead for Microbiology)	Dr Hugo Donaldson* *(See also WMUH site)*	0208 321 5784		via Switchboard
GPs	GP only clinical advice enquiries		07827 904 038		
Charing Cross *(Laboratory based on this site)*	Charing Cross Hospital clinical advice enquiries *(voicemail available)*		17801 / 17802	Mobile 07584881860	
	Laboratory Manager	Manfred Almeida	17262	Mobile 07827 904062	
	Specialist Scientist	Sweenie Goonesekera	17883		
	Microbiology Lab Manager	Anna Morkowska	15157		
	Consultant	Dr. Ximena Gonzalo	17256		via Switchboard
	I&I Sciences Governance & Quality Manager	Nicola Mandikate	15175		
	Department secretary		17262 / 17257		
	On-Call BMS		Mobile 07766133404		
St Mary's	St Mary's hospital clinical advice enquiries		21562		
	Consultant	Dr Dunisha Samarasinghe	21074		via Switchboard
	Consultant	Dr Victor Vasquez Zorrila	21817		via Switchboard
	Consultant	Dr. Joanna Peters	21817		via Switchboard
	Specialist Registrars		21562 / 25345	1010	
Hammersmith	Hammersmith hospital clinical advice enquiries		32075 / 73 (*not manned during ward rounds*)		
	Specialist Registrars		31973/32073/75	5008	
	Consultant	Dr Anan Ghazy			via Switchboard
	Consultant	Dr. Frances Davies	31974 / 32073		via Switchboard
	Microbiology Specimen Reception at HH		32060		
Chelsea & Westminster	Specialist Registrars		58273 / 57264	4318 / 7260	
	Consultant	Dr. Nabeela Mughal	57259 / 57264		via Switchboard
	Consultant	Dr. Luke Moore	58273 / 57264		via Switchboard
West Middlesex University Hospital	Consultant	Dr. Hugo Donaldson* *(based primarily at WMUH)*	0208 321 5784		via Switchboard
	Consultant	Dr. Farhana Butt	0208 321 6882		via Switchboard
	Consultant	Dr. Nupur Goel	0208 321 6539		via Switchboard

Hillingdon Hospital	Consultant	Dr Stella Barnass	01895 279290		via Switchboard
	Consultant	Dr Josephine Elfick	01895 279115		via Switchboard
	Consultant		01895 279834		via Switchboard

SPECIMEN INFORMATION AND ADDITIONAL TESTS

If samples cannot be sent to the laboratory immediately they should be kept at 4°C to prevent bacterial growth. The exception is blood cultures where they should be sent immediately to the Microbiology Department for incubation at 37°C.

For information on how to collect blood cultures, refer to the following on the Trust Intranet: "Guidelines for taking Peripheral Blood Cultures from Adults"
http://source/prdcont/groups/extranet/@clinical/@guidelines/documents/ppgs/id_026258.pdf
There is no need to telephone or bleep the BMS when sending blood cultures; they are all dealt with as urgent.

Sputum samples received in the laboratory more than 12 hours after being taken and salivary specimens are not cultured for respiratory pathogens other than TB if requested. Unless in-patient urine specimens are clearly unrepeatable e.g. because treatment is about to be started, they *will not be processed* if received more than 12 hours after being taken.

Requests for additional tests must be made via the Medical Microbiologists who will approve them on a case-by-case basis. Time limits for requesting additional tests vary according to specimen type and should be discussed as above.Culture plates are kept for 48 hoursand sample retention times include 48 hours for Urines for MC&S, 1 week for Swabs while Fluids and tissues are kept for 1 month.

Labelled specimens should be sent immediately in non-leak containers, details of presumptive diagnosis, recent antibiotic treatment, foreign travel, pets, immunisation and suspected contact with infectious diseases. Urgent requests during routine hours must be telephoned to the laboratory via the Pathology call centre. The call centre will transfer callers through to the relevant area.

Collect specimens before starting antibiotic treatment.
Where swabs are used ensure transport medium swabs are used. Prompt delivery of pus or body fluids is essential.

Direct plating of certain material may be advisable and can be arranged with the laboratory.

ENQUIRIES
Always order investigations through the hospital Cerner computer system. All results are on Cerner; please use this facility rather than telephoning the laboratory.
Please see the normal turn round times for reporting of specimens before contacting the laboratory. Where bacteriological findings need urgent action, results will be telephoned. All positive blood cultures are telephoned as a matter of routine. Medical advice is available at all times. If you are uncertain about a particular test or the significance of any result, please contact one of the medical microbiologists.

See site specific contact details above for general enquiries and Microbiology medical staff.

SpRs	Charing Cross	Bleep2068
	St Mary's	Bleep 1010
	Hammersmith	Bleep 5008
Out-of-hours	Via switchboard	

TRANSPORT OF SAMPLES TO THE LABORATORY

For details on how to send samples to the laboratories, including by courier, please refer to appropriate sections below for Routine, Weekend and out of hours requests where details are given per hospital site.
Note there are specific arrangements in place for each site.

REQUESTS FOR ROUTINE INVESTIGATIONS

NB Do NOT send blood culture or precious sample via the pneumatic tube system

St Mary's Hospital (Monday to Friday 0900-1700)

Specimens will be transported from Clinical Biochemistry at St Mary's Hospital to Charing Cross Hospital on a regular basis during the way. Specimens for analysis should be sent to the Clinical Biochemistry laboratory via the specimen porter or via the pneumatic tube system during these hours.

Charing Cross Hospital (Monday to Friday 0800-1700)

Specimens will be collected from ward areas during routine specimen porter ward rounds or should be sent to the Microbiology Laboratory via the pneumatic tube system (station 900).

Chelsea & Westminster Hospital (Monday to Friday 0800-1700)

Specimens will be collected from ward areas during routine specimen porter ward rounds or should be sent to the central specimen reception area via the pneumatic tube system.

Hammersmith Hospital (Monday to Friday 0900-1700)

Specimens should be sent to Pathology Reception Ground Floor G block via the pneumatic tube system or collected from ward areas during the routine specimen porter ward rounds. Samples are transported to Microbiology at Charing Cross Hospital at hourly intervals.

REQUESTS FOR URGENT INVESTIGATIONS UP TO 17.00

St Mary's Hospital

- Specimens will be transported from Clinical Biochemistry at St Mary's Hospital to Charing Cross Hospital on a regular basis. Specimens for analysis should be sent to the Clinical Biochemistry laboratory via the specimen porter or via the pneumatic tube system during these hours.

Charing Cross Hospital

- Telephone the Pathology Specimen porters ext: 17083 who will collect the specimen and dispatch it to Microbiology.
- Contact the laboratory on ext: 17835 to inform them of the urgent specimen being sent.

Chelsea & Westminster Hospital

- Bleep the Pathology Specimen porters (bleep 0252 or bleep 0173) who will collect the specimen and dispatch it to Microbiology at Charing Cross.
- Contact the laboratory on ext: 17835 to inform them of the urgent specimen being sent.

Hammersmith Hospital

- Specimens are transported from Pathology Reception (Ground Floor G Block) to Microbiology at Charing Cross Hospital
- Contact the laboratory on ext. 17835 to inform them of the urgent sample being sent.

WEEKEND TRANSPORT SERVICE

St Mary's Hospital (Saturday and Sunday)

Routine

- On Saturday and Sunday there will be five collections from the Biochemistry laboratory in the Mint Wing at 0830, 1130,1800 and 2300.

Urgent

- See out of hours service below for urgent specimens.

Charing Cross Hospital (Saturday and Sunday)

Routine

- Send samples to specimen reception, 1st floor laboratory block.

Urgent

- Contact the laboratory on ext: 17835 OR mobile/Bleep the microbiology on call scientist, on bleep 0248, to inform them of the urgent sample being sent.
- Use pneumatic tube system to station 900 or take to specimen reception on the 1st floor laboratory block

Chelsea and Westminster Hospital (Saturday and Sunday)

Routine

- There will be scheduled collections at 0900, 1200, 17.00 and 2200 from Pathology C&W to Charing Cross Hospital.

Urgent

- Call the C&W pathology porters on x. 36804 to arrange collection of the sample. State that it is an urgent sample.
- C&W pathology porters will collect the sample and take it to Pathology.
- Pathology Specimen Reception staff will arrange for the urgent courier to transport the sample to Microbiology at Charing Cross
- Contact the laboratory on ext: 17835 OR mobile/Bleep the microbiology on call scientist, on bleep 0248, to inform them of the urgent sample being sent.

Hammersmith Hospital (Saturday and Sunday)

Routine

- There will be scheduled collections at 0800, 1100, 1730 and 2230 from Pathology Reception HH to Charing Cross Hospital

Urgent

- Contact the duty porters via ext: 34559 or Bleep 9257. They will collect the sample and dispatch it to Microbiology at Charing Cross.
- Contact the laboratory on ext: 17835 OR mobile/Bleep the microbiology on call scientist, on bleep 0248, to inform them of the urgent sample being sent.

18.00 – 20.00 AND OUT-OF-HOURS TRANSPORT SERVICE

Requests should be limited to those *necessary for immediate patient management*. The medical officer should discuss the request with the duty BMS who can be contacted via mobile/bleep. Samples marked urgent but which have not been telephoned will not be processed. If there is doubt about the need for an urgent test, the BMS is instructed to refer the request to the on call doctor. *The on call BMS will not deal with requests to look up results, please use the Cerner system*.

Non-urgent, out of hours specimens may be refrigerated overnight, with the exception of blood cultures, which should be sent immediately to the microbiology department for incubation at 37°C.Whenever possible, take pre-operative swabs (e.g. eye swabs before cataract removal) at least 48 hours and preferably 72 hours before results are required.

St Mary's Hospital (Monday to Friday 17.00 to 0900)

Routine

- Specimens will be transported from the porters' lodge (Ground Floor QEQM) at 0830, 1730, 1830 and 2330 to the Charing Cross site.

Urgent

- Ward staff must send urgent samples to Clinical Chemistry Specimen Reception, 2nd Floor, Mint Wing – bleep 1022; by porter or via the pod.
- Ward staff must inform Clinical Chemistry Specimen Reception staff or the porter that sample requires urgent courier.
- Clinical Chemistry Specimen Reception staff will arrange adhoc courier for the sample on the instruction of the ward staff/porter.
- Contact the on call scientist on mobile/bleep 0248to inform them of the urgent sample being sent.

Charing Cross Hospital (Monday to Friday 1700 to 0800)

Routine

- Send samples to specimen reception, 1st floor laboratory block.

Urgent

- Contact the laboratory on ext: 17815 OR mobile/Bleep the microbiology on call scientist, on bleep 0248, to inform them of the urgent sample being sent.
- Use pneumatic tube system to station 900 or take to specimen reception on the 1st floor laboratory block

Chelsea and Westminster Hospital (Monday to Friday 1700 to 0900)

Routine

- There will be two scheduled collections at 1800 and 2200 to transport microbiology specimens from Pathology at C&W to the Charing Cross site.

Urgent

- Call the C&W pathology porters on x. 36804 to arrange collection of the sample. State that it is an urgent sample.
  - C&W pathology porters will collect the sample and take it to Pathology.
  - Pathology Specimen Reception staff will arrange for the urgent courier to transport the sample to Microbiology at Charing Cross. (This was formerly done by ward staff but no longer.)
  - Contact the laboratory on ext: 17835 OR mobile/Bleep the microbiology on call scientist, on bleep 0248, to inform them of the urgent sample being sent.

Hammersmith Hospital (Monday to Friday 1700 to 0900)

Routine

- There will be two scheduled collections at 1800 and 2200 to transport microbiology specimens from Pathology Reception at HH to the Charing Cross site.

Urgent

- Bleep the microbiology on call scientist, on bleep 0248,
- Contact the porters as normal via ext: 34559 or bleep 9257. They will collect the sample and dispatch it to Microbiology at Charing Cross

MICROBIOLOGY REPERTOIRE, SAMPLE REQUIREMENTS AND TURNAROUND TIMES

For Microbiology Serology test information see under Department of Infection & Immunity.

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
For additional information on test background and clinical indications, please also refer to the test repertoire on the Pathology website on http://nwlpathology.nhs.uk/					
Unless otherwise stated, samples should be sent to the laboratory on the day of collection or refrigerated overnight					
Turnaround times are in working days and will be extended if further referral to a reference centre is required. Additional referral laboratory turnaround times may vary from 5 – 15 days according to the isolate and referral work required. Turnaround times may also be extended if additional work is required on complex cultures.					
Acanthamoeba culture	Corneal scrape	Culture medium obtained from laboratory by prearrangement with microbiology.	3 days	Transport pre-inoculated culture medium in a sealed-plastic bag, and the slide prepared by the clinician in a plastic slide container	Positive cultures are sent to the London School of Hygiene and Tropical Medicine for confirmation
Ascitic fluid cell count, microscopy and culture	Ascitic fluid	Cell count: approx. 3 mL fluid in EDTA (lavender top)• Microscopy and culture: sterile universal container (2 mL)	5 days	Transport to the laboratory on the day of collection	Reference Range Cell count : <250 WBCs/µL
Blood culture	Aseptically-collected venous blood samples	Adult set: 5-10 mL/bottle BACTEC® FX (aerobic and anaerobic bottles) - Paediatric set: 2-5 mL in single BACTEC FX paediatric bottle	6 days for routine cultures• 14 days for extended cultures if clinically indicated (eg. ?Brucellosis)	Transport to the laboratory on the day of collection or store overnight at room temperature	Positives phoned. Daily culture updates reported electronically.

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments
Bone marrow biopsy and/or aspirate	Aseptically collected bone marrow sample	Sterile universal container for specific tests, such as *Leishmania* microscopy, culture and PCR. -Blood culture bottle for routine bacteriological investigations	1-2 weeks	Transport to the laboratory on the day of collection or store overnight at room temperature.
Bordetella culture	Nasopharyngeal swab, Nasopharyngeal aspirate (NPA), Pernasal swab	Amies transport medium containing charcoal for both nasopharyngeal and pernasal samples. --Sterile universal container for NPA samples with a minimum volume of 1 mL	7-10 days	Transport to the laboratory on the day of collection or store overnight at room temperature
Cerebrospinal fluid (CSF) cell count, microscopy and culture	CSF	Preferably three sequentially labelled sterile universal containers ≥1 mL	3 days	Transport to the laboratory as soon as possible, after informing laboratory personnel
Chlamydia trachomatis (CT) NAAT	First-catch urine• Genital swabs (urethral, cervical, vulvo-vaginal and rectal) • Extra-genital swabs (throat or conjunctival)	Urine in sterile universal container-BD ProbTec™ sample collection kit (male/female). Click here for instructions on self collection of vaginal swabs	5 days	Transport to the laboratory on the day of collection or store overnight at room temperature (See also Combined CT / Neisseria gonorrhoeae (GC) NAAT)

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments
Combined CT / Neisseria gonorrhoeae (GC) NAAT (See also Chlamydia trachomatis (CT) NAAT	First-catch urine• Genital swabs (urethral, cervical, vulvo-vaginal and rectal) • Extra-genital swabs (throat or conjunctival)	Urine in sterile universal container-BD ProbTec™ sample collection kit (male/female). Click here for instructions on self collection of vaginal swabs	5 days	Transport to the laboratory on the day of collection or store overnight at room temperature Note: The laboratory is not UKAS accredited for the confirmatory Chlamydia trachomatis test by PCR due to a change in platform. See here for further information
Chlamydia trachomatisLymphogranulomavenereum (LGV) PCR	Sample sent for Chlamydia/gonorrhoea NAAT positive for *C.trachomatis*	BD Qx SDA collection kit	1 week	Other sample sites (e.g. urine, throat) may be accepted; please contact the laboratory if required.
Clostridium difficile	Faeces	5 - 10 mls in Sterile universal container	24 hours	Plus 14 days for ribotyping The laboratory is not currently accredited for Detection of Clostridium difficile toxin by PCR due to a change in platform
Contact Lens Culture	Contact lens or fluid	Contact lens container	7 days	
Corneal Scrape Culture	Corneal scrape material	Culture Plates	5 days	Only available for samples sent from the Western Eye Hospital
Corneal Scrape Microscopy	Corneal scrape material	Slide	1 day	
Cross infection screen	Swabs, urine	Swabs in Amies transport medium	3 days	To screen for the following organisms: • multi-drug resistant coliforms • multi-drug resistant Acinetobacter baumanni • vancomycin-resistant enterococci (VRE) The laboratory is not currently accredited for the OKN test due to a change in platform

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
				The laboratory is also not currently accredited for detection by PCR of Detection of Carbapenem Resistant organisms due to a change in platform	
Cryptococcal antigen test	Serum, CSF	Rust Top Vacutainer, sterile universal container for CSF	2 days	The laboratory is unaccredited for the confirmatory test performed on positives	
Ear, nose, throat (ENT) culture	Swabs from ear, nose, throat or pharyngeal, mouth, tongue	Amies transport medium	3 days		
Exit site swab culture	Exit site swabs	Amies transport medium	3 days		
Eye or conjunctival culture	Eye , conjunctival swab	Amies transport medium	3 days		
Faecal cryptosporidia microscopy	Faeces	5 - 10 ml in Sterile universal container	3 days		
Faecal culture	Faeces	5 - 10 ml in Sterile universal container. See link for instructions to patients on collecting a faeces sample.	2 - 4 days	Samples may be referred to Public Health England for further investigation in which case TAT will be extended up to an additional 25 days	
Faecal ova, cyst and parasite	Faeces, Whole parasite or segments, Sellotape® slide for pinworm investigation	5 - 10 ml in Sterile universal container	3 days	For invasive amoebiasis, a fresh 'hot' sample should be transported to the laboratory as soon as possible.	Samples may be referred to the Hospital for Tropical Diseases and the London School of Hygiene and Tropical

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
					Medicine for further investigation
Faecal Enteric PCR (Detection of Salmonella, Shigella, Campylobacter, Verotoxigenic Escherichia coli (VTEC), Giardia, Cryptosporidium)	Faeces	1 ml in Sterile universal container	4 days	To identify faecal pathogens other than the targets listed above, appropriate clinical details must be provided so a full culture can be added. Samples may be referred to Public Health England for further investigation For a full list of test limitations, refer to the website entry hyperlinked in the test name	
Faeces Rotavirus, Adenovirus, Norovirus	Faeces	1 – 2 ml (min 0.5ml) in Sterile Universal container	3 days	See also Norovirus	
Fluid culture (Non-sterile body fluids)	Drain fluid / collection	Sterile Universal container	5 days		
Fluid microscopy and culture (Sterile body fluids)	Bile, synovial (joint) fluid, pericardial fluid, peritoneal fluid, pleural fluid	Sterile Universal. Always submit as much fluid as possible; never submit swab dipped in fluid.	5 days		

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
Fungal Dermatophyte microscopy and culture	Skin scrapings, Hair (plucked with follicles), Nail clippings	Dermapak™, Mycotrans™ and/or sterile universal container	4-5 weeks	Transport to the laboratory within 2-3 days of collection. Store at room temperature in dry conditions	For skin scrapings and nail clippings disinfect the affected area with alcohol and collect sufficient amount. For hair samples, include at least 10 infected hair strands
Fungal long-term culture	Tissue and/or biopsy samples, Bone marrow aspirate	Sterile universal container	4-5 weeks	Transport to the laboratory on the day of collection or store overnight at room temperature	
Fungal short-term culture	Respiratory samples (including sputum, bronchoalveolar lavage, bronchial washing, etc.), Sterile fluids (including pleural fluid), Swabs (including ENT, oral, genital, etc.)	• Swabs in Amies transport medium • Other samples in sterile universal container	2 weeks	Transport to the laboratory on the day of collection or store overnight at room temperature	
GUM sexual health screen	Genital swabs (urethral, cervical, vulvo-vaginal), Extra-genital swabs (rectal and throat), Sup-prepuce swabs are occasionally submitted for candidiasis/balanitis in men	Pre-inoculated culture media for the microorganisms above are inoculated at sexual health clinics and incubated at 35-37°C at 5 % CO_2.	3 days	Transport to the laboratory on the day of collection	. Samples may be referred to the Sexually Transmitted Bacteria Reference Laboratory, Public Health England, for further investigation

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
Genital swabs (female)	Cervical and endocervical swabs, High vaginal swabs (HVS), Low vaginal swabs (LVS), Labial or vulval swabs	Amies transport medium containing charcoal for cervical and endocervical swabs, Amies transport medium for all other sites	3 days	Transport to the laboratory on the day of collection or store overnight at room temperature	
Helicobacter culture	Gastric or deodenal biopsy	Sterile universal container	7-10 days	Samples may be referred to Public Health England for further investigation	
Helicobacter pylori antigen test	Faeces	5 - 10 ml in Sterile universal container	3 days		
HIV (rapid testing out of hours)	Serum	5 ml GEL SST (Rust Top)	1 day	Only available out of hours and by arrangement with the Microbiology medical staff. In hours, urgent HIV testing is performed by the I&I laboratory and must be arranged with them in advance.	All samples are forwarded to the Infection & Immunity laboratory for confirmation of results.
Intravascular catheter (line tip) culture	5 cm distal tip	Sterile universal container	3 days		
IUCD culture	IUC device	Sterile universal container	7-10 days	Transport to the laboratory on the day of collection	
Legionella culture	Respiratory samples (sputum, BAL, BW, TA), Sputum samples (expectorated or induced)	2 mls in Sterile universal container (not sputum trap container)	7-10 days	Please request separately. Not included in standard respiratory culture testing	Samples may be referred to the Atypical Pneumonia Unit, Public Health England, for further investigation

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
Legionella urinary antigen	Urine	5 mL in Sterile universal container	24 hrs	Samples may be referred to Public Health England for further investigation. Due to a change in platform, this test is currently unaccredited	
Lymphogranulomavenereum (LGV) PCR	Sample sent for Chlamydia/gonorrhoea NAAT positive for *C.trachomatis*	BD Qx SDA collection kit	1 week	Other sample sites (e.g. urine, throat) may be accepted; please contact the laboratory if required. (See also Chlamydia trachomatis information	
Microsporidia PCR	Faecal sample or other relevant sample (mainly tissue biopsy) depending on clinical presentations	5 - 10 ml in Sterile universal container	7-14 days	Not currently performed in house; this test is referred to the Hospital for Tropical Diseases	
MRSA screen	Nose or nose/axilla/groin swabs	Amies transport medium	2 days		
Mycoplasma and/or Ureaplasma culture	Urogenital swab (dry swab or PCR collection swab), urine, neonatal NPA	2 mls in Sterile universal container	4 days	Transport to the laboratory on the day of collection or store overnight at room temperature	Please request separately. Not included in standard genital culture testing.

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments
Mycoplasma genitalium screen and resistance assay	Urine or urogenital swab	Roche M.genitalium collection kit	4 days	Refer to website entry for additional information on handling This is a newly implemented test that has not yet undergone UKAS accreditation. This test was previously referred externally to Micropathology Special requests for Mycoplasma hominis or Ureaplasma sp. PCR will be referred to Micropathology.
Nasopharyngeal aspirate (NPA) culture	NPA fluid	> 2 mls in Sterile universal container	3 days	Samples should be sent to Virology if viral infections are suspected. If bacterial infection is suspected, routine culture for bacteria and fungi can be performed.
Neonatal screen	Swab from neonate's ear post delivery, Swabs from umbilical, nose, groin areas if clinically relevant	Amies transport medium	3 days	
Norovirus	Faeces	1 – 2 ml (min 0.5ml) in Sterile Universal container	3 days	
Penile swab culture	Penile swab	Amies transport medium	3 days	Transport to the laboratory on the day of collection or store overnight at room temperature
Peri-anal and/or perineal swabs culture	Swab	Amies transport medium	(Up to) 5 days	

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
Peritoneal dialysis fluid (PDF) cell count, microscopy and culture	PDF	Two to three sterile universal containers each containing approx. 20 mL of fluid	7 days	Transport to the laboratory on the day of collection	Cell count: <100 WBCs/µL
Pleural Fluid	Bile, synovial (joint) fluid, pericardial fluid, peritoneal fluid, pleural fluid	Sterile Universal. Always submit as much fluid as possible; never submit swab dipped in fluid.	5 days		
Pneumococcal Antigen	Urine	5 mL in Sterile universal container	24 hrs		Due to a change in platform, this test is currently unaccredited
Pneumocystis (PCP) immunofluorescence (IF)	Note: This test is no longer available. PCP is now referred externally for PCR testing. Please see below.				
PCP (Pneumocystis) PCR	Induced sputum, Bronchoalveolar lavage, Bronchial washing	2 mls in Sterile universal container		Not currently performed in house; this test is referred to Micropathology, Coventry	
Pus and/or abscess culture	Aseptically collected pus and/or abscess aspirate/drain	≥1 mL in Sterile universal container	(Up to) 7 days		
Rapid Antigen Screen	Serum	5 ml GEL SST (Rust Top)	1 day	Note: The laboratory is not UKAS accredited for this test.	See here for further information
Rectal swab culture (other than GUM samples)	Swab	Amies transport medium	3 days		

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
Respiratory tract culture	Bronchial/tracheal fluid	2 mls Sterile universal container (not sputum trap container)	3 days		
Rotavirus, Adenovirus	Faeces	1 – 2 ml (min 0.5ml) in Sterile Universal container	3 days	See also Norovirus	
Semen culture	Semen sample	2 mls Sterile universal container	3 days for routine culture, 5-7 days if Mycoplasma and/or Ureaplasma cultures are requeste	Transport to the laboratory on the day of collection or store overnight at room temperature	Patient preparation: external genitalia should be washed with soap and water before sample collection.
Sexual health (GUM) screen	• Genital swabs (urethral, cervical, vulvo-vaginal) • Extra-genital swabs (rectal and throat) • Sup-prepuce swabs are occasionally submitted for candidiasis/balanitis in men	Pre-inoculated culture media for the microorganisms above are inoculated at sexual health clinics and incubated at 35-37°C at 5 % CO_2	3 days	Transport to the laboratory on the day of collection.	Samples may be referred to the Sexually Transmitted Bacteria Reference Laboratory, Public Health England, for further investigation.
Sputum culture	Expectorated or induced sputum samples	2 mls in Sterile universal container (not sputum trap container)	3 days	Transport to the laboratory on the day of collection or store overnight at room temperature	
Sterility culture	Milk bank samples, Cell culture medium	Sterile universal container	(Up to) 14 days		

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments	
TB and mycobacterial culture	Respiratory samples (sputum, bronchoalveolar lavage, bronchial washing, tracheal aspirate)• Tissue samples and biopsies including lymph node• Aspirates including fine needle aspirate and gastric washings• Fluids (pleural, ascetic, pericardial, etc.)• Pus samples• Early morning urine (EMU) samples	Sterile universal container. Three consecutive EMU samples are required for culture. Minimum volume for each sample is approx. 100 mL.	6-8 weeks	Samples may be referred to the *Mycobacteria* Reference Unit, Public Health England, for further investigation.	
TB blood culture	Blood and bone marrow samples	Specific TB culture bottles obtained from Pathology Reception	6-8 weeks		
TB PCR (Mycobacterium tuberculosis complex) PLUS Rifampicin resistance gene detection	CSF and/or respiratory samples	≥1 mL in Sterile universal container (min. 2mls for BAL samples)	4 days	Transport to the laboratory on the day of collection or store overnight at room temperature. This test is only performed with prior agreement with a Consultant Microbiologist.	Note: The laboratory is not currently accredited for this test due to a change in platform The laboratory will not be UKAS accredited for this test at any time for sample types CSF and tissue. See here for further information

Investigation	Samples tested	Container & Sample volume	Turnaround time	Additional transport requirements and other comments
Tip culture (other than intravascular)	The distal end section of catheter	Sterile universal container	3 days	
Tissue and/or biopsy culture	Tissue (including bone) and/or biopsy samples in sterile universal container, Fine needle aspirates in sterile universal container	Sterile universal container	7-10 days	Samples may be referred to the *Mycobacteria* Reference Unit, Public Health England, for further investigation.
Tobramycin Assay	Now referred externally to Bristol antimicrobial Reference laboratory. Sample referral and reporting managed by Infection & Immunity laboratory. Refer to website here			
Tracheostomy swab culture	Swab	Amies transport medium	3 days	
Urethral swabs (other than GUM samples)	Urethral swab	Amies transport medium containing charcoal	3 days	Transport to the laboratory on the day of collection or store overnight at room temperature
Urine microscopy and culture	Mid-stream clean-catch urine	Sterile universal container	2 days	Click here for instructions to patients on how to collect a urine sample
Urine Schistosoma microscopy	Terminal catch of early morning urine	Sterile universal container	2 days	
Vaginal culture	Cervical and endocervical swabs, High vaginal swabs (HVS), Low vaginal swabs (LVS), Labial or vulval swabs	Amies transport medium containing charcoal for cervical and endocervical swabs, Amies transport medium for all other sites	3 days	Transport to the laboratory on the day of collection or store overnight at room temperature
Wound and ulcer culture	Wound, Ulcer, Umbilical swabs	Amies transport medium	3 days	See statement at beginning of test table on extended turnaround times if referred

REFERENCE LABORATORY DETAILS

At times, it may be necessary to refer work to other laboratories or consultants. The department routinely sends work to the following organisations:

Reference Laboratory	Test referred
Micropathology Ltd University of Warwick Science park Venture Centre Sir William Lyons Road Coventry CV4 7EZ	16S or 18S Ribosomal PCR Whipples PCR
Anaerobic reference laboratory NPHSMicrobiology, Cardiff UniversityHospital of Wales, HeathPark Cardiff CF14 4XW	Identification of Anaerobic bacteria and *Actinomyces*
Hospital for Tropical Diseases (HTD) Department of Clinical Parasitology 3 rd floor Mortimer Market Tottenham Court Road London WC1E 6DG	Intestinal parasites identification *Acanthamoeba* identification Microsporidia PCR
Antimicrobial Resistance and Healthcare Associated Infections (AMRHAI) PHE, 61 Colindale Avenue, London, NW9 5HT	Serological Typing PVL toxin gene detection Extended toxin gene detection Genomovar determination MIC evaluation ESBL detection Carbapenem resistance Acquired AmpC *mecA*PCR *mupA*PCR Linezolid resistance Identificatiobn
Rare and Imported Pathogens Laboratory Manor Road Porton Salisbury Wiltshire SP4 0JG	Identification of Anthrax
Respiratory and vaccine preventable bacteria reference unit (RVPBRU) PHE, 61 Colindale Avenue, London, NW9 5HT	*Bordetella* culture, identification, PCR Respiratory Chlamydia PCR *Legionella* culture, confirmation and typing and urine antigen detection *Mycoplasma* and *Ureaplasma* culture and identification *Haemophilus* identification and typing Epidemiological typing of streptococci Identification of *Streptococcus*sp and related genera Identification and toxigenecity testing of *Corynebacteriumdiphtheriae*
Animal and Plant Health Agency New Haw, Addlestone Surrey KT15 3NB	Identification of *Brucella* sp.
Laboratory of Gastrointestinal Pathogens PHE, 61 Colindale Avenue, London, NW9 5HT	*Campylobacter* identification, molecular typing and susceptibility testing *Salmonella, Shigella, Vibrio, Yersinia* and *E. coli* (including serotype O:157) identification and typing *Helicobacter* identification and susceptibility testing *Bacillus* sp., *C. botulinum*, *C. perfringens*, *C. tetani*, *Listeria* sp. and *S. aureus* toxin/gene detection, isolation, identification and typing
Meningococcal Reference Laboratory PO BOX 209 Manchester Royal Infirmary Clinical Science Building Oxford Road Manchester M13 9WZ	Meningococcal identification, characterisation, sensitivity testing and PCR Pneumococcal PCR and pre-post vaccine serology
National Mycobacterium Reference LaboratoryPHE, National Mycobacterium Reference Service-South, National Infection Service, 61 Colindale Avenue, London, NW9 5HT	Mycobacterial culture, identification and sensitivities

Reference Laboratory	Test referred
Mycology Reference Laboratory (PHE) Bristol Royal Infirmary Myrtle Road, Kingsdown Bristol BS2 8EL	Fungal identification and sensitivity testing
Cryptosporidium Reference Unit Public Health Wales Microbiology ABM Singleton Hospital Swansea SA2 8QA	Cryptosporidium
Diagnostic Parasitology Lab Faculty of Infectious & Tropical Medicine, London School of Hygiene& Tropical Medicine, Keppel St, London WC1E 7HT	Parasite for Identification

Please refer to the UKAS website http://www.ukas.com/search-accredited-organisations/for UKAS accredited laboratories

ANTIBIOTIC ASSAYS

Assays for Vancomycin, Amikacin and Gentamicin are carried out in Clinical Biochemistry under the Biochemistry test scope. Clinical support is provided by Microbiology consultants. Please refer to the Clinical Biochemistry section of the Pathology Website for information on test requirements.

Trough Level – Take blood immediately before the dose.

Other assays are not performed routinely. These must be discussed with a member of the medical microbiology staff and, if required, may necessitate considerable forward planning. These are referred by the Infection & Immunity laboratory.

Tobramycin assays, previously performed by Biochemistry, are now referred externally to Bristol Antimicrobial Reference laboratory. Sample referral and reporting is managed by the Infection & Immunity laboratory.

TUBERCULOSIS

If you require urgent microscopy, please contact the laboratory on ext 17828. Positive microscopy and culture results are telephoned to the doctor whose name appears on the request and written reports are sent to the ward or department indicated on the request and also to the consultant.

Cultures are incubated for up to 6 weeks before being reported as negative.