LABORATORY USER MANUAL

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SUMMARY OF CHANGES

The following is a summary of changes and additions to this edition of the document. Users are also informed of significant changes by memo.

REASON FOR CHANGE: Updated procedures to reflect the relevant change requests.

Amendments (v.14 07/10/25 & v.15 20/11/25)

Section No	Content
Section 1.12	New details for blood collection via Blood Track and written additional requests.
Section 1.13.1	The Retention and Storage of Pathological records and Specimens" v 5 now v6.
Section 1.13.5	Removed "Samples may be stored at room temperature after analysis" for NPT
Section 1.2	Additional wording in relation to discrimination free patient care.
Section 1.12.4	SafeDoc now EcoOnline
Section 2.3	Communication in advance for CJD requests on CSF samples.
Section 2.4, Table 8	SPEP (Serum Protein Electrophoresis) assay information added. Immunoglobulins (IgG/IgA/IgM) assay information added.
Section 2.4.13, Table 11	SPEP (Serum Protein Electrophoresis) analyte stability added. Immunoglobulins (IgG/IgA/IgM) analyte stability added. Serum Immunofixation analyte stability added. Serum osmolality stability updated.
Section 2.4.14	Metabolic profile information added. Link updated.
Section 2.6.1	Service provision updated to include detail of scope of accreditation
Section 2.6.3	Remove F/S service time
Section 2.6.8, table 15	Gynae cytology referral updated to HTS Labs & TAT updated: 10 w/days. PDL1 turnaround times 95% in 5 working days. PDL1 clone sp263 now sent to PCI along with other clones, Androgen to SVUH, MSI/Hypermethylation studies to Molecular Lab Beaumont, Claudin IHC to PCI, Folate, Receptor Alpha to HTS Labs (Unilabs). Her2 reflex is now DDish instead of FISH
Section 3.1.1	Additional information regarding accessing quotes for testing added.
Appendix A	Evicel removed. Accredited tests now marked with * in Test/Profile column.
Appendix B	Accredited tests now marked with * in Test/Profile column. Turnaround times updated for: ACA, APCR, APA, Apixaban, Argatroban, B2GLYGO, BCRABL, FISHs, KARYA, KARYB, IMMPHE, Factor assays, CF36,

	FRAGX, Dabigatran, ERY, HGBE, HAP, CD4 CD8, MS, JAK2, LA, LYMPHS UB, MIX, MTHFR, MPN, MYOU, NKC, PXNH, PC, PS, PTM, Rivoaroxaban, Thalassaemia Screen, Thrombophilia Screen & HEM. Referral laboratory changed to MLL for: Immunophenotyping & Chromosome Analysis (FISH & Karyotyping). Lithium Heparin sample type added to: Bone Marrow Cytogenetics & Immunophenotyping. Referral of Malaria slides details added.
Appendix C	Reference to TAT for gram stain for Blood Culture removed. Previous omission for TAT for blood cultures - updated to 5 days, 21-day TAT for query endocarditis and 2-hr TAT for molecular testing on flagged positives TB by individual request only. eNat swabs for C. trachomatis & N. gonorrhoeae testing Male N. gonorrhoeae swabs turnaround time of 4 days Accredited tests now marked with * in Test/Profile column.
Appendix D	SPEP (Serum Protein Electrophoresis), Immunoglobulins (IgG/IgA/IgM) and Serum Immunofixation test information added to in-house tests. Urine Dipstick test information updated. Sample to be discarded after analysis. TATs for Serology tests updated: HIV, HBSAb, HBSAb, HCV, Hepatitis B Core Ab, Syphilis, Rubella IgG. Prolactin test information updated. Additional information for PTH testing Cortisol test mnemonic added for ordering cortisol post dexamethasone test. COVID Ag rapid self-test removed. Turnaround Times updated for: BNP, PSA, PTH and B12. Accredited tests now marked with * in Test/Profile column.
Appendix E	Anti-LRP4 and Copeptin test information added to list of referral tests. Acylcarnitines (dried bloodspot), Urinary organic acids, Plasma amino acids test information added to list of referral tests. Volume requirement for BJP updated to 25ml from 20ml. IgG, IgA, IgM and Protein Electrophoresis removed from list of referral tests. Allergens list updated Added G6PD - sent to Eurofins, EDTA sample required. Hb result within 7 days of G6PD also required. Turnaround times: Copper & Zinc now 6 Days

1 GENERAL USER INFORMATION

1.1 INTRODUCTION

The Pathology Laboratory is situated in Suite 35 The Mall, Beacon Hospital, Beacon Court, Sandyford, Dublin 18. The Phlebotomy (Out-Patient) Department is located on Level 4 on the Main Hospital.

This manual is designed to give an overall view of the services available in the Pathology Laboratory and to enable its users to obtain the maximum benefits from the services provided. It is intended as a reference guide for all clinical users and the information provided is a broad guideline to the use of more commonly performed tests. The Beacon Hospital Pathology Laboratory is composed of six departments, as follows: Blood Transfusion/Haemovigilance, Haematology, Microbiology, Biochemistry/Endocrinology, Near Patient Testing and Histopathology/Cytology. There is also a Phlebotomy service available for both inpatients and outpatients. This guide is divided into sections, one for each of the disciplines within the Pathology Laboratory. Refer to the appropriate section of this manual for detailed advice, facts and guidance. For internal users, this manual is available on Q-pulse.

The Pathology Department is guided by the Hospital's Mission, Vision and Values which emanate from the organisation's Mission Statement as detailed below.

"We will provide exceptional patient care in an environment where quality, respect, caring and compassion are at the centre of all we do."

We aim to achieve this by:

- Results Focussed – committed to ensuring the best possible outcomes for all our patients by empowering our team of experts with the resources they need.
- Collegial – Our teams work in an open, cooperative and collaborative environment and are united among a common purpose; to deliver the best patient care.
- Communication – Ensuring open communication at all times between teams and with their patients is central to the ethos of the Beacon Hospital.
- Dignity – Patients will be treated with the utmost dignity and respect at all times. We recognise all our patients as the individual people they are and tailor their treatment to the person.
- Excellence – Beacon Hospital strives for excellence in patient care, medical standards and hospital experience.

1.2 THE QUALITY POLICY OF THE PATHOLOGY LABORATORY

The Pathology Laboratory is committed to providing a service of the highest quality and shall be aware and take into consideration the needs and requirements of its users.

To ensure that the needs and requirements of users are met, the Pathology Laboratory will:

- Operate a quality management system to integrate the organisation, procedures, processes and resources.
- Set quality objectives and plans in order to implement this quality policy
- Ensure that all personnel are familiar with this quality policy to ensure user satisfaction.
- Commit to the health, safety and welfare of all its staff.
- Ensure visitors to the department will be treated with respect and due consideration will be given to their safety while on site and patient care is free from discrimination
- Uphold professional values and be committed to good professional practice and conduct.
- Maintain INAB Accreditation are defined in the Scope of Accreditation detailed on the INAB website (www.inab.ie), Registration No. 242MT.
- Comply with INAB Regulations and Terms and Conditions.

The Pathology Laboratory incorporating Haemovigilance will comply with the S.I.360 2005/62/EC, International Standard ISO 15189 (2022), and AML-BB incorporating EU Directive 2002/98/EC, and is committed to:

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

Ref: **LF-QP-001 Quality Policy of the Pathology Laboratory** and **QM-GEN-001 The Pathology Laboratory Quality Manual.**

1.3 KEY PERSONNEL

Key Personnel and their Deputies in the Pathology Laboratory **– refer to LF-QA-002.**

1.4 DEFINITIONS

BAL: - Bronchoalveolar lavage

CSF: - Cerebrospinal Fluid

DMR: - Digital Medical Record

DOB: - Date of Birth

EDTA: - Ethylenediaminetetraacetic acid

EMU: - Early Morning Urine

FBC: - Full Blood Count

Meditech: - Hospital and Laboratory Information System

MRN: - Medical Record Number

MSU: - Mid Steam Urine

NCMG: -National Centre for Medical Genetics

NPT: - Near Patient Testing

NVRL: - National Virus Reference Laboratory

O/N: - Overnight

OGTT: - Oral Glucose Tolerance Test

PTS: - Pneumatic Tube System

Q-Pulse: - Electronic Quality Management System

RPMI 1640: - Roswell Park Memorial Institute

SJH: - St. James Hospital

TAT: - Turnaround Times

UTM: - Universal Transport Medium

TUH: - Tallaght University Hospital

H&S; - Health and Safety

1.5 COMMUNICATION / CONSULTATION

The laboratory communicates with users/customers about the service via:

- Meetings.
- Telephone.
- E-mail.
- Laboratory User Manual.
- Hospital intranet and Web Site.
- User Surveys.

Any Customer requiring advice or a consultation with regard to any aspect of the pathology service should contact the laboratory staff, see table 1 below in section 1.6, who will arrange for the appropriate person to consult with them as soon as possible. Any customer requiring information on the laboratory services can do so by e-mail or telephone or by writing to the Pathology manager. The hospital web site address also provides general information on laboratory tests. Ref: **www.beaconhospital.ie**

To provide feedback to the laboratory, please use feedback@beaconhospital.ie. This forum is monitored by the Hospital Patient Safety and Quality department and laboratory specific feedback will be cascaded for action.

The results of laboratory tests will be made available to patients through their clinicians or general practitioners but not directly from the laboratory.

1.5.1 Complaints Policy

The laboratory encourages users to comment on their experience with the services provided. The hospital is committed to responding positively to all complaints received and regards these as an opportunity to improve its service. Complaints can be made verbally or in writing to the Laboratory Manager. Complaints are dealt with in the first instance by the Laboratory Manager or, as appropriate, by the relevant Pathology Consultant or Hospital Quality Manager. See Table 1 below in section 1.6 for contact details for Laboratory Manager.

Complaints received by the Pathology Laboratory staff members must be forwarded to the Laboratory Manager, who will respond to the complaint as quickly as possible. Ref: **LP-GEN-081 Internal Complains Policy.**

1.5.2 Consultant Advisory Services

The laboratory has Consultants for all departments to provide appropriate clinical advice and expertise to users. These consultants can be contacted where required for advice on the appropriate choice of examinations and their clinical indications, the limitations of examination procedures and appropriate test frequency. They can provide consultation where required on individual clinical cases and interpretation of results of laboratory examinations.

A clinician who requires interpretation of laboratory data can contact the laboratory to speak to the appropriate consultant.

1.5.3 Policy on Protection of Personal Information

The proper management of data and information in the Laboratory is essential for the provision of the service. The Laboratory adheres to the Patient Confidentiality and the Data Protection (Amendment) Act 2018. Ref: **PPS-ORG-147, Data Protection Plan.**

Beacon Hospital takes very seriously the protection of patient's rights to privacy and confidentiality. This is achieved by following best practices in how all information is handled and stored and in accordance with Data Protection laws and other regulatory and professional best-practice guidelines.

Beacon Hospital obtains patient data via the patient consent process when attending the hospital for their care. The Pathology Laboratory retains the following information in relation to each test request received, for defined minimum retention periods, based on regulatory and best practices guidelines. This information may include some or all of the following:

- Patient full name.
- Patient MRN.
- Patient DOB.
- Date/time of collection, date/time of receipt in the laboratory and date/time of report for each specimen.
- Clinical information provided by requesting clinician.
- The test result and interpretation of test requested, where appropriate.
- Requesting clinician and address.

Beacon Hospital may share patient information, including laboratory information, with health professionals involved in patient care. These include but are not limited to; General Practitioners to ensure continuity of care, other health institutes or hospitals during transfers of care or during multidisciplinary team meetings, diagnostic companies outside of Beacon Hospital Pathology Laboratory, Insurance companies during the processing of insurance claims and research institutes for new treatments, interventions and continual improvement of patient care. In the majority of these cases this information is obtained and released during the consent process and after authority has been given by a qualified health professional.

There are certain legal requirements where Beacon Hospital is required by law to report information to the appropriate authorities. For example, where a formal court order has been issued or in the event of child protection concerns involving Tusla or when infectious diseases are encountered, Beacon Hospital are required to notify the Health Protection Surveillance Centre. Beacon Hospital may also transfer personal data outside the EEA, for example in the cases of research projects or diagnostics.

For further information on the processing, use, retention or release of patient information please refer to Beacon Hospital's Data Protection webpage at:

Data Protection - Beacon Hospital https://www.beaconhospital.ie/patients-visitors/data-protection/

Or contact Beacon Hospital's Data Protection Officer via email at:

dataprotection@beaconhospital.ie

or via Telephone on: 01 650 4646

or by Post addressed to: Data Protection Officer

Beacon Hospital

Sandyford

Dublin 18

D18 AK68

1.6 TELEPONE /FAX/EMAIL/WEBSITE

Table 1. Pathology Laboratory Contact Details

Laboratory Manager	01 293 8643 leanne.ricciardelli@beaconhospital.ie
Quality Manager	01 293 6600 ext. 1237
Specimen Reception	01 293 6600 ext. 1746
Blood Transfusion	01 293 7560
Haemovigilance	01 293 7509
Haematology	01 293 7510
Biochemistry	01 293 6684
Microbiology	01 293 7562/7565
Histology	01 293 6670/1745
Lab IT	01 293 6600 ext. 1750
Phlebotomy	01 293 6693

Fax No: - 01 2938622

Web site: www.beaconhospital.ie

1.7 HOURS OF OPENING

1.7.1 Routine Working Hours within the Pathology Laboratory

Table 2. Routine Opening Times

Laboratory Area	**Days**	**Times**
Specimen Reception	Monday - Friday	07:30 – 17:30
Blood Transfusion	Monday - Friday Saturday	07:30 – 17:30 08:00 – 12.00
Haemovigilance	Monday - Friday	08.00 - 16.00
Haematology	Monday - Thursday Friday Saturday	07:30 – 17:30 07.30 - 17.00 08:00 – 12.00
Biochemistry	Monday - Thursday Friday Saturday	07:30 – 17:30 07:30- 17:00 08:00 – 12.00

Laboratory Area	**Days**	**Times**
Near Patient Testing	Monday- Friday	09:00 – 17:00
Microbiology	Monday - Friday Saturday	07:00 – 17:00 08:00 – 12.00
Histology	Monday - Friday	08:00 – 17:00
Phlebotomy: In- Patients	Monday - Friday Saturday Sunday/Public Holiday	07:00 – 17:00 07:00 – 11:00 07:00 – 10:00
Phlebotomy: Out-Patients	Monday – Friday	08:00 – 16:00

1.7.2 Urgent / Emergency Examinations

The laboratory is available at all times for urgent examinations.

Out of routine hours staff may be contacted for emergencies on the Laboratory On-Call Mobile. This number is available on the internal hospital directory and from the Nurse Supervisor on duty. For urgent troubleshooting on NPT devices the on-call scientist is available.

Out of hours cover: - Mon-Fri: - on-site from 17:00-24:00

Sat: - On site from 12:00-24:00

Sun/PH: - On site from 8:00-18:00

Mon-Sat Post 24:00- On Call is covered off site by means of a mobile phone.

Sun & PH post 18:00, On Call is covered off site by means of a mobile phone.

If called, please allow a 30-minute response time as the scientist travels into the hospital.

1.8 PHLEBOTOMY SERVICES

The Phlebotomy Department is located on the Level 4 of the Main Hospital. For Beacon outpatients there is no requirement to make an appointment, however the referral letter from the requesting clinician is required.

Phlebotomy must not proceed until the phlebotomist is satisfied as to the correct identity of the patient.

1.8.1 Identification of the Conscious/Coherent In-Patient

To correctly identify an inpatient, the phlebotomist must:

- Ask the patient to clearly state their full name and Date of Birth.
- Check this information matches the details on the ID band
- Check patient's name, MRN (Medical Record Number) and DOB on ID band, match exactly the name, MRN and DOB on transfusion documentation / request
- If the patient is not wearing an ID band, the sample must not be taken. The nurse in charge must be contacted to provide one, or the phlebotomist may print one and attach it to the patient, before the blood sample is collected.
- If any of the information does not correspond, the nurse in charge must be contacted to clarify and amend the details before any blood samples are taken.

1.8.2 Identification of the Conscious/Coherent Out-Patient

To correctly identify an out-patient, the phlebotomist must:

- Ask patient to clearly state their name and Date of Birth.
- Check all details against the request form. Where any detail is incorrect or unspecific, the phlebotomist may need to contact the requesting clinician to verify the request prior to venepuncture.

1.8.3 Identifying the Unconscious / Incoherent Patient

To correctly identify an inpatient, the phlebotomist must:

- Check the name, MRN and DOB on the patient's ID band, match the name, MRN and DOB on the transfusion prescription / transfusion documentation
- If a relative or carer is present, it is acceptable to confirm the name and DOB of the patient with them.

1.8.4 Obtaining Consent

For most routine laboratory procedures, consent can be inferred when the patient presents himself or herself at phlebotomy with a referral request from a doctor and willingly submits to venepuncture.

Patients in a hospital bed can refuse venepuncture. In this situation, the phlebotomist notifies the nurse in charge, or the medical team looking after the patient. The refusal should be documented, signed and dated.

Invasive procedures, or those with an increased risk of complications to the procedure, will need a more detailed explanation and, in some cases, written consent. In emergency situations, consent might not be possible; under these circumstances it is acceptable to carry out necessary procedures, provided they are in the patient's best interest.

A consent form is required to be signed by a patient prior to collection of samples for genetic testing or needle stick injuries occurred on the grounds of Hospital. In these cases, an explanation of the clinical procedure may be required to enable informed consent, along with more detailed explanations such as the importance of the provision of patient or family information.

1.9 SPECIMEN COLLECTION AND ORDER OF DRAW

1.9.1 General Guidelines

Specimens for some tests must be collected with the patient fasting, in the basal state or with due regard to diurnal variations. Some test may be performed only after prior arrangement with the laboratory. If in doubt, please contact the relevant Department.

1.9.2 Personnel Responsible for Primary Specimen Collection

- Phlebotomists, nursing staff, general practitioners and practice nurses are responsible for blood specimen collection.
- Clinical staff are responsible for tissue and fluid specimen collection within Beacon Hospital.
- Urine and faecal sample collection may be performed by the patient.

1.9.3 Procedure for Venepuncture

A phlebotomist must have a professional, courteous, and understanding manner in all contact with all patients. For a blood sample to be collected by the phlebotomist, the best vein will be identified. The cephalic, medial cubital or basilic veins are most used.

- Wear appropriate PPE.
- Observe hospital consent policy.
- Ensure patients identification details are checked and correct.
- Select correct specimen tubes, refer to Table 4 for Order of Draw.
- Always use sample collection tubes that are in date. Blood taken into expired collection tubes may render the specimen unsuitable. Specimen tubes must NOT be pre-labelled.
- Please adhere to hospital policies appropriately for sample collection: PPC-ORG-95 Adult Peripheral Venepuncture and PPC-LAB-10 Peripheral Venepuncture for Paediatrics.
- Proceed to label the tube.

1.9.4 Haemolysed Samples

Factors which may cause haemolysis when performing venepuncture:

- Using a needle which had a small diameter.
- Using a small needle with a large collection tube.
- An improperly attached needle and syringe will lead to frothing as the blood enter the syringe.
- The plunger of the syringe is pulled back too quickly.
- Vigorous shaking of the blood collection tubes.
- Drawing blood from a site of haematoma or from indwelling line.
- The flow into the tube is slow or fast.

1.9.5 Safe Disposal of Materials Used in Sample Collection

- All sharps, both contaminated and unused must be disposed of in a Yellow SHARP PROOF container, properly assembled, signed and dated.
- All soiled soft waste, e.g., blood stained gauze must be disposed of in a suitable biohazard bin (located on all the phlebotomy trolleys in-house).
- Any clean waste, e.g., packaging from equipment is placed in a clear general waste bag for domestic waste.
- All non-sharp, clinically contaminated materials must be disposed of in a yellow clinical waste bin.
- Protective clothing, aprons, gloves etc. from barrier rooms must be disposed of in clinical waste bins.
- When disposing of needles and blood collection sets, ensure the safety protection cap has been engaged fully, before placing in a sharp's container.
- Do not over fill sharps containers.
- Always attach traceability tag and sign sharps bin before disposal.
- All staff must adhere to **PPC-LAB-7 Laboratory Safety Manual and PPC-PCI-03 Healthcare Waste Management.**

1.9.6 Consumable Supplies

Sufficient consumable supplies can be obtained from Stores during working hours.

Hospital Stores Department supply the following:

- Plain swabs.
- Routine Culture, MRSA, VRE, CRE, COVID- 19 screening swabs.
- Virology screening swabs.
- Containers for sputum and mid-stream urines.
- Downtime Request forms.
- All tubes for blood collection.
- Sterile universal container for CSF and Fluids.
- Endocervical and Male Urethral Swabs for Chlamydia.

The Laboratory supply the following:

- Timed urine collection containers, which may contain no preservative (plain) or preservatives as relative for the investigation required.
- Blood culture bottles.
- Specimen tubes for TB Quantiferon testing.
- EDTA/Aprotinin collection tube for ACTH testing.

1.9.7 Blood Samples Order of Draw

The collection tubes and blood culture bottles contain different additives and growth media, respectively. The cap colour indicates which additive is present; therefore, it is important to use the correct specimen container and to collect the sample at the appropriate time.

The order of draw is important to minimize carry-over. It is preferable that blood tubes are filled to their stated capacity. This is particularly important for the blue top container (Sodium citrate) for coagulation.

When one patient requires different blood samples to be taken, it is important that the specimens are collected in the following order, to avoid any cross contamination of samples.

1. Blood culture bottles: when using a needle-protected butterfly needle, **the aerobic (blue)** bottle is collected first and then **the anaerobic (purple).** Only when a syringe is used for collecting blood, the anaerobic bottle is taken first.
2. Sodium Citrate tubes **(Light Blue top),** for PT, INR, APTT, APTTR, D-Dimers.
3. Serum tubes **(White top**), no gel separator for special requirements tests.
4. Gel tubes **(Brown/Yellow top**) with clot activator, for most Biochemistry assays.
5. Lithium Heparin **(Green top)** for plasma determinations in Biochemistry.
6. EDTA tubes **(Pink top)** for Blood grouping, Type & Screen / Type and Crossmatch
7. EDTA tubes **(Purple top)** for full blood counts or plasma determinations in Biochemistry
8. Fluoride / Oxalate tubes **(Grey top)** for glucose.

Table 3. Blood Samples Order of Draw

Order of Draw	**Blood Culture**	**Volume**	**Instructions/Laboratory Use**
1.		8-10 ml	Aerobic/Anaerobic bottles must be collected first/ Blood Cultures.
Additive			**Do not over or underfill. Do not shake tubes**
2.	 Sodium Citrate	3 ml	DO NOT UNDERFILL. Mix sample GENTLY to prevent clotting/ Coagulation Studies
3.	 Serum Tubes	4.9 ml	Mix sample GENTLY 8-10 times to allow uniform clotting/ Special requirements tests.
4.	 Serum Separator Gel	4.9 ml	Mix sample GENTLY 8-10 times to allow uniform clotting/ Most Biochemistry/Immunology/Virology Tests.
5.	 Lithium Heparin	4.9 ml	Mix sample GENTLY 8-10 times to prevent clotting/ Plasma determinations in Biochemistry.
6.	 K2EDTA	7.5 ml	Mix sample GENTLY 8-10 times to prevent clotting/ Blood Transfusion.
7.	 K2EDTA	2. 7 ml	Mix sample GENTLY 8-10 times to prevent clotting/ Haematology Determinations.
8.	 Fluoride/ Oxalate	3 ml	Fill to marked line/ Glucose Levels.

1.9.8 Collection of Blood Culture Bottles

Two bottles are required - – **blue** top **(aerobic)** and a **purple** top **(anaerobic)** bottle supplied by the Pathology Laboratory. **Blood cultures must be drawn first to avoid contamination**.

Note: Biomerieux Bact/Alert Virtuo blood culture system is used in the Beacon Hospital.

- The sets include a FA aerobic bottle and a FN anaerobic bottle. FN contains contain 32ml of complex media and 8ml of a charcoal suspension. Bottles contain an atmosphere of nitrogen under vacuum. FA contains 22ml of complex media and 8ml of a charcoal suspension. Bottles contain an atmosphere of CO2 in oxygen and it is suitable for the isolation of aerobic, anaerobic organisms and fungi.
- Prior to use, the culture bottles should be examined for evidence of damage. Bottles presenting evidence of deterioration or bottles that are out of date should be discarded.
- Check Name and D.O.B. with patient and same details including MRN on patient's wristband.
- Hand hygiene must be completed by the phlebotomist, by washing hands or using alcohol hand rub.
- Identify a suitable vein (usually on the arm) from which to draw blood from the patient.
- Open sterile pack and set up sterile field, attaching the devices needed together in preparation for the procedure.
- Using a needle-protected butterfly needle and blood culture adaptor cap, push in the aerobic (blue) bottle first (8 -10mls of blood draw) and then the anaerobic (purple) bottle. This sequence will prevent the air in the butterfly tube from entering the anaerobic bottle. If using a syringe, then the anaerobic bottle is taken first and then the aerobic bottle.
- Label each bottle with the patient's name, hospital number, and date and time of collection
- **Blood cultures must be received in the laboratory within four hours of the sample being taken.**
- Send the bottles in the bag attached to the yellow microbiology request form to the microbiology laboratory during normal working hours or be place the special On-Call box out of hours.
- Blood culture bottles should never be placed in the fridge. Contact the Microbiology Department for further information.

1.9.9 Information for Oral Glucose Tolerance Test (OGTT)

Principle: The oral glucose tolerance test involves taking of two blood samples: one when the patient arrives (fasting 8-14 hours) and one 2 hours after a glucose drink.

Instructions:

Following the collection of the fasting blood for glucose analysis (grey top tube), the sample is labelled with the time of collection and as fasting (F). Hold onto this sample.

The glucose drink is then given and should be consumed within a maximum of 5 minutes. Timing of the test starts at the beginning of ingestion. The patient will be required to remain in the hospital for 2 hours. After taking the drink, instruct the patient not to eat, drink, smoke or exercise.

The second blood sample for glucose analysis will be taken exactly 2 hours after the glucose load (beginning). The tube will be labelled with the time of collection. Both the fasting and the 2-hour sample will be sent to the Biochemistry Department at the same time, attached to the request form on which OGTT is clearly stated.

1.9.10 Information for Synacthen Test

This is a screening test for adrenal insufficiency. Preferably the test should start at 9am. Please clearly label the blood collection tubes with the specific times before sending them to the Laboratory. Instructions are available from requesting clinician.

1.9.11 Information for 24-Hour Urine Collection (PLAIN)

This test requires the collection of urine over a 24-hour period, following the instructions on the information sheet issued with the specimen collection container. The 3-litre brown 24-hour urine collection container is available from the Biochemistry Department. Please read carefully all instructions on the container before commencing the urine collection. The urine container is amber coloured for specimens being assayed for light sensitive analytes. More than one storage container might be needed to collect the entire volume of urine during the 24-hour period. When the sample is complete, it must be fully labelled with the patient information, plus, the start date and time of collection, and the finish date and time of collection. A complete 24-hour sample is required. If the collection is not complete, the results will be invalid.

Collection Protocol:

Important: Collect ALL the urine that is passed over an EXACT 24-hour period. Loss of any volume of urine, or a collection made for less or beyond the 24-hour, will render the test invalid. For ease of collection, you may require a detergent-free receptacle (e.g. an old jug) to collect any urine that you pass over a full 24-hour period. Transfer any volume into the collection container. The collection must be timed accurately as follows:

- In the morning (e.g. 8 a.m.) empty your bladder completely into the toilet. Do NOT save this urine. The 24-hour collection starts now, write on the bottle label the exact time and date.
- Thereafter, collect all the urine (including during the night, no matter how small) and transfer it to the collection container using the clean jug. Remember, if you do not collect the entire volume passed during the 24-hour time, you may have to repeat the collection from start as the test might result into an incorrect diagnosis.
- The following morning (e.g. 8 a.m.) empty bladder and ADD this urine to the collection. This is the finish time and the collection is complete. Indicate the finish time on the container and make sure to label correctly with your NAME, DOB, MRN (if applicable). Deliver the collection container to the Laboratory at once.

1.9.12 Information for 24-Hour Urine Collection (ACID)

Health and Safety Notice for containers with acid added.

- The 24-hour collection bottle contains a strong acid which is required to preserve the sample. Do NOT discard.
- DO NOT breathe any fumes from the bottles.
- Avoid skin contact and do not drink.
- If you spill any acid on your skin, wash immediately with plenty of water and, if necessary, seek medical advice.
- Patients MUST be advised NOT TO URINATE DIRECTLY in the bottle and KEEP THE CONTAINER OUT OF THE REACH OF CHILDREN.

Collection Protocol:

Important: Collect ALL the urine that is passed over an **exact** 24-hour period. Loss of any volume of urine, or a collection made for less or beyond the 24-hour, will render the test invalid.

For ease of collection, you may require a detergent-free receptacle (e.g. an old jug) to collect any urine that you pass over a full 24-hour period. The urine should immediately be poured into the 24-hour collection container. Do not, under any circumstances, pass urine directly into the container.

The collection must be timed accurately as follows:

In the morning (e.g. 8 a.m.) empty your bladder completely into the toilet. Do NOT save this urine. The 24-hour collection starts now, write on the bottle label the exact start time and date.

- Thereafter, collect all the urine (including during the night, no matter how small) and transfer it straight away into the collection container using the clean jug. Remember, if you do not collect the entire volume passed during the 24-hour time, you may have to repeat the collection from start as the test might result into an incorrect diagnosis.
- The following morning (e.g. 8 a.m.) empty bladder and ADD this urine to the collection. This is the finish time and the collection are complete. Indicate the finish time on the container and make sure to label correctly with your NAME, DOB, MRN (if applicable). Deliver the collection container to the Laboratory at once.

Note: When two tests are requested, each requiring a different container (one plain, one requiring acid), two separates 24-hour collections must be obtained.

For any further information, please contact the Laboratory Specimen Reception at 1746 /1743.

1.9.13 Mid-Stream Urine (MSU)

The aim of collecting a ‘mid-stream’ sample is to establish if the patient has a urinary tract infection (UTI). An MSU sample is the best sample as the first void of urine passed may be contaminated with bacteria from the skin.

Tips before passing a sample of urine:

- If possible, do not empty the bladder for three hours.

- The container should be labelled with the patient's full name, date of birth, date / time of collection.
- Wash hands and genital area with soap and water.
- The patient should pass some urine into the toilet, then without stopping the flow of urine, catch some urine in the sterile container (approximately half full). The patient should then finish passing urine into the toilet.
- The lid of the container should be firmly closed. Place the container into the specimen biohazard bag and send it to the lab within two hours from collection. If this is not possible, the sample should be refrigerated.

1.9.14 Stool Samples

To detect if a patient has a bowel infection, a faeces/stool sample is required. Stool specimens should be collected in a clean container with a secure lid.

- The container should be labelled with patient's surname, first name, DOB, date/time of collection. No trace of disinfectant or bleach should be present in the lavatory pan or potty, as this will interfere with the test.
- The container is firmly closed and placed into the biohazard bag and brought to the lab as soon as possible. If there is a delay in transport, the sample should be refrigerated

1.9.15 Sputum Samples

The patient should be instructed to remove dentures, rinse mouth and gargle with tap water and not antiseptic mouthwash. The ideal time to collect the specimen is early in the morning just after getting out of bed. However, the specimen may be collected at any time sputum is available to be produced. The patient should discard saliva or postnasal discharge as these are not suitable specimens for analysis. After a cough deeply from within the chest, a deep lung sputum sample should be expectorated into a specimen container. The clearly labelled and tightly capped container must be placed in the biohazard bag and sent to laboratory as soon as possible.

Specimens for TB testing: 3 specimens are usually required. Take the specimens on 3 consecutive days. Collect and transport all specimens as described above. TB testing is upon individual request only.

1.9.16 Swabs

The specimens should be collected by passing the swab twice over the relevant area and then labelled accordingly using Meditech generated labels. The swabs should be sent to the laboratory as soon as possible.

1.9.17 Throat/Nasal Swabs for COVID-19 and other respiratory viruses

Specimens for on-site COVID-19 and other respiratory viruses PCR testing should be sent using the eNAT (blue top tube) used for collection, transport and preservation of clinical specimens for respiratory viral molecular diagnostic testing.

First, the small cotton flocked tipped swab is rubbed against the back of the oropharynx in circular motions and then rubbed against and above the nasal passage. Insert the swab into the nostril sweeping the floor of the septum; insert as far as but no further than the red mark on the swab stick. Rotate the swab and gently remove.

The swab is then placed into the blue capped tube of eNAT transport medium liquid. Holding the swab shaft close to the rim of the tube, and keeping the tube well away from face, break the swab stick and discard the end piece. Ensure the lid is screwed on and securely tightened to prevent any leakage of the medium. Please note that specimens for COVID-19 and other respiratory virus testing are to be packed separately from other laboratory samples, by using a separate bio hazard bag.

1.9.18 Rectal swabs for CPE and VRE

These swabs are supplied as a pack, a swab and media are present in the sterile pack. The media incorporates a Cary-Blair medium, which allows for transport and preservation of rectal and faecal enteric pathogenic bacteria during transport to the laboratory. The flocked swab is used to obtain the clinical specimen, the swab is inserted through the rectal sphincter and gently rotated, the rectal swab has a plastic ring on the shaft, which is a marker for the maximum depth for the rectal sampling. Do not insert the rectal swab beyond the marker. Faecal material should be visible on the swab before inserting it into the media provided in the tube. Specimen should be evenly dispersed and suspended in the preservation medium. The swab is then

broken off at the red point on the swab and left in the medium, the screw cap (orange or green) is then put back on the tube and tightened. The correctly labelled swab is then sent to the lab in a sealed biohazard bag.

1.9.19 Histology Specimen Collections and Identification

To preserve tissue morphology, it is imperative that specimens for histological examination are collected in an appropriate manner.

- Specimens should arrive in the pathology laboratory in an appropriately sized leak proof container either as fresh samples or in a volume of 10% formalin with a ration of at least 5:1 formalin: tissue. Small specimen containers should be placed in a biohazard bag with appropriate request form.
- Histology staff must be notified at least 24 hours before any unfixed/fresh specimens arrive in the department and should be brought to the laboratory without delay.
- Specimens for Frozen Section must be booked in with histology staff the day before the procedure is carried out and arrive to the laboratory fresh/unfixed. Theatre staff must include a contact number on the request form to ensure the result can be phoned without delay.
- Muscle biopsies must be booked in the day before the procedure is carried out and should be wrapped in gauze that is barely dampened in saline and must be hand delivered to the laboratory immediately. As muscle biopsies are sent to an external lab (Beaumont) for processing it is imperative that the specimen is received to the laboratory before 4pm.
- Renal biopsies must be booked in with the histology laboratory the day before the procedure is carried out as the renal biopsy may need to arrive fresh depending on the underlying condition.
- Skin biopsies for Direct Immunofluorescence must be pre-booked with the laboratory and should be wrapped in gauze that is barely dampened in saline and must be hand delivered to the laboratory immediately.
- Products of conception for cytogenetics must be collected directly into RPMI +ATB medium (available from Biomnis & stored in the laboratory cold room) and sent directly to the laboratory.

- The same procedure is followed for both fresh and formalin fixed specimens. Staff must check that all details on the specimen container and request form correspond and that all necessary information is provided.
- All specimen containers must be checked to ensure there is tissue present. Laboratory staff must then time, date and sign the request form and the relevant department specimen log book to register receipt of the specimens. Specimens with any discrepancies in the outlined criteria above must not signed into the laboratory.

1.10 SPECIMEN LABELLING AND INTEGRITY

1.10.1 General Requirements

Samples that do not meet the labelling criteria may not be accepted for testing.

All samples, apart from samples for blood transfusion, may be labelled with Beacon Laboratory labels, (post ordering in Meditech). Details on transfusion samples must be handwritten by transcribing details directly from the patient ID band.

The minimum requirements for specimens labelling are:

- Patient's full forename and surname (Initials are not acceptable).
- Patient's unique medical record number (MRN).
- Patient's date of birth (DOB).
- Specimen Type/Nature of specimen (and site if relevant).

Unlabelled samples will NOT be accepted. Leaking samples may NOT be processed.

Please ensure that the samples are placed in a sealed 'Biohazard' plastic bag, along with the colour coded Downtime request form in the separate sleeve of the bag.

For 24-hour urine collection, the specimens must be clearly labelled with the date and time that the collection commenced and finished. The urine collection must be kept refrigerated during collection and returned to the laboratory on the same day that the collection finished.

Microbiology samples must also be clearly labelled as above, also including the type of sample and site taken if appropriate.

All specimens for Blood Transfusion must be handwritten. Please refer to Section 1.10.1 for more information.

When a Meditech label cannot be printed, addressograph labels can be used (apart from blood transfusion samples). Where no addressograph labels are available, clear handwritten labelling is accepted with a ***minimum*** of two acceptable identifiers. The acceptable identifiers are Patient's Full Name and either MRN or DOB.

1.10.2 Collection and Labelling of Blood Samples

It is the responsibility of the person collecting the samples to correctly identify the patient via the ID band, accurately label samples and then sign the labelled samples thereby validating the details on the ID band and Meditech labels.

ACCURATE PATIENT IDENTIFICATION IS PARAMOUNT

- Do NOT pre-label sample tubes. Inpatients MUST have an ID wristband.
- Take the set of Meditech labels for that patient only, to the bedside. Be careful when several sets of labels have printed. Double check all the labels are for the correct patient.
- Carefully identify the patient by referring to the details on the ID band.
- Confirm the details with the patient where possible, by asking them to state their name and date of birth. Check the full name, medical record number and date of birth against the set of Meditech labels.
- Query any discrepancies with the Nurse in charge.
- Collect the appropriate samples. **NB**. Each Meditech label bears the type of sample required.
- Attach the Meditech labels matching the correct label to the sample type.
- One label should generate for each sample type (H prefix for Haematology samples, C for most Chemistry, CG for a Glucose, BB for transfusion, UM for Microbiology).
- Attach labels lengthwise along the tube, not around the tube.
- The person taking the blood must check the patient identity on the ID band and the Meditech labels match, add the time of collection and then sign each sample.

If Meditech is unavailable, use a 'Down Time Request Form' e.g. LF-GEN-017, LF-MIC-039, LF-HIST-002 and label each sample with Full Name, MRN and DOB. Record the date and time of collection on the request form. Ideally all samples should be sent to the laboratory as soon as possible. Check patient details carefully to ensure the date and current visit number are correct.

Note: Inform IT department if you have any printers that are not printing legible bar codes.

1.11 SPECIMEN RECEPTION

1.11.1 General Information

The specimen reception area in the laboratory provides the following functions:

- Reception of samples from phlebotomy staff, ward nurses, health care assistants, attendants, pneumatic tube system etc.
- Distribution of samples to the relevant laboratory department.
- Where appropriate, specimens are centrifuged.
- Dispatch of referral samples via courier to external testing laboratories.
- Reception of goods inwards.

The minimum criteria for sample acceptance, as described below, are strictly adhered to in order to comply with accreditation standards and in the interest of patient safety. Failure to provide the required data shall lead to rejection of the specimen along with the request form.

1.11.2 Sample Acceptance Criteria and Rejection Process

Samples arriving at the laboratory are accepted for testing if they meet the following requirements:

- Are of appropriate sample type for the test required and of sufficient volume for testing.
- The specimen arrives with a downtime form indicating the requested test or the test has been ordered electronically on Meditech
- The information on the downtime form accompanying the sample are correctly matched. Writing must be legible by using BLOCK CAPITALS.

Samples may be rejected in the following circumstances, please note this list is not exhaustive:

- Incorrectly or inadequately labelled specimens are not accepted by the laboratory.
- Previous day blood sample will not be analysed due to analyte instability.
- Inappropriate sample type for the test requested.
- Handwriting is illegible.
- Specimens have leaked during transportation.
- Sample is of very low volume.
- Sample is haemolysed (refer to specific test information).
- Sample contains other interferences e.g. intralipid, icterus as these adversely affect Haematological investigations and some Biochemistry analytes.
- Sample is clotted or contains fibrin strands that will affect results.
- Sample is underfilled or overfilled.
- Samples was taken from an arm with a running I.V.
- Insufficient information on the sample and/or request form.
- Incorrect transport media used (e.g. MRSA requested on Chlamydia swab, viral swab request on plain swab).
- Genetic testing request without consent form from patient.

When a request is determined to be rejected, the requesting source (the clinician/ nurse in charge) will be promptly informed by telephone. These events will be recorded as rejections on the laboratory information system and may be raised as non-conformances

Ref: **LP-GEN-061, Non-Conformance Procedure.** The rejected specimens are also recorded in a specimen log. Ref: **LF-GEN-091 Specimen Rejection Log**.

1.11.3 Essential Information on the Request (Electronic Equivalent)

Requests for all laboratory tests, except for Histology (see below) should be ordered via the hospital computer system, Meditech. Ref: PPC-LAB-01 Ordering Laboratory Tests

Due to the complexity of ordering histology requests on Meditech, all Histology requests are ordered via a Histology Form, **LF-HIST-002**. On receipt into the laboratory Administration staff transfer the hard copy Histology requests, together with all details on the form into the laboratory module of Meditech. In this manner all laboratory tests are ordered, reported and

resulted within the laboratory computer system. Each test is ordered via a specific laboratory module / category in the hospital computer system Meditech. There are 4 main modules with the laboratory LIS, namely:

LAB: Includes all tests requests for Haematology, Coagulation, Biochemistry, NPT and Immunology/ Serology /Virology.

BBK: Includes all requests for Blood Transfusion.

MIC: Includes all tests requests for Microbiology & some Virology.

PTH: Includes all tests requests for Histology/ Cytology.

1.11.4 Essential Information Required on the Request (Downtime Form)

1. Patient's Full Surname and Forename (Initials are not acceptable)

2. Patient's MRN.

3. Patient's DOB.

4. Nature of examinations/tests required.

5. Specimen Type/Nature of specimen (and site if relevant).

6. Name of consultant.

7. Relevant clinical details, where required.

All details on the request should correspond to that on the specimen container.

1.11.5 Desirable Information on the Request

1. Clinical Information. History of travel may also be pertinent.
2. Any anticoagulant or antibiotic therapy.
3. Risk of infection.
4. Date and time sample collected (which is sometimes essential, e.g., GTT and Cortisol).
5. Patient's address.
6. Patient's sex.
7. Clinician's contact number.

1.11.6 Laboratory Downtime Request Forms

The Pathology Laboratory routinely operates an electronic request and reporting system through the Meditech Hospital Information System. Occasionally this hospital information may go down either unexpectedly or as a planned procedure.

All requests for Laboratory tests must be written manually on the colour coded Laboratory Downtime request forms. These forms are available to print off from Q-Pulse and must accompany all specimens delivered to the laboratory for processing.

Please use the colour coded request form for the appropriate department/s in order to facilitate the specimens to be promptly processed at the lab reception. Multiple tests for one department can be sent on one request form but **separate specimens and request forms are required if tests are being sent to different departments.**

It is important to remember that this communication is the definitive and, at times, the only communication between the clinician requesting the test and the scientist performing the test. Please ensure that all relevant information is included on the request form.

The following request forms are in use:

Table 4. Downtime Request Forms in the Pathology Laboratory

Department	Request Form Colour	Document Number
Biochemistry /Haematology/Transfusion	White	LF-GEN-014
Microbiology	Yellow	LF-MIC-039
Histology / Cytology	White	LF-HIST-002

The use of patient addressograph labels on request forms is recommended. The following information should be documented in a legible manner on all sheets of the request form:

- Patient's Full Surname and Forename.
- Patient's MRN.
- Patient's DOB.
- Date and time of specimen collection.
- Name of the Requesting Consultant.
- Specimen anatomical site and type of specimen collected.

- Clinical Details
- Analysis required.
- If a specimen is urgent, please indicate on request form and the request will be prioritised. If results are extremely urgent, please contact the relevant department to discuss your requirement. Overuse of the urgent service will adversely affect the turnaround time for all urgent tests.

Note: An adequately completed request (electronic/hardcopy) once accepted in the laboratory initiates an agreement for services. The laboratory will cooperate with users or their representatives if clarification of a request is required.

1.12 SPECIMEN TRANSPORT

1.12.1 General Considerations

The specimen transportation system is to ensure the timely arrival of specimens in the optimal condition to correct destination and in a manner that does not pose a threat to the health and safety of anyone coming in contact with the sample and in compliance with regulations.

The transport of samples to the laboratory may be undertaken by phlebotomists, medical staff, nursing staff, administration staff, GPs, patients themselves, courier (road and air), rail system, post, laboratory staff and hospital attendants. Special specimen handling requirements, if necessary, for individual tests (such as transport on ice), may be listed in the specimen requirements appendices.

1.12.2 Specimen Packaging System

The Specimen Packaging system consists of three layers as follows:

1. Primary receptacle: a labelled primary leak proof receptacle containing the specimen.
2. Secondary receptacle: a secondary sealable biohazard bag to enclose and protect the primary receptacle(s). A sufficiently absorbent material must be used to absorb the contents of the primary receptacles.

3. Tertiary/outer transport package: the secondary receptacle is placed in an outer transport container that protects it and its contents from external influences such as physical damage while in transport. These conform to P650, from current ADR regulations. Each package should be marked with "UN 3373" in a diamond and the words "Biological Substance Category B" in letters at least 6 mm high adjacent to the diamond.

Note: Once material is packaged in accordance with P650 no other requirements of ADR apply. ADR refers to: The European Agreement concerning the International Carriage of Dangerous Goods by Road.

1.12.3 Transport Within the Hospital

Specimens are presented in their original primary receptacle. This is then placed in a sealable biohazard bag (secondary receptacle), which has a pouch for a request form if required.

If appropriate, the pneumatic tube system may be used within the hospital. Follow instructions provided at the pneumatic tube station.

Do not place any samples in the specimen buckets in the fridge. Some samples are unsuitable for transport in the Pneumatic Tube System:

- Do not send samples for Histology or Cytology in pneumatic chute.
- Do not send specimens that are not easily repeated e.g. CSFs, Bronchial washings, Bone Marrow aspirates or slides.
- Do not send blood gas or lactate samples in pneumatic chute.
- Do not send samples on ice in pneumatic chute.
- Do not send blood products in pneumatic chute.
- Do not send samples that are suspect VHF Virus samples, e.g., Ebola, in pneumatic chute.

1.12.4 Histology Specimen Transport

Standard precautions must be exercised in the handling and transport of specimens to the histology department. Specimens for routine Histology must be placed in an appropriately sized

and tightly sealed approved container with sufficient volume of 10% neutral buffered formalin. Proper and timely fixation is a critical step in tissue preparation and the importance of this step cannot be overemphasised. If this procedure is not followed it may affect the interpretation of the result of the specimen. The specimen(s) together with request form must be placed in a suitable plastic pathology biohazard bag. Specimens are then transported to the histology laboratory either in designated carrier units or transport trolley as appropriate. Beacon hospital operate a full chain of custody process for receipt of samples for histology. Refer to **PPC-LAB-09 Specimen Management** and **PPC-SURG-05 Collection, Handling & Tracking of Tissue Specimens.**

Personnel handling formalin or formalin filled containers must be aware of the standard safety precautions and the proper procedure for dealing with small or large formalin spills. The Safety Data Sheet for formalin can be viewed on EcoOnline on the Intranet.

1.12.5 Transport from Beacon Hospital

The transport of all hazardous materials by road is governed by the ADR regulations. There are 2 categories, A & B. Category A covers UN 2814 – Infectious Substances Affecting Humans and Category B covers UN 3373 – Diagnostic Specimens.

Specimens are packaged according to the primary, secondary and tertiary system as outlined above and conform to the appropriate regulations. Diagnostic specimens which have been correctly classified as UN no 3373 are packaged according to P650 Packaging regulations from ADR and transported by designated hospital Courier or by post as appropriate. The primary or secondary container must be capable of withstanding, without leakage, an internal pressure of 95 kPa (0.95 bar). Infectious Substances which are assigned a UN 2814 are subject to more rigorous ADR transportation regulations and a designated Courier with a Haz-Chem license undertakes these. Specimens which require to be refrigerated, e.g., on dry ice, are transported by a designated Courier. All Specimens which have been correctly packaged are labelled with both the sender details and receiver details and a UN 3373/UN 2814 label as appropriate.

1.12.6 Collection of Blood & Blood Products

Only staff who have been trained and signed off as competent in the use of Blood Track (hospital electronic blood tracking system) are authorised to collect Blood/Blood Components/Blood Products from controlled storage. Patient identification must be brought to the hospital transfusion laboratory in order to confirm collection of the correct component/product for the correct patient. A Blood Collection form (LF-BB-064) is available on Q-Pulse for this purpose.

The appropriate single use transport bag (Red & White bag for all refrigerated components/products & Blue bag for Platelets) must be used to transport all units from site of storage to the clinical area. These bags are located beside each of the three blood fridges.

Red Cells

Once issued, Red Cells are stored between 2-6 degrees Celsius in one of the 3 blood fridges:

- Issue Fridge (BB-01-06) located in the Laboratory Reception area
- ICU Blood Fridge (BB-18-20) located in ICU
- Theatre Blood Fridge (BB-19-20) located beside theatre reception area

If red-cells are required for transfusion, the user must scan each unit out of the required blood fridge using electronic blood tracking system ‘blood track’

Only one unit of blood should be collected at one time, if being brought to a genernal ward area, unless the patient is bleeding.

Plasma (Octaplas)

Thawed plasma can be stored for up to 5 days post thawing once it is stored in a blood fridge between 2-6 degrees Celsius. Once requested, the laboratory will thaw the plasma (30 mins thawing time) and issue the unit(s) to the issue fridge in lab for collection. If plasma is required for transfusion - the user must scan each unit out of the fridge using the electronic blood tracking system, Blood Track.

Note: If a delay in transfusion is anticipated blood and plasma must be returned to controlled storage in a blood fridge **within 30 minutes** of removal to **avoid unnecessary wastage**.

Any unused units must always be returned to the Blood Transfusion Laboratory - contact the Blood Transfusion Lab or the Haemovigilance Officer for advice, if required.

Fibrinogen

Fibrinogen is stored at room temperature and once requested, will be issued to the designated box bedside the issue fridge located at lab reception area for collection. If required for transfusion the user must scan each gram of Fibrinogen out of the laboratory using the electronic blood tracking system, Blood Track.

Other Products

Other products such as Albumin or Factor Concentrates are issued to the issue fridge located in the laboratory reception area as requested. If required for transfusion- the user must scan each unit out of the required blood fridge using the electronic blood tracking system, Blood Track.

Blood Track 'Down Time'

In the event of Blood Track 'down time' staff must use the manual fridge registers located at all three blood fridges to document movement of units in and out of controlled storage. The user must revert to the manual method of crosschecking and manually document removal of the relevant component / product in the relevant fridge registers located at each of the three blood fridges **LF-BB-064 A, B &C**

Refer to **LP-BB-064, Collection and Sign Out of Blood /Blood Products Policy** on Q-Pulse, for more detailed information.

1.12.7 Courier Service

The laboratory provides a courier service by arrangement for the collection of samples. Transport of samples by the Clinic is compliant with "Carriage of Dangerous Goods by Road Regulations", current ADR regulations. For sample collections the Customer contacts the laboratory when they require this service.

1.13 RETENTION OF SPECIMENS

1.13.1 General Considerations

Retention of specimens is in line with "The Retention and Storage of Pathological records and Specimens", Royal College of Pathologists (6th Edition), the National Pathology Accreditation Advisory Council Retention of Laboratory Record and Diagnostic Material 6th Edition and current INAB terms & conditions. The recommendations that follow outline the minimum retention time for various clinical material. Storage facilities are in accordance with current legislation, regulations and guidelines.

1.13.2 Specimen Retention in the Pathology Laboratory

Table 5. Specimen retention in the Pathology Laboratory

Specimens and Preparations	**Retention Time** *RT°C-Room Temperature
Haematology and Blood Transfusion Samples	
FBC Samples	72 Hours -RT°C.
Coagulation samples	72 Hours – RT°C.
ESR samples	24 Hours
Blood Transfusion samples (blood for group, antibody screen and/or cross match)	7 Days – 4°C (can only be used for 3 days, after, samples are held for archive reasons only).
Blood Films	1 Month (routine specimens). If consultant referred, blood films are held indefinitely.
Bone Marrow Aspirates	Held indefinitely (stained and unstained).
Biochemistry Samples	
Plasma, Serum, Urine and Body Fluids	3 Days (72 Hours) 2-8°C.
Whole Blood and Red Cells	3 Days (72 Hours) 2-8 °C.
Needle stick Injury Serum/Positive Virology serum (as per List of Notifiable Diseases, EXT-207).	Minimum Two years @ - 80°C freezer.
Other Specimens	
Blood gas and Lactate samples	12 hours @ RT
NPT samples – Ward level	N/A (sample discarded post analysis).
Urine samples (beta hCG, dipstick) – Ward level	24 Hours
Histology Samples	Cytology Specimens- 4 Weeks after signing out- RT°C post processing.

Specimens and Preparations	**Retention Time** *RT°C-Room Temperature
	Formalin fixed specimens – 4 Weeks after signing out- RT°C.
	Cytology specimens post processing- 4 Weeks- RT°C
	Histology stained slides 15+ years- RT°C
	Cytology stained slides- 10+ years- RT°C
	Paraffin Embedded histology/cytology blocks 30+ years- RT°C
Microbiology	Blood Cultures – 1 month after final report (positive samples) - RT°C
	CSF – 3 Months – 4°C; transferred to - 80°C freezer for another 3 Months.
	Swabs, Sputum, Faeces, – 1Week – 4°C.
	Fluids (Other than CSF), Tissue –3 Months – 4°C.
	Urines – 1 Week – 4°C.
	Cultures – 1 Week -RT°C.
	Fungal Specimens –3 Months – 4°C.
	Gram-stained preparations form culture bottles-1Week after final report.
	Faecal occult blood cards – 1 Week –4°C.
Radioactive Samples	24 Hours in proper radioactive proof storage.

1.13.3 Residual Samples for Research Purposes

The laboratory must seek explicit consent through the Consultant in charge of the patient, from parents/guardians in order to use residual or surplus samples. In the absence of explicit consent, prior approval must be granted by the hospital Medical Advisory Committee (MAC), which deals with hospital ethical issues or in order that samples may be used for purposes other than the examinations requested e.g. quality control, method development. If used, all samples must be made anonymous. With certain unique samples e.g. dried blood specimens or biopsies, only a portion of the sample may be used. Sufficient sample must be retained in the event of further investigations being required.

Residual or surplus samples may only be used for research related to a specific disorder or group of disorders provided prior approval is granted by the MAC or appropriate body. Ethical approval must be sought independently for every proposed study. Policy on use of residual samples for research purposes is under constant review by MAC or third-party Ethics Committee.

1.13.4 General Sample Stability

All samples should be collected and sent to the Laboratory as soon as possible. Samples should not be stored in ward areas overnight. Samples that are not transported in a timely manner to the laboratory may be rejected if there is any doubt about the sample integrity.

Storage of samples in the fridge will also render some tests unsuitable e.g. coagulation samples, blood cultures, serum samples for potassium. Please ensure all samples are sent to the lab on the day of collection to avoid sample rejection. In this case, a repeat sample may be requested from the Nurse in charge.

The validity of results requires adherence to pre-analytical sample guidelines as outlined in the Laboratory User Manual, together with correct sample storage and transport conditions.

1.13.5 Specimen Storage Conditions after Collection

- Send the blood samples to the Laboratory as soon as possible. Unless otherwise specified, store blood samples at room temperature.
- Routine infectious serology samples are analysed weekly, every Wednesday and are stored in the biochemistry fridge until analysis
- Serum Osmolality samples are only stable for 24 hrs at room temperature or 48 hrs refrigerated. Urine Osmolality samples are only stable for 24 hours. If testing is delayed longer than this, then samples must be frozen.
- 24-hour urine containers must be refrigerated during collection and returned to the laboratory ASAP.
- Delayed microbiology specimens must be preserved by refrigeration at 4˚C in a designated specimen fridge in order to maintain the viability of the pathogens and to prevent the overgrowth of non-pathogenic bacteria. Exceptions include blood cultures, CSF and samples for the isolation of *Neisseria gonorrhoea.* All these samples should be stored at room temperature.
- NPT samples are generally not stable for extended periods and results are usually required urgently.
- Where finger prick samples are used, there is no specimen retention and a further sample is requested from the patient.

1.13.6 Requests for Add-On Tests

Due to the diverse nature of samples and requests, storage of samples and additional testing on samples already submitted varies greatly and is both sample and investigation dependent. If additional examinations are required advice is available from the Laboratory regarding the requests for these additional examinations and the suitability of the previously submitted sample.

NEVER place additional test requests on Meditech without first contacting the Laboratory.

Telephoned requests for add-on tests are accommodated provided the usual criteria for acceptance of the added test are met. Some tests may be time sensitive and therefore may not be available as an add-on request. Please contact the appropriate department to ensure that the specimen that is in the laboratory is valid for any additional requests if you are unsure as to the validity of the specimen.

1.14 REPORTING OF LABORATORY RESULTS

1.14.1 Laboratory Policy on Phoning Results

All laboratory results in Beacon Hospital are reported electronically on the hospital computer system, Meditech. Results are available in real time to internal wards directly through Meditech. Results are also made available to service users via “Beacon Remote”, a secure web-based VPN link. Access to this service must be arranged through the Beacon Hospital IT Department. Patients results for all disciplines, including Histology, can be accessed through this link.

- Results may be telephoned, when previously arranged or requested, e.g. on urgent samples with prior verbal notification.
- Results may be telephoned when prompted by the Meditech System (critical results etc)
- Results may be telephoned when the results may be of relevant to immediate clinical management e.g. clinically unexpected results obtained.

The laboratory staff member issuing the report will make sure of the patient’s unique identification by requesting date of birth and/or MRN of the patient prior to issue. After the

report has been transmitted, the laboratory staff member in question will ask the receiver to read back the results in order to minimize the risk of transmission errors.

Reports will only be issued to clinicians, their secretaries or ward staff. The identity of the receiver must be verbally confirmed to laboratory staff before issuing the report. Results are not released to patients or their families by Laboratory staff.

The above method is used to ensure the results only reach an authorised receiver and that results are clear and unambiguous. The security of the personal records is ensured, and the risk of error reduced. This is done in accordance with JCI and ISO15189:2022 standards.

Hard copy reports for Histology results only are printed daily and posted internally and externally as required to customers.

Once available, the results for the specialist examinations, referred to external laboratories, are transmitted through the DMR System. This system is used by all the departments in the Pathology Laboratory that will refer specimens for specialist examination work and will receive tests reports from referral laboratories. If a delay occurs in reporting of results, requesting clinicians are notified as soon as possible.

1.14.2 Telephoning Critical Results

Critical results are telephoned by laboratory staff to users as per the hospital's Critical Values Policy Ref: **PPS-PS-35, Critical Values Policy.**

Results will be phoned if there are no recent similar results available for comparison, if there is no known clinical reason for the result or if results are significantly abnormal- as defined in the documents above. While the staff in the Laboratory will do their best to adhere to the above guidelines, it is the duty of all doctors to follow up, in a timely fashion, on the results of pathology investigations requested on patients under their care.

Histopathology critical results are telephoned to users by consultants.

1.14.3 Turnaround Times

The turnaround time (TAT) is given as the maximum number of working hours/days between sample receipt and issuing a report either in the computer or by phone under normal operating conditions**.** In addition to the routine service each department operates an "urgent" system whereby the target turnaround time is shorter. Some tests are performed on a weekly basis; if such tests are required urgently, please phone the appropriate Department to discuss the request.

Turnaround times (TATs) for Microbiology and Histology are based on working days (Mon-Fri).

TATs are routinely monitored as part of the laboratories quality improvement program and are established with collaboration between senior laboratory staff, departmental consultants and clinical users. Significant delays in agreed TAT, for example due to instrument down time, will be communicated to the clinical area or requesting clinician where possible**.**

Ref: **LP-GEN-005, Laboratory Turnaround Times.**

1.14.4 Reference Intervals and Measurement Uncertainty

Reference intervals are stated appropriately on laboratory reports. Sources for these are available on request and are reviewed by senior laboratory staff in conjunction with relevant consultant.

The laboratory calculates measurement uncertainty, which are available to laboratory users on request.

2 SCOPE OF THE PATHOLOGY SERVICES

The services provided by Beacon Hospital Pathology Laboratory are:

- Blood Transfusion/ Haemovigilance
- Haematology
- Microbiology
- Clinical Biochemistry/ Endocrinology
- Near Patient Testing
- Histology and Cytology

The examinations performed in each discipline, including sample requirements and turnaround times (TAT), are listed in this Laboratory User Manual. INAB accredited activities are defined in the scope of accreditation as detailed on the INAB website (www.inab.ie), registration number 242MT. For specialist examinations, Beacon Hospital sources outside laboratories based on their ability to provide a quality service and include those that are a reference laboratory for specialist examinations, and/or an accredited laboratory, e.g. CPA or ISO 15189 accredited.

2.1 BLOOD TRANSFUSION

2.1.1 Haemovigilance

Haemovigilance is defined as a "set of surveillance procedures from the collection of blood and its components to the follow–up of recipients, to collect and assess information on unexpected or undesirable effects resulting from the therapeutic use of blood/ blood products, and to prevent their occurrence".

Reporting of adverse reactions and events is required to comply with EU directive 2002/98/EC, which stipulates the following:

- All serious adverse reactions and serious adverse events which are attributed to the quality and safety of blood components transfused will be captured and reported.
- All blood products are traceable from donor to recipient.

This information must be available for thirty years.

If you suspect a transfusion reaction, please contact either the blood transfusion laboratory on 01 2937560 during routine hours or the Haemovigilance Officer, from 8:00- 16:00 Monday – Friday on 01 2937509. If out of hours, contact the Medical Scientist On-Call.

In Beacon Hospital, the main objectives of the Haemovigilance system are:

- To ensure the safety of the transfusion system.
- Educate staff in best transfusion practice.
- Audit transfusion practice
- Ensure compliance with legal requirements for traceability / reporting of SAEs /SARs
- Promote appropriate use of blood
- Improve public confidence in the safety of blood and blood components.

2.1.2 Patient Identification

It is essential to perform positive identification of patients in order to minimise the risk of errors, such as an ABO incompatible transfusion.

Patients must be positively identified as follows:

- All In-patients ***must*** have a hospital wristband (ID band) incorporating their full name, Medical Record Number (MRN) and date of birth.
- Patients must be asked to confirm the details on their ID band e.g. Name and DOB
- Samples for Transfusion may not be taken from patients without wristbands.
- All patients attending the Pre-Op Clinic are positively identified using their charts.
- Transfusion samples collected at the Pre-op clinic are only used to pre-screen for Blood type and antibody status.
- All patients that attend the Pre-op clinic have repeat samples taken on Admission after the hospital wristband has been applied.

2.1.3 Sample Taking and Labelling

After positive identification of the patient, by checking the ID band against the information given by the patient, samples may be taken.

Samples should be collected using standard phlebotomy techniques into the correct blood collection tube. Refer to specific collection information in the test's repertoire, Appendix A.

All samples that are handwritten for transfusion **must be legible.**

Details on samples for Blood Transfusion (type and screen /type and crossmatch) must be handwritten. **Addressograph labels <u>are not accepted</u>** <u>and</u> will be rejected by the Blood Transfusion laboratory.

The ***Minimum*** details for Blood Transfusion samples are:

- Patient's full name exactly as it appears on Meditech (Initials or abbreviations are not acceptable).
- Patient's unique medical record number (MRN)
- Patient's date of birth.
- Initials and ¾ I.D. of the person taking the sample.
- Date and time of sample collection.

Discrepancies in the labelling of samples for Blood Transfusion will result in rejection of the sample by the laboratory and will necessitate a fresh sample.

2.1.4 Electronic Request on Meditech

- Log onto the O/E module.
- Select Category the in which you wish to order the test (e.g. BBK for Blood Bank).
- Order the test required. Each test is ordered by selecting from a drop-down menu in the Meditech computer system.

If ordering a **Type & Crossmatch** proceed as follows:

- Log onto the O/E module.
- Select Category BBK (for Blood Bank). Type TS first, to order a Type & Screen. Then type LDRCC to order Red Cells. The cursor will stop at the Count column. Enter the number of red cells required and press Enter.
- The Crossmatch (XMC) request will now default into Meditech.

Note: Requests for other products, such as Platelets, Plasma, Albumin and Factor Concentrates cannot be ordered via Meditech, requests for these products should be telephoned to the Blood Bank Laboratory on 01 2937560.

2.1.5 Firm Indications for Giving Plasma

The correction of haemostatic disorders where no other more suitable therapy exists or is available:

- Emergency warfarin reversal where Octaplex is unavailable.
- Haemostatic failure associated with major blood loss.
- Liver Disease, either in the presence of haemorrhage, or prior to an elective procedure.
- Acute Disseminated Intravascular coagulation (DIC).
- Replacement of single factor plasma deficiencies where no licensed virally inactivated or recombinant single factor concentrate is available e.g. acetyl cholinesterase deficiency.

The treatment of choice in thrombotic thrombocytopenic purpura (TTP) in conjunction with plasma exchange.

Octaplex is licensed for use in the Republic of Ireland for the treatment of bleeding and peri-operative prophylaxis of bleeding in patients receiving Warfarin. It is also licensed for treatment of bleeding and peri-operative prophylaxis in congenital deficiency of any of the vitamin K dependant coagulation factors (FII, FVII, FIX & FX) when purified specific coagulation products are not available. Octaplex provides a more rapid and effective reversal of Warfarin at a lower volume than human plasma.

2.1.6 Management of Bleeding and Excessive Anticoagulation

Table 6. Management of bleeding and excessive anticoagulation

INR* 3 – 6 (target INR 2.5) INR 4-6 (target INR 3.5) no bleeding or minor bleeding *INR = International Normalised Ratio	1. Reduce warfarin dose or stop 2. Restart warfarin when INR < 5.0
INR 6 – 8; no bleeding or minor bleeding	1. Stop warfarin 2. Restart when INR < 5.0
INR > 8.0, no bleeding or minor bleeding	1. Stop warfarin 2. Restart warfarin when INR < 5.0 3. If other risk factors for bleeding exist **,

**Age of patient > 70 and/or Previous history of bleeding	give 1-2 mg of vitamin K IV or orally 4. If INR still too high post 24 hours- Vitamin K dose can be repeated
Life threatening bleeding *****a single dose should not exceed 3000 IU**	1. Stop warfarin 2. Give 5mg of vitamin K IV-***Slowly*** 3. Give Octaplex*** in addition to Vitamin K as follows. INR 1.5-1.9 give 15 IU/Kg Octaplex INR 2.0-3.9 give 25 IU/Kg Octaplex INR 4.0-6.0 give 35 IU/Kg Octaplex INR>6.0 give 50 IU/Kg Octaplex

Check INR 30-60 mins post infusion. Contact Haematology if further correction is needed.
If PCC (Octaplex) is contraindicated or unavailable, administer plasma (Octaplas) at 15 mls/Kg.
Recheck the Coagulation Screen at the end of the infusion and every 4 hours until Vitamin K effect is evident.

2.1.7 Managing Anticoagulation in the Perioperative Period

Elective invasive procedure: Stop anticoagulant for three days prior to surgery.
Emergency invasive procedure: Where surgery cannot be postponed, reverse anticoagulant with low dose Vitamin K as above.
In emergency situations, Vitamin K should be given IV, which will reduce the INR within 4 hours, with complete reversal to the therapeutic range within 24hours.
In less urgent situations, where surgery may be delayed for >6 hours, Vitamin K can be given orally. Where Vitamin K tablets are no longer available, the intravenous solution of Vitamin K can be given orally and is effective. Only 1mg is required to reduce the INR from > 4.5 to a target of 2.0 – 3.0 within 24 hrs.

Octaplex should **NOT** be used for reversal of Warfarin in non-emergency situations.

Please refer to hospital policy on recommendations for the reversal of warfarin: **PPC-LAB-8**

2.1.8 Bleeding and Perioperative Prophylaxis of Bleeding during Vitamin K Antagonist Treatment

The dose will depend on the INR before treatment and the targeted INR.

*** The single dose should not exceed 3,000 IU Octaplex.**

Contact the Consultant Haematologist if further advice is required.

2.1.9 Albumin

This product is available as 50g/litre solution (volume 500ml) and 200g/l solution (volume 100ml). The dosage depends on the diagnosis and clinical condition. In general, a dose of 1g/kg will raise serum albumin by ~ 8g/l.

Indications for use:

- Short term management of hypoproteinaemic patients in whom there is extravascular fluid overload and resistance to diuretics, particularly in nephritic syndrome.
- In patients with ascites and peripheral oedema due to hepatic failure and in whom there is resistance to diuretic therapy.
- The clinical management of burns in situations where plasma volume is required but it is also necessary to restrict salt and water intake.
- In patients undergoing dialysis.
- Once the pack has been perforated use within 3 hours and any unused preparation discarded.

2.1.10 Anti-D Immunoglobulin

Rhophylac 300 is the product issued. It contains 1500 IU (300 μg), 750 IU/150 μg per ml of human anti-D immunoglobulin in 2ml of solution for injection in a pre-filled syringe. (Stored at 2 – 8°C.)

Rhophylac may be given when there are complications with pregnancy (miscarriage termination, etc) in Rhesus negative women.

Please refer to hospital policy on administration of anti-D for indications and doses (accessed via Q Pulse) **PPC-WHC-2**

2.1.11 Second Sample Requirement for Blood Transfusion

Group Specific Blood Products will only be issued when the Laboratory has confirmed the patient blood group on a **second independently taken sample**. Patients who have no previous blood group on record in Beacon Hospital and require transfusion of blood / blood components, should have a second sample taken. The transfusion laboratory will inform the relevant clinical area when a second 'check' sample is required. In an emergency, Group O red cells may be issued without a confirmatory patient group.

2.1.12 Additional Requests

All tests requests are electronic. If a clinical area wishes to add–on an additional test to a sample already received into the Laboratory, **they must contact the laboratory by phone**. Orders on Meditech for Type & Screen and Type & Crossmatches should only be made **at the time of initial sampling.**

If additional units or products are required, **PLACE AN ORDER ON MEDITECH.** The request for additional products **MUST** be telephoned to the Laboratory. Requests for other products, such as Platelets, Plasma, Albumin and Factor Concentrates should be telephoned to the Laboratory to prevent delay in issuing blood and blood productsAll oral requests must be followed up with a meditech request within the working day from the ordering clinican/medical team.A questionnaire is also attached to all blood and blood products to include clinically relevant information to aid the laboratory in the selection of appropriate blood components / products.

2.1.13 CMV Negative Irradiated Requests

All requests for special transfusion requirements such as CMV Negative and/or Irradiated products, should be telephoned to the Laboratory and prescribed on the appropriate section of the blood prescription.

If a patient has special transfusion requirements, such as requiring CMV negative and / or irradiated components, the consultant must fill out the relevant request form and send it to the blood transfusion laboratory (CMV negative / irradiated component request from **LF-BB-033** accessed via Q-Pulse**)**

A marker will then be placed in the patient's electronic transfusion record in Meditech. Any further changes or updates to the patient's special transfusion requirements **must be phoned** to the transfusion laboratory.

For any queries, please contact the Blood Transfusion Laboratory Ext 7560 or the Haemovigilance officer Ext 7509.

An adequately completed request (electronic/hardcopy) once accepted in the laboratory initiates an agreement for services. The laboratory will cooperate with users or their representatives if clarification of a request is required. Separate request forms should be sent for different testing timelines, e.g., 24hr urine requests that require separate collections.
Users are asked for feedback on request forms through user meetings and surveys.

2.1.14 Valid Sample Age

Samples used for crossmatching must be **less than 72 hrs** old at time of transfusion. A fresh sample must be taken for Type & Screen and Crossmatch if more than 72 hrs have elapsed (or will have elapsed by the time of infusion) since the patient was previously bled, regardless of previous transfusions/pregnancies.

2.1.15 Patient Information Leaflet

With the exception of emergency transfusions, all patients that receive a transfusion in Beacon Hospital should receive a copy of the Patient Information Leaflet, LP-BB-085 as part of the consent process. This leaflet contains information regarding the reason for the transfusion, risks, alternatives and possible reactions to transfusions.

For unconscious / confused patients and children, the information leaflet should be offered to the next of kin, parent or legal guardian.

It is the responsibility of the nursing staff or the prescribing doctor to offer / give the patient information leaflet to the patient and / or next of kin. Confirmation that the leaflet has been offered / given should be documented on the consent section of transfusion prescription record**.** If, for any reason ***the transfusion information leaflet is not given***- this must also be documented on the consent section.

2.1.16 Emergency Transfusion Request

If blood is urgently required due to a patient's clinical condition, the medical scientist in Blood Transfusion must be notified immediately by phone. Red Cells for a patient previously unknown in Beacon Hospital should be available within an hour of receipt of a sample in the laboratory, provided no unexpected results, e.g. positive antibody screens, are obtained. Where a valid group and screen sample exists, red cells should be available within 40 minutes of request.

If red blood cells are needed immediately, 2 units of emergency stock O Rh D negative, K negative units may be used (normally located in the ICU blood fridge). ABO group-specific blood may be provided if/ when the blood group is known (i.e. patient has been type & screened at least twice in Beacon Hospital). Thawed plasma (up to 4 units) is available within 30 minutes of request, provided patient group is known. Platelets are ordered as requested from the IBTS and average time from order to receipt is 90mins.

Beacon Hospital have a major haemorrhage policy in place for both adults and children **Ref: LF-HV-CL-001, Acute Massive Blood Loss Guideline for Adults and LI-HV-CL-002 Paediatric Major Haemorrhage Protocol.** Major haemorrhage protocols may be initiated by senior medical personnel. If activated, the laboratory will issue a pre-set 'pack' of components and products as listed on the above policies, in addition to any further requests from the clinical area.

2.2 HAEMATOLOGY

2.2.1 Service Provision

The Haematology Laboratory deals with disorders of blood, blood cells and the bone marrow. Examples are the investigation of anaemias, leukaemia's, coagulation abnormalities and blood borne infections such as malaria.

2.2.2 Test and Sample Information

The sample requirements and volumes required are indicated in **Appendix B.** Please ensure that the minimum volume required is supplied, or there may be insufficient sample to process the tests requested and will be reported as insufficient.

2.2.3 Factors that can Affect Test Results

Activated samples – this can occur when the Citrate tubes are underfilled. It is important that Citrate samples are filled completely to the fill line. Overfilled or underfilled Citrate tubes are unsuitable for analysis.

Clotted samples – this can occur when the samples are not mixed correctly during venepuncture. Samples must be mixed gently by inversion to ensure the anticoagulant mixes with the blood, and small clots do not occur.

- EDTA Samples that are clotted or insufficient are not acceptable for FBC, Reticulocytes, ESR, Sickle cell screening or Malaria.
- Citrate samples that are clotted are not acceptable for Coagulation test (INR, APTT, APTTR, Fibrinogen or D-Dimer).

Special Collection Instructions – please ensure any special collection instructions are followed, or the samples may be unsuitable for analysis. Special collection instructions are noted next to the sample information in **Appendix B.**

2.2.4 Time Limit for Requesting Additional Haematology Tests

- EDTA samples for FBC are retained for 3 days (for traceability reasons only). Additional tests such as Blood Film, Reticulocytes, Sickle cell screen, ESR or Malaria are affected by EDTA changes and must be performed on samples < 24 hours old.
- For referred Haemoglobinopathy Screens additional tests may be added within 7 days of sample collection.
- For referred Immunophenotyping a fresh sample is preferable. Additional tests may be possible within 5 days of sample collection.
- For add-on D-dimer requests, samples should be less than 8 hours old.
- For add-on Fibrinogen requests, samples should be less than 4 hours old.
- An add-on PT/INR and/or APTT/APTTR may be added within 4 hours of sample collection.
- Immunophenotyping can only be performed on samples that are less than 24 hours old.

Ref: LI-HAEM-007 Haematology Test Cut-off Times.

2.3 MICROBIOLOGY

2.3.1 Service Provision

The Microbiology Department in the Beacon Hospital provides bacterial, parasitology and mycology investigation of specimens. The department is also responsible for send out of referral tests. The tests available in house and referral and the sample requirements are listed in the following sections.

2.3.2 General Guidelines

Microbiology results depend critically on the type and quality of the material received. Therefore, specimens should be transported to the laboratory **without delay** to ensure optimal results. If a specimen is accompanied by the colour coded request form, this should also include all relevant clinical details.

It is the responsibility of the person dispatching the specimen to the laboratory to ensure that it is packaged correctly and does not pose a risk to anyone coming in contact with it during transport or on receipt in the laboratory.

The following pages and **Appendix C** contain guidance on the taking and submission of samples for the most requested microbiological investigations. In addition, advice is always available from medical scientists, both regarding the tests described below or others which may be occasionally requested.

- All specimen containers lids must be tightly closed prior transportation and placed in a zipped biohazard bag before being sent to the laboratory.
- The specimens must be labelled with the necessary information to allow correct processing: the correct patient identifiers and specimen type and anatomical site if appropriate.
- The samples submitted must be of sufficient volume.
- The staff of the Microbiology department must be informed prior to sending a potentially cytotoxic specimen.

2.3.3 Test and Sample Information

Blood Cultures

- Only take blood for culture when there is a clinical need to do so and not as routine.
- Blood cultures are taken to identify patients with bacteraemia.
- Blood cultures should not be refrigerated and always sent to the laboratory within maximum 4 hours from collection.
- Ensure fluid is clear and sensor at the bottom of the bottle is grey. There is an expiry date on each bottle, and they should not be used within five days of this date.

Refer **to Section 1.9.8 Collection of Blood Culture bottles** for sampling method.

Cerebrospinal Fluid (CSF)

- All CSF specimens are treated with priority in the Microbiology Laboratory. Outside normal hours, the requesting clinician must ensure that the on call medical scientist in Microbiology is aware that a CSF is expected.
- Samples should be transported to the lab as soon as possible. They must never be sent in the pneumatic tube system. They must be hand delivered to medical scientist to ensure **prompt processing.**
- Bacteraemia is sometimes seen associated with meningitis, and a blood culture should be taken when meningitis is suspected. If in doubt, the Consultant Microbiologist should be contacted for advice. Results are phoned to the ward as soon as they are available.
- Where CJD (Creutzfeldt–Jakob disease) is suspected or requested on a CSF sample, communication must be made to the Consultant Microbiologist and also to the relevant Microbiology team members <u>before</u> the sample is taken.

Specimen Required:

CSF sample – as much sample as possible divided into:

1. Three Sterile universal container bottles sequentially marked 1, 2 and 3 in order of collection.

2. Telephone the Microbiology Department and inform the scientists a CSF sample is to be sent.
3. Send to laboratory ASAP for microscopy, culture and sensitivity or any additional tests e.g. oligoclonal bands, virology, cytology, mycobacteria.
4. A specimen will be analysed in Biochemistry for CSF glucose and protein.
5. If subarachnoid haemorrhage suspected bottle 2 of the CSF must be made light proof and will be sent to the biochemistry department in Beaumont hospital for Xanthochromia analysis.
6. Send a blood glucose sample (to compare with CSF glucose value).
7. Send blood culture as outlined above.
8. Send EDTA blood sample for PCR for meningococcus if this is suspected.
9. Send a serum sample for oligoclonal bands if this is required (CSF will not be processed for oligoclonal bands if no serum is received).

Pus Samples / Wound Swabs

- Pus sent in sterile containers give the best results for both Gram stain and culture and is essential for the diagnosis of TB or actinomycosis. Send pus in a sterile universal container wherever possible.
- Wound swabs should only be taken when signs of clinical infection are present**.** Deep swabs rather than superficial will give more accurate representation of bacteria/ fungi present which may be causing infection.
- Swabs should be sent in transport medium after it has been soaked in the pus or exudate. Please clearly indicate the site of the wound. Send pus swabs only if pus is difficult to collect. Pus sample is always preferable to a wound or pus swab.
- Wound or pus samples are screened for all likely bacterial pathogens and, if present, these organisms and their antibiotic sensitivity results are reported.
- Ideally all specimens should be processed within 30 min of sampling. Delays of >4 hours will compromise the recovery of anaerobes.

Ulcers

- Prior to obtaining the sample, ulcers should be cleaned with sterile saline to remove surface contamination.
- Ulcers should only be swabbed if there is evidence of infection e.g. if there is cellulitis or pus formation. Do not swab as a routine.

Eyes

- Use normal technique when swabbing discharging eyes for bacterial culture.
- For investigation of conjunctivitis or corneal lesion, retract the lower eye lid and stroke the tarsal conjunctiva with a transport swab and remove all purulent material. Place the swab in viral transport medium case.
- Contact the medical scientist if fungal or amoebic infections are suspected.

Throat Swabs

- Swabs should be taken from the tonsillar region.
- Viruses account for over 70% of sore throats. Group A β-haemolytic streptococcus is the most common bacterial cause of sore throat in Ireland.
- Swab request for other pathogens e.g. *C. diphtheriae, N. gonorrhoea* or *N. meningitidis* must be accompanied by down time request form.
- Swabs for virology investigations should be taken at an early stage of a suspected viral illness. Please use viral transport medium for this request (pink top swab).

Faeces

- Please send stool specimens for culture/parasitology/virology in separate universal containers when possible. Please fill the specimen container to between ¼ and ½ full. Please do not fill to the brim.
- Faeces for culture and sensitivity should be refrigerated if processing is delayed >4 hours.
- Send separate specimen for Norovirus testing as this test is referred to the NVRL.
- For **ova and parasites** three specimens should be collected over no more than a 10-day period. No more than specimen should be examined within a single 24-hour period unless the patient has severe diarrhoea.

- For ***Clostridium difficile*** testing is performed on all faecal samples except when the specimens do not take the shape of the container or the specimen was positive for *C. difficile* within the last 14 days.
- In-patient testing for routine culture and sensitivity will not be carried out on patients with a hospital stay >3 days unless requested by consultant microbiologist.

Urine

- Send a specimen after obtaining about 10 ml of urine in a sterile universal container. Patients should be instructed to pass a little urine into the toilet first, then pass enough urine into the specimen container to half fill it and finish urinating into the toilet.
- Urine specimens for TB should be collected in the early morning on three consecutive days and placed in a sealed plastic bag. If there are no appropriate containers for a whole Early Morning Urine (EMU) sample, a midstream EMU sample is an acceptable, but not ideal alternative.

Respiratory Specimens

- Sputum for culture and sensitivity should be transported to the laboratory within 2 hours. A good quality purulent sputum specimen should be obtained. Salivary specimens are unsuitable for testing. If transport is delayed, please refrigerate the sample.
- Sputum specimens for investigation of *Mycobacterium spp* should be relatively fresh (less than 1 day old) to minimise contamination. Purulent specimens are best. Two to three samples of ≥5mL should be collected approximately 8-24 hours apart with at least one from early morning. Samples taken early morning (that is, shortly after patient waking) have the greatest yield.
- eNAT swabs are used for the collection of samples for the testing of SARS-CoV-2 and Respiratory Viruses. All samples for urgent testing should be transported and hand delivered to the laboratory staff (Microbiology and On-Call). All routine testing can be sent to the lab via the chute system.

High Vaginal Swabs

- Use a speculum and a trans swab to obtain a high vaginal swab.
- The swab should then be placed in transport medium preferably with charcoal.

Cervical / Endocervical Swabs

- Obtain a swab by use of a speculum without lubricant. After the cervix area was cleaned, gently insert a swab into the endocervical canal and rotate to obtain an exudate.
- The swab should then be placed in transport medium preferably with charcoal.

Fluids for sites normally sterile

- Specimens should be transported to the lab and processed as soon as possible.
- Large volumes of purulent material maintain the viability of anaerobes for longer.
- The recovery of anaerobes is compromised if the transport time exceeds 3 hours.
- If processing is delayed, refrigeration is preferable to storage at ambient temperature.
- Delays of over 48 hours are undesirable.

2.3.4 Requesting Microbiological Investigations

- Please use the yellow request forms for Microbiology when the order was not made electronically.
- Urgent request must be accompanied by a verbal/telephoned request and handed to a medical scientist e.g. CSF samples, Urgent SARS-CoV-2.
- Always ensure that the request forms are fully completed, and relevant clinical details were included on the request.
- Requests for additional tests must be requested the day the specimen is taken.
- Requests for additional tests that are not routinely carried out in the laboratory should be discussed with the Senior and or Chief medical scientist.

2.3.5 Microbiology Specimen Stability and Storage Overnight

Table 7. Microbiology specimen storage

Specimen	Storage and Specimen Life
Blood Cultures	DO NOT refrigerate. These should arrive in the laboratory within 4 hours of collecting.
CSF	Immediate processing of CSF specimens is always indicated. Please promptly inform the laboratory or the on-call staff when you have taken a specimen. Do not use PTS. If the specimen is more than 2 hours old on receipt the cell count may not be accurate due to cell disintegration. Glucose analysis must be done as soon as possible, it cannot be performed on specimens more than 1 hour.
All other Specimens	Urine, swabs including eNAT, Faecal swabs, fluids, stool, tissue, sputum etc. may all be stored overnight if refrigerated. Please leave all such specimens in the cold room at -4C. They will be collected and processed by laboratory staff each morning

2.3.6 Requests for Additional Tests and Specimen Retention

Additional tests will be performed where possible and when specimen volume and specimen quality allow. Specimen quality deteriorates over time, especially where specimens are stored at room temperature. Ref: **Table 6: Specimen Retention in the Pathology Laboratory**

2.4 CLINICAL BIOCHEMISTRY

2.4.1 Service Provision

The Biochemistry Department offers a wide range of investigations. Tests not available onsite are sent to external reference laboratories.

2.4.2 General Considerations

The sample requirements and volumes required are indicated in the sections that follows. Please ensure that the minimum volume required is supplied. The laboratory will always try to maximise the use of any sample, however where a sample is less than half full, please indicate the tests that are of greatest importance. Some more specialised tests, those which we send to

referral laboratories, may require larger sample volumes. Please contact the Laboratory to discuss sample requirements for specialised tests. All samples referred for testing by external laboratories are dispatched Monday-Friday during routine hours. All samples for external referral submitted to the laboratory outside these hours, will be stored frozen until they can be dispatched the next working day (working days do not include weekends).

Minimum labelling requirements as detailed in section 1.10 above. Please also include time of collection. Sample collection requirements are described in section 1.9 above, adhering to order of draw.

The test profiles defined in the following table are available to requesting clinicians. Please use the profile names given below as these are the only profiles defined and recognised by the Clinical Biochemistry Department. Nonspecific and vague statements such as 'biochemistry screen', 'bio profile', should not be used. Terms such as 'hormone profile', 'tumour marker' etc are vague, undefined and should not be used when requesting tests. A detailed list of all tests, specimen requirements and turnaround times are outlined in **Appendix D.**

Table 8. Assays Performed Routinely within the Biochemistry Department

Profile	Assays Included
U&E-Urea & Electrolytes	Urea, eGFR, Creatinine, Sodium, Potassium.
BP-Bone Panel	Calcium, Phosphate, Magnesium, Albumin, Alkaline Phosphatase.
LIVP-Liver Panel	Total Bilirubin, Alkaline Phosphatase, ALT, Gamma GT, Total Protein, Albumin, Globulin. If AST is required, please request separately.
RENP -Renal Panel	Urea, eGFR, Creatinine, Sodium, Potassium, Calcium, Corrected Calcium, Albumin.
LIPP-Lipid Panel	Cholesterol, Triglycerides, HDL Cholesterol, LDL Cholesterol.
IRP -Iron Panel	Ferritin, Iron Binding Capacity (UIBC, TIBC), Transferrin Saturation, Serum Iron.

Profile	Assays Included
TFT-Thyroid Function Test	Free Thyroxine (FT4), Thyroid Stimulating Hormone (TSH).
FULLBIO	LIVP, RENP, BP, Urate, LIPP, IRP.
Haematinics	Ferritin, Vitamin B12, Folate.
GAM - Immunoglobulins	IgG, IgA, IgM
SPEP (Serum Protein Electrophoresis)	Total protein, IgG, IgA, IgM, Interpretation

2.4.3 Serology Tests

Serology tests can be used to diagnose infections by assessing the patient's antibody response to an infective agent. The department offers a comprehensive range of serological screening investigations. The laboratory also offers a Needle Stick Injury service – consent for both Needle Stick Injury specimens from both the donor and recipient of the injury will be obtained at ward level. Any clinical reactive specimens will be forwarded onto the National Reference Laboratory for confirmatory testing.

2.4.4 Processing of Body Fluids, CSF and Urine for Analysis

Fluids samples should be sent to the lab in a sterile universal container. Microbiological analysis if required should be processed first. Samples for glucose where testing is delayed greater than 1 hour must be sent in a Fluoride EDTA collection tube. Samples for pH must be collected into a heparinised syringe (safePICO) and brought to the laboratory immediately for analysis.

CSF samples are always handled by Microbiology to maintain sterility for culture and sensitivity testing. An aliquot is then dispatched to Biochemistry.

When samples for fluid or urine analysis are accompanied by downtime request forms, please use the appropriate colour coded form e.g. white for Biochemistry. Multiple tests for one department can be sent on one request form but **separate specimens and request forms are required if tests are being sent to different departments.** Refer to **Appendix D** for the list of fluids assays available onsite.

2.4.5 Antibiotic Assays

Vancomycin, Gentamicin and Amikacin are the only antibiotics measured in-house. See antibiotic guidelines re: timing of samples in relation to administration of dose. State time of sampling, details of last dose and whether sample is a trough or a peak.

2.4.6 Pre-analytical Factors Affecting Blood Test Results

Common analytical factors that are known to affect the performance of a test or the interpretation of results are described below.

Table 9. Analytical Factors Affecting Test Results

Factors	Precautions
Mixing	Gentle mixing only of blood with additives must be carried out by gently inverting the tube at least three times, immediately on collection.
Haemolysis	Avoid mechanical trauma to red cells. Never inject blood through a syringe needle into a specimen collection tube. Haemolysed samples may be unsuitable for analysis either due to the high level of an analyte in the erythrocyte relative to plasma or for reasons of analytical interference.
Contamination	Do not take blood from the same limb being used for infusion of fluids or decant blood from one container to another. Always follow the correct order of drawn, taking blood into a purple top (EDTA) tube last.
Venous Constriction	It is essential that there should be no venous constriction (tourniquet) or active muscle movement during the collection of blood for the estimation of such constituents as calcium, protein, lactate and electrolytes, as this can lead to considerable alteration in levels. If avoidance of constriction is not practicable, its duration must be kept to an absolute minimum.
Delayed Separation	Many analytes are affected if there is a delay in transporting samples to the laboratory. In general, all samples should reach the laboratory within maximum 4 hours of venesection. Details are available in the test guide for more specific specimen requirements. See Appendix D
Fasting Samples	Certain tests, such as Fasting Glucose, or Lipid Profiles, require the patient to be fasting. Please ensure the patient is fasted for 12 hours, preferably overnight. They are permitted only water during this period.

2.4.7 Analytical Failure and Serum indices

Haemolysis

Analytes affected by haemolysis are not reported as indicated by manufacturers recommendations and best practice guidelines. Haemolysed samples for Troponin T will be communicated to the requesting location for repeat sampling. If locations are experiencing high levels of test rejection due to haemolysis, phlebotomy retraining can be investigated.

Lipaemia and Icterus

Samples are analytically assessed for lipaemia and icterus. Where such interferences are detected and if analytes are affected, they will not be reported. The exception to this is creatinine on icteric samples which will be reported with a cautionary comment.

2.4.8 Potential Biotin Interference in Immunoassays

The Biochemistry Department uses Roche Cobas platforms for analysis of most analytes.

The Biotin – Streptavidin couple is part of the assay design for many biomarker immunoassays. If patients are taking large doses of this Biotin / Vitamin B7, there is known potential for significant interference in immunoassays for several commonly requested tests in Biochemistry.

The manufacturer is aware of the potential impact on assay interference and recommends that samples should be taken from patients receiving therapy with high biotin doses e.g., > 5 mg/day until at least 8 hours following the last biotin administration. Literature suggests that if a patient is on a very high dose of biotin supplement, then this should be discontinued for a period of 48 hours prior to sample collection.

If aberrant results are reported where the biochemical and clinical picture is discordant, the clinician may wish to exclude possible biotin interference as a cause.

Particular care should be taken in interpreting Troponin T results, where appreciable concentrations of biotin may cause a negative interference and is therefore potentially falsely reassuring. Clinicians caring for patients being investigated for chest pain should ask about biotin supplements for all patients when a Troponin level is requested.

High-dose biotin (100 mg) is sometimes used to treat metabolic diseases (isolated carboxylase defects and defects of biotin metabolism). A 100 mg biotin dose equates to 500 ng/mL plasma concentration. This concentration leads to gross analyte disturbance across all Roche assays. While all immunoassays tests using Streptavidin-Biotin technology may be affected, some of the most significant effects are listed below.

Table 10. Biotin Interference

Immunoassay	**Effect**
Negative Interference	
Troponin T	Inappropriately LOW Result
TSH	Inappropriately LOW Result
BHCG	Inappropriately LOW Result
FSH	Inappropriately LOW Result
LH	Inappropriately LOW Result
PSA	Inappropriately LOW Result
PTH	Inappropriately LOW Result
CA 12-5	Inappropriately LOW Result
CA 15-3	Inappropriately LOW Result
CA 19-9	Inappropriately LOW Result
AFP	Inappropriately LOW Result
Prolactin	Inappropriately LOW Result
Positive Interference	
Free T4	Inappropriately HIGH Result
Cortisol	Inappropriately HIGH Result
Oestradiol	Inappropriately HIGH Result
Testosterone	Inappropriately HIGH Result

2.4.9 Sample Storage and Requests for Additional Tests

After processing, routine specimens are retained in the Biochemistry department for up to 72 hours; all sample types are stored refrigerated at 4°C post analysis. Analyses of additional tests are subject to specimen integrity and analyte stability. In some case, the Laboratory will decline to undertake further investigations. Additional tests must be requested by contacting the Laboratory by phone. A member of the Biochemistry department will assess whether the sample is still acceptable for analysis. Ref: **LP-BIO-012** Specimen Reception and Labelling in the Biochemistry Department.

2.4.10 Urgent Requests

Most tests can be prioritised in exceptional circumstances: please contact the Laboratory in advance of sending the sample and **hand deliver** the sample and inform the lab staff that the request is urgent.

2.4.11 Urgent Osmolalities

Serum and urine osmolality samples are batch analysed by the Laboratory, Monday to Friday during routine hours. If such tests are required urgently, please phone the Laboratory to discuss the request.

Serum samples can be stored room temperature for 24 hours, refrigerated for up to 48 hours and frozen after this until analysis can be performed. Urine samples can be stored refrigerated for 24 hours; beyond this they must be frozen.

2.4.12 Turnaround Times

The turnaround time for individual tests is given in the A-Z Test Repertoire in **Appendix D**. The Biochemistry department aims that 80% of results or greater will be reported within the time frames given. **TATs are routinely monitored as part of the Laboratory quality improvement program.**

Overuse of the urgent service will adversely affect the turnaround time for all urgent tests.

2.4.13 Analyte Stability

Table 11. Stability of Analytes in Serum/Plasma

Analyte	**Analyte Stability in Serum/Plasma**	
	Room Temperature (15-25 ºC)	**Refrigerated (2-8ºC)**
AFP	3 days	3 days
Albumin	3 days	3 days
Alkaline Phosphatase	3 days	3 days
ALT	3 days	3 days
AMH	3 days	3 days

Analyte	**Analyte Stability in Serum/Plasma**	
	Room Temperature (15-25 ºC)	**Refrigerated (2-8ºC)**
Amikacin	8 hours	2 days
Amylase	3 days	3 days
AST	3 days	3 days
B12	6 hours	2 days
Beta HCG **	3 days	3 days
Bilirubin Total	24 hours	3 days
Blood Gases	Analysed as soon as possible (<30 mins)	Not applicable
BNP	3 days	3 days
CA 125	8 hours	3 days
CA 15-3	2 days	3 days
CA 19-9	3 days	3 days
Calcium	3 days	3 days
Chloride	3 days	3 days
CEA	3 days	3 days
Cholesterol	3 days	3 days
CK	2 days	3 days
Cortisol	24 hours	3 days
Creatinine	3 days	3 days
CRP	3 days	3 days
CSF Glucose	Analyse immediately	Not applicable
CSF Protein	Analyse immediately	Not applicable
Ferritin	2 days	3 days
Folate	6 hours	2 days
Free T4	3 days	3 days
FSH	3 days	3 days
Gentamicin	3 days	3 days
GGT	3 days	3 days
Glucose (Fl. EDTA)	3 days	3 days
HDL	3 days	3 days
HbA1c	3 days	7 days

Analyte	**Analyte Stability in Serum/Plasma**	
	Room Temperature (15-25 ºC)	**Refrigerated (2-8ºC)**
**Hep B Antibody (living patient)	7 days	14 days
**Hep B Antigen (living patient)	7 days	14 days
**Hep B Core Antibody (living patient)	7 days	14 days
**Hep C antibody (living patient)	7 days	14 days
**HIV (living patient)	7 days	4 weeks
** IL 6	6 hours	2 days
Immunofixation	3 days	7 days
Immunoglobulin A (IgA)	8 months	8 months
Immunoglobulin G (IgG)	4 months	8 months
Immunoglobulin M (IgM)	2 months	4 months
Iron	3 days	3 days
LDH	3 days	3 days
LH	3 days	3 days
Magnesium	3 days	3 days
Oestradiol	24 hours	2 days
Osmolality	24 hours	48 hours
**PCT	24 hours	2 days
Phosphate	24 hours	3 days
Potassium	3 days	3 days
Progesterone	24 hours	3 days
Prolactin	3 days	3 days
PSA	24 hours	3 days
PTH (EDTA)	2 days	3 days
Rheumatoid Factor	24 hours	3 days
**Rubella IgG	7 days	21 days
Sodium	3 days	3 days
SPEP (Serum Protein Electrophoresis)	3 days	10 days
Syphilis Antibodies (living patient)	7 days	14 days
Total Protein	3 days	3 days
Testosterone (total)	3 days	3 days
Triglycerides	2 days	3 days

Analyte	**Analyte Stability in Serum/Plasma**	
	Room Temperature (15-25 ºC)	**Refrigerated (2-8ºC)**
Troponin T	6 hours	24 hours
TSH	3 days	3 days
UIBC	3 days	3 days
Urea	3 days	3 days
Uric Acid	3 days	3 days
Vancomycin	2 days	3 days
Vitamin D	8 hours	3 days

**** These analytes cannot be added on once the sample has been loaded onto analyser due to the potential for carryover interferences.**

Table 12. Stability of Analytes in Urine

Analyte with correct additive	**Analyte Stability in Urine**	
	Room Temperature (15-25 ºC)	**Refrigerated (2-8ºC)**
Albumin	3 days	3 days
Amylase	2 days	3 days
Calcium	2 days	3 days
Creatinine	2 days	3 days
Osmolality	24 hours	24 hours
Protein	24 hours	3 days
Sodium	3 days	3 days
Potassium	3 days	3 days
Phosphate	3 days	3 days

2.4.14 Referred Tests

Many low demand assays or more specialised investigations are sent to appropriate external laboratories for analysis as per **Appendix E,** referred tests section. The list of referred tests is not exhaustive. Reports on these tests are slower since time must be allowed for transport of the sample and most laboratories will batch analyses. If a clinician requires a test that is not detailed in this manual or is uncertain about some aspects of the preanalytical requirements, they should contact the Laboratory in advance of arranging the test.

2.4.14.1 Metabolic Profile

Please complete Metabolic Form for all metabolic requests. Form is available for electronic download from https://www.childrenshealthireland.ie/list-of-services/laboratory/ (also see EXT-721 CHI Metabolic Investigations Request Form on Q-Pulse). Clinical details are required for interpretation and appropriate follow-up. Requests for urgent tests MUST be made before 09.30 Mon-Fri. Discuss with CHI Metabolic Lab 018784458.

See Appendix E for additional information regarding **metabolic profile** (urinary organic acid, urinary urate, GAGs/creatinine ratio and plasma amino acid analysis) and acylcarnitine analysis. Further information is also available from the Laboratory at Children's Health Ireland. Ref: “DPLM Test Requirements Manual” and “DPLM User Manual”.

Dried bloodspot cards can be requested from the CHI Metabolic Laboratory 01-8784724 or Metabolic Unit 01-8784317.

2.5 NEAR PATIENT TESTING

2.5.1 Service Provision

Near Patient Testing (NPT) is defined as any testing carried out close to the patient, away from the central laboratory, carried out by clinical staff. A limited range of tests are performed by non-laboratory staff where appropriate and sufficiently trained. NPT available in the Beacon Hospital under the remit of the pathology laboratory involves the following equipment:

- NOVA StatStrip glucose / ketone meters for blood glucose and ketone estimation
- Radiometer ABL90 blood gas analysers for blood gas, electrolyte glucose and lactate analysis
- Siemens Clinitek Status analysers for urinalysis and pregnancy testing
- iSTAT Alinity for Creatinine testing
- Hemochron for ACT testing

The rapidity of obtaining a result can contribute to improved outcomes for patients. It is essential that all NPT is conducted within a framework of quality standards in compliance with national guidelines. Please refer to **LP-NPT-004 Management of Near Patient Testing** for the full near patient testing policy.

As with all diagnostic testing, in correct NPT results may impact significantly on patient management and morbidity. Therefore, all samples (except for finger pricks) must be labelled with the minimum sample requirements outlined in **Section 1.10 Specimen Labelling and Integrity**. Similarly, all patients must be identified and prepared as described above. It is the responsibility of all staff performing NPT to ensure that:

- They are fully trained and competent in accordance with the manufacturer's instructions for use
- They are familiar with and have read the relevant standard operating procedures and working instructions related to the specific NPT test
- Results are reported in accordance with clinical protocol and that they are aware of the critical limits for each NPT test and report these as per the hospital's Critical Values Policy Ref: **PPS-PS-35, Critical Values Policy.** All staff performing NPT must participate in internal quality control (IQC), external quality assurance (EQA) and proficiency testing when required

2.5.2 Blood Gas Analyses

There are four blood gas analysers in the hospital: one in ICU, one in Catheterization laboratory (Cath Lab), one in the theatre and other in the Laboratory. Staff in these areas have been trained to operate these analysers. Samples from all other areas must be hand delivered promptly to the Laboratory and must be brought to the attention of a member of staff. The protocol for blood gas and lactate analysis is as follows:

- A heparinised syringe must be labelled with the patient identifiers i.e. Full name, D.O.B and MRN.
- Requires 1 -1.5 mL blood in air-free heparinised syringe, well mixed.
- Any air in the syringe must be expelled.
- The needle must be removed before transport and the syringe capped immediately.
- Samples are to be hand delivered to the laboratory and must not be delivered in the pneumatic tube system.

Ref: LP-NPT-009 Specimen Reception in Near Patient Testing.

2.6 HISTOLOGY AND CYTOLOGY

2.6.1 Service Provision

The Histology department provides a fully accredited service covering all stages of the histological diagnostic process, from receipt and accessioning of specimens through tissue processing, embedding, microtomy, staining (including routine Haematoxylin and Eosin), slide review and authorised reporting by a qualified pathologist.

Additional services, including special Stains, immunohistochemistry, frozen section and non-Gynae Cytology, as well as a referral service for tests not performed in-house are provided by the histology laboratory and are performed under the same quality management system, using validated methods and qualified personnel; however, these procedures are not currently within the accredited scope. The hours of operation are 8am-5pm. Samples must be delivered to the laboratory by 4.30pm the latest.

2.6.2 General Guidelines

Specimens for Histology should be brought to the Laboratory in sufficient 10% buffered formalin, as outlined above in section 1.12.4 Histology Specimen Transport, unless special investigations requiring fresh tissue are requested. Routine histology specimens in formalin are stored at room temperature. Fresh specimens, and specimens for cytology must be brought to the lab immediately. Fresh specimens and cytology specimens must be stored refrigerated at 2-5°C until their prompt transport to the lab.

The lab must be notified in advance of fresh specimens for special investigations (DIF/Muscle bx/ Renal bx). The cut off time for receipt of fresh specimens is 2.00pm to ensure the specimen is received in the referral lab before close of business.

On delivery to the histology lab, any fresh specimens must be brought to the attention of a Medical Scientist. A visual check is performed on acceptance of specimens in the histology department and specimens delivered to Histology must be accompanied by a chain of custody specimen logbook.

Please Note: Routine histology specimens WILL NOT be signed for by other staff in the Pathology Department or during the on-call service. Specimens cannot be left in the Histology Department without being signed in. All cytology specimens must be sent to the lab as soon as possible or should reach the laboratory before 4.30pm so that appropriate preparation can be performed.

2.6.3 Frozen Sections

Twenty-four hours' advanced notice must be given to the laboratory prior to a frozen section. Frozen sections outside the usual working hours may be provided by prior arrangement with the Consultant Pathologist and histology laboratory team.

Specimens from patients with TB, HIV or Hepatitis B or C infection should not be sent for frozen section. If such a suspicion is present, the medical staff concerned must inform Laboratory personnel in order to safeguard the Laboratory staff from risk of infection. In addition, if the Laboratory inadvertently processes such specimens, a decontamination procedure of the equipment required for frozen sections must be carried out. Decontamination of this equipment takes 24 hours. During this time no further, frozen sections can be performed.

To book a frozen section - 24hrs notice required. Call the histology laboratory on 01 293 6670 or email bcnhhistology@beaconhospital.ie and provide the following details:

Patients Name:

DOB:

MRN:

Consultant performing FS:

Clinical Details:

Date/Time FS is expected in Lab:

Theatre number (if known):

The specimen for frozen section must be brought to the histology laboratory without delay, with accompanying completed request from, noting the theatre phone number and/or surgeons phones number to be contacted on. The laboratory **must** be informed in the case of a cancellation of or delay to a frozen section.

2.6.4 Other Urgent Specimens

Other urgent specimens are dealt with on an individual basis. The request form for an urgent case must be clearly marked as such, and the clinical details must reflect the reason for urgency. The Laboratory should be contacted directly with these requests in order to ensure that they are handled appropriately. If a sample that has been already sent down to the laboratory subsequently becomes urgent, the main laboratory should be phoned (ext. 6670) clearly outlining the reason as to why the status of the specimen has changed.

2.6.5 Histology Specimen Requirements

Table 13: Histology Specimen Requirements

TEST	SAMPLE REQUIRMENTS	COMMENTS
Routine Histology	Specimens must be immersed in an adequate volume of 10% neutral buffered formalin in an appropriately sized container	The volume of formalin must be enough to fully immerse the specimen.
Tissue for frozen section	Must be sent fresh to the laboratory and without delay. See section 1.2.3 above.	Frozen sections must be booked in advance (Phone ext. 6670).
Muscle / Nerve biopsy	Fresh: wrap in saline moistened gauze.	Referral Test: Notify lab in advance on Ext. 6670 Send immediately to the lab Clinical details are mandatory. Specimen to be received in lab before 2.00pm
Skin punch for Direct Immunofluorescence (DIF)	Send two samples – one fresh and one fixed in 10% neutral buffered formalin Wrap fresh sample in saline-moistened gauze.	Referral Test: Notify lab in advance on Ext. 6670 Send immediately to the lab. Clinical details are mandatory. Specimen to be received in lab before 2.00pm
Renal Biopsy	Fresh: place in saline	Referral Test: Notify lab in advance on Ext. 6670 Send immediately to the lab Clinical details are mandatory. Specimen to be received in lab before 2.00pm
Lymph nodes for suspected Lymphomas	Specimens must be immersed in an adequate volume of 10% neutral buffered formalin in an appropriately sized container	Clearly mark the request form as Urgent with appropriate clinical details.
Specimens requiring Microbiology and Histology	Send sample fresh to Microbiology along with the histology request form.	Sample will be sent from microbiology to histology once microbiology analysis has been complete.

2.6.6 Cytology Specimen Requirements

All non-gynae cytology samples must be received fresh or in Cytolyt (see table 14 below). To avoid cellular deterioration samples must be delivered to the laboratory during routine hours (08:00-16:30). Samples which cannot be transported to the lab during working hours must be refrigerated (under-bench fridge in main histology lab). Specimen and completed request form

should be submitted to the laboratory in a plastic biohazard bag, please ensure that container lids are screwed tightly onto the body of the container.

Table 14: Cytology Sample Requirements

TEST	SAMPLE REQUIRMENTS	COMMENTS
Cervical smear samples ThinPrep® liquid based sample	ThinPrep® liquid based sample vials	Referred Externally
Urine	Voided urine taken into a sterile 50ml Universal Container. The specimen should be taken from the patient approximately 3 hours after the first early morning specimen.	Chain of custody log not required for urine samples.
Pleural/Ascitic fluid	Material should be submitted in a sterile 50ml Universal Container. At least 20ml of sample is needed for processing.	Drainage bags will not be accepted, please aliquot the sample from the bag into a 50ml universal container.
Bronchial Washings/ Bronchial Lavages	Material should be taken into a sterile 50ml Universal Container	
Cyst /Fluid Aspirate	Material should be taken into a sterile 50ml Universal Container	
Bronchial/Bilary Cytolyt	Cut the tip of the brush off and submerge the brush in ThinPrep Cytolyt Solution	Cytolyt is available from the Cytology Lab
Cerebro-Spinal Fluid (CSF)	Ideally at least 10ml is required for cytological analysis. Taken into a white top sterile container.	CSF for full laboratory investigation, including cytology (culture, white cell count, biochemistry profiles, cytology etc) must be submitted immediately to the Microbiology department.
Fine Needle Aspirate (FNA).	Needle rinsed in Cytolyt Solution	Under no circumstances should the needle used to take the aspirate be submitted in the specimen container. Cytolyt Solution is available from the Cytology Lab
Other Cytological Examinations	Sterile universal container	Examination of fluids and aspirates may be performed on request. Please contact the laboratory beforehand

2.6.7 Turnaround Times Routine Histology/Cytology

The following are target turnaround times and are subject to the factors outlined below and the impact of various resource issues. Turnaround times refer to the availability of an authorised report for 80% of uncomplicated specimens.

Routine Histology – 10 working days
Non-Gynae Cytology – 5 working days

Frozen section: Within 20mins (per chuck) from receipt into the lab to communication of results. Final report - 10 working days.

In-house special Stains and immunohistochemistry: 1-7 working days.

Cases clearly identified as urgent will be dealt with as a priority.

Turnaround time may vary according to the type of specimen to be processed including requirement for decalcification, the optimum fixation time required and complexity of the case. Certain additional investigations such as special stains, immunohistochemistry or expert opinions etc will impact on turnaround times, resulting in additional time required.

Turnaround times are continuously monitored and may need to be revised at times. Any adjusted TATs will be communicated to users.

2.6.8 Histology Referral Tests and Turn Around Times

TATs for referral tests reflect time from receipt into the referral lab to receipt of external report. Additional 2-5 working days required to allow for Beacon supplementary report and authorisation. The following is a list of commonly referred tests from the histology department. The list is non-exhaustive. If a clinician requires a test that is not detailed in this manual or is uncertain about some aspects of the preanalytical requirements, they should contact the Histology Laboratory.

Table 15. Referral Tests – Histology

TEST	REQUIREMENTS	SEND TO:	REFERRAL LAB TAT
Renal Biopsy/Muscle/Nerve Biopsy	As above section 2.6.5 – Table 13	Beaumont Hospital	2-3 weeks
Skin DIF (Direct Immunofluorescence)	As above section 2.6.5 – Table 13	St James's Hospital	4-6 weeks
Neuropathology	As above section 2.6.5 – Table 13 (routine histology and tissue for frozen section)	Beaumont Hospital	2-3 weeks
Gynae Cytology	Prefilled ThinPrep Vial (Preservcyt)	HTS labs	10 working days
IHC	2 Unstained Slides per Antibody	TUH	5 working days
Specials	2 Unstained Slides per stain	TUH	5 working days
Androgen Receptor IHC	2 Unstained Slides	St. Vincent's Histopathology Lab	<15 working days
Glutamin Synthase IHC	2 Unstained Slides	St. Vincent's Histopathology Lab	<15 working days
Folate Receptor Alpha	2 Unstained Slides	HTS labs	5-7 working days
MSI (microsatellite instability)	Block	Molecular Pathology, Beaumont Hospital	10-20 working days
Methylation Studies	Block	Molecular Pathology, Beaumont Hospital	10-20 working days
T(11;14)	Block	St. James's Histopathology Lab	10-15 working days
T(14;18)	Block	St. James's Histopathology Lab	10-15 working days
Lymphoma FISH/CISH	Block	St. James's Histopathology Lab	10-15 working days
TCR gene rearrangement	Block +Recut H&E	CMD St James's	15 working days
Colon Panel (KRAS/ BRAF/ PIK3CA)	Block +Recut H&E	CMD St James's	10 working days
Lung Panel (EGFR /ALK/ ROS1/ RAS/ BRAF/ NTRK)	Block +Recut H&E	CMD St James's	10 working days
Melanoma Panel (BRAF/ NRAS/ KIT)	Block +Recut H&E	CMD St James's	10 working days
GIST Panel (KIT/ PDGFRA/ BRAF)	Block +Recut H&E	CMD St James's	10 working days

Oncomine (incl. NTRK)	Tissue scrolls +Recut H&E	CMD St James's	20-30 working days
BRCA combined	Block x2 (50% tumour) + 3-5 ml EDTA Blood + Recut H&E	CMD St James's	20-30 working days
BRCA tumour	Block x2 (50% tumour content) + Recut H&E	CMD St James's	20-30 working days
BRCA germline	3-5ml purple EDTA	CMD St James's	20-30 working days
Oncotype DX	Block	Genomic Health USA	14 working days
Foundation One	Block +Recut H&E	Foundation Medicine (Roche)Germany	14 working days
Her-2 IHC/ DDish (Breast/GI)	5 Unstained Slides	Source BioScience UK	5 working days IHC/ +2 days Ddish
PDL-1 (SP142 +22C3+28.8) (Urothelial, Upper GI & TN Breast Cancer) PDL-1 (SP263) Lung Tissue NSCLC	5 Unstained Slides	Poundbury Cancer Institute	95% 5 working days
Claudin IHC	2 Unstained Slides	Poundbury Cancer Institute	5 working days

3 TEST INFORMATION AND REQUIREMENTS

3.1.1 General Considerations

This section of the manual contains an alphabetic listing of the tests available from different departments of the Pathology Laboratory. Each test is described under the headings: test/profile, mnemonic, specimen type, specimen requirements, comments, interfering substances and referral laboratory. All accredited testing is marked with an * after the Test/Profile name. In some cases, a Negative result does not rule out the possibility of infection and must be followed up by a repeat specimen where clinically indicated. This will be detailed in the laboratory report. The below lists are not exhaustive and are regularly updated. Please contact the Laboratory if you need supplementary information concerning any other test requisition. To obtain a quote for testing, please visit the self-pay section of the website and submit a query: https://www.beaconhospital.ie/patients-visitors/self-pay/.

Appendix A: Blood Transfusion Test Repertoire

Test/Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) / Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Anti-leucocyte antibody	HLAAB	Blood		7.5 mL	Blood / Tube	None/ Referred to IBTS, HLA Lab.	3 – 15 Days
Anti-platelet alloab. I.e.: for patient's refractory to platelet transfusions only	PLTAB	Blood		7.5 mL	Blood / Tube	None/Referred to IBTS, HLA Lab.	3 – 15 Days
Blood type and screen*	TS	Blood	 K2EDTA	7.5 mL	Blood / Tube	Special labelling requirements. See section 2.1.16.	1Day
Blood Crossmatch*	XM	Blood	 K2EDTA	7.5 mL	Blood / Tube	Special labelling requirements. See section 2.1.16.	1 Day
Coombs Test*	DAT	See DAT					
Direct Antiglobulin test (DAT)*	DAT	Blood	 or  K2EDTA	3-4 mL	Blood / Tube	Positive in autoimmune haemolytic disease, HDN & in association with some drugs. Investigation of transfusion reaction.	1 Day
Albumin human solution. 20 % (Blood derivative)	ALB	N/A	N/A	100 mL	N/A	Order to be phoned to Blood Transfusion.	30 Mins

Test/Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) / Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Crossmatch – Red blood cells (blood product)	LDRCC	Blood	 K_2EDTA	7.5 mL	Blood / Tube	Special labeling requirements. See section 2.1.16.	40 Min – 4 Hours
Cryoprecipitate (named basis only, replaced by Fibrinogen)	Refer to Lab	N//A	N//A	N//A	N//A	Lab must have blood group on record. Must be ordered through consultant. Order to be phoned to Blood Transfusion.	4 Hours
Fibrinogen (Riastap)	FIB	N//A	N//A	100 mL	N//A	Order to be phoned to Blood Transfusion.	30 Mins
Human lymphocyte antigen (HLA typing)	Ordered by Lab	Blood		7.5 mL	Blood / Tube	Send samples to IBTS.	15 Day
Human lymphocyte antigen (HLA typing) Disease association	HLAA29 HLAB27	Blood		4 mL	Blood / Tube	Send samples to IBTS. Indicate which antigens required e.g. B27. / Referred to IBTS.	15 Days
Second Sample Group*	Second Group	Blood		4 mL	Blood / Tube	Special labelling requirements. See section 2.1.16.	
Transfusion Reaction Investigation	TXRXN	Blood	 K2EDTA	7.5 mL	Blood / Tube	• Repeat Group and Crossmatch & DCT: 7.5ml, red-topped K2EDTA sample • 1 x Clotted Samples (brown top) – for antibody and IBTS investigations • FBC	1 Day 5 Days

Test/Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) / Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
						• Coagulation studies (PT/APTT, fibrinogen) • U&E, creatinine, LDH, Bilirubin • Blood cultures to Microbiology Department if required • Urine sample for Haemosiderin if red cell involvement is suspected • Return the unit and administration set intact to Hospital Blood Bank Department.	2 Days
Gamma – Globulins	See Pharmacy	Available through pharmacy.	N//A	N//A	N//A	Contact hospital pharmacy.	-
Novoseven (Factor VIIa)	Refer to Lab	N//A	N//A	2 mg	N//A	Used in massive transfusions. Must be ordered through consultant. Order to be phoned to Blood Transfusion.	30 Mins
Octaplex (Human Prothrombin complex)	OCTPLX	N//A	N//A	500iu (powder & solvent)	N//A	Suitable for warfarin reversal. Order to be phoned to Blood Transfusion.	30 Mins
Plasma (frozen) Octaplas/Uniplas (Blood Product)	Refer to Lab	N//A	N//A	200 mL	N//A	Lab must have blood group on record. Not recommended for Warfarin reversal. Replaces some clotting factors. Order to be phoned to Blood Transfusion.	30 – 45 Mins
Platelets (blood product)	Refer to Lab	N//A	N/A	200 mL	N//A	Lab must have blood group on record. Must be ordered through consultant. Order to be phoned to Blood Transfusion.	1 ½ – 2 Hours

Appendix B: Haematology Test Repertoire

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Anti-Cardiolipin Ab	ACA	Blood	 x1	4.9 ml	Blood / Tube	Immunological assay / Referred to Eurofins Biomnis. Specify if IgM or IgG	1 week
Activated partial thromboplastin time (APTT) and APTTR (APTT ratio) *	APTT	Blood	 x1	3 ml	Blood / Tube	**IS:** Haemolysis. Must be tested within 4 hours. **NB**: Fill tube to the mark.	2 Hours/ 1 Hour STAT
Activated Protein C Resistance	APCR	Blood	 x2  x1 (x2 for fertility)	3 ml (x 3)	Blood / Tube	Consent and SJH forms required. Clinical details requested. Send fresh samples stat to lab. **IS**: Lipaemia / haemolysis. **NB**: Fill tube to the mark /Referred to SJH Note: if for fertility patients / Referred to Eurofins Biomnis.	8 weeks SJH 1 week Biomnis
Anti–phospholipid Ab (see lupus anticoagulant)	APA	Blood	 x1	4.9 ml	Blood / Tube	Immunological assay / Referred to Eurofins Biomnis.	1 week
Anti-Thrombin III	AT3	Blood	 x2  x1	3 ml (x3)	Blood / Tube	Clinical details requested. Send fresh sample. Stat to lab. SJH forms required **IS**: Lipaemia / haemolysis. **NB**: Fill tube to the mark / Referred to SJH. Note: if for fertility patients / Referred to Eurofins Biomnis.	8 Weeks (SJH) 10 Days (Biomnis)

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Apixaban	NOORDERS	Blood	 x2	3 ml (x2)	Blood / Tube	Test should only be ordered after calling the coagulation consultant in NCL. Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen at -20ºC and sent the next day. **IS**: Lipaemia / haemolysis. **NB**: Fill tube to the mark / Referred to SJH.	2 weeks (Please contact NCL for advice prior to sending)
Argatroban	NOORDERS	Blood	 x2	3 ml (x2)	Blood / Tube	Test should only be ordered after calling the coagulation consultant in NCL. Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen at -20ºC and sent the next day. **IS**: Lipaemia / haemolysis. **NB**: Fill tube to the mark / Referred to SJH.	2 weeks (Please contact NCL for advice prior to sending)
B2-Glycoprotein Ab (Part of lupus anticoagulant screen)	B2GLYC01M	Blood	 x1	4.9 ml	Blood / Tube	Immunological assay for fertility patients / Referred to Eurofins Biomnis.	2 weeks

Test /Profile	**Mnemonic**	**Specimen Type**	**Specimen Requirements**			**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn around Time TAT**
			Additive Required	**Volume Required**	**Container Type**		
BCR-ABL Genetic Screen	BCRABL	Blood/ Bone marrow	x4 Or Bone Marrow in RPMI	2.7 ml (x4)	Blood / Tube Bone marrow in RPMI	Send sample as soon as possible as it must be referred to SJH and processed within 24hrs. RNA based assay. No prior arrangement needed / Referred to SJH.	3 weeks
Bone marrow – Cytogenetics	FISH	Bone marrow	Lithium heparin or RPMI	As available	Bone marrow aspirate in lithium heparin or RPMI	By prior arrangement only. Clinical details required and consent form. Transport urgently at RT/ Referred to MLL.	1 week
Bone marrow – Cytogenetics	KARYB	Bone marrow	Lithium heparin or RPMI	As available	Bone marrow aspirate in lithium heparin or RPMI	By prior arrangement only. Clinical details required and consent form. Transport urgently at RT/Referred to: MLL.	1 week
Immunophenotyping	IMMPHE	Blood	x2	2.7 ml (x2)	Blood / Tube	Referred to MLL or SJH. Haematology consultant approval required.	2 weeks
Immunophenotyping (Bone marrow)	IMMPHE	Bone marrow	Lithium heparin or RPMI	As available	Bone marrow aspirate in lithium heparin or RPMI	Samples must be refrigerated if not possible to send on same day as testing.	10 Days (extended panel 20 days)

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Intrinsic factor assay (FVIII, FIX, FXI & FXII activity)	FVIII, FIX, FXI, FXII	Blood	 x6	3ml (x6)	Blood/tube	Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen at -20ºC and sent the next day.	1 week
Chromosome Analysis (FISH)	FISH	Blood	 x2	4.9 ml (x2)	Blood / Tube	Haematology consultant approval required. Send early in the morning. Clinical details requested and consent form. Can be stored overnight at RT/ Referred to MLL. LAB NOTE: ALWAYS attach: The clinical and therapeutic details, full blood count results, platelets levels.	1 week
Chromosome Analysis (Karyotyping)	KARYA	Blood	 x2	4.9 ml (x2)	Blood / Tube	Send early in the morning. Clinical details requested and consent form. Can be stored overnight at RT/Referred to MLL. LAB NOTE: Attach: - the clinical and therapeutic data. - the results of the FBC – Platelets.	2 weeks
Chromosome analysis (Karyotyping) Bone marrow	KARYB	Bone marrow	Bone marrow in Li-hep  x1	4.9 ml (x2)	Bone marrow	Referred to MLL. Email for courier (lablinklogisitcs@eurofins.ie). Include request/consent forms.	2 weeks

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
CF GENE	CF36	Blood	 x2	2.7 ml (x2)	Blood / Tube	Ambient temperature. Samples must be refrigerated if transport is >48 hours. Clinical details and consent form requested / Referred to Eurofins Biomnis.	2 weeks
C-KIT	GENETICS	Blood/ Bone marrow in RPMI	 x2 or bone marrow in RPMI	3 ml (x2) Or BM in RPMI	Blood/Tube BM/RPMI	E-mail Lablink courier for Biomnis to have it sent to Synnovis. LablinkLogistics@eurofins.ie or gary.byrne@eurofins-biomnis.ie To be sent within 2 days. Store at Room Temperature. BM is the preferred sample as peripheral blood can be more likely to give false negative result.	1 Month
Coagulation Screen (PT & APTT)*	CS	Blood	 x1	3 ml	Blood / Tube	PT & APTT done routinely on coagulation screen request. Must be tested within 4 hours. **IS**: Haemolysis. **NB**: To fill tube to the mark.	2 Hours/ 1 Hour STAT
Cytogenetics Fragile X	FRAGX	Blood	 x2	2.7 ml (x3)	Blood / Tube	Ambient temperature. Clinical details and consent form requested / Referred to Eurofins Biomnis.	1 month
Dabigatran	NOORDERS	Blood	 x2	3ml (x2)	Blood/Tube	Test should only be ordered after calling the coagulation consultant in NCL. Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen	2 weeks
D-dimer*	DDIMER	Blood	 x1	3 ml	Blood / Tube	**IS**: Haemolysis Must be tested within 8 hours. **NB**: To fill tube to the mark.	2 Hours/ 1 Hour STAT

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
D.I.C Screen (Disseminated intra-vascular coagulation)	DIC	Blood	 x1  x1	3 ml 2.7 ml	Blood /Tube	Screen includes PT, APTT, Fibrinogen, D-dimers and Platelet count. Must be tested within 4 hours. **IS**: Lipaemia / Haemolysis. **NB:** To fill tube to the mark.	2 Hours/ 1 Hour STAT
Erythropoietin	ERY	Blood	 x1	4.9 ml	Blood / Tube	Sample must be taken in morning due to EPO fluctuations during the day. **IS:** Haemolysed samples unsuitable. LAB NOTE**:** must be sent out FROZEN / Referred to Eurofins Biomnis.	1 week
ESR (Erythrocyte Sedimentation Rate)*	ESR	Blood	 x1	3.5 ml	Blood/Tube	Sample must be tested within 6 hours & must be taken into an ESR S-Sedivette tube.	6 Hours/ 3 Hours STAT
Extrinsic factor assays (FII, FV, FVII & FX)	FII/FIIC FV/FVC FVII/FVII C/FVIIAG FX	Blood	 x6	3ml (x6)	Blood/Tube	Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen at -20^{o}C and sent the next day.	2 weeks
Factor II	FIIC	Blood	 x2	3ml (x2)	Blood / Tube	By prior arrangement only. Samples must be fresh and sent early morning **IS**: Lipaemia / Haemolysis **NB:** To fill tube to the mark/Referred to SJH.	2 weeks

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Factor Vc	FVC	Blood	 x2	3ml (x2)	Blood / Tube	By prior arrangement only. Samples must be fresh and sent early morning **IS:** Lipaemia / Haemolysis. **NB:** To fill tube to the mark/Referred to SJH.	2 weeks
Factor VIIc	FVIIC	Blood	 x2	3ml (x2)	Blood tube	By prior arrangement only. Samples must be fresh and sent early morning/ Referred to SJH. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Refereed to SJH.	2 weeks
Factor VIIIc	FVIIIC	Blood	 x2	3ml (x2)	Blood / Tube	By prior arrangement only. Samples must be fresh and sent early morning/ to SJH. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	2 weeks
Factor V Leiden Screen (Will not be performed if the APCR is normal)	FVL	Blood	 x2  x1 (x2 EDTA only if for fertility)	3ml (x2)	Blood / Tube	By prior arrangement only. Samples must be fresh and sent early morning/ to SJH. Consent and SJH forms required. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH. Note: if for fertility patients / Referred to Eurofins Biomnis.	8 Weeks

Test /Profile	**Mnemonic**	**Specimen Type**	**Specimen Requirements**			**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn around Time TAT**
			Additive Required	**Volume Required**	**Container Type**		
Factor Ixc	FIXC	Blood	x2	3 ml (x2)	Blood / Tube	By prior arrangement only. Samples must be fresh and sent early morning/ to SJH. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	2 weeks
Factor Xc	FXC	Blood	x2	3 ml (x2)	Blood/ tube	By prior arrangement only. Samples must be fresh and sent early morning/Referred to SJH. **IS**: Lipaemia / haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	2 weeks
Factor Xic	FXIC	Blood	x2	3 ml (x2)	Blood / Tube	By prior arrangement only. Samples must be fresh and sent early morning/ Referred to SJH. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	2 weeks
Factor XIIc	FXIIX	Blood	x2	3 ml (x2)	Blood /Tube	By prior arrangement only. Samples must be fresh and sent early morning/ Referred to SJH. **IS:** Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	2 weeks
Factor XIIIc or XIII	FXIIICH or FXIII	Blood	x2	3 ml (x2)	Blood /Tube	By prior arrangement only. Samples must be fresh and sent early morning/ to SJH. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	4 Weeks

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Factor XA	FxaC (on clexane) FxaH (on heparin)	Blood	 x2	3 ml (x2)	Blood / Tube	By prior arrangement only. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark. Used to monitor certain patients on low molecular weight heparin. Samples should be taken 4 hrs. after last injection of heparin. Phone in advance / Referred to SJH.	2 weeks
Fibrinogen Assay*	FIB	Blood	 x1	3 ml	Blood / Tube	**IS**: Haemolysis. Must be tested within 4 hours **NB**: to file tube to the mark.	2 Hours/ 1 Hour STAT
Film Morphology*	BF	Blood	 x1	2.7 ml	Blood / Tube	None. Sample must be tested within 24 hours.	24 Hours – 3 Working Days
Full Blood Count (FBC)*	FBC	Blood	 x1	2.7 ml	Blood / Tube	**IS**: for Hb: – Lipaemia. Must be tested within 24 hours.	2 Hours/ 1 Hour STAT
Haemochromatosis Screening	HFE	Blood	 x2  x1	2.7 ml (x2) 4.9 ml	Blood / Tube	By prior arrangement only. Clinical details requested and consent form. Test not suitable for children <16 years. / Referred to Biochemistry SJH. Lab Note: Attach Iron panel result. EDTA samples may be refrigerated O/N.	6 Weeks
Haemoglobin*	HB	Blood	 x1	2.7 ml	Blood / Tube	**IS** – Lipaemia.	2 Hours/ 1 Hour STAT

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Haemoglobin electrophoresis: HbA2 and HbF (>16 years)	HGBE	Blood	 x1  x1	2.7 ml 4.9 ml	Blood / Tube	SJH only for patients >16 years old. By prior arrangement only. Must have clinical details. / Referred to SJH. LAB NOTE: Send copy of most recent FBC and Ferritin with sample. Note: Patients <16 years old are sent to Crumlin.	2 Weeks
Haemoglobin electrophoresis: HbA2 and HbF (<16 years)	HGBE	Blood	 x1  x1	2.7 ml 4.9 ml	Blood / Tube	Test referred to Crumlin for patients <16 years old. By prior arrangement only. Must have clinical details. Contact LAB for urgent samples (01-4096432). LAB NOTE: Send copy of most recent FBC and Ferritin with sample. Ferritin not required for children < 2 years.	14 days
Haemosiderin	-	-	-	-	-	See Urinary haemosiderin.	-
Haptoglobin	HAP	Blood	 x1	4.9 ml	Blood / Tube	ALWAYS specify the patient's age and gender. Refrigerated / Referred to Eurofins Biomnis.	1 week
Heparin-induced Thrombocytopenia (HIT)	HIT	Blood	 x2	4.9 ml (x2)	Blood /Tube	By prior arrangement only. Complication of heparin therapy. HIT screen 4T score form must be completed by consultant before sending to SJH. Out of hours only by authorisation by Beacon Hospital Consultant Haematologist and NCL Coagulation Consultant. NCL Enquires to 01 4162956 or 4162049 during routine hours, Mon-Fri 9am-5pm. To contact NCL Coagulation Consultant on-call, ring main hospital switchboard on 01 4103000. **IS:** Haemolysis	Verbal (PF4) within 1-3 days ELISA (PHIA) 2 days

Test /Profile	**Mnemonic**	**Specimen Type**	**Specimen Requirements**			**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn around Time TAT**
			Additive Required	**Volume Required**	**Container Type**		
HIV Panel for CD4/CD8 counts	CD4, CD8	Blood	 x2	2.7 ml (x2)	Blood/Tube	Please contact laboratory to arrange sample processing as this is a specialized test. Sample must be kept at ambient temperature and analysed within 24 hours. Send FBC Report	1 week
(INR) International Normalized Ratio*	-	-	-	-	-	See PT/INR	-
Infectious Mononucleosis Screen (Monospot)	MS	Blood	 x1 OR  x1	2.7 ml 4.9 ml	Blood / Tube	Serum samples that are haemolysed are unsuitable for use. EDTA whole blood samples should be tested within 24 hours. Serum samples that have been stored at 2-8^{0} C for up to three days may be used. **IS**: Haemolysis	4 Hours/ 1 Hour STAT
JAK 2 Mutation	JAK2	Blood	 x4	2.7 ml (x3)	Blood / Tube	Referred to SJH. Sample should be sent as soon as possible. If delay in sending refrigerated at 4 degrees until dispatch.	1 month
Lupus Anticoagulant Screen AND Anti-Phospholipid Antibody	LA APA	Blood Blood	 x4  x1	2 ml (x4) 4.9 ml	Blood / Tube Blood / Tube	By prior arrangement. Request/consent forms required Clinical details requested. Send fresh sample. Stat to lab. **IS**: Lipaemia / Haemolysis. **NB:** To fill tube to the mark / Referred to SJH. Note: if for fertility patients FROZEN < 1hr / Referred to Eurofins Biomnis. Otherwise, referred to SJH (Sent with APA).	2 weeks 1 week
Lymphocyte Subsets (T, B, NK subsets)	LYMPHSUB	Blood	 x1	2.7 ml (x1)	Blood/Tube	Please contact laboratory to arrange sample processing as this is a specialized test. Sample must be kept at ambient temperature and analysed within 24 hours. Referred to SJH. Send FBC Report.	1 week

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Malaria	MALS	Blood	 x1	2.7 ml	Blood / Tube	Send fresh sample Stat to lab. Travel history & clinical details essential. Please fill out the Malaria Screen Information Form (on Q pulse). A negative result does not exclude a diagnosis of malaria. Must be tested within 24 hours. Thick and thin slides sent to Eurofins Biomnis	2 Hours/ 1 Hour STAT Slides 24hrs – 3 days
Mixing Studies (Correction Test)	MIX	Blood	 x6	3 ml (x6)	Blood / Tube	Send fresh samples to NCL at SJH. Test availability during routine hours Monday - Friday 9am-5pm or out of hours only by authorisation by the Coagulation Consultant. Samples must be received in National Coagulation Laboratory, Centre for Laboratory Medicine and Molecular Pathology, by 4pm Monday - Friday. Enquires to 01 416 2049 during routine hours, Monday - Friday 9am-5pm. The Coagulation Consultant on-call can be contacted through the hospital switchboard on 01 410 3000.	1 week
Mutation MTH FR 677 (mutation for infertility)	MTHFR	Blood	 x2	2.7 ml (x2)	Blood /tube	Ambient temperature, Samples must be refrigerated if transport >48 hours. Clinical details requested, and consent form / Referred to Eurofins Biomnis	2 weeks
Myeloproliferative neoplasm (MPN) (JAK2V617F, CALR, MPL)	GENETICS	Blood or Bone marrow	 x4 Or BM in RPMI	2.7ml (x2) Or BM in RPMI	Blood/Tube Bone Marrow	Room Temperature. CMD SJH – Request form or Synnovis Request form.	3 weeks

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Myoglobin	MYOU	Urine	1 tube 24 hr. urine or  x1	20 ml Urine	Urine	Freeze < 1 hour at -20ºC. Specify diuresis. Referred to Biomnis	1 week
Natural Killer Cells	NKC	Blood	 x1	2.7 ml (x1)	Blood / Tube	The sample must be sent WITHOUT FAIL within 24 hrs. of sampling. Samples must arrive no later than 14.00 hours Thursday. Sample not to be sent Fridays. / Referred to Eurofins Biomnis. LAB NOTE: Always send FBC report performed on the same day as sampling.	1 week
Paroxysmal Nocturnal Haemoglobinuria (PNH)	PXNH	Blood	 x1	2.7 ml	Blood /Tube	By prior arrangement only. Must have clinical details. Complete SJH PNH information form / Referred to SJH.	2 weeks
Plasma Viscosity	VISP	Blood	 x1	2.7 ml	Blood / Tube	Ambient Temperature / Referred to SJH.	1 Day
Protein C Assay (Refer to thrombophilia testing guidelines)	PC	Blood	 x2 Fertility:  x2 and  x2	3 ml (x2)	Blood / Tube	By prior arrangement. Consent and SJH forms required. Clinical details requested. Send fresh sample. Stat to lab. **IS**: Lipaemia / Haemolysis. **NB** to fill tube to the mark /Referred to SJH. Note: if for fertility patients FROZEN < 1hr / Referred to Eurofins Bomnis. State anticoagulant status and relevant clinical details.	8 weeks 1 week

Test /Profile	Mnemonic	Specimen Type	Specimen Requirements			Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn around Time TAT
			Additive Required	Volume Required	Container Type		
Protein S (Refer to thrombophilia testing guidelines)	PSAGFREE (for SJH) PS (for Biomnis)	Blood	 x2	3 ml (x2)	Blood / Tube	Seek advice from NCL before sending to lab due to strict testing guidelines. By prior arrangement. Consent and SJH forms required. Clinical details requested. Send fresh sample. Stat to lab. **IS:** Lipaemia / Haemolysis. **NB** to fill tube to the mark / Referred to SJH. Note: if for fertility patients FROZEN < 1hr / Referred to Eurofins Biomnis. State anticoagulant status and relevant clinical details.	8 weeks 1 week
Prothrombin Gene Mutation (Refer to thrombophilia screen guidelines)	PTM	Blood	 x1	2.7 ml	Blood / Tube	Seek advice from NCL before sending to lab due to strict testing guidelines. By prior arrangement only. Consent and SJH forms required. **NB:** SJH Thrombophilia Testing Guidelines must be read by clinician and full clinical details given. Send fresh sample STAT to lab. Store at 4˚C Overnight. Referred to SJH. **Note:** If for fertility patients, complete consent form and refrigerate if transport is >48 hrs. / Referred to Eurofins Biomnis.	8 weeks 1 week
Prothrombin Time*	PT PT/INR	Blood	 x1	3 ml	Blood / Tube	**IS**: Lipaemia / Haemolysis. **NB:** To fill tube to the mark. Must be tested within 4 hours.	2 Hours/ 1 Hour STAT
Reticulocyte Count*	RETIC	Blood	 x1	2.7 ml	Blood / Tube	Must be tested within 24 hours.	2 Hours/ 1 Hours STAT

Test /Profile	**Mnemonic**	**Specimen Type**	**Specimen Requirements**			**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn around Time TAT**
			Additive Required	**Volume Required**	**Container Type**		
Rivaroxaban	NOORDERS	Blood	x2	3ml (x2)	Blood/Tube	This test should only be ordered following consultation with the Clinical Coagulation Team. Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen at -20°C and sent the next day.	2 weeks
Sickle Cell Screen	SIC	Blood	x1	2.7 ml	Blood / Tube	N/A	4 Hours/ 2 Hours STAT
Thalassaemia Screen (FBC, Film, Retics, HBA2, HBF, HB Electrophoresis, Ferritin)	FBC BF HGBE RETIC FER	Blood	x2 x1	2.7 ml (x2) 4.9 ml	Blood / Tube	By prior arrangement only. Must have clinical details. / Referred to SJH. LAB NOTE: Send copy of most recent FBC and Ferritin with sample. Ferritin not required for children < 2 years.	2 weeks
Thrombophilia Screen	TM1 (SJH) TM2 (fertility / Biomnis)	Blood	x6 x1 x1 (APA serum to SJH)	3ml (x6) 2.7 ml 4.9 ml	Blood / Tube	Please seek advice from NCL (01-4162141) prior to sending to lab due to strict testing guidelines. By prior arrangement only. Serum sample sent to Immunology SJH for APA. Consent and SJH forms required. **NB:** SJH Thrombophilia Testing Guidelines must be read by clinician and full clinical details given. Send fresh sample. Stat to lab. **NB:** to fill to the mark. **IS**: Lipaemia / Haemolysis. Note: if for fertility patients FROZEN < 1hr, complete consent form /Referred to Eurofins Biomnis.	8 Weeks 2 weeks

Test /Profile	**Mnemonic**	**Specimen Type**	**Specimen Requirements**			**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn around Time TAT**
			Additive Required	**Volume Required**	**Container Type**		
Urinary Haemosiderin	HEM	Urine	 x1	20 ml	MSU Container	Send to SJH	1 week
Von Willibrands Screen	VWPROFILE	Blood	 x4	3ml (x4)	Blood / Tube	Samples (unseparated) should be sent within 3 hours to arrive in NCL by 16.00 hours. If this is not possible samples can be separated by double centrifugation procedure and frozen at -20ºC and sent the next day. VWF Multimers are only analysed in specific circumstances or request by Coagulation consultant. **IS**: Lipaemia / Haemolysis. **NB**: To fill tube to the mark/Referred to SJH.	4 weeks

Appendix C: Microbiology Test Repertoire

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
CSF*	Any organism	 x3	2 ml (x3)	Sterile universal container	Send samples to the lab immediately after informing the medical scientist.	3- 5 Days
Other body fluids (other than CSF, urine)*	Any organism		20 ml	Sterile universal container	Send sample as soon as possible.	7 Days
Blood Cultures	Any organism		8-10 ml	Blood culture bottles	Send samples as soon as possible. The Turnaround Time for molecular testing is 2 hours from the initial flagged positive.	7 Days (21 Days for Endocarditis)
URINE						
Culture	Urinary pathogens		20 ml	MSU container	Send sample as soon as possible.	6 Days
Legionella Antigen*	Legionella antigen		20 ml	MSU container	Send sample as soon as possible.	1 Day
Microscopy*	N/A		20 ml	MSU container	Send sample as soon as possible.	24 Hours
S.pneumoniae/Pneumococcal antigen*	*Streptococcus pneumoniae*		20 ml	MSU container	Send sample as soon as possible.	1 Day

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
FAECES						
*C. Difficile**	*C.Difficile*		1-2 g	Sterile container	Performed only on specimens that take the shape of the container.	2 Days
Enteric Pathogen	Enteric pathogens		1-2 g	Sterile container	Performed only on specimens that take the shape of the container.	5 Days
Helicobacter pylori Antigen	*Helicobacter pylori*		1-2 g	Sterile container	Send sample as soon as possible.	4 Days
Ova/Parasites	Ova & Parasites		1-2 g	Sterile container	Clinical/travel details essential.	5 Days
Rota/Adeno Virus	Rota/Adeno virus		1-2 g	Sterile container	Send sample as soon as possible.	4 Days
SPUTUM						
Routine Culture*	Respiratory pathogens		As available	MSU container	Salivary are sample is unsuitable.	6 Days

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
SKIN SCRAAPPINGS/NAIL CLIPPING						
Culture	Dermatophytes, moulds and yeasts		As much as possible	MSU container	Swabs are not appropriate specimen for fungal culture. Hair must contain root.	28 Days
Microscopy	Fungal elements		As much as possible	MSU container	Send sample as soon as possible.	7 Days
SWABS						
HVS – Culture*	Bacterial vaginosis		N/A	Charcoal swab	Send sample as soon as possible.	48-72 Hours
HVS – Microscopy*	Bacterial vaginosis		N/A	Charcoal swab	Send sample as soon as possible.	1 Day
MRSA Screen*	MRSA		N/A	Agar gel swab	MRSA only from Nasal, Groin and Wound sites.	4 Days
CPE&VRE*	Carbapenemase producing *Enterobacterales* &Vancomycin – resistant *Enterococci*		N/A	Cary-Blair medium swab	Only one swab required for the two tests.	1 Day

Test/Profile	**Target Pathogen**	**Specimen Requirements**			**Comments/ Referral Laboratory**	**Turn Around Time TAT**
		Specimen	**Minimum Volume**	**Container Type**		
Non-Urogenital (e.g. Eye, Ear, Nasal, Wound, Throat)*	Pathogens appropriate to site		N/A	Charcoal swab	Relevant clinical details essential e.g., surgery, post-partum.	6 Days
Penile/Vulval*	Non STI pathogens		N/A	Charcoal swab	Send sample as soon as possible.	4 Days
Respiratory Panel SARS-CoV-2 only accredited	Adenovirus, Coronavirus HKU1, NL63, 229E, OC43, Human Metapneumovirus, Human Rhinovirus / Enterovirus, MERS-CoV, Influenza A, Influenza B, Parainfluenza Virus 1, Parainfluenza Virus 2, Parainfluenza Virus 3, Parainfluenza Virus 4, Respiratory Syncytial Virus, *Bordetella parapertussis*, *Bordetella pertussis*, *Chlamydia pneumonia*, *Mycoplasma pneumonia*		N/A	Molecular transport media swab	Send sample as soon as possible.	1 Day

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
COVID-19 (Coronavirus Disease 2019)*	SARS-CoV-2		N/A	Universal viral transport media	Send sample as soon as possible.	2 Hrs STAT 72 Hrs Routine
SUSPECTED STI SPECIMEN REQUIREMENTS – Referred						
MALE -Urine	*Chlamydia trachomatis*	 eNAT Swab	25 ml	eNAT Swab	First void urine required.	5 Days
-Swab Urethral	*N. gonorrhoeae*	 eNAT Swab	N/A	eNAT Swab	Clinical details e.g., urethral discharge/ STI essential.	2 Days
-Rectal -Pharyngeal	*N. gonorrhoeae*	 eNAT Swab	N/A	eNAT Swab	Clinical details essential.	4 Days

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
FEMALE -Swab Endocervical -Cervical -Urethral	*N. gonorrhoeae*	 eNAT Swab	N/A	eNAT Swab	Clinical details essential.	4 Days
-Swab Endocervical -Urine	*Chlamydia trachomatis*	 eNAT Swab	N/A	eNAT Swab	Clinical details essential. First void urine required.	4 Days
-HVS	Bacterial vaginosis Candida and non-STI pathogens		N/A	Charcoal swab	Clinical details essential.	4 Days

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
OTHER MICROBIOLOGY SPECIMENS -Referred						
16S rDNA Bacterial PCR	Bacterial DNA		As available	Sterile universal container	Fluids from normally sterile sites, tissue samples. Referred to PHE Colindale, Molecular Identification Services Unit (MISU)	7 Days
Acid-Fast-Bacilli Culture and Smear	*Mycobacterium tuberculosis*		As available	Sterile universal container	Referred to Mater Hospital.	5-7 Days
Cytomegalovirus PCR -BAL	Cytomegalovirus		As available	MSU container/ Universal container	Referred to NVRL, UCD.	7 Days
Enterovirus PCR- Stool/Swab	Enterovirus		20 g N/A	Stool container/ Viral swab	Referred to NVRL, UCD.	7 Days
Galactomannan – BAL	*Aspergillus fumigatus*		As available	Sterile universal container	Referred to Eurofins Biomnis.	10 Days

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
Helicobacter pylori – Biopsy	*Helicobacter pylori*		As available	Sterile universal container	Referred to Eurofins Biomnis.	10 Days
Herpes Simplex Virus - Swab /BAL /Swab /BAL /Another Fluids /Urine /CSF	Herpes Simplex Virus	 	N/A As available	Viral Swab/ Sterile universal container	Referred to NVRL, UCD.	7 Days
Isoelectric focussing - CSF + serum	Oligoclonal bands	  x1	As available/ 4.9 ml	Sterile universal container/ Blood/Tube	Referred to Eurofins Biomnis.	5 Days
Legionellosis PCR- BAL	*Legionella spp*		As available	Sterile universal container	Referred to Eurofins Biomnis.	7 Days
Leptospirosis - PCR	*Leptospira spp*		As available	Universal container	Referred to Eurofins Biomnis.	7 Days
Meningococcal - PCR, CSF	*N. meningitis*		As available	Sterile universal container	Referred to IMSRL, Temple Street.	5 Days
Mycoplasma and Urea plasma screen	*Mycoplasma pneumoniae*	  x1	20 ml 4.9 ml	MSU container/ Blood/Tube	First catch urine. Referred to Eurofins Biomnis.	7 Days

Test/Profile	Target Pathogen	Specimen Requirements			Comments/ Referral Laboratory	Turn Around Time TAT
		Specimen	Minimum Volume	Container Type		
Mycoplasma pneumoniae PCR - BAL	*Mycoplasma pneumoniae*		As available	Sterile universal container	Referred to Eurofins Biomnis.	7 Days
Norovirus Testing	Norovirus		20 g	Stool container	Referred to NVRL, UCD.	5 Days
Pneumococcal PCR - CSF	*Streptococcus pneumoniae*		As available	Sterile universal container	Referred to IMSRL, Temple Street	5 Days
Pneumocystis jiroveci	*Pneumocystis jiroveci*		As available		Immunocompromised patients only. Referred to NVRL, UCD.	7 Days
Semen Analysis post vasectomy	-		As available	Sterile universal container	Referred to Rotunda Hospital.	7 Days
TB Culture (individual request only)	*Mycobacterium* spp.		As available	MSU container/ Sterile universal container	Referred to Eurofins Biomnis.	65 days
TB Quantiferon (individual request only)	*M. tuberculosis*		1 ml	QuantiFERON ®-TB Gold Plus kit	Collect 1 ml blood by venepuncture into each QFT-Plus Blood Collection Tube. Referred to Biomnis.	7 Days

Appendix D: Biochemistry Test Repertoire/ Near Patient Testing

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Alpha Fetoprotein*	AFP	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot be directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	1 Day
Alanine Aminotransferase*	ALT	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Albumin*	ALB	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Alkaline Phosphatase*	ALP	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Anti – Mullerian Hormone*	AMH	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	1 Day
Amylase*	AMY	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Amikacin*	AMIK	Serum	4.9 ml	Contact Biochemistry to inform of intention to send sample.	2.5 Hr Routine *Notification to lab required prior to sending.
Arterial Blood Gas*	ABG	safePICO (whole blood)	1-1.5 mL	Send to the lab promptly by hand, do not use chute system. Ensure there are no air bubbles or blood clots and analyse immediately. **IS:** Contact laboratory if assay interference is suspected	30 Mins
Aspartate Aminotransferase *	AST	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Bilirubin Total*	BILT	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
BNP (Pro BNP) *	BNP	Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference.	90 Mins STAT 2.5 Hr Routine
CA 15-3*	CA153	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot de directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	1 Day

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
CA 19-9*	CA199	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot de directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	1 Day
CA 12-5*	CA125	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot de directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	1 Day
Calcium*	CA2	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Calcium Corrected* (calculated)	CACOR	Serum	4.9 ml	This is a calculated test.	60 Mins STAT 2 Hr Routine
CEA*	CEA	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot de directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	1 Day

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Chloride*	CL	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Cholesterol *	CHOL	Serum	4.9 ml	Fasting status to be known by clinician. **IS:** Contact laboratory if assay interference is suspected	60 Mins STAT 2 Hr Routine
Cortisol*	COR (DST if post dexamethasone test)	Serum	4.9 ml	State time of sample collection. Please indicate if steroid treatment ongoing. **IS:** Please see Table 11 for Biotin interference.	90 Mins STAT 2.5 Hr Routine
C-Reactive Protein*	CRP	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Creatinine Kinase*	CK	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Creatinine*	CREA	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Creatinine (i-STAT) *	NPT CREAT	 SafePICO (whole blood)	1 – 1.5Ml	Analyse as soon as possible. Samples should be processed with 30 minutes.	Processed at ward level
CSF Glucose	GLUCSF*	 CSF in Fluoride EDTA OR  Sterile universal container	As available	Bring to Microbiology Department immediately. Blood for plasma glucose should be taken at the same time. Fluoride EDTA specimen is required if there is a delay of delivery to laboratory (not suitable for CSF protein analysis).	1 Hour
CSF Protein	TPCS*	 CSF in Sterile universal container	As available	Bring to Microbiology Department immediately.	1 Hour

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Dip-stick urinalysis	NA	 Urine	20 Ml	Samples should be processed with 30 minutes. Samples for urinalysis should be discarded after processing at ward level.	Sample processed at ward level
eGFR* (calculated)	EGFR	 Serum	4.9 ml	This is a calculated test.	60 Mins STAT 2 Hr Routine
eGFR* (calculated)	N/A	 safePICO (whole blood)	Min 65 ul	Mix immediately before processing. SafePICO Self-fill for arterial stab and safePICO Aspirator for line draw	Sample processed at ward level
Ferritin*	FER	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	90 Mins STAT 2.5 Hr Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Fluid Analysis -Pleural (Panel: Albumin, LDH and Total Protein) Also available: Amylase, Cholesterol, Creatinine, Potassium, Sodium, Total Bilirubin, Triglyceride, Urea	PFLUID	 Pleural Fluid in Sterile universal container AND  Serum	As available	State collection date and time on request form. Serum sample for Total Protein and LDH should also be sent to allow for fluid: serum ratio calculations.	1 Day
Fluid Analysis – Other sites (not pleural) (Panel: Albumin, Amylase, LDH and Total Protein) Also available: Cholesterol, Creatinine, Potassium, Sodium, Total Bilirubin, Triglyceride, Urea	FLUID PANEL	 Fluid in Sterile universal container	As available	State collection date and time on request form. Please specify site.	1 Day

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Fluid Analysis (pH)	Site Dependant	 Fluid into blood gas syringe	As available	State collection date and time on request form. Expel the air and bring to lab immediately. Please specify site.	1 Day
Fluid Analysis (Glucose)	FLUID GLUCOSE	 Fluid in Fluoride EDTA tube	As available	State collection date and time on request form. Please specify site.	1 Day
Folate*	FOL	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	90 Mins STAT 2.5 Hr Routine
Follicle Stimulating Hormone*	FSH	 Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference.	1 Day
Free T4*	FT4	 Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference.	90 Mins STAT 2.5 Hr Routine
Gamma Glutamyl Transferase*	GGT	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Gentamicin*	GENT	 Serum	4.9 ml	Samples should be taken pre-dose or 18-24 hrs post dose.	60 Mins STAT 2 Hr Routine
Globulins (calculated) *	GLOB	 Serum	4.9 ml	This is a calculated test.	60 Mins STAT 2 Hr Routine
Glucose (Nova StatStrip) *	NA	Whole Blood, finger prick	NA	Fresh drop of blood from a clean finger	Sample processed at ward level
Glucose*	GLU	 Fluoride EDTA	3 ml	Fasting status to be known by clinician. **IS:** Contact laboratory if assay interference is suspected	60 Mins STAT 2 Hr Routine
Glucose Tolerance Test*	GTT	 Fluoride EDTA	3 ml (x2)	Refer to the GTT protocol. Please indicate times.	60 Mins STAT 2 Hr Routine
Haemoglobin A1C *	HBA1C	 EDTA	2.7 ml	HbA1c testing should not be requested more than once every 3 months. There are certain situations were HbA1c testing is not appropriate, some of these include the following:	2 working days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
				• In monitoring daily glucose control or to replace glucose testing in paediatric patients, pregnant women or patients with Type 1 diabetes. • To diagnose diabetes during pregnancy or to diagnose gestational diabetes. • To diagnose diabetes in patients with conditions that alter the life span of red blood cell • Patients with malignancies or severe chronic hepatic and renal disease. It must also be noted that interference from different Hb variants is possible and a comment will be added to the final report indicating if a variant has been detected.	
HCG * Pregnancy Test	BHCG	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot de directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	70 Mins STAT 2 Hr Routine
Hepatitis B Antibody	HBSAB	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected. **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day Urgent 7 days Routine
Hepatitis B Antigen	HBSAG	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected. **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day Urgent 7 days Routine

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Hepatitis B Core Antibody	HEPBCOREAB	Serum	4.9 mL	**IS:** Contact laboratory if assay interference is suspected. **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day Urgent 7 days Routine
Hepatitis C Antibody	HCV	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected. **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day Urgent 7 days Routine
HIV Serology	HIV	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected. **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day Urgent 7 days Routine
High Density Lipoprotein*	HDL	Serum	4.9 ml	Fasting status to be known by clinician. **IS:** Contact laboratory if assay interference is suspected	60 Mins STAT 2 Hr Routine
Interleukin-6 (IL-6)	IL6	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Immunofixation	IF	 Serum	4.9ml	This procedure confirms and identifies the presence of a monoclonal immunoglobulin (follow on test to serum protein electrophoresis)	7 Days
Immunoglobulins (IgG, IgA, IgM)	GAM	 Serum	4.9ml	IgG, IgA and IgM can be ordered together under the GAM profile. They are also included as part of our SPEP profile. In line with good practice internationally, serum protein electrophoresis may be analysed as a result of abnormal immunoglobulin concentrations.	1 Day
Iron*	FE	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Ketone (Nova StatStrip) *	NA	Whole blood, finger prick	NA	Fresh drop of blood from a clean finger	Sample processed at ward level
Lactate*	LACT	 Blood gas syringe (whole blood)	1-1.5 mL	Send to the lab promptly by hand, do not use chute system. Ensure there are no air bubbles or blood clots and analyse immediately. **IS:** Contact laboratory if assay interference is suspected	30 Mins

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Lactate Dehydrogenase *	LDH	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Low Density Lipoprotein * (calculated)	LDL	 Serum	4.9 ml	This is a calculated test.	60 Mins STAT 2 Hr Routine
Luteinising Hormone*	LH	 Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference.	1 Day
Magnesium *	MG	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Oestradiol*	ESTRAD	 Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference.	1 Day
Osmolality (Blood) *	OSMOS	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	1 Day Routine
Osmolality (Urine) *	OSMOU	 Urine	5 ml	**IS:** Contact laboratory if assay interference is suspected.	1 Day Routine
pH (Blood) *	LAC	 Blood gas syringe (whole blood)	1-1.5 mL	See Arterial Blood Gas.	30 Mins
Potassium*	K	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Procalcitonin	PCT	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected **This analyte cannot be added on once the sample has been loaded onto the analyser due to the potential for carryover interferences.**	1 Day
Progesterone*	PROG	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	1 Day
Prolactin*	PROLAC	Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference. Prolactin result of >600 mIU/ml will be automatically referred to Eurofins Biomnis (See Macroprolactin)	1 Day
Prostate Specific Antigen*	PSA	Serum	4.9 ml	It is advised to have this test measured in the same laboratory for the duration of the treatment and follow-up. Values determined by different testing procedures cannot de directly compared with one another and could lead to erroneous medical interpretations. **IS:** Please see Table 11 for Biotin interference.	90 Mins STAT 2.5 Hr Routine
Parathyroid Hormone, Intact*	PTH	EDTA	2.7 mL	Because of the instability of PTH in unseparated serum, it is recommended to use EDTA tubes for blood collection. PTH will be stable in EDTA plasma for 3 days at 2-8ºC. Please note the reference interval for PTH (listed in LI-BIO-008 on Qpulse), is based on an apparent healthy population with measured 25OHD in the range 50-75 nmol/L. **IS:** Contact laboratory if assay interference is suspected.	90 Mins STAT 2.5 Hr Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Pregnancy Test (Urinary hCG)*	n/a	 Urine	10 mL	Analyse as soon as possible. Samples should be processed with 30 minutes. Sample not blood stained, viscous or strong coloured	Sample processed at ward level
Rheumatoid Factor*	RF	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	2 Hr Routine
Rubella IgG	RUBG	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	1 Day Urgent 7 days Routine
Serum Protein Electrophoresis (SPEP)	SPEP	 Serum	4.9ml	Serum specimen essential. Give full clinical details and include any monoclonal antibody therapies the patient might be on. Depending on the results of the electrophoresis, specimens may be sent for immunofixation. Any samples where the total protein has been invalidated due to HIL indices, will be deemed unsuitable for serum protein electrophoresis analysis. In addition, please note free serum light chains and urine Bence Jones protein samples are still referred out to St James Hospital**.**	5 days
Syphilis Antibodies	SYPH	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	1 Day Urgent 7 days Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Testosterone (total) *	TEST	Serum	4.9 mL	**IS:** Please see Table 11 for Biotin interference.	1 Day
Thyroid Simulating Hormone*	TSH	Serum	4.9 ml	**IS:** Please see Table 11 for Biotin interference.	90 Mins STAT 2.5 Hr Routine
TIBC (calculated) *	TIBC	Serum	4.9 ml	This is a calculated test.	60 Mins STAT 2 Hr Routine
Total Protein*	TP	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Transferrin Saturation * (calculated)	TRANSSAT	Serum	4.9 ml	This is a calculated test.	60 Mins STAT 2 Hr Routine
Triglycerides*	TRIG	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Troponin T*	TROP	Serum	4.9 ml	Send to the lab as soon as possible. **IS:** Please see Table 11 for Biotin interference.	70 Mins STAT 2 Hr Routine
UIBC*	UIBC	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Urate (Uric Acid) *	URIC	Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Urea*	UREA	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Urinary Amylase*	URINE AMYLASE	 Urine	10 ml	Fresh sample sent to laboratory as soon as possible. **IS:** Contact laboratory if assay interference is suspected.	1 Day
Urinary Albumin/Creatinine Ratio*	ACRE	 Urine	10 ml	Fresh sample sent to laboratory as soon as possible. **IS:** Contact laboratory if assay interference is suspected.	1 Day
Urinary Calcium * (24-Hour)	CAL24	 24-hour urine collection (acidified)	24 Hrs Collection	Acidified 24-hour urine container collected from laboratory. Deliver to lab after completion. Indicate the date and time for the start and the end of collection.	1 Day
Urinary Calcium/Creatinine Ratio*	CACRR	 Urine	10 ml	Fresh sample sent to laboratory for analysis <4 hours. **IS:** Contact laboratory if assay interference is suspected.	1 Day
Urinary Calcium Creatinine Clearance Ratio *	CACRCL	 Urine AND  Serum	10 ml 4.9 ml	Fresh sample sent to laboratory for analysis <4 hours. Serum sample for Calcium and Creatinine should also be sent to allow for ratio calculations. **IS:** Contact laboratory if assay interference is suspected.	1 Day
Urinary Creatinine * (24-Hour)	CREAT24	 24-hour urine collection	24 Hrs Collection	24-hour urine container collected from laboratory. Deliver to lab after completion. Indicate the date and time for the start and the end of collection.	1 Day

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Urinary Creatinine Clearance*	CREAT CLEARANCE	 24-hour urine collection AND  Serum	24 Hrs Collection 4.9 ml	State collection date and time on request form. Serum sample for Creatinine should also be sent to allow for ratio calculation.	1 Day
Urinary Sodium Spot/Random*	NAU	 Urine	10 ml	Fresh sample sent to laboratory for analysis <4 hours. **IS:** Contact laboratory if assay interference is suspected.	1 Day
Urinary Sodium (24-Hour) *	NA24	 24-hour urine collection	24 Hour Collection	24-hour urine container collected from laboratory. Deliver to lab after completion. Indicate the date and time for the start and the end of collection.	1 Day
Urinary Phosphate * (24-Hour)	PHOS24	 24-hour urine collection (acidified)	24 Hrs Collection	Acidified 24-hour urine container collected from laboratory. Deliver to lab after completion. Indicate the date and time for the start and the end of collection.	1 Day
Urinary Potassium Spot/Random*	URINE POTASSIUM	 Urine	10 ml	Fresh sample sent to laboratory for analysis <4 hours. **IS:** Contact laboratory if assay interference is suspected.	1 Day

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Urinary Potassium * (24-Hour)	POT24	 24-hour urine collection	24 Hour Collection	24-hour urine container collected from laboratory. Deliver to lab after completion. Indicate the date and time for the start and the end of collection.	1 Day
Urinary Protein/Creatinine Ratio *	PCR	 Urine	10 ml	Fresh sample sent to laboratory for analysis <4 hours. **IS:** Contact laboratory if assay interference is suspected.	1 Day
Urinary Total Protein (24- Hour) *	TPU24	 24-hour urine collection	24 Hour Collection	24-hour urine container collected from laboratory. Deliver to lab after completion. Indicate the date and time for the start and the end of collection.	1 Day
Vancomycin Trough*	VANCT	 Serum	4.9 ml	Peak levels should be drawn 20-30 minutes after completion of dose. Trough levels should be drawn within 30 minutes prior to giving a subsequent dose. **IS**: Contact laboratory if assay interference is suspected.	60 Mins STAT 2 Hr Routine
Vitamin B12*	B12	 Serum	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	90 Mins STAT 2.5 Hr Routine
Vitamin D 25*	VITD	 x1	4.9 ml	**IS:** Contact laboratory if assay interference is suspected.	2 Days

Appendix E: External Referral List (please note this list is not exhaustive)

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
1-3 Beta-D-Glucan	BDGLUCAN	 Serum	4.9 ml	Referred to Eurofins Biomnis.	11 Days
17-Hydroxyprogesterone	17HYD	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Adalimumab (Humira Antibody)	ADAL	 Serum	4.9 ml	Sample must be sent immediately to the lab for separation. Referred to Eurofins Biomnis.	14 Days
Adrenocorticotropic Hormone	ACTH	Aprotinin EDTA plasma	4.9 ml	APROTININ EDTA plasma tube available from laboratory upon request. Send sample to laboratory immediately. Referred to Eurofins Biomnis. LAB NOTE: Frozen specimen.	7 Days
Aldolase	ALDO	 Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Aldosterone	ALD	 EDTA	2.7 ml	Referred to Eurofins Biomnis. LAB NOTE: Frozen specimen.	7 Days
Allergen: Total IgE	IGE	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: Animal Mix	EX1	 Serum	4.9 ml	Animal Mix contains: Cat Dander, Horse Dander, Cow Dander, Dog Dander. Referred to Eurofins Biomnis.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Allergen: Cat Dander	E1	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: Dog Dander	E5	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: Food Mix	FX5	Serum	4.9 ml	Food Mix contains: Egg White, Milk, Fish, Peanut, Wheat, Soya Bean. Referred to Eurofins Biomnis.	14 Days
Allergen: Grass Mix	GX3	Serum	4.9 ml	Grass Mix contains: Orchard, Timothy, Meadow, Rye, Meadow Fescue. Referred to Eurofins Biomnis.	14 Days
Allergen: House Dust Mites	D1 D2	Serum	4.9 ml	D1 (*D.pteronyssinus)*, D2 (*D.farinae)* Referred to Eurofins Biomnis.	14 Days
Allergen: Mould Mix	MX1	Serum	4.9 ml	Mould Mix contains: *Penicillium notatum, Cladosporium herbarum, Aspergillus fumigatus, Alternaria alternata.* Referred to Eurofins Biomnis.	14 Days
Allergen: Nut Mix	FX1	Serum	4.9 ml	Nut Mix contains: Peanut, Hazel Nut, Brazil Nut, Almond, Coconut. Referred to Eurofins Biomnis.	14 Days
Allergen: Tree Mix	TX8	Serum	4.9 ml	Tree Mix contains: Box-elder, Common Silver birch, Hazel, Oak, Maple. Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Almond	F20	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Allergen: Aspergillus Specific IgE	IGEASP	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Beef	F27	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE BET V 1 (Birch component test)	T215	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Brazil Nut	F18	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Cashew	F202	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Chicken	F83	Serum	4.9 ml	Chicken Meat Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Chicken Feathers	E85	Serum	4.9 ml	Chicken Feathers Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Coconut	F36	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Cod	F3	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Egg	F245	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Allergen: IgE Egg White	F18	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Egg Yolk	F75	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Hazelnut	F17	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Kiwi	F84	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Milk	F2	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Peanut	PEANUT	Serum	4.9 ml	Contains: F13 (Whole Peanut) and F423 (Ara h 2 storage protein) Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Pecan	F201	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Pistachio	F203	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Pork	F26	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Prawn/ IgE Shrimp	F24	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Sesame	F10	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Allergen: IgE Soybean	F14	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Tomato	F25	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Turkey Meat	F284	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Walnut	F256	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Allergen: IgE Wheat	F4	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Alpha 1 Anti-Trypsin	A1A	Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Alzheimer's Biomarkers (Tau, P-Tau, β – Amyloid Peptides)	ALZHEIMER	CSF (Special tube mandatory – available from lab)	3ml minimum	*Please contact Laboratory Specimen Reception for information regarding this assay CSF must be collected into polypropylene tubes provided by the laboratory and accompanied by completed sample collection form LI-SR-014. Must be delivered ASAP to laboratory Specimen Reception Mon-Fri only before 4pm. Referred to St. James' Hospital LAB NOTE: Please refer to LI-SR-013.	8-10 Weeks

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Amino acids (plasma) (Part of **metabolic profile**, see also urinary organic acids)	AMINO ACIDS	 Lithium Heparin	1.2ml	Referred to Metabolic Laboratory CHI Temple Street. Send with Metabolic Investigations Request form EXT-721. Additional notes: 1. State whether fasting of post prandial. If fasting, state length of fast. 2. Separate promptly and freeze within 2 hours	1-14 days
Ammonia	AMM	 2 X EDTA	2.7 ml (x2)	Send immediately to the laboratory on ice. Referred to TUH. LAB NOTE: Send 2 separate frozen aliquots. Contact TUH in advance of sending the samples.	1 Day
Androstenedione	AND	 Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Angiotensin Converting Enzyme	ACE	 Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Anti – Cardiolipin Antibodies	ACA	 Serum	4.9 ml	Referred to Eurofins Biomnis	14 Days
Anti – Citrullinated Peptides Antibodies	ACCP	 Serum	4.9 ml	This antibody appears to be more specific (approximately 90%) for rheumatoid arthritis than rheumatoid factor. Minimum retesting interval: 12 weeks. Referred Eurofins Biomnis.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Anti – Double Stranded DNA Antibodies	ADNAS	Serum	4.9 ml	Referred Eurofins Biomnis.	14 Days
Anti – ENA Antibody Typing	ENA	Serum	4.9 ml	Referred Eurofins Biomnis.	14 Days
Anti – GAD Antibodies	GAD	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – Ganglioside Antibodies/Anti-Glycolipid Antibodies	AGA	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – GBM Antibodies	AGBM	Serum	4.9 ml	Not to be confused with anti-epidermal basement membrane antibodies. Referred to St. James Hospital.	7 Days
Anti – LKM Antibodies	ALKM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – LRP4 Antibodies	ANTI-LRP4	Serum	4.9 ml	Referred to Oxford Immunology Laboratory	14 Days
Anti – Mitochondrial Antibodies	AMA	Serum	4.9 ml	Referred Eurofins Biomnis.	14 Days
Anti – MOG Antibodies	AMOG	Serum	4.9 ml	Eurofins Biomnis.	20 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Anti – Musk Antibodies	ANTIMUSK	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Anti – Neuron Antibodies	ANTINEURON	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – NMDA Antibodies	ANMDARAB	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – Nuclear Antibodies	ANA	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – Parietal Cells Antibodies	APCAB	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti – Smooth Muscle Antibodies	SMAB	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti -Acetylcholine Receptor Antibodies	AACAB	Serum	4.9 ml	Referred to Eurofins Biomnis. LAB NOTE: Frozen specimen.	20 Days
Anti -Aquaporin -4 Antibodies (Anti NMO Antibodies)	AQUAP	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Anti B2 Glycoprotein IgG/IgM	AB2G AB2GPAB	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Anti -Neuromyelitis Optica Antibodies (Anti NMO Antibodies)	AMNO	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Anti- Phospholipid Antibodies	APA	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Anti- Potassium Channel Antibodies	ANTIK	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Anti-Bullous Pemphigoid Antibody	ABP	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Anti-Endomysial Antibodies	EMA	Serum	4.9 ml	Assay only performed if anti-tTG is positive. Anti-EMA antibodies are highly specific for coeliac disease. Referred to Eurofins Biomnis.	7 Days
Anti-Intrinsic Factor Antibody	AINTFAB	Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Anti-Neuron Antibodies/Paraneoplastic Antibodies	ANTINEURON/ PARANEOAB	Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Anti-Neutrophil Cytoplasmic Antibodies Panel includes MPO and PR3	ANCA	Serum	4.9 ml	Referred to Eurofins Biomnis.	5 Days
Anti-streptolysin-O Antibodies	ASOT	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Anti-tTG (tissue transglutaminase) Antibodies	TTG	Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Aspergillosis Serology	ASPCRN	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Aspergillus Antigen (Galactomannam)	GALACT	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
B. Burgdorferi IgG (Lyme Disease)	LYMEIGG	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
B Burgdorferi IgM (Lyme Disease)	LYMEIGM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Bartonella Serology	BARSER	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Bence Jones Protein (Spot OR 24 Hrs)	BJP	 Urine OR  24-hour urine collection	25 ml 24 Hour Collection	A 24-Hour collection is required if quantification is needed. Referred to St. James Hospital.	21-28 Days
Beta-2 Glycoprotein Antibodies	B2GLYCO	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Beta-2 Microglobulin	B2M	 Serum	4.9 ml	Referred to St. James Hospital.	7 Days
Betahydroxybutyrate	BHYDROX	 Fluoride EDTA	3 mL	Contact laboratory for instructions. Referred to Temple Street Hospital.	5 Days
Bilirubin Direct	BILD	 Serum	4.9 ml	Light protected sample. Referred to Eurofins Biomnis.	7 Days
Brucellosis Serology	BRUCS	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Caeruloplasmin	CER	 Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Calprotectin	CALPRO	 Faeces sample	30 g	Referred to Eurofins Biomnis.	14 Days
Carbamazepine	CARB	 Lithium heparin	4.9 mL	Referred to TUH.	3 Days
Catecholamines	CATECH	 Lithium heparin	2ml(x2)	Sent immediately to laboratory Referred to Eurofins Biomnis.	20 Days
Catecholamines, 24 Hours Urine Collection	UCAT	 24-hour urine collection	24 Hour Collection	Indicate the date and time for the start and the end of collection. Referred to Eurofins Biomnis. LAB NOTE: 2 ml FROZEN aliquot.	14 Days
Chikungunya Serology	CHIKUSCRN	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Chlamydia pneumoniae IgG	CHLAMPNEUMIGG	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Chlamydia pneumoniae IgM	CHLIGM	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Chromogranin A	CHROM	 Serum	4.9 ml	Send to Lab immediately. Centrifuge without delay, separate the supernatant. Referred to Eurofins Biomnis. LAB NOTE: Frozen specimen.	20 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Complement C3	C3	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Complement C4	C4	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Copeptin	COPEPTIN	 Serum	4.9ml	Referred to Royal Victoria Infirmary	21 Days
Copper	CU	Plain blood tube no gel or additive.	4.9 ml	Do not use tubes with separator gel. Please contact the laboratory for instructions. Referred to Eurofins Biomnis.	6 Days
Coxiella Burnetii Total Antibodies (Q Fever)	COXTAB	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Coxsackie Virus	COXA	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Cryoglobulins	CRY	 Plain serum	4.9 ml	Referred to Eurofins Biomnis	10 Days
Cyclosporin	CYCLOSPORIN A	 EDTA	2.7 mL	Referred to TUH. One run per week (Usually Wed.)	10 Days
Cytomegalovirus IgG	CMVIGG CMVIGM	 Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Cytomegalovirus IgM	CMVIGM	 Serum	4.9 ml	Referred to NVRL, UCD.	14 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Cytomegalovirus PCR	CMVPCR	EDTA	2.7 ml	Referred to NVRL, UCD.	14 Days
Dehydroepiandrosterone	DHEA	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Dehydroepiandrosterone sulfate	DHEAS	Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Delta Androstenedione	AND	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Dengue IgM	DENGUEIGM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Digoxin	DIG	Lithium Heparin	4.9 ml	Referred to TUH.	3 Days
DPD Gene Mutation	DPD	2 X EDTA	2.7 ml (x2)	Referred to Purine Research Laboratory, London via Synnovis	14 Days
Elastase	FELAS	Faeces sample	30 g	Referred to Eurofins Biomnis.	14 Days
Epstein Barr Virus	EBVIGG	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Epstein Barr, PCR	EBVPCR	EDTA	2.7 ml	Referred to NVRL, UCD.	14 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Ethanol	ALC	Lithium Heparin	4.9 mL	Referred to TUH.	3 Days
Free Serum Light Chains	FSLC	Serum	4.9 ml	Referred to St. James Hospital.	14 Days
Free T3	FT3	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Galactomannan	GALACT	Serum	4.9 ml	See Aspergillus Antigen above.	14 Days
Gastrin	GASTRIN	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Glucose-6-phosphate dehydrogenase	G6PD	EDTA	2.7 ml	Referred to Eurofins Biomnis. Haemoglobin result within 7 days of G6PD also required.	14 Days
Glucagon	GLUCAGON	Aprotinin EDTA	2.7 ml	EDTA/APROTININ plasma. Send sample to laboratory immediately. Referred to Eurofins Biomnis.	14 Days
Growth Hormone	GH	Serum	4.9 ml	Fasting status should be known by clinician. Consider dynamic function test for appropriate interpretation. Referred to Eurofins Biomnis.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Hantavirus -Serology	HANTA	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Hepatitis A Confirm	HAACON	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Hepatitis A IgG	HAIGG	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Hepatitis A IgM	HAIGM	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Hepatitis B Confirm	HBECON	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Hepatitis C PCR	HCVPCR	Serum OR EDTA	4.9 ml 2.7 ml	Referred to NVRL, UCD.	14 Days
Hepatitis D Antibody	HEPDAB	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Hepatitis E IgG	HEPEIGG	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Hepatitis E IgM	HEPEIGM	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Herpes Simplex Virus Serology	HSV1+2IGM AB HSV1IGGAB HSV2IGGAB	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Histamine	HIST	EDTA	2.7 ml	Referred to Eurofins Biomnis.	14 Days
HIV PCR	HIVPCR	EDTA	2.7 ml	Referred to NVRL, UCD.	14 Days
Homocysteine	HOMOC	EDTA	2.7 ml	Referred to Eurofins Biomnis. Sample MUST be placed on ice immediately after sampling and delivered to laboratory.	7 Days
IGF1 Somatomedin C	IGF1	Serum	4.9 ml	Fasting status should be known by clinician. Consider dynamic function test for appropriate interpretation. Referred to Eurofins Biomnis.	14 Days
IgG Sub-Classes	IGG1 IGG2 IGG3 IGG4	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Infliximab Antibodies and Drug Levels	INFLIX	Serum	4.9 ml	Referred to Eurofins Biomnis. LAB NOTE: Clinical Information Form to be filled by ward.	20 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Inhibin A	INHIA	Serum	4.9 ml	Referred to Eurofins Biomnis.	21 Days
Inhibin B	INHIB	Serum	4.9 ml	Referred to Eurofins Biomnis.	21 Days
Insulin	INS	Serum	4.9 ml	Please deliver to laboratory for separation immediately. Referred to Eurofins Biomnis.	14 Days
Lamictal	LAM	Plain blood tube no gel or additive.	4.9 ml	Do not use tubes with separator gel. Please deliver to the laboratory for immediate separation. Referred to Eurofins Biomnis.	14 Days
Lamotrigine	LAM	Plain blood tube no gel or additive.	4.9 ml	See Lamictal above	14 Days
Legionella IgM	LEG	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Leptospirosis IgM	LEPTOIGM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Lipase	LIP	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Lithium	LI	Serum	4.9 ml	Referred to TUH.	3 Days
Lysozyme	LYSOZYME	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Macroprolactin	PROLMAC	Serum	4.9 ml	Referred to Eurofins Biomnis.	21 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Measles IgG	MEASG	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Measles IgM	MEASM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Metanephrines	METANEPH	Lithium Heparin	2ml(x2)	Please send to the laboratory immediately. Sample to be frozen within 1 hour. **IS:** Pre-test dietary restrictions for 48 hours prior to phlebotomy: avoid consumption of bananas, chocolate, citrus fruit and consume only moderate amounts of tea and coffee Referred to Eurofins Biomnis.	14 Days
Metanephrines, 24 Hours Urine Collection	UMETAEPH	24-hour urine collection	24 Hour Collection	Please deliver to laboratory immediately following completion of collection. Indicate the date and time for the start and the end of collection. Referred to Eurofins Biomnis.	14 Days
Mumps IgG	MUMPSIGG	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Mumps IgM	MUMPIGM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Mycoplasma Pneumoniae IgG	MYCO	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Mycoplasma Pneumoniae IgM	MYCOIGM	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Myeloma Screen	MYELOMA	Serum	4.9 ml	Referred to St. James Hospital.	28 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Myositis Panel	MYOSITIS	 Serum	4.9 ml	Referred to Eurofins Biomnis.	21-28 Days
Neurokinin A (Substance K)	NKA	 EDTA	2.7 ml	Referred to Eurofins Biomnis.	14 Days
Paracetamol (Acetaminophen)	PARACET	 Lithium Heparin	4.9 mL	Referred to TUH	3 Days
Parvovirus B19	PARVO	 Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Phenobarbital	PHNO	 Lithium Heparin	4.9 mL	Referred to TUH.	3 Days
Phenytoin	PHENY	 Lithium Heparin	4.9 mL	Referred to TUH	3 Days
Pneumococcal Antibody	PNAB	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Porphyrins	PORPH	 Urine	10 ml	Early morning urine sample. **Please protect from light.** Referred to Eurofins Biomnis.	14 Days
Proinsulin	PROINS	 Serum	4.9 ml	Referred to Eurofins Biomnis.	25 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
PTH Related Protein	PTHRP	Aprotinin EDTA sample	4.9 ml	EDTA/APROTININ plasma. Send sample to laboratory immediately. Referred to Eurofins Biomnis.	20 Days
Renin Active	REN	 EDTA	2.7 ml	Referred to Eurofins Biomnis. LAB NOTE: Frozen specimen.	14 Days
Reverse T3	RT3	 Serum	4.9 ml	Referred to Eurofins Biomnis.	5 weeks
Rubella IgM	RUBM	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Salicylate (Aspirin)	SALIC	 Lithium Heparin	4.9 mL	Referred to TUH.	3 Days
Schistosomiasis	SCHISTO	 Serum	4.9 ml	Referred to Eurofins. Biomnis.	14 Days
Sex Hormone Binding Protein	SHBG	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Stone Analysis	STA		N/A	Referred to Eurofins Biomnis	1 month
Theophylline	THEO	 Lithium Heparin	4.9 mL	Referred to TUH.	3 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Thiopurine Methyltransferase genotyping	TPMT	EDTA	2.7 ml	Referred to Eurofins Biomnis.	20 Days
Thyroglobulin	THYR	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Thyroid Peroxidase Antibody	ATPO	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Total T3	TT3	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Toxoplasma IgM	TOX	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Toxoplasmosis IgG	TOXG	Serum	4.9 ml	Referred to NVRL, UCD.	14 Days
Transferrin	TRANS	Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Trypanosomiasis	TRYPAN	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Tryptase	TRY	Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
TSH Receptor Antibody	TRAB	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Urinary Free Cortisol	UCORT	 24-hour urine collection	24 Hour Collection	Referred to Eurofins Biomnis.	14 Days
Urinary Magnesium	MGUR	 Urine	5 ml	Referred to Blackrock Clinic	14 Days
Urinary organic acids (includes urinary urate, GAGs/creatinine ratio) (Part of **metabolic profile**, see also plasma amino acids)	URINE ORG ACID	 Urine (spot)	5ml	Referred to Metabolic Laboratory CHI Temple Street. Send with Metabolic Investigations Request form EXT-721. Additional notes: 1. Urine pH should be measured prior to dispatching sample. Where the pH≥8.5, microbial contamination is suspected, continue to dispatch urine sample to CHI at Temple Street and please request a repeat urine sample on the patient.	2-28 days (Urgent 1 working day)

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
				2. Please note that urine samples with a creatinine concentration below 0.4 mmol/L are too dilute for accurate analysis. When a dilute sample is received, it is analysed to detect gross abnormalities and a repeat sample is requested. 3. Freeze promptly, no preservative. If any delay in freezing store at 4°C up to 4- 6 hours (make note of delay on request form).	
Valproate/ Valproic acid	VAL	 Lithium heparin	4.9 ml	Referred to TUH	3 Days
Varicella- Zoster IgM	VZAB	 Serum	4.9 ml	Referred to Eurofins Biomnis.	14 Days
Varicella-Zoster IgG	VZ	 Serum	4.9 ml	Referred to Eurofins Biomnis.	7 Days
Vasoactive Intestinal Polypeptide	VIP	Aprotinin EDTA sample	4.9 ml	EDTA/APROTININ plasma. Referred to Eurofins Biomnis.	20 Days
Vedolizumab	VEDO	 Serum	4.9 ml	Referred to Eurofins Biomnis.	24 Days

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Vitamin A (Retinol)	VITA	 Gel free serum, no additives	4.9 ml	Please contact laboratory for Lithium Heparin gel free tube. Please deliver light protected to the laboratory for immediate separation and freezing (<90 minutes) Referred to Eurofins Biomnis.	14 Days
Vitamin B1	VB1	 EDTA	2.7 ml	Individual aliquot for this analysis. **IS**: Light protected during transport to Laboratory. Referred to Eurofins Biomnis. **LAB NOTE**: Frozen specimen, light protected.	10 days
Vitamin B2	VB2	 EDTA	2.7 ml	Individual aliquot for this analysis. **IS**: Light protected during transport to Laboratory. Referred to Eurofins Biomnis. **LAB NOTE**: Frozen specimen, light protected.	3 Weeks
Vitamin B3	VB3	 EDTA	2.7 ml	Individual aliquot for this analysis. **IS**: Light protected during transport to Laboratory. Referred to Eurofins Biomnis. **LAB NOTE**: Frozen specimen, light protected.	4 Weeks

Test/Profile	**Mnemonic**	**Sample Requirements**		**Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory**	**Turn Around Time TAT**
		Sample Type/ Container	**Volume Required**		
Vitamin B6 (Pyridoxal phosphate)	VITB6	Gel free serum, no additives	2.7 ml	Please contact laboratory for Lithium Heparin gel free tube. Please deliver light protected to the laboratory for immediate separation and freezing (<90 minutes) Referred to Eurofins Biomnis.	14 Days
Vitamin B8 (Biotin)	VITB8	Gel free serum, no additives	4.9 ml	Please contact laboratory for Lithium Heparin gel free tube. Please deliver light protected to the laboratory for immediate separation and freezing (<90 minutes). Referred to Eurofins Biomnis.	14 Days
Vitamin C (Ascorbic acid)	VITC	Gel free serum, no additives	4.9 ml	Please contact laboratory for Lithium Heparin gel free tube. Please deliver light protected to the laboratory for immediate separation and freezing (<90 minutes) Referred to Eurofins Biomnis.	14 Days
Vitamin E (Tocopherol)	VITE	Gel free serum, no additives heparin	4.9 ml	Please contact laboratory for Lithium Heparin gel free tube. Please deliver light protected to the laboratory for immediate separation and freezing (<90 minutes) Referred to Eurofins Biomnis.	14 Days

Test/Profile	Mnemonic	Sample Requirements		Special Requirements / Comments/ Interfering substances (IS) /Referral Laboratory	Turn Around Time TAT
		Sample Type/ Container	Volume Required		
Vitamin K (Phylloquinone)	VITK	 Gel free serum, no additives	4.9 ml	Please contact laboratory for Lithium Heparin gel free tube. Please deliver light protected to the laboratory for immediate separation and freezing (<90 minutes) Referred to Eurofins Biomnis.	20 Days
VMA, 24 Hours Urine Collection	VMAU	 24-hour urine collection	24 Hour Collection	Deliver to laboratory immediately after completion of collection. Indicate the date and time for the start and the end of collection. Referred to Eurofins Biomnis.	14 Days
Voltage Gated Calcium Chanel antibodies	CCA	 Serum	4.9 ml	Referred to Eurofins Biomnis.	20 Days
Zinc	ZI	 Gel free serum, no additives	4.9 ml	Do not use tubes with separator gel. Please contact the laboratory for instructions. Referred to Eurofins Biomnis.	6 Days