



Pathology Laboratory User Manual

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1. INTRODUCTION

The Pathology service in Roscommon University Hospital (RUH) is part of the Diagnostic Directorate of the Saolta Health Care Group. It is organised into a Blood Sciences Department (combined Haematology and Biochemistry) and Blood Transfusion. This manual is designed to provide a guide to services provided by the Pathology Laboratory of Roscommon University Hospital.

1.1. Services available at RUH Pathology Laboratory:

The pathology department provides a routine and emergency diagnostic service in Blood Sciences and Transfusion to all clinical areas at Roscommon University Hospital. It also provides a diagnostic services to other healthcare institutions and to the community of General Practitioners (GPs) supported by the hospital. A Haemovigilance Service is available in the hospital; see Table 1 for contact details.

1.2. Services unavailable at RUH Pathology Laboratory:

All samples for Immunology, Histology and Microbiology are referred to the Laboratory Medicine Department at Galway University Hospital (GUH). All results are available on the Laboratory Information system but access to some results especially Histology will be restricted to certain users. In the event that a specific Immunology, Histology or Microbiology test is not available in GUH then the sample may be referred to an outside laboratory for testing.

All Biochemistry and Haematology tests not available in the Pathology Laboratory at Roscommon Hospital are referred to Laboratory Medicine Department at Galway University Hospital. All results are available on the Laboratory Information system. In the event that a specific Biochemistry or Haematology test is not available in GUH then the sample may be referred by either GUH or RUH to an outside laboratory for testing.

For these samples the laboratory operates a tracking system for all tests referred out. When samples are referred out they are booked into the LIS with details of the test name and referral centre. When reports are returned from the referral laboratory, RUH dispatches the original report to the requestor.

Details of all tests referred to GUH can be obtained in the current version of the Laboratory Medicine User Guide University Hospital Galway.

See <https://saolta.ie/sites/default/files/publications/Laboratory%20User%20Guide%20Ver%203.11-final.pdf>

A full list of tests available, laboratory opening hours and contact details for all consultants are available in this publication.

All samples for referral to GUH are sent by courier at 13:00 each day Monday to Friday and should be received in the Laboratory no later than 12:50 to be included in the routine dispatch. If there is a need to send samples urgently to GUH please contact the Laboratory to arrange delivery. For Blood Cultures taken between 12 midnight and 09:00 am please use the transport boxes provided on the Wards. Full instructions and contact details are included on the box.

1.3. Accreditation:

- The Haematology Laboratory, Blood Transfusion Laboratory and Haemovigilance Service are accredited by the Irish National Accreditation Board (INAB) in compliance with the International Standard ISO/IEC 15189 and AML-BB (Minimum Requirements for Blood Bank Compliance with Article 14 (Traceability) and Article 15 (Notification of Serious Adverse Reactions and Events) of EU Directive 2002/98/EC).
- All activities are performed in accordance with the requirements of the above standards.
- INAB Registration number: 238MT.

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Laboratory management are committed to:-

- Staff recruitment, training, development and retention at all levels to provide a full and effective service to its users.
- The proper procurement and maintenance of such equipment and other resources as are needed for the provision of the service.
- The collection, transport and handling of all specimens in such a way as to ensure the correct performance of laboratory examinations.
- The use of accredited examination procedures and methods that will ensure the highest achievable quality of all tests performed.
- Reporting results of examinations in ways which are timely, confidential, accurate and clinically useful.
- The assessment of user satisfaction, in addition to internal audit and external quality assessment, in order to produce continual quality improvement.

Details of the scope of accreditation can be seen at <https://www.inab.ie/fileupload/medical-testing/roscommon-university-hospital-saolta-university-healthcare-group-238mt.pdf>

All Blood Science laboratory activities are subject to continuous review through quality assurance and audit. The laboratory participates in a number of external quality assessment schemes, all of which are accredited. A list of assays and relevant schemes is available on request.

1.4. Confidentiality:

All Laboratory staff are bound by the Health Service Executive Codes of Standards and Behaviour which states: “Employees must not improperly disclose, during or following termination of employment, information gained in the course of their work.

Employees may have access to or hear information concerning the medical or personal affairs of patients and/or employees, or other health service business. Such records and information are strictly confidential and can only be divulged or discussed in the performance of normal duty. Disclosure of records or information under various statutory provisions (e.g. Freedom of Information Acts 1997 and 2003; Data Protection Acts 2001 and 2003; the Health Acts 1947 to 2007) will be made in accordance with HSE policies, procedures and protocols.”

GDPR provides for high standards of data protection for individuals and imposes increased obligations on organisations that process personal data. All HSE staff must comply with all applicable data protection, privacy and security laws and regulations including the HSE Data Protection Policy which sets out the requirements of the HSE relating to the protection of personal data where we act as a Data Controller and / or Data Processor, and the measures to be taken to protect the rights of data subjects, in line with EU and Irish legislation.

HSE Data Protection Policy is available from: <https://www.hse.ie/eng/gdpr/hse-data-protection-policy/hse-data-protection-policy.pdf>.

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2. CONTACT DETAILS

Section	Telephone
Laboratory Office (all enquiries)	09066 32258 or 09066 32176
Roscommon University Hospital – Switchboard	09066 32000
Emergency out of hours on call laboratory service	9 (switchboard) –and request to be connected to mobile of scientist on-call.
Chief Medical Scientist	09066 32131
Blood Transfusion	09066 32023
Quality Manager	09066 32131
Haemovigilance Office	09066 32350 or bleep 335
Consultant Haematologist	091 524222 and request to speak to the Haematology consultant on call.
Other Galway University Hospital Laboratory Medicine Consultants	See GUH LAB Users Guide https://saolta.ie/sites/default/files/publications/Laboratory%20User%20Guide%20Ver%203.1%20final.pdf (Available from https://saolta.ie/documents/guh-laboratory-medicine-user-guide)
Postal Address	Pathology Laboratory, Roscommon University Hospital, Athlone Road, Roscommon F42 AX61.
email	denise.lally@hse.ie
Complaints:	denise.lally@hse.ie
GP Supplies:	orders@cruinn.ie
Haemovigilance Officer	mary.mimnagh@hse.ie

Table 1. Contact details. If calling from within Roscommon Hospital just dial the digits shown in blue.

3. LOCATION

The Laboratory is located on the first floor of the hospital. The external door is controlled via keypad access. Please ring bell for access.

4. OPENING HOURS

Department/Activity	Opening Hours
Routine Laboratory Diagnostic Service Mon. to Fri.	09:00 to 20:00
Routine Laboratory Diagnostic Service Sat. a.m.	09:30 to 12:00
On call Mon. to Fri. (Contact Med. Scientist on call via switchboard before sending samples)	20:00 to 09:00 (next morning)
On call Sat. (Contact Med. Scientist on call via switchboard before sending samples)	12:00 to 09:30 (Sunday morning)
On call Sun. & Bank Holidays. (Contact Med. Scientist on call via switchboard before sending samples)	09:30 to 09:00 (next morning)

Table 2. Opening Hours

To facilitate efficient processing of requests, samples should be delivered to the laboratory before 19:00. The “On-call” service should not be used to run routine bloods for elective cases.

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5. ON-CALL SERVICE

An emergency out of hours service (on call) is in place for emergency work, i.e. non deferrable tests necessary for decisions regarding patient treatment. During these hours, the laboratory is staffed by one medical scientist on call. The scientist must be contacted when urgent samples are being sent to the laboratory (via switch – dial ‘9’ from within RUH).

All tests listed in Section 10 are available on call with the exception of Urinary chemistries.

For advice on any test not included in these lists, please contact the medical scientist on-call.

Blood gases can be analysed on the blood gas instrument. Lactate, ionised Calcium, Sodium, Potassium, Chloride, Haemoglobin and Carboxyhaemoglobin are also available on this instrument. The Blood Gas analyser is password controlled. Please contact the Pathology Laboratory if you require a password.

6. LABORATORY SUPPLIES

All users must use approved specimen containers, which can be obtained from the Laboratory or directly from Cruinn Diagnostics.

6.1. Hospital

Collect supplies from Laboratory as required during routine opening hours. Please do a complete stock check on a monthly basis and send order for any products required rather than submitting multiple orders for one or two items.

6.2. General Practitioners

Cruinn Diagnostics centrally process and supply all requisitions from external service users as per the Roscommon order form available from Cruinn.

All supply orders received by 12pm will be delivered by the next working day.

Cruinn Diagnostics Ltd
 Email: orders@cruinn.ie
 Telephone: 01 629 7400
 Fax: 01 629 7401

For added convenience Cruinn Diagnostics Ltd will also supply a number of ancillary items such as Request Forms, bags, swabs, urine containers etc.

7. SAMPLE AND REQUEST FORM REQUIREMENTS

The Pathology Laboratory has 2 request forms:

- Blood transfusion request form (RCH/BT/F001) is used for blood transfusion requests, including group and screen, group and cross match, direct coomb’s test, transfusion reaction investigation, blood component requests. For Blood Transfusion samples refer to **Positive identification** of the patient prior to sample collection is detailed in Haemovigilance procedure RCH/HVIG/CP/003.

Patient Consent for transfusion must be documented on Transfusion Prescription and Administration Document for Blood and Blood Components RCH/HVIG/CF009 following discussion between doctor and patient who provide the patient with the information detailed in policy for Provision of Information to Patients Regarding the Administration of Blood Component or Product RCH/HVIG/CP/001.

- Blood Sciences request form (RCH/BS/F001) used for all non Transfusion requests. This is a triplicate request form and if using pre printed patient ID labels ensure a copy of the label is placed on all 3 copies. Note for RUH patients the ward and consultant are not specified on pre printed labels and **MUST BE** handwritten on form.

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Table 3: Specimen / Request Form Acceptance/Rejection Criteria

Information Required on Specimen	Information Required on Request Form	Requirements	Action if non-compliant
Surname & Forename	Surname & Forename	<p>Details on specimen must match details on request form.</p> <p>All specimens from within RUH should be labelled with Blood Track label generated at the bedside except OPD or theatre specimens which may be handwritten or in exceptional circumstances when all Blood Track PDA / printers are out of service or in emergency situation.</p> <p>In the case of samples not originating within RUH it is the responsibility of the requesting Doctors/Phlebotomists who opt to use printed labels to have safe procedures in place for controlling and printing, affixing and checking patient details of such labels.</p> <p>NEVER use felt tip pens to label samples or complete request forms.</p>	<p>Request will be rejected.</p> <p>(If Blood Track label / patient ID label is offline or any of the required information is missing then request will be rejected.)</p> <p>Note: In Transfusion the urgent need for blood overrides the strict sample labelling requirements. If the situation is critical, blood samples shall be identified with sufficient information to identify the patient, two independent identifiers (e.g. patient full name and PID number) and the individual who drew the blood. Specimen may be processed.</p> <p>A comment will be included in the printed test report detailing the nature of the non-conformance.</p>
DOB	DOB		
Unique ID (PID (Patient Identification) number)	Unique ID (PID (Patient Identification) number) GP users are requested to provide the 'Hospital PID Number' applicable to the patient on the request form if available.		
Date and time of specimen collection	Date and time of specimen collection		
Gender	Gender		
	Sample type		
Blood Track COLLECT label (if applicable)	Blood Track COLLECT label (if applicable)	Blood Track COLLECT label is acceptable as signature of the taker on specimens and request forms from within RUH	
Signature of specimen taker	Signature of specimen taker		
Ward/Location (RUH in-patients and OPD patients only)	Ward/Location	Must be on specimen or form. Details on specimen should match details on request form.	If absent from request form sender will be asked to confirm before sample can be processed
	Consultant / Requesting G.P.	Must be on request form.	Sample is processed. A comment will be included in the test report detailing the nature of the non-conformance.
	Test Request/Product required (in the case of Transfusion request form)	Must be on request form.	If absent from request form sender will be asked to confirm before sample can be processed Sample is processed. A comment will be included in the printed test report detailing the nature of the non-conformance.
	Clinical Details or Special Requirements	All Blood Transfusion special requirements e.g. CMV Neg or Irradiated must be specified on form.	If absent from Transfusion request form sender will be asked to confirm before sample can be processed Sample is processed. A comment will be included in the printed test report detailing the nature of the non-conformance.
	Signature of requestor + Bleep or Ext. No. or contact phone number	For Transfusion request forms all fields must be complete on bottom left section of request form and must be traceable via user ID from the Blood Track label.	Requesting Doctor or nominee may amend the Request form.

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Table 4: Transfusion specific requirements

Information Required on Request Form	Requirements	Action if non-compliant
Type of Blood Component	Must be on Blood Transfusion request form	If absent from Transfusion request form sender will be asked to confirm before sample can be processed Sample is processed. A comment will be included in the printed test report detailing the nature of the non-conformance.
Quantity of Blood Component required.		
Date required		
Time required		
Previous Transfusion history		
Clinical Details or Special Requirements	All Blood Transfusion special requirements e.g. CMV Neg or Irradiated must be specified on form.	
Signature of requestor + Bleep or Ext. No. or contact phone number	For Transfusion request forms all fields must be complete on bottom left section of request form and must be traceable via user ID from the Blood Track label.	Requesting Doctor or nominee may amend the Request form.

Table 5: Additional Specimen Rejection Criteria

Issue	Action
Current patient details relating to patients name, date of birth, hospital number or PID (Patient Identification) number do not match with historical details on file.	Requestor will be contacted and if current details are correct request will be accepted. If incorrect it will be rejected.
Haemolysed Blood Transfusion Samples <i>(Haemolysis in the patient sample may mask antibody-induced haemolysis and therefore may significantly affect the interpretation of transfusion results)</i>	Request will be rejected. Requestor will be informed.
Clotted FBC, ESR or Coagulation samples	Request will be rejected. Requestor will be informed.
Incorrect sample container, under filled, grossly haemolysed, sample leaked, or no sample	Request will be rejected. Requestor will be informed.
Specimen containers that are externally contaminated with body fluids	
Details on sample illegible	
Request form contaminated / blood stained	
Use of correction fluid on sample or request form or sample	
Empty sample container	
Expired sample container	
Urgent samples or samples that cannot be repeated.	Due to the nature of histology and CSF samples, incorrectly labelled samples or request forms may be amended. The requesting doctor will be informed and if he/she is confident that the sample can be correctly identified, it may be accepted once the amendments have been made. The doctor must sign the request form to confirm that he/she has amended the sample or form and is satisfied that both sample and form are now correct. Amendments are also permitted on 24 hr Urine Collection samples.

A list of factors known to affect the performance of Haematology examinations or the interpretation of Haematology results are available on request

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Please remember that inadequately completed request forms can cause delays in issuing reports. Some requests for biochemistry and haematology are listed on the request form and requested by means of a 'tick box'. All other investigations required must be clearly handwritten on form.

These criteria for sample acceptance are essential for patient safety. They are in place to decrease the risk of potential harm caused by labelling errors. Samples not meeting the minimum requirements may be rejected. Only addressograph labels generated by the Blood Track handheld system are acceptable on Blood Transfusion samples. If a sample is to be submitted to the Blood Transfusion Laboratory and the Blood Track handheld system is not available the sample label must be handwritten and must contain all the mandatory information detailed in table 3.

Addressograph labels are acceptable on all other samples.

The laboratory reserves the right to reject specimens that are improperly labelled or are accompanied by forms that are incompletely filled. Consistent practices for specimen rejection are employed across the laboratory.

The laboratory recognises that, in certain cases where the specimen, involves an invasive procedure, or could not otherwise be easily recollected, it may be acceptable to apply an exception of specimen rejection. Exceptions are applied using strict and explicit criteria in accordance with established procedures. The person who collected the specimen will be required to come to the laboratory to identify the specimen and record reason for acceptance and sign the request form, assuming responsibility for the identification of the specimen. Reports relating to such samples will carry a disclaimer stating the nature of the non conformance.

If insufficient specimen is received for all tests requested and the specimen is easily re collectable (e.g. urine, stool, sputum, blood), a repeat collection will be requested. Test(s) for which there is sufficient specimen will be performed.

If the specimen is not easily re-collectable (e.g. CSF, fluids), the ordering clinician will be contacted to establish priority order of tests to be performed.

8. ORDER OF DRAW, SAMPLE VOLUMES FOR BLOOD SAMPLES

The order of draw is important to minimize carry-over of anticoagulant. **Note: Blood cultures must be drawn first to avoid contamination.**

Please note, it is preferable that blood tubes, especially those containing preservatives, are filled to their stated capacity. This avoids the risk of insufficiency or interferences from excess concentrations of preservative. This is mandatory for some tests (e.g. coagulation), where an imbalance of preservative due to under-filling or over-filling would invalidate the test. Ensure all blood collection tubes are in date before use.

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Table 6: Order of venipuncture.

Specimen Type or Tube Colour and Order of Draw	Additive	Laboratory Use
BLOOD CULTURES	Soya broth	Blood cultures aerobic & anaerobic. Send to Laboratory immediately. For Blood Cultures taken between 12 midnight and 09:00 am please use the transport boxes provided on the Wards. Full instructions and contact details are included on the box.
	Trisodium Citrate	Coagulation Studies & D Dimers. If using butterfly needles and a coagulation sample is the first sample to be taken then a discard sample must be taken before the coagulation sample. Fill to mark on tube.
	5ml plain gel tube	Serum determinations.
	Na+. EDTA	Trace Elements
	Lithium Heparin	Contact lab for list of tests
	K3EDTA 6.0 mL blood	Blood Transfusion Group & Hold, X Match, DCT & Transfusion Reaction Investigation.
	3.0 mL K3 EDTA	Full Blood count, ESR & DCT. Fill to mark on tube.
	Sodium fluoride/Potassium oxalate	Blood glucose
 	Urine in plain vacutainer – part of Griener urine collection system Transfer urine into Yellow Top Vacuette (Z Urine No Additive)	Urine ACR (albumin:creatinine ratio) and any other spot urine biochemistry assays.
	Plain urine container (white top)	
	Boric acid container (red top)	

Always ensure sample containers are in date.

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Following sample collection discard all materials used in collection safely according to local policy for disposal of healthcare risk waste. Contaminated sharps are potentially hazardous and must be disposed of in a rigid, leak-proof container.

9. Transfusion Specific Information:

- 9.1. Collected specimens should be sent at room temperature immediately, or as soon as practically possible, to the Blood Transfusion laboratory. Specimens must arrive in the Laboratory within 5 hours of being taken. It is the policy of the Transfusion department to process all specimens received to the blood transfusion laboratory immediately, or as soon as practically possible depending on workload and urgency of sample.
- 9.2. Blood transfusion specimens are valid for ordering additional testing/ blood components for a period of 72 hours from **the time the sample was drawn**. Cross matched blood is held for a patient for a period of not more than 72 hours. Laboratory will contact ward to inform of crossmatched units that may be de reserved for a given patient before the 72 hours have elapsed, e.g. blood needed for another patient during an emergency bleed.
- 9.3. Patients that are transfused within the 72 hour time frame of the original specimen need not be re drawn; however a new sample is required after the 72 hours **post time of sample draw** has elapsed.
- 9.4. **Urgent** specimens for blood transfusion may be sent by the chute system (number 2 for laboratory), alternatively, the specimen may be delivered by designated hospital staff to the medical scientist “on call” and the person generating the request **must contact the scientist on call**.
- 9.5. Blood Transfusion samples from outside agencies will be processed Mon-Fri 09.00-20.00 and a report will issued on the same day.
Blood transfusion requests from outside agencies must be accompanied by 2 samples see table 2 and table 3 for labelling requirements.
- 9.6. A Haemovigilance service is available in the hospital. Further information can be got from the Haemovigilance Officer or by contacting the hospital blood bank (see contact details in table 1).
- 9.7. The following products are stocked in the Blood Transfusion Laboratory:
 - Red Cells
 - LG Plasma (Octoplas)
 - Albumin 20%
 - Octaplex
 - Fibrinogen 1g
 - Platelets are ordered from the IBTS on a named patient basis only and are not stocked at RUH.
- 9.8. The special coagulation factors shown in Table 7 can be supplied by the Blood and Tissue Establishment (BTE) GUH. Administration of these products must be approved by the patient’s consultant after discussion with the Haematologist on call in GUH. Contact the Blood Transfusion Lab. RUH to arrange delivery. As transfusion of these products is likely to be an extremely rare event these products will be administered as specified in relevant policies supplied by BTE GUH.

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Table 7. Special coagulation factors available from BTE GUH

Product	Supplier	Apex Product Code	Supplier Code/ Stock Source	Purpose
Activated PCC/FEIBA 1000IU	Baxalta	FEIBA1000	x	Activated PCC product (Human) for treatment of patients with Haemophilia A who have antibodies to Factor VIII
Activated PCC/FEIBA 500IU	Baxalta	FEIBA500	x	
Wilate 500IU	Octapharma	WILA500	o	Von Willebrand factor/Coag. factor VIII complex (Human) for treatment of patient's with Von Willebrand's disease
Wilate 1000IU	Octapharma	WILA1000	o	
Alprolix 250 IU	Sobi	ALP250	S	Alprolix is used for the treatment and prevention of bleeding in all age groups of patients with haemophilia B (inherited bleeding disorder caused by factor IX deficiency)
Alprolix 500 IU	Sobi	ALP500	S	
Alprolix 1000 IU	Sobi	ALP1000	S	
Alprolix 2000 IU	Sobi	ALP2000	S	
Alprolix 3000 IU	Sobi	ALP3000	S	
Novoseven 1mg	Uniphar	NS50	n	Coagulation Factor VIIa recombinant. Treatment of patients with haemophilia A or B who have inhibitors , congenital Factor VII deficiency and patients with Glanzmann's Thrombasthenia who have a decreased or absent response to platelet transfusions.
Novoseven 2mg	Uniphar	NS100	n	
ELOCTA 250IU	Sobi	ELOC250	S	Recombinant coagulation factor VIII, Fc fusion protein. Treatment and prevention of bleeding in all age groups of patients with haemophilia A (factor VIII deficiency). ELOCTA is prepared by recombinant technology without addition of any human- or animal-derived components in the manufacturing process.
ELOCTA 500IU	Sobi	ELOC500	S	
ELOCTA 750IU	Sobi	ELOC750	S	
ELOCTA 1000IU	Sobi	ELOC1000	S	
ELOCTA 1500IU	Sobi	ELOC1500	S	
ELOCTA 2000IU	Sobi	ELOC2000	S	
ELOCTA 3000IU	Sobi	ELOC3000	S	
Fibrinogen	IBTS	RIASTAP	q	RiaSTAP, Fibrinogen Concentrate (Human) indicated for the treatment of acute bleeding episodes in patients with congenital fibrinogen deficiency, including afibrinogenemia and hypofibrinogenemia. RiaSTAP is not indicated for dysfibrinogenemia.
Praxbind	Reversal agent for Pradaxa (Dabigatran) request from Pharmacy RUH who will obtain from BTEGUH or PUH as required. This is a Pharmacy product and details will not be stored on Apex.			

- 9.9. All activities relating to transfusion of red blood cells and platelets are monitored using the Blood Track System. Data relating to all blood, platelet and product transfusions are maintained on the Laboratory Information system.

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9.10. LIFE THREATENING EMERGENCY BLEED:

- 9.10.1. The blood transfusion department has 2 units of group confirmed O Rh D negative, phenotype CE and Kell negative red blood cells for emergency transfusion only, when the risk of not transfusing outweighs the risk of waiting for fully crossmatched compatible blood.
- 9.10.2. **Staff should be advised that** supply of **group specific uncross matched** blood will take **10 minutes** from time of specimen receipt **for patients with a known history**. Patient's **history unknown** & blood required sooner than 40 mins, **give the emergency uncrossmatched O Rh (D) Negative units**.
- 9.10.3. Supply of **fully crossmatched** blood will take 40 -60 minutes.
- 9.10.4. Supply of compatible blood is compromised if the patient has **irregular antibodies**, laboratory will advise on availability.
- 9.10.5. The two units of O negative red blood cells are located in the Roscommon Issue Fridge at the Pathology laboratory specimen reception area. Units are clearly labelled as "Emergency Blood". Use only in extreme emergency. A blood transfusion report form is kept with these units, please complete patient details on this form and keep in patient's chart.
- 9.10.6. Plasma is also available on request from the laboratory. Plasma can be issued from the laboratory within 30 minutes on receipt of request.
- 9.10.7. Fibrinogen 1g is also available on request from the laboratory. Fibrinogen can be issued from the laboratory within 15 minutes on receipt of request.
- 9.10.8. Platelets are not available on site but can be ordered as required. Please note that the transport time for platelets on request is approximately 90 minutes.
- 9.10.9. In a life threatening bleed/ multiple trauma, it is imperative that the Medical Officer or deputy, contacts the blood transfusion laboratory, or "on call" scientist as soon as possible to advise of the clinical situation.
- 9.10.10. A properly labelled transfusion specimen must be drawn, **before transfusing the 2 O Rh negative units**. This is imperative for accurate patient blood grouping.
- 9.10.11. To prevent the risk of samples being lost in the air chute system, it may be advisable to send a member of staff with the sample, directly to the transfusion laboratory.

9.11. TRANSFUSION REACTION INVESTIGATION

9.11.1. If a transfusion reaction is suspected then:

- Stop the Transfusion immediately
- Notify a senior member of the clinical team immediately
- Notify the Laboratory and Haemovigilance immediately

The following samples must be sent to the Laboratory if indicated:

- ABO/ Rh group and antibody screen
- Blood cultures
- First voided urine sample for haemosiderin test
- SMAC
- Direct Antiglobulin Test (DAT)
- FBC
- Coagulation
- MSU
- Return implicated unit to laboratory

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All Transfusion reaction investigations are treated as urgent.
Send all samples to the Laboratory as soon as possible after phlebotomy to ensure sample integrity is maintained.

10. Blood Sciences Test Profiles:

Haematology Test Profiles:

Full Blood Count (FBC): White Cell Count, Red Cell Count, Haemoglobin, HCT (Haematocrit), Mean Cell Volume, Mean Cell Haemoglobin, Mean Cell Haemoglobin Concentration, Platelet count, Neutrophils, Lymphocytes, Monocytes, Eosinophils, Basophils (may also include Nucleated Red Blood Cell count and / or Reticulocytes as appropriate).

Coagulation Screen: INR, Prothrombin Time, Activated Partial Thromboplastin Time and Fibrinogen (Clauss).

Other Haematology tests available: Monospot test for Infectious Mononucleosis, D-Dimers and ESR.

Biochemistry Test Profiles:

Renal Profile (U+E): Sodium, Potassium, Chloride, Urea, Creatinine and eGFR (where appropriate).

Liver Profile (LFT): Albumin, Alkaline Phosphatase (ALP), Alanine aminotransferase (ALT), Total Bilirubin, Gamma-Glutamyl transferase (GGT), Total Protein

Bone profile: Calcium, Calcium (adjusted), Inorganic Phosphate, Albumin and Alkaline Phosphatase (ALP)

Haematinics: Vitamin B12, Folate and Ferritin.

Other Biochemistry tests available:

C-Reactive Protein (CRP)	Aspartate Aminotransferase (AST)
Creatine Kinase (CK)	Amylase
Troponin T	pro B-Type Natriuretic Peptide (pBNP)
Magnesium	Urate
Bicarbonate	Glucose
Human Chorionic Gonadotropin (HCG)	

Urine Chemistries:

Urine Sodium	Urine Potassium,
Urine Calcium	Urine Creatinine
Urine Albumin	Urine Albumin:Creatinine Ratio
Urine Total Protein	Urine Protein:Creatinine Ratio
Calculation of Calcium Excretion rate	
Calculation of Calcium: Creatinine Molar Ratio	
24 hr Creatinine Clearance	

Faecal Analysis:

Faecal Occult blood.

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Many clinicians request the profile ‘SMAC’ on request forms, which includes (*depending on the origin of the specimen*):

Biochemistry (SMAC) Profile for RUH hospital patients	Biochemistry (SMAC) Profile for GP and other non-RUH patients.	Biochemistry (SMAC) Profile for aged samples.
Sodium	Sodium	Sodium
Potassium	Potassium (must arrive <4hrs post phlebotomy)	Chloride
Chloride	Chloride	Urea
Urea	Urea	Creatinine ± eGFR
Creatinine ± eGFR	Creatinine ± eGFR	Calcium
Glucose	Calcium	Calcium (adjusted),
Calcium	Calcium (adjusted)	Alkaline Phosphatase
Calcium (adjusted)	Total Bilirubin	Alanine Aminotransferase
Total Bilirubin	Alanine Aminotransferase	Total Protein
Inorganic phosphate	Alkaline Phosphatase	Albumin
Alanine Aminotransferase	Total Protein	Gamma –Glutamyl Transferase will be added if Alkaline Phosphatase result is >104 U/L
Gamma –Glutamyl Transferase	Albumin	
Alkaline Phosphatase	Gamma –Glutamyl Transferase will be added if Alkaline Phosphatase result is >104 U/L.	
Total Protein		
Albumin		

11. PATIENT INSTRUCTIONS FOR 24-HOUR URINE COLLECTION

Important points

- 11.1. It is very important that all urine passed in an exact 24 hour period is collected. Loss of any urine or a collection made for either more or less than 24 hours will invalidate the tests and might lead to an incorrect diagnosis
- 11.2. Do not void urine directly into the 24-hour container, but into a suitable clean detergent-free jug and then pour into the 24-hour container.
- 11.3. **If the container contains acid (used as a preservative) or has a warning label, then care needs to be exercised when adding urine from the collection vessel. Hydrochloric acid causes burns and is irritating to eyes, skin and respiratory system. If it comes in contact with skin, wash the affected area immediately with plenty of water and seek medical advice. Keep out of reach of children. Not to be taken internally – would cause severe irritation and damage.**
- 11.4. Ensure that the container is correctly labelled as per table 3.

11.5. Instructions to patient for sample collection

- 11.5.1. Empty your bladder on rising and throw away the sample. The collection is started after this sample has been passed. Write the start time on the specimen container label.
- 11.5.2. Collect all urine in the container provided on **every** occasion that it is passed during the following 24 hours and store refrigerated if possible.
- 11.5.3. Empty your bladder on rising the next morning and add this sample to the collection.
- 11.5.4. Write the finish time on the container label.
- 11.5.5. Bring the container to the laboratory on the day of completion.

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11.6. Incomplete collections

- 11.6.1. If a sample is forgotten or lost down the toilet, then all the urine collected to this point should be thrown away and the collection re-started the following morning.
- 11.6.2. If the incomplete sample is an acid collection, the original container should be returned to the laboratory and a new one requested.

12. ADDITIONAL REQUESTS / SAMPLE RETENTION

If further additional testing is required after the specimen has been sent to the laboratory, please contact the relevant department to investigate the feasibility of using the initial specimen for analysis. If test is feasible you will be requested to forward an additional request form with details of additional tests required.

13. URGENT REQUESTS

All Blood Sciences requests from UCC, MDS, MAU, Radiology and RAC are treated as urgent and are fast-tracked through the laboratory's system. Once authorized, results are available for reviewing on the Ward Enquiry module of the Laboratory Information System (see section 17 for details on accessing results electronically).

All other urgent requests should be labelled as such **AND** the laboratory phoned to advise of the urgency. Please note that during on-call times **all requests should be phoned to the Medical Scientist on call**. See section 2 of this manual for contact details.

For tests that require urgent referral to Galway University Hospital or another institution please contact the Laboratory to arrange transport.

14. SAMPLE TRANSPORTATION

14.1. Health and safety

It is the policy of the Laboratory to treat all samples as potentially infectious or high risk.

Therefore, we advise that universal precautions are taken in the collection process, packaging, and delivery of specimens to the Laboratory for analysis.

Specimens should always be placed in a biohazard transport bag with the request form placed in the pouch and the bag should be sealed. All samples should be sent to the Laboratory as soon as possible.

14.2. Sample delivery within the hospital

Samples may be sent to the Laboratory via the Pneumatic Tube System (PTS). The following samples must **never** be sent in the PTS:

- Histology specimens
- CSFs

NOTE: The Laboratory is responsible for the maintenance of the PTS. In the event of System failure please notify the Laboratory @ ext. 2258.

14.3. Packaging of diagnostic specimens from outside RUH

It is the responsibility of all persons sending samples to the laboratory to adhere to national and international regulations ensuring that specimens sent to the laboratory do not present a risk to anyone coming in contact with them during transportation or on receipt in the laboratory. Carriage of goods by road must comply with the European Agreement Concerning the International Carriage of Dangerous Goods by Road regulations (ADR) (2012). See Health and Safety Authority website www.hsa.ie for a copy of the regulations.

Specimens may be brought directly to the laboratory and placed in the locked GP SAMPLE BOX.

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14.4. Instructions:

14.4.1. The packaging must be of good quality, strong enough to withstand the shocks and loadings normally encountered during carriage.

14.4.2. The packaging must consist of at least three components:

- a. A leak proof primary receptacle e.g. blood collection tube, MSU container;
- b. A secondary sealable package to enclose and protect the primary container(s), e.g. plastic specimen bag, approved GP transport containers.
- c. Outer package: the secondary package is placed in an outer transport container with suitable cushioning that protects it and its contents from external influences such as physical damage and water while in transit. This must conform to ADR regulations.

14.4.3. For carriage, the outer packaging must be marked with UN 3373 and 'Biological Substances, Category B' marked adjacent to the diamond shaped mark.



BIOLOGICAL SUBSTANCE, CATEGORY B

Sending of samples through the post is not permitted.

14.5. Storage of samples prior to transport to the laboratory

Samples should be transported to the Laboratory as soon as possible after collection. **Samples should not be stored in ward areas or in GP practices overnight or over the weekend.** Samples that are not transported in a timely manner to the laboratory may be rejected if there is any doubt about the sample integrity.

15. Procedure for the Transport of Infectious or Suspected Infectious Specimens

- 15.1. Specimens or samples to be sent should be stored in a secure (preferably plastic) primary container, containing absorbent material.
- 15.2. Place primary container containing the specimen into a plastic biohazard bag, seal bag.
- 15.3. State clearly on the request form RCH/BT/F001 or RCH/BS/F001 that the sample is from a possible or confirmed "High Risk" patient.
- 15.4. Place the request form on the plastic sleeve on the bio hazard bag. Place the name, address and contact number of the originator on the outside of the box.

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16. REFERENCE RANGES

16.1. Factors that influence the reference range include:

- The manufacturer of the reagents
- Technology utilised to carry out the examination
- Population/laboratory studies
- Literature/reference books
- Clinical advice

Where appropriate reference ranges are age and gender related and are available on all reports both electronic and paper formats.

Any changes to reference ranges are notified to the clinician for a minimum of a 3 month period following the change and included as a comment on all reports. Any changes to reference ranges will not apply to historical results.

17. REPORTS & ENQUIRIES

17.1. Electronic access to reports

As soon as reports are authorized, they may be viewed within the Ward Enquiry module of the Laboratory Information System. The LIS is a shared system between Roscommon University Hospital, Galway University Hospital and Mayo University Hospital and most results generated and authorised on these sites are available for review on the LIS.

Histology results are only available to approved clinicians who require access to these results. Some tests are deemed confidential and are only available to the patients clinician e.g. Genetic testing, HIV testing.

Upon authorisation, Blood Sciences reports for GP patients are released to Healthlink (for all GPs registered with Healthlink).

17.2. Instructions for accessing reports electronically within Roscommon Hospital and SHH:

Authorised results (for Roscommon University Hospital, Galway University Hospital or Mayo University Hospital) from the following departments may be accessed as described below:

- Biochemistry
- Haematology
- Microbiology
- Immunology

Access to results is password controlled. Each staff member who requires access to Laboratory results must have their own unique User ID and Password. This is issued to each individual who completes a Lab User Access Form and sends same to colm.walsh2@hse.ie

17.2.1. This unique username and password can be used to access all results using the Web based ward Enquiry option. A shortcut is available in the GUH Useful Resources folder. Double click on shortcut to display log on screen or follow link below:

<http://guh-limsweb/apex/mgwms32.dll?MGWLPN=APEX&APP=PCOMB&APPDIR=/APEX>

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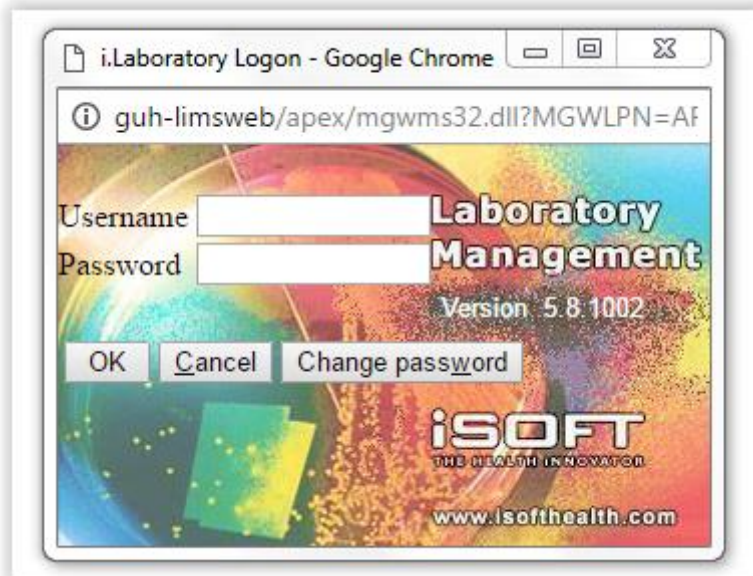


Figure 5. Log on screen for Web ward enquiry.

After entry of username and password the user can search using either the PID (Patient Identification) number and first 2 letters of surname or an unknown search using a combination of name/DOB/Sex . See Figure 6 below.

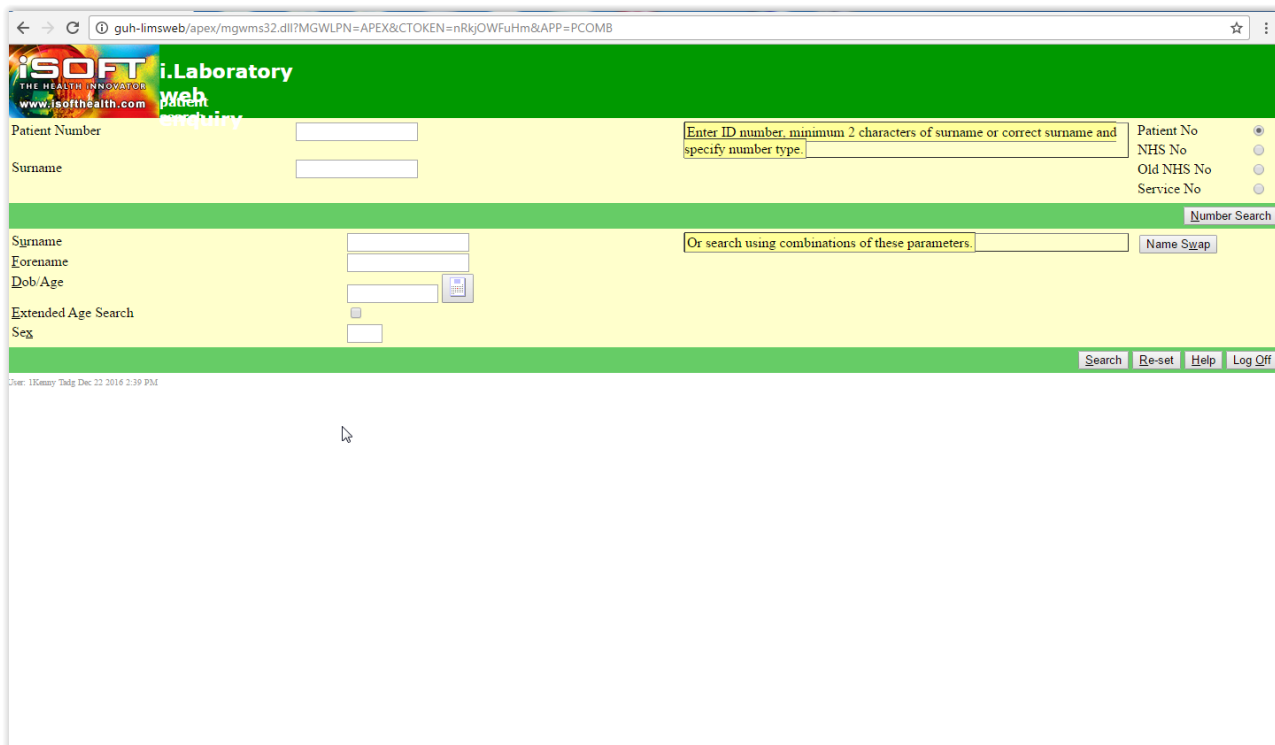


Figure 6. Patient enquiry screen

17.3. Appearance of Haematology and Biochemistry unauthorised reports:

If a sample has been received in the Laboratory and testing is not complete then no results will be displayed and a message “In Progress” or “Not Fully Authorised” will be displayed until the all results have been validated.

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17.4. Hardcopy reports

17.4.1. RUH hardcopy reports

To facilitate identification, hospital reports are colour-coded as follows:

Department Report colour

Biochemistry White with Green

Haematology White with Purple

Transfusion Pink

Hardcopy reports are delivered to ward areas via the chute system throughout the day. For all other areas (OPD etc), reports are delivered to Medical Records.

17.4.2. Hardcopy reports for patients outside of RUH

Electronic reporting is available via Healthlinks for all registered GP's. For further information on Healthlinks contact 091 775909.

For GPs who receive hardcopy reports and any other organisations who do not have access to electronic reports, they are sent via an Post.

Any reports received in error should be returned to the laboratory.

17.4.3. Reports for referred samples

Reports for specimens that have been referred out for testing will be on hardcopy and in the reporting format as defined by the referral laboratory. Such reports will contain patient demographics, results and interpretations.

For Blood Transfusion details of blood group, antibody investigation results and relevant compatible units will be included.

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18. PHONING OF CRITICAL RESULTS

Abnormal results defined in the critical limits table below will be telephoned to the requesting source. Please note that it is laboratory policy to ask for name of recipient and that results be repeated back when phoned to ensure accurate transfer of information.

Table 8. Critical Limits

Discipline	Test code	RESULTS TO BE PHONED IF
Haematology	Hb	≤ 9.0 g/dl <i>first time</i> presentation at RUH and all GP's ≤ 8.0 g/dl every time ≥ 19 g/dl Males ≥ 17 g/dl Females
	Plt	$\leq 100 \times 10^9/l$ <i>first time</i> presentation at RUH and all GP's $\leq 20 \times 10^9/l$ every time $\geq 1000 \times 10^9/l$ every time
	WCC	$\leq 3.0 \times 10^9/L$ <i>first time</i> presentation at RUH and all GP's $\geq 30 \times 10^9/L$ every time
	NEUTS	$\leq 1.5 \times 10^9/L$ first time presentation for RUH patients and all GP's
	Monocytes	$\leq 0.1 \times 10^9/L$ first time presentation
	Blasts	After confirmation for <i>first time</i> patients only.
	PT	≥ 30 secs. and no evidence of anticoagulant therapy.
	APTT	≥ 50 secs. and no evidence of anticoagulant therapy.
	INR	≥ 4
	FIB	≤ 1.5
Haematinics	Vit B12	< 125 pg/ml
Biochemistry	CRP	≥ 300 mg/L (Unless > 300 mg/L in previous 24 hours and phoned)
	Na	≤ 120 or ≥ 150 mmol/l
	K	≤ 2.5 or ≥ 6.0 mmol/l
	Urea	For first time presentation ≥ 30 mmol/l $\geq 50\%$ change in 30 hours (Delta check)
	Creatinine	≥ 345 μ mol/L
	eGFR	≤ 15 ml/min
	GLUC	≤ 2.5 & ≥ 25 mmol/l Not known diabetic ≥ 30 mmol/l Known diabetics
	CALCIUM	≤ 1.8 or ≥ 3.0 mmol/l
	Adjusted CA	≤ 1.8 or ≥ 3.0 mmol/l
	ALT	≥ 600 U/L
	AMY	≥ 200 U/L
	CK	≥ 700 U/L for ext. patients (GP's, etc.) ≥ 3000 U/L in-patients
	Phos	≤ 0.45 mmol/l
	Mg	≤ 0.4 mmol/l
TT	≥ 20 ng/L for ext. patients (GP's, etc.) ≥ 100 ng/L for <i>first time</i> in patients at RUH	
Transfusion	Group and Hold or X Match	Positive antibody screen. Discrepancy between current results and historical results. Difficulty in determining patients group. Any other reason that could result in significant delay in providing products requested.
Other e.g. factors known to significantly affect the performance of the examination or the interpretation of the results		Unsuitable blood samples. If a sample cannot be fully processed for whatever reason e.g. incorrectly labelled, under filled, haemolysed etc. the Lab staff will attempt to contact the Ward or GP. If unsuccessful the result will be available via the LIS or healthlink. Any written or verbal requests to phone results when available. Amended reports.
<i>First time refers to the first time a result is noted above the values listed for any admission.</i>		

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19. E MAILING OF RESULTS

The laboratory follows the HSE Electronic Communications policy regarding transmission of patient information. See [http://www.hse.ie/eng/services/Publications/pp/ict/Electronic Communications Policy.pdf](http://www.hse.ie/eng/services/Publications/pp/ict/Electronic_Communications_Policy.pdf).
And the HSE Data Protection policy
<https://www.hse.ie/eng/gdpr/hse-data-protection-policy/hse-data-protection-policy.pdf>

20. TELEPHONE ENQUIRIES

Telephone enquiries for reports should be directed to the laboratory ext. 2258 (09066 32258)
Please note that electronic reports are available as described in section 17 above. Staff should first check for the availability of electronic reports on the LIS or Healthlink before contacting the Lab.

21. TURNAROUND TIMES

The Laboratory has set target turnaround times for all tests performed. See section 26 Alphabetical Test Directory for details.
Turnaround times are determined from the date and time of receipt of the sample in the laboratory to the date and time of authorization. Turnaround times are subject to regular audit.

22. ADVICE and CONSULTATION

Scientific and medical advice on issues within the laboratory's range and competence is available. Refer to Section 2 for a list of all contacts.

23. USER SATISFACTION & COMPLAINTS

There are a number of channels by which comments and complaints may be identified to the Laboratory. In all cases, it is department policy to respond in an open, positive and professional manner to issues raised. Where necessary, adjustment to process may ensue. Complaints should be referred to the Chief Medical Scientist, e-mail denise.lally@hse.ie or by telephone and request to speak to the medical scientist in charge.
The laboratory performs annual surveys of user satisfaction. The survey results are circulated and discussed at the annual quality management review.

24. POINT OF CARE TESTING

ABL Flex 90: Arterial Blood Gas Analyser is available in Laboratory Reception. The blood gas analyser is maintained and quality controlled by laboratory staff. User password is required. Contact the laboratory at 2258 if any problems noted.

Storage time and temperature recommendations

Plastic syringe

- If it is not possible to analyse the sample immediately, analyse it within 30 minutes
- Recommended sample storage temperature is room temperature
- Samples with expected high pO₂ values should be analysed immediately or within five minutes
(Refer to ABL90 FLEX Operator's manual section 12 Sampling)

The parameters available are:

Measured: pH, ChC+, pCO₂, pO₂, Na+, K+, Cl-, Ca++, HB, Glu, Lactate, Bili

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Derived: TCO₂, BE_{ecf}, tHb(c), BE(B), AG, sO₂(c), HCO₃⁻(c), HCO₃⁻-std.

Abbott Blood Glucose and Ketone testing: Meters available on all Wards and Out Patient Departments for Blood Glucose Testing. The blood glucose meters are maintained and quality controlled by laboratory staff. User password is required and password is renewed automatically if the user has run and passed the required internal Quality Control samples at least once in past year. Contact the laboratory at 2258 if any problems noted or if re certification is required or user badge ID has changed. Note Ketones are only available on selected meters and these meters will be labelled as “Ketones enabled”. It will be necessary to run and pass Ketone controls before any patient tests can be run.

Clinitech Status Urinary HCG testing: Available on St. Bridgets Ward and Endoscopy. The Clinitech status analyser is maintained and quality controlled by laboratory staff. User password is required. Contact the laboratory at 2258 for password setup or if any problems noted.

25. MUSCLE BIOPSIES OR LYMPH NODES.

The Histopathology laboratory GUH, telephone 091524425, must always be notified by the consultant performing the biopsy at least 24 hours in advance.

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26. Alphabetical Test Directory

ACTH

Laboratory: Clinical Biochemistry GUH
 Specimen: x2 3mL k⁺EDTA FBC samples . Send to lab immediately, lab to separate and freeze
 Turnaround: 1 week
 Ref. Range: On report form

Activated Partial Thromboplastin Time (APTT)

Laboratory: Haematology RUH
 Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube
 Comment: Must fill bottle to mark.
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: Refer to report

Activated Protein C Resistance (APC-R) (see Thrombophilia Screen)

Laboratory: Haematology GUH
 Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube
 Comment: Fresh specimen required. Must fill bottle to mark.
 Turnaround: 5 weeks
 Ref. Range: Refer to report

Adenovirus / Rotavirus Antigen

Laboratory: Medical Microbiology, GUH
 Specimen: Faeces collected in acute phase of illness 1-2 g in leak proof container. Delay > 2 h refrigerate @ 2-8°C
 Comment: *Rotavirus* and *Adenovirus* are tested for in specimens from children aged less than 5 years of age.
 Turnaround: 2 working days
 Report: Rota / Adenovirus antigen detected / not detected

Adiponectin

Laboratory: Referred to Eurofins SCDL
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 2 weeks
 Ref. Range: On report form

Adrenaline / Noradrenaline / Dopamine

See "Catecholamines/Fractionated Metanephrines"

Adjusted Calcium

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Comment: Calculated parameter
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Alanine amino Transferase (ALT)

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Albumin

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

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Albumin (Urine) / Microalbumin, Albumin/Creat Ratio (ACR)

Laboratory: Biochemistry, RUH
 Specimen: Urine in plain vacutainer – part of Griener urine collection system
 Comment: Date of collection must be stated on the request form.
 Turnaround: 1 day from receipt in RUH.
 Ref. Range: Refer to report form.

Alcohol (Ethanol)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube filled completely & delivered immediately to the laboratory.
 For RUH, 4.0mL blood collected into a fluoride oxalate (grey top) tube filled completely is the preferred sample as transport time will delay receipt of sample in GUH.
 Comment: Do not use alcohol wipes. Analysis for medical use only
 Turnaround: From receipt in GUH lab : Urgent: 1hour. All other requests : 3hours
 Interpretation : On report form

Aldosterone

Laboratory: Clinical Biochemistry , GUH
 Specimen: 2 x 3 mL: k⁺EDTA FBC samples. Send to lab immediately, lab to separate and freeze
 Comment: Please provide clinical/antihypertensive medication details.
 Turnaround: 3 weeks
 Ref. Range: On report form

Aldosterone/Plasma Renin Activity Ratio

Laboratory: Clinical Biochemistry, GUH
 Specimen: 2 x 3ml mL: k⁺EDTA FBC samples. Send to lab immediately, lab to separate and freeze
 Comment: Please provide clinical/antihypertensive medication details
 Turnaround: 3 weeks
 Ref. Range: On report form

ALK Translocation (EML4-ALK translocation)

Laboratory: Department of Histopathology, Cytopathology and Molecular pathology, GUH
 Specimen: Tissue samples already processed by the Histopathology Laboratory, arrange via consultant pathologist.
 Comment: Testing available on request by Pathologist.
 Referrals: Contact the Department of Histopathology, Cytopathology and Molecular pathology on 091 544078
 Turnaround; 5 – 10 working days after request from Pathologist received.
 Report: Integral part of Histopathology report issued by Division of Anatomic Pathology, Department of Histopathology, Cytopathology and Molecular Pathology.

Alkaline phosphatase (Alk Phos)

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Allergen Specific IgE (Rast)

Laboratory: Immunology, GUH
 Specimen: 5 mL blood in a plain gel tube. Must specify allergen according to history.
 Comment: Those not performed in GUH are referred to Immunology Dept, Northern General Hospital, Sheffield. Note restrictions in place for referral requests.
 Turnaround: 7 working days
 Ref. Range: 0 - 0.35 kUA/L

Alpha-1-Antitrypsin

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 5 working days
 Ref. Range: 0.9 - 2.0 g/L

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Alpha-1-Antitrypsin Phenotyping

Laboratory: Referred to Alpha One Foundation, Beaumont Hospital, Dublin.
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 6 weeks
Report: See report- including interpretative comment

Alpha fetoprotein (AFP)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: Priority: 1 working day. Routine: 2 working days
Ref. Range: On report form

17-Alpha-OH-Progesterone

Laboratory: Referred to Eurofins SCDL
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 week
Ref. Range: On report form

Aluminium

Laboratory: Referred to Eurofins SCDL
Specimen: 5.0 mL Na⁺ heparin whole blood (request sample tube from lab)
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Amikacin

Laboratory: Medical Microbiology, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Specify time specimen collected indicating Peak or Trough.
Turnaround: 1 day
Ref. Range: Post dose/Peak: 20-30 mg/L. Pre-dose/Trough: <8.0 mg/L

Amphetamine

See "Toxicology Screen"

Amylase

Laboratory: Biochemistry, RUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Androstenedione

Laboratory: Referred to Eurofins SCDL
Specimen: 5.0 mL blood in a plain gel tube. Send to lab immediately. Lab to separate and freeze
Turnaround: 1 week
Ref. Range: On report form

Angiotensin Converting Enz (ACE)

Laboratory: Referred to Eurofins SCDL
Specimen: 5.0 mL blood in a plain gel tube.
Turnaround: 1 week
Ref. Range: On report form

Angiotensin II

Laboratory: Referred to Eurofins SCDL
Specimen: x2 3mL k⁺EDTA FBC samples . Send to lab immediately, lab to separate and freeze
Turnaround: 1 week
Ref. Range: On report form

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Antibody Titration

Laboratory: Blood & Tissue Establishment, GUH
 Specimen: 6.0 mL EDTA K²E blood
 Turnaround: Within 1 day, with the exception of weekends and bank holidays and in the event of additional testing or if an antibody that requires extensive investigation
 Ref. Range: N/A

Anti IgA Antibodies

Laboratory: Referred to NHS Blood & Transplant, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Acetylcholine Receptor Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Adrenal Antibodies

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti Beta-2 Glycoprotein-1 Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Ref. Range: Refer to report

Anti Beta-Interferon Neutralising Antibodies

Laboratory: Referred to UCL, London.
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti Basal Ganglia Antibodies

Laboratory: Referred to UCL, London.
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Cardiac Muscle Antibodies

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti Cardiolipin Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Ref. Range: On report form including interpretative comment

Anti-CASPR2 antibodies

Laboratory: Referred Immunology Dept, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
 Comment: Refer to anti-VGKC
 Turnaround: 6 weeks
 Report: Refer to report

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Anti CCP (Citrullinated Cyclic Peptide)

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Comment : Requests for Anti-CCP will also be tested for Rheumatoid Factor
 Turnaround: 7 working days
 Report: Negative <10 U/mL

Anti-Centromere Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Report: Positive/Negative

Anti-C1q Antibody

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-D Quantitation

Laboratory: Blood Transfusion, referred to IBTS, St James's Street, Dublin 8
 Specimen: 6.0 mL EDTA K²E blood
 Turnaround: Test performed Tuesdays and Thursdays only
 Ref. Range: N/A

Anti-dsDNA Antibody

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Comment : Only performed in the context of positive ANA
 Turnaround: 7 working days
 Ref. Range: Refer to report

Anti-ENA Screen (Extractable Nuclear Antigens: Sm / RNP / Ro / La / Scl-70 / Jo-1)

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Report: Refer to report.

Anti-Endomysial Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Comment: IgA anti-endomysial antibody test if IgA anti-tTG screening test positive.
 Turnaround: 10 working days
 Report: Positive/Negative

Anti-GABA (anti-glutamate receptor antibodies)

Laboratory: Referred to Immunology Dept, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
 Turnaround: 6 weeks
 Report: Refer to report

Anti-Ganglioside Antibodies

Laboratory: Referred to Neuroscience Group, Institute of Molecular Medicine, John Radcliffe Hospital, Oxford
 Specimen: 5.0 mL blood in plain gel tube
 Comment: As several types of anti-ganglioside antibodies occur please specify test required and provide clinical details.
 Turnaround: 6 weeks
 Report: Positive/Negative

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Anti-Gastric Parietal Cell Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Report: Positive/Negative

Anti-GBM Glomerular Basement Membrane (GBM) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 5 working days
 Report: 0 – 10 U/mL

Anti-Glutamic Acid Decarboxylase (GAD) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 3 weeks
 Ref Range: 0-9 IU/mL

Anti-Glycine Receptor Antibodies

Laboratory: Referred to Immunology Dept, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
 Turnaround: 6 weeks
 Report: Refer to report

Anti-Histone Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 3 weeks
 Report: Positive/Negative

Anti-HMGCR antibodies (anti-HMG-CoA Reductase antibodies)

Laboratory: Referred to Immunology Dept, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube.
 Turnaround: 6 weeks
 Report: Refer to report

Anti-IA2 Antibodies

Laboratory: Referred to Immunology Dept, Northern General hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive / Negative

Anti-Insulin Antibodies

Laboratory: Referred to Immunology Dept, Northern General hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Ref. Range: 0-5 mg/l

Anti-Intrinsic Factor Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 2 weeks
 Report: 0 – 6 U/mL

Anti-Islet Cell Antibodies

Laboratory: Referred to Immunology Dept, Northern General hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive / Negative

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Anti-Jo-1 Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 10 working days
 Report: Positive/Negative

Anti-La (SS-B) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 10 working days
 Report: Positive/Negative

Anti-LGIl antibodies

Laboratory: Referred to Immunology Dept, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
 Comment: Refer to anti-VGKC
 Turnaround: 6 weeks
 Report: Refer to report

Anti-Liver Kidney Microsomal (LKM) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Report: Positive/Negative

Anti-Myelin Associated Glycoprotein (MAG) Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Mitochondrial Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Report: Positive/Negative

Anti-M2 Mitochondrial (Pyruvate Dehydrogenase) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 3 weeks
 Report: Positive/Negative

Anti--MUSK Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 Weeks
 Report: Positive/Negative

Anti-Myeloperoxidase (MPO) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 5 working days
 Ref. Range: 0 - 3.5 IU/ml

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Anti-Natalizumab (Tysabri) Antibodies

Laboratory: Referred to Barts Hospital, London
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 4 weeks
 Report: Positive/Negative

Anti-Neuromyelitis Optica Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Neuronal Nuclear Cell (Hu Ri) Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube
 Comment: Supply clinical details and specify if other neuronal antibody tests required.
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Neutrophil Cytoplasmic Antibodies (ANCA)

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 5 working days
 Report: Screened at 1/20
 Negative / C-ANCA / P-ANCA / Atypical ANCA
 Positives tested for anti-MPO and anti-PR3. See report form for interpretative comment.

Anti Nuclear Antibody (ANA)

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Report: Screened at 1/80
 Negative/Positive. Positive results titre 1/80 to $\geq 1/1280$. ANA Pattern reported.

Anti NMDA Receptor Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Ovarian Antibodies

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Paraneoplastic Antibodies: See anti-Hu Ri Yo

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
 Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
 Comment: Supply clinical details and specify if other paraneoplastic antibody tests (CV2/CRMP5, Ma1/Ma2, anti-amphiphysin) required.
 Turnaround: 6 weeks
 Report: Positive/Negative

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Anti-Pemphigus & Pemphigoid Autoantibodies

Laboratory: Referred to Immunology Dept, St James Hospital, Dublin 12
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 6 weeks
Report : Positive/Negative

Anti-Phospholipase 2A receptor (PLA2R) antibodies

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 3 weeks
Ref. Range: 0-14 RU/mL

Anti-Platelet antibody investigation

Laboratory: Blood Transfusion: - referred to IBTS, St James's Street, Dublin 8
Specimen: 6.0 mL EDTA K²E blood
Turnaround: Variable
Ref. Range: N/A

Anti-Proteinase 3 (PR3) Antibodies

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 5 working days
Ref. Range: 0 -2 IU/ml

Anti-Purkinje Cell (Yo) Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
Comment: Supply clinical details and specify if other neuronal antibody tests required.
Turnaround: 6 weeks
Report: Positive/Negative

Anti-Ribosomal P Protein Antibodies

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 3 weeks
Report: Positive/Negative

Anti-Ro (SS-A) Antibodies

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 10 working days
Report: Positive/Negative

Anti-Salivary Gland Antibodies

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 6 weeks
Report: Positive/Negative

Anti-Scl-70 (Topoisomerase 1) Antibodies

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 10 working days
Report: Positive/Negative

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Anti-Skeletal (Striated) Muscle Antibodies

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Report: Positive/Negative

Anti-Sm (Smith) Antibody

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 10 working days
 Report: Positive/Negative

Anti-Smooth Muscle Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 7 working days
 Ref. Range: Positive/Negative

Anti-Soluble Liver Antigen (SLA) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 3 weeks
 Report: Positive/Negative

Anti-Streptolysin-O (ASO)

Laboratory: Virology, GUH
 Specimen: 7.0 mL blood in plain gel tube
 Comment: Available in specific cases only and by prior arrangement with a Consultant Microbiologist.
 Turnaround: 1 week
 Report: Reported in International Units. Normal Range <200 IU.

Antithrombin (see Thrombophilia Screen)

Laboratory: Haematology, GUH
 Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube.
 Comment: Requests should be sent to the laboratory immediately, for dispatch to GUH
 If received after 1pm Mon-Fri, samples will be separated and frozen
 Details of anticoagulant therapy required. Must fill bottle to mark.
 Turnaround: 5 weeks
 Ref. Range: Refer to report

Anti-Thyroid Peroxidase (TPO) Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 5 working days
 Ref. Range: 0 – 25 IU/ml

Anti-TSH Receptor Antibodies (TRAB see TSH Receptor antibodies)

Laboratory: Referred to Eurofins SCDL
 Specimen: 5.0 mL blood in plain gel tube
 Comment: Lab staff : if ordered with Anti TPO, send Anti TPO and Anti TSH to Medlab.
 Turnaround: 5 working days
 Ref. Range: 0 – 25 IU/ml

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Anti-Tissue Transglutaminase (tTG) Antibodies (Coeliac Screen)

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Comment: IgA anti-tTG antibody test. If selective IgA deficiency then IgG anti-tTG test performed. Contact Immunology GUH for further information
Turnaround: 7 working days
Ref. Range: IgA anti tTG : 0-10 IU/ml. IgG anti-tTG : 0-7 IU/ml

Anti-U1-RNP Antibodies

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 10 working days
Report: Positive/Negative

Anti-Voltage Gated Calcium Channel (VGCC) Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
Turnaround: 6 weeks
Report: Positive/Negative

Anti-Voltage Gated Potassium Channel (VGKC) Antibodies

Laboratory: Referred to Immunology Laboratory, Churchill Hospital, Oxford OX3 7LJ.
Specimen: 4.0 mL blood in a plain gel tube. CSF analysis also available.
Turnaround: 6 weeks
Report : Positive/Negative

Ascitic Fluid - Cytology

See " Effusions"

Ascitic Fluid (see Fluid / Tissue / Pus)

Laboratory: Medical Microbiology, GUH
Specimen: Fluid including clots in sterile universal container
Comment: If delay refrigerate @ 2-8°C.
Turnaround: Microscopy: 1 working day. Culture: 3 working days
Report: Microscopy: Cell count, Differential and Gram stain
Culture: Any clinically significant isolate with the appropriate sensitivities

Aspartate amino Transferase (AST)

Laboratory: Biochemistry RUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Aspirates - Cytology

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology
Specimen: Cells obtained from any palpable lump/mass or cyst
Comment: Prepare immediately on site: Clearly label 2 frosted coded slides with patient name, DOB or BN. Air dry one smear, label this slide ' Air Dried', and fix the second one with cytofix spray. Wash any fluid remaining in syringe/needle into green cyto fixative in a Universal container. In the case of pathology assisted F.N.A's this collection of specimens is performed by lab staff. For pathologist assisted FNA, please telephone the laboratory to prebook. Ref FNA.
Turnaround: 80% by 5 working days
Report: Neoplastic / Non-neoplastic cells

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Autoantibody Tests

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Comment: Select specific autoantibody test(s) pending clinical picture. Please contact Immunology GUH.
Turnaround: 1-3 weeks depending on individual autoantibody and whether additional specialized test methods required.

AutoImmune ENA Panel – Profile includes anti-: nRNP, Sm, SS-A, Ro-52, SS-B, Scl-70, PM-Scl, Jo-1, Centromere, PCNA, dsDNA, Nucleosomes, Histones, Ribosome-P protein and AMA-M2

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 3 weeks
Report: Positive / Negative

AutoImmune Inflammatory Myopathy panel includes anti-: Mi-2 alpha, Mi-2 beta, TIF1 gamma, MDA5, NXP2, SAE1, Ku, PM-Scl100 and PM-Scl75, OJ, EJ, Jo-1, PL-7, PL-12, SRP and Ro-52

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 3 weeks
Report: Positive / Negative

Autoimmune Liver Disease Panel – Profile includes anti: AMA-M2 (pyruvate dehydrogenase complex), M2-3E (BPO, fusion protein of the E2 subunits of the alpha-2-oxoacid dehydrogenases of the inner mitochondrial membrane), Sp100, PML, gp210, LKM-1, LC1, SLA/LP and Ro52.

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 3 weeks
Report: Positive / Negative

Autoimmune Systemic Sclerosis Panel – Profile includes anti-Scl-70, Centromere A, Centromere B, RNA Pol III(RP11 and 155), Fibrillarin, NOR 90, Th/To, PM-Scl 100, PM-Scl75, Ku, PDGFR and Ro-52

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 3 weeks
Report: Positive / Negative

Bartholin's Abscess (see Swab / Pus)

Laboratory: Medical Microbiology, GUH
Specimen: Aspirate or swab pus using a sterile swab in charcoal agar. If delay refrigerate @ 2-8°C
Comment: Endocervical / Urethral swabs are routinely cultured for *N. gonorrhoeae*. All other specimens must specify *N. gonorrhoeae* on request if required.
Turnaround: 3 working days
Report: Culture report: Any clinically significant isolate with the appropriate sensitivities

BCR-ABL

Laboratory: Referred to CMD Laboratory, St James Hospital, Dublin 8
Specimen: 3 x 3.0 mL K³ EDTA blood
Comment: Test available Monday –Thursday only
Turnaround: 120 days
Ref. Range: N/A

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Bence - Jones proteins (Urine Free Light Chains)

Laboratory: Immunology, GUH
Specimen: Early morning sample preferred. 24h urine for quantification and disease monitoring or minimum 10ml for screening. Plain container, no preservatives. Collect 24hr urine container from lab
Turnaround: 10 working days
Report: Positive/Negative: Typing by Immunofixation. Quantification of BJP 24h output or BJP concentration - g/l

Beta-hydroxybutyrate

See "Ketones"

Beta-2-Microglobulin

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 5 working days
Ref. Range: 0.8 – 2.2 mg/l

Beta-2-Transferrin

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
Specimen: 5.0 mL blood in plain gel tube **and** ear/nasal discharge in universal container
Turnaround: 3 weeks
Report : Positive/Negative

Bicarbonate

Laboratory: Available on blood gas analyser
Specimen: Blood in a Li Heparin syringe
Turnaround: 15 mins
Ref. Range: On report form

Bile Acids

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: 1 working day Mon to Fri
Ref. Range: On report form

Bilirubin - Conjugated

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
Ref. Range: On report form

Bilirubin - Total

Laboratory: Biochemistry, RUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Biopsy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin
Comment: Health & Safety precautions
Report: Histological diagnosis

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Blood Culture

Laboratory: Medical Microbiology, GUH
Specimen: 8.0 -10.0 mL in Bactec Aerobic and Anaerobic vial.
Comment: Deliver to Laboratory ASAP for immediate dispatch to GUH
Turnaround: 1 week for aerobic, anaerobic and paediatric vials, 21 days for query endocarditis and 6 to 7 weeks for Myco/Lytic vial. Gram stain results of all new positive blood cultures are telephoned to the relevant medical team within 2 hours of positivity. Identification and susceptibility testing results will be available in 24-48 hours.
Report: Any Growth.

Blood Film

Laboratory: Haematology RUH
Specimen: 3.0 mL K³ EDTA blood
Comment: Blood films will be made, examined and reported on patients FBC results which satisfy the criteria laid down by this laboratory in the guidelines 'Indications for blood film examination'. If a clinician specifically requests a blood film which falls outside of these guidelines this will also be examined where the request form provides clinical details. Some films require referral to Haematology GUH. These films which satisfy criteria laid down by lab will be referred to Haematology, GUH
Turnaround: Where clinical details are supplied urgent requests for blood films will receive immediate attention. Routine differentials are reported within 1 day, referrals to GUH variable.
Report : N/A

Blood Gases (pH, pCO₂, pO₂, Bicarbonate, Base Excess, Total CO₂)

Laboratory: Available on Blood Gas analyser located in UCC.
Specimen: Blood in a Li Heparin syringe
Comment: If delay between sample collection and processing on analyser is greater than 15 minutes put on ice.
Turnaround: 15 minutes
Ref. Range: On report form

Blood Product for Culture

Laboratory: Medical Microbiology, GUH
Specimen: Bactec Blood culture vials.
Comment: Send to lab ASAP for immediate dispatch to GUH
Turnaround: 1 week.
Report: Any Growth.

Body Cavity Fluid Cytology (Pleural, Peritoneal, Pericardial, Abdominal and Ascite Fluid).

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Collect fresh 10 – 20 mL specimens into twist top leak proof 20 mL or 50 mL Universal containers containing Shandon Cytospin Collection Fluid (green fixative solution). Refrigerate overnight if necessary.
Comment: Indicate type of primary specimen and site and side of origin (e.g. left lobe BAL). Indicate clinical history on test requisition and reason for test.
Turnaround: 80% by 5 working days
Report: Detection of neoplastic and non neoplastic cells

Bone Markers Urine N Teloepitide/GFR, Urine N Ter X links, Urine Creat, Urine Calcium, Urine Phos. Blood : Ionized Ca, PTH, 25OH D, CTX1, P 1NP, Osteocalcin, CTX1, FGF23 (Fibroblast Growth Factor23)

Laboratory: All tests referred to Clinical Chemistry Lab, St. Vincents University Hospital, Elm Park, Dublin 4
Specimen: x3 5.0 mL blood in a plain gel tube, x2 plain urine sample, X4 3mL k⁺EDTA FBC samples
Comment: Protocol available from Laboratory.
Lab staff, give clinican protocol from 'Special Blood Sciences' folder. Send to lab immediatley, lab to separate and freeze (lab staff, follow protocol from St.Vincents, in Special Blood Sciences folder)
Turnaround: 4 weeks.
Ref Range : On report form

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Bordetella pertussis antibodies

Laboratory: Referred to Atypical Pneumonia Unit, Collindale Avenue, London NW9 5HT
Specimen: 5 mL blood in a plain gel tube
Comment: Available only in very specific cases and following prior arrangement with a Consultant Microbiologist.
Turnaround: 2-3 weeks
Report: Positive/Negative

Bordetella Species (Whooping cough / Pertussis)– culture

Laboratory: Medical Microbiology, GUH
Specimen: Perinasal swab (available from Medical Microbiology, GUH)
Comment: Contact Laboratory prior to sending to ensure fresh media is available. If delay refrigerate @ 2-8°C.
Turnaround: 10 days
Report: "Bordetella pertussis" Not isolated or "Bordetella pertussis" isolated

Borrelia burgdorferi antibodies (Lyme Disease)

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube. (For CSF-PCR see under Cerebrospinal Fluid)
Turnaround: 1 - 2 weeks (In-house screen). Samples referred for further testing 2-3 weeks.
Report: Not Detected, if negative. A Provisional report will be issued on any sample giving reactive findings on initial testing. These specimens are referred to the PHE, Rare and Imported Pathogens Laboratory, Porton Down for further testing and a final report.

BRAF mutation

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Tissue samples already processed by the Histopathology Laboratory, arrange via consultant pathologist.
Comment; Testing available on request by Pathologist.
Referrals Contact the Department of Histopathology, Cytopathology and Molecular pathology on 4078
Turnaround; 5 – 10 working days after request from Pathologist received
Report: Integral part of Histopathology report issued by Division of Anatomic Pathology, Department of Histopathology, Cytopathology and Molecular Pathology.

Bronchial Brush Specimen

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Sample can be spread on a glass slide, one slide may be air dried and labelled for Diff quik stain, and one slide spray fixed. Label slides and container to include name, date of birth and sample site.
Comment: Indicate clinical history on test requisition, and the specific site sampled.
Turnaround: 80% by 5 working days
Report: Detection of neoplastic and non neoplastic cells. Detection of infectious organisms.

Bronchial Wash Specimen

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Collect fresh specimens (0.5 – 50.0 mL) into twist top, leak proof 50 – 100 mL specimen cups. Do not add fixative but refrigerate if storage required. Transport to the laboratory, ASAP. Refrigerate or add fixative if delay unavoidable.
Comment: Indicate clinical history on test requisition, and the reason for test.
Turnaround: 80% by 5 working days
Report: Detection of neoplastic and non neoplastic cells. Detection of infectious organisms.

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Broncho Alveolar lavage fluid (BAL) - Culture

Laboratory: Medical Microbiology, GUH
Specimen: BAL in sterile container
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 3 working days for routine culture, 6 to 7 weeks for Mycobacteria culture.
Report: Culture with sensitivities, if appropriate, as well as microscopy and culture for Mycobacteria

Broncho Alveolar lavage fluid - Cytology

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Collect fresh 0.5 – 50 mL BAL (indicate if RUL, RLL, LUL, LLL) in a twist top, leak proof 50 – 100 mL specimen container. Submit to laboratory ASAP. Refrigerate or add fixative if delay unavoidable.
Comment: Indicate clinical history on test requisition form and reason for test.
Turnaround: 80% by 5 working days
Report: Detection of neoplastic and non neoplastic cells. Detection of infectious organisms.

Brucella abortus antibodies

Laboratory: Referred to Liverpool Clinical Laboratories, Royal Liverpool and Broadgreen University Hospitals Trust
Specimen: 5 mL blood in a plain gel tube
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist.
Turnaround: 2-3 weeks
Report: Negative/Positive.

Bursa Fluid

Laboratory: Medical Microbiology, GUH
Specimen: Fluid in sterile container.
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 3 working days
Report: Culture with sensitivities, if appropriate

CA 125

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Priority : 1 working day. Routine : 2 working days
Ref. Range: On report form

CA 15-3

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Priority: 1 working day. Routine: 2 working days
Ref. Range: On report form

CA 19-9

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Priority: 1 working day. Routine: 2 working days
Ref. Range: On report form

Cadmium (Urine)

Laboratory: Referred to Eurofins SCDL
Specimen: Randon urine
Turnaround: 1 – 3 weeks
Ref. Range: On report form

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Calcitonin

Laboratory: Referred to Endocrinology Laboratory, Mater Misericordiae Hospital, Eccles Street, Dublin 7.
Specimen: 5.0 mL blood in a plain gel tube sent to lab immediately, lab to separate and freeze
Comment: Send fasting specimen. Must be separated and frozen within 15 minutes of phlebotomy.
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Calcium

Laboratory: Biochemistry, RUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Calcium -ionised

Laboratory: Available on Blood Gas analysers located in UCC
Specimen: Blood in a balanced heparin syringe
Comment: Process within 15 minutes of collection
Turnaround: 15 mins
Ref. Range: On report form

Calcium (Urine)

Laboratory: Biochemistry, RUH
Specimen: 24 hour acidified (20-30ml acid needed) urine collection or
Spot sample in plain container to arrive in lab within 2 hours of collection
Turnaround: 1 working day
Ref. Range: On report form

Calcium Excretion (Calcium :Creat ratio)

Laboratory: Biochemistry, RUH
Specimen: Fasting urine sample in plain container to arrive in lab within 2 hours of collection, 5.0 mL blood in a plain gel tube. Obtain protocol from laboratory, lab staff to follow protocol in 'Special Bio' folder
Turnaround: 1 working day
Ref. Range: On report form

Faecal Calprotectin, Calprotectin/Elastase profile

Laboratory: Referred to Eurofins SCDL
Specimen: Random faeces
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Cannabis

See "Toxicology Screen"

Carbamazepine (Tegretol)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Comment: Take specimen immediately before next dose (trough specimen)
Turnaround: 1 week
Therapeutic range: On report form

Carbapenemase Producing Enterobacteriaceae Screen

Laboratory : Medical Microbiology, GUH
Specimen : Rectal swab in transport medium / faeces sample. Delay > 2 h refrigerate @ 2-8°C.
Comment : Restricted to specific groups of hospitalized patients. Non hospitalized patients are screened by prior arrangement with a Consultant Microbiologist.
Turnaround : 3 working days.
Report : CPE isolated / Not isolated.

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Carboxyhaemoglobin

Laboratory: Available on Blood Gas analysers located in UCC
 Specimen: Blood in a Heparinised syringe
 Turnaround: 15 minutes
 Ref. Range: On report form

Cardiac biopsy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
 Comment: Health & Safety precautions.
 Report: Histological diagnosis

Carotene

See "Vitamin A"

Catecholamines/Fractionated Metanephrines (Adrenaline/Noradrenaline/Dopamine/Metanephrine/Normetanphrine/3-methoxytyramine - Urine)

Laboratory: Referred to Eurofins SCDL
 Specimen: Urine catecholamines : 24 hour acidified urine collection. Collect container from lab
 Plasma catecholamines : Lithium Heparin sample, send to lab immediately, must be separated and frozen
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Catheter / Intravascular Cannulae / Tips

Laboratory: Medical Microbiology, GUH
 Specimen: Lines and Tips from arterial /venous lines cut to 4 cm in sterile container.
 Comment: Only send where there is evidence of infection. Urinary catheters not tested. If delay refrigerate @ 2-8°C.
 Turnaround: 3 working days
 Report: Any clinically significant isolate with the appropriate sensitivities

Cat Scratch Disease Antibodies

See "Bartonella henselae PCR"

CEA

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: Priority: 1 working day. Routine: 2 working days
 Ref. Range: On report form

Cerebrospinal Fluid (Molecular analysis for Pathogens)

Laboratory: Medical Microbiology GUH: - referred to Irish Meningococcal and Streptococcal Reference Laboratory /National Virus Reference Laboratory when unavailable on site.
 Specimen: 0.5 mL CSF in plain leak-proof sterile container
 Turnaround: 1-2 weeks (Verbal report available on positive samples within 2-5 working days)
 Report: Detected/Not Detected.

Cerebrospinal Fluid – Culture / Microscopy

Laboratory: Medical Microbiology, GUH
 Specimen: 3 specimens in sterile containers hand delivered to lab for immediate dispatch to Medical Microbiology GUH
 Comment: If Xantochromia is requested a CSF sample should be received in the laboratory wrapped in tinfoil. Culture reported only on CSFs with an elevated cell count.
 Turnaround: Microscopy: 2 hours. Culture: 3 days.
 Report: Microscopy & Culture

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Cerebrospinal Fluid - Cytology

Laboratory:	Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen:	3ml – 20 mL cerebral spinal fluid, lumbar puncture or ventricular tap in a 20 mL universal container. Refrigerate overnight if necessary as the cells are sensitive to temperature and cellular degeneration occurs if left at room temperature for extended periods of time.
Comment:	Indicate clinical history on test requisition and reason for test. Submit immediately to laboratory. Fixative may NOT be added if specimen is to be shared with microbiology for assessment. Please submit to microbiology department directly and request Urgentpersonal delivery directlyfrom Microbiology for subsequent Cytological assessment. Please note there is no on call or emergency out of hours service available in the Diagnostic Cytology laboratory. Specimens must be received by 16:00 h for same day processing. There is no weekend service available in Diagnostic Cytology. Note: Cytology will not be performed on a ?CJD or a CJD sample
Turnaround:	80% by 5 working days
Report:	Detection of neoplastic and non neoplastic cells. Detection of infectious organisms.

Cerebrospinal Fluid - Glucose

Laboratory:	Clinical Biochemistry, GUH
Specimen:	1.5 mL CSF specimen
Comment:	Send all CSF samples to Micro for processing, send simultaneous plasma glucose specimen
Turnaround:	1 – 3 hours
Ref. Range:	CSF Glucose level is normal approximately two thirds of the plasma glucose value

Cerebrospinal Fluid - Protein

Laboratory:	Clinical Biochemistry, GUH
Specimen:	1.5 mL CSF specimen
Comment:	Send all CSF samples to Micro for processing
Turnaround:	1 – 3 hours
Ref. Range:	On report form

Cerebrospinal Fluid – Oligoclonal bands and CSF IgG Index

Laboratory:	Immunology, GUH
Specimen:	Minimum of 0.5mL of CSF specimen and 5.0 mL blood in plain gel tube
Turnaround:	3 weeks
Report:	See report form including interpretative comment

Cerebrospinal Fluid Shunt

Laboratory:	Medical Microbiology, GUH
Specimen:	4 cm cut from line placed in a sterile container.
Comment:	Only send where evidence of infection. If delay refrigerate @ 2-8°C.
Turnaround:	3 working days
Report:	Any clinically significant isolate with the appropriate sensitivities

Ceruloplasmin

Laboratory:	Immunology, GUH
Specimen:	5.0 mL blood in plain gel tube
Turnaround:	5 working days
Ref. Range:	Male : 0.15-0.3 g/l Female : 0.16-0.45 g/L

Cervical Swab

Laboratory:	Medical Microbiology, GUH
Specimen:	Swab in transport medium. If delay refrigerate @ 2-8°C.
Comment:	Endocervical / Urethral swabs are routinely cultured for <i>N. gonorrhoeae</i> . All other specimens must specify <i>N. gonorrhoeae</i> on request if required.
Turnaround:	3 working days
Report:	Culture report: Any clinically significant isolate with the appropriate sensitivities.

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Chlamydia pneumoniae Serology

Laboratory: Referred to The National Virus Reference Laboratory, Dublin.
Specimen: 5.0 mL blood in a plain gel tube
Comment: By prior arrangement with Microbiology Medical Staff, GUH
Turnaround: 1 – 3 weeks
Report: Positive/Negative

Chlamydia psittaci Antibodies

Laboratory: Referred to Health Protection Agency, Bristol BS2 8EL
Specimen: 5.0 mL blood in a plain gel tube
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist.
Turnaround: 2 – 5 working days
Report: Detected / Not Detected

Chlamydia trachomatis (PCR)

Laboratory: Virology, GUH
Specimen: Abbott Multicollect swab preferably delivered to the laboratory within 24 h of collection.
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 10 working days
Report: Detected / Not Detected

Chloride

Laboratory: Biochemistry, RUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Chloride (Urine)

Laboratory: Clinical Biochemistry, GUH
Specimen: 24hr urine collection, plain. Collect container from lab
Turnaround: 1 working day
Ref. Range : On report form

Cholesterol

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Comment: Ideally a patient should fast for 12 hours.
Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
ESCG Target Value:Standard <5.0mmol/L High-Risk <4.0mmol/L

Cholesterol/HDL Ratio

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Comment : Calculated parameter
Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
Interpretation: High risk >5.0, desirable <3.5.

Chromogranin A

Laboratory: Referred to Eurofins SCDL
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: 1-3 weeks
Ref. Range: On report form

Chromosomal Analysis

Refer to Cytogenetics

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Clostridium difficile Toxin B gene detection

Laboratory:	Medical Microbiology, GUH
Specimen:	Faeces 1-2 g during acute phase of illness in leak proof laboratory container. If delay 24h refrigerate @ 2-8°C. > 72 h – freeze @ -20°C.
Comment:	<i>C. difficile</i> requests are appropriate in particular in hospitalized patients who have developed diarrhoea while receiving antimicrobial agents.
Turnaround:	5 working days
Report:	<i>C. difficile</i> toxin B gene Detected/ Not Detected An additional test, for detection of <i>Clostridium difficile</i> toxin, will be performed on all stools which have <i>C. difficile</i> toxin gene detected. This will be reported as <i>C.difficile</i> toxin Detected/ Not Detected including relevant interpretative comments.

Clozapine (Clozaril)

Laboratory:	Referred directly from Psychiatry dept to external laboratory
Specimen:	6 mL K ⁺ EDTA blood (x2 FBC)
Turnaround:	1 – 3 weeks
Therapeutic Range:	On report form

Coagulation Factor Assays (incl Factors – II, V, VIII, VIII:C, IX, XI, XII, and FX)

Laboratory:	Haematology , GUH
Specimen:	2 x 2.7 mL blood specimens in 0.109m Sodium Citrate tubes
Comment:	Prior arrangement with the coagulation laboratory GUH contact 091 544995. It is important that the specimen container is filled to the mark.
Turnaround:	1 day for routine specimens. Telephoned requests (to GUH) for faster turnaround time can be accommodated when specifically requested.
Ref. Range:	See individual assay

Coagulation Screen

Laboratory:	Haematology, RUH
Specimen:	2.7 mL blood specimens in 0.109m Sodium Citrate tubes. Do not refrigerate specimen.
Comment:	Profile includes, PT, INR, Fibrinogen and APTT. Details of anticoagulant therapy required. Must fill bottle to mark.
Turnaround:	Urgent: 1 hour. Routine 4 hours.
Ref. Range:	Refer to report

Cocaine

See "Toxicology"

Coeliac Screen

See 'Anti-Tissue TransGlutaminase (tTG) Antibodies'

Cold Agglutinins

Laboratory:	Blood & Tissue Establishment, GUH
Specimen:	6.0 mL EDTA K ² E blood
Comment:	Specimen needs to be transported to the Blood & Tissue Establishment, GUH in a flask at 37°C before 15.30
Turnaround:	Within 12 h
Ref. Range:	N/A

Complement: C1 Esterase Inhibitor

Laboratory:	Immunology, GUH
Specimen:	5.0 mL blood in plain gel tube
Turnaround:	5 working days
Ref. Range:	0.15 – 0.43 g/L

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Complement: C1 Esterase Inhibitor Functional Assay

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube.
Comment: Must arrive in Immunology on the same day it was taken . Time and date of collection must be stated on request form.
Turnaround: 5 weeks
Ref. Range: 70-130%

Complement: C1q

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
Specimen: 5.0 mL blood in plain gel tube
Comment : Specimen referred for testing if CH100 functional activity is abnormal.
Turnaround: 11 weeks
Ref. Range: Refer to Report

Complement: C2/C5/C6/C7/C8/C9

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
Specimen: 5.0 mL blood in plain gel tube
Comment: Only if abnormal CH100 or CH100A Functional Activity
Turnaround: 6 weeks
Ref. Range: On report form including interpretative comment

Complement: C3/C4

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 5 working days
Ref. Range: C3: 0.75 – 1.86 g/L
C4: 0.13 – 0.49 g/L

Complement: C3 Nephritic Factor

Laboratory: Referred to Immunology Dept, Northern General Hospital, Sheffield
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 6 weeks
Report: Positive/Negative

Complement: CH100 (Total Haemolytic Complement) Functional Activity CH100 (Total) and CH100A (Alternate Pathway)

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Comment: Must arrive in Immunology on the same day it was taken . Time and date of collection must be stated on the request form.
Turnaround: 5 weeks
Ref.range: Refer to report form

Conjunctivitis (Bacterial Culture)

Laboratory: Medical Microbiology, GUH
Specimen: Swab of conjunctiva in transport medium
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 3 working days
Report: Culture report: Any clinically significant isolate with the appropriate sensitivities.

Conjunctivitis (Chlamydia trachomatis)

Laboratory: Virology, GUH
Specimen: Swab of conjunctiva in Abbott Multicollect tube.
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 10 working days
Report: Detected / Not Detected

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Copper

Laboratory: Referred to Eurofins SCDL
 Specimen: 5.0mL blood in a plain gel tube
 Turnaround: 3weeks
 Ref. Range: On report form

Copper (Urine)

Laboratory: Referred to Eurofins SCDL
 Specimen: 24 hour urine sample (plain).
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Cortisol

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5.0mL blood in a plain gel tube
 Turnaround: Priority: 1 working day. Routine: 2 working days
 Ref. Range: On report form

Cortisol (Urine)

Laboratory: Referred to Eurofins SCDL
 Specimen: 24 hour urine collection, plain
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

COVID-19 see SARS

See "SARS CoV-2 (PCR)"

Coxiella burnetii IgM Antibodies (Q fever)

Laboratory: Referred to the Health Protection Agency, South West Laboratory, Bristol
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 2-3 weeks.
 Report: See report form including interpretative comment.

Coxsackie B Virus

See "Enterovirus"

C Peptide

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5.0mL fasting blood in a plain tube delivered immediately to the laboratory. Lab must separate and freeze
 Turnaround: 1 week.
 Ref. Range: On report form

Creatine Kinase (CK)

Laboratory: Biochemistry, RUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Creatinine

Laboratory: Biochemistry, RUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

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Creatinine (Urine)

Laboratory: Biochemistry, RUH
Specimen: 24 hour urine sample, plain
Turnaround: 1 working day
Ref. Range: On report form

Creatinine Clearance

Laboratory: Clinical Biochemistry, GUH
Specimen: 24 hour urine in plain container and 5mL blood in plain gel tube taken at some point during the urine collection. It is important that the blood and urine are received in the laboratory as a matched pair.
Turnaround: 1 working day
Ref. Range: On report form
Interpretation: Creatinine clearance may be higher during normal pregnancy due to glomerular hyperfiltration.

Creutzfeld-Jakob Disease (CJD, 14-3-3 Protein)

Laboratory: Medical Microbiology, GUH: Referred to Beaumont Hospital and then onwards to Edinburgh
Specimen: 2 - 5mls of CSF
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist.
Turnaround: 3 - 6 weeks
Report: Positive/Negative

CRP (C Reactive Protein)

Laboratory: Biochemistry, RUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Cryoglobulins

Laboratory: Immunology, GUH
Specimen: 10mL blood in plain tube (provided by Immunology lab), 10.0 mL EDTA blood, transported immediately at 37°C. Contact laboratory who will provide suitable flask for transport of sample at 37°C.
Comment: Requests accepted Mon – Thurs 8h-16h. Friday 8h -13h. May not be possible to transfer sample from RUH, clinician must contact Immunology GUH for advice
Turnaround: 8 working days
Report: Positive/Negative.
If positive then quantified by Cryocrit and typed by Immunofixation.

Cryptococcal Antigen

Laboratory: Virology, GUH
Specimen: 5.0 mL blood in a plain gel tube
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist.
Turnaround: 1 week
Report: Detected/Not Detected

Cryptosporidium spp

Laboratory: Medical Microbiology, GUH
Specimen: Faeces 1-2 g during acute phase of illness in leak proof Laboratory container. If delay refrigerate @ 2-8°C.
Comment: *Cryptosporidium spp* is tested routinely on all outpatients.
Turnaround: 2 working days
Report: *Cryptosporidium* DNA detected / Not detected.

Crystals for Uric acid assessment

See Joint Aspirates Department of Histopathology, Cytopathology and Molecular Pathology

CSF – Culture & Microscopy / Glucose / Protein / Lactate

See “Cerebrospinal Fluid – Culture & Microscopy / Protein / Glucose / Lactate”

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CSF – Oligoclonal bands and CSF IgG Index

See “Cerebrospinal Fluid – Oligoclonal bands and CSF IgG Index”

CSU – Catheter Urine

Laboratory: Medical Microbiology, GUH
Specimen: Specimen in Boric Acid Universal container. Use plain sterile universal container for Paediatric specimen or urine volumes >20ml.
Comment: Contact Laboratory Medical staff as routine submission of CSU is not appropriate. If delay refrigerate @ 2-8°C.
Turnaround: Microscopy: 4 hrs for Urines received 8am to 12 midnight. Paeds Urines only processed post midnight. Culture 3 working days.
Report: Microscopy : Cell count& Culture and sensitivities if appropriate

Curettings

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions
Report: Histological diagnosis

CV2/ CRMP5

Laboratory: Referred to Immunology Department, Churchill Hospital, Oxford OX3 7LJ
Specimen: 5.0 mL blood in plain gel tube. CSF analysis also available.
Turnaround: 6 weeks
Report: Positive/Negative

Cyclosporin (Neoral)

Laboratory: Clinical Biochemistry, GUH
Specimen: 4.0 mL K⁺ EDTA whole blood (x2 EDTA FBC samples)
Comment: Collect sample pre-dose. State date/time of sample collection clearly on request form.
Turnaround: 1 week
Ref. Range: Patient specific

Cystic Fibrosis – Genetic Test

Laboratory: Referred to Department of Clinical Genetics, CHI, Crumlin, Dublin.
Specimen: 5.0 mL EDTA whole blood. (x2 EDTA FBC samples)
Comment : It is mandatory for all requests to be accompanied by a fully completed CHI Genetic request form. It is critical the informed consent section is completed. Testing will not be carried out if forms are not completed fully. A CF patient information request form (CF PID), may be submitted, CHI request forms can be download from www.olchc.ie
Turnaround: Up to 10 weeks
Report: Refer to report- including interpretative comment

Cyst Fluid

Department of Histopathology, Cytopathology and Molecular Pathology. Please refer to Aspirates/ effusions

Cytogenetics: Chromosome Analysis / Karyotyping Adults (age >5 years)

Laboratory: Referred to Eurofins SCDL (Mon – Thurs service).
Specimen: 5.0 mL of blood in Lithium Heparin tube (to be kept at room temperature only)
Comment: MedLab request form to be submitted with samples for testing (available at www.sonichealthcare.ie) Clinical details must be provided.
Turnaround: 15 working days (MedLab)
Report: Refer to report- including interpretative comment

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Cytogenetics: Microarray / aCGH

Laboratory: Referred to Department of Clinical Genetics, OLCH, Crumlin
Specimen: 5.0 mL of blood EDTA (x2 EDTA FBC samples)
Comment: It is mandatory for all requests to be accompanied by a fully completed CHI Genetic request form. It is critical the informed consent section is completed. Testing will not be carried out if forms are not completed fully. CHI request forms can be download from www.olchc.ie
Turnaround: up to 5 weeks
Report: Refer to report- including interpretative comment

Cytomegalovirus (CMV-DEAFF)

Laboratory: Referred by RUH Laboratory to the National Virus Reference Laboratory, Dublin.
Specimen: Freshly voided urine
Turnaround: 1-3 weeks
Report: Positive/Negative

Cytomegalovirus (CMV – PCR)

Laboratory: Referred to the National Virus Reference Laboratory, Dublin
Specimen: 8ml K2EDTA Greiner tube
Comment: Specimens must be delivered directly to lab for immediate dispatch to National Virus Reference Laboratory, Dublin .Request must be approved by the Microbiology Medical Staff, GUH.
Turnaround: 1 – 3 weeks
Report: Detected/Not Detected

Cytomegalovirus (CMV) IgG / IgM Antibodies

Laboratory: Virology, GUH
Specimen: 5.0 ml blood in a plain gel tube
Turnaround: 1-2 days
Report: Detected / Not Detected

Cytomegalovirus (CMV – PP65 Antigenaemia)

Laboratory: Referred to the National Virus Reference Laboratory, Dublin
Specimen: 5.0 mL blood in an EDTA tube
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist. Please call Microbiologist GUH to discuss if this test is required.
Turnaround: 1-3 weeks
Report: Positive/Negative

Cytotoxic Antibodies (solid organ transplantation)

Laboratory: Referred to Tissue Typing Laboratory, Immunology, Beaumont Hospital, Dublin.
Comment: Discuss with tissue typing lab in Beaumont
Specimen: 5 ml blood in plain gel tube
Turnaround: 4 weeks
Ref range: Refer to report form

D-Dimers

Laboratory: Haematology, RUH
Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube. Specimen must be tested within 2 hours of draw. One specimen sufficient for D-Dimer and Coagulation screen.
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: Refer to report

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Dengue fever Antibodies

Laboratory: Referred to the National Virus Reference Laboratory, Dublin.
Specimen: 5.0 mL blood in a plain gel tube.
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist.
Turnaround: 1 – 3 weeks
Report: Positive/Negative

Dermatophytosis

Laboratory: Medical Microbiology, GUH
Specimen: Hair, Nail clippings, skin scrapings in Dermapak.
Comment: Contact Microbiology GUH. If delay refrigerate.
Turnaround: Microscopy: 1 week. Culture: 5 to 6 weeks.
Report: Microscopy & Culture

DHEA Sulphate

Laboratory: Referred to Eurofins SCDL
Specimen: 7.0 mL blood in a plain tube
Turnaround: 3 weeks
Ref. Range: On report form

Digoxin

Laboratory: Clinical Biochemistry, GUH
Specimen: 7.0 mL blood in a plain gel tube
Comment: Take specimen six hours post dose, Hypokalaemia is associated with an enhanced response to digoxin. Potassium should always be measured when digoxin toxicity is suspected.
Turnaround: Urgent: 1hour. All other requests: same day
Therapeutic Range: On report form

Dihydropyrimidine Dehydrogenase (DPD) Activity

Laboratory: Referred to Purine Laboratory, 4th Floor, North Wing, St. Thomas's Hospital, Lambeth Place Road, London SE1 7EH, England
Specimen: x2 FBC blood, and a urine specimen
Turnaround: 1 – 3 weeks
Report: See report form

Diphtheria (Culture of Throat swab)

Laboratory: Medical Microbiology, GUH
Specimen: Swab in charcoal medium. If delay refrigerate @ 2-8°C.
Comment: Contact Laboratory prior to sending swab to ensure fresh media is present.
Turnaround: 1 week
Report: Culture Report: Any clinically significant isolate with the appropriate sensitivities

Direct Coombs Test

Laboratory: Blood & Tissue Establishment GUH
Specimen: 6.0 mL EDTA K²E blood
Turnaround: 1 day
Ref. Range: N/A

Dopamine

See "Catecholamines/Fractionated Metanephrines"

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Duodenal Aspirate

Laboratory: Medical Microbiology, GUH
Specimen: Fluid in sterile universal container
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 3 working days
Report: Culture Report: Any clinically significant isolate with the appropriate sensitivities.

Duodenal Smear for *Giardia intestinalis* trophozoites.

Laboratory: Medical Microbiology, GUH
Specimen: Smear on slide. If delay refrigerate @ 2-8°C.
Turnaround: 1 week
Report: *Giardia intestinalis* detected / not detected

Ear Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab any pus or exudate with in transport medium
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 3 working days
Report: Culture Report: Any clinically significant isolate with the appropriate sensitivities

Echinococcus (Hydatid cyst) antibodies

Laboratory: Referred to Hospital for Tropical Diseases, London WC1E 6AU
Specimen: 7.0 mL blood in a plain gel tube
Comment: Available only in very specific circumstances and with prior approval of a Consultant Microbiologist.
Turnaround: 2 – 3 weeks
Report: Positive/Negative

Ecstasy

See "Toxicology Screen"

Effusions

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Collect 10-20 ml fresh specimen into a twist top leak proof 20ml or 50 ml sample bottle containing Shandon Cytospin collection fluid (green fixative solution available from Laboratory). Refrigerate overnight if necessary
Comment: Indicate clinical history on test requisition, and reason for test. Do not submit drainage bags or large volumes of fluid for disposal in Laboratory
Turnaround: 80% by 5 working days.
Report: Detection of neoplastic and non neoplastic cells

eGFR

Laboratory: Biochemistry, RUH
Specimen: 7.0 mL blood in plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Comment: Calculated parameter
Interpretation: On report form

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EGFR Mutation analysis

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Tissue samples already processed by the Histopathology Laboratory, arrange via consultant pathologist.
Comment: Testing available on request by Pathologist.
Referrals: Contact the Department of Histopathology, Cytopathology and Molecular pathology on 091 544078
Turnaround: 5 – 10 working days after request by Pathologist received.
Report: Integral part of Histopathology report issued by Division of Anatomic Pathology, Department of Histopathology, Cytopathology and Molecular Pathology.

Electron Microscopy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Tissue
Comment: Discuss with appropriate Consultant Histopathologist at least 24 hours in advance of surgery.
Report: Histological diagnosis

Endocervical Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium
Comment: Endocervical / Urethral swabs are routinely cultured for *N. gonorrhoeae*. If delay refrigerate @ 2-8°C.
Turnaround: 3 working days
Report: Culture Report: Any clinically significant isolate with the appropriate sensitivities.

Enterobius vermicularis (Sellotape slide for Pinworms)

Laboratory: Medical Microbiology, GUH
Specimen: Apply sellotape to anal area, fix to slide, send to Laboratory. If delay refrigerate @ 2-8°C.
Turnaround: 2 working days
Report: Presence or Absence of *E. vermicularis*.

Enterovirus (PCR)

Laboratory: Medical Microbiology, GUH
Specimen: 0.5 mL CSF in plain leak-proof sterile container
Comment: On Consultant Microbiologist request
Turnaround: 1 week
Report: Enterovirus RNA: Detected/ Not Detected.

Epstein – Barr Virus (EBV) Antibodies

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 – 2 days
Report: Detected/Not Detected

Erythropoietin

Laboratory: Referred to Eurofins SCDL.
Specimen: 5 mL blood in a plain gel tube
Turnaround: 2 weeks
Ref. Range: Refer to report

Erythrovirus B19 IgM + IgG antibodies

Laboratory: Referred to the National Virus Reference Laboratory, Dublin
Specimen: 5 mL blood in a plain gel tube. Available only in specific circumstances, contact Virology GUH.
Turnaround: 3 weeks
Report: Positive/Negative

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ESR (Erythrocyte Sedimentation Rate)

Laboratory: Haematology, RUH.
 Specimen: Minimum 2mls blood in EDTA purple top tube for ESR and FBC..
 Turnaround: 1 day routine specimens. Telephoned requests for faster turnaround time can be accommodated on particularly urgent specimens
 Ref. Range: Refer to report

Extended Spectrum Beta Lactamase (ESBL) culture

Laboratory: Medical Microbiology, GUH
 Specimen: Rectal swab in transport medium/Faeces sample. Delay > 2 h refrigerate @ 2-8°C.
 Comment: Restricted to specific groups of hospitalized patients. Non hospitalized patients are screened by prior arrangement with a Consultant Microbiologist.
 Turnaround: 3 working days
 Report: ESBL isolated / not isolated

Eye Swab

Laboratory: Medical Microbiology, GUH
 Specimen: Swab in transport medium (charcoal)
 Comment: If delay refrigerate @ 2-8°C.
 Turnaround: 3 working days
 Report: Culture Report: Any clinically significant isolate with the appropriate sensitivities.

Factor Inhibitor Studies

Laboratory: Haematology, GUH
 Specimen: 3 x 2.7 mL blood in a 0.109m Sodium Citrate tube
 Comment: Prior arrangement with coagulation laboratory, GUH necessary. Must fill bottle to mark.
 Turnaround: 1 week
 Ref. Range: N/A

Factor V Leiden Mutation

Laboratory : Referred to NCHCD, St James' Hospital, Dublin
 Specimen : 5.0 ml blood in EDTA tube (x2 FBC)
 Comment : APCR <2 or positive lupus only will be sent to SJH for testing. This must be written on the Haematology request form. A signed patient consent form for genetic testing is required by the laboratory before analysis can be processed.
 Turnaround : 4 weeks
 Ref Range : N/A

Faecal Elastase, Faecal Calprotectin Elastase profile

Laboratory: Referred to Eurofins SCDL
 Specimen: Random faeces
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Faecal Occult Blood

Laboratory: Laboratory, RUH
 Specimen: Random faeces
 Turnaround: 1 day
 Ref. Range: On report form

Faeces – Molecular analysis, Microscopy, Culture and Antigen Detection

Laboratory: Medical Microbiology, GUH
 Specimen: 1-2 g faeces collected in acute phase of illness in leak proof container. If delay refrigerate @ 2-8°C
 Comment: *Shigella* Spp. survival may be compromised @ 2-8°C – delay reduces isolation
 Turnaround: 3 working days
 Report: Molecular : Bacterial DNA Detected/Not Detected. Culture: Any clinically significant isolate-all samples with pathogen DNA detected (Except *Campylobacter* spp)

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Farmers Lung Antibodies (Micropolyspora Faenii)

Laboratory:	Referred to PHL, Cumberland Infirmary, Carlisle CAZ 7HY
Specimen:	7.0 mL blood in a plain gel tube
Comment:	Available only in specific circumstances and with prior approval of a Consultant Microbiologist, GUH
Turnaround:	2 – 3 weeks
Report:	Positive/Negative

FDP's (Fibrinogen degradation products)

Laboratory:	Haematology, GUH
Specimen:	2.0 mL blood in special FDP bottle supplied on request by coagulation laboratory, GUH
Comment:	Must fill bottle to mark
Turnaround:	1 day
Ref. Range:	Refer to report

Ferritin

Laboratory:	Haematology, RUH
Specimen:	5.0 mL blood in a plain gel tube..
Turnaround:	1 day
Ref. Range:	Refer to report

Filaria Antibodies

Laboratory:	Referred to Hospital for Tropical Diseases, London WCIE 6AU
Specimen:	7.0 mL blood in a plain gel tube
Comment:	Available only in specific circumstances and with prior approval of a Consultant Microbiologist, GUH
Turnaround:	2 – 3 weeks
Report:	Positive/Negative

Fine Needle Aspiration Biopsy - FNAB

Laboratory:	Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen:	Submit specimen to laboratory in 10% Neutral Buffered Formalin.
Turnaround :	80% by 5 working days
Report:	Histological diagnosis

Fine Needle Aspirates (FNAs) of breast, thyroid, axilla, parotid, submandular, lymph node and cysts.

Laboratory:	Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen:	Superficial and deep seated lesions. Deep seated lesions that need ultrasonic, CT or fluoroscopic guidance may be required. Use a 22 – 25 gauge fine needle and a 10 – 20 mL syringe for collection of specimen. Clearly label two frosted glass slides with patients name, DOB, and /or BN. Prepare thin even smears. For optimal diagnosis, air dry one slide for diff quik stain, please label as 'Air Dried. Immediately after preparation, spray a complete even coating of Cell-Fixx onto the other slide(s) from a distance of 25 – 30 cm (10 – 12 inches). Fixed slides should be labelled in pencil with patient Name DOB and or BN. Labelling should be carried out before spray fixing. Fixed and air dried slides should be placed in slide mailers clearly labelled on the outside with patient's addressograph. Needle wash may be collected into Shandon Cytospin Collection Fluid in a Universal container green fixative solution and submitted to the laboratory for processing. Please indicate exact location of sample site on request form and specimen container. Pathologist assisted FNAs must be prebooked by contacting the laboratory office 091 544078 / 4492 or Cytology laboratory Prep 091 544883. Contact with Pathologist rostered on Cytology may also be made via GUH switchboard.
Comment:	Additional Sample may be taken for Flow cytometry if clinically indicated
Turnaround:	80% by 5 working days
Report:	Correlated with clinical presentation. Allow on site evaluation, rapid turn a round time.

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Flow Cytometry (Immunotyping of Leukaemias and Lymphomas)

Laboratory: Haematology, GUH
 Specimen: 3.0 mL K³ EDTA blood or Bone Marrow aspirate in EDTA or Lymph Node Biopsy in RPMI
 Comment: Prior arrangement with consultant Haematologist or SPR
 Turnaround: 3 - 5 days
 Report: Contact Consultant Haematologist.

FLT3 – Mutation

Laboratory: Referred to CMD Laboratory, St James Hospital, Dublin 8.
 Specimen: 3.0 mL K³ EDTA blood, or Bone Marrow in RPMI.
 Comment: Arrange through Haematology Registrar, or Consultant Haematologist, GUH
 Turnaround: 1 Month
 Report: See report form.

FISH, HER-2 Status Evaluation

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Tissue samples already processed by the Histopathology Laboratory, on Request from Consultant Pathologist only.
 Comment: Testing available on request by Pathologist.
 Turnaround; 5 – 7 working days after request from Pathologist received
 Report: Integral part of Histopathology report issued by Division of Anatomic Pathology

Folate (Serum)

Laboratory: Haematology, RUH
 Specimen: 5.0 mL blood in a plain gel tube.
 Turnaround: 1 day
 Ref. Range: Refer to report

Fragile X Chromosome

Laboratory: Referred to Department of Clinical Genetics, CHI, Crumlin
 Specimen: 5.0 mL blood in EDTA tube (x2 FBC)
 Comment : It is mandatory for all requests to be accompanied by a fully completed CHI Genetic request form. It is critical the informed consent section is completed. Testing will not be carried out if forms are not completed fully. CHI request forms can be download from www.olhc.ie Turnaround: up to 26 weeks
 Ref Range : See report- including interpretative comment

Fructosamine

Laboratory: Referred to Eurofins SCDL
 Specimen: 5.0 mL blood in a plain gel tube.
 Turnaround: 1 day
 Ref. Range: Refer to report

Free light chains

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 10 working days
 Ref. Range: Kappa light chains 3.3 – 19.4 mg/L
 Lambda light chains 5.7 – 26.3 mg/L
 Kappa / Lambda Ratio 0.26 – 1.65
 Kappa / Lambda Ratio 0.37-3.1 applies for patients with stage 3 CKD or above

Fresh Tissue

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Submit specimen intact to laboratory UNFIXED.
 Comment: Lymph nodes for query lymphoma, Frozen section and Muscle biopsy to be confirmed with Consultant Histopathologist on frozens at least 24 hours in advance. Skin biopsies and renal biopsies for DIF to be confirmed with Histopathology laboratory staff at least 24 hours in advance. Health & Safety precautions
 Report: Histological diagnosis

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Free T4

See "Thyroxine"

Frozen Sections

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Fresh tissue
 Turnaround: Same day
 Comment: Avoid if there is a danger of infection e.g if tuberculosis is strongly suspected. Frozen sections will not be done where there is a danger of infection. Alternative approaches to rapid diagnosis can be discussed with the Consultant rostered on 'frozens'.
 Prior Arrangement: Please book frozen section 24 hours in advance with the Consultant Histopathologist rostered for 'frozens' (091 544589). If possible put the operation at the beginning of the operation list. If the operation is delayed or if it is subsequently found that the frozen section is not required, please notify the Histopathology Department without delay at 091 544589. The unfixed tissue sample is transported directly to the laboratory by portering staff in a fully labelled container accompanied by a fully completed request form. Include contact details for immediate call back of frozen section result. Tissue for frozen section must be handed directly to a Medical Scientist, NCHD or Consultant Histopathologist.
 Unbooked Frozen Sections: Frozen sections that are required but not booked during the 'normal working hours' (09:00-17:00 h) must be discussed with the Consultant Histopathologist rostered for 'frozens' before any samples are taken.
 Report: Histological diagnosis

FSH

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5mL blood in a plain gel tube
 Turnaround: Priority: 1 working day. Routine: 2 working days
 Ref. Range: On report form

Full Blood Count

Laboratory: Haematology, RUH
 Specimen: 3.0 mL K3 EDTA blood, (1.0 mL Paediatric tubes are available).
 Comment: After 24 hours, WBC differential and red cell indices are affected by EDTA changes. Ensure samples are not taken from a drip site as this results in dilution of the sample. In cases of platelet clumping special sample bottles (thrombo exact) are available upon request. For use in platelet counting only.
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: Refer to report

Fungal Microscopy and Culture

Laboratory: Medical Microbiology, GUH
 Specimen: Transport swab. Tissue / pus in sterile container. Hair, nail clippings, skin scrapings in Dermapak.
 Delay > 2h refrigerate @ 2-8°C.
 Comment: Refer to Medical Microbiology section
 Turnaround: Microscopy: 1 week. Culture: 5 to 6 weeks.
 Report: Microscopy: Presence or absence of Fungal elements. Culture: Growth / No Growth

G6PD Quantitation

Laboratory: Referred to Special Haematology, St James Hospital, Dublin 8
 Specimen: 3.0 mL K³ EDTA blood
 Turnaround: 2 weeks
 Ref. Range: See report form

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Galactomannan antibodies

Laboratory: Referred to the Department of Microbiology, St. James' Hospital, James Street, Dublin 8
Specimen: 5 mL blood in plain gel tube
Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround: 1 – 2 weeks
Report: Positive/Negative

Gamma-glutamyl-transferase (γ-GT)

Laboratory: Biochemistry, RUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

Gastrin

Laboratory: Referred to Eurofins SCDL
Specimen: Fasting 5 mL blood in a plain gel tube sent to the lab immediately, lab must separate and freeze
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Gastrointestinal Tract Hormones (GIT Hormones): incl. Pancreatic Polypep, C-Term Glucagon, Vasoactive Polypep, Somatostatin and CART

Laboratory: Clinical Biochemistry: - referred to external laboratory for analysis
Specimen: x2 3ml K⁺ EDTA blood per hormone assay, send to lab immediately, lab must separate and freeze. *Lab staff : see 'special Blood Sciences' folder*
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Genital Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
Comment: Endocervical swabs and Urethral swabs are routinely cultured for *N. gonorrhoeae*. All other specimens must specify *N. gonorrhoeae* on request if required.
Turnaround: 3 working days.
Report: Any clinically significant isolate.

Gentamicin/Genticin

Laboratory : Clinical Biochemistry, GUH
Specimen : 5 mL blood in a plain gel tube. Delay >2h refrigerate @2-8°C.
Comment : State time collected and if Peak or Trough specimen
Turnaound : Analysed during routine working hours only.
Therapeutic Range : On report form

Glucagon

See "Gastrointestinal Tract Hormones"

Glucose

Laboratory: Biochemistry, RUH
Specimen: 4.0 mL Fluoride Oxalate blood
Comment: Fasting : Ideally a patient should fast for 12 hours. However, if a patient is unable or unwilling to fast for 12 hours a specimen taken after a 9 hour fast is acceptable.
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: On report form

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Group and Crossmatch

Laboratory: Blood Transfusion Laboratory RUH
 Specimen: EDTA K²E 6.0 mL blood
 Turnaround: 1 Hour (for an urgent crossmatch) 2 Hours (routine crossmatch)
 Ref. Range: N/A

Group and Hold

Laboratory: Blood Transfusion Laboratory RUH
 Specimen: EDTA K²E 6.0 mL blood
 Turnaround: 1 hour (for an urgent Group and Hold) 2 Hours (routine)
 Ref. Range: N/A

Growth Hormone

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube, must arrive in lab before 12pm for referral to GUH. It should only be requested as part of a dynamic function test. In general, a random growth hormone measurement has very little diagnostic value.
 Turnaround: 3weeks
 Interpretation: On report form

Gut Hormone Profile

See "Gastrointestinal Tract Hormones"

Haemochromatosis – C282Y and H63D Genetic Mutations

Laboratory: Immunology, GUH:- referred from GUH to Molecular Genetics Lab. Northern Molecular Genetics Service, Biomedicine East, Central Parkway. Newcastle Upon Tyne, NE1 3BZ, UK
 Specimen: x2 3ml blood in EDTA tube. RUH send to GUH for onward referral
 Comment: Must specify genetic test on request form. The patient must be >16 years old and the EDTA sample must be fresh and not used for other testing.
 Turnaround: up to 8 weeks
 Ref range: On report form including interpretative comment. Paper report ONLY.

HbA_{1c}

Laboratory: Clinical Biochemistry, GUH
 Specimen: 3 mL EDTA blood
 Turnaround: 2 working days
 Ref. Range: On report form

Haemoglobin A₂

Laboratory: Referred to St James Hospital.
 Specimen: 3.0 mL K³ EDTA blood
 Comment : Request form must give clinical details, transfusion history and ethnic origin of patient. Levels of HbA₂ will be affected by the presence of iron deficiency.
 Turnaround: 4 weeks
 Ref. Range: On report form

Haemoglobin F

Laboratory: Referred to St James Hospital
 Specimen: 3.0 mL K³ EDTA blood
 Comment: Request form must give clinical details, transfusion history and ethnic origin of patient.
 Turnaround: 4 weeks
 Ref. Range: On report form

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Haemoglobin S

Laboratory: Referred to St James Hospital
Specimen: 3.0 mL K³ EDTA blood
Comment: Request form must give clinical details, transfusion history and ethnic origin of patient.
Turnaround: 4 weeks
Ref. Range: On report form

Haemoglobinopathy Screens

Laboratory: Referred to St James Hospital
Specimen: x3 3.0 mL K³ EDTA sample required
Comment: Request form must give clinical details, transfusion history and ethnic origin of patient. Levels of HbA₂ will be affected by the presence of iron deficiency. Thalassaemia cannot be excluded in the presence of iron deficiency.
Turnaround: 4 weeks
Ref. Range: On report form

Haemophilus influenzae B Antibodies (IgG)

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 5 weeks
Ref. Range: Minimum Protective Level >0.15 mg/L
Optimum Protective Level >1.00 mg/L

Haemosiderin (Urine)

Laboratory: Haematology, GUH
Specimen: First morning urine specimen in a plain universal container.
Turnaround: 3 - 5 days
Ref. Range: N/A

Hantavirus Antibodies - Serum

Laboratory: Referred to HPA, Special Pathogens Reference Unit, Wiltshire SP4 OJG
Specimen: 5 mL blood in plain gel tube
Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround: 1-3 weeks
Report: Positive / Negative

Haptoglobin

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 5 working days
Ref. Range: 0.3-2.0 g/l

HCG, Total

Laboratory: Biochemistry, RUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: Urgent requests: 1hour. Priority : 3 hours. Routine : same day
Ref. Range: On report form

Helicobacter pylori Faecal Antigen Test

Laboratory: Medical Microbiology, GUH
Specimen: Faeces collected in a leak proof container.
Comment: *H. pylori* is available for patients with dyspepsia aged less than 45 years **with NO "alarm symptoms"**. Stool samples should be submitted within 24 hours of collection, Monday to Friday. Specimens that are aged, where the date of collection is not stated, or without relevant clinical details, will not be processed.
Turnaround: 2 working days.
Report: *H. pylori* 'antigen' detected / Not detected.

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Heinz Bodies

Laboratory: Haematology, GUH
Specimen: 3.0 mL K³EDTA blood
Comment: Prior authorization by Consultant Haematologist or SPR. Arrange with Haematology laboratory before taking specimen.
Turnaround: 2 days.
Ref. Range: N/A

Hepatitis A IgM Antibody

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 week
Report: Detected / Not Detected

Hepatitis A Virus Total Antibody

Laboratory: Virology, GUH
Specimen: 5 mL blood in plain gel tube
Turnaround: 1 week
Report: Detected / Not Detected

Hepatitis B Surface Antigen

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Requests for testing post "Needlestick" injury should be notified to the laboratory in advance of sending the specimen, as these samples are processed urgently.
Turnaround: 2 working days
Report: Detected / Not Detected.

Hepatitis B Antibody

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Requests for testing post "Needlestick" injury should be notified to the laboratory in advance of sending the specimen.
Turnaround: 2 working days
Report: Levels reported as mIU/ml with relevant comment regarding protective levels and advice on further vaccination

Hepatitis B Core Antibody (anti-HBc)

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 2 working days
Report: Detected / Not Detected

Hepatitis C Antibody

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Requests for testing post "Needlestick" injury should be notified to the laboratory in advance of sending the specimen.
Turnaround: 2 working days. Samples referred for further testing 1-2 weeks.
Report: Not Detected, if negative. A Provisional report will be issued on any sample giving reactive findings on initial testing. These specimens are referred to the NVRL for further testing and a final report.

Hepatitis C Antigen

Laboratory : Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Comment : Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround : 3-5 working days
Report : Not Detected/Detected

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Hepatitis C PCR / Viral Load / Genotype

Laboratory: Virology, GUH
Specimen: x2 6ml K2EDTA Greiner tube. Two tubes if genotype is also required.
Comment: Specimen must be delivered to a Virology staff member within 3 hours of phlebotomy and before 4pm.
Turnaround: 1 – 3 weeks
Report: Viral Load reported in IU/ml with comment where relevant

Hepatitis D Antibody

Laboratory: Referred to referred to the National Viral Reference Laboratory, Dublin
Specimen: 5 mL blood in a plain gel tube
Comment: Request must be approved by Consultant Microbiologist
Turnaround: 2-4 weeks
Report: Positive/Negative

Hepatitis E Antibody

Laboratory: Referred to the National Viral Reference Laboratory, Dublin
Specimen: 5 mL blood in a plain gel tube
Comment: Request must be approved by Consultant Microbiologist
Turnaround: 2 – 4 weeks
Report: Positive/Negative

Hereditary Spherocytosis Screen (Flow Cytometry)

Laboratory: Referred to Crumlin Hospital
Specimen: 3.0 mL K³EDTA blood, at room temperature.
Comment: Samples must be received within 24hours. Full clinical information and reason for request must accompany specimen. Consult with haematologist GUH
Turnaround: 4 weeks
Ref. Range: Interpretation by Consultant Haematologist on report form.

Herpes simplex virus antibody

Laboratory: Referred to HPA, Sexually Transmitted + Blood Borne Virus Laboratory, Colindale.
Specimen: 5 mL blood in a plain gel tube
Comment: Only referred to Reference Laboratory in exceptional circumstances and with prior approval of a Consultant Microbiologist
Turnaround: 1 – 3 weeks
Report: Positive/Negative

Herpes simplex virus - PCR

Laboratory: Medical Microbiology, GUH
Specimen: 0.5 mL CSF in plain leak-proof sterile container or swab in viral transport medium from genital site.
Comment: On Consultant Microbiologist request
Turnaround: 1 week
Report: HSV 1 & 2 DNA: Detected/ Not Detected.

5-HIAA (Urine)

Laboratory: Referred to Eurofins SCDL
Specimen: 24 hour acidified urine collection, lab to send 30ml aliquot to Medlab (state volume on request form)
Turnaround: 1 – 3 weeks
Ref. Range: On report form

High Density Lipoprotein (HDL)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Ideally a patient should fast for 12 hours. However, if a patient is unable or unwilling to fast for 12 hours a specimen taken after a 9 hour fast is acceptable".
Turnaround: 2 working days
Ref. Range: On report form

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High Vaginal Swab (HVS)

Laboratory:	Medical Microbiology, GUH
Specimen:	Swab in transport medium . Delay > 2 h refrigerate @ 2-8°C.
Comment:	Endocervical swabs and Urethral swabs are routinely cultured for <i>N. gonorrhoeae</i> . All other specimens must specify <i>N. gonorrhoeae</i> on request if required.
Turnaround:	3 working days
Report:	Any significant pathogen and susceptibilities if appropriate.

Histoplasma Antibodies

Laboratory:	Referred to The Health protection Agency, Mycology Reference Laboratory Bristol BS2 8EL
Specimen:	5 mL blood in a plain gel tube
Comment:	Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround:	1 – 3 weeks
Report:	Positive/Negative

Histology Tissue Specimen

Laboratory:	Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen:	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
Comment:	Health & Safety precautions
Report:	Histological diagnosis

HITS (Heparin Induced Thrombophilia Syndrome)

Laboratory:	Haematology, GUH
Specimen:	5 mL blood in a plain gel tube.
Comment:	Arrange with Haematology team, GUH
Turnaround:	1 day (Mon – Fri)
Ref. Range:	Positive / Negative

HLA B27 Typing

Laboratory:	Referred to Eurofins SCDL
Specimen:	x2 3 mL EDTA blood
Comment :	Restricted test-restricted to the following disciplines Rheumatology, Ophthalmology & Orthopaedics. Please phone laboratory if there are exceptional reasons why this test is essential
Turnaround:	3 weeks
Report:	On report form

HLA Typing

Laboratory:	Referred to Eurofins SCDL
Specimen:	x3 3ml EDTA blood
Comment :	Restricted test, consult with Haematologist, GUH
Turnaround:	3 weeks
Report:	On report form

Homocysteine

Laboratory:	Clinical Biochemistry, GUH
Specimen:	x2 3ml EDTA blood delivered to the laboratory immediately, lab to separate and freeze
Turnaround:	1 week
Ref. Range:	On report form

Human Immunodeficiency Virus antigen/antibody

Laboratory:	Virology, GUH
Specimen:	5 mL blood in a plain gel tube.
Turnaround:	2 working days. Samples referred for further testing 1-2 weeks.
Report:	Not Detected, if negative. A Provisional report will be issued on any sample giving reactive findings on initial testing. These specimens are referred to the NVRL for further testing and a final report.

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Human Immunodeficiency (HIV) PCR / Viral Load / Genotype

Laboratory:	Virology, GUH
Specimen:	One 8 ml Greiner K ₂ EDTA Vacuette tube (Ref: 455040) for viral load testing. Need to obtain from Virology GUH, contact lab. Two tubes if Genotype is also required.
Comment:	Specimen must be delivered to a Virology staff member within 3 hours of phlebotomy, send to lab for immediate dispatch to GUH. Greiner tubes should be used to collect both adult and paediatric samples. Only samples collected in these tubes are suitable for processing.
Turnaround:	1 – 3 weeks
Report:	Detected/Not detected

Human T-Lymphocyte Virus

Laboratory:	Referred to National Viral Reference Laboratory, Dublin.
Specimen:	5 mL blood in a plain gel tube
Comment:	Only available in specific cases and following approval by the Microbiology Medical staff
Turnaround:	2 – 4 weeks
Report:	Reported in IU/ml

Huntington's Disease

Laboratory:	Referred to Department of Clinical Genetics, OLCH, Crumlin, Dublin.
Specimen:	x2 3ml blood in EDTA tube
Comment:	It is <u>mandatory</u> for all requests to be accompanied by a fully completed CHI Genetic request form. It is critical the informed consent section is completed. Testing will not be carried out if forms are not completed fully. CHI request forms can be download from www.olchc.ie
Turnaround:	Up to 12 weeks
Ref range:	Refer to report- including interpretative comment

Hydatid antibodies

Laboratory:	Referred to the Hospital for Tropical Diseases, London WC1E 6AU
Specimen:	5 mL blood in a plain gel tube
Comment:	Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround:	2 – 3 weeks
Report:	Positive/Negative

Hydatid Cyst

Laboratory:	Medical Microbiology, GUH
Specimen:	Fluid from liver to sterile container. Delay > 2 h refrigerate @ 2-8°C.
Turnaround:	2 working days
Report:	Presence or absence of <i>Echinococcus</i> sp.

Immunoglobulins IgG / IgA / IgM and Serum Protein Electrophoresis

Laboratory:	Immunology, GUH
Specimen:	5.0 mL blood in plain gel tube
Turnaround:	10 working days
Ref. Range:	On report form

IgD

Laboratory:	Referred to Immunology dept, Northern General hospital, Sheffield
Specimen:	5 mL blood in plain gel tube
Turnaround:	6 weeks
Ref. Range:	Refer to report

IgE (Total)

Laboratory:	Immunology, GUH
Specimen:	5.0 mL blood in plain gel tube
Turnaround:	7 working days
Ref. Range:	On report

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IgG Subclasses (IgG1, IgG2, IgG3)

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 10 working days
Ref. Range: On report form

IgG Subclasses (IgG4)

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Turnaround: 10 working days
Ref. Range: IgG4 g/L
Adult 0-1.29

IGRA : See Quantiferon Test

IL28B genotyping

Laboratory: Referred to National Virus Reference Laboratory, UCD.
Specimen: x3 3mL EDTA blood
Turnaround: 4 weeks
Ref. Range: Refer to report- including interpretative comment

Immunofluorescence Biopsies - Renal

Laboratory: Please notify the Histopathology Department, GUH (ext. 4589) at least 24 hours in advance.
Specimen: Place the biopsy in normal saline to maintain hydration and deliver to the laboratory immediately. Include contact details on request form.
Comment: Health & Safety precautions
Report: Histological diagnosis

Immunofluorescence Biopsies - Skin

Laboratory: Please notify the Histopathology Department, GUH (ext. 4589) at least 24 hours in advance.
Specimen: Deliver to the laboratory immediately. Include contact details on request form.
Comment: Health & Safety precautions
Report: Histological diagnosis

Immunophenotyping (Flow Cytometry)

Laboratory: Haematology, GUH
Specimen: 3.0 mL K³ EDTA blood or Bone Marrow aspirate in EDTA or Lymph Node Biopsy in RPMI
Comment: Prior arrangement with Consultant Haematologist or SPR.
Turnaround: 2 – 5 days
Report: Contact Consultant Haematologist

Influenza A virus

Laboratory: Virology, GUH
Specimen: Combined nasal/throat swab in viral transport medium
Comment: Seasonal availability only
Turnaround: 2-3 working days
Report: Detected/Not Detected

Influenza B virus

Laboratory: Virology, GUH
Specimen: Combined nasal/throat swab in viral transport medium.
Comment: Seasonal availability only
Turnaround: 2 - 3 working days
Report: Detected/Not Detected

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INR (International Normalised Ratio)

Laboratory: Haematology RUH
Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube.
Comment: Fill bottle to mark. Details of anticoagulant therapy required. Do not refrigerate specimens for INR
Turnaround: 1 day
Ref. Range: See report form

Insulin

Laboratory: Clinical Biochemistry, GUH
Specimen: 5ml fasting blood in a plain gel tube delivered immediately to the laboratory, lab to separate and freeze
Turnaround: 1 week
Ref. Range: On report form

Insulin Like Growth Factor 1

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL fasting blood in a plain gel tube, delivered to laboratory immediately, lab to separate and freeze
Turnaround: 3 weeks
Ref. Range: See report form

Interleukin 6

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Specimen must be received in the laboratory on the day of venepuncture.
Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
Ref. Range: See report form

Intraocular Fluids / Corneal Scrapings

Laboratory: Medical Microbiology, GUH
Specimen: Pre-inoculated media. If sufficient fluid use sterile container.
Comment: Contact Laboratory to collect fresh culture plates and slide for corneal scrapings. Deliver to Laboratory immediately.
Turnaround: 3 days
Report: Clinically significant isolate with the appropriate sensitivities

Intra – Uterine Contraceptive Device (IUCD)

Laboratory: Medical Microbiology, GUH
Specimen: Intra Uterine Device. Delay > 2 h refrigerate @ 2-8°C.
Comment: Only submit for culture with relevant clinical details. Endocervical swabs and Urethral swabs are routinely cultured for *N. gonorrhoeae*. All other specimens must specify *N. gonorrhoeae* on request if required.
Turnaround: 3 working days
Report: Clinically significant isolate with the appropriate sensitivities

Intravascular Cannulae - Culture

Laboratory: Medical Microbiology, GUH
Specimen: Cut 4cm of line to sterile container. Delay > 2 h refrigerate @ 2-8°C.
Comment: Only submit specimen for culture where indications of infection are present.
Turnaround: 3 working days
Report: Clinically significant isolate with the appropriate sensitivities.

Iron

Laboratory: Clinical Biochemistry, GUH
Specimen: Fasting sample required. 5 mL blood in a plain gel tube
Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
Ref. Range : On report form

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Iron Stain (Perla Prussian Blue – Cytochemical Stain)

Laboratory: Haematology, GUH
 Specimen: Bone marrow spread on a glass slide
 Comment: As for Bone Marrow testing
 Turnaround: 2 weeks
 Ref. Range: N/A

JAK -2 Mutation

Laboratory: Referred to CMD Laboratory, St James Hospital, Dublin 8
 Specimen: 3 x 3.0 mL K³ EDTA blood
 Comment: Test available Monday-Thursday only
 Turnaround: 120 days
 Ref. Range: N/A

Joint Aspirates – Uric Acid Crystals

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology
 Specimen: 5-10 mls fresh specimen in a universal container. Do not use fixative. Specify if cytology or crystal analysis is required. Please do not inject any material into joint before obtaining joint fluid sample. Submit sample to laboratory ASAP. Refrigerate overnight if necessary. Please use powder free gloves to avoid contamination of sample by powder.
 Comment: Indicate clinical history on test requisition and reason for test.
 Turnaround: 80% by 5 working days
 Report: Detection of inflammatory conditions

Joint Fluid

Laboratory: Medical Microbiology, GUH
 Specimen: Specimen in sterile container. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 3 working days
 Report: Clinically significant isolate with the appropriate sensitivities

Joint Fluid – Uric Acid Crystals

Please refer to Joint Aspirates

Karyotyping

See Cytogenetics

Ketones

Laboratory: Available on point of care glucose meters, call lab for further information
 Turnaround: 1 day (Mon – Fri) – not available on weekends.
 Ref. Range: N/A

KRAS Mutation analysis

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Tissue samples already processed by the Histopathology Laboratory,
 Request from: Arrange via consultant pathologist.
 Comment : Testing available on request from consultant Pathologist.
 Referrals: Contact the Department of Histopathology, Cytopathology and Molecular pathology on 091 544078
 Turnaround : 5 – 10 working days after request from Pathologist received
 Report: Integral part of Histopathology report issued by Division of Anatomic Pathology

Lactate

Laboratory: Available on Blood Gas analyser
 Specimen: Blood in a balanced heparin syringe, process within 15 mins of collection
 Turnaround: 15 mins
 Ref. Range: On report form

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Lactate Dehydrogenase (LDH)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube, do not re-refrigerate
 Turnaround: Urgent: 1hour. Priority : 3 hrs. Routine: same day.
 Ref. Range: On report form

Lead

Laboratory: Referred to Eurofins SCDL
 Specimen: Blood sample x1 3 ml EDTA. If urine sample required, random urine
 Turnaround: 1 month
 Ref. Range: On report form

Legionella culture

Laboratory: Medical Microbiology, GUH
 Specimen: Sputum or BAL in 60 mL sterile container. Delay > 2 h refrigerate @ 2-8°C.
 Comment: Atypical pneumonia.
 Turnaround: 10 days
 Report: *Legionella* sp isolated / Not isolated.

Legionella pneumophila Urinary Antigen

Laboratory: Virology, GUH
 Specimen: Plain random urine specimen in a sterile Universal container
 Comment: Specimen to arrive in laboratory within 24 hours of collection
 Turnaround: 1 working day
 Report: Detected / Not Detected

Leishmania antibody

Laboratory: Referred to The Hospital for Tropical Diseases, London WC1E 6AU
 Specimen: 5 mL blood in a plain gel tube
 Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
 Turnaround: 2 – 3 weeks
 Report: Positive/Negative

Leptospira antibody

Laboratory: Referred to National Virus Reference Laboratory
 Specimen: 5 mL blood in a plain gel tube.
 Turnaround: 2-3 weeks.
 Report: Positive/Negative

Leucocyte Alkaline Phosphatase (LAP) Cytochemical Stain

Laboratory: Haematology, GUH
 Specimen: 6.0 mL Li Heparin blood, contact lab for bottle
 Comment: Prior authorization by Haematology SPR.
 Turnaround: 2 days
 Ref. Range: Refer to report

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Leucocyte Mixed-Esterase Stain (Cytochemical Stain)

Laboratory: Haematology, GUH
Specimen: Bone marrow slides
Comment: Prior authorization by Haematology SPR.
Turnaround: 2 days
Ref. Range: N/A

Leucocyte Esterase Stain (Cytochemical Stain)

Laboratory: Haematology, GUH
Specimen: 3.0 mL K³ EDTA blood
Comment: Prior authorization by Haematology SPR.
Turnaround: 2 days
Ref. Range: N/A

LH

Laboratory: Clinical Biochemistry, GUH
Specimen: 5ml blood in a plain gel tube
Turnaround: Priority : 1working day. Routine : 2 working days
Ref. Range: On report form

Lipoprotein (a)

Laboratory: Referred to Eurofins SCDL
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Lithium

Laboratory: Clinical Biochemistry, GUH
Specimen: 5ml blood in a plain gel tube
Comment: Sample 12 hours post dose
Turnaround: Urgent: 1hour. All other requests: 3hours
Therapeutic Range: On report form

Liver core biopsy- (Hep C, Primary tumour or metastases)

Laboratory: Histopathology, GUH
Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions.
Report: Histological diagnosis

Lletz

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions.
Report: Histological diagnosis

Low Density Lipoprotein (LDL)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Calculated parameter
Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
Ref. Range: On report form

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Lupus Anticoagulant Screen

Laboratory: Haematology, GUH
 Specimen: 3 x 2.7 mL blood in 0.109m Sodium Citrate tubes
 Comment: Details of anticoagulant therapy required. Must fill bottle to mark. Samples must submitted within 6 hours of draw. Otherwise RUH must separate and freeze
 Turnaround: 5 Weeks.
 Ref. Range: Qualitative Positive/Negative

Lyme Disease Antibodies

See "Borrelia burgdorferi"

Lymph Nodes for Query Lymphoma

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Fresh Tissue. Submit specimen intact to laboratory UNFIXED
 Comment: To be confirmed with Consultant Histopathologist at least 24 hours in advance. Immediately Dispatch to the lab.
 Report: Histological diagnosis.

Lymphocyte subsets CD3 (T cell) CD4 (T helper) CD8 (T cytotoxic) CD19 (B cell) CD16/56 (NK cell)

Laboratory: Immunology, GUH
 Specimen: x2 3ml blood in EDTA bottle. Do not refrigerate.
 Comment: Record time and date of collection on form. Samples must be kept at room temperature, deliver to Immunology within 48 hours.
 Turnaround: 3 working days
 Ref. Range: Refer to report

Lymphogranuloma venereum antibodies

Laboratory: Referred to the Health Protection Agency, South West Lab. Bristol BS" 8EL
 Specimen: 5 mL blood in a plain gel tube
 Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
 Turnaround: 2 – 4 weeks
 Report: Positive/Negative

Magnesium

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Magnesium (Urine)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 24 h collection, plain
 Turnaround: 1 working day
 Ref. Range: On report form

Malaria Screen

Laboratory: Haematology, GUH
 Specimen: 3.0 mL K³ EDTA blood. Fresh sample required.
 Comment: Blood film is examined microscopically. The blood is tested for the presence of parasite associated enzyme. Positive specimen forwarded to Microbiology Laboratory. Travel history and clinical details essential. When submitting malarial requests please alert the Laboratory.
 Turnaround: 1 day (Mon – Fri). Results of this test done out of hours or on weekends are confirmed by second scientist as soon as possible on the next working day.
 Report: Positive / Negative. Where clinically indicated a negative specimen may be referred to a reference centre for analysis by PCR.

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Malignancy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
 Comment: Health & Safety precautions
 Report: Histological diagnosis

Manganese

Laboratory: Referred to Eurofins SCDL
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 3 – 4 weeks
 Ref. Range: See report form

Measles IgG antibody

Laboratory: Virology , GUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 1 – 2 weeks
 Report: Detected / Not Detected

Measles IgM antibody

Laboratory: Referred to National Virus Reference Laboratory
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 2-3 weeks.
 Report: Detected / Not Detected

Meningococcal C vaccine antibodies - Serum

Laboratory: Referred to Immunology Dept, Meningococcal Reference Unit, Manchester Medical Microbiology Partnership
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 6 weeks
 Ref range: Refer to report

Meningococcal PCR

Laboratory: Medical Microbiology, GUH
 Specimen: Greater than 200 ul CSF in a sterile plain tube or EDTA blood
 Comment: Sample to be handed to Medical Microbiology staff member
 Turnaround: 1 – 5 working days
 Report: Meningococcal DNA Detected/Not detected

Mercury - Urine

Laboratory: Referred to Eurofins SCDL
 Specimen: Random urine
 Turnaround: 1 – 3 weeks
 Ref. Range: See report form

Metabolic Profile SMAC, lipid profile, Glucose, HbA1c, Insulin, CRP, adiponectin

Laboratory: Clinical Biochemistry: - RUH, GUH. Eurofins SCDL
 Specimen: x3 5ml blood in a plain gel tube, x1 3 ml k⁺EDTA
 Comment: Full clinical details must accompany request
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

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Metabolic Screen (Amino Acid Chromatography)

Laboratory: Refer to Biochemistry, Temple street
Specimen: Li Heparin blood sample and random urine,
Comment: Full clinical details must accompany request
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Metabolic Screen (Urine Amino Acid Chromatography)

Laboratory: Refer to Biochemistry, Temple street
Specimen: Plain random urine specimen
Comment: Full clinical details must accompany request
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Metanephrines (Metanephrine/Normetanephrine/3-methoxytyramine - Plasma)

Laboratory: Referred to Eurofins SCDL
Specimen: x2 3 mL k+EDTA, patient fasting cannulated and supine for 30 mins.
Delivered to laboratory immediately. Lab to separate and freeze
Comment: Specimen must be delivered immediately to the lab post phlebotomy.
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Metanephrines (Urine)

See "Catecholamines/Fractionated Metanephrines"

Methadone

See "Toxicology Screen"

Methicillin-Resistant Staph aureus (MRSA)

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
Comment: Restricted to specific groups of hospitalized patients. Pre-op screens from GPs. Other Non hospitalized patients are screened by prior arrangement with a Consultant Microbiologist.
Turnaround: 3 working days.
Report: MRSA isolated / Not isolated.

Methotrexate (Maxtrex)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0mL blood in a non-gel tube, contact lab for sample bottle
Comment: State date/time of sample collection clearly on request form. Measured on patients on high-dose Methotrexate. Contact Lab in advance and state time of infusion on request form.
Turnaround: 1 – 2 hours
Ref. Range: Guidance on report form

Methylmalonic Acid -serum

Laboratory: Referred to Eurofins SCDL
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: 5 weeks
Ref. Range: On report form

Methylmalonic Acid (Urine)

Laboratory: Referred to Eurofins SCDL
Specimen: 24 hr plain urine
Turnaround: 1 – 3 weeks
Ref. Range: On report form

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Microalbumin / Creatinine Ratio

See 'Albumin (Urine) / Microalbumin'

Microarray/aCGH

See Cytogenetics: Microarray/aCGH

Micropolyspora faenii (Farmer's Lung)

See: "Farmer's Lung antibodies"

Monospot

Laboratory: Haematology RUH
 Specimen: 3.0 mL K3 EDTA blood or 7.0 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours
 Ref. Range: N/A

Morphine (Opiates)

See "Toxicology Screen"

Morphology

Refer to "Blood Film"

Mouth Swab

Laboratory: Medical Microbiology, GUH
 Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 3 working days
 Report: Presence of pathogens/ No Pathogens isolated.

MRD-CLL (Minimum Residual Disease detection of Chronic Lymphocytic Leukaemia)

Laboratory: Haematology, GUH
 Specimen: 3.0ml K³EDTA
 Comment: Samples must be received within 24 hours. Full clinical information and reason for request must accompany specimen.
 Turnaround: 3 -5 working days.
 Report: Interpretation by Consultant Haematologist on report form.

MRSA (Methicillin-Resistant Staph aureus)

Laboratory: Medical Microbiology, GUH
 Specimen: Swab in transport medium. Anatomical Site of origin must be written on each swab. Delay > 2 h refrigerate @ 2-8°C.
 Comment: Restricted to specific groups of hospitalized patients. Pre-op screens from GPs. Other Non hospitalized patients are screened by prior arrangement with a Consultant Microbiologist.
 Turnaround: 3 working days.
 Report: MRSA isolated / Not isolated.

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MSU – Midstream Urine

Laboratory: Medical Microbiology, GUH
Specimen: Specimen in Boric Acid Universal container. Use plain sterile Universal container for Paediatric specimen or urine volumes < 20 mL. Delay >2 h refrigerate @ 2-8°C
Comment: Urine taken at mid-point of urination.
Turnaround: Microscopy: 4 hrs for Urines received 8am to 12 midnight. Paeds Urines only processed post midnight.
Culture: 3 working days
Report: Microscopy: Cell count. Culture: Presence of significant pathogen and sensitivities if relevant.

Mumps IgG antibody

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1-2 weeks
Report: Detected / Not Detected
Comment: A Provisional report will be issued on any sample giving reactive findings on initial testing. These specimens are referred to the NVRL for further testing and a final report.

Mumps IgM antibody

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 -2 weeks.
Report: Detected / Not Detected

Muscle Biopsies

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Fresh tissue
Comment: Immediate dispatch to laboratory where tissue pieces are frozen / formalin fixed. Fresh tissue samples to be confirmed with the Consultant Pathologist (on frozens) at least 24 hours in advance.
Report: Histological diagnosis

Mycobacteria Testing

Laboratory: Medical Microbiology, GUH
Specimen: Specimen of sputa, BAL in sterile 60 mL container. Early morning urine in 100 mL sterile container by prior arrangement only. Fluids / tissues in sterile containers. Blood Culture / Bone Marrow aspirate, heavily blood stained fluids in Bactec Myco/Lytic (red cap) vials. Delay > 2 h refrigerate @ 2-8°C.
Comment: Decontaminated respiratory specimens are retained for 7 weeks. They are unsuitable for other investigations once decontaminated. The mycobacteria culture system is not validated for processing urine specimens.
Turnaround: Microscopy: 1 working day. Culture: 6 to 7 weeks
Report: Microscopy: Presence or absence of AAFB. Culture: *Mycobacteria* sp isolated / Not isolated & sensitivities if relevant.

Mycology

Laboratory: Medical Microbiology, GUH
Specimen: Transport swab. Tissue / pus in sterile container. Hair, nail clippings, skin scrapings in Dermapak. Contact Microbiology GUH for further information
Comment: Delay > 2 h refrigerate @ 2-8°C.
Turnaround: 5 to 6 weeks
Report: Microscopy : presence or absence of fungal elements Culture : Fungi Isolated/Not Isolated.

Mycoplasma pneumoniae antibody

Laboratory: Referred to National Virus Reference Laboratory, Dublin
Specimen: 5 mL blood in a plain gel tube
Comment: Available only in very specific cases and following prior arrangement with a Consultant Microbiologist
Turnaround: 2-3 weeks
Report: Positive/Negative

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Myoglobin

Laboratory: Referred to Eurofins SCDL
Specimen: 5 mL blood in a plain gel tube or random urine
Turnaround: 1 – 2 weeks
Ref. Range: On report form

Neoplasm

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions
Report: Histological diagnosis

Neutrophil Function Test – Dihydrorhodamine Flow Cytometry Assay of Respiratory Burst Activity

Laboratory: Immunology, GUH
Specimen: x2 3ml blood in EDTA must be kept at room temperature. Do not refrigerate.
Control sample must also be taken. Samples must be delivered to lab within 24 hours.
Comment: Testing must be first discussed with immunology medical/scientific staff
Turnaround: 2 days
Report: Normal/Abnormal

N. meningitidis PCR

See “Meningococcal PCR”

Neisseria gonorrhoeae PCR

Laboratory: Virology, GUH
Specimen: Abbott Multicollect swab delivered to the laboratory within 24 h of collection.
Comment: If delay refrigerate @ 2-8°C.
Turnaround: 10 working days
Report: Detected / Not Detected

Noradrenaline (Adrenaline/Dopamine)

See “Catecholamines”

Norovirus detection

Laboratory: Medical Microbiology, GUH
Specimen: Faeces in spoon container. Delay < 24 h refrigerate @ 2-8°C. Delay > 24 freeze @ -20°C.
Comment: Only processed by prior arrangement with microbiology consultant.
Turnaround: 1 working day
Report: Norovirus antigen detected / Not detected. Molecular: Norovirus Genotype 1 & 2 RNA detected / Not detected

Nose Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
Comment: Only processed for *S. aureus*.
Turnaround: 3 working days
Report: *S. aureus* isolated / Not isolated.

NRAS

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Tissue samples already processed by the Histopathology laboratory, arrange via Consultant Pathologist
Comment: Testing available on request by Pathologist
Referrals: Contact the Department of Histopathology, Cytopathology and Molecular Pathology on 091 544078
Turnaround: 5-10 working days after request from Pathologist received
Report: Integral part of Histopathology report issued by the Division of Anatomic Pathology, Department of Histopathology, Cytopathology and Molecular Pathology

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Oestradiol

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5.0mL blood in a plain gel tube
 Turnaround: Urgent: 1hour. Priority: 1 working day. Routine : 2 working days
 Ref. Range: On report form

Opiates

See "Toxicology Screen"

Organic Acids

Laboratory: Clinical Biochemistry:- lab staff, see 'Special Blood Sciences' folder
 Specimen: Plain urine specimen
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Osmolality

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5ml blood in a plain gel tube
 Turnaround: Urgent: 1hour. Priority: same day. Routine: 2 working days
 Ref. Range: On report form

Osmolality (Urine)

Laboratory: Clinical Biochemistry, GUH
 Specimen: Plain random urine specimen
 Turnaround: Urgent : 1hour. Priority : same day. Routine : 2 working days
 Ref. Range: On report form

Osmotic Fragility

Laboratory: Haematology , GUH
 Specimen: 5.0 mL Li fresh Heparin blood and a normal control specimen in 5.0 mL Li Heparin
 Comment: Authorisation by Haematology SPR and arrangement with laboratory. The specimen must reach the laboratory before 11:00 on day of analysis.
 Turnaround: 2 days
 Ref. Range: See report form.

Ova / Cysts / Parasites

Laboratory: Medical Microbiology, GUH
 Specimen: Faeces in leak proof container. Delay > 2 h refrigerate @ 2-8°C.
 Comment: Cryptosporidium and Giardia detection by molecular technique. Other ova and parasites are rarely detected in faeces. Examination for other O&P is only performed when specific additional parasite is specified on the request form, accompanied by relevant clinical information.
 Turnaround: 3 days for Cryptosporidium and Giardia molecular detection. 1 week for parasite concentration.
 Report: Cryptosporidium / Giardia Detected / Not Detected.Ova, Cysts or Parasites Seen / Not seen.

Ovarian Cyst Fluid, Neoplastic/Non-Neoplastic Cells

See Effusions/ FNA

Paracetamol

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1hour. All other requests: 3hours.
 Interpretation: On report form

Paraneoplastic Antibodies

See "Autoantibodies: Anti-Neuronal Antibodies"

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Parvovirus / B 19 IgM Antibodies

See "Erythrovirus B19"

Pelvic Cavity Wash (Diaphragm, Gutter or Cul de sac Wash)

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH Specimen: Collect 10 - 20 mL fresh specimen into a twist top leak proof 20 mL or 50 mL universal sample bottle containing Shandon Cytospin Collection Fluid (green fixative solution). Refrigerate overnight if necessary.

Comment: Indicate clinical history on test requisition and reason for test.

Turnaround: 80% in 5 working days

Report: Detection of neoplastic and non neoplastic cells

Penile Swab

Laboratory: Medical Microbiology, GUH

Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C

Comment: Treated as skin swab. For investigation for *Neisseria gonorrhoeae* a Urethral swab must be sent.

Turnaround: 3 working days

Report: Any significant pathogen and susceptibilities if appropriate.

Pericardial Fluid – Pleural Fluid - Cytology

See "Effusions"

Pericardial Fluid / Peritoneal Fluid / Pleural Fluid

Laboratory: Medical Microbiology, GUH

Specimen: Specimen in sterile container (include clotted material). Delay > 2 h refrigerate @ 2-8°C.

Turnaround: 3 working days

Report: Growth / No Growth & sensitivities if required

Peritoneal Fluid - Cytology

See "Effusions"

Pernasal Swab / Pertussis

Laboratory: Medical Microbiology, GUH

Specimen: Pernasal swab (available from Medical Microbiology).

Comment: Delay > 2 h refrigerate @ 2-8°C.

Turnaround: 10 days

Report: Growth / No Growth of *Bordetella* sp

Phenytoin (Epanutin)

Laboratory: Clinical Biochemistry, GUH

Specimen: 7.0 mL blood in a plain gel tube

Comment: Take specimen immediately before next dose (trough specimen)

Turnaround: 1 week

Therapeutic Range: On report form

Phosphate -inorganic

Laboratory: Clinical Biochemistry, RUH

Specimen: 5 mL blood in a plain gel tube

Turnaround: Urgent: 1 hour. Routine 4 hours.

Ref. Range: On report form

Phosphate (Urine)

Laboratory: Clinical Biochemistry, GUH

Specimen: 24 hour urine collection.
Lab staff RUH: refer to Bone marker section if part of 'Bone Marker' request

Comment: Used in conjunction with serum inorganic phosphate to calculate IPeGFR

Turnaround: 1 working day

Ref. Range: On report form

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Pippelle Biopsy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology GUH
 Specimen: Submit specimen to laboratory in 10% Neutral Buffered Formalin.
 Comment: Health & Safety precautions
 Report: Histological diagnosis

Pinworm

Laboratory: Medical Microbiology, GUH
 Specimen: Apply sellotape to anal area, fix to slide, send to Laboratory. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 1 week
 Report: Ova seen / Not seen

Placenta

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
 Comment: Health & Safety precautions
 Report: Histological diagnosis

Plasma Viscosity

Laboratory: Haematology, GUH
 Specimen: 3 x 3.0 mL K³ EDTA blood
 Comment: Must be received in laboratory within 2 hours of phlebotomy so this test must not be taken in RUH as it can not be guaranteed to arrive in GUH within 2 hrs
 Turnaround: 1 day
 Ref. Range: Refer to report

Platelet Aggregation Studies

Laboratory: Haematology, GUH
 Specimen: 6 x 2.7 mL blood specimens in 0.109m Sodium Citrate tubes. Please supply samples from a normal control in conjunction with the test specimens.
 Comment: Prior authorization by Consultant Haematologist or SPR. Arrange with Coagulation laboratory before taking specimen. Patient must not take any anti-platelet medications for 1 week prior to test (incl. aspirin, NSAIDA, Clopidogrel/plavix, cough suppressants). Discard the first specimen when obtaining blood from patient as there may be some platelet activation present which will influence the test results. Specimens must reach the Coagulation laboratory no later than 11:00 on the day of analysis. Must fill bottles to mark.
 Turnaround: Assay performed on day of appointment
 Ref. Range: N/A

Pleural Fluid - Cytology

See "Effusions"

Pleural Fluid Microscopy & Culture

Laboratory: Medical Microbiology, GUH
 Specimen: Pleural fluid in sterile container. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: Microscopy: 1 working day. Culture: 3 working days
 Report: Microscopy: Cell count, Differential and Gram stain
 Culture: Growth / No Growth & sensitivities if required

Pneumococcal PCR

Laboratory: Medical Microbiology, GUH
 Specimen: Greater than 200 ul CSF in a sterile plain tube or EDTA blood
 Comment: Sample to be handed to Medical Microbiology staff member
 Turnaround: 1 – 5 working days
 Report: Pneumococcal DNA: Detected / Not Detected

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Pneumococcus IgG/ IgG2 antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0mL blood in plain gel tube
 Turnaround: 5 weeks
 Ref range: Pneumococcus IgG: 11.0 - 320.8 mg/L
 Pneumococcus IgG2: 1.2 – 107.1 mg/L

Pneumocystis jiroveci investigation

Laboratory: Medical Microbiology, GUH
 Specimen: BAL or induced sputum only. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 2 weeks
 Report: Pneumocystis DNA detected / Not detected

PNH Screening (Paroxysmal Nocturnal Haemoglobinuria) by Flow Cytometry

Laboratory: Haematology, GUH
 Specimen: 3.0 mL K3 EDTA blood
 Comment: Samples must be received within 24 hours. Full clinical information and reason for request must accompany specimen.
 Turnaround: 3-5 working days
 Ref Range: Interpretation by Haematologist

POC – Products of Conception

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology , GUH
 Specimen: Submit specimen to laboratory in 10% Neutral Buffered Formalin.
 Comment: See also Foetus. Health & Safety precautions
 Report: Histological diagnosis

Porphyrin Screen

Laboratory: Referred to St. James' Clinical Biochemistry
 Specimen: x4 3mL k⁺EDTA FBC samples, 10.0 mL Li Heparin blood, 5g fresh faeces and a 24 hour urine collection
 Comment: All specimens must be protected from light.
 RUH lab staff, see Special Blood Sciences folder for further information
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Post-Vasectomy Analysis

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Semen
 Comment: Available Monday to Friday 09:00 to 16:00 h. Refrigerate overnight if necessary. Indicate clinical history on test requisition. Include the collection time and date.
 Report: Histological diagnosis

Potassium

Laboratory: Biochemistry, RUH
 Specimen: 5 mL fresh blood in a plain gel tube
 Comment: GP specimens **MUST** be received in the laboratory within 4 hours of phlebotomy
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Potassium (Urine)

Laboratory: Biochemistry RUH
 Specimen: 24 hour urine collection
 Turnaround: 1 working day
 Ref. Range: On report form

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Pregnancy Test

See "HCG Total"

Pregnancy Test (Urine)

Laboratory: Biochemistry RUH and Point of Care testing available in St. Bridget's Ward and Endoscopy Unit.
 Specimen: Urine in plain vacutainer
 Turnaround: N/A
 Ref. Range: N/A

Primidone/Mysoline

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Comment: Take specimen immediately before next dose (trough specimen)
 Turnaround: 1 week
 Therapeutic Range: On report form

ProBNP

Laboratory: Biochemistry RUH
 Specimen: 5ml blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Procalcitonin

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube, send to lab before 12pm Mon-Fri for dispatch to GUH
 Turnaround: Urgent: 1hour. Priority: 3hours. Routine: 2 working days
 Ref. Range: See report form

Procollagen 1 Peptide N-terminal

See 'Bone markers'

Progesterone

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5mL blood in a plain gel tube
 Turnaround: Priority:1 working day. Routine: 2 working days
 Interpretation: On report form

Prograf

See " Tacrolimus"

Proinsulin

Laboratory: Referred to Eurofins SCDL
 Specimen: x1 3ml EDTA , send to lab immediately, lab to separate and freeze
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Prolactin

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5ml blood in a plain gel tube
 Turnaround: Priority : 1 working day. Routine : 2 working days
 Ref. Range: On report form

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Prostatic Core Biopsy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin. Ensure each container clearly indicates site and information matches details given on form.
 Comment: Health & Safety precautions
 Report: Histological diagnosis

Protein

Laboratory: Biochemistry RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Protein (Urine)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 24 hour urine collection and random urine
 Turnaround: 1 working day
 Ref. Range: On report form

Protein C

Laboratory: Haematology, GUH
 Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube
 Comment: Send to lab immediately, lab to separate and freeze
 Details of anticoagulant therapy required. Must fill bottle to mark.
 Turnaround: 5 weeks
 Ref. Range: Refer to report

Protein S and Free Protein S

Laboratory: Haematology, GUH
 Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube
 Comment: Send to lab immediately, lab to separate and freeze. Must fill bottle to mark. Details of anticoagulant therapy required.
 Turnaround: 5 Weeks
 Ref. Range: Refer to report

Prothrombin Gene Mutation

Laboratory: Referred to NCHCD, SJH, Dublin
 Specimen: x2 3ml blood in EDTA tube
 Comment: Consent form for genetic analysis must accompany each request for this test and reason for request.
 Contact haematologist GUH
 Turnaround: 4 weeks
 Ref range: N/A

Prothrombin Time (PT)

Laboratory: Haematology, RUH
 Specimen: 2.7 mL blood in a 0.109m Sodium Citrate tube.
 Comment: Details of anticoagulant therapy required. Do not refrigerate specimens for PT. Must fill bottle to mark.
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: Refer to report

PSA Total

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Priority: 1 working day. Routine: 2 working days
 Ref. Range: On report form

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PTH

Laboratory: Clinical Biochemistry, GUH
Specimen: 5ml blood in a plain gel tube delivered to the laboratory for same day dispatch to GUH, otherwise RUH to separate and freeze
Turnaround: 1 working day
Ref. Range: On report form

Punch Biopsy

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions. Where specimen is for DIF do not use fixative. See Immunofluorescence.
Report: Histological diagnosis

Pyruvate Kinase Screening (PK)

Laboratory: Referred to Special Haematology, St James Hospital, Dublin 8.
Specimen: 1 x 3.0 mL K³ EDTA blood
Turnaround: 2 weeks
Report: Positive / Negative

Q Fever

See "Coxiella burnetii"

Quantiferon Test

Laboratory : Referred to the TB Laboratory, Microbiology, Mater Hospital, Dublin
Specimen : Set of 4 specific Quantiferon tubes and Quantiferon request form – available only from lab
Comment : The 4 samples must reach the laboratory within 4hrs of collection, Monday – Thursday only before 5pm.
NO Friday samples accepted
Lab staff, follow instructions on request form
Turnaround: 3 weeks
Report: Positive/Negative

RCD 11 Refractory Coeliac Disease Type 11 Detection by Flow Cytometry

Laboratory: Haematology, GUH
Specimen: Duodenal biopsies in RPMI.
Comment: Requires prior arrangement with flowcytometry. RPMI is supplied by flowcytometry lab. Scientist collects sample directly from ward.
Turnaround: 3-5 working days
Ref. Range: Interpretation by Consultant Haematologist on report form

Renal Biopsy for Direct Immunofluorescence (DIF)

Laboratory: Please notify Histopathology staff, GUH at least 24 hours in advance.
Specimen: Place the biopsy in normal saline to maintain hydration and deliver to the laboratory immediately. Include contact details on request form.
Comment: Health & Safety precautions
Report: Histological diagnosis

Renal Biopsy for Electron Microscopy

Laboratory: Please notify Histopathology Staff, GUH at least 24 hours in advance
Specimen: Place the biopsy in normal saline to maintain hydration and deliver to the laboratory immediately. Include contact details on request form.
Comment: Health & Safety precautions
Report: Histological diagnosis

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Renin

Laboratory: Clinical Biochemistry, GUH
Specimen: 4.0 mL K⁺ EDTA blood, send to lab immediately, lab to separate and freeze
Comment: Please provide clinical/antihypertensive medication details.
Turnaround: 3 weeks
Ref. Range: On report form

Respiratory Syncytial Virus

Laboratory: Virology, GUH
Specimen: Combined nasal/throat swab in viral transport medium
Comment: Seasonal availability only
Turnaround: 2- 3 working days
Report: Detected/Not Detected

Reticulocyte Count

Laboratory: Haematology, RUH
Specimen: 3.0 mL K³ EDTA blood,
Turnaround: Urgent: 1 hour. Routine 4 hours.
Ref. Range: Refer to report

Rheumatoid Factor IgM

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Comment: Requests for Rheumatoid Factor will also be tested for Anti-CCP
Turnaround: 5 working days
Ref. Range: 0 – 14 IU/ml

Rickettsia sp. antibodies

See "Coxiella"

Ristocetin CoFactor (RiCof) (VW F : RiCof)

Laboratory: Haematology, GUH
Specimen: 2 x 2.7 mL blood in a 0.109m Sodium Citrate tube.
Comment: Prior authorization by Consultant Haematologist or SPR. Arrange with coagulation laboratory before taking specimen. Must fill bottles to mark.
Turnaround: 4 weeks
Ref. Range: Refer to report

ROS-1

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Tissue samples already processed by the Histopathology laboratory, arrange via Consultant Pathologist
Comment: Test available on request by Pathologist
Referrals: Contact the Department of Histopathology, Cytopathology and Molecular Pathology on 091 544078
Turnaround: 5-10 working days after request from Pathologist received
Report: Integral part of Histopathology report issued by the Division of Anatomic Pathology, Department of Histopathology, Cytopathology and Molecular Pathology

Rotavirus / Adenovirus Faecal Antigen

Laboratory: Medical Microbiology, GUH
Specimen: Faeces collected in acute phase of illness 1-2g in leak proof container. Delay > 2 h refrigerate @ 2-8°C.
Comment: *Rotavirus* and *Adenovirus* are tested for in specimens from children aged less than 5 years of age.
Turnaround: 1 working day.
Report: Rota / Adenovirus antigen detected / Not detected.

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Rubella IgG Antibody

Laboratory: Virology, GUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 2 working days
 Report: Reported in IU/ml with relevant comment

Rubella IgM Antibody - Serology

Laboratory: Virology, GUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 1 week
 Report: Detected / Not Detected

Salicylate

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: Urgent: 1hour. All other requests: 3hours.
 Interpretation: On report form

SARS CoV – 2 (PCR)

Laboratory: Virology, GUH
 Specimen: Combined nasal/throat /nasopharyngeal swab in viral transport medium
 Comment: If delay refrigerate @ 2-8°C.
 Turnaround: 1 - 2working days
 Report: Detected / Not Detected / Indeterminate

Schistosoma haematobium

Laboratory: Medical Microbiology, GUH
 Specimen: Urine in sterile container. Delay > 2 h refrigerate @ 2-8°C.
 Comment: Only performed on request on patients after recent travel to endemic area. Urine volume >10ml (The urine must be obtained between 10:00-14:00 h on the day of testing).
 Turnaround: 1 working day
 Report: S. haematobium detected / not detected

Schistosomal haematobium antibodies

Laboratory: Referred to the Hospital for Tropical Diseases, London WC1E 6AU
 Specimen: 5.0 mL blood in a plain gel tube
 Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
 Turnaround: 2 – 3 weeks
 Report: Positive/Negative

Selenium

Laboratory: Referred to Eurofins SCDL
 Specimen: 5.0 mL blood in a plain gel tube
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Semen Analysis

See "Post-Vasectomy analysis"

Serum Amyloid A (SAA)

Laboratory: Referred to Immunology dept, Northern General hospital, Sheffield
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 3 weeks
 Ref. Range: refer to report

Serum Protein Electrophoresis (SPE)

Refer to Immunoglobulins.

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SHBG

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Comment: Female – only analysed where testosterone >1.2nmol/L.
 Turnaround: Priority : 1 working day. Routine : 2 working days
 Ref. Range: On report form

Sickle Screen (Sickledex)

Laboratory: Haematology, GUH
 Specimen: 3.0 mL K³ EDTA blood
 Comment: Must give clinical details, transfusion history and ethnic origin of patient. Test not valid on children under six months of age. All sickledex requests are referred for further confirmation of results by HPLC.
 Turnaround: 1 day for screen. 4 weeks for confirmation by HPLC
 Report: Positive / Negative

Sirolimus

Laboratory: Referred to Biochemistry, Mater Hospital
 Specimen: x2 3ml EDTA blood
 Turnaround: 1 – 3 weeks
 Ref. Range: Patient specific

Skin Punch Biopsy for Direct Immunofluorescence (DIF)

Laboratory: Please notify Histopathology staff GUH at least 24 hours in advance.
 Specimen: Place the biopsy in a fully labelled suitable sized container without any preservative and deliver to the laboratory immediately, with completed request form. Include contact details. If the biopsy is from outside University Hospital, Galway, the sample may be sent in a suitable transport medium (e.g Michel's or Zeuss medium).
 Comment: Health & Safety precautions
 Report: Histological diagnosis

Skin Swab

Laboratory: Medical Microbiology, GUH
 Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
 Comment: Only skin swabs with relevant clinical details will be processed
 Turnaround: 3 working days
 Report: Any significant pathogen & sensitivities if required

Sodium

Laboratory: Biochemistry RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Sodium (Urine)

Laboratory: Biochemistry, RUH
 Specimen: Random urine sample
 Turnaround: 1 working day
 Ref. Range: On report form

Sodium Valproate (Epilim)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Comment: Take specimen immediately before next dose (trough specimen)
 Turnaround: 1 week.
 Therapeutic Range: On report form

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Somatomedin (IGF1)

See "Insulin Like Growth Factor 1"

Sputum Culture

Laboratory: Medical Microbiology, GUH
Specimen: Purulent specimen in 60ml sterile container. Delay > 2 h refrigerate @ 2-8°C.
Comment: Salivary specimens will be discarded. Specimens >48hr old will be rejected for culture.
Turnaround: 3 working days
Report: Any significant pathogen & sensitivities if required.

Sputum - Cytology

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: 0.5 ml to 20 mL spontaneous or induced fresh specimen collected into a 20 mL or 50 mL twist top leak proof universal container.
Comment: Indicate clinical history on test requisition and reason for test. Sputum must be deeply coughed from lungs. Avoid oral contamination and saliva. Early morning upon rising is the preferred collection time. Refrigerate if necessary.
Turnaround: 80% by 5 working days
Report: Detection of neoplastic and non neoplastic cells. Detection of infectious organisms.

Stem Cell Quantification

Laboratory: Haematology, GUH
Specimen: 3.0 mL K³ EDTA blood or specimen from aphaeresis collection.
Comment: All Stem Cell quantifications must be preauthorized by Consultant Haematologist or SPR and prearranged with both laboratory and point of clinical activity. Specimen must be accompanied by special request form available from the Haematology laboratory and signed on receipt in the laboratory.
Turnaround: 1 day
Ref. Range: N/A

Steroid profile (Urine 24 hour)

Laboratory: Dept. Of Clinical Biochemistry, Kings College Hospital, London. SE59RS. Phone 00442032994131
Specimen: 24hr urine palin urine container
Comment: Lab to send 20ml aliquot. State volume on request form
Turnaround: 3 weeks
Ref. Range: on report

Strongyloides antibodies

Laboratory: Referred to the Hospital for Tropical Diseases, London WC1E 6AU
Specimen: 5 mL blood in a plain gel tube
Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround: 2 – 3 weeks
Report: Positive/Negative
Ref. Range: N/A

Sural Nerve Biopsies

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Fresh tissue
Comment: Immediate dispatch to laboratory where tissue pieces are osmicated/formalin fixed.
Report: Histological diagnosis

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Surgical Specimens for Histological Examination

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Formalin fixed tissue
Comment: Health & Safety precautions
Report: Histological diagnosis

Swab - Culture

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. State site of anatomical origin on each swab. Delay > 2h refrigerate @2-8°C
Turnaround: 3 working days
Report: Presence of significant pathogen and sensitivities if relevant.

Synovial Fluid

Laboratory: Medical Microbiology, GUH
Specimen: Specimen in sterile container. Delay > 2 h refrigerate @ 2-8°C.
Turnaround: 3 working days.
Report: Any significant pathogen & sensitivities if required.

Synovial Fluid – Cytopathology

See "Joint aspirate"

Syphilis (*Treponema pallidum*) antibodies

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 2-3 working days
Report: Detected/Not Detected

T3 (Total)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 week
Comment: Assay only available by request from Endocrine Team or by prior agreement with Dr. Damian Griffin / Dr. Paula O'Shea
Ref. Range: On report form

Tacrolimus (Prograf/Advagraf)

Laboratory: Clinical Biochemistry, GUH
Specimen: x2 3ml K⁺ EDTA blood
Comment: Collect sample pre-dose. State date/time of sample collections clearly on request form.
Turnaround: 1 week
Ref. Range: Patient specific

Tartrate Resistant Acid Phosphatase (TRAP) Cytochemical Stain

Laboratory: Haematology, GUH
Specimen: 3.0 mL K³ EDTA blood/Bone marrow slides
Comment: Prior authorization by Haematology SPR. To reach lab within 8 hours of phlebotomy.
Turnaround: 2 days Ref. Range:N/A

Tear Duct - Culture

Laboratory: Medical Microbiology, GUH
Specimen: Swab in Transport medium. Delay > 2 h refrigerate @ 2-8°C.
Turnaround: 3 working days.
Report: Any significant pathogens & sensitivities if required.

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Testosterone

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5mL blood in a plain gel tube collected between 8 -10 am
 Turnaround: Priority: 1 working day. Routine: 2 working days
 Ref. Range: On report form

Tetanus Toxoid IgG Antibodies

Laboratory: Immunology, GUH
 Specimen: 5.0 mL blood in plain gel tube
 Turnaround: 5 weeks
 Ref. Range: Minimum Protective Level > 0.01 IU/mL
 Optimum Protective Level > 0.10 IU/mL

Theophylline (Aminophylline)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Comment: Take specimen immediately before next dose (trough specimen)
 Turnaround: 1 week
 Therapeutic Range: On report form

Thiopurine methyl transferase (TPMT)

Laboratory: Referred to Eurofins SCDL
 Specimen: x2 3ml K⁺ EDTA blood
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Throat Swab

Laboratory: Medical Microbiology, GUH
 Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 3 working days.
 Report: Haemolytic Streptococci isolated / Not isolated.

Thrombophilia Screen (incl: PT/INR, APTT, Fibrinogen (derived), Antithrombin, Protein C, Free Protein S, APCResistance, Lupus inhibitor)

Laboratory: Haematology, GUH
 Specimen: 4 x 2.7 mL blood in a 0.109m Sodium Citrate tube.
 Comment: Requests should be received in the laboratory within 4 hours of phlebotomy Mon – Fri during routine working hours. Clinical details and relevant patient and family history are required. Testing should not be done during thrombotic period or while the patient is on anticoagulant therapy. Must fill bottles to mark. Please send to RUH before 12pm for dispatch at 1pm, otherwise lab to separate and freeze
 Turnaround: 5 weeks
 Ref. Range: Refer to report

Thyroglobulin and Thyroglobulin Antibodies

Laboratory: Referred to Biochemistry Lab, St. James' Hospital, Dublin
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 1 – 3 weeks
 Ref. Range: On report form

Thyroxine Free (Free T4), Thyroid Function test (Free T4, TSH)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Priority: 1 working day. Routine: 2 working days
 Ref. Range: On report form

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Total Iron Binding Capacity (TIBC)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5 mL blood in a plain gel tube. Fasting specimen required.
 Turnaround: Urgent: 1hour. Priority: 3 hours. Routine : 2 working days
 Ref. Range: On report form

Tissue

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
 Comment: Health & Safety precautions
 Report: Histological diagnosis

Tissue / Biopsy

Laboratory: Medical Microbiology, GUH
 Specimen: Specimen in Sterile container for routine culture and microscopy. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 3 working days
 Report: Growth / No growth & sensitivities if required.

Tobramycin

Laboratory: Medical Microbiology, GUH.
 Specimen: 5 mL blood in a plain gel tube. Delay > 2 h refrigerate @ 2-8°C.
 Comment: State time collected and if Peak or Trough specimen
 Turnaround: 1 day.
 Ref. Range: Post dose/Peak: 5-8mg/L. Pre-dose/Trough: <1.0mg/L (once daily) &<2.0mg/L Multi dose).

Toxicology / Drug Screen Urine (Benzodiazepines, barbiturates, opiates, cocaine, propoxyphene, cannabis, amphetamine, methadone, phencyclidine, phenothiazine, alcohol)

Laboratory: Referred to Toxicology lab, Beaumont
 Specimen: Random plain urine
 Turnaround: 1 – 3 weeks
 Comment: Parental consent required in patients <18 years old
 Report: On report form

Toxocara Antibodies

Laboratory: Referred to the Hospital for Tropical Diseases, London WC1E 6AU
 Specimen: 5 mL Blood in a plain gel tube
 Comment: Only available in specific cases and following approval by the Microbiology Medical Staff.
 Turnaround: 2 – 3 weeks
 Report: Positive/Negative

Toxoplasma gondii IgG antibodies

Laboratory: Virology, GUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 1-2 working days
 Report: Detected/Not Detected.

Toxoplasma gondii IgM antibodies

Laboratory: Virology, GUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 1-2 working days
 Report: Not Detected, if negative. A Provisional report will be issued on any sample giving reactive findings on initial testing. These specimens are referred to the Health Protection Agency, Singleton Hospital Swansea SA2 8QA for further testing and a final report.

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Toxoplasma gondii antibody /avidity/dye test

Laboratory: Referred to the Health Protection Agency, Singleton Hospital, Swansea SA2 8QA
Specimen: 5 mL blood in plain gel tube
Comment: Available only in specific cases and approval of a Consultant Microbiologist
Turnaround: 1 – 2 weeks
Report: Detailed report with relevant comment.

Transferrin

Laboratory: Clinical Biochemistry, GUH
Specimen: 5ml blood in plain gel tube. Fasting specimen required.
Turnaround: Urgent: 1hour. Priority: 3 hours. Routine : 2 working days
Ref. Range: On report form

% Transferrin Saturation

Laboratory: Clinical Biochemistry
Specimen: 5mL blood in a plain gel tube. Fasting specimen required.
Comment: Calculated Parameter
Turnaround: Urgent: 1hour. Priority: 3 hours. Routine : 2 working days
Ref. Range: On report form

Transfusion Reaction Investigation (also see Transfusion pack (blood product) for culture below)

Laboratory: Blood Transfusion Laboratory RUH and Blood & Tissue Establishment GUH
Specimen: Refer to Transfusion Prescription & Administration Document for Blood & Blood Components RCH/HVIG/CF 009 document for list of samples required
Comment: Ensure labeling as per Haemovigilance procedure. Urine haemosiderin and DCT referred to GUH with turnaround times stated under individual tests in this document
Turnaround: 1 day (excluding haemisiderin and culture)
Report: Positive or Negative

Transfusion Pack (Blood product) for culture

Laboratory: Medical Microbiology, GUH
Specimen: Bactec Blood culture vials, send to lab immediately
Comment: Ensure labeling as per Haemovigilance procedure.
Turnaround: 1 week.
Report: Any Growth.

Trichomonas vaginalis

Laboratory: Medical Microbiology, GUH
Specimen: Urethral or Endo-Cervical swab in transport medium (charcoal).
Turnaround: 3 working days
Report: *Trichomonas vaginalis* detected / not detected. This is a non-accredited test.

Triglycerides

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube
Comment: Ideally a patient should fast for 12 hours. However, if a patient is unable or unwilling to fast for 12 hours a specimen taken after a 9 hour fast is acceptable".
Turnaround: Urgent: 1hour. Priority: 3 hours. Routine : 2 working days
Ref. Range: On report form

Troponin T

Laboratory: Biochemistry, RUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: Urgent: 1 hour. Routine 4 hours.

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Ref. Range: On report form

Trypanosoma cruzi Antibodies

Laboratory: Referred to the Hospital for Tropical Diseases, London WC1E 6AU
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: 2 – 3 weeks
 Report: Positive/Negative

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Tryptase (Mast Cell)

Laboratory: Immunology, GUH
Specimen: 5.0 mL blood in plain gel tube
Comment: For investigation of anaphylaxis serial samples are required and the timing must be specified. Timing of samples: Immediately after resuscitation (record time) ; At 1-2 hours post reaction (record time) and at 24 hours post reaction (baseline)
Turnaround: 3 weeks
Ref. Range: 0-14 units

TSH (Thyroid Stimulating Hormone)

Laboratory: Clinical Biochemistry, GUH
Specimen: 5.0 mL blood in a plain gel tube
Turnaround: Priority: 1 working day. Routine: 2 working days
Ref. Range: On report form

TSH Receptor Antibodies

Laboratory: Referred to Eurofins SCDL
Specimen: 5 mL blood in a plain gel tube
Turnaround: 1 – 3 weeks
Ref. Range: On report form

Tuberculosis Testing

Laboratory: Medical Microbiology, GUH
Specimen: Specimen of sputa, BAL in sterile 60 mL container. Early Morning Urine in a 100 mL sterile container. Fluids / Tissues to Sterile containers. Blood Culture / Bone Marrow aspirate, heavily blood stained fluids to Bactec Myco/Lytic (red cap) vials.
Comment: Delay > 2 h refrigerate @ 2-8°C.
The mycobacteria culture system is not validated for processing urine specimens. The Department of Medical Microbiology does not routinely accept more than three sputum specimens for Mycobacterium culture in a single episode of illness
Turnaround: Microscopy: 1 working day. Culture: 6 to 7 weeks.
Report: Mycobacteria isolated / Not isolated.

Tumour

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions.
Report: Histological diagnosis

TURP

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
Specimen: Submit specimen to laboratory in 10% Neutral Buffered Formalin.
Comment: Health & Safety precautions
Report: Histological diagnosis

Ulcer Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
Comment: Rejected in the absence of relevant clinical details.
Turnaround: 3 working days.
Report: Any significant isolates / No pathogens isolated.

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Urea

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Urea (Urine)

Laboratory: Biochemistry, GUH
 Specimen: 24 hour urine collection, plain
 Turnaround: 1 working day
 Ref. Range: On report form

Urethral Swab

Laboratory: Medical Microbiology, GUH
 Specimen: Swab in transport medium. Delay > 2 hr Refrigerate @ 2-8°C.
 Turnaround: 3 working days.
 Report: Any significant isolates & sensitivities if required.

Uric Acid

Laboratory: Biochemistry, RUH
 Specimen: 5 mL blood in a plain gel tube
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: On report form

Uric Acid (Urine)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 24 hour urine collection, plain
 Turnaround: 1 working day
 Ref. Range: On report form

Urine Culture – Midstream Urine

Laboratory: Medical Microbiology, GUH
 Specimen: Specimen in Boric Acid Universal container. Use plain sterile Universal container for Paediatric specimen or urine volumes < 20 mL. Delay > 2 h refrigerate @ 2-8°C
 Comment: Urine taken at mid-point of urination.
 Turnaround: Microscopy: 4 hrs for Urines received 8am to 12 midnight. Paeds Urines only processed post midnight.
 Culture: 3 working days
 Report: Microscopy: Cell count. Culture: Presence of significant pathogen and sensitivities if relevant.

Urine - Diagnostic Cytology

Laboratory: Department of Histopathology, Cytopathology and Molecular Pathology, GUH
 Specimen: Immediate fixation is necessary. Collect 10 – 20 mL fresh voided or catheterized urine or bladder wash specimen into a universal bottle containing Shandon Cytospin Collection Fluid (greenfixative solution) available from the Diagnostic Cytology laboratory.
 Comment: Indicate clinical history on test requisition and reason for test. Patients must be well hydrated before collecting urine. Any instrumentation must be noted on the requisition form. For routine urine collection, emphasize the need for a clean catch specimen. Random mid-day collection is preferred. First morning specimen is not suitable for Cytological analysis. Refrigerate specimens overnight if necessary.
 Turnaround: 80% by 5 working days
 Report: Detection of neoplastic and non neoplastic cells

Urine Protein Electrophoresis

Refer to 'Bence Jones Protein'

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Urine Protein Creatinine Ratio (PCR)

Laboratory: Biochemistry RUH
Specimen: Urine: *Early morning* sample preferred
Turnaround: 1 working day
Ref. Range: on report form

Urine Schistosomiasis (see *Schistosoma haematobium*)

Laboratory: Medical Microbiology, GUH
Specimen: On patients after recent travel to endemic area. Urine volume >10mL. (The urine must be obtained between 10:00-14:00 on the day of testing). Delay > 2 h refrigerate @ 2-8°C.
Turnaround: 1 working day.
Report: *S. haematobium* detected / not detected.

Vaginal Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
Comment: Endocervical swabs and Urethral swabs are routinely cultured for *N. gonorrhoeae*. All other specimens must specify *N. gonorrhoeae* on request if required.
Turnaround: 3 working days.
Report: Any significant isolates & sensitivities if required.

Vancomycin

Laboratory: Clinical Biochemistry, GUH
Specimen: 5 mL blood in a plain gel tube. Delay > 2 h refrigerate @ 2-8°C.
Comment: State time collected and if Peak or Trough specimen
Turnaround: Analysed during routine working hours only.
Ref. Range: On report form

Vancomycin Resistant Enterococci (VRE)

Laboratory: Medical Microbiology, GUH
Specimen: Rectal Swab in transport medium/Faeces sample. Delay > 2 h refrigerate @ 2-8°C.
Comment: Restricted to specific groups of hospitalized patients. Non hospitalized patients are screened by prior arrangement with a Consultant Microbiologist.
Turnaround: 3 working days.
Report: VRE isolated / Not isolated.

Varicella-zoster Virus IgG antibodies

Laboratory: Virology, GUH
Specimen: 5 mL blood in a plain gel tube.
Turnaround: 5 working days. Samples from pregnant patients who have been in contact with chickenpox are processed urgently if received before 2pm Monday to Friday. The request must be marked as Urgent with clinical details, and the requesting clinician's contact number, clearly stated. The laboratory should be contacted (091 544398) to alert staff that the sample is in transit.
Report: Reported as Detected/Not detected with relevant comment.

Varicella-zoster Virus IgM PCR

Laboratory: Referred to National Virus Reference Laboratory
Specimen: Vesicular fluid or skin scrapings in a Viral Transport Medium swab
Turnaround: 2 - 3 weeks.
Report: Detected / Not Detected

Vasculitic Screen

Laboratory: Immunology, GUH
Specimen: 5 mL blood in a plain gel tube
Turnaround: 5 days
Ref. Range: On report form

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Vincent's Angina

Laboratory: Medical Microbiology, GUH
 Specimen: Mouth Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
 Turnaround: 3 working days.
 Report: Vincents organisms seen / not seen.

Vitamin B12

Laboratory: Haematology, RUH
 Specimen: 5.0 mL blood in a plain gel tube
 Comment: Specimen to be received within 24hrs of phlebotomy
 Turnaround: 1 day
 Ref. Range: Refer to report

Vitamin D (25 Hydroxy Vitamine D3 / Hydroxycholecalciferol)

Laboratory: Clinical Biochemistry, GUH
 Specimen: 5.0mL blood in a plain gel tube
 Turnaround: 2 – 3 weeks
 Ref. Range: On report form

VMA

See "Catecholamines"

Von Willebrands Factor Antigen (vWF:Ag)

Laboratory: Haematology, GUH
 Specimen: 2 x 2.7 mL blood in 0.109m Sodium Citrate tubes
 Comment: Requests should be received in GUH laboratory within 8 hours of phlebotomy. Must fill bottle to mark.
 Turnaround: 4 weeks
 Ref. Range: Refer to report

VRE

See "Vancomycin Resistant Enterococci"

White Blood Cell & Differential White Cell Count

Laboratory: Haematology, RUH
 Specimen: 3.0 mL K³ EDTA blood
 Comment: White Cell Differential will be done automatically on all fresh FBC specimens. As EDTA artifacts can appear within 2 hours of phlebotomy it is important that films (where necessary) are made from fresh blood (less than one day old).
 Turnaround: Urgent: 1 hour. Routine 4 hours.
 Ref. Range: See report form.

Whooping Cough

Laboratory: Medical Microbiology, GUH
 Specimen: Pernasal swab (available from Medical Microbiology). Delay > 2 h refrigerate @ 2-8°C.
 Comment: Contact Laboratory prior to ensure fresh media is available.
 Turnaround: 10 days.
 Report: *Bordetella* sp isolated / not isolated.

Whooping Cough antibodies

See "Bordetella pertussis."

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Wound Swab

Laboratory: Medical Microbiology, GUH
Specimen: Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.
Turnaround: 3 working days.
Report: Any significant pathogens & sensitivities if required.

Yellow fever antibodies

Laboratory: Referred to the Health Protection Agency, Special Pathogens Reference Unit, Porton Down, Salisbury SP4 OJG.
Specimen: 5.0 mL blood in a plain gel tube
Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround: 1 – 3 weeks
Report: Positive /Negative

Yersinia Antibodies

Laboratory: Referred to the Health Protection Agency, Laboratory of Enteric Pathogens, Colindale, London NW9 5EQ
Specimen: 5.0 ml blood in a plain gel tube
Comment: Only available in very specific cases and following approval by a Consultant Microbiologist
Turnaround: 2 – 3 weeks
Report: Detected/Not Detected

Zinc

Laboratory: Referred to Eurofins SCDL
Specimen: 3.0 mL K³ EDTA blood
Turnaround: 3 weeks
Ref. Range: On report form