# Laboratory Services Provided

## General Information

### Location of Department

The Clinical Directorate of Laboratory Medicine is located between the lower ground and ground floors of Beaumont Hospital.   
The postal address of the Directorate is:

Clinical Directorate of Laboratory Medicine

Beaumont Hospital

PO Box 1297

Beaumont Road

Dublin 9

D09 V2N0

Visitors to any laboratory should go to the Pathology Reception Office on the Lower Ground Floor. Staff at pathology reception will contact the Department and a member of staff will accompany them to the relevant Laboratory.

### Contacting the Department/Telephone Numbers

| **FUNCTION** | **CONTACT** | **TELEPHONE/ EMAIL** |
| --- | --- | --- |
| Beaumont Hospital Reception | Switchboard | 01-8093000/8377755 |
| Directorate Management | Clinical Director | 01-8092644 |
| Laboratory Manager | 01-7977925 |
| Business Manager | 01-8092508 |
| Quality Management | Quality Manager | 01-8092978 |
| Blood Transfusion & Haemovigilance | | |
| Medical Enquiries | Dr. Philip Murphy | 01-8093382 |
| Dr. John Quinn | 01-8092664 |
| Prof. Patrick Thornton | 01-8092664 |
| Haematology Registrar | Bleep 276 |
| SP Registrar | Bleep 887 |
| For Out-Of- Hours Service | Contact Switch Board |
| Scientific Enquiries | Chief Medical Scientist | 01-8094733 |
| Senior Medical Scientists | 01-8094734 |
| Senior Scientist with Responsibility for Quality | 01-8094734 |
| Routine Laboratory | 01-8092705 |
| On Call | Bleep 252 |
| Haemovigilance Enquiries | Haemovigilance Officers | 01-8093334/2034 |
| Haematology Department | | |
| Appointments/ Enquiries | Haematology Secretary Office | 01-8092655 |
| Department email | haematologyadmin@beaumont.ie | |
| Lab Enquiries | Lab Reception | 3914/2674/2669/4075 |
| Results | Pathology Reception | 01-8092690 |
| Medical Enquiries | Prof. Philip Murphy | 01-8093382 |
| Prof John Quinn | 01-8092664 |
| Prof Patrick Thornton | 01-8092664 |
| Prof. Siobhan Glavey | 01-8092664 |
| Dr. Karl Ewins | 01-8528832 |
|  | Dr Jeremy Sargent | 01-8092664 |
|  | Dr Elizabeth Smyth | 01-8092664 |
| Clinical Advice and Laboratory Test Interpretation | Coleman. K. Byrne Unit | 01-8092150/2622 |
| Haematology Registrars | Contactable through switch |
| Haematology Senior House Officers | Contactable through switch |
| Chief Medical Scientist | 01-8092662 |
| Clinic | Coleman. K. Byrne Unit | 01-8092150/2622 |
| Warfarin Clinic | 01-8092083/3982 |
| Scientific Enquiries | Chief Medical Scientist | 01-8092662 |
| Haematology Laboratory | 01-8092703 |
| Coagulation Laboratory | 01-8092656 |
| Flow Cytometry Laboratory | 01-8092763 |
| Morphology  Special Haematology | 01-8093226 |
| Emergencies only/on-call Scientist | Bleep 852 |
| Immunology Department | | |
| General Enquiries | Departmental Secretary | 01-8093026 |
| Secretary to Prof. Keogan/Dr Khalib/Dr Cox | 01-8092652 |
| Specialist Registrar | Bleep 797 |
| Appointment Information | Secretary to Prof. Keogan/Dr Khalib/Dr Cox | 01-8092652 |
| Clinical Advice and Laboratory Test Interpretation | Specialist Registrar | Bleep 797  immunologydepartment@beaumont.ie |
| Lab Enquiries | Lab Reception | 3914/2674/2669/4075 |
| Results | Pathology Reception | 01-8092690 |
| Scientific Enquiries | Chief Medical Scientist | 01-8093174 |
| Immunology Laboratory | 01-8092635/2421  immunologylab@beaumont.ie |
| Chemical Pathology Department | | |
| General Enquiries | Pathology Reception | 01-8092507/4674 |
| Test Results | Pathology Reception | 01-8092507/4674 |
| Medical Enquiries | Dr. Shari Srinivasan | 01-8092676 |
| Dr Clodagh Loughrey | 01-8092035 |
| Specialist Registrar | 01-8092666 |
| Scientific Enquiries | Chief Medical Scientist | 01-8092670 |
| Chief Medical Scientist | 01-7977811 |
| General Clinical Biochemistry/Endocrinology | 01-8092668/2704 or  01/8528727 |
| Proteins | 01-8092305 |
| Mass Spectrometey | 01-8092351or 01-7977333 |
| Emergency (on-call) service | Bleep 251 |
| Microbiology Department | | |
| All Enquiries | Microbiology office | 01-8092646 |
| Results | Microbiology office | 01-8092646 |
| Medical Enquiries | Prof. B. Dinesh | 01-8092646 |
| Prof. F. Fitzpatrick | 01-8092646 |
| Prof. K. Burns | 01-8092646 |
| Dr. Ciara O’ Connor | 01-8092646 |
| Dr. Sinead O’ Donnell | 01-809 2646 |
| Dr. Helene McDermott | 01-809 2646 |
| Registrars | 01 -8093320/3321/2667 |
| Out of Hours | Through Switchboard |
| Medical scientist on-call | Through the switchboard or bleep. | Bleep 869 |
| Scientific Queries | Microbiology laboratory | 01-8092971 |
| Histopathology & Cytopathology Department | | |
| General Enquiries | Department Office | 01-8092636/2353 |
| Department Email | [histo@beaumont.ie](mailto:histo@beaumont.ie) |
| Medical Enquiries | Dr. Clíona Ryan | 01-80922284 |
| Dr. Marie Staunton | 01-8092997 |
| Dr. Anthony Dorman | 01-8094242/ Bleep 4240 |
| Prof Brendan Doyle | 01-8092636 |
| Dr. Anne Marie O’Shea | 01-8093910 |
| Dr. Maeve Redmond | 01-8092998 |
| Dr. Helen Barrett | 01-8092641 |
| Dr. Christian Gulmann | 01-8092078 |
| Dr Neil Pilson | 01-8093986 |
| Dr. Clive Kilgallen | 01-8092284 |
| Dr. Odharnaith O’Brien | 01-8094218 |
| Dr. Laura Mc Kenna | 01-8093286 |
| Scientific Enquiries | Chief Medical Scientist | 01-8092555 |
| Main Laboratory | 01-8092353 |
| Specimen Reception | 01-8092659 |
| Cytology Laboratory | 01-8092640 |
| Molecular Histopathology | 01-8093726 |
| Reports | Histopathology Office | 01-8092636/2632/3919/3150/2154 |
| MDT Co-Ordinator | 01-8092640 |
| Renal Pathology | | |
| Medical Enquiries | Dr. Anthony Dorman | 01-8092644/ Bleep 322 |
| ProfBrendan Doyle | 01-8092636 |
| Scientific Enquiries | Renal Pathology Laboratory | Dect Phone (01-8528633) |
| General Enquiries | Renal Pathology Secretary | 01-8092765 (Dect phone) |
| Neuropathology | | |
| Medical Enquiries | Dr Jane Cryan | 01-8093973 |
| Dr. Francesca Brett | 01-8093143/ Bleep 324 |
| Dr. Alan Beausang | 01-8092615 |
| Specialist Registrar | 01-8092706 |
| Scientific Enquiries | Senior Medical Scientist | 01-8092633 |
| Senior Medical Scientist (CJD) | 01-8092633 |
| Research Scientist | 01-8092706/ 3798 |
| Brain Bank | 01-8092706 |
| Molecular Neuropathology | 01-8098452/8453 |
| Reports | Neuropathology Office | 01-8092631/2072 |
| NHISSOT | | |
| General Enquirines | Main Laboratory | 01-8092650 |
| Chief Medical Scientist | 01-8092661 |
| Scientific Enquiries | Main Laboratory | 01-8092650 |
| Molecular | 01-8093955 |
| Scientists Office | 01-8093238/2960 |
| Reporting Room | 01-8092651/4246 |
| Antibody Screening | 01-8094248 |
| Out of Hours  Medical Scientist on duty | On-call mobile: 087 2615 112  Speed Dial: 70128 |
| Email Addresses | General enquires | crossmatch@beaumont.ie |
| Patient enquires | transplantlab@beaumont.ie |
| Post transplant enquires | posttransplant@beaumont.ie |
| Clinical Enquiries | Consultant Immunologist | 01-8092652 |
| Out-of-hours | Through Switchboard |
| Renal Transplant  Co-Ordinators Beaumont Hospital | Office | 01-8092759 |
| E-Mail | [transplantcoordina@beaumont.ie](mailto:transplantcoordina@beaumont.ie) |
| Urgent Call via Switch | 01-809300/8377755 |
| Phlebotomy | | |
| Appointments | Pathology Reception | 809 2669 / 2674/2507 |
| Near Patient Testing (NPT) | | |
| General Enquiries | NPT Manager | DECT 01-7977885 |
| NPT Scientist | 01-7974786 |
| Departmental Email | POCT@beaumont.ie |
| Molecular | | |
| General Enquiries | Chief Medical Scientist | 01-8092856  molecular@beaumont.ie |

When contacting the laboratory regarding a specific patient it is essential to have the current patient Case Number (Episode Number) available as it is the only way that laboratory staff can access the patient file. The Patient History number is required for the Blood Transfusion Department

Check the status of all orders on Powerchart prior to contacting the laboratories.   
Powerchart clearly indicates the status of a sample:

* Awaiting Collection = not received by the laboratory
* Received in Laboratory = Sample is in process.
* Partial Result = Some tests have been completed.
* Order Complete = All test on the sample are complete.

### Department Opening Hours

The Clinical Directorate of Laboratory Medicine is open 8am to 8pm, Monday to Friday. There is a routine Saturday, 09.00 – 13.00. A reduced service is offered between Christmas, New Year and Easter.

* Immunology laboratory hours are from 9.00 am to 5.00pm, on Monday to Friday.
* Blood Transfusion laboratory routine hours are: 8am -5pm Monday to Friday and 9am-1pm on Saturday contactable on Ext. 2705. An Emergency On –Call service from 5pm -8am Monday to Friday and 1pm - 8am Saturday to Monday contactable on Bleep. 252
* Chemical Pathology laboratory routine hours 8am to 8pm, Monday to Friday. There is a routine Saturday service from 9am to 1pm. An Emergency On –Call service from 8pm - 8am Monday to Friday and 1pm - Saturday to 8am Monday. Contactable on Bleep. 251. A reduced service is available on public holidays.
* Haematology Laboratory routine hours 8am to 8pm, Monday to Friday. There is a routine Saturday, 09.00 – 13.00. An Emergency On –Call service from 8pm -8am Monday to Friday and 1pm - 8am Saturday to Monday. Contactable on Bleep. 852. A reduced service is offered between Christmas, New Year & Easter
* Microbiology laboratory hours are from 8:00am to 8.00pm, on Monday to Fridays and 09:00am to 1.00pm on Saturdays. After 8pm on weekdays, and from 1pm Saturday until 8:00am Mondays, Microbiology provides emergency on-call service only. The medical scientist on-call may be bleeped at 869.
* Only a limited Histopathology/Cytopathology/Neuropathology service is provided between 5pm to 8am and scientists on call can be contacted through switch.
* NHISSOT Laboratory hours are from 8am to 6pm Monday to Friday. After 6pm, it is an emergency on call service. The laboratory is closed on Saturday, Sunday and Bank Holidays
* Molecular Pathology Laboratory hours are from 8am to 5pm Monday to Friday. The laboratory does not operate at weekends/bank holidays.
* NPT hours are from 8am to 4pm Monday to Friday.

There is no clerical support outside Monday to Friday 09:00-17:00

Please ensure samples arrive in the laboratory as early as possible in the working day.

### Use of The Laboratory I.T. System:

The Powerchart system is used in Beaumont Hospital to access the laboratory service. Powerchart gives a user friendly image of the laboratory system such that what is seen on Powerchart is identical to what is seen in the laboratory system.

Access to the Powerchart (Lab Ordering and Results icon) system is password protected and passwords are only granted when training has been completed.  
Contact the IT department with regard to training issues, 2550.

#### Ordering

Ordering is electronic at ward level. Patient requests are placed on Powerchart and any specific requirements with regard to timings, fasting, foil covering, labile samples, special requirements regarding ice or days/times that samples cannot be drawn are specified on the computer screen within the order. When all orders have been placed and updated, the patient barcode labels are printed. Routine orders are gathered for the phlebotomy rounds, routine requests must be placed before midnight for phlebotomy draw the next day.

Draw one sample per barcode label. The barcode label gives all the required information with regard to sample type on the lower left hand corner of the label. In some cases this is replaced by a reference to special requirements for sample collection.

All commonly requested tests are available to order on Powerchart, including tests that are referred externally for analysis. As some analytes are labile or require special processing conditions they can only be accepted in the laboratory Monday to Friday 9am to 5pm, see specific details when the order is placed on Powerchart. Samples that required shipping outside Ireland, with limited stability are normally only accepted Monday to Wednesday. Samples shipped on a Thursday are only dispatched if clinically urgent and can be repeated, as if there is any transport delay, referral sites will not accept samples on a Saturday/Sunday or Public Holiday.

Urine orders may print more than one label depending on the combination of orders placed; multiple labels may be attached to a single 24 hour collection provided the sample type indicated on the upper right hand corner is the same on each label.

Contact the laboratory for instructions on how to order rare/esoteric test requests that are not available to order on Powerchart.

#### Order-com Sample Label

The label contains the following information:

1. Surname
2. First name
3. MRN number
4. Accession number
5. Anticoagulant Ward/ department
6. Date of Birth
7. Date/time label printed
8. Routine or Stat request
9. M/F Male or Female
10. Bench routed in MedLIS
11. Mnemonic for test\*

#### Haematology Requests

**HbA1c** is analysed in the Chemical Pathology Laboratory. Patients requiring a FBC and HbA1c will require **2** EDTA 2.6mL samples sent with the test requests.

**INR** only should be requested for patients on Warfarin therapy and not a COAG screen.

New **CD4** Patients that require **G6PD**: These require **2** EDTA 2.6mL samples. If only one sample is received, the G6PD assay will be performed and a repeat sample will be required for the CD4.

#### Microbiology Requests

* Specimens should be collected using aseptic techniques to minimise contamination by normal flora. A sufficient volume of material must be submitted.
* Swabs in transport media are acceptable for throat, eye, ear, vaginal and urethral specimensotherwise pus or tissue is preferable to a swab.
* Swabs with special transport media are available, e.g. viral transport swabs (available from Microbiology Dept.), chlamydia GenProbe swabs (available from NVRL or St. Johns ward).
* If a diagnosis of a viral haemorrhagic fever (Lassa, Ebola, Marburg, Congo-Crimean fever), or CJD is suspected, the consultant microbiologist must be informed before any specimens are collected.
* If a potentially cytotoxic specimen is being sent, the chief or senior medical scientists in microbiology **must** be informed.

#### Molecular / Genetics Requests

Patient consent is required for all Molecular/Genetic tests and consent forms are available to download from The intranet under Quicklinks>> Laboratory User Guide and Request Forms. : Pathology Department: Lab User guide and forms.

There are different consent forms:

* Haemochromatosis,
* Haematology Genetic Consent form
* Huntington’s,
* Cystic Fibrosis
* Karyotyping.
* Familial Hypercholesterolaemia
* FSHD requests for Bristol
* All other requests for DCG

All samples must be accompanied by the specific request form above, and where appropriate, the patient consent form.

Demographic information on samples and forms must match completely – otherwise the request will be rejected. No changes are permitted to any demographics.  
Haemochromatosis, CF & FHC are Powerchart orderable,

Haemochromatosis testing is performed in Beaumont Hospital. All other test requests are referred to The National Centre for Medical Genetics, they extract the DNA and refer the request to a suitable laboratory if not done in DCMG.

AttendingPhlebotomy**:**

Should a patient require any of these tests to be taken in Phlebotomy, the appropriate request form must be completed in full in the clinic (including patient consent obtained), and given to the patient to bring to phlebotomy. Both the completed form and the bloods must be sent together to the Laboratory.

#### Out Patient Requests

All orders are placed on Powerchart by the requesting clinician or by clerical staff in the Phlebotomy department.

**A bleep number must be clearly indicated on the form so that the requesting clinician can be contacted with clinically urgent results.**

#### H&I Requests

Consent forms for HLA typing and HLA Antibody screening can be obtained by emailing [crossmatch@beaumont.ie](mailto:crossmatch@beaumont.ie)

#### NPT Requests

* Blood Gases, Glucose, Ketone, INR, HbA1c analysis:

There is no requirement to order any of the above NPT tests on Powerchart. These NPT requests are classified as unsolicited orders. This means that the order is generated as the patient’s details are scanned by the analysers/devices which are located at or near the patient’s bedside. The patient’s **current number** (available on the patient’s wristband and/or addressograph label) is the only acceptable patient ID to be scanned/entered on any NPT device when processing samples.

All blood gas samples are to be correctly labelled with the patient’s addressograph label prior to analysis. This is to ensure the samples are correctly identified.

The only test which must be pre ordered on Powerchart are blood gases to be analysed in the Chemical Pathology Laboratory. These samples must be labelled with the barcode label.

Quick Reference Guides are available on the hospitals intranet page (link below) which provide step by step guidance for trained staff on how to perform relevant NPT.

[Point of Care Testing - All Documents (beaumont.ie)](http://my.beaumont.ie/Pages/Forms/AllItems.aspx?RootFolder=/Pages/Departments/Information Communications Technology/Project Coral/Med Lis Training/Point of Care Testing&FolderCTID=0x01200086897FB0688FE14B9E085D77A5B35581&View={8AFB3C5A-A0C6-4A54-AAE0-C0C79CF0393A}&InitialTabId=Ribbon.Document&VisibilityContext=WSSTabPersistence)

* Liat Covid & Influenza A/B analysis:

There is no requirement to pre order NPT Covid and Flu A/B tests for the Liat. Three identical addressograph labels must be printed together. One addressograph label is to be placed on the sample to be tested and the other two are to accompany the sample to the Liat room. All samples requested on patients outside of the approved patient pathway must be pre-approved by site/incident manager or Microbiology Consultant on duty.

### Consent

The laboratory shall obtain the informed consent of the patient for all procedures carried out on the patient. For most routine procedures, consent can be inferred when the patient presents himself or herself with a request form and willingly submits to the collecting procedure e.g. venepuncture. Patients in a hospital bed should normally be given the opportunity to refuse.

Special procedures, including more invasive procedures, or those with an increased risk of complications to the procedure, may need a more detailed explanation and, in some cases, recorded consent.

If obtaining consent is not possible in emergency situations, the laboratory may carry out necessary procedures, provided they are in the patient’s best interest

The requirement for consent for individual tests performed is outlined in the relevant departmental sections of this laboratory manual.

### Specimen Collection Guidelines & Order of Draw

#### Patient Preparation

Patients should adhere strictly to any conditions which are required prior to and during primary sample collection. Caregivers and phlebotomists should ensure that patients are informed of the procedure required for specialist primary sample collection and that they have the required equipment e.g. 24hr urine collection containers. For further information on patient preparation for primary sample collection, please contact the relevant laboratory using the contact details provided in section 1.1.2 above.

Specific sampling conditions and requirements are outlined in the orders in Powerchart where they apply,e.g. fasting sample required, or sample must be on ice etc. These conditions must be adhered to.

#### Specimen Labelling

* Samples must be labelled with an order-com label generated in Powerchart, which is placed over the **existing** bottle label, with the writing in the same direction (to facilitate barcode scanners), see below.
* The barcode label must be stuck to the blood sample bottle straight down the length of the tube without any creases. Never wrap a label around a tube. Only one barcode label per tube.
* The sample bottle must be labelled immediately after the sample is drawn and before moving on to the next patient. **The patient wrist band must be checked against the name on the barcode label.** Refer to section 2.1.5 for Specimen labelling requirements for Blood Transfusion.

In the case of 24 hour urine collections – if multiple barcode labels are generated that indicate the same sample requirement e.g. 24HU – then all labels with a 24HU sample type requirement can be attached to the same collection.

#### Venepuncutre Instructions

The collection of a venous sample means the identification of the best vein to source the sample. The arm veins are normally the first choice for a phlebotomist. The most commonly used veins are the cephalic, medial cubital or basilic veins.

1. The Limb should be supported on a pillow or armrest of a phlebotomy chair.
2. Apply the tourniquet 2 – 3 inches above the selected site.
3. Wear your disposable gloves, cleanse the patients skin with a mediswab.
4. Anchor the vein using manual traction below the site of entry. The vein should feel firm and slightly bouncy.
5. Insert the needle with the bevel facing upwards and the needle at 15° angle.
6. There should be a flashback of blood to denote a vein has been accessed.
7. The needle should be held firmly between your thumb and fingers to allow the change of the different tubes onto the needle.
8. When all blood specimens have been obtained, release the tourniquet, detach the last tube and now remove the needle smoothly and quickly.
9. Apply pressure to the venous site for as long as required. This avoids a haematoma forming.
10. Dispose of the used needle immediately into the sharps bin. Do not recap the needle

The blood bottles must now be labelled correctly and any special requirements adhered to.

#### Blood Sample Order of Draw

Samples must be drawn in the order as tabulated below, to avoid any cross contamination of samples.

|  |  |  |
| --- | --- | --- |
| **Colour Code** | **Tube type and Order of Draw** | **Investigations** |
| **Brown** | **1st**   |  | | --- | | **Serum Gel**  **STAND UPRIGHT ONCE DRAWN** | | |  | | --- | | **4.9ml** **Chemical Pathology** (specific tests only, see label)  **4.9ml Immunology** | |
| **White** | **2nd**   |  | | --- | | **Serum**  **STAND UPRIGHT ONCE DRAWN** | | |  | | --- | | **4.9ml** **Chemical Pathology** (specific tests only, see label) **Virology (**Serological testing) | | **4.9ml** WHITE on ICE | |
| **Green** | **3rd**   |  | | --- | | **Sodium Citrate** **Coag** | | |  | | --- | | **10ml** required for **HLA27 / Tissue Typing**  **2.9ml / 1.8ml** for **Coagulation Tests**  ***Under-filled or over-filled tubes will be rejected*** | |
| **Orange** | **4th**   |  | | --- | | **Lithium Heparin**  4.9ml | | |  | | --- | | **Troponin** only  ***Under-filled tubes will be rejected*** | |
| **Orange** | **5th**   |  | | --- | | **Lithium Heparin**  4.9ml | | |  |  | | --- | --- | | **4.9ml**  **Chemical Pathology** (specific tests only)  **4.9ml** orange on ice   |  | | --- | | Metal-free available from Specimen Reception (using special metal-free needle) | | |
| **Pink** | **6th**   |  | | --- | | **K-EDTA** | |  | | |  | | --- | | **2.6ml** Pink **FBC (Haematology tests),HbA1C**  **Molecular Tests**  **Virology** (Molecular Investigations eg EBV,CMV,HIV molecular) | |
| **Blue** | **7th**   |  | | --- | | **K-EDTA**  Blue 4.9ml with BTD label | | **4.9 ml** EDTA for **Type and Screen**    **4.9 ml** EDTA for **ACTH/PTH/Aldosterone/Renin** |
| **Yellow** | **8th**   |  | | --- | | **Sodium Fluoride** | | **Glucose**  **Alcohol** |
| **Purple** | **9th**   |  | | --- | | **Sodium Citrate** | | **ESR**   |  | | --- | | ***Under-filled tube will be rejected*** | |

Never pour blood from one tube into another. The preservative in the first tube could contaminate the second tube; this can greatly affect results and potentially compromise patient care.

Refer to the each departments test library for information on sample requirements and the number of tubes required. Tubes CANNOT be used / shared across different platforms because of the risks involved in sample re-labelling.

The brown and white cap samples must be stood upright to clot as soon as the bottles are filled to ensure that the clot forms in the base of the tube and not the lid. The yellow, orange, green, purple and pink bottles must be inverted gently to ensure complete mixing.

Place all the labelled samples into the bio-hazard bag attached to the patient request form and seal.

Please note: The order of draw is in line with approved standards.

#### 24-Hour Urine Collection: General Information for Patients:

You will receive

* A large plastic container with acid in which to store urine.
* A request form with your details on it.
* A plastic bag in which to return your collection and request form.

1. You may need more than one storage container to contain all of your urine for the 24-hour period.
2. Make sure each storage container is labelled with your full name and hospital number written on it. **If your container is not labelled** **properly, you may be asked to repeat the 24-hour collection.**
3. Keep your storage container cool throughout the 24-hour collection period until you bring it back
4. For certain collections, a blood sample may need to be taken within the 24 hour collection period; you will be informed if this is the case.

**How to collect your sample**

1. Start the 24-hour urine test by urinating directly into the toilet. Do not save this urine.
2. After you urinate, write the date and time on your storage container, **this is the start of your test.** Write this time & date on the container.
3. For the next 24 hours, collect all your urine into your storage container.
4. Exactly 24 hours after you started the test, urinate one last time and place the urine in your storage container. **This is the end of your test.** Write the date and time the test ended on your storage container.
5. If you need to use more than one container during the 24-hour period, use one container at a time. When it is full, collect your urine in the next container.
6. Please bring the urine to the hospital as soon as possible. To prevent leaks, make sure the lid is on tightly, and that the container is transported upright inside a plastic bag.
7. If you are an inpatient, your nurse will tell you what time to begin and end the collection and will set up more containers, as needed. If you have questions about the procedure, please ask.

#### 24-Hour Urine Collection (Acidified): Information for Patients

HCl can cause burns and irritate the respiratory system. It is designated harmful and corrosive and bears the following hazard warnings.

 

Harmful Corrosive

You will receive

* A large plastic container with acid in which to store urine.
* A request form with your details on it.
* A plastic bag in which to return your collection and request form.

1. You may need more than one storage container to contain all of your urine for the 24-hour period.
2. Make sure each storage container is labelled with your full name and hospital number written on it. **If your container is not labelled** **properly, you may be asked to repeat the 24-hour collection.**
3. Keep your storage container in a cool place throughout the 24-hour collection period and until you return it to the laboratory.
4. For certain collections, a blood sample may need to be taken within the 24 hour collection period; you will be informed if this is the case.

**How to handle acid safely**

1. Your storage container is supplied with a small volume of acid, do not throw this out.
2. You should open the container in a well ventilated area as fumes may escape from the acid.
3. Do not urinate directly into an acidified container.
4. Pour the urine slowly down the inside wall of the container, trying not to splash the acid.
5. Close the lid and swirl the container gently, to mix the acid and the urine.
6. Repeat steps 2~4 each time you add urine to the container.
7. Should you spill any acid on your skin, wash it off at once with plenty of running water.
8. If you experience soreness or reddening of your skin, as a result of a splash, consult your doctor & take these instructions with you.
9. **Keep the container in a safe place and out of the reach of children at all times.**

**How to collect your sample**

1. Start the 24-hour urine test by urinating directly into the toilet. Do not save this urine.
2. After this urination, write the date and time on your storage container, **this is the start of your test.**
3. For the next 24 hours, collect all your urine into your storage container.
4. Exactly 24 hours after you started the test, urinate one last time and collect this urine in your storage container. **This is the end of your test.** Write the date and time the test ended on your storage container.
5. If you need to use more than one container during the 24-hour period, use one container at a time. When it is full, collect your urine in the next container.
6. Please bring the urine to the hospital as soon as possible. To prevent leaks, make sure the lid is on tightly, and that the container is transported upright inside a plastic bag.
7. If you are an inpatient, your nurse will tell you what time to begin and end the collection and will set up more containers, as needed. If you have questions about the procedure, please ask.

#### Mid-Stream Urine

Male: Clean the glans penis with soap and water. Commence micturition and when a few ml of urine has been passed, introduce a widemouthed primary container into the stream (New Needle free transfer system (NFT) system

Females: If the patient is able to collect urine without assistance from the nursing staff, instruct them as follows:

1. Separate the labia and with cotton wool or a sponge moistened with water, wipe the vulva from the front to the back. Disinfectants must not be used.
2. With the labia still separated allow some urine to pass into the toilet, and then, without stopping, allow some to pass into a sterile container.
3. Pass the remaining urine into the toilet.

#### Swabs

Collect the specimen by passing the swab twice over the relevant area. Label and send to the laboratory as soon as possible after collection

#### Endocervical Swab for GC Culture

Clean the cervical os with a large sterile swab and discard. Insert a new swab into the endocervix and rotate 360 degrees.17 Swab the external os 360 degrees if os stenosed

#### Sputum

Instruct the patient to remove dentures, rinse mouth and gargle with tap water and not with antiseptic mouthwash. Instruct the patient to expectorate saliva or postnasal discharge and discard, before expectorating a deep lung sputum sample into a specimen container. Specimens must be submitted in a wide-mouthed container and sent to the laboratory without delay.

#### Stool Samples

Stool specimens should be collected in a clean container with a secure lid, labeled, and sent to the laboratory as soon as possible after collection

#### (ABG) Blood Gas analysis

All samples for ABG analysis must be collected in the appropriate heparanised syringes. The needle must be removed from the syringe and disposed of in the sharps bin as soon as the sample has been collected. Once the sample is collected any air in the sample must be removed immediately. The cap provided must then be fitted to the syringe. Once capped, the sample should be mixed by gently rolling it between the palms of the hand for 30secs.

ABG samples to be sent to the Chemical Pathology lab for processing must be hand delivered. Samples must not be sent to the lab via the pneumatic chute. Please ensure samples are correctly labelled with the appropriate barcode request, and placed in a biohazard bag for transport.

If sending samples to the lab out of hours, please bleep the Chemical Pathology scientist on call prior to sending the sample.

#### Disposal of Materials Used

Dispose of all clinical waste must be in accordance with National Guidelines.

* Universal precautions must be adhered to at all times.
* Gloves must be worn at all times.
* Gloves must be changed after each patient.
* Needles must not be recapped after use.
* Dispose of sharps in a suitable sharps container.
* Dispose of all clinical waste into yellow bag.

Sample Requirements for Toxicology.

* Blood toxicology and urine drugs of abuse screens are available, but **not for Medico-legal purposes.**
* Additional tests that are available include: ethylene glycol, methanol, paraquat. Please contact the toxicology laboratory for further information if any of these are required.
* Sample Requirements for TDM
* Therapeutic Drug Monitoring (TDM) samples should be taken immediately prior to next dose, i.e. a trough sample.
* **Digoxin:** samples must be taken pre-dose or at least 6 hours post-dose.
* **Lithium:** samples must be collected 12 hours post dose.
* Samples for FK506 must be delivered to the laboratory by 11am Monday – Friday, excluding Bank Holidays, to ensure analysis within the day.

Random Urine Samples

Random spot urine samples are collected into plain MSU containers; these contain no preservative. Ensure the lid is tightly closed.

24 Hour Urine Collections

A 24 hour urine collection is either taken in a plain container or an acidified container, depending on the test required. Pre-acidified containers with 50% acid are available from the laboratory. Plain containers are available on the ward or from supplies. Urine orders may print more than one label depending on the combination of orders placed; multiple labels may be attached to a single 24 hour collection provided the sample type indicated on the upper right hand corner is the same on each label.

If the patient urine volume exceeds the capacity of a 24 hour collection bottle a second bottle must be used – the 2nd bottle must be clearly labelled with the patient demographics and clearly labelled as the 2nd part of a collection with a note on the 1st bottle to indicate a 2nd bottle exists as part of the collection. Both bottles must be delivered to the laboratory at the same time, in the same bag.

CSF Samples

CSF samples are sent directly to the Microbiology Department for analysis.

Once the sterile work has been completed the samples are then sent to Chemical Pathology for analysis of Protein and Glucose, or dispatched for Oligoclonal IgG bands or other referred tests.

Samples for CSF Xanthochromia

Samples for CSF Xanthochromia must be drawn into a brown plastic container or if not available –foil wrapped to protect from light, one mL sample is required and must be delivered by hand to Chemical Pathology immediately. Please note: Do NOT place samples in the chute system. See [Beaumont Hospital - Chemical Pathology](http://www.beaumont.ie/index.jsp?a=41&n=184&p=105) for further guidance.

Other Molecular Testing

For other molecular tests please contact the Department of Clinical Genetics at Our Lady’s Children’s Hospital, Crumlin [01-409 6739].

### Urgent samples

|  |  |
| --- | --- |
| **Specimen Type** | **Prioritised For** |
| Haematology/ Coagulation/ Flow Cytometry | Oncology, CKB, Day Oncology, High Dependency Unit (HDU), A/E, Resus, EMR AMU/ AMAU, ITU, RDW & RTU & Transplant patients, Stroke Unit |
| Chemical Pathology | Oncology, CKB, Day Oncology, High Dependency Unit (HDU), A/E, Resus, EMR AMU/ AMAU, ITU, RDW & RTU, Transplant patients and Stroke Unit |
| Microbiology | A/E, EMR AMU/AMAU, ICN, ICS, RTU & transplant patients, Oncology |
| Immunology |  |

Otherwise, it is imperative that if a sample is urgent, the relevant laboratory must be informed by telephoning the laboratory with the urgent sample details or hand delivering the sample directly to the laboratory.

Samples must be ordered as STAT on Powerchart in order for them to be prioritised and identified by the analysers as STAT.

### Sample Collection & Labelling Guidelines During Computer Downtime

In the event of computer downtime, electronic ordering is not available. A limited repertoire of critical tests will be available during downtime as specified below and as decided by the Laboratory Clinical Director and Beaumont Hospital Clinical Advisory Group. These tests must be ordered on a paper- request form which can be obtained from the laboratory if required.

**Critical Tests available during Downtime**

* FBC
* Coag
* D-Dimer
* INR
* BNP
* Troponin
* CRP
* Renal
* Liver
* Pregnancy test
* Blood Cultures
* CSF
* Urine
* COVID
* Group and Screen

The menu of tests offered may need to be adjusted in order to adapt to practicalities and the priorities imposed by the nature of the emergency

Ordering of laboratory requests must be kept to clinically urgent requests highlighted above as the laboratories will have drastically reduced capacity and manual procedures. The downtime system is only designed to deal with clinically urgent samples only.

### Specimen Acceptance Criteria

The name on the request form and accompanying specimen(s) must match e.g. do not use Pat on one and Patrick or Patricia on other. Please ensure that writing is legible- BLOCK CAPITALS. The requesting clinician is responsible for the correct labelling of specimens and request cards. Incorrectly or inadequately labelled specimens are not accepted by the laboratory and will be rejected.

Specimens will be rejected in the following situations:

* Unlabelled / Incorrectly labelled specimens i.e. without two unique patient identifiers
* Leaking or improperly sealed containers.
* Overfilled specimens   
  ESR samples where blood is collected into the lid of the container.   
  Coagulation containers where the blood is filled beyond the marking on the label.
* Underfilled specimens:   
  ESR samples must be 85mm full. 2.7 ml   
  FBC and Retic samples must have a minimum of 1mL of blood. 1.8 ml samples should have at least 500µL for FBC Coagulation samples must be filled to the marking on the label.
* Obvious inadequacy of specimen for the test(s) required e.g. only one coagulation specimen for a Thrombophilia screen
* Clotted samples with the exception of a serum clotted sample when required.
* Incorrect anti-coagulant: Samples in the wrong container for the requested test.
* Samples transferred from incorrect anti-coagulants to correct anti-coagulant containers e.g. beads in sample
* Samples where the laboratory has been informed the specimen was collected from the incorrect patient
  + Haemolysed Coagulation specimens and ESR samples
  + Aspirate/ Fluid samples: All aspirate/fluid samples must be sent to Microbiology.
  + Any EDTA sample bottles other than the 2.6mL for FBC analysis. Other EDTA sample bottles with different dimensions are not compatible with the laboratory cap piercing analysers.
  + 8.2 mL sodium citrate samples for Coag screens, INR’s these samples are not compatible with the Coagulation analysers.
* Unsanctioned requests e.g. ALL Non routine coagulation samples must be sanctioned by the Haematology Team.
* Factor V Leiden sample, if the screening test APCR is not also requested. Exceptions allow for family history.
* All inherited thrombophilia/ Lupus requests if the patient is on anticoagulation.
* APCR request if the patient is on DOAC, proceed directly with FVL.
* Haematology Molecular testing cannot be performed unless patient consent has been obtained and HAEMG-LF-084 Request form has been completed in full.
* One specimen submitted for CD4 and G6PD. In the event whereby 1 EDTA sample is received fro CD4 and G6PD analysis, the G6PD will be given priority and the CD4 reequest rejected.

**Aged Samples:**Coagulation samples must be <4 hours old, with the exception of INRsample which canbe processed <24hours old.D-Dimer/: Request for D-Dimer/ add-on, must be <8 hours old post sample collectionESRs should be < 6 hours old. Samples >6 hours can lead to a false lowering of results.Reticulocyte samples must be < 24 hours old. **Malaria** Samples must be less than 2 hours old for analysis. External patients must attend A/E or the Phlebotomy Outpatients if Malaria is suspected **Flow Cytometry** CD4, TBNK , LST 72 hours & Lymphoproliferative Panels must be <24 hours old. T-Cell Panels or Acute Panels must be <24 hours in EDTA or <48 hours in RPMI and Sodium Heparin. EDTA samples for PNH testing may be stored in the fridge for <72 hours. Fine Needle Aspirate samples in RPMI and Sodium Heparin are stable for 24 hours in the fridge.

* FBC: EDTA samples must be <24hours   
  Blood film preparation: samples must be <8 hours old

### Specimen Tubes & Containers

With the exception of swabs, pre-acidified 24hr urine collection bottles and saliva collection devices, specimen tubes and containers are available from Beaumont Hospital Stores Department. Contact number: 01 809 3030. All orders must be accompanied by a requisition form. These are also available from the Stores Department.

Sarstedt brand tubes are used by Beaumont Hospital. It is important to check expiry dates on all tubes. Tubes Must Be FILLED to ensure the appropriate concentration of any anticoagulant. Only the blood transfusion department accept Paediatric tubes. Paediatric EDTA from Raphaels is acceptable..

Westmed heparanised syringes are required for blood gas analyses. These are also available from stores.

**Never pour blood from one tube into another. The preservative in the first tube will contaminate the second tube; this can greatly affect results**.

Blood Samples

| **Tube colour** | **Anticoagulant** | **Volume (ml)** |
| --- | --- | --- |
| Orange | Lithium Heparin | 4.9 |
| Orange | Lithium Heparin For Troponin Only | 2.7 |
| Orange | Lithium Heparin in FOIL | 4.9 |
| White | White Serum ,in FOIL | 4.9 |
| Pink | EDTA wrapped in FOIL |  |
| Random Urine | Random urine wrapped in FOIL |  |
| Faecal Sample | Faecal Sample, foil wrapped. |  |
| Brown | Plain, With Gel Separator | 4.9 |
| White | Plain, 4.9 mL volume | 4,9 |
| White | Plain | 7.5 |
| White On Ice | Plain White | 7.5 |
| Orange On Ice | Lithium Heparin | 4.9 |
| Pink | Potassium EDTA | 2.6 |
| Pink on ICE | Potassium EDTA on ICE | 2.6 |
| Yellow | Sodium Fluoride | 2.7 |
| Pink- Large | Potassium edta | 7.5 |
| N/A | plain |  |
| \*\*Orange | Special Metal Free Tube & Needle | 7.5 |
| N/A | Plain |  |
| N/A | Pre-Acidfied |  |
| N/A | CSF Plain |  |
| CSF – Brown | Plain-Protect From Light | At least 1ml |
| Arterial syringe | Lithium heparin |  |
| Purple | Tri-sodium citrate 4NC | 3.5 mL |
| Pink | EDTA-KE (Tri-potassium Ethylenediaminetetra-acetic acid) | 2.6 mL  1.8 mL- Paediatric |
| Green | Tri-sodium citrate 9NC | 2.9 mL  1.8 mL- Paediatric |
| Red | 0.82mg Magnesium/mL | 2.7mL |
| n/a | Salivette |  |
| Blue tube with Blue cap | Potassium EDTA with Blood Bank label | 4.9 |

Urine Samples

Both 24 hour urine collections and random spot urine samples are analysed in the laboratory.

* Random spot urine samples are collected into approved yellow screw-capped Sarstedt containers (CE Marked); these contain no preservative. REF #75.9922.745
* A 24 hour urine collection is either taken in a plain 3L container or an acidified 3L container, depending on the test required. Pre-acidified containers with either 50% acid or concentrated acid are available from phlebotomy. If known in advance that the patient has an unusually large output, please request 2 containers for the test. Results are normally expressed per 24 hour period. Where two tests are desired, each requiring a different container, two separate 24 hour collections must be obtained. If in doubt please contact the relevant laboratory prior to commencement of the test.

Aptima GenProbe Collection Devices

Aptima GenProbe Collection Devices (swabs and urine containers) are only available from the NVRL. Contact number: (01) 7161354

Saliva Samples

Saliva collection devices are available from Phlebotomy and Sample Reception.

### Test Results

If you have any queries in relation to a report, please contact the relevant laboratory area to discuss the result. Feedback from users about difficulty with reports helps us to improve the service. Contact details are available in Section 3.1.2 of this manual.

All reports are available on Powerchart. All Powerchart reports contain the appropriate reference ranges and are available to be viewed through the system as soon as they are authorised in the laboratory.

Reports generated during I.T. downtime are paper reports that are transported to the requesting laboratory.

PLEASE NOTE: It is the responsibility of the laboratory to ensure that tests are performed to the highest possible standard and reported in the time specified within this User Manual. It is the responsibility of the requesting clinician to follow up on the test results.

Despite our best efforts, it is possible that an error can occur. If you have concerns about a report please draw it to our attention without delay, and we will investigate immediately.

#### Genetic Test Requests Referred by Haematology

Haematology Cytogenetic reports are available on Powerchart.

#### Critical Values

Results falling outside defined alert limits and results critical to patient care will be communicated to appropriate personnel as soon as available. The below table outlines the laboratory process for communication of critical results:

|  |  |
| --- | --- |
| **Communication of Critical Results – All wards except A/E** | |
| **Routine Hours** | **Outside of Routine Hours** |
| 1. Contact the referring / ordering clinician or an appropriate member of his / her team. 2. In the event that the referring/ordering clinician or his/her team cannot be contacted, contact  * nurse in-charge of the relevant area, or * nurse caring for the patient.  1. In the event that the nurse cannot be contacted, contact the Consultant in charge of the patient through switch | 1. Contact the  * nurse in-charge of the relevant area, or * nurse caring for the patient.  1. In the event that the nurse cannot be contacted, contact the 2nd medical SHO on call through switch on Dect 7402 or through switch. 2. In the event that 2nd medical SHO cannot be contacted, contact the 1st medical SHO on Dect 7403 or through switch. 3. In the event that 1st medical SHO cannot be contacted, contact the 3rd medical SHO on call through switch. 4. In the event that 3rd medical SHO cannot be contacted, contact the overnight nurse manager through switch |
| **Communication of Critical Results – Emergency Department (ED)** | |
| **At all times** | |
| 1. Contact the  * nurse in-charge of ED or   nurse caring for the patient.  Nurses Station: 2838, 2721 or 2722  Doctors Station: 3349, 2713 or 2717.   1. In the event that the nurse cannot be contacted, contact the Consultant in charge of ED through switch | |
| **Communication of Critical Results - OPD** | |
| **Routine Hours** | **Outside of Routine Hours** |
| 1. Contact the referring / ordering clinician or an appropriate member of his / her team. 2. In the event that the clinician cannot be contacted, contact the Consultant in charge of the patient through switch | 1. Contact the referring / ordering clinician or an appropriate member of his / her team. 2. In the event that the referring/ordering clinician or his/her team, contact the 2nd medical SHO on call on Dect 7402 or through switch. 3. In the event that 2nd medical SHO cannot be contacted, contact the 1st medical SHO on Dect 7403 or through switch. 4. In the event that 1st medical SHO cannot be contacted, contact the 3rd medical SHO on call through switch. 5. In the event that 3rd medical SHO cannot be contacted, contact the overnight nurse manager through switch |
| **Communication of Critical Results – Haematology/Oncology patients** | |
| **Routine Hours** | **Outside of Routine Hours** |
| 1. Contact the referring / ordering clinician or an appropriate member of his / her team. 2. In the event that the referring/ordering clinician or his/her team cannot be contacted, contact  * nurse in charge of the relevant area, or * nurse caring for the patient.  1. In the event that the nurse cannot be contacted, contact the Consultant in charge of the patient through switch | 1. If identified as under the care of Haematology/Oncology, contact the Haematology/Oncology SHO on call through switch 2. In the event that the Haematology/Oncology SHO cannot be contacted, contact the Haematology/Oncology Registrar on call through switch 3. In the event that the Haematology/Oncology Registrar cannot be contacted, contact the Haematology/Oncology Consultant on call through switch |
| **Communication of Critical Results – GP patients** | |
| **At all times** | |
| 1. Contact the referring GP 2. If the referring GP is uncontactable, contact the 2nd medical SHO on call on Dect 7402 or through switch. 3. In the event that 2nd medical SHO cannot be contacted, contact the 1st medical SHO on call on Dect 7403 or through switch. 4. In the event that 1st medical SHO cannot be contacted, contact the 3rd medical SHO on call through switch. 5. In the event that 3rd medical SHO cannot be contacted, contact the overnight nurse manager through switch | |
| **Communication of Critical Results – Referral Labs** | |
| **At all times** | |
| 1. Contact the referring laboratory   If contact details have been provided to the laboratory, they will be available on laboratory Qpulse in documents module under ‘Communication of…’ otherwise contact the referring laboratory through their switch.  Consult departmental procedures for further details | |

AAll

Details of all telephoned results will be recorded and include name (forename, Surname and Grade) of the person taking the result ;the patient’s name, date of birth, address (for outpatients/GP results) and one other form of identification e.g. hospital number and also contain the test, examination date and request date/time (where pertinent).

Any difficulties encountered in notifying the patient’s clinical team of a critical result will be documented in the same manner as telephoned results departmentally, recorded as a non-conformance on Q-Pulse and notified to laboratory management.

### A/E Patient that has been Discharged

If the laboratory needs to contact **an A/E** patient that has been discharged with anadd on result e.g. a Blood morphology report, positive Lupus screen, whereby this result has a clinical impact on patient treatment and care, the Liaison Nurse on 2708 will be contacted.

Chemical Pathology Samples that are received that were not drawn on the day of delivery to the department will have all labile tests reported as ‘on cells’.

### Specimen Referral

Tests not provided by Beaumont Hospital are referred to an appropriate referral Laboratory. The choice of laboratory is primarily based on quality grounds, with accredited laboratories being chosen preferentially. Other factors such as cost and turnaround times are also considered. A list of referral laboratories in use is available from the Directorate on request.

### Specimen Transportation Guidelines

* Transport specimens to the laboratory as quickly as possible.
* Place all specimens in bio-hazard bags and transport to the laboratory in a way as to minimise damage or risk of leakage. Up to 10 specimens may be placed in the bag.
* Porter sample collections are Monday- Friday collections at 10.00, 12.00, and 15.00, Saturday and Sunday collections at 9.00, 11.00, and 13.00.
* Specimens where the external surface is contaminated with blood or other body fluids will not be accepted for analysis – another specimen must be collected.
* If a specimen arrives in a condition which places staff at risk, we regret that it cannot be processed. Where contact details are provided the requesting clinician will be informed, however we can take no responsibility for delays which occur due to the lack of contact details.
* Samples drawn by the Phlebotomy Department are collected by the laboratory portering service from all wards at specified times through the day and on Saturday and Sunday mornings.
* Urgent samples or samples drawn outside the standard phlebotomy service must be sealed into a bio-hazard bag and may be delivered to the laboratory via the chute system unless specifically specified in Powerchart.
* Labile samples must be delivered directly to the laboratory with the time of sampling clearly on the label.
* 24 hour urine samples must be tightly sealed and in a plastic bag.
* MSU samples must be sealed in a bio-hazard bag.
* Urine samples must be delivered to the appropriate laboratory, as specified on the sample label, to ensure appropriate storage prior to analysis.
* Blood gas samples (ABGs) to be processed by the laboratory must be hand delivered within 30mins of sample collection (15mins if ionised calcium is requested). Samples must arrive in a sealed biohazard bag with no needle attached to the syringe.
* Blood, CSFs and other critical specimens must be transported to the laboratory immediately. All specimens should be placed in bio-hazard bags and transported to the laboratory in such a way as to minimise damage or risk of breakage.
* Blood cultures must be incubated at 37˚C within 4 hours of collection. Specimens in plastic bottles should be sent by the pneumatic tube system; otherwise bottles should be transported to the laboratory by the portering service and placed in the automated blood culture monitoring system. This can be arranged by calling extension 2140.
* Samples for auto antibody crossmatches for NHISSOT should reach the laboratory within 24 hours'.

**Please note:** Glass specimen tubes are not acceptable due to Health and Safety regulations.

#### Exception to the above

|  |  |  |
| --- | --- | --- |
| Test | Details | Department |
| Critical specimens | Must be hand delivered/sent by porter | All departments |
| CSF | Must be hand delivered/sent by porter | Microbiology |
| CSF Xanthochromia | Must be hand delivered/sent by porter | Chemical Pathology |

#### Pneumatic Chute System

Specimens may be sent via the Chute system to the following terminals:

|  |  |
| --- | --- |
| **Laboratory Department** | **Terminal Number** |
| Blood Transfusion | 2706 |
| Haematology | 2703/2656 |
| Chemical Pathology | 2668/2704 |
| Immunology | 2635 |
| Microbiology | 2645 / 2647 |
| NHISSOT | 2650 |

The following specimens may **NOT** be transported using the Chute System:

* CSF Specimens
* Blood gas samples
* LDH test results may be increased by up to 15% if sample is sent via Chute System

### Specimen Storage Conditions

* Store blood samples at room temperature, unless otherwise specified. Note that blood samples stored in a refrigerator may have falsely elevated results e.g. potassium.
* 24 hour urine collections should be refrigerated throughout the collection and brought to the laboratory ASAP.
* Addition of test requests to existing samples is not recommended due to issues of sample integrity. Contact individual laboratory for advice.
* Blood, CSFs and other critical specimens must be transported to the laboratory immediately.
* CSF Samples for Xanthochromia.must be hand delivered to the Chemical Pathology laboratory immediately. Do not put into the Chute.
* Samples that require preservation on ice post collection due to the labile nature of the analyte must be sent to the lab immediately.
* In most cases, if delays are unavoidable, microbiology specimens can be preserved by refrigeration at 2-8˚C in a designated specimen fridge, as this maintains the viability of the pathogens present and prevents the overgrowth of non-pathogenic bacteria. This is of particular importance if quantitative or semi-quantitative culture is required, for example during microbiological analysis of sputum and urine.   
  Exceptions to this include:
* Blood cultures should be promptly incubated at 37˚C.
* CSFshould be held at room temperature and arrive in laboratory <2 hours after collection for accurate microscopy results.
* Samples specifically for the isolation of *Neisseria gonorrhoea****.*** *(*i.e. cervical or urethral specimens) should be stored at room temperature.

### Data Protection Policy

The Clinical Directorate of Laboratory Medicine complies with the policy of the HSE regarding the legislation pertaining to the rights of the patient and staff and to act in an ethical and responsible manner in maintaining the security and integrity of all personal information

The Directorate retains the following information in relation to each test request received, for a minimum of 30 years, in order to ensure patient history is maintained and that sufficient information is available to staff responsible for the interpretation and reporting of results from the laboratory:

1. Patient full name
2. Patient Address
3. Patient medical record number/episode number
4. Patient date of birth
5. For each specimen: date/time of collection, date/time of receipt in the laboratory and date/time of report, specimen type, priority.
6. Clinical information provided by clinicians
7. The results and where appropriate, interpretation of each test requested.
8. Requesting clinician and address

### Placing Patient Information in the Public Domain

It is laboratory policy that information obtained or created during the performance of laboratory activities is not placed in the public domain unless agreed by the patient. If the laboratory is required by law or authorised by contractual arrangements to do so, the patient’s clinician will be informed and they will inform the patient (unless this is prohibited by law). Further details are outlined in the relevant departmental standard operating procedures.

Information about the patient from a source other than the patient (e.g. complainant, regulator) is kept confidential by the laboratory. The identity of the source is kept confidential by the laboratory and is not shared with the patient, unless agreed by the source.

### Time Limits for Requesting Additional Examinations

Please note that requests for any additional examinations must be placed electronically in Powerchart and the barcode delivered to the appropriate laboratory, in order for results to be issued.

Requests for add-on testing cannot be accepted by Chemical Pathology during any period of I.T. Downtime.

### Repeat Examination due to Analytical Failure

In the event of an analytical failure, if the system returns to normal within the test cut-off time, the samples are processed accordingly. However, if this time exceeds the test cut-off limit, the users are notified and repeat samples are requested, where applicable

### Uncertainty of Measurement (UM)

Every measurement, including a laboratory result, is subject to a level of uncertainty. For example blood pressure measured a few times within a single clinical visit may vary. This variation is made up of biological variation together with the uncertainty of measurement (and may be compounded further if any error is made). Systems in the laboratory are designed to minimise error – however if you are concerned that an error has occurred please contact us to let us investigate this. Even when error is eliminated, uncertainty of measurement affects all results.

When interpreting the results of a laboratory test the uncertainty of measurement (UM) of that result needs to be considered. UM is a numerical value & is an expression of the magnitude of uncertainty of a result. It characterizes the dispersion of values reasonably attributed to measurement. If not understood may lead to over interpretation of results.   
e.g. If the UM is 10% & the result is 100, then the true result probably lies between 90-110. Therefore is the result obtained due to clinical changes in the patient or imprecision of the test method itself?

Uncertainty is not error. Error tells us the difference between the true value & the measured value. Error can be corrected, uncertainty cannot. UM is the quantitative expression of doubt (uncertainty) & spread of a particular measurement. It is an estimate of the confidence in the result produced by the laboratory.   
Uncertainty is a parameter associated with every result & is specific to each result. The uncertainty of any assay performed in the laboratory is available on request.

### Complaints

Beaumont Hospital is committed to responding to patient and user feedback both positive and negative. The hospital endeavors to respond to concerns and identify and manage any deviation from high quality care.

Complaints and feedback may be given directly to any member of staff in the laboratory or through the Patient Advisory Liaison Service (PALS) In any case, there may be a resolution at point of contact or the case may be of a serious nature that requires further action. All complaints (verbal or written) are recorded directly onto Q-Pulse, and are classified as per Non-conformity procedure. The medical significance of each complaint is decided upon by the departmental Consultant Pathologist. The Head of Department or Laboratory Manager may deal with the complaint depending on its severity. Records of complaints are maintained for periods as defined in schedule for record retention.

If a complaint cannot be resolved at local level it will be forwarded to the hospital’s Patient Liaison officer.

The laboratory actively seeks feedback from its patients, users and personnel which is used to analyse and improve the laboratory management system, activities and services provided to users as demonstrated below.This is achieved through regular user satisfaction surveys, complaints and compliments that are received and through it’s annual management review. All of these contribute to the laboratory continual improvement process.

### Open Disclosure

Beaumont Hospital follows the HSE National Policy for Open Disclosure. Open Disclosure is a requirement of the HIQA National Standards for Safer Better Healthcare. Open Disclosure “an open, consistent approach to communicating with patients when things go wrong in healthcare. This includes expressing regret for what has happened, keeping the patient informed, providing feedback on investigations and the steps taken to prevent a recurrence of the adverse event.”Open Disclosure should happen when a service user has experienced an “adverse event” but also when a service user experiences a “no harm event” or is exposed to a “near miss event”.

### Accreditation/Quality Standards

Beaumont Hospital Clinical Directorate of Laboratory Medicine’s current scope of Accreditation to ISO15189 is available from the INAB website, https://www.inab.ie/fileupload/medical-testing/beaumont-hospital-225mt.pdf

The H&I Department is accredited by EFI (European Federation for Immunogenetics).

**BLOOD TRANSFUSION**

### Blood Transfusion Test Repertoire and TAT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test** | **Sample Type** | **Minimum**  **Volume** | **TAT** | **Comment** | **Mnemonic** |
| Group & Screen | 4.9ml EDTA Specimen bottle labelled: “EDTA - FOR BLOOD BANK” (PalePink top tube) | 2.5ml | **Routine:**  Same day if received before cut off time of 17:00 during routine hours.  **Emergency:** 1 hour | GS specimens should be taken using the Bridge Medical devices/Powerchart for OPD either desktop or PDA. Equipment must be brought to patient bedside.  When the Bridge medical device is not available the patient details must be handwritten on the specimen bottle.  Unavoidable delays in the provision of results can occur when a patient has a positive antibody screen and/ or when a specimen is referred to the IBTS. | Group and Antibody screen |
| Direct Antiglobulin Test | EDTA Specimen (2.7 ml) | 2.5ml | **Routine:**  Same day if received before cut off time of 17:00 during routine hours.  **Emergency:** 1 hour | DAT specimens should be taken using the Bridge Medical devices either desktop or PDA/Powerchart for OPD. Equipment must be brought to patient bedside.  When the Bridge medical device is not available the patient details must be handwritten on the specimen bottle. | DAT |
| Transfusion Reaction Investigation | 4.9ml EDTA Specimen + 7.5ml clotted serum specimen | 2.5ml | Depends on the complexity of investigation. | Should be sent to the hospital Blood Bank as soon as possible after taking the specimens. | TRX |
| ABO Antibody titration | 4.9ml EDTA Specimen. | 4.0ml | **Routine:**  24 hours from time of receipt during routine hours  **Urgent:**  Same day if received before 1400. | This test is requested only under the instruction of the Nephrology team.  Specimens should be taken using the Bridge Medical devices either desktop or PDA/Powerchart for OPD. Equipment must be brought to patient bedside.  When the Bridge medical device is not available the patient details must be handwritten on the specimen bottle. | Anitbody TITR |
| Cold Agglutinins | 2 X 4.9ml EDTA specimen bottle. | 4.9ml. | 5 working days from sample receipt by NHSBT  As per Specimen User Manual IBTS | Referred to IBTS  Specimens should be taken using the Bridge Medical devices either desktop or PDA/Powerchart for OPD. Equipment must be brought to patient bedside.  When the Bridge medical device is not available the patient details must be handwritten on the specimen bottle. | COLDAGGS |
| ABO Rh D grouping for Living donor and H&I | 4.9ml EDTA Specimen. | 2.5ml. | **Routine:**  Same day if received before cut off time of 17:00 during routine hours.  **Emergency:** 1 hour |  | Ext Blood Group |

### Blood Components/Products Available

|  |  |  |
| --- | --- | --- |
| **Power chart Mnemonic** | **Turnaround Time** | **Comment** |
| Red Blood Cells | With valid TS: 15 mins to 3hours \*  From receipt of TS: up to 4 hours\*  Emergency   * Uncrossmatched RC: <10 mins * Crossmatched RC: 60 min from receipt of GS\* |  |
| Frozen Plasma | 40min to 3 hours |  |
| Platelete Concentrate | 15mins to 12hours \*\* | The blood bank strives to maintain 2 stock platelets at all times for emergency issue. However this depends on demand and supply.  Non-emergency orders should be placed prior to 14:00 hrs during routine working hours and will be available from 16:30 hrs the same day and before 22:00 hrs for approx. 11am next day delivery. |
| Fibrinogen Product | 15min to 60mins |  |
| Albumin 5%  Albumin 20% | 15min to 60mins |  |
| Factor Concentrates   * Novoseven * Factor VIII (Altuvoct and Elocta) * vWF * Factor IX * Prpthrombin Concentrate * Factor XIII | 15 mins to 60 mins | Discussion with Haematology Medical Team required |
| Other  Anti-D  Anti-Thromin  Granulocytes | 60min to 4 hours | Discussion with Haematology Medical Team required |

\*Turnaround Time provided the patient has no Antibodies or blood group discrepancies. \*\*Availability is dependent on national supply

Specimens referred to the IBTS for antibody investigation, serological crossmatch or/and Cold Agglutinins, the results of these tests are not covered by the scope of Beaumont Hospital Blood Bank Department ISO15189 accreditation

* + 1. ***Specialised Tests Referred to the National Histocompatibility and Immunogenetics Reference Laboratory (NHIRL)***

|  |  |  |
| --- | --- | --- |
| **Test Referred** | **Power chart Mnemonic** | **Specimen Required** |
| Human Leucocyte Antigen (HLA Typing) for Matcheded platelets | Ref Lab HLA typing for matched platetes | 5-10mls EDTA |
| Screening for Platelet Allo-antibodies | Ref lab platelet allo Ab investigation | 5-10mls clotted |
| Human Platelet Antigen Typing (HPA) (Genotyping) | Ref Lab HPA genotyping | 5mls EDTA |
| Platelet Refractoriness | Ref Lab platelet refractoriness | 5-10mls EDTA and Citrate |
| HLA Class 1&11 typing of transplant patients and family for BMT | Not on Powerchart | 5-10mls EDTA |

**These samaples must be accompanied by form BT255-6 for reference lab send out.**

**HAEMATOLOGY**

**MICROBIOLOGY**

**Table 1:** Approved urine, faeces and respiratory sample containers for microbiology investigations

|  |  |  |
| --- | --- | --- |
| **Department** | **Test** | **Container** |
| **Microbiology** | **Non-Urine Samples**  Eg:  -Faeces samples  -Sputum/Respiratory samples  -Sterile fluids  -Tips  -Theatre samples/miscellaneous  Ref. 75.9922.745 |  |
| **Microbiology** | -Urine culture & sensitivity  -Urine hCG (pregnancy test)  -Urinary Legionella/ Streptococcal Antigen  Sarstedt Product reference 10.252) |  |
| **Microbiology** | -Urine culture and sensitivity  Catheter Stream Urines (CSU) only |  |

Table 2: Specimen acceptance criteria

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Label** | **Test ordered** | **Container** | **Volume** | **Stability** | **Comments** |
| **Urine** | | | | | |
| C Urine | Urine culture with microscopy | 10 ml Monovette tube, 60 ml sterile container with red sticker on the lid | 2 mls | 4 hours at room temperature48 hours at 4 ̊C | **Exception:**Nephrostomy and Theatre urines always processed |
| C HCG | HCG Pregnancy | 10 ml Monovette tube60 ml sterile container | 2 mls | 4 hours at room temperature48 hours at 4 ̊C |  |
| Leg Ur Ag | Legionella urinary antigen | 10 ml Monovette tube, 60 ml sterile container | 2 mls | 4 hours at room temperature, 48 hours at 4 ̊C |  |
| S pneum Ag | Streptococcus pneumoniae antigen | 10 ml Monovette tube, 60 ml sterile container | 2 mls | 4 hours at room temperature, 48 hours at 4 ̊C |  |
| C TB | TB culture | 60 ml sterile container | 10 mls | 24 hours at room temperature, If delay store at 4 ℃ |  |
| C O&P | Ova and Parasites | 60 ml sterile container | 10 mls | 1 hour without the addition of undiluted formalin |  |
| **Faeces** | | | | | |
| C diff toxin & Enteric Path | C diff and Enteric Path | 60 ml sterile container | 1-2 ml/g | 48 hours at 4 ̊C | Liquid or semi-formed samples only processed |
| C diff toxin PCR | C diff toxin PCR | 60 ml sterile container | 1-2 ml/g | 48 hours at 4 ̊C | Liquid or semi-formed samples only processed |
| EntericPath | Enteric Path | 60 ml sterile container | 1-2 ml/g | 48 hours at 4 ̊C | Liquid or semi-formed samples only processed |
| ROT/ADV | Rotavirus/Adenovirus combi test | 60 ml sterile container | 1-2 ml/g | 48 hours at 4 ̊C |  |
| C O&P | Ova and Parasites | 60 ml sterile container | 1-2 ml/g | 24 hours at room temperature  48 hours at 4℃ without addition of 10% formalin-water | Travel details essential or CMT Request |
| H. pylori Ag | Helicobacter pylori antigen | 60 ml sterile container | 1-2 ml/g | 48 hours at 4 ℃ |  |
| Norovirus RNA | Norovirus | 60 ml sterile container | 1-2 ml/g | 48 hours at 4 ℃ | Dispatched to NVRL |
| **Respiratory** | | | | | |
| C BAL/C Respiratory/C Sputum/C CF Resp | Respiratory culture  BAL/Sputum/TASP/EBUS | 60 ml sterile container | 15 mls | 48 hours at 4 ̊C | CF specimens can be processed >48 hours after collection |
| GALAGB | Galactomannan-BAL | 60 ml sterile container | 1 ml | 5 days at 4℃  14 days at -20 ̊C |  |
| C TB | TB culture | 60 ml sterile container | 1 ml | 24 hours at room temperature, If delay store at 4 ℃ |  |
| COVID 19/FLU | SARS-CoV-2/Influenza A/B | VTM/UTM viral swab containing one swab or PrimeStore® Lysis MTM swabs | N/A | 48 hours at room temperature  > 48 hours at -70 ℃ | Copan viral swabs (pink) can be sent to NVRL for processing |
| COVID TRANS | SARS-CoV-2 Transplant | VTM/UTM viral swab containing one swab or PrimeStore® Lysis MTM swabs | N/A | 48 hours at room temperature  > 48 hours at -70 ℃ | Processed immediately on receipt |
| **Fungal** | | | | | |
| C Fungal | Fungal culture  (Skin scrapings/Nail clippings/Hair) | Dermapak  60 ml sterile container | As much as possible | Several months stored at room temperature | Any hair specimens must contain root of the hair |
| C GALAGS | Galactomanna-Blood | White Topped Serum Tube | 7.5 ml | 5 days at 4℃  14 days at  -20 ̊C |  |
| **Screens** | | | | | |
| C MRSA | MRSA Screen Culture | Charcoal Transswab  (Nasal, Groin or Wound site) | N/A | 24 hours at room temperature  72 hours at 4 ℃ |  |
| C VRE | VRE Screen | Charcoal Transswab (Rectal swab) | N/A | 24 hours at room temperature  72 hours at 4 ℃ |  |
| C CPE | CPE Screen | Charcoal Transswab  (Rectal swab) | N/A | 24 hours at room temperature  72 hours at 4 ℃ |  |
| CPE Mol. Scrn | CPE Molecular Screen | Liquid Amies eSwab (Rectal swab)  Charcoal Transswab  (Rectal swab) | N/A | 24 hours at room temperature  72 hours at 4 ℃ | Charcoal Transswab with CPE Mol. Scrn orders can be accepted. In GenLab result as “See Culture” |
| **Swabs** | | | | | |
| C Swab/C Wound/C Eye/C Ear/C Throat/C Mouth/C Nasal/C Pus | Swab/Wound/Eye/Ear/Throat/Mouth/Nasal/Pus culture | Charcoal Transswab  (Wound, Eye, Ear, Throat, Mouth, Nasal, Pus),NT swab (orange)For ear, nose, throat only | N/A | 24 hours at room temperature  72 hours at 4 ℃ |  |
| C Genital | Genital culture | Charcoal Transswab  (Cervical/Endocervical/Urethral/ Throat/Rectal/Pus or Discharge from penis | N/A | 24 hours at room temperature  72 hours at 4 ℃ |  |
| C GC | GC Direct plate culture | VCAT plate already inoculated | N/A | N/A |  |
| C HVS | HVS Culture | Charcoal Transswab  (HVS) | N/A | 24 hours at room temperature  72 hours at 4 ℃ |  |
| **Fluids** | | | | | |
| C Abd Fl,C Ascitic fl,C Bile fl,C Drainage fl,Pancreatic fl,C Peritoneal fl,C Pleural fl,C Perf/Ves. Perf. Fl,C Pericardial fl,C Joint fl,C Fl/Asp | Abdominal fluid culture,Ascitic fluid cultureBile fluid culture,Drainage fluid culture,Pancreatic fluid culture,Peritoneal fluid culture,Pleural fluid culture,Perfusion fluid,Pericardial fluid culture,Joint fluid culture,Fluid/Aspirate culture | 60 ml sterile container  Aerobic and Anaerobic blood culture bottles | Minimum of 1 ml in 60 ml sterile container  Minimum of 2 mls in blood culture bottles | 24 hours at room temperature  48 hours at 4 ℃ for 60 ml sterile container  ≤ 4 hours at room temperature for blood culture bottles | > 4 hours for blood culture bottles are processed with “BC DELAY” comment |
| C PD fl | PD fluid culture | Aerobic and Anaerobic blood culture bottles  Rocket tube | Minimum of 2 mls | ≤ 4 hours at room temperature | > 4 hours for blood culture bottles are processed with “BC DELAY” comment |
| Fluid Cell Ct | Fluid microscopy (cell count) | EDTA tube (pink top) | 1 ml | 24 hours |  |
| C TB | TB culture | 60 ml sterile container | 1 ml | 24 hours at room temperature,If delay store at 4 ℃ |  |
| **Theatre** | | | | | |
| C Theatre | Theatre culture | 60 ml sterile container | As much as possible | 24 hours at room temperature  If delay store at 4 ℃ | Perfusion fluids from theatre can be processed with C Perf/Ves. Perf. Fl orders |
| C TB | TB culture | 60 ml sterile container | 1 ml | 24 hours at room temperature,If delay store at 4 ℃ |  |
| **Pus** | | | | | |
| C Pus | Pus culture | 60 ml sterile container | 1 ml | 24 hours at room temperature  If delay store at 4 ℃ |  |
| **Tip** | | | | | |
| C Cath Tip | Catheter Tip Culture | 60 ml sterile container | 4-5 cm length | 24 hours at room temperature  If delay store at 4 ℃ |  |
| **CSF** | | | | | |
| C CSF BH | CSF culture & microscopy | Clear sterile universal container | Minumum of 600 µl | 2 hours | Comment “Order of collection not indicated” if received in the lab >2 hours after collection |
| C TB | TB culture | Clear sterile universal container | 500 µl | 24 hours at room temperature  If delay store at 4 ℃ |  |
| **Blood culture** | | | | | |
| C Blood | Blood culture | Aerobic and Anaerobic blood culture bottles | 8-10 mls | 4 hours | Comment “BC DELAY” if received in the lab >4 hours after collection  Comment if incomplete/incorrect BC set received.  See 2.4.2 above |
| C TB Blood | TB Blood culture | Mycobacterium blood culture bottle | 1-5 mls | 4 hours | Comment “BC DELAY” if received in the lab >4 hours after collection |
| **Quantiferon** | | | | | |
| Quantiferon TB | Quantiferon | QuantiFERON®-TB Gold blood collection tubes | 1 ml x 4 tubes (fill to black line on tube) | 16 hours at room temperature | MF-MIC-55 request form must be filled out with MedLIS sticker and Date & time bloods taken |
| **Cryptococcal antigen** | | | | | |
| Crypto Ag | Cryptococcal antigen | CSF | 100 µl | 72 hours at 4 ℃  Longer at -20 ℃ |  |
| Crypto Ag | Cryptococcal antigen | White Topped Serum Tube | 7.5 ml | 72 hours at 4 ℃,Longer at -20 ℃ |  |
| **Virology (External laboratories)** | | | | | |
| AmikR | Amikacin levels | White Topped Serum Tube | 7.5 ml | Separated at 4 ℃ within 48 hours | Dispatched to Biochemistry MMUH |
| ADVADNA VRL  ADVDNAL VRL | Adenovirus PCR | EDTA tube (pink top) | 2.6 ml | Separated at -20 ℃ within 24 hours | Dispatched to NVRL  State clearly on label Serum or Plasma |
| CMVDNA VRL | CMV PCR | EDTA tube (pink top) | 2.6 ml | Separated at -20 ℃ within 24 hours |
| EBV DNA VRL | EBV Serology | EDTA tube (pink top) | 2.6 ml | Separated at -20 ℃ within 24 hours |
| HBVL VRL  HBGER VRL | Hep B Viral Load/PCR/DNA | White Topped Serum Tube | 7.5 ml | Separated at -20 ℃ within 24 hours |
| HCVGE VRL  HCVVL VRL | Hep C PCR/Genotype/DNA/Viral Load | White Topped Serum Tube | 7.5 ml | Separated at -20 ℃ within 24 hours |
| HIVGER VRL | HIV Viral Load/PCR | White Topped Serum Tube | 7.5 ml | Separated at -20 ℃ within 24 hours |
| HIV1VL VRL | HIV Viral Load/PCR | EDTA tube (pink top) | 2.6 ml | Separated at -20 ℃ within 24 hours |
| B-D GLUCAN | Beta-D-glucan | White Topped Serum Tube | 7.5 ml | Separated at 4 ℃ for 15 days  Separated at -20 ℃ for 27 days | Dispatched to Southmead, Bristol |
| NORXPERT VRL | Norovirus | 60 ml sterile container | 1-2 ml/g | 48 hours stored at 4 ̊C |  |
| PARVDNA VRL | Parvovirus PCR | White Topped Serum Tube | 7.5 ml | Separated at -20 ℃ within 24 hours | Dispatched to NVRL,State clearly on label Serum or Plasma |
| Teicoplanin Level | Teicoplanin levels | White Topped Serum Tube | 7.5 ml | Separated at 4 ℃ within 48 hours | Dispatched to Eurofins Biomnis |
| Tobra Trough | Tobramycin levels | White Topped Serum Tube | 7.5 ml | Separated at 4 ℃ within 48 hours | Dispatched to Biochemistry SVUH |
| Voriconazole | Voriconazole levels | White Topped Serum Tube | 7.5 ml | Separated at -20 ℃ within 24 hours | Dispatched to MMUH |

Table 3: Specimen rejection criteria

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Specimen** | **Label** | **Test ordered** | **Container** | **Volume** | **Stability** | **Comments** |
| **Urine** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen | C Urine | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Sarstedt “Urine NFT” primary sample container  60 ml sterile container without red sticker on lid | < 2 ml (manual microscopy & culture will be performed) | > 4 hours at room temperature  > 48 hours at 4 ℃ | e  **Exception:** Nephrostomy and Theatre urines always processed |
| C HCG | < 2 ml | 24 hours at RT  > 48 hours at 4 ℃ |  |
| Leg Ur Ag | < 2 ml |  |
| S pneum Ag | < 2 ml |  |
| C TB, | < 10 mls |  |
| C O&P | < 10 mls |  |
| **Faeces** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen | C diff toxin & Enteric Path | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order | Sarstedt “Urine NFT” primary sample container  10 ml Monovette tube | < 1 ml/g | >48 hours at 4℃ | Formed samples & < 2 years old for C.diff |
| C diff toxin PCR | Sarstedt “Urine NFT” primary sample container  10 ml Monovette tube | < 1 ml/g | >48 hours at 4℃ |  |
| EntericPath | < 1 ml/g |  |
| ROT/ADV | < 1 ml/g |  |
| C O&P | < 1 ml/g | > 48 hours at 4℃ without addition of 10% formalin-water | Will only be processed for Crypto/Giardia if no travel details have been received or no request from CMT |
|  | H. pylori Ag |  | < 1 ml/g | > 48 hours unless stored at – 20 ℃ |  |
| **Respiratory** | | | | | | |
| ecimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen  (If possible clean & process leaking BALs from endoscopy) | C BAL/C Respiratory/C Sputum/C CF Resp | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Sarstedt “Urine NFT” primary sample container | < 15 mls | > 48 hours stored at 4 ̊C except CF specimens | Salivary samples (except CF) are rejected. |
| GALAGB | Sarstedt “Urine NFT” primary sample container | < 1 ml | > 5 days at 4 ℃  >14 days at -20 ℃ |  |
| C TB | Sarstedt “Urine ,FT” primary sample container | < 1 ml  (Culture only) | > 24 hours at room temperature |  |
| Specimen unlabeled with MedLIS label  Specimen mislabeled with incorrect patient  Leaking specimen | COVID 19/FLU | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Swabs other than VTM/UTM viral swab containing one swab or PrimeStore® Lysis MTM swabs | N/A | > 48 hours at room temperture | Copan viral swabs (pink) can be sent to NVRL for processing |
| COVID TRANS | Swabs other than VTM/UTM viral swab containing one swab or PrimeStore® Lysis MTM swabs | N/A | > 48 hours at room temperture |  |
| **Fungal** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen | C Fungal | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Non sterile container | No visible sample present  Culture only performed on insufficient sample | Stored at 4 ℃  > Several months |  |
| C GALAGS | Any blood sample other that serum | < 7.5 ml | > 5 days at 4 ℃ |  |
| **Screens** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details | C MRSA | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Viral swab (pink)ENT swab (orange)Pertussis swab (blue)Liquid Amies eSwab | N/A | > 24 hours at room temperature  > 72 hours at 4 ℃ |  |
| C VRE | N/A | > 24 hours at room temperature,> 72 hours at 4 ℃ |  |
| C CPE | Viral swab (pink)  ENT swab (orange)  Pertussis swab (blue) | N/A | > 24 hours at room temperature  > 72 hours at 4 ℃ |  |
| CPE Mol. Scrn | N/A | > 24 hours at room temperature  > 72 hours at 4 ℃ | If charcoal Transswab received process and enter “See Culture” in GenLab |
| **Swabs** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details | C Swab/C Wound/C Eye/C Ear/C Throat/C Mouth/C Nasal/C Pus | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Viral swab (pink)  Pertussis swab (blue)  Liquid Amies eSwab  ENT swab (orange) for any site other than ear, nose, throat | N/A | > 24 hours at room temperature  > 72 hours at 4 ℃ |  |
| C Genital | N/A | > 24 hours at room temperature  > 72 hours at 4 ℃ |  |
| C GC | Agar plate other than VCAT | N/A | N/A |  |
| C HVS | Viral swab (pink),ENT swab (orange),Pertussis swab (blue),Liquid Amies eSwab | N/A | > 24 hours at room temperature  > 72 hours at 4 ℃ |  |
| **Fluids** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen  (If possible clean & process) | C Bile fl  C Drainage fl  C Pancreatic fl  C Peritoneal fl  C Pleural fl  C Perf/Ves. Perf. fl  C Pericardial fl  C Joint fl  C Fl/Asp | Incorrect MedLIS order on label,Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Non sterile container | < 1 ml in 60 sterile container  Visibly no sample inoculated for blood culture bottles | > 24 hours at room temperature  > 48 hours at 4 ℃ for 60 ml sterile container  ≥ 4 hours for blood culture bottles samples processed with “BC DELAY” comment. |  |
| C PD fl | 60 ml sterile container  Non sterile container | ≥ 4 hours for blood culture bottles samples processed with “BC DELAY” comment. |  |
|  | Fluid Cell Ct |  | Any blood bottle other than EDTA | < 1 ml | > 24 hours at room temperature |  |
| C TB | Non sterile container | <1 ml  (Culture only performed on insufficient volume) | > 24 hours at room temperature  If delay store at 4 ℃ |  |
| **Theatre** | | | | | | |
| Specimen unlabelled with MedLIS label (Send back to theatre to label)  Specimen mislabelled with incorrect patient  (Contact theatre to fill out MF-MIC-Change Patient Details)  Leaking specimen’(If possible clean in safety cabinet & process with comment) | C Theatre | Incorrect MedLIS order on label  (Send back to theatre to re order)  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only (Send back to theatre to order) | Non sterile container  (Process with comment. | No visible specimen | > 48 hours at 4 ℃ process with “DELAY” comment | Perfusion fluids from theatre can be processed with C Perf/Ves. Perf. Fl orders |
| C TB | Non sterile container  (Process with comment. | < 1 ml | > 24 hours at room temperature process with “DELAY” comment |  |
| **Pus** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen,(If possible clean & process) | C Pus | Incorrect MedLIS order on label | Non sterile container | < 1 ml | > 24 hours at room temperature  > 48 hours at 4 ℃ | If < 1 ml charcoal swab can be processed |
| **Tips** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details | C Cath Tip | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Non sterile container | > 4-5 cm length | > 24 hours at room temperature  > 48 hours at 4℃ | Urinary catheter tips not processed for culture |
| **CSF** | | | | | | |
| Specimen unlabelled with MedLIS label  (Contact clinician to order in lab)  Specimen mislabelled with incorrect patient  (Clinician to come to lab and fill out MF-MIC- Change Patient Details)  Leaking specimen  (If possible Clean in safety cabinet & process with comment for sample rejection) | C CSF BH | Incorrect MedLIS order on label  (Clinician to re order in lab)  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order (Clinician to order) | Non sterile container  (Process with comment. See LI-MIC-Barcodes for sample rejection) | Insufficient volume: Liase with CMT to prioritise tests | > 2 hours  (Comment added ‘The white cell count on a CSF rec’d in lab 2hrs or more after collection may not be accurate due to cell lysiswith |  |
| C TB | Non sterile container  (Prcess with comment. See LI-MIC-Barcodes for sample rejection) | < 500 µl | > 24 hours at room temperature process with “DELAY” comment |  |
| **Blood Cultures** | | | | | | |
| Specimen unlabelled with MedLIS label  (Contact clinician to order in lab)  Specimen mislabelled with incorrect patient  (Clinician to fill out MF-MIC-Change Patient Details)  Leaking specimen  (Clean in safety cabinet & process with comment. | C Blood | Incorrect MedLIS order on label  (Clinician to re order)  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only to order) | Incorrect blood culture bottles (Contact clinician to reorder if needed, otherwise not processed) | Visibly no blood inoculated | > 4 hours (Process with “BC DELAY” comment) |  |
| C TB Blood | Incorrect blood culture bottles (Contact clinician to reorder if needed, otherwise not processed) | Visibly no blood inoculated | > 4 hours (Process with “BC DELAY” comment) |  |
| **Quantiferon** | | | | | | |
| Specimen unlabelled with MedLIS label  (Send back with clinician to order)  Specimen mislabelled with incorrect patient  Leaking specimen | Quantiferon TB | Incorrect MedLIS order on label  (Clinician to re order)  No MF-MIC-55 request form (Clinician to fill out)  No Date & Time filled out on MF-MIC-55 request form (Clinician to fill out) | Any blood bottles other than QuantiFERON®-TB Gold blood collection tubes | Insufficient volume are sent to MMUH and rejected by testing hospital | > 16 hours at room temperature |  |
| **Cryptococcal antigen** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen | Crypto Ag | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only | Fluid other than CSF | < 100 µl | > 72 hours at 4 ℃ |  |
| Crypto Ag | Blood bottle other than white topped serum tube | < 7.5 ml | > 72 hours at 4 ℃ |  |
| **Virology (External laboratories)** | | | | | | |
| Specimen unlabelled with MedLIS label or mislabelled with incorrect patient details  Leaking specimen | AmikR | Incorrect MedLIS order on label  Specimen with request form, not ordered on MedLIS except during downtime or any test that is lab order only (See LI-MIC-Laboratory Only Microbiology Orders) | Blood bottle other than white topped serum tube | Visibly no blood in bottle | Not separated at 4 ℃ within 48 hours |  |
| ADVADNA VRL  ADVDNAL VRL | Blood bottle other than EDTA tube (pink top) |  |
| CMVDNA VRL |  |
| EBV DNA VRL |  |
| HBVL VRL  HBGER VRL | Blood bottle other than white topped serum tube |  |
| HCVGE VRL  HCVVL VRL |  |
| HIVGER VRL |  |
| HIV1VL VRL | Blood bottle other than EDTA tube (pink top) | Visibly no blood in bottle | Not separated at 4 ℃ within 24 hours |  |
| B-D GLUCAN | Blood bottle other than white topped serum tube | Visibly no blood in bottle | Not separated at 4 ℃ for 15 days,not separated at -20 ℃ for 27 days |  |
| NORXPERT VRL | Non sterile container | Visibly no faeces | > 48 hours at 4 ℃ |  |
| PARVDNA VRL | Blood bottle other than white topped serum tube | Visibly no blood in bottle | Not separated at 4 ℃ within 24 hours |  |
| Teicoplanin Level |  |
| Tobra Trough |  |  |
| Voriconazole |  |

### Serological Investigations

HIV- Viral loads and hepatitis C PCR

* Samples for routine viral investigations are referred to the NVRL and transported to the NVRL three times daily by courier: 10.30am, 12.30pm and 2.30pm. For HIV viral load, blood should be collected in an EDTA blood collection tube.
* For hepatitis C PCR, a serum sample is required
* Hepatitis C PCR and HIV viral load investigations should be sent to the laboratory immediately for processing. **The serum must be frozen within 6 hours of taking the patient’s blood.**
* Specimens are transported at -20˚C by courier each Friday to the NVRL.

Viral screening

* Samples for routine viral investigations are referred to the NVRL and transported to the NVRL three times daily by courier: 10.30am, 12.30pm and 2.30pm.
* Clotted blood is the specimen of choice for most other external investigations.
* Please include relevant clinical details, complete demographics and inform laboratory if urgent.

Galactomannan

Serum or BAL samples can be tested for Galactomannan in house as an aid in the diagnosis of Invasive Aspergillosis.

Meningococcal/pneumococcal PCR

* Specimens for PCR are referred to the Children’s Hospital, Temple St.
* An EDTA blood specimen or CSF or both should be sent. All the relevant patient details must accompany the specimen.
* Please phone ext. 2647 to alert the laboratory to the imminent arrival of the specimens

Antibody Detection.

* Samples for antibody investigations are referred to the NVRL and transported to the NVRL three times daily by courier: 10.30am, 12.30pm and 2.30pm
* In order to establish a diagnosis of acute or recent viral infection by serology, viral specific IgM needs to be detected.
* Before laboratory investigations are performed, paired sera must be submitted. The first should be taken as early as possible in the illness, and the second 14-21 days later and a four-fold rise in titre is required to confirm recent infection.
* A single specimen of serum is required to determine immune status or past infection.

**Important –** **These investigations are requested on Powerchart by the dialysis and hepatology units, using agreed algorithms. All others must also order on Powerchart (**[**www.nrvl.ie**](http://www.nrvl.ie/)**).**

* Please ensure that the specimens and Powerchart requests are completed correctly
* For serological investigations, a serum specimen of more than 1ml is required. One container of clotted blood should be sent to the NVRL.
* For results enquiries, please phone the NVRL 01- 7161354.
* Printed reports are are available on Powerchart.

Quantiferon for TB

* This test is referred to the Mater Misericordiae University Hospital
* TB Quantiferon is ordered on Powerchart
* Kits must be collected directly from the microbiology Laboratory.
* The person collecting the TB kit must sign the Quantiferon Issue Log when collecting and returning the kit- this will be facilitated by the microbiology laboratory staff.
* Due to the large volume of kits used by Phlebotomy, they are exempt from this rule and can use porters to collect and return kits to the lab without signing the issue log.
* When the Quantiferon kits are being issued, a request form (Quantiferon TB request form) is provided. Multiple use drawing needle and a safety tube holder are also provided if required.
* There are 4 blood tubes in the kit and it is imperative that they are taken in the colour order Grey, Green, Yellow, and Purple. (The Quantiferon TB request form also provides this information). If they are not taken in this order an accurate result cannot be guaranteed. There is a black ‘fill line’ (1ml) on each tube, and each tube must be filled to this line.
* When the kits are returned ensure that the blood tubes are labelled and the patient detail section on the request form (part1) is completed fully, including the time and date the specimen was taken at.

Quantiferon kits and request forms must be returned to the Microbiology Laboratory within 16 hours of sampling.

### Repertoire of Haematology Tests

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **Specimen Container** | **Minimum/ Container**  **Volume** | **Adult Reference Range**  **(Refer to Report for Paediatric Ranges)** | **TAT** | **Comment** | **Test Method** | **Mnemonic/ display name** |
| Full  Blood count | EDTA (pink capped) | 2.6ml standard | |  |  |  | | --- | --- | --- | | *Parameter*  *Tested* | *Male* | *Female* | | Hb | 13-17.5 g/dL | 11.5-16.5 g/l  11.7-16.0\* | | PCV | 0.37-0.54 L/L | 0.335-0.54 L/L  0.355-0.52\* | | RCC | 4-6.5 x1012/L | 3.8-5.8 x1012/L  3.8-5.6\* | | RDW | 11-15 % | | | MCV | 79 -96 fL | | | MCH | 27 -32 pg | | | PLTS | 140 -400 x109/L | | | WBC | 4.0 -11 x109/L | | | Neut | 2.0 -7.5 x109/L | | | Lymph | 1.0 -4.0 x109/L | | | Mono | 0.2- 1.0 x109/L | | | Eosin | 0.04- 0.4 x109/L | | | Baso | 0.01- 0.1 x109/L | | | In-house: 4 Hours  Urgent: 1 hour | 7.5ml and 10ml EDTA samples are incompatable with the analysers and will be rejected.  \*women > 50 years | Sysmex XN   * Sodium Lauryl Sulphate (SLS) Haemoglobin Method * Calculated Parameters * Impedance Technology * Fluorescence Flow Cytometry | **FBC** |
| Platelet Clumping Check\* | 0.82mgMg2+/mL  (Red) | 2.6mL | 140 -400 x109/L | In-house: 4 Hours  Urgent: 1.5 hour | Arrange in advance with laboratory to obtain sample tube. | Sysmex XN   * Impedance Technology * Fluorescence Flow Cytometry | Plt Exact |
| ESR | Trisodium citrate  4NC /3.5 (purple) | 3.5 ml **must** be filled to the line | |  |  | | --- | --- | | *Male* | *Female* | | 1- 12 mm/hr | 1-20 mm/hr | | 1 Working Day  Urgent for Temporal Arthritis: 90 minutes | Theclinical Haematology team have listed the following conditions as the only times an ESR is indicated  *1.Giant cell arteritis, Temporal arteritis*  *2. Polymyalgia rheumatica.*  *3.‘Suspected myeloma’*  *4. Hodgkins Lymphoma*  *5.Prosthetic joint infection*  *6. Osteomyelitis*  *7. Rheumatoid Arthritis*  Stat samples -  Must contact the Laboratory to request sample to be prioritised. | Sarstedt Desaga S2000  Sedimentation of RBC's | **ESR** |
| Reticulocyte  Count | EDTA (pink capped) | 2.6mL standard | Retic: 0.4-1.9 %Male  0.4-1.8% Female  Retic (Abs) 14-100 x109/L | In-house: 4 Hours  Urgent: 1 hour | 7.5ml and 10ml EDTA samples not acceptable | Sysmex XN  FFluorescence Flow Cytometry | **Retics** |
| Infectious mononucleosis  Screen | EDTA (pink capped) | 2.6mL standard | Negative | 1 Working Day  Urgent: 1 hour |  | Manual Immunoassay | **IM** |
| Blood film examination | EDTA(pink capped) | 2.6mL standard | N/A | Routine: 5 working days  Urgent: 24 hours | Sample must be <8 hrs old.  Clinical details and reason for blood film must be on the form. | Sysmex sp50,Staining/Microscopy | **Must be requested by phoning the Laboratory directly** |
| Referral Blood Film | EDTA(pink capped) | 2.6mL standard | N/A | Routine: 9 working days  Urgent: 24 hours | Blood film sent to Haematology Team for review. Report will follow within 7 days. | Sysmex sp50, Staining/Microscopy | **HBFC**Only ordered by Haematology staff |
| Malaria: Rapid Diagnostic Tests (RDT’s) and Blood Film | EDTA(pink capped) | 2.6mL standard | Negative | 3 hrs for RDT. 4-72 hours depending on RDT results for Blood films. RDT neg – film processed next working day | Samples must be < 2 hours old. | Manual/ Immuno-chromatographic test  Manual Staining/microscopy | Mal Scr  Mal film |
| Sickle solubility Screen | EDTA (pink capped) | 2.6mL standard | Negative | Urgent: 2 hours.  If non-urgent, sample is Referred to SJH for full HB-EL screen:  A verbal report is available 7 days after dispatch.  Phone No.’s:01-4162394 (SJH)  A printed report is available 5 weeks after dispatch. | This test is performed for urgent pre-op anaesthetic screening only. If urgent, please contact the laboratory. In all other instances, order Haemoglobin Electrophoresis Complete the SJH request form available as a link on Powerchart  The Sickle solubility test is a screening method and as such is subject to false positives and negatives. All sickle solubility tests must be confirmed by HPLC/Electrophoresis. This test is performed in St James Hospital. | Manual Solubility Test for HbS | Sickle  Hb'opathy Scr (SO) |
| Bone marrow aspirate | Bone marrow  aspirate on glass slides. Needles and slides available in CKB (2150) | A minimum of 5 slides. | N/A | Processed during Routine working hours  Stained for next Working Day. Await Consultant reporting:  Reporting TAT:  Written report is available on Powerchart within 3 weeks | Slides must be labelled in pencil with the patients’ Surname and second unique identifier either D.O.B or unique hospital number.  Order the Bone Marrow Aspirate (Haem) | Staining/  Microscopy | **BMA** |

### Repertoire of Flow Cytometry Tests

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **Specimen Container** | **Minimum/ Container**  **Volume** | **Reference Range** | **TAT** | **Comment** | **Test Method** | **Mnemonic/ Display name** |
| CD4 | EDTA (pink capped) | 2.6mL standard | 502-1749 Cells/ul | 3 Working days | Samples must be <48 hours old.  Only processed Monday to Friday. Must be Received in Laboratory before 3pm on a Friday | Flow Cytometry | **CD4** |
| TBNK | EDTA (pink capped) | 2.6mL standard | CD3#797-2996Cells/ul  CD3/4#502-1749Cells/ul  CD3/8#263-1137Cells/ul  CD19#99-618Cells/ul  CD56#72-577Cells/ul | 3 Working days | Samples must be <48 hours old.  Only processed Monday to Friday. Must be Received in Laboratory before 3pm on a Friday | Flow Cytometry | **TBNK** |
| Lymphoid Screening Tube | EDTA (pink capped  Sodium Heparin  (orange capped - BMA)(white c apped, RPMI, –cytogenetics bottle Lymph Node Aspirate) | 2.6mL standard | N/A | Written report: 10 working days  Verbal report: 24 hours | All samples must be <48 hours old.  Must be Received in Laboratory before 3pm on a Friday | Flow Cytometry | **LST** |
| Lymphoproliferative Panel | EDTA (pink capped)  Sodium Heparin  (orange capped - BMA)  with 1ml RPMI | 2.6mL standard | N/A | Written report: 10 working days  Verbal report: 24 hours | All samples must be <48 hours old. | Flow Cytometry | B NHL Panel |
| Acute Leukaemia Screen  Acute Leukaemia Panel  Blast count | EDTA (pink capped)  Sodium Heparin  (orange capped- BMA)  with 1ml RPMI. | 2.6mL standard | N/A | Written report: 10 working days  Verbal report: 24 hours | Must be arranged in advance with prior consultation with the lab. Containers are only obtained from the lab. | Flow Cytometry | **BLAST**   |  | | --- | | Acute  Panel | | Acute  Scr | |
| EDTA Samples must be <24 hours old. |  |
| Sodium Heparin  (orange capped - BMA)  with 1ml RPMI must be < 48 hours old |  |
| Paroxysmal Nocturnal Haemoglobinuria | Fresh EDTA  (pink capped) | 2.6mL standard | N/A | Written report: 10 working days  Verbal report: 24 hours | Arrange in advance with Laboratory personnel. Sample may be stored in fridge for <72 hours if not for immediate testing | Flow Cytometry | **PNH** |
| T-Cell Panel | EDTA (pink capped) Sodium Heparin  (orange capped)  with 1ml RPMI | 2.6mL standard | N/A | Written report: 10 working days  Verbal report: 24 hours | EDTA Samples must be <24 hours old. | Flow Cytometry | T NHL Panel |
| Sodium Heparin  (orange capped - BMA)  with 1ml RPMI must be < 48 hours old |  |

### Repertoire of Coagulation Tests

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **Specimen Container** | **Number of**  **Samples** | **Minimum**  **Volume** | **Reference Range** | **TAT** | **Comment** | **Test Method** | **Mnemonic/ Display name** |
| Coag Screen includes PT, INR, APTT and APTT  Ratio (APTTR)  Coag GP – is the same as above without the APTTR | Trisodium citrate 9 NC/2.9/1.8 mL  (green capped) | 1 | **Must** be filled to the line | PT: 10-13.2 seconds  INR- The INR should only be used for monitoring Warfarin therapy. Refer to local treatment algorithmAPTT: 24 – 36 seconds  APTTR 1.5 -2.5 ratio  APTTR: The APTT ratio should only be used for monitoring the anticoagulant effect of an Unfractionated Heparin Infusion. | In-house: 4 Hours  Urgent: 1.5 hour | Sample must be <4 hours old | Coagulometric(turbidimetric)  Calculated Parameters | Coag Scr  Coag GP |
| INR | Trisodium citrate 9 NC/2.9/1.8 mL  (green capped) | 1 | **Must** be filled to the line | The INR should only be used for monitoring Warfarin therapy. Refer to local treatment algorithm. | In-house: 4 Hours  Urgent: 1.5 hour | INRs only are stable for 24 hrs Warfarin Office contact no.  01-8092083 | Calculated Parameter | **INR** |
| D-Dimer | Trisodium citrate 9 NC/2.9/1.8 mL  (green capped) | 1 | **Must** be filled to the line | Under 50 yrs<0.5 µg/ml  Then increases in 5 year increments by 0.5. i.e 55-60 (<0.6) and 85-90  ( <0.9) | In-house: 4 Hours  Urgent: 1.5 hour | Sample must be <8 hours old | Immuno-turbidimetric | Dimer |
| Fibrinogen | Trisodium citrate 9 NC/2.9 /1.8 mL  (green capped) | 1 | **Must** be filled to the line | 1.9 – 3.5 g/L | In-house: 4Hours  Urgent: 1.5 hour | Sample must be <4 hours old  For patients on Argatroban a Clauss Fibrinogen test is not appropriate & will be reported as follows: "Fibrinogen result is unavailable as the patient is on Argatroban which may cause a false low fibrinogen result in the Clauss fibrinogen assay. Please discuss with the Haematology team". | Clotting (Clauss) | **Fib-c** |
| Mixing study | Trisodium citrate 9 NC/2.9 mL  (green capped) | 2 | **Must** be filled to the line | Corrected to within the PT and APTT normal ranges | 1 week | Lab criteria for mixing study are prolonged PT or APTT when patient is not on anticoagulant and the liver function is normal. Mixing study requests must be approved by the Haematology team. For urgent requests, contact the laboratory in the morning, may be able to facilitate testing that day. | Coagulometric(turbidimetric)  Calculated Parameter | Mix Stdy |
| Intrinsic Factor assay Screen | Trisodium citrate 9 NC/2.9 mL  (green capped) | 2 | **Must** be filled to the line | See individual assays below | Case dependent, maximum  14 days | Requests must be approved by the Haematology team c/o Coagulation consultant.Tests done in batches. | Coagulometric(turbidimetric) | **IFS** |
| Extrinsic Factor assay Screen | Trisodium citrate 9 NC/2.9 mL  (green capped) | 2 | **Must** be filled to the line | See individual assays below | Requests must be approved by the Haematology team c/o Coagulation consultant.Tests done in batches. | Coagulometric(turbidimetric) | **EFS** |
| Factor Assays  Individual requests | Trisodium citrate 9 NC/2.9 mL  (green capped) | 2 | **Must** be filled to the line | |  |  | | --- | --- | | FII | 0.72-1.31 IU/mL | | FV | 0.63-1.33 IU/mL | | FVII | 0.51-1.54 IU/mL | | FVIII | 0.60-1.36 IU/mL | | FIX | 0.80-1.47 IU/mL | | FX | 0.64-1.50 IU/mL | | FXI | 0.72-1.52 IU/mL | | FXII | 0.52-1.64 IU/mL | | Case dependent, maximum  14 days | Tests done in batches. For urgent requests, contact the laboratory in the morning, may be able to facilitate testing that day. Requests must be approved by the Haematology team c/o Coagulation consultant. | Coagulometric(turbidimetric) | **FII, FV, FVII,**  **FVIII:C,FIX, FX, FXI, FXII** |
| Thrombophilia screen | Trisodium citrate 9 NC/2.9 mL  (green capped) | 4 | **Must** be filled to the line | See individual requests APCR, Prot C, Prot S Act,, Antithrombin | 4 weeks. | Batch tested. Inherited Thrombophilia screen includes the following tests: PT,APTT, Fib-c, AT,Prot C, Prot S Act, APCR  5LEIDEN\*. A Lupus screen is not on this profile.  Hence, these tests do **not** need to be ordered on an individual basis**, Order the thrombophilia careset The coagulation consultant will review and saction all Thrombohpilia orders** | APCR  Coagulometric(turbidimetric)  PC  Antithrombin  Chromogenic  Prot s  Immuno-turbidimetric | Thrombophilia care set conatins the Thrombophilia questionnaire and the screen request (Thr philia) |
| Protein C | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | 0.74 - 1.32 IU/mL | 4 weeks. | Batch tested.  Patient must be off warfarin for a minimum of 2wks to perform this assay. | Chromogenic | Prot C |
| Free Protein S | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | Males: 0.76-1.46 IU/mL  Females:0.65-1.33 IU/mL | 4 weeks. | Batch tested.  Patient must be off warfarin for a minimum of 2wks to perform this assay | Immuno-turbidimetric | Prot S Act |
| Anti Xa (LMWH and UFH) | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | For clinical interpretation please contact the haematology team. | 1 week | Clinical indication & timing of blood samples must be discussed with & sanctioned by the Haematology team. Please contact the laboratory prior to sending samples. Sample must be <2 hours old. | Chromogenic | XA  . |
| Antithrhrombin | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | 0.82 - 1.18 IU/mL | 4 weeks. | Batch tested.  Patient must not be on Direct Thrombin inhibitor anticoagulant. | Chromogenic | Antithrombin |
| Activated protein C resistance (APCR) | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | Negative | 4 weeks. | Batch tested  Patient must not be on A Direct oral anticoagulant. | Coagulometric(turbidimetric) | **APCR** |
| Von Willebrand factor | Trisodium citrate 9 NC/2.9 mL  (green capped) | 2 | **Must** be filled to the line | 0.49 - 1.73 IU/mL | Case dependent, maximum 14 days | “The presence of Rheumatoid Factor may produce an overestimation of the result” | Immuno-turbidimetric | VWF Ag |
| Lupus anticoagulant | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | DRVVS ratio: <1.17  DRVVT-TR ratio: < 1.23  SCT-TR ratio <1.14 | 4 weeks | Batch tested  Patients must not be on any anticoagulation as they interfere with the interpretation of the assayThe coagulation consultant will review and sanction all Lupus orders. | Coagulometric(turbidimetric) | **Order the** Lupus Anticoagulant care set. This contains the Lupus questionnaire and the Lupus screen request (LA Scr). |
| Rivaroxaban | Trisodium citrate 9 NC/2.9 mL  (green capped) | 1 | **Must** be filled to the line | No therapeutic reference range as monitoring not needed | 1 weeks | Clinical indication & timing of blood samples must be discussed with & sanctioned by the Haematology team. Please contact the laboratory prior to sending samples. | Chromogenic | Rivaroxaban |

### Repertoire of Haematology Molecular Tests

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **Specimen Container** | **Number of Samples** | **Minimum**  **Volume** | **Reference Range** | **TAT** | **Comment** | **Test Method** | **Mnemonic/ Display name** |
| Factor V Leiden mutation | EDTA sample  (pink) | 1 | 2.6ml Standard | Negative | 6 weeks | Only tested if APCR (Activated Protein C) is positive or family history is indicated on the request form. See previous page for APCR requirements)  The laboratory will no longer take receipt or store the form containing patient genetic consent. It is the responsibility of the ordering clinician to obtain and file a copy of genetic consent in the patient’s record. | **Real time PCR** | **Lab order only**  **FVL** |
| Prothrombin G20210A mutation | EDTA sample  (pink) | 1 | 2.6ml Standard | Not Detected | 6weeks | .  The laboratory will no longer take receipt or store the form containing patient genetic consent. It is the responsibility of the ordering clinician to obtain and file a copy of genetic consent in the patient’s record | **Real time PCR** | PTGA |
| HFE  Haemochromatosis | EDTA sample  (pnk) | 1 | 2.6ml Standard |  | 4weeks | Must be accompanied by completed Haemochromatosis Genetic Screening Request  (HAEMC-LF-077) This form can be obtained from the Beaumont Hospital website, under Haematology Dept. If genetic consent is not obtained the molecular test will be rejected. The laboratory will no longer take receipt or store the form containing patient genetic consent. It is the responsibility of the ordering clinician to obtain and file a copy of genetic consent in the patient’s record. | **Real time PCR** | **HFE** |

### Clinical Advice & Laboratory Test Interpretation

Interpretation of Laboratory Tests / procedures may be obtained by phoning any of the telephone numbers in section 1.1.2 and asking for the Chief Medical Scientist or by requesting a senior member of staff 09:00- 17:00 Mon-Fri excluding Bank Holidays

### Clinical Advice & Laboratory Test Interpretation

Interpretation of Laboratory Tests / procedures may be obtained by phoning any of the telephone numbers in section 1.1.2 and asking for the Chief Medical Scientist or by requesting a senior member of staff 09:00- 17:00 Mon-Fri excluding Bank Holidays

### Specimens Referred to External Hospitals

If there is an issue with the sample or the required/ correct referral form does not accompany the sample, the sample will be sent back to the requesting area to be ordered correctly. HAEMG-LF-124 Form with reasons for return of BMA/Fluid/CSF to ward, for correction –

Test reports from external referral laboratories are scanned into the patient record when received & are available on Powerchart.

|  |  |  |  |
| --- | --- | --- | --- |
| ADAMTS 13 Assay | 2 fresh coag samples <4hrs  ADAMTS13 request form must have requesting clinician’s name, mobile number and email address. For urgent requests telephone Haemostasis laboratory in Belfast City Hospital. Urgent samples must be in Belfast lab by noon for testing that day. | Belfast City Hospital  Tel: 028 950 40910 | ADAMT  Q pulse form EX-HAEM-1062-  Avavailable in lab and CKB |
| Amyloid | 1 GLASS tube (available in CKB) | National Amyloidosis Centre, London | Amyloid (SO) |
| Apixaban | 2 fresh Coag samples, relevant clinical details, anticoagulant therapy, must be supplied with each request. Must be cleared by requesting Dr with Coagulation in SJH | National Coagulation Laboratory, St. James’ Hospital  Tel: 01 4162956 | Apix (SO) |
| **Breast Implant Fluid Flow Cytometry** | 5ml RPMI Heparin | Clinical Cytometry & Haemoglobinopathy, St James’s Hospital | **Breast Implant Fluid FCM (SO)**  **Form required**  Hand written request on St James Hospital Flow Cytometry request form **EX-HAEM-1074** |
| CSF for Flow Cytometry | Get a Transfix tube. CSF sample is stable in Transfix for 3 days at 2-8°C. | MLL Münchner  München | CSF FCM (SO) |
| Cancer Molecular Diagnostics (CMD) | 2 EDTA samples | Cancer Molecular Diagnosis St. James’ Hospital | CMD |
| Cytogenetics | Place sample in RPMI medium with sodium heparin. (Universal Container obtained from fridge in Haem Lab). | Department of Clinical Genetics, Our Lady’s Hospital, Crumlin | Cytogen/FISH CHI |
| Cytogenetics (FISH) | Lithium Heparin sample | MLL Münchner  München | Cytogen/FISH MLL |
| Cytogenetics, ERIC Panel, (TP53-IGHV Mutation), T-cell gene rearrangement studies (TCR) | 2 EDTA samples or BM in RPMI sample if Haematology team requests it. Transported at RT°C | Molecular Haematology ,  Belfast City Hospital | IgHV Rearrangement, P53 Deletion, TCR (SO) |
| Dabigatran Level | 2 fresh Coag samples, relevant clinical details, anticoagulant therapy, must be supplied with each request. Must be cleared by requesting Dr with Coagulation in SJH | National Coagulation Laboratory, St. James’ Hospital | Dabigatran (SO) |
| EMA binding assay  Test for Hereditary Spherocytosis | 1 x 2.6mL EDTA sample & Blood film required.  EDTA sample must be < 24hrs old on testing.  Complete clinical details and any family history of HS. (also known as Eosin-5-Maleimide, replaces Osmotic Fragility) | Clinical Cytometry & Haemoglobinopathy,  St James’s Hospital | HS Scr (SO) |
| Factor VIII and FIXinhibitors | 2 fresh Coag samples, relevant clinical details, anticoagulant therapy, must be supplied with each request. Must be cleared by requesting Dr with Coagulation in SJH | National Coagulation Laboratory, St. James’ Hospital | FVIII INH (SO)  FIX INH (SO) |
| FXIII antigen | 2 fresh Coag samples, relevant clinical details, anticoagulant therapy, must be supplied with each request. Must be cleared by requesting Dr with Coagulation in SJH | National Coagulation Laboratory, St. James’ Hospital | FXIII Ag (SO) |
| Fanconi Anaemia Screen | 2 x 4 ml Lithium Heparin (peripheral blood) | MLL  München | FS (SO) |
| Fluid Flow Cytometry   * **Ascitic fluid** * **Pleural fluid** | 5ml RPMI Heparin | Clinical Cytometry & Haemoglobinopathy, St James’s Hospital. | Fluid FCM (SO)**Form required**  Hand written request on St James Hospital Flow Cytometry request form **EX-HAEM-1074** |
| G6PD  G6PD\_Q  (The latter Will be referred by SJH to Guys if deficient) | 1 EDTA sample and marked as urgent  Note: SJH require that all sections of the form are completed, in particular the clinical details and Haematology indices sections | Clinical Cytometry & Haemoglobinopathy,  St James’s Hospital | G6PD Scr  G6PD Assay (SO) |
| Haemoglobin  Electrophoresis & Sickle Cell confirmation | [1 EDTA sample < 7 days old. 1 serum sample for Ferritin measurement to be done in-house if not already done. All sections of the form must be completed, in particular the clinical details and Haematology indices sections](../../../Downloads/%20http://www.stjames.ie/media/Haemoglobinopathy%20Request%20Form%202018.docx%20%20%20) | Clinical Cytometry & Haemoglobinopathy,  St James’s Hospital | Hb'opathy Scr (SO) |
| Haptoglobin | 1 serum sample- | MMUH , Eccles St, | Hapto (SO) |
|  |  |  |  |
| High Molecular weight Kininogen/ Prekallikrein | 2 fresh Coag samples, | Eurofins | HMWK careset |
| HIT Screen | 2 serum samples. Samples received in lab after 14.00 will be sent to SJH the following day. | National Coagulation Laboratory,  St. James’ Hospital | HIT (SO) |
|  |  |  |  |
| Minimal Residual Disease (MRD) | Performed by PCR  4 EDTA samples  Complete a CMD request form | Cancer Molecular Diagnostics,  St James Hospital | B ALL MRD (SO)  CLL MRD (SO)  T ALL MRD (SO) |
| Myeloid Gene panel | 2 EDTA samples | King’s College Hospital, London | Myeloid Gene Panel |
| MPN panel | Assay includes JAK2 V617F, JAK2 exon 12, CALR & MPL mutations.  Peripheral blood or Bone marrow, 9ml in RPMI | Cancer Molecular  Diagnostics, St James Hospital, | MPN panel |
| MRD NPM1 | EDTA PB or BMA  Samples should reach the laboratory within 24 hours of collection. Storage and transport: Room temperature. | Guys | NPM1 Quant |
| Plasma cell screen (SO) |  | MLL | MM Panel (SO) |
| Plasma  Viscosity | 1 or 2 EDTA samples less than 48 hours old.  All sections of the form must be completed, in particular the clinical details and Haematology indices sections | Clinical Cytometry & Haemoglobinopathy  St James’s Hospital | PV (SO) |
| Plasminogen Activator Inhibitor | 1 Coag sample required  This test is extremely sensitive to pre analytical conditions. A freshly drawn coag sample must be mixed immediately by gentle inversion at least six times following collection. | Eurofins/Biomnis, | PAI-1 |
| Pyruvate  Kinase | EDTA sample x 2.  NB: keep sample at RT do not put in the fridge  Order a RETFBC & a PK,  Avoid sending on Thursdays and Fridays. | Chris Lambert, Red Cell Protein Laboratory, King’s College Hospital, London | PK (SO) |
| Red Cell Gene Panel/ Neutropenia panel | 5 mls EDTA blood adults (2 samples)  For red cell panel - please provide FBC, HPLC screening results, iron levels and markers of haemolysis plus a blood film, if available.Stored in the fridge where possible. | Viapath Analytics Molecular Pathology Laboratory, King’s College Hospital, | RC/Neutropenia Panel |
| Ristocetin Co-Factor (RICOF) | 2 fresh Coag samples, relevant clinical details, anticoagulant therapy, must be supplied with each request. Must be cleared by requesting Dr with Coagulation in SJH | National Coagulation Laboratory, St. James’ Hospital | VWF RCo (SO) |
| Vaccine Induced Thrombotic Thrombocytopenia (VITT) | 2 x serum samples.  Confirm that the case has been discussed with Haematology. If not, contact Dr Karl Ewins Coagulation consultant or bleep registrar (#870) or the Haematology registrar / consultant on call if out of hours. Positive tests will have PF4 induced Plt activation assay (PIPA) referred to external laboratory. | National Coagulation Laboratory, CPLM building, St. James’ Hospital | VITT |
| Von Willebrand Study send out | 2 fresh Coag samples, relevant clinical details, anticoagulant therapy, must be supplied with each request. Must be cleared by requesting Dr with Coagulation in SJH | National Coagulation Laboratory, CPLM building, St. James’ Hospital | VWFS (SO) |
| Warfarin (drug) Level | Separated serum is optimal sample type.  Complete a Coagulation request form. Store and transport at room temp. | Viapath, St Thomas Hospital, Lambeth Palace Road, London | Warfarin Level |

**Note:** if a CKB patient is being referred to SJH for a stem-cell transplant and if Bone marrow aspirate slides are referred, the following form must be completed and sent with the BMA slides. Clink on the link: [GP & External Request Forms | St James's Hospital](https://www.stjames.ie/labmedinformation/gpexternalrequestforms/) and then download the ‘Bone Marrow Aspirate Request Form’

### Requests for Additional Analysis

**Provided a suitable sample is available verbal requests will be accepted for tests. Refe**r to table below for test cut-off times when requested to add a test to a sample already received in the Laboratory. Ensure that the correct sample requirements are met when taking an add-on request i.e. the sample has been received/ correct anti-coagulant/ the sample is not too old for analysis.

#### Test Cut-Off Times

|  |  |
| --- | --- |
| **Test** | **Test Cut-off Times** |
| FBC | <24 hours |
| Blood Film preparation | <8 hours |
| Platelet Exact for platelet clumping | <24 hours |
| Reticulocyte | < 24 hours |
| ESR | < 6 hours |
| Haptoglobin | < 8 days once stored @ 2-8C |
| Malaria | < 2 hours |
| IM | <24 hours. |
| Sickle Screen | < 45 days if stored @ 2-8C |
| PNH | < 72 hours if stored at @ 2-8C |
| LST, TBNK & CD4 | <48 hours |
| Flow Cytometry: Lymphoproliferative Panel | <48 hours (All samples) |
| Flow Cytometry: Acute Leukaemia Panel | <48 hours (Bone marrow) |
| < 24 hours (EDTA samples) |
| Flow Cytometry: T Cell Panel | <24 hours (All samples) |
| Coagulation Samples(PT, APTT, Fibn) | < 4 hours |
| D-dimer | < 8 hours |
| INR | <24 hours |
| Factor V Leiden, , Prothrombin G20210A mutation and HFE | <28 days once stored at 2-8C |
|  |  |

#### Process for additional analysis is by placing the order through powerchart and selecting the priority as add on. Then the requestor must call the lab to inform them of this add on request and to see whether there is a suitable sample or not.

As a blood film request is not available on powerchart ( only for the Haematology consultants ) this must be ordered directly by calling the lab , given the clinicians name , bleep number , whether it is a bld film or for consultant review and the reason for the request.

**CHEMICAL PATHOLOGY**

### Routine Test Profiles and their Components

|  |  |  |
| --- | --- | --- |
| **Description** | **Mnemonic** | **Tests** |
| Renal Profile | Renal | Urea, Na, K, Cl, Creatinine, eGFR |
| Liver Profile | Liver | Bilirubin, ALT, ALK, γGT, AST, ALB, TP, Globulin |
| Lipid Profile - Fasting  Lipid Profile - Non-fasting | FHDL  HDL | Cholesterol, Triglyceride, HDL, Calculated LDL, non-HDL Cholesterol |
| Bone Profile | Bone | Ca, ALB, Phosphate, Ca Adjusted, ALK |
| Thyroid Function Test | TFT | FreeT4 and TSH |

Blood, CSF & Fluid Tests

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test | Sample  Required | Specimen Container | Minimum  Volume | Reference Range | TAT |
| ACTH | EDTA Plasma | Potasium EDTA  (Blue Top) | 4.9ml | 7.2 – 63.3 pg/ml | 10days  STAT: Contact laboratory |
| Alanine Transaminase ALT | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M < 41 I.U/L  F < 33 I.U/L | Routine: 4hrs  STAT: 2hrs |
| Albumin | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 35 - 52 g/L | Routine: 4hrs  STAT: 2hrs |
| Alcohol (ETOH) Plasma | Plasma | Fluoride Oxalate (Yellow Top) | 2.7ml | Units: mg% | Routine: 4hrs  STAT: 2hrs |
| Aldosterone | EDTA plasma  (patient must be seated for 10mins prior to sample draw) | Potasium EDTA  (Blue Top) | 4.9ml | Female: 0 – 1179pmol/L  Male: 0 - 670pmol/L | 20 days |
| Alkaline Phosphatase | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M 40 - 129I.U/L  F 35 – 104 I.U/L | Routine: 4hrs  STAT: 2hrs |
| Alpha Fetoprotein (blood) | Serum | Brown top (Serum) | 4.9ml | 0 – 5.8 (kU/L) | 3days |
| Alpha-1-Antitrypsin | Plasma | Lithium  Heparin  (Orange Top) | 4.9ml | 0.9-2.0 g/L | 72 hours |
| Adrenal Vein Sampling  (Aldosterone and Cortisol) | See labels | See labels | See labels | See individual tests | See individual tests |
| Amylase | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 28 - 100 I.U/L | Routine: 4hrs  STAT: 2hrs |
| Amylase (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs  STAT: 2hrs |
| Aspartate Transaminase | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M < 40 I.U/L  F < 32 I.U/L | Routine: 4hrs  STAT: 2hrs |
| B2 Microglobulin Serum | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | <60yrs: 0.8 – 2.4mg/L  >60yrs: ≤ 3.0mg/L | 72 hours |
| Beta Human Chorionic Gonadotrophin | Serum | Serum  (Brown Top) | 4.9ml | IU/L  Non-pregnant, pre-menopausal women: <1  Postmenopausal women: <7  Men: <2 | Routine: 3days  STAT:2hrs |
| Beta Natriuretic Peptide  (NT proBNP II) | Lithium Heparin or Serum | Plain  (White Top) or Lithium Heparin (Orange Top) | 4.9ml | 35y-45y M 0-115pg/mL  35y-45y F 0-237 pg/mL  45y-55y M 0-173 pg/mL  45y-55y F 0-284 pg/mL  55y-65y M 0-386 pg/mL  55y-65y F 0-352 pg/mL  65y-75y M 0-879 pg/mL  65y-75y F 0-623 pg/mL | 24hours |
| Beta 2 Transferrin | Fluid collection (otorrhoea / rhinorrhea) plus  Paired serum sample | Fluid - Plain  Serum (white top) | As much as possible  4.9ml | See Interpretive Comment | 196 hrs |
| Bilirubin | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | < 21 μmol/L | Routine: 4hrs  STAT: 2hrs |
| Bilirubin (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs  STAT: 2hrs |
| Bilirubin Direct | Lithium Heparin  Protected from light. | Lithium Heparin (Orange Top) | 4.9ml | < 5.0μmol/L | 72 hours |
| C-Peptide | Serum | Plain  (White Top) | 4.9ml | 1.1 – 4.4µmol/L | 10days |
| C Reactive Protein | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 0 – 5 mg/L | Routine: 4hrs  STAT: 2hrs |
| CA 12-5 | Serum | Brown top (Serum) | 4.9ml | <35 kU/L | 3days |
| CA 15-3 | Serum | Brown top (Serum) | 4.9ml | <25–kU/L | 3days |
| CA 19-9 | Serum | Brown top (Serum) | 4.9ml | <27 kU/L | 3days |
| Caeruloplasmin | Lithium Heparin | Lithium  Heparin  (Orange top) | 4.9ml | M 0.15 – 0.30 g/L  F 0.16 – 0.45g/L | 72 hours |
| Calcium | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 18-60yrs: 2.15 – 2.50mmol/L  60-90yrs: 2.20 – 2.55mmol/L  >90yrs: 2.05 – 2.40mmol/L | Routine: 4hrs  STAT: 2hrs |
| Calcium Adjusted | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 2.21 – 2.52 mmol/L  (Locally derived equation) | Routine: 4hrs  STAT: 2hrs |
| Carbamazepine | Serum | Plain  (White Top) | 4.9ml | 4.0 - 12.0 mg/L | Routine: 4hrs  STAT: 2hrs |
| Carcinoembryonic Antigen | Serum | Brown top (Serum) | 4.9ml | <5.2 ng/ml | 3days |
| Chloride Plasma | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 95 - 108 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Cholesterol | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | < 5.0mmol/L | Routine: 4hrs |
| Cholesterol – Fluid | Fluid | Plain  (White Top) | 4.9ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Cortisol A.M. | Serum | Brown Top (Serum) | 4.9ml | 166 - 507 nmol/L | 24hrs |
| Cortisol Day Curve (Hydrocortisone)10 timed samples for Cortisol | See Labels | See Labels | 7.5ml | N/A  Dynamic Function Test | 24hrs |
| Cortisol Day Curve (Cushings)  6 timed samples for Cortisol | Serum | Brown Top (Serum) | 4.9ml | N/A  Dynamic Function Test | 24hrs |
| Cortisol M/N | Serum | Brown Top (Serum) | 4.9ml | See Interpretive Comment | 24hrs |
| Cortisol Random | Serum | Brown Top (Serum) | 4.9ml | See Interpretive Comment | Routine: 24hrs  STAT: 2hrs |
| Creatine Kinase Total | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M 39 – 308 I.U/L  F 26 - 192 I.U/L | Routine: 4hrs  STAT: 2hrs |
| Creatinine (fluid) | Fluid | Plain  (White Top) | 4.9ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Creatinine (plasma) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M 59 – 104 μmol/L  F 45 - 84 μmol/L | Routine: 4hrs  STAT: 2hrs |
| Creatinine Clearance  2 labels print – 24 hr Urine and Blood | Lithium Heparin/24HU | Lithium Heparin (Orange Top)/24HU | 4.9ml & 24HU | 80 - 125 ml/min | Routine: 48hrs |
| CRF  Timed samples for Cortisol and ACTH | See Labels | See Labels | 4.9ml | N/A  Dynamic Function Test | STAT: Contact laboratory |
| Cryoglobulins (CRYOS, SPE, IGG)  Sample must be clotted @ 37°C | Serum & EDTA plasma  8 hour Fasting Samples Required | Serum Plain  (White Top)  Plasma Pink EDTA | 7.5ml filled  2.6ml filled | Qualitative  See individual tests | 840 hours |
| CSF Protein / Glucose | CSF | Plain | 300ul | See individual tests | Routine: 4hrs  STAT: 2hrs |
| CSF Xanthochromia | CSF Brown | Brown plastic | 1ml | N/A  See Interpretive Comment | 24hours |
| Cyclosporin A | Whole Blood | Potassium EDTA  (Pink Top) | 2.6ml | N/A  See Interpretive Comment | 10 days |
| Cystatin C | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 0.61mg/L – 0.95mg/L | 10 days |
| Dehydroepiandrostenesulphate (DHEAS) | Serum | Plain  (White Top) | 4.9ml | (µmol/L)   |  |  |  | | --- | --- | --- | | Years | Females | Males | | 15-20y | 1.8-10.0 | 1.9-13.4 | | 20-25y | 4.0-11.0 | 5.7-13.4 | | 25-35y | 2.7-9.2 | 4.3-12.2 | | 35-45y | 1.7-9.2 | 2.4-11.6 | | 45-55y | 1.0-7.0 | 1.2-9.0 | | 55-65y | 0.5-5.6 | 1.4-8.0 | | 65-75y | 0.3-6.7 | 0.9-6.8 | | ≥ 75y | 0.3-4.2 | 0.4-3.3 | | 3days |
| Dexamethasone Supression.  High Dose Long  3 Timed Cortisol Samples | Serum | Brown Top (Serum) | 4.9ml | N/A  Dynamic Function Test | 24hrs |
| Dexamethasone Supression.  Low Dose Long  3 Timed Cortisol Samples | Serum | Brown Top (Serum) | 4.9ml | N/A  Dynamic Function Test | 24hrs |
| Dexamethazone Overnight Supression.  Single Timed Cortisol Sample | Serum | Brown Top (Serum) | 4.9ml | N/A  Dynamic Function Test | Routine: 24hrs  STAT: 2hrs |
| Dexamethazone Suppression Test 8mg | Serum | Brown Top (Serum) | 4.9ml | N/A  Dynamic Function Test | 24hrs |
| Digoxin | Serum | Plain  (White Top) | 4.9ml | 0.6 – 1.2 μg/L | Routine: 4hrs  STAT: 2hrs |
| Estimated Glomerular Filtration Rate (eGFR) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | >90ml/min/1.72m2 | Routine: 4hrs  STAT: 2hrs |
| Ethanol | Plasma | Fluoride oxalate  (YELLOW cap) | 2.7ml | Unit: mg % | 2 hours for STAT samples |
| Ferritin | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | Female 17-60yr: 13 – 150 ng/mL  Male 20-60yr: 30 – 400 ng/mL  No reference range for >60yr old. | 3days |
| Folate/Folic Acid | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 3.9-26.8 µg/L | 3days |
| Follicle Stimulating Hormone | Serum | Brown Top (Serum) | 4.9ml | Male :1.5 – 12.4 U/L  Female:  Follicular: 3.5-12.5 U/L  Mid Cycle: 4.7 – 21.5 U/L  Luteal 1.7-7.7 U/L  Post Menopausal : 25.8-134.8 U/L | 3days |
| Free T3 | Lithium Heparin | Lithium  Heparin  (Orange Top) | 4.9ml | 3.1 – 6.8 | 3days |
| Free Thyroxine (FT4) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 11.9 -21.6 pmol/L | 3days |
| G-Glutamyl Transferase | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M < 59 I.U/L  F< 39 I.U/L | Routine: 4hrs  STAT: 2hrs |
| Globulin (calculated value includes Protein & Albumin) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | See individual tests | Routine: 2.5hrs  STAT: 2hrs |
| Glucagon Test | See Labels | See Labels | 4.9ml | N/A  Dynamic Function Test | See individual tests |
| Glucose (fluid) | Fluid | Fluoride Oxalate (Yellow Top) | 2.7ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Glucose 120 minutes (2 HR PP) | Plasma | Fluoride Oxalate (Yellow Top) | 2.7ml | Units: mmol/L | Routine: 4hrs  STAT: 2hrs |
| Glucose Random Sample | Plasma | Fluoride Oxalate (Yellow Top) | 2.7ml | Units: mmol/L | Routine: 4hrs  STAT: 2hrs |
| Glucose Tolerance Test | See Labels | Fluoride Oxalate (Yellow Top) | 2.7ml | Units: mmol/L | Routine: 4hrs  STAT: 2hrs |
| Glucose Tolerance Test (Short) | See Labels | See Labels | See Labels | See individual tests | See individual tests |
| Glucose Tolerance Test for HGH | See Labels | See Labels | See Labels | N/A  Dynamic Function Test | 20 days |
| Glucose Tolerance with Rels. Factors | See Labels | See Labels | See Labels | See individual tests | See individual tests |
| Glucose Zero Time (Fasting) | Plasma | Fluoride Oxalate (Yellow Top) | 2.7ml | 3.6 – 6.0mmol/L | Routine: 4hrs  STAT: 2hrs |
| Gonadotrophins (FSH & LH) | Serum | Brown Top (Serum) | See Labels | See individual tests | 3days |
| GTT Prolonged | See Labels | See Labels | See Labels | N/A  Dynamic Function Test | See individual tests |
| GTT with Insulin | See Labels | See Labels | 4.9ml | N/A  Dynamic Function Test | 10 days |
| Haemoglobin A1C | Whole Blood | Potassium EDTA  (Pink Top) | 2.6ml | 20 – 42 mmol/mol  In normal subjects | 96hours |
| HGH day Curve  5 Timed GH samples | See Labels | See Labels | See Labels | N/A  Dynamic Function Test | 20days |
| Hirsute Synacthen Stimulation | See Labels | See Labels | See Labels | N/A  Dynamic Function Test | See individual tests |
| Human Growth Hormone | Serum | Brown Top (Serum) | 4.9ml | (ng/ml)  See Interpretive Comment | 20days |
| Hypoglycaemia Screen  glucose, insulin, c-peptide, proinsulin, beta-hydroxybutyrate  serum Sulphonylureas | See Labels | See Labels | See Labels | See Individual Tests | See individual tests |
| Interleukin 6 | Serum | Brown Top (Serum) | 4.9ml | < 7.0pg/mL | 10 days |
| Immunoglobulins G,A,M | Serum | Brown Top (Serum) | 4.9ml | IgG: 7.0 – 16.0g/L  IgA: 0.7-4.0 g/L  IgM: 0.4-2.3 g/L | 72 hours |
| Insulin & C-Peptide | See Labels | See Labels | See labels | See individual tests | 10days |
| Insulin Stress Test  Timed samples for Insulin, Growth Hormone & Glucose | See Labels | See Labels | See Labels | N/A  Dynamic Function Test | 10days |
| Insulin Stress Test+ Release Factors | See Labels | See Labels | See Labels | N/A  Dynamic Function Test | 10days |
| Insulin Fasting | Serum | Plain  (White Top) | See Labels | Fasting: 2.6-24.9 mU/L  (provided fasting glucose is within normal/ reference range) | 10days |
| Insulin-Like Growth Factors-1 | Serum | Plain  (White Top) | 4.9ml | (ng/ml)   |  |  |  | | --- | --- | --- | | Years | Female | Male | | 0-1y | 17.9-125.6 | 27.0-157.0 | | 1-2y | 19.5-132.3 | 29.7-166.8 | | 2-3y | 22.2-145.4 | 33.9-183.9 | | 3-4y | 25.9-164.2 | 39.0-204.5 | | 4-5y | 30.7-187.8 | 44.3-225.0 | | 5-6y | 26.2-214.4 | 50.0-245.5 | | 6-7y | 42.0-240.4 | 56.2-267.1 | | 7-8y | 48.6-269.6 | 63.4-291.9 | | 8-9y | 56.9-305.3 | 72.4-323.1 | | 9-10y | 67.2-349.4 | 83.6-361.6 | | 10-11y | 79.5-400.3 | 96.9-406.6 | | 11-12y | 92.6-452.6 | 111.6-454.4 | | 12-13y | 105.3-499.1 | 126.1-498.7 | | 13-14y | 115.9-533.4 | 138.6-532.5 | | 14-15y | 123.4-552.0 | 147.5-551.2 | | 15-16y | 127.4-554.2 | 152.2-553.5 | | 16-17y | 127.9-541.5 | 152.9-541.8 | | 17-18y | 125.3-517.3 | 150.6-520.6 | | 18-19y | 120.5-485.8 | 146.2-493.6 | | 19-20y | 114.4-450.8 | 140.2-462.7 | | 20-21y | 107.8-416.0 | 133.1-430.0 | | 26-31y | 78.4-270.0 | 97.9-281.6 | | 31-36y | 73.1-243.0 | 88.3-246.0 | | 36-41y | 69.0-227.0 | 83.4-232.7 | | 41-46y | 61.5-204.4 | 74.9-216.4 | | 46-51y | 56.8-194.5 | 66.9-205.1 | | 51-56y | 53.0-189.6 | 60.6-200.3 | | 56-61y | 45.6-172.4 | 54.3-194.2 | | 61-66y | 42.2-169.0 | 48.8-187.7 | | 66-71y | 38.3-162.5 | 46.5-191.9 | | 71-76y | 36.6-164.7 | 40.9-179.2 | | 76-81y | 34.7-164.8 | 37.1-172.0 | | 81-86y | 34.4-172.4 | 33.8-165.4 | | 86-91y | 33.6-177.8 | 32.2-166.1 | | 20days |
| Intravenous Petrosal Sampling  16 site specific labels for ACTH | EDTA Plasma | BLUE | 4.9ml | N/A  Dynamic Function Test | 10days |
| Iron (FE) & Transferrin Saturation | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 5.8 – 34.5µmol/L  A Fasting Transferrin Saturation > 55% in Males or  > 50% in Females indicates Iron accumulation. | Routine: 4hrs |
| Lactate | CSF | Plain | 300ul | 1.01 – 2.09 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Lactate Dehydrogenase | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M 135 – 225 I.U/L  F 135 – 214 I.U/L  Please note: LDH test results may be increased by up to 14% by sending the sample to the laboratory using the pneumatic chute transport system. Interpret results with caution. | Routine: 4hrs |
| LDH (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Lithium Serum | Serum | Plain  (White Top) | 4.9ml | 0.6 – 1.2 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Lipid Profile (Fasting) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | Cholesterol ≤ 5.0mmol/L  LDL (calculated) ≤ 3.0mmol/L  HDL Cholesterol ≥ 1.0mmol/L  Triglycrides ≤ 1.7mmol/L  Non HDL cholesterol ≤ 3.8mmol/L | Routine: 4hrs |
| Lipid Profile (Non Fasting) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | Cholesterol ≤ 5.0mmol/L  LDL (calculated) ≤ 3.0mmol/L  HDL Cholesterol ≥ 1.0mmol/L  Triglycrides ≤ 2.0mmol/L  Non HDL cholesterol ≤ 3.8mmol/L | Routine: 4hrs |
| Liver Function | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | See individual tests | Routine: 4hrs  STAT: 2hrs |
| Lutenising Hormone | Serum | Brown Top (Serum) | 4.9ml | Follicular: 2.4 - 12.6 U/L  Ovulation: 14.0 - 95.6 U/L  Luteal: 1.0 - 11.4 U/L  Post Menopausal: 7.7 - 58.5 U/L  Male : 1.7 - 8.6 U/L | 3days |
| Lutenising Hormone Releasing F. | See Labels | See Labels | 4.9ml | See individual tests | See individual tests |
| Magnesium | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 0.66 – 1.07mmol/L | Routine: 4hrs  STAT: 2hrs |
| Oestradiol | Serum | Brown Top (Serum) | 4.9ml | Male: 41.4 – 159 pmol/L  Female:  Follicular: –114-332 pmol/L  Ovulation: 222-1959 pmol/L  Luteal: 222-854 pmol/L  Post Menopausal: 18.4 - 505 pmol/L | 3days |
| Osmolality Plasma | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 275 – 295 mOsm/Kg | Routine: 4hrs  STAT: 4hrs |
| Paracetamol - Serum | Serum | Plain  (White Top) | 4.9ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs  STAT: 2hrs |
| Parathyroid Hormone | Plasma | Potasium EDTA  (Blue Top) | 4.9ml | 17 - 74pg/mL | 3days |
| Phenobarb | Serum | Plain  (White Top) | 4.9ml | 10.0 - 40.0 mg/L | Routine: 4hrs  STAT: 2hrs |
| Phenytoin | Serum | Plain  (White Top) | 4.9ml | 5.0-20.0 mg/L | Routine: 4hrs  STAT: 2hrs |
| Phosphate | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 0.81 - 1.45 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Pituitary Screen | See Labels | See Labels | See labels | See Individual Tests | 20days |
| Plasma Metanephrines | EDTA Plasma on Ice (Sample must arrive in the Lab within 1 hour of collection) | REDL | 7.5ml | Reference ranges are based on  a fasting adult patient in a  seated position:  Normetanephrine <1180 pmol/L  Metanephrine <510 pmol/L  3-Methoxytyramine <180 pmol/L  For samples taken in a supine  Posture (post 30 mins rest),  supine reference ranges  are recommended:  Normetanephrine <730 pmol/L  Metanephrine <450 pmol/L  3-Methoxytyramine <180 pmol/L | 12 days |
| Post Transplant GTT(Timed GLUC and INS) | See Labels | See Labels | See Labels |  | See individual tests |
| Potassium | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 3.5 – 5.3 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Potassium (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Procalcitonin | Serum | Brown Top (Serum) | 4.9ml | See Interpretive Comment | 1 batch run daily |
| Progesterone | Serum | Brown Top (Serum) | 4.9ml | Male: 0.159 - 0.474 nmol/L  Female:  Follicular: 0.159 – 0.616 nmol/L  Ovulation: 0.175 – 13.2 nmol/L  Luteal: 13.1 – 46.3 nmol/L  Post Menopasal: 0.159-0.401 nmol/L | 3days |
| Prolactin | Serum | Brown Top (Serum) | 4.9ml | Total Prolactin  Female: 102-496 mIU/L  Male: 86-324 mIU/L  Bioactive Prolactin:  Female: 75-381mIU/L  Male: 63-245 mIU/L  Bioactive prolactin is the biologically active form of prolactin. | Routine: 3days  STAT: Discuss with laboratory |
| Prostate Specific Antigen | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | Age related PSA Levels  (non-suspicious DRE)  <50 = <2ug/L  50 – 59 = <3ug/L  60 – 69 = <4ug/L  70+ = <5ug/L | Routine: 3days |
| Protein & Albumin | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | See individual tests | Routine: 4hrs  STAT: 2hrs |
| Protein & Albumin (fluid) | Fluid | Plain MSU | 5ml | See individual tests | Routine: 4hrs |
| Protein Total | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 60 - 80 g/L | Routine: 4hrs  STAT: 2hrs |
| Renal Profile (UREA/NA/K/CL/CREAT) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | See individual tests | Routine: 4hrs  STAT: 2hrs |
| Renin | EDTA plasma | Potasium EDTA  (Blue Top) | 4.9ml | Female: 6.1 – 62.7mIU/L  Male: 9.0 – 103.5mIU/L | 20days |
| Salicylate - serum | Serum | Plain  (White Top) | 4.9ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs  STAT: 2hrs |
| Saline Suppression Test | See Labels | See Labels | 4.9ml | N/A  Dynamic Function Test | See individual tests |
| Serum Free Light Chains | Serum | White Top (Serum) | 4.9ml | Free Kappa 3.30 – 19.40 mg/L  Free Lamda 5.71 – 26.30 mg/L  Kappa / Lambda ratio 0.26 – 1.65  Modified Kappa / Lambda ratio of 0.82 – 3.6 where eGFR ≤55Ml/min//1.73m2 | 14 days |
| Serum Protein Electrophoresis  (Protein Total, SPE, IGGs) | Serum | Brown Top (Serum) | 4.9ml | Protein Total 60 - 80 g/L  IgG: 7.0 – 16.0g/L  IgA: 0.7-4.0 g/L  IgM: 0.4-2.3 g/L  And Interpretative Comment | 840 hours |
| Sex Hormone Binding Globulin | Serum | Plain  (White Top) | 4.9ml | M: 20-49yr: 18.3-54.1 nmol/L  M: ≥ 50yr: 20.6-76.7 nmol/L  F: 20-49yr: 32.4-128 nmol/L  F: ≥ 50yr: 27.1-128 nmol/L  No SHBG reference intervals for <20yr old. | 3days |
| Sodium | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 133 - 146 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Sodium (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Synacthen Stimulation Test | See Labels | See Labels | 4.9ml | N/A  Dynamic Function Test | Routine: 24hrs  STAT: 2hrs |
| Tacrolimus (FK506) | Whole Blood | Potassium EDTA  (Pink Top) | 2.6ml | N/A  See Interpretive Comment | 72hrs. Cut off for receipt of samples for same day analysis is 11am |
| Testosterone | Serum | Plain  (White Top) | 4.9ml | Male: (19 - 50y): 8.6 - 29.0 nmol/L  (≥50y): 6.7 - 25.7 nmol/L  Female:  (19 - 50y): 0.3 - 1.7 nmol/L  (≥50y): 0.1 –1.4 nmol/L | 3days |
| Theophylline | Serum | Plain  (White Top) | 4.9ml | 10.0 - 20.0 mg/L | Routine: 4hrs  STAT: 2hrs |
| Thyroid Function Tests | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | See TSH & FT4 reference ranges. | Routine: 3days |
| Thyroid Stimulating Hormone | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 0.27-4.20 mU/L | Routine: 3days |
| Thyrotropin Releasing Factor | See Labels | See Labels | 7.5ml | N/A  Dynamic Function Test | See individual tests |
| Total CO2 / Bicarbonate | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 22 - 29 mmol/L | Routine: 4hrs  STAT: 2hrs |
| Total Thyroxine (TT4) | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 66 – 181nmol/L | 3days |
| Triglyceride | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | Fasting 0.5 – 1.7mmol/L  Non Fasting 0.5 – 2.0mmol/L | Routine: 4hrs |
| Triglyceride (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs |
| Troponin T  Must have a dedicated sample | Lithium Heparin | Lithium Heparin (Orange Top) | 2.7ml | < 14 ng/L | 1.5 hours |
| Urate/Uric Acid | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | M 202 - 416μmol/L  F 143 - 340μmol/L | Routine: 4hrs  STAT: 2hrs |
| Urea | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 2.8 – 8.1mmol/L | Routine: 4hrs  STAT: 2hrs |
| Urea (fluid) | Fluid | Plain  (White Top) | 5ml | N/A  Interpret in conjunction with clinical findings. | Routine: 4hrs  STAT: 2hrs |
| UREA/NA/K/CL/CREAT/TCO2 | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | See individual tests | Routine: 4hrs  STAT: 2hrs |
| Valproic Acid | Serum | Plain  (White Top) | 4.9ml | 50 – 100 mg/L | Routine: 4hrs  STAT: 2hrs |
| Vit.B12 / Folic Acid | Lithium Heparin | Lithium Heparin (Orange Cap) | 4.9ml | See individual tests | 3days |
| Vitamin B12 | Lithium Heparin | Lithium Heparin (Orange Top) | 4.9ml | 197-771ng/L | 3days |
| Vitamin D | Serum | Serum Gel | 4.9ml | Deficient: < or = 50nmol/L | 10 days |
| Water Deprivation Test  10 Timed Samples plasma & urine osmolality | See Labels | See Labels | 4.9ml plasma  5ml urine | N/A  Dynamic Function Test | 24 hours |

Urine Tests

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test | Sample  Required | Specimen Container | Minimum  Volume | Reference Range | TAT |
| 5-HIAA Urine | 24 Hour Urine | Pre-Acidified Container | N/A | <50 umol/24hours | 288 hours |
| Albumin Creatinine Ratio(Urine) | MSU | Plain MSU | 5ml | M 0.0 – 2.5mg/mmol  F 0.0 – 3.5mg/mmol | Routine: 96hrs |
| Alcohol (ETOH) urine | MSU | Plain MSU | 5ml | Qualitative | Temporarily outsourced. 5 days |
| Amylase - Spot Urine Sample | MSU | Plain MSU | 5ml | M: 16 – 491 I.U/L  F: 21 – 447 I.U/L | Routine: 4hrs  STAT: 2hrs |
| Calcium - 24 Hour Urine | 24 Hour Urine | 24hr. No Preservative | N/A | 2.5 - 7.5 mmol/24Hr | Routine: 48hrs  STAT: 2.5hrs |
| Chloride - Spot Urine Sample | MSU | Plain MSU | 5ml | Units: mmol/L | Routine: 4hrs |
| Creatinine - Spot Urine Sample | MSU | Plain MSU | 5ml | Units µmol/L | Routine: 4hrs |
| Creatinine – 24 Hour Urine | 24 Hour Urine | 24hr. No Preservative | N/A | M 9000 – 19000 µmol/24Hrs  F 6000 - 13000 µmol/24Hrs | Routine: 4hrs |
| Magnesium - 24 Hour Urine | 24 Hour Urine | 24hr Collection. No Preservative | N/A | 3.0 – 5.0 mmol/24Hr | Routine: 24hrs |
| Osmolality Urine | MSU | Plain MSU | 5ml | 400-1000 mOsm/Kg | Routine: 24hrs  STAT: 4hrs |
| Phosphate - 24 Hour Urine | 24 Hour Urine | 24hr Collection. No Preservative | N/A | 13.00 – 42.00 mmol/24Hrs | Routine: 24hrs |
| Potassium – Spot Urine Sample | MSU | Plain MSU | 5ml | Units: mmol/L | Routine: 4hrs |
| Potassium - 24 Hour Urine | 24 Hour Urine | 24hr Collection. No Preservative | N/A | 30.0 – 100.0mmo/24Hrs | Routine: 24hrs  STAT: 2.5hrs |
| Protein-Creatinine Ratio | MSU | Plain MSU | 5ml | 3 - 14 mg/mmol | Routine: 96hrs |
| Sodium - 24 Hour Urine | 24 Hour Urine | Plain Container | N/A | 40.0 – 220.0mmol/24Hrs | Routine: 24hrs  STAT: 2.5hrs |
| Sodium - Spot Urine Sample | MSU | Plain MSU | 5ml | Units: mmol/L | Routine: 4hrs |
| Total Urinary Proteins | 24 Hour Urine | Plain Container | N/A | 0.05 - 0.14 g/24HR | Routine: 24hrs  STAT: 2.5hrs |
| Urate - 24 Hour Urine | 24 Hour Urine | Plain Container | N/A | 1.20 – 5.90mmol/24Hr | Routine: 24hrs |
| Urea - 24 Hour Urine | 24 Hour Urine | Plain Container | N/A | 428.0 – 714.0mmol/24Hr | Routine: 24hrs |
| Urea - Spot Urine Sample | MSU | Plain MSU | 5ml | Units: mmol/L | Routine: 4hrs |
| Urinary Catecholamines | 24 Hour Urine | Pre-Acidified Container | N/A | Reference Ranges quoted in Section above this table | Routine: 576hrs |
| Urinary Total Fractionated Metanephrines (Total Metanephrine & Total Normetanephrine) | 24 Hour Urine | Pre-Acidified Container | N/A | Reference Ranges quoted in Section above this table | Routine:  576hrs |
| Urine Protein Electrophoresis:  (BJP) or Myeloma Screen  Known Myeloma Patient | EMU (early morning urine)  24 Hour Urine | Plain Container | N/A | Qualitative | 35 days |
| Urine Stone Screen. | See Labels | See Labels | See Labels | See individual tests | See individual tests |

the Immunology laboratory.

Tests Referred to External Laboratories

Please note dispatch of samples to our referral labs is done weekly however urgent referral is available pending discussion.  
Note: Due to a lack of courier service to UK/Europe the turnaround times for referral tests during the Christmas/New Year period is increased by on average 7-10 days.

Test reports from external referral laboratories are scanned into the patient record when received & are available on Powerchart.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test | Mnemonic | Sample Requirements | Notes | Referral Lab | Ref Range | Turn-Around Time |
| Adalimumab (both levels & IgG antibodies) | ADALIM & ADALIMIGG | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield |  | 2-4 Weeks |
| Anti-Acetylcholine Receptor Antibodies | ACRA | Serum Gel Tube 4.9mls |  | Glasgow Neuroimmunology Laboratory | <0.5 nmol/L | 1 Month |
| Anti-Aquaporin 4 Antibodies (NMO) | AQUA4 | Serum Gel Tube 4.9mls |  | Neurosciences Group, Oxford | Negative | 4 Weeks |
| Anti-Aquaporin 4 Antibodies (NMO) CSF | AQUA4CSF | CSF |  | Neurosciences Group, Oxford | Negative | 4 Weeks |
| Anti-C1Q Antibodies | ANTIC1Q | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | 0-15 u/mL | 2-4 Weeks |
| Anti-Cardiac and Striated Muscle Abs | MUSCLEABSO | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | Negative | 24 days |
| Anti- Diphtheria antibodies | DIPH | Serum Gel Tube 4.9mls |  | Manchester Medical Microbiology Partnership | 0.1IU/mL protective level | Up to 3 Months |
| Anti-Gangleoside Antibodies | GANG AB | Serum Gel Tube 4.9mls |  | Glasgow Neuroimmunology Laboratory | Negative | 18 days |
| Anti-Ganglioside Antibodies (CSF) | GANG ABCSF | CSF |  | Neurosciences Group, Oxford | Negative | 18 days |
| Anti-Glutamic Acid Decarboxylase Antibody | GAD | Serum Gel Tube 4.9mls |  | Immunology Dept, Mater Hospital | <9 IU/mL | 5 Weeks |
| Anti-Haemophilus influenzae B Antibodies (HIB) | HIB | Serum Gel Tube 4.9mls |  | Immunology Black Country Pathology Services New Cross Hospital | 0.15 mg/L Minimum protective level | Up to 2 Months |
| Anti-Insulin Antibody | INAB | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | <5 mg/L | 19 days |
| Anti-Islet Antigen Type 2 Antibodies | IA2 | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | <10 IU/mL | 4 Weeks |
| Anti-Islet Cell Antibodies | ICA | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | Negative | 24 days |
| Anti-Musk Antibodies | MUSK | Serum Gel Tube 4.9mls |  | Neurosciences Group, Oxford | Negative | 4-6 Weeks |
| Anti-MAG antibodies | MAGA | Serum Gel Tube 4.9mls |  | Neurosciences Group, Oxford | 0-1000 BTU | 3-4 Weeks |
| Anti-MOG Antibodies | MOG | Serum Gel Tube 4.9mls |  | Neurosciences Group, Oxford | Negative | 5 Weeks |
| Anti-Myelin Oligodendrocyte Antibodies (CSF) | MOGCSF | CSF |  | Neurosciences Group, Oxford | Negative | 5 Weeks |
| Anti-Ovarian Antibodies | OVA | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | Negative | 1 Month |
| Anti-PLA2R Antibodies | PLA2R | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | 0-13 RU/mL | 4 weeks |
| Anti-Tetanus Antibodies | TET | Serum Gel Tube 4.9mls |  | Immunology Black Country Pathology Services New Cross Hospital | 0.01-0.09 IU/mL Basic protection | Up to 2 Months |
| Anti-Thyroid Receptor Antibodies | TRAB | Serum Gel Tube 4.9mls |  | Dept. of Endocrinology, St. James Hospital | <1.8 IU/L | 24 days |
| Anti-Voltage Gated Ca Channel Antibodies | VGCC | Serum Gel Tube 4.9mls |  | Neurosciences Group, Oxford | 0-45 PM/L | 4-6 Weeks |
| Anti-Voltage Gated Ca Channel Abs CSF | VGCCCSF | CSF |  | Neurosciences Group, Oxford |  | 4-6 Weeks |
| Anti-Voltage Gated K+ Channel Antibodies | VGKC | Serum Gel Tube 4.9mls |  | Neurosciences Group, Oxford | 70-130 PM/L Equivocal  >130 PM/L Positive | 4-6 Weeks |
| Anti-Zinc Transporter Antibodies | ZNT8 | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | <10 U/mL | 24 Days |
| Biologics (except Infliximab, Adalimumab & Rituximab) serum levels & IgG antibodies) | BIOLOGIC & BIOLOGICIGG | Serum Gel Tube 4.9mls | Requesting Clinician to complete Biologics Request Form (LF-IMM-GEN0055) Please contact lab for details. | Sanquin Diagnostic Services, Amsterdam |  | 2-4 Weeks |
| C3 Nephritic Factor | C3NF | Fresh frozen Serum Gel Tube 4.9mls | Only done on C3 reduced samples | Dept of Immunology, Sheffield | Negative | By Arrangement |
| Complement C1q Level | C1QLEVEL | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | 50-250 mg/L | 4-6 Weeks |
| Complement C2 | C2 | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | 10-30 mg/L | 4-6 Weeks |
| Complement Function | COMPFSO | Serum Gel Tube 4.9mls | Serum must be separated & frozen maximum of 3 hours after venepuncture | Dept. of Immunology, St James Hospital | Normal | 3 months |
| Functional C1 Inhibitor | C1INHFXN | Serum Gel Tube 4.9mls |  | Dept. of Immunology, St James Hospital |  | 35 days |
| IgG Subclass 4 | IGG4 | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield | Age Related. Adult 0-1.3 g/L | 19 days |
| Infliximab (both levels & IgG antibodies) | INFLIXIGG & INFLIX | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield |  | 2-4 Weeks |
| Mannose Binding Lectin | MBL | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield |  | 24 days |
| Meningococcal Serology (Serotype Specific Antibodies) | MENINGO | Serum Gel Tube 4.9mls |  | Manchester Medical Microbiology Partnership | Serogroups A,C,Y,W >=8 rSBA Titre protective | Up to 3 Months |
| Neutrophil Oxidative Burst | OXBURSTSO | Fresh EDTA  4mls plus travel control |  | Dept. of Immunology, St James Hospital | Normal | By Arrangement/12 days |
| Rituximab (both levels & IgG antibodies) | RITUX & RITUXIGG | Serum Gel Tube 4.9mls | Requesting Clinician to complete Biologics Request Form (LF-IMM-GEN0055) Please contact lab for details. | Sanquin Diagnostic Services, Amsterdam |  | 2-4 Weeks |
| Specific IgE Referral | SIGEREFERRAL | Serum Gel Tube 4.9mls |  | Dept of Immunology, Sheffield |  | 24 days |
| Serotype Specific Anti-Pneumococcal Antibodies | SSPNEUM | Serum Gel Tube 4.9mls |  | Immunology Addenbrooks Hospital, Cambridge | 0.35g/mL Protective | 4-6 Weeks |
| Urinary Soluble CD163 | UCD163 | Urine |  | Dept. of Immunology, St James Hospital |  | 28 days |

Contact Details of External Laboratories

Neurosciences Group, Headington, Oxford Tel:00 44 186 522 5995

Glasgow Neuroimmunology Laboratory. Tel:00 44 141 354 9010

Dept of Immunology, Northern General Hospital, Sheffield. Tel:00 44 114 271 5552

Dept. of Immunology, St James Hospital, Dublin 8. Tel:01 416 2924/2925

Immunology Black Country Pathology Services New Cross Hospital. Tel: 00 44 01902 695279

Immunology Department, Mater Misericordiae University Hospital, Dublin 7. Tel: 01 803 2398/2119

Manchester Medical Microbiology Partnership Tel: 0044 161 276 8854

Immunology Addenbrooks Hospital, Cambridge University Hospitals NHS Foundation Trust.   
Tel: 0044 122 321 6729

IMD Berlin, Nicolaistraße 22, Berlin, 12247, Germany Tel: +49 30 77001-220

Sanquin Diagnostic Services, Dept UDC, Plesmanlaan 125, 1066 CX Amsterdam, The Netherlands

Tel: 0031 20 512 3449

Repertoire of Tests & Test Profiles

All tests are performed on serum samples. Up to 5 tests can be performed on a 10 mL sample. However separate samples are required for some tests to facilitate optimum handling.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Test | Specimen | Minimum  Volume | Method | Reference Range | TAT | Urgent  Service | Comment | Mnemonic | Frequency  of Retesting |
| Anti-Adrenal Antibodies | Serum Gel Tube | 4.9mls | Indirect immunofluorescence | Negative | 4 weeks |  |  | ADRA | 6 months |
| Anti-Beta2Glycoprotein 1 (IgG and IgM) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | <10 U/ml | 8 days |  |  | APS | 12 weeks |
| Anti-Cardiolipin Antibodies (IgG and IgM) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | IgG: 0-10 GPLU/mL  IgM: 0-10 MPLU/mL | 8 days |  |  | APS | 12 weeks |
| Anti-CCP | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | < 7 U/ml | 8 days |  |  | CCP | 3 Months |
| Anti-dsDNA Antibodies | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) & IIF by DNA crithidia | EliA:<10 IU/mL  IIF: Negative | EliA:<3-5 days IIF: 8 days | On Request |  | DNA | >3 weeks (unless plasma-apheresis/ discussion) |
| Anti-ENA (Extractable Nuclear Antigen) Antibodies – includes anti-Ro, La, RNP, Sm, Jo-1 & Scl-70) | Serum Gel Tube | 4.9mls | EliA with confirmation by EliA/Immunoblot | Negative for all 6 components | 2-3 weeks |  | ENA Typing is carried out on all Equivocal and Positive ENA Screens by EliA & conformed with Immunoblot | ENA | >1 year unless patient is pregnant |
| Anti-Endomysial (IgA) Antibodies | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence | Negative | 8 days |  |  | EMA | >3 months |
| Anti-Endomysial (IgG) Antibodies | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence | Negative | 8 days |  | Only performed when IgA deficiency | EMAG |  |
| Anti-Gastric-Parietal Cell antibodies (Anti-GPC) | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence | Negative | 3-5 days |  |  | GPC | >3 months |
| Anti-Glomerular Basement Membrane antibodies (Anti-GBM) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | Negative: <7U/ml  Equivocal: 7- 10U/ml  Positive: >10 Uml | 1-3 days | On Request |  | GBM | As requested & discussed |
| Anti-Histone Antibodies | Serum Gel Tube | 4.9mls | Immunoblot | Negative | 4-6 weeks |  |  | HIST | Once Off |
| Anti-Intrinsic Factor Antibodies | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | Negative: <7 U/ml  Equivocal: 7-10 U/mL  Positive: > 10 U/ml | 8 days |  |  | IF | >6 months |
| Anti-Liver-Kidney Microsomal (LKM and or LC1) Antibodies | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence + Immunoblot if IIF positive | Negative | 3-5 days |  |  | LKM | >1 month |
| Anti-Mitochondrial Antibody (including M2 subtyping) | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence + ELISA if positive | Negative  M2 ELISA <10 IU/ml | 3-5 days (1 month if IIF positive) |  |  | AMA | >3 months  M2 performed only once |
| Anti-Myeloperoxidase antibodies (Anti-MPO) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | <3.5IU/mL | 3-5 days, or as required | On request | Follow-up of patients with know MPO-ANCA positive disease | MPO | 3 Weeks, unless discussed |
| Anti-Myeloperoxidase antibodies (Anti-MPO) & Anti-Proteinase 3 antibodies (Anti-PR3) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | <3.5IU/mL MPO  <2IU/mL PR3 | 3-5 days, or as required | On request |  | MPR3 | 3 Weeks, unless discussed |
| Anti-Neuronal Antibodies incorporating Anti-Hu, Anti-Yo, Anti-Ri, Anti-PNMA2, Anti- Amphiphysin, Anti-Cv2/CRMP5, Anti-Recoverin, Anti-SOX1, Anti-Zic4, Anti-Titin, Anti-GAD65, Anti-Tr | Serum Gel Tube  & CSF | 4.9mls | Indirect Immunofluorescence & Immunoblot | Negative | 15 days |  | Paired Serum/CSF samples will be accepted. Results of both must be interpreted in the clinical context. | Serum: NEURONAL/ NEUROBLOT  CSF: NEURONALCSF / NEUROBLOTCSF | >6 months |
| Anti-Neutrophil Cytoplasm Antibodies (ANCA) (IIF) | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence | Negative | 8 days |  |  | ANCA | 3 Weeks, unless discussed |
| Anti-NMDA Antibodies Serum | Serum Gel Tube | 4.9mls | Indirect Immunoflourescence | Negative | 8 days | Upon request |  | NMDA | Discuss with Clinical Team |
| Anti-NMDA Antibodies CSF | CSF |  | Indirect Immunflourescence | Negative | 8 days | Upon request |  | NMDACSF | Discuss with Clinical Team |
| Anti-Nuclear Antibodies | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence | Negative.  Weak positive (1:80 ) are commonly seen particularly in healthy older women. | 3-5 days |  | Investigating Autoimmune Liver Disease, otherwise order CTD | ANA | No more than 3 monthly |
| Anti-Nucleosome Antibodies | Serum Gel Tube | 4.9mls | Immunoblot | Negative | 4-6 weeks |  | Strong clinical suspicion of lupus with negative routine serology. Must discuss with Consultant Immunologist. | NUCSOME | Once Off |
| Anti-Proteinase 3 antibodies (Anti-PR3) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | <2IU/mL | 3-5 days, or as required | On request | Follow-up of patients with known PR3-ANCA positive disease. | PR3 | 3 Weeks, unless discussed |
| Anti-Ribosomal-P Antibodies | Serum Gel Tube | 4.9mls | Immunoblot | Negative | 4-6 weeks |  | Strong clinical suspicion of lupus with negative routine serology. Must discuss with Consultant Immunologist. | RIBOP | Once Off |
| Anti- SARS-CoV-2 Antibodies | Serum Gel Tube | 4.9mls | Immunoassay | Nucleocapsid: Not Detected  Anti-Spike: <0.8 U/ml Not Detected | 16 days |  | Nucleocapsid and Spike Antibody | ANTICV19 |  |
| Anti-Scleroderma Antibodies/ Systemic Sclerosis Panel | Serum Gel Tube | 4.9mls | Immunoblot | Negative | 4-6 weeks |  |  | SCLRDERM |  |
| Anti-Skin Antibodies | Serum Gel Tube | 4.9mls | Indirect immunofluorescence | Negative | 8 days |  |  | SKIN | 6 months but Positive ICS as requested |
| Anti-Smooth Muscle Antibodies | Serum Gel Tube | 4.9mls | Indirect Immunofluorescence | Negative | 3-5 days |  |  | SMA | >3 months |
| Anti-Streptolysin-O Titre (ASOT) | Serum Gel Tube | 4.9mls | Immunoturbidimetry | <200IU/ml | 3-5 days |  |  | ASOT | 3 weeks |
| Anti-Thyroid Peroxidase Antibodies (anti-TPO) | Serum Gel Tube | 4.9mls | Immunoassay | Negative: <=34 IU/mL  Positive: > 34 IU/mL | 8 days |  |  | TPO | >6 months; if equivocal >3 months |
| Anti-Tissue Transglutaminase Antibodies (anti-tTG) | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | Negative: < 4 U/ml  Equivocal: 4-10 U/ml  Positive: 10 U/ml | 8 days |  |  | tTG | >3 months |
| Autoimmune Encephalitis Panel (AIEPANEL) incorporating anti-NMDA, anti-AMPA 1/2 , anti-GABAb, anti-DPPX, anti-LGI1, anti-CASPR2 Antibodies | Serum Gel Tube  CSF | 4.9mls | Indirect Immunoflourescence | Negative | 8 days | Upon request | Paired Serum/ CSF samples required particularly during initial work up. | AIE & AAIECSF | Discuss with Clinical Team |
| Autoimmune Encephalitis Screen Serum (AIESERUM) incorporating anti-NMDA, anti-AMPA 1/2 , anti-GABAb, anti-DPPX, anti-LGI1, anti-CASPR2 Antibodies | Serum Gel Tube | 4.9mls | Indirect Immunoflourescence | Negative | 8 days | Upon request | Paired Serum/CSF samples preferred, particularly during initial workup. Plasma can be accepted following discussion with Lab/Clinical staff | AIE | Discuss with Clinical Team |
| Autoimmune Encephalitis Screen CSF (AIECSF) incorporating anti-NMDA, anti-AMPA 1/2 , anti-GABAb, anti-DPPX, anti-LGI1, anti-CASPR2 Antibodies | CSF |  | Indirect Immunoflourescence | Negative | 8 days | Upon request | Paired Serum/CSF samples preferred, particularly during initial workup. | AIECSF | Discuss with Clinical Team |
| C1 Esterase Inhibitor (C1INH) | Serum Gel Tube | 4.9mls | Turbidimetry | 0.21-0.38 g/L | 4-6 weeks |  |  | C1INH | Once off if normal. As required if low |
| C3 | Serum Gel Tube | 4.9mls | Immunoturbidimetry | 0.9-1.8 g/L | 1-5 days | On request |  | C3 | As Requested |
| C4 | Serum Gel Tube | 4.9mls | Immunoturbidimetry | 0.1-0.4 g/L | 1-5 days | On request |  | C4 | As Requested |
| CTD Screen | Serum Gel Tube | 4.9mls | EliA (IMMUNOCAP) | Negative | 2-5 days |  |  | CTD | No more than 3 monthly |
| Direct Immunofluorescence (DIF) on Skin Biopsies | Fresh skin biopsy, transported on damp gauze to the laboratory |  | Direct Immunofluorescence |  | 4 weeks |  | Unless special arrangements have been agreed specimen MUST reach the immunology laboratory by 4pm |  |  |
| IgG Subclasses | Serum Gel Tube | 4.9mls | Turbidimetry | IgG 7 - 16 g/L  IgG1 3.824 - 9.286 g/L  IgG2 2.418 - 7.003 g/L  IgG3 0.218 - 1.761 g/L  Note: These are adult specific reference ranges | 8 weeks |  |  | IGGSub | Annually |
| Tryptase | Serum Gel Tube | 4.9mls | FEIA (IMMUNOCAP) | 2-14 μg/L (Anti-mortem specimens only) | 1 month |  |  | TRYPTRAND/TRYPT1HR/TRYPT24HR/TRYPT3HR | As requested/discussed |
| Myositis Screen /Panel | Serum Gel Tube | 4.9mls | Immunoblot, correlated with ANA apperance | Negative | 4-6 weeks |  |  | MYOSITIS | Once off |
| Immunology Consult | Serum Gel Tube | 4.9mls | Consultant, SPR or Chief Medical Scientist will select appropriate tests | As appropriate | As per assay |  | Full clinical details and contact bleep number required | IMMCON |  |
| Rheumatoid Factor | Serum Gel Tube | 4.9mls | Immunoturbidimetry | <14 IU/mL | 3-6 days |  |  | RF | >3 Months |
| Specific IgE | Serum Gel Tube | 4.9mls | FEIA (IMMUNOCAP) | <0.35 Units Class 0 Negative  0.35-0.7 Class 1 Weakly Positive  0.7-3.5 Class 2 Positive  3.5-17.5 Class 3 Positive  17.5-52.5 Class 4 Strongly positive  52.5-100 Class 5 Strongly positive  >100 Class 6 Strongly positive | 15 days  21 days for sIgE to Drugs |  |  | See section on page 75 | 1 year for same allergens |
| Specific IgGs  sIgG Aspergillus  sIgG M. Faeni  sIgG Budgie  sIgG Pigeon | Serum Gel Tube | 4.9mls | FEIA (IMMUNOCAP) | <40 mgA/l  <22 mgA/l  <30 mgA/l  <38 mgA/l | 30 days |  |  |  | >6 months |
| Total IgE | Serum Gel Tube | 4.9mls | FEIA (IMMUNOCAP) | Range is age related.  Adult reference range 0-100 kU/L | 15 days |  |  | IGE | 1 year |

Any of these guidelines may be overruled in a particular clinical situation, if the case is discussed with staff in the immunology laboratory and/or the Consultant Immunologist. If you are uncertain of how best to investigate the patient, you are welcome to contact the Chief Medical Scientist, the Specialist Registrar or Prof. Keogan/Dr Khalib/Dr Cox, Consultant Immunologists to discuss the individual case.

Current available Specific IgE (sIgE) Allergens

|  |  |  |  |
| --- | --- | --- | --- |
| Allergen | Code | Allergen | Code |
| Asthma Panel | ASTHMA | Grape | f259 |
| CF-ABPA Panel | Careset | Grass Pollen Mix | gx1 |
| Acarus siro (Flour mite) | d70 | Hake | f307 |
| Almond | f20 | Hazel nut | f17 |
| Alternaria alternata | m6 | Hazel nut components | CORA9A14 |
| Amoxicilloyl | c6 | Honey bee | i1 |
| Ampicilloyl | c5 | Horse dander | e3 |
| Animal Panel | ANIMAL | House dust mite (d1) | d1 |
| Apple | f49 | House dust mite (D. Farinae) | d2 |
| Aspergillus fumigatus | m3 | Kiwi | f84 |
| Banana | f92 | Latex | k82 |
| Barley | f6 | Lentil | f235 |
| Blue mussel | f37 | Lobster | f80 |
| Brazil nut | f18 | Macadamia nut | f345 |
| Cagebird Feather Mix | ex72 | Mackerel | f206 |
| Candida albicans | m5 | Maize, Corn | f8 |
| Cashew nut | f202 | Milk | f2 |
| Cat dander | e1 | Morphine | c260 |
| Cefaclor | c7 | Mushroom | f212 |
| Chick pea | f309 | nCor a 9, Hazel nut | f440 |
| Chicken | f83 | Nut Mix | fx1 |
| Chilipepper | f279 | Oat | f7 |
| Chlorhexidine | c8 | Orange | f33 |
| Citrus Fruit Mix | fx29 | Oyster | f290 |
| Cladosporium herbarum | m2 | Pea | f12 |
| Coconut | f36 | Peach | f95 |
| Cod | f3 | Peanut | f13 |
| Common silver birch | t3 | Peanut Panel | PEANUT |
| Common wasp (Yellow jacket) | i3 | Pecan nut | f201 |
| Crab | f23 | Penicillin Panel | PENICILLIN |
| Dog dander | e5 | P. chrysogenum (notatum) | m1 |
| Egg | f245 | Penicilloyl G | c1 |
| Egg white | f1 | Penicilloyl V | c2 |
| Fish Mix | fx2 | Pine nut, pignoles | f253 |
| Fruit Mix | fx21 | Pistachio | f203 |
| Pollen Panel | POLLEN | Salmon | f41 |
| Pork | f26 | Sesame seed | f10 |
| Potato | f35 | Shellfish Panel | SHELLFISH |
| rAra h 2 Peanut | f423 | Shrimp | f24 |
| rAra h 8 PR-10, Peanut | f352 | Soybean | f14 |
| rAra h 9 LTP, Peanut | f427 | Spice Mix | fx71 |
| rAsp f 2 Aspergillus | m219 | Strawberry | f44 |
| Allergen | Code | Allergen | Code |
| rBet v 1 PR-10, Birch | t215 | Suxamethonium | c202 |
| rCor a 1 PR-10, Hazel nut | f428 | Timothy grass | g6 |
| rCor a 14, Hazel nut | f439 | Tomato | f25 |
| rCor a 8 LTP, Hazel nut | f425 | Tree Pollen Mix | tx8 |
| Rhinitis Panel | RHINITIS | Tuna | f40 |
| Rice | f9 | Walnut | f256 |
| rMal d 1 PR-10, Apple | f434 | Wheat | f4 |
| rMal d 3 LTP, Apple | f435 | Yeast | f45 |
| Rocuronium | U254 | Total IgE | IgE |
| rPru p 3 LTP, Peach | f420 | Tryptase (Random) | TRYPTRAND |
| rPru p 4 Profilin, Peach | f421 | Tryptase <1 HR | TRYPT1HR |
| rTri a 19 Omega-5 Gliadin, Wheat | f416 | Tryptase 24 HR | TRYPT24HR |
| Rye | f5 | Tryptase 3 HR | TRYPT3HR |

\*Details of Panel & Mix contents are given below

|  |  |
| --- | --- |
| ALLERGENS | Panel & Mix Details |
| ANIMAL PANEL | Cat, Dog |
| ASTHMA PANEL | HDM, Aspergillus fumigatus, Cat |
| CAGEBIRD FEATHER MIX | Budgerigar, Canary bird, Parakeet, Parrot & Finch feathers |
| CITRUS FRUIT MIX | Orange, Lemon, Grapefruit, Mandarin |
| FISH MIX\*\* | Fish, Shrimp, Blue mussel, Tuna, Salmon |
| FRUIT MIX | Kiwi, Melon, Banana, Peach, Pineapple |
| GRASS POLLEN MIX | Cock's-foot or orchard grass, Meadow fescue, Ryegrass, Timothy-grass, Common Meadow-grass (Dactylis glomerata, Festuca elatior, Lolium perenne, Phleum pratense, Poa pratensis) |
| Hazel Nut Components | nCor a 9 & rCor a 14, Hazel nut |
| NUT MIX\*\* | Peanut, Hazel nut, Brazil nut, Almond, Coconut |
| PEANUT PANEL | Peanut & Arah2 |
| PENICILLIN PANEL | Penicillin G, Penicillin V, Amoxicillin, Ampicillin, Cefaclor |
| POLLEN PANEL | Trees, Grass |
| RHINITIS PANEL | HDM, Cat, Trees, Grass |
| SHELLFISH PANEL | Lobster, Crab, Shrimp, Mussel |
| SPICE MIX | Caraway, Mace, Cardamom, Clove; |
| TREE MIX | Box-elder, Common silver birch, Hazel, Oak & Maple leaf sycamore (Acer negundo, Betula verrucosa, Corylus avellana, Quercus alba, Platanus acerifolia) |

\*\*For nut mix & fish mix, if we get a positive result, we would automatically do the individual allergens included in the relevant mix.

Please request SIGEREFERRAL, and state name of allergen, for anything not on the above list. If the history indicates an unusual allergen, the appropriate test will be sent to the UK.

Test Profiles

To make test ordering more efficient we have set up a range of disease specific test profiles, for investigations of common potentially immunological disorders. Where screening tests are included in test batteries, positive screening tests lead to reflex ordering of appropriate follow-up tests, as detailed in Section 8.

|  |  |  |  |
| --- | --- | --- | --- |
| Profile | Tests Included | Indication | Comment |
| Acute Renal Failure Screen | CTD  Anti-MPO and PR3 Antibodies  GBM  C3/C4  ASOT | Acute or acute –on-chronic renal failure. | Please discuss all pulmonary-renal syndrome or ? rapidly progressive GN, as urgent service available. |
| Inflammatory Arthritis Antibodies | RF  CCP  CTD | Isolated inflammatory arthritis, in the absence of systemic features. | ANCA should be added if urinalysis is abnormal. NB: 2 separate samples are required for INFL ABS. |
| Liver Disease Associated Autoantibodies | ANA  Anti-Smooth Muscle  Anti-Mitochondrial  Anti-LKM | Suspected chronic liver disease. | If MITO pos, M2 subtyping will be performed, on the first occasion only. |
| Vasculitis Screen | CTD  Anti-MPO and PR3 Antibodies RF  C3/C4 | Suspected vasculitis or connective tissue disease. | This battery is intended for diagnosis only.  More selective tests should be used for monitoring once diagnosis established. |
| Asthma sIgE | sIgE - House dust mite  sIgE – Aspergillus  sIgE – Cat | Allergic asthma. |  |
| Rhinitis sIgE | sIgE – House dust mite  sIgE – Cat  sIgE – Trees  sIgE - Grass | Perennial Rhinitis, thought to be allergic. |  |
| Shellfish sIgE | sIgE – Lobster  sIgE - Crab  sIgE - Shrimp  sIgE - Mussel | Suspected allergy to shellfish. | Negative result does not rule out shellfish allergy. If this is suspected clinically referral to a Clinical Immunologist is advised. |
| Pollen sIgE | sIgE – Mixed gras  sIgE–Mixed trees |  |  |
| Coeliac Screen | Anti-tTG  Anti-EmA (if tTG is Equivocal or Positive) | Suspected Coeliac Disease.  Malabsorption.  Anaemia.  Gastrointestinal symptoms. |  |
| Autoimmune Encephalitis Panel AIEPANEL | Anti-NMDA, Anti-AMPA 1/2, Anti-DPPX, Anti-GABAb, Anti-LGI1, Anti-CASPR2 Antibodies | Suspected Autoimmune Encephalitis, Myotonia, seizures, Neuropsychiatric symptoms. | Paired Serum/CSF samples preferred, (particularly in the initial diagnostic phase), due to the known incidence of false negatives on serum documented in the literature. |

Immunological Tests performed in other Laboratories in Beaumont Hospital

|  |  |  |  |
| --- | --- | --- | --- |
| Test | Mnemonic | Specimen | Contact |
| Immunoglobulins | IGGS | Serum Gel | Proteins (809) 2305 |
| C Reactive Protein | CRP | Heparin | Clin Chem (809) 2668 |
| Protein electrophoresis | SPE | Serum Gel | Proteins (809) 2305 |
| Urine electrophoresis (Bence Jones Protein) | UPE | 24 hour urine collection | Proteins (809) 2305 |
| 2 Microglobulin | B2M | Serum Gel | Proteins (809) 2305 |
| Cryoglobulins | CRYOS | Special instructions on computer  8 hour Fasting Samples Required | Proteins (809) 2305 |
| Lymphocyte subsets | LY-SUB | EDTA | Haematology (809)2763 |

**HISTOPATHOLOGY**

### Specimen Requirements For Histopathology

The following is a guideline on the requirements of the various specimen types and the appropriate manner in which they should be delivered to the laboratory. This ensures the integrity of the specimen for laboratory investigations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Tissue Type** | **Fixative Required** | **Comment** |  |
| Specimen for Frozen Section. | Send fresh to the laboratory -  immediately. | 24 hours notice of Frozen sections should be given where possible. Contact the Histopathology Lab Ext 2353.  Details supplied with the specimen must include a bleep number or theatre intercom to deliver report to. |  |
| Renal biopsies | Send in saline (Dublin Hospitals)  Send in Formalin/Zeus (Regional Centres) (full details in section Error: Reference source not found) | Please inform Renal Office Ext. 2765 of specimen. The Main Histology Lab can be contacted @ 2353. The EM lab on 8633. |  |
| Lymph nodes  (for lymphoma diagnostics) | Send fresh to the laboratory -immediately. | Please supply all relevant clinical details. |  |
| Solid Tumours  (Colon, Breast, Lung etc.) | Send fresh to the laboratory -  immediately. | Please supply all relevant clinical details. |  |
| Liver biopsies\* | Where possible, send two specimens – one in 10% Neutral Buffered Formalin and one wrapped in saline moistened gauze. | Please supply relevant clinical details. |  |
| Oncotyping\* | Paraffin Block | Referred to Genomic HealthCare (US) for Onctotpyping |  |
| Mitochondrial Studies\* | Send fresh to the laboratory -  Immediately | Referred to Mitochondrial Research Group in Newcastle University for analysis/St James Hospital (CMD) |  |
| CSF for RT-QuIC Analysis | CSF frozen at -70°C within 30 minutes of aspiration and transported to the Neuropathology Dept, Beaumont Hospital on dry ice. | Volume CSF: 1 - 2ml.  Sample must be clear and colourless (not blood stained) with a white cell count of <10x10^6/L and have a total protein concentration of <1 g/L1. Red blood cells (>1250 x 10^6/L) inhibit the RT-QuIC response resulting in false negatives. High CSF total protein concentrations of >1.0 g/L and raised white blood cell counts can result in false positives. |  |
| Primary Ciliary Dyskinesia\* | Nasal Scraping | Referred to Southhampton General Hospital for analysis |  |
| Flow Cytometry\* | CSF  Or  Lymph Node | Referred to Haematology in St. James’s Hospital Dublin for Analysis |  |
| Amyloidosis\* | Paraffin Block | National Amyloidosis Centre, London, University College London |  |
| PDL1\* non-breast (NCCP recommendation) | Paraffin Block | Referred to Poundbury Cancer Institute, Dorchester, London &  HSL-Advanced Diagnostics  HEALTH SERVICES LABORATORIES  (A Sonic Healthcare UK laboratory) for metastatic oesophageal SCC. | |
| Molecular Studies – MY88 | Paraffin Block | Referred to Royal Victora Hospital Belfast |  |
| All other tissue | Send in 10% Neutral Buffered Formalin. | An adequate volume of formalin in a specimen container of suitable size is essential for proper fixation. The volume of formalin used should be at least twice the volume of the tissue to be fixed. Small specimens should be placed in biohazard bags. |  |
| Histology Blocks\* |  | outsourcing of blocks for cutting & staining to HTS |  |

### Cytopathology Specimen Requirements

|  |  |
| --- | --- |
| **Specimen** | **Specimen requirements** |
| **Bronchial brushings** | * Place material in a sterile container labelled with   patient and specimen details, including the time  of specimen collection. |
|  |  |
| **Fluids**  **(Pleural, Ascitic etc.)** | * Place material in a sterile container labelled with patient and specimen details, including the time of specimen collection. * At least 20 mls of fluid is required for diagnosis. |
| **Urine** | - Total voided specimen is required for cytology.   * The first morning specimen is not suitable. * Place in a container labelled with patient and specimen details. |
| **Fine Needle Aspiration Cytology/EUS/EBUS** | Sample from EUS/EBUS is sent to the cytology lab in cytolyt (available in the lab – Ext 2640) |
| **Cerebrospinal Fluid for Cytology.** | * Specimen must be collected in a sterile container labelled with patient and specimen details and delivered to the Neuropathology laboratory. |
| **Flow Cytometry\*** | * ***Cytometry placed directly into RPMI are viable for up to 18Hrs****. (Contact Cytology on Ext. 2640)* |

\* Specimens referred out from Beaumont Hospital - the results of these tests are not covered by the scope of Beaumont Hospital Histopathology Department ISO15189 accreditation

### Reports issued/Expected Turn Around Times (TAT)

#### Turn Around Times

The following table lists the turn-around-times for H&I reports:

|  |  |
| --- | --- |
| **TESTS** | **TURN AROUND TIMES** |
| HLA typing for Solid Organ Transplant | 3 weeks – *Urgent service available* |
| HLA Antibody Screening | 2-4 weeks – *Urgent service available* |
| HLA Antibody Screening HLA typing requests for emergency transplantation | Same day service if requested |
| NHISSOT Patient report for the transplant clinic | 4 weeks from request to issuing a report |
| Transplant pool work-up | 2-6 weeks |
| Deceased donor work-up | 6 hours |
| Potential donor recipient list | 8 hours |
| Crossmatching for renal transplants | 6 hours |
| Crossmatching for pancreatic/cardiothoracic transplants. Time taken from receipt of bloods in H&I laboratory and potential names for crossmatch given to the on-call scientist | 6.5 hours for processing a single donor with a standard workup of a maximum 4 names. This time may change due to additional names or for technical issues. Users will be informed |
| Living donor work-up | 1st work-up 4 weeks  2nd work-up 3 weeks  Final work-up 48 hours |
| Autocrossmatch | 2-3 days |
| Post Transplant Monitoring  Non Urgent.  *If contacted by the referring clinician for a more timely report the sample can be set on the next screen*.  Further testing/ typing | 2 weeks.  3 weeks |
| Post Transplant monitoring - Urgent antibody screening request for possible graft rejection  *Requires discussion with Antibody Screening Senior. The level of urgency must be stated by the referring clinician*. | Same day service available if required, otherwise the sample is set on the next screen. |
| HLA typing for disease association | 4 weeks |
| HLA typing for BMT/HSCT | 2 weeks (unless awaiting further potential donors from overseas) |
| HLA typing for B57 | 4 weeks |
| HLA typing for partners | 3 weeks |
| ABO Blood Grouping | 2-3 hours |

### Reference Ranges

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **Sample required** | **Speimen container** | **Min sample volume** | **Reference ranges** | **TAT** | **Comments** | **Mnemonic** |
| Arterial Blood Gas NPT | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | pH: 7.35-7.45  pCO2: 4.3-6.4 kPa  pO2: 11.0-14.4 kPa  sO2: 94.0-98.0%  HCO3-(P,)c: 21-28 mmol/L  HCO3-(P,st)c: 22-26 mmol/L  SBEc: -2.0 to 3.0 mmol/L  tHb: 11.7-17.4 g/dL  FO2Hb: 90.0-95.0%  Na+: 136-145mmol/L  K+ : 3.5-5.1 mmol/L  Cl- : 98-107 mmol/L  Ca2+ :1.15-1.33 mmol/L  Glu: 3.6-5.3 mmol/L  Lac: 0.4-0.8 mmol/L  Hctc: N/A | 2mins | Test profile for ABG samples processed at the **point of care**. Reference ranges quoted are specific for arterial blood sample types and are not gender specific.  Never transfuse a patient based on a blood gas tHb result. | ABGPOCT |
| Arterial Blood Gas Lab | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | pH: 7.35-7.45  pCO2: 4.3-6.4 kPa  pO2: 11.0-14.4 kPa  sO2: 94.0-98.0%  HCO3-(P,)c: 21.0-28.0 mmol/L  HCO3-(P,st)c: 22-26 mmol/L  SBEc: -2.0 to 3.0 mmol/L | 0.5Hrs | Test profile for ABG samples processed in the **Chem Path Lab**. Reference ranges quoted are specific for arterial blood sample types and are not gender specific.  Never transfuse a patient based on a blood gas tHb result. | ABG |
| Lactate, Arterial Sample | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | 0.4-0.8 mmol/L | 0.5Hrs | Processed in Lab only | ALACT |
| Lactate, Venous Sample | Arterial Syringe or Lithium Heparin | Lithium Heparin (Orange Top) | 1mL (syringe)  2.7ml (Li-Hep tube) | 0.6-1.4 mmol/L | 0.5Hrs | Processed in Lab only | VLACT |
| pH (fluid) | Arterial syringe | Lithium Heparin | 1mL | N/A | 0.5Hrs | Processed in Lab only | FLPH |
| Carboxyhaemoglobin | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | FCOHb: 0.5- 3.0% | 2mins | No specific ranges reported on analyser for smoker/non/smoker | COHB |
| Methaemoglobin | Arterial Syringe | Lithium Heparin | 1 mL | 0.0 – 1.5 % | 0.5 hours |  |  |
| Methanol | Serum | Plain  (White Top) | 4.9ml | Units: mg% | 24 hours | Processed in Lab only | METHB |
| SARS-CoV-2 & Influenza A/B | Nasopharyngeal Swab | VTM/UTM viral swab containing one swab | N/A | N/A | 30mins | TAT from time sample loaded on to Liat device | CV19POCT |
| Glucose NPT | Capillary | Fingerprick |  | 4-7mmol/L | 10s | Confirm any abnormal result with a venous sample sent to lab | N/A |
| Ketone NPT | Capillary | Fingerprick | 1.0 µL | 0.1-0.6 mmol/L | 10s |  | N/A |
| INR NPT | Capillary | Fingerprick | 8µL | INR target ranges depend on the presenting condition that requires the patient to be on anticoagulant therapy. Results >4.5 must be followed up with an urgent sample to the lab | 10s | Confirm result >4.5 with a venous sample sent to lab | N/A |
| HbA1c NPT | Capillary | Fingerprick |  | <48mmol/mol (6.5%) in normal subjects | 5mins | For new patients always send first sample for HbA1c analysis to the Chem path lab to check for any existing variants prior to ever using NPT devices. | N/A |

### Specimen Requirements for Neuropathology

|  |  |  |
| --- | --- | --- |
| **Tissue Type** | **Means of Delivery to Neuropathology** | **Comment** |
| Specimen for urgent frozen section | Send fresh. Hand deliver immediately. | The Neuropathology consultation form must include a bleep number or intercom number to deliver the report |
| Muscle Biopsy\* | Send on gauze that is barely dampened in saline. Do not fix in formalin. Hand deliver immediately.  See Section Error: Reference source not found for requirements from external centres. | Must be received during normal working hours unless previously arranged. |
| Nerve Biopsy | Send on gauze that is barely dampened in saline.  Do not fix in formalin. Hand deliver immediately. See Section Error: Reference source not found for requirements from external centres. | Must be received during normal working hours unless previously arranged. |
| Hippocampus & Amygdala | Send fresh. Hand deliver immediately to the laboratory. |  |
| Temporal Lobe (Epilepsy) | Send fresh. Hand deliver immediately to the laboratory. |  |
| Temporal Artery | Send in 10% Neutral Buffered Formalin. | Send Immediately/ASAP |
| Laminectomy/Disc | Send in 10% Neutral Buffered Formalin. |  |
| Tumour fluid for cytology | Hand delivery immediately. | Must be received during normal working hours. |
| CSF for cytology | Hand delivery immediately. | Must be received during normal working hours. |
| CSF for RT-QuIC Analysis | CSF frozen at -70°C within 30 minutes of aspiration and transported to the Neuropathology Dept, Beaumont Hospital on dry ice. | Must be received during normal working hours unless previously arranged.  CJD Questionnaire must accompany specimen. |
| Autopsy & Biopsy tissue (e.g/ Brain / Tonsil) for Prion Protein Analysis | Hand delivery immediately. | Must be received during normal working hours. Contact Rachel Howley 017977766 |
| All other tissue | Sent in 10% neutral buffered formalin indicating volume. | Must be received during normal working hours. |

\* Specimens referred out from Beaumont Hospital - the results of these tests are not covered by the scope of Beaumont Hospital Histopathology Department ISO15189 accreditation.

## NHISSOT

### How to Order Tests

As per the EFI standard for sample acceptance, all samples received and accepted into the laboratory **must** have the patient’s name, date of birth and sample date. Samples that do not comply with this EFI standard will be rejected and repeat samples will be required.

* HLA Typing: The Histocompatibility Testing Request and Consent Form [H&I-Form-509] **must** be completed and must include the patient name, date of birth, requesting clinician/consultant, centre and sample date. This form should accompany the blood samples
* It is the responsibility of the requestor to ensure that the patient has read and understood the permission statement on the consent form. This must be signed by the consenting individual.
* HLA antibody screening: A HLA antibody screening request form must be completed [H&I-Form-236]. This form may be E-mailed to [crossmatch@beaumont.ie](mailto:crossmatch@beaumont.ie) or posted with the samples to the H&I Department.
* Forms for HLA typing and HLA antibody screening are available from the H&I department. Please phone or email [crossmatch@beaumont.ie](mailto:crossmatch@beaumont.ie) if a request form is required.

### Repertoire of Tests

|  |  |  |  |
| --- | --- | --- | --- |
| **Test** | | **Blood Container** | **Minimum**  **Volume** |
| HLA Typing of patients for solid organ transplant | | Sodium Citrate | 2.9ml |
| HLA Antibody Screening for solid organ transplant  Pre transplant / Post transplant / Antibody Mediated Rejection query | | Clotted | Paeds: 3ml  Adult: 5ml |
| ABO blood grouping of patients for solid organ transplant | | EDTA | 5ml |
| HLA Disease Association Testing [B\*27 / B\*57:01/ HLA-DQ] | | Sodium Citrate | 2.9ml |
| Potential deceased donor work-up | | Sodium Citrate  Clotted  EDTA | 60ml  5ml  5ml |
| Living donor work-up : Potential Donors | 1st Workup | Sodium Citrate  EDTA | 2.9ml  5ml |
| 2A Workup  2B Workup | Sodium Citrate  EDTA  Sodium Citrate  EDTA | 2.9ml  5ml  50ml  5ml |
| 3rd and Final Workup | Sodium Citrate  Clotted | 40ml  5ml |
| Living donor work-up : Potential Recipients | 2B Workup | Sodium Citrate  Clotted | 40ml  5ml |
| 3rd and FinalWorkup  Clotted blood should be within 7 days of the proposed transplant date | Sodium Citrate  Clotted | 40ml  5ml |
| Autocrossmatch | | Sodium Citrate  Clotted | 40ml  5ml |
| HLA typing for partners | | Sodium Citrate | 2.9ml |

### Reference Ranges

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test** | **Sample required** | **Speimen container** | **Min sample volume** | **Reference ranges** | **TAT** | **Comments** | **Mnemonic** |
| Arterial Blood Gas NPT | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | pH: 7.35-7.45  pCO2: 4.3-6.4 kPa  pO2: 11.0-14.4 kPa  sO2: 94.0-98.0%  HCO3-(P,)c: 21-28 mmol/L  HCO3-(P,st)c: 22-26 mmol/L  SBEc: -2.0 to 3.0 mmol/L  tHb: 11.7-17.4 g/dL  FO2Hb: 90.0-95.0%  Na+: 136-145mmol/L  K+ : 3.5-5.1 mmol/L  Cl- : 98-107 mmol/L  Ca2+ :1.15-1.33 mmol/L  Glu: 3.6-5.3 mmol/L  Lac: 0.4-0.8 mmol/L  Hctc: N/A | 2mins | Test profile for ABG samples processed at the **point of care**. Reference ranges quoted are specific for arterial blood sample types and are not gender specific.  Never transfuse a patient based on a blood gas tHb result. | ABGPOCT |
| Arterial Blood Gas Lab | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | pH: 7.35-7.45  pCO2: 4.3-6.4 kPa  pO2: 11.0-14.4 kPa  sO2: 94.0-98.0%  HCO3-(P,)c: 21.0-28.0 mmol/L  HCO3-(P,st)c: 22-26 mmol/L  SBEc: -2.0 to 3.0 mmol/L | 0.5Hrs | Test profile for ABG samples processed in the **Chem Path Lab**. Reference ranges quoted are specific for arterial blood sample types and are not gender specific.  Never transfuse a patient based on a blood gas tHb result. | ABG |
| Lactate, Arterial Sample | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | 0.4-0.8 mmol/L | 0.5Hrs | Processed in Lab only | ALACT |
| Lactate, Venous Sample | Arterial Syringe or Lithium Heparin | Lithium Heparin (Orange Top) | 1mL (syringe)  2.7ml (Li-Hep tube) | 0.6-1.4 mmol/L | 0.5Hrs | Processed in Lab only | VLACT |
| pH (fluid) | Arterial syringe | Lithium Heparin | 1mL | N/A | 0.5Hrs | Processed in Lab only | FLPH |
| Carboxyhaemoglobin | Arterial sample | Lithium Heparin Arterial Syringe | 1mL | FCOHb: 0.5- 3.0% | 2mins | No specific ranges reported on analyser for smoker/non/smoker | COHB |
| Methaemoglobin | Arterial Syringe | Lithium Heparin | 1 mL | 0.0 – 1.5 % | 0.5 hours |  |  |
| Methanol | Serum | Plain  (White Top) | 4.9ml | Units: mg% | 24 hours | Processed in Lab only | METHB |
| SARS-CoV-2 & Influenza A/B | Nasopharyngeal Swab | VTM/UTM viral swab containing one swab | N/A | N/A | 30mins | TAT from time sample loaded on to Liat device | CV19POCT |
| Glucose NPT | Capillary | Fingerprick |  | 4-7mmol/L | 10s | Confirm any abnormal result with a venous sample sent to lab | N/A |
| Ketone NPT | Capillary | Fingerprick | 1.0 µL | 0.1-0.6 mmol/L | 10s |  | N/A |
| INR NPT | Capillary | Fingerprick | 8µL | INR target ranges depend on the presenting condition that requires the patient to be on anticoagulant therapy. Results >4.5 must be followed up with an urgent sample to the lab | 10s | Confirm result >4.5 with a venous sample sent to lab | N/A |
| HbA1c NPT | Capillary | Fingerprick |  | <48mmol/mol (6.5%) in normal subjects | 5mins | For new patients always send first sample for HbA1c analysis to the Chem path lab to check for any existing variants prior to ever using NPT devices. | N/A |