UHK
LABORATORY
DEPARTMENT

PRIMARY SAMPLE
COLLECTION MANUAL

A TO Z INDEX OF LABORATORY TESTS

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Revision History

The User Handbook is controlled in accordance with local quality management system requirements. The full amendment history is available by contacting the Laboratory Quality Manager.

Date	Section No:	Details of changes in this version of the document
22.04.26	**1.6**	**Requirements regarding patients:** Added new section on Requirements regarding patients to include 'upholding the rights of patients to care that is free from discrimination'
22.04.26	**1.7**	**Accreditation Section 1.7**: Update section on accreditation
01.09.26	**3.9**	**Contact Information:** Update contact details for personnel
24.09.26	**Attachments I, II & III**	**Attachments I, II and III:** Moved three appendices to end of document for ease of reading
28.04.26	**Attachment IV**	**Attachment IV: Name and address of referral laboratories:** Added names and addresses of the referral locations used by the laboratory at UHK.
27.04.26	**A-Z**	**Accreditation statement:** Remove 'This is not an accredited test' from immunoassay tests performed in Biochemistry.
29.06.26	**A-Z**	**Aldosterone:** Sample type change from Serum to EDTA
22.04.26	**A-Z**	**APTTR:** Add APTTR as a separate test
23.09.26	**A-Z**	**Blood Gases**: Additional details added to section for Blood Gas (pH, pCO_2, pO_2, tHb, O_2Hb, COHb, MetHb, HHb, sO_2, TCO_2, BEecf, BE(B), p_{50}, HCO_3^-(c), HCO_3^-std)
27.04.26	**A-Z**	**BRACA:** Add genetic test BRACA to A-Z and details for requests
27.04.26	**A-Z**	**Calprotectin: Add Note**: Please return stool samples to the laboratory on the day they collect the sample or early the day after collection. Ask patients to write the collection date on the stool container and on the request form.
23.09.26	**A-Z**	**Cerebrospinal Fluid – Viral, Bacterial, Cryptococcus PCR** Updated Turnaround time to Approx. 2 hrs. for PCR results on CSF samples
23.09.26	**A-Z**	**Cerebrospinal Fluid/Shunts - Culture/Microscopy** Added statement - A differential leucocyte count is reported when sufficient cells are counted ≥ 20 WBCs/cmm. Please note: An accurate Leucocyte Differential may not be possible if WBC is below 100.
22.04.26	**A-Z**	**Chromogranin B:** Remove chromogranin B from A-Z as test is no longer available
23.09.26	**A-Z**	**Clostridium difficile Molecular Analysis:** Updated comments section to read: In accordance with the HPSC guidelines the following guidelines will apply to in house testing for C.Difficile: 1.Testing on children <2 yrs of age will not be performed. Exceptions may be made at the discretion of the Paediatrician or Infection Control. 2.Do not send stool samples for test of cure after treatment or if a patient is on treatment. 3. Once *C. difficile* testing has been performed after onset of symptoms re-testing is not performed for 28 days unless specifically requested by the Consultant, Clinician, or Infection Control. 4.Repeat samples sent within 10 days of a negative test

		For GP patients C. difficile testing will be performed in the following scenarios: • All patients ≥ 65 years old •Patients < 65 years old when specifically requested with relevant clinical details and risk factors Similar to currently existing procedures the following samples will not be tested unless discussed with the Clinical Microbiology medical team: • Samples from children <16 years of age • Repeat samples sent within 28 days of a patient testing positive •Repeat samples sent within 10 days of a negative test
22.04.26	**A-Z**	**Cystic Fibrosis:** Added 'Recommend **not** to take samples on Friday of Bank Holiday as samples need to be referred by the laboratory to Dublin ≤ 5 days'
27.04.26	**A-Z**	**Faecal Elastase:** Added: Please return stool samples to the laboratory on the day they collect the sample or early the day after collection. Ask patients to write the collection date on the stool container and on the request form.
24.09.26	**A-Z**	**Folate:** Folate testing is now performed in Biochemistry UHK and forms part of KBF profile with Vitamin B12
23.07.26	**A-Z**	**Gential Swab Culture and Microscopy (vaginal, cervical, urethral, Penile)**: Added statement - LVS/Anorectal swabs are the preferred sample type for Group B streptococci screening in pregnancy.
31.08.26	**A-Z**	**Glucose (POCT):** Add Glucose performed on Point of Care device as new test in A-Z
31.08.26	**A-Z**	**Haemoglobin Electrophoresis (Hb electrophoresis):** Add samples on patients <6 months are referred to Crumlin
23.09.26	**A-Z**	**Haemoglobin A_1C (HbA1C)**: Add new Point of Care Test (POCT) HbA1C to the A-Z
22.04.26	**A-Z**	**Hereditary spherocytosis**: Corrected name of EMA binding to Hereditary spherocytosis screening (HS screening) due to confusion with EMA screening (Anti-Endomysial antibody screening for coeliac disease)
22.04.26	**A-Z**	**HCG (POCT):** Add Human Chorionic Gonadotrophin Pregnancy Test as a Point of Care test **(POCT)** to A-Z
23.09.26	**A-Z**	**Human Metapneumovirus Molecular:** Removed statement Microbiology UHK: In-House testing availability is determined by Laboratory management at the point in time.
23.09.26	**A-Z**	**Influenza Virus A and B Molecular:** Removed - Reported with RSV or other pathogens as outlined in Respiratory Viral Screen for in-house testing.
23.09.26	**A-Z**	**Influenza Virus A and B Molecular:** Updated Turnaround time Section to read - 4 hours instead of <24 hours (Monday – Sunday)
23.09.26	**A-Z**	**Intra-Uterine Infection Screen / TORCH Screen:** Updated TAT to 3 – 4 days for Toxoplasma IgM, Rubella IgM, CMV IgM & Parvovirus B19 IgM.
23.09.26	**A-Z**	**Ketones (POCT):** Add Ketones on POCT devices to A-Z
31.08.26	**A-Z**	**LDH: Added the following note**: Transport of the sample via pneumatic tube system may cause elevated LDH. If elevated LDH does not fit the clinical picture for this patient, please send a repeat sample and hand deliver to the laboratory
24.09.26	**A-Z**	**Osmolality:** Remove statement 'This test is not accredited'
24.09.26	**A-Z**	**Potassium:** Transport of the sample via pneumatic tube system may cause elevated Potassium. Haemolysis invalidates the test.
24.09.26	**A-Z**	**Protein Electrophoresis:** Remove statement 'This test is not accredited'

22.04.26	**A-Z**	**PTH Related Peptide:** Change sample type to 1ml EDTA sample - **Purple** top Vacuette® **Separate and freeze in <1hr.**
03.08.26	**A-Z**	**Respiratory Viral Screen Molecular (POCT)** (SARS-CoV-2, FluA, FluB and RSV): Add new Point of Care Test (POCT) to A-Z
27.04.26	**A-Z**	**TPMT** address for referral location corrected: Sample referred from Biochemistry to Black Country Pathology Services, Specialist Chemistry Postal Reception, Pathology Dept. Sandwell General Hospital Lyndon West Bromwich B71 4HJ UK, UK
03.08.26	**A-Z**	**Troponin I (hs) (POCT):** Add new Point of Care Test (POCT) Troponin I (hs) to A-Z.
03.08.26	**A-Z**	**Urine Microscopy and Culture:** Updated Turnaround time section to read: **Microscopy**: Routine: 24 hours. Urgent: 2 hours of receipt **Culture**: Preliminary Culture Report: Available after 24 hours on contact with Department; Final Report : 1 to 5 days
23.09.26	**A-Z**	**Urine Microscopy and Culture:** Updated Report section to read – **Microscopy**: Report on the range of WBCs and RBCs per cmm as well as the presence of epithelial cells, bacteria, yeasts, Trichomonas spp. (if present). **Culture**: Report bacterial growth in orgs/mL with sensitivities and comment where appropriate. Culture will only be carried out where WCC is >25/µL AND organisms are seen, but the following are cultured **in all cases**; Antenatal, <16 year, Renal, ICU, potentially immunocompromised.
27.04.26	**A-Z**	**Viapath:** Updated address Purine Research Lab, Central Specimen Reception, Synnovis, Friars Bridge Court 41-43 Blackfriars Road, London SE1 8NZ, UK
24.09.26	**A-Z**	**Vitamin B12:** B12 testing is now performed in Biochemistry UHK and forms part of KBF profile with Folate

1.0 INTRODUCTION

This manual provides appropriate information for users of the Laboratory services at University Hospital Kerry. The information in this manual is detailed to provide users with a comprehensive understanding of the laboratory's scope of activities and requirements.

This document is intended to provide a reference guide for all Laboratory users on the type of examination, the required type of sample and any limitation to the examination. Advice on choice of examination and interpretation of results is available from clinical laboratory staff as required. Indications for testing including the frequency of requesting the examination is also available through the Laboratory Services Reform Programme on the following link https://www.hse.ie/eng/about/who/cspd/lsr/resources/advice.html

All Laboratory services undergo continuous review through quality assurance and audit activities. The laboratory is committed to performing its activities in accordance with the requirements of the International Standard ISO 15189:2022.
The manual is intended for all users of the Laboratory Services at University Hospital Kerry.

Laboratory management are committed to:

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

1.1 DISCLAIMER

This manual has been prepared by the department of Laboratory, University Hospital Kerry. Every care has been taken in its completion. This manual is intended for use as a guide only.
Practitioners should use this manual as a guide to individual testing on the basis of clinical findings, not as a complete or authoritative statement of such testing.
The Department shall not be liable to users of the manual nor to any other person, firm, company or other body for any loss; direct, indirect, or consequential, in contract or in tort, or for any negligent mis-statement or omission contained herein, by reason of, or arising from or in relation to any such user, other person, company or body relying or acting on, or purporting to rely or act upon any matter contained in this manual.

1.2 PREFACE

The essential role of the Laboratory services is to aid clinicians in the effective and efficient investigation of disease and maintenance of patient health. The quality and usefulness of laboratory testing depends on many factors. Within the laboratory, processing and analysis are subject to designated protocols and procedures with the application of Quality Assurance techniques at all stages. However, just as critical to the performance of laboratory investigations are the many pre- and post-analytical factors that can influence quality. These include elements such as appropriate test selection, patient preparation, requesting and sampling procedures, preservation and handling of specimens, transportation and the timely communication and interpretation of results. Errors or omissions in any of these areas may compromise the value of investigations and lead to delays in the appropriate management of patients.

This handbook has been designed and produced to provide convenient ready access to essential information for all users of the Laboratory Services. Every effort has been made to ensure that the information provided is correct at the time of publication. However, it is our policy to continuously review and develop our services and where changes occur we will circulate appropriate addenda. We hope that all healthcare staff involved in using the Laboratory Services will find this a useful publication and we welcome any criticisms or suggestions with respect to this handbook or any aspect of the service.

1.3 MISSION STATEMENT

The Pathology Department at UHK is committed to providing the highest quality diagnostic and consultative services for all its users in a timely, efficient and impartial manner.

1.4 OBJECTIVES AND GOALS

- To serve all the patients of Kerry and our wider catchment area in a professional, person-centred and courteous manner.
- To provide accurate scientific information to their doctors that would be of benefit in diagnosing, treating and managing disease and which would contribute to the maintenance of health and continued well-being.
- To provide a responsive, validated, accredited service of the highest quality, which is both effective and is delivered in an appropriate time frame.
- To provide a safe, adequately resourced working environment, allowing wellness at work.
- To foster personal growth and development in all our staff, empowering them to make their best contribution to scientific health care, as part of an empowered team.
- To strive for continuous quality improvement through education, training and research.

1.5 QUALITY POLICY

The aim of the Laboratory Department is to be a centre of excellence in the provision of Laboratory services as judged by the users of the services and the wider healthcare community. The Department will supply services for the following Laboratory disciplines:

- Biochemistry (*)
- Blood Transfusion (*)
- Haematology (*)
- Histopathology
- Microbiology/ Molecular Diagnostics

(*) Laboratories provide accredited tests

The Quality Policy is implemented by the following means:

- Implementation of a quality management system, which continuously endeavours to improve the quality of the services.
- Setting quality objectives and plans to implement the quality policy.
- Ensuring that all staff are familiar with the quality policy and all other quality documentation to ensure user satisfaction.
- Treating Health and Safety as a prime focus for both staff and visitors.
- Upholding professional values and good professional practice.
- Complying with all national legislation and EU Directives on laboratory practice.

The (*) laboratories within the Laboratory Department will comply with the international standard ISO 15189 and all relevant Irish National Accreditation Board (INAB) regulations and policies.

The Laboratory Department is committed to:

- Staff recruitment, training and development at all levels to provide an effective and efficient service to its users.
- Good professional practice.
- Providing and managing resources to ensure that Laboratory examinations are processed to produce the highest quality results possible.
- Implementation of internal quality control, external quality assessment, audit and assessment of user satisfaction to continuously improve the quality of the service.
- Reporting results in ways which are timely, confidential, accurate and are supported by clinical advice and interpretation when required.

1.6 REQUIREMENTS REGARDING PATIENTS

Laboratory management ensures that patients' well-being, safety and rights are the primary considerations. The laboratory has established and implements processes to:

a) Provide opportunities for patients and laboratory users to offer helpful information to aid the laboratory in the selection of the examination methods, and the interpretation of the examination results;
b) Provision of patients and users with publicly available information about the examination process, including costs when applicable, and when to expect results;
c) Periodic review of the examinations offered by the laboratory to ensure they are clinically appropriate and necessary;
d) Where appropriate, disclosure to patients, users and any other relevant persons, of incidents that resulted or could have resulted in patient harm, and records of actions taken to mitigate those harms;
e) treatment of patients, samples, or remains, with due care and respect;
f) obtaining informed consent when required;
g) ensuring the ongoing availability and integrity of retained patient samples and records in the event of the closure, acquisition or merger of the laboratory;
h) making relevant information available to a patient and any other health service provider at the request of the patient or the request of a healthcare provider acting on their behalf;
i) Upholding the rights of patients to care that is free from discrimination.

1.7 ACCREDITATION STATUS

Accreditation Status

a. Blood Transfusion, Haematology and Biochemistry laboratories at University Hospital Kerry are accredited laboratories to the International Standard ISO 15189:2022 Registration number **197MT.** Refer to Irish National Accreditation Body website www.inab.ie for details.

Non-accredited tests in Biochemistry will be clearly identified to the user in the comments section of the relevant tests in the A-Z. The Microbiology laboratory is not an accredited laboratory however, the laboratory participates actively in the Pathology Quality Management System.

b. The Laboratory at University Hospital Kerry has been accredited as a training laboratory by the Joint Committee for Biomedical Sciences to support in-service year for Medical Laboratory Scientist students.

1.8 IMPARTIALITY POLICY

It is laboratory policy that laboratory activities are undertaken impartially and are structured so as to safeguard impartiality. The laboratory recognises that it is responsible for the impartiality of its laboratory activities and ensures that commercial, financial, or other pressures do not compromise its impartiality. It is policy that members of staff reflect the management's commitment to impartiality in all aspects of their work. The laboratory monitors its activities and its relationships to identify threats to its impartiality

1.9 DATA PROTECTION AND PROTECTION OF PERSONAL INFORMATION

The Laboratory at UHK is committed to protecting the privacy of personal information of its service users and patients. In the course of their work, health service staff are required to collect and use certain types of information about people, including 'personal data' as defined by the Data Protection Acts 1988 & 2003. Such records and information are strictly confidential and can only be divulged or discussed in the performance of normal duty. The HSE has a responsibility to ensure that this personal data is;

- obtained fairly
- recorded correctly, kept accurate and up-to-date
- used and shared both appropriately and legally
- stored securely
- not disclosed to unauthorised third parties
- disposed of appropriately when no longer required

All laboratory staff are legally required under the Data Protection Acts 1988 and 2003 to ensure the security and confidentiality of personal information obtained or created during the performance of laboratory activities. The laboratory will only share such information with trusted third parties for the benefit of patient care, making relevant information available to any other health service provider at the request of the patient or the request of a healthcare provider acting on their behalf e.g. copy of report. Data Protection rights apply whether the personal data is held in electronic format or in a manual or paper based form. HSE policy and procedures with regards to Data Protection can be obtained through the following link: http://www.hse.ie/eng/services/yourhealthservice/info/DP/

The Freedom of Information/GDPR Department is responsible for managing and processing all requests for information with University Hospital Kerry ensuring compliance with a wide range of legal obligations. Where applicable the requests may be forwarded to the Laboratory for review.
A request for patient samples may be made directly to the laboratory by the Coroner /Deputy coroner for the purposes of post mortem investigations.

All staff in the laboratory are made aware of their responsibilities in relation to protection of personal patient information consistent with the Data Protection Act 2018 and Freedom of Information Act 2003. The HSE Code of Conduct for Health and Social Service Providers is available on HSE website and internally on Q-pulse **[RD-PATH-DOHCODE]**. All records are retained in accordance with requirements outlined in EU Blood Directive 2002/98/EC and securely managed in accordance with local laboratory instruction Policy on Control of Quality, Technical and Clinical Records **[P-PATH-QUALTEC]**

1.10 CONFIDENTIALITY POLICY

The laboratory understands that it is responsible, through legally enforceable commitments such as Irish and European Regulations, contracts with suppliers, service contracts, service level agreements, memoranda of understanding, and contracts established by the acceptance of samples, for the management of all information obtained or created during the performance of laboratory activities. It is the policy of the laboratory that it shall inform the user and/or the patient in advance, of the information it intends to place in the public domain. Except for information that the user and/or the patient makes publicly available, or when agreed between the laboratory and the patient (e.g. for the purpose of responding to complaints), all other information is considered proprietary information and shall be regarded as confidential.

All investigations and results produced by the laboratory at UHK are done so in a manner that ensures the confidentiality and privacy of personal information at all times. The HSE Code of Conduct for Health and Social Service Providers is available on Q-pulse **[RD-PATH-DOHCODE]** and covers employees' impartiality and confidentiality obligations.

Medical scientists are CORU registered Health and Social Care professionals and abide by a statutory Code of Professional Conduct and Ethics for Medical Scientists. Annual registration ensures a high standard of conduct by acting in the best interests of the public and respecting the confidentiality and privacy of service users.

1.11 RELEASE OF INFORMATION

When the laboratory is required by law or authorized by contractual arrangements to release confidential information, the patient concerned shall be notified of the information released, unless prohibited by law. Information about the patient from a source other than the patient (e.g. complainant, regulator) shall be kept confidential by the laboratory. The identity of the source shall be kept confidential by the laboratory and shall not be shared with the patient, unless agreed by the source.

Sharing information with third parties outside of the HSE, i.e. private or voluntary hospitals, referral laboratory specialists etc. is done on a need-to-know basis if there is a genuine need in order to ensure the highest quality of care is provided. Only information that is necessary for this purpose is shared. Measurement of uncertainty and metrological traceability data for assays (if applicable) is available to service users upon request.

1.12 FEEDBACK AND COMPLAINT PROCEDURE

The goal of Laboratory UHK is to ensure that our users receive accurate, reliable, meaningful and timely laboratory results. To facilitate this objective, it is necessary to receive feedback from patients and users of the service. It is your right as a service user of the HSE to provide feedback if you believe that standards of care, treatment or practice fall short of what is acceptable. If you need to make a complaint, we want the

process to be easy, effective and fair. It is the policy of the laboratory to treat all complaints seriously. The laboratory records all feedback (positive or negative) on Q-pulse as confirmation of the complaint received. The laboratory welcomes feedback and there are opportunities for patients and laboratory users to provide helpful information to aid the laboratory in the selection of the examination methods, and the interpretation of the examination results. In order to help you to provide feedback to the laboratory please contact the appropriate Department, the Laboratory Manager or the Quality Manager (refer to section 3 for contact details).

Customer satisfaction is assessed through annual user satisfaction surveys which is fed directly back to the laboratory and forms part of the annual management review of laboratory services.

You may also visit the University Hospital Kerry website at www.UHK.ie and select the patient feedback option or simply click on the following link:
https://uhk.ie/patient-feedback/

Your service, your say the policy and procedures for 'The Management of Consumer Feedback to include Comments, Compliments and Complaints in the Health Service Executive' is another means of providing user feedback and this can be accessed through the HSE website www.HSE.ie or by clicking on the following link:
https://www2.hse.ie/complaints-feedback/

Patients and users may obtain other relevant information such as HSE Open Disclosure policy on the HSE website at www.HSE.ie or for specific HSE policies and procedures please click on the following link
https://www.hse.ie/eng/services/publications/pp/

1.13 SERVICE AGREEMENTS

Each request, completed via a manual request form or electronically and accepted by the laboratory is considered an agreement.

The agreement includes the request (request form or electronic request), the examination required and the report. The examination request must provide sufficient information to ensure:

a) Unequivocal traceability of the patient to the request and the sample
b) Identify and contact information of requestor
c) Identify the examination requested
d) Informed clinical and technical advice and clinical interpretation can be provided.

The act of completing the request (manual request form or electronic request) along with submitting the sample to the laboratory indicates that the requestor agrees to the laboratory conditions for providing medical laboratory services.

This document specifies the information needed to complete the request (manual request form or electronic equivalent), the sample type required for each examination (A-Z test menu) and the expected time to reporting (turnaround time stated in A-Z test menu).

Each request form (together with its relevant primary samples) is checked for conformity with the laboratory's labelling requirements (see sections 6.2 to 6.5)

2.0 GUIDE TO USING THIS MANUAL

A controlled copy of this manual is available on the UHK website www.UHK.ie

For internal users a controlled electronic version of the manual is stored on the shared folder 'UHKnoticeboard' and is accessible through the menu 'Departmental policies and Procedures', > 'Laboratory', > "UHK User Manual". The document is stored in Adobe Acrobat format, which allows users to read the document while preventing modification.

Sections 1, 2 and 3 provide details of laboratory location, operating hours and contact details. **Sections 4 to 9** of this document provides details on requesting laboratory examination, specimen delivery and reporting of results.

A-Z Section of this manual provides comprehensive details of laboratory tests which are performed in UHK and tests which are referred to external referral locations.
Specific details on specimen requirements and specimen volume are provided.
Comments are added where additional information or documentation e.g. consent forms pertaining to the specimen and/or test is necessary.

Please note: Specimens are generally identified as adult or paediatric bottles. **Caution for paediatrics:** cap colours are different between paediatric and adult bottles e.g. **Red** top Vacuette is an adult bottle, the corresponding paediatric bottle is a **Brown** top paediatric serum bottle. **Refer to Attachment I Tube Guide** for paediatric and adult bottle cap colours.

3.0 GENERAL INFORMATION

3.1 Population Served

The South/South West Hospital Group and Cork Kerry Community Healthcare have become part of HSE South West Health Region since 3rd March, 2025. Health Regions are geographically-based units with clearly defined populations. The Health Regions are tasked with population-specific planning resourcing and delivery of health and social care services for the needs of its unique population. The HSE South West Health Region manages and delivers public health and social care services in Cork and Kerry and includes all hospital and community healthcare services in the region.

University Hospital Kerry, Tralee is the second largest acute hospital of the 7 hospitals in the Health Service Executive South West Health Region and is the acute hospital for County Kerry. The population of County Kerry is 156,458 persons (2022 census figures released by Central Statistics Office). The figures show the population of Kerry has risen by 5.9% since 2016.

There are currently a total of 283 Inpatient beds in UHK.

- 283 Acute Inpatient beds (Medical & Surgical) inclusive of critical care and maternity beds.
- Additionally there are 14 Surgical Day beds plus day service places [Oncology x 10; Haemodialysis x 20; Endoscopy x 11, Delivery Beds x 4; Obstetric Services x 4 Infusion suite x 5; Discharge Lounge x 5; AMU x 8
- The above complement of inpatient beds is exclusive of the Palliative Care Unit x 15 beds and the Mental Health Unit x 34 beds.

As of December 2024, there were approximately 1534 WTE across all staffing levels in the hospital of which approximately 15.4% are medical/dental, 42% are nursing and midwifery, 11% Health and Social Care, 13% management administrative, 12% general support staff and 7% other patient and client care.

The Laboratory provides a comprehensive laboratory service to hospital and community users. As of January 2025, the laboratory serves 97 General Practice surgeries in Kerry and the surrounding counties.
In 2024 over 5 million tests were carried out by the laboratory.

3.2 Location

The Pathology department (Laboratory) at University Hospital Kerry is situated on the first floor of the main hospital building. It is composed of four testing laboratory departments: Clinical Biochemistry, Microbiology & Molecular Diagnostics, Haematology and Blood Transfusion. Histopathology services are referred to Histopathology in CUH and to the Histopathology department Bon Secours Hospital Tralee. There is a Central Specimen Reception area for main deliveries and routine queries. Phlebotomy department is located on the ground floor of main hospital building, adjacent to out-patient clinic area.

3.3 Laboratory Department Opening Times

Department/Activity	Opening Hours
Laboratory Reception	Monday to Friday 8.00am – 8.00pm*
Routine laboratory Diagnostic Service	Monday to Friday 8.00am – 8.00pm
Emergency out of hours service (on call diagnostic service)	Monday to Friday 8.00pm – 8.00am Saturday, Sunday, Bank Holidays (24 Hours)
Phlebotomy (Opening times are subject to change depending on resource availability – Please check opening times with Phlebotomy department prior to attending)	Public opening hours: 9am to 4.45 (Mon - Thurs) 9am - 3pm (Friday) Wards 7.30 - 3pm (Monday - Friday) 7.30 - 12 (Sat/Sun and BH)

*Samples may be delivered to Laboratory outside of these hours via front reception.
It is essential to communicate sample delivery with staff to ensure necessary storage conditions are met to ensure sample integrity is not compromised.
An on-call system operates outside normal hours for emergency work i.e. non-deferrable tests necessary for decisions regarding patient treatment. Refer to the "On-call/Emergency service" Section of this manual.

3.4 Postal Address

The postal address for specimen delivery is:
Pathology Laboratory Reception
Department of Pathology
University Hospital Kerry
Rathass, Tralee
Co. Kerry,
V92 NX94
Ireland

3.5 Laboratory Department Telephone Numbers

There are a number of different disciplines within the Laboratory Department. Where medical and scientific advice is required on medical indications and appropriate selection of available procedures, the Laboratory Department welcomes your queries.

The five-digit numbers listed below can be dialled from within this hospital. When calling from outside the hospital phone switch on 066 7184000 and ask for the department. Alternatively dial (066) 718 followed by the last 4 digits of the extension number for direct access. Advice on interpretation of results and sampling procedures will be directed to the appropriate person.

Section	Extension
Laboratory Clerical Office	54363/54364
Central Specimen Reception	54157
Microbiology	54368
Molecular Diagnostics	54052

Biochemistry (including Immunology and Endocrinology)	54369
Histopathology	54370
Haematology	54367
Blood Bank	54366
Haemovigilance	54155
Phlebotomy	54233
Laboratory Manager	54365
Quality Manager	54361
IT Manager/Deputy	54361
Consultant Haematologist (on-site) Consultant Haematologist (off-site)	Via Switch in UHK Via Switch in CUH
Consultant Microbiologists	Via Switch in UHK
Consultant Chemical Pathologist	Via Switch in UHK
Consultant Histopathologists Bon Secours Hospital Tralee	Via Switch in UHK or BSHT (066) 714 9800
Consultant Histopathologists CUH,	Via Switch in CUH

3.6 Laboratory Department Fax Number

Fax No.: +353 (0) 66 718 4158 located in Laboratory main office

3.7 UHK Telephone Number

Phone No.: +353 (0) 66 718 4000 (University Hospital Kerry Main Switch Number)

3.8 Staffing

The Laboratory Department consists of:

Staff	Staff
Laboratory Manager	Senior Scientists
Laboratory Director	Medical Scientists
Consultant Haematologist	Surveillance scientist
Consultant Microbiologist	Lab aides
Consultant Chemical Pathologist	**Support services**
Laboratory Manager	Haemovigilance Officers
Chief Medical Scientists	Secretarial Staff
Specialist Scientists	Portering Staff
Laboratory Quality Manager	Specimen Reception
Information Technology Manager	Household

The Laboratory has been accredited as a training laboratory by the professional body for Biomedical Scientists (MLSA) for the in-service year for Medical Laboratory Scientist students.

3.9 Contact Information

Contact Details of key members of staff			
Name	**Title (Role)**	**Extn No**	**email address**
Dr. Grace Creedon	Laboratory Manager	54365	grace.creedon@hse.ie
Dr. P. Arregui	Consultant Haematologist	Via switch in UHK	
Dr O. C Ortega	Consultant Haematologist	Via switch in UHK	
Dr M Louw	Consultant Chemical Pathologist	Via switch in UHK	
Dr T. Karampatakis	Consultant Microbiologist	Via switch in UHK	
Dr A Tsergouli	Consultant Microbiologist	Via switch in UHK	
Ms. Carol Shanahan	Laboratory Quality Manager	54361	carol.shanahan@hse.ie
Ms. N. Cahill	Chief Medical Scientist-Microbiology	54368	niamh.cahill2@hse.ie
Mr. P. Walsh	Chief Medical Scientist - Biochemistry	54369	Paul.walsh4@hse.ie
Mr. D Burke	Chief Medical Scientist - Haematology	54367	david.burke@hse.ie
Mr. P Qualter	Chief Medical Scientist – Blood Bank	54366	pat.qualter@hse.ie
Biochemistry On-Call		Via Switch in UHK	
Haematology On-Call		Via Switch in UHK	

4.0 REQUEST FOR LABORATORY EXAMINATION, SPECIMEN BOTTLES AND CONTAINERS

4.1 General Information

This section deals with pre-collection and collection activities including completing request forms, specimen collections, specimen containers, instructions for patient preparation and patient-collected samples.
The laboratory accepts requests placed either electronically e.g. MN-CMS, GP ordermms (pilot sites) or manually on request forms. There are four different request forms in routine us, namely: Form 124A for Biochemistry/Haematology, Form 124B for Microbiology, Form 165 for Blood Transfusion and Form 164 for Histology. It is important that the correct form is used for the relevant department (See 4.3). An incorrect form may result in a delay in getting samples to the correct laboratory location and thus a possible delay in analysis.

In the case of the Maternity and Newborn Clinical Management System (MN-CMS) requests for examinations are generated electronically. Request forms are not required for Biochemistry, Haematology or Microbiology. MN-MCS request forms **are** required for Blood Bank and Histology. MN-CMS request forms are generated and printed off at ward level and must accompany samples to the laboratory.

MN-CMS: For add-on test requests for Biochemistry, Haematology or Microbiology MN-CMS request forms are printed out and sent to the laboratory as a record of the add-on test request.

GP ordercomm system: Requests for laboratory examinations can be generated electronically through Healthlink at participating GP practices. Requests for examinations can be made for a catalogue of Biochemistry, Haematology and Microbiology tests. Not all laboratory examinations are available to order on the GP ordercomms system. A specific GP ordercomms request form is generated after the electronic order has been placed and is printed out at the GP surgery. The request form must accompany samples to the laboratory. It is assumed that positive patient identification has taken place

Note: Where necessary for patient care the laboratory will communicate with users or their representatives to clarify the user's request.

4.2 Supplies of Request Forms and Specimen Containers

Supplies of request forms and routine specimen containers are available from Hospital Supplies Department (Phone: 066 717 8615). It is important to order supplies in advance to facilitate timely delivery. Once supplies have arrived ensure to check expiry date on specimen containers and tubes.

a) Request forms and routine sample/specimen containers are issued from Hospital Supplies. Chlamydia swabs, blood culture bottles and viral swabs are also available from Hospital Supplies Department (Phone: 066 717 8615).
b) 24-hour urine containers, paediatric coagulation bottles and blood gas syringes are available from Central Specimen Reception (CSR) in Laboratory (Phone: 066 718 4157).
a) Quantiferon kits are only available from Microbiology laboratory.

4.3 Completing the Request Form

4.3.1 Instruction on completing the request form

For accurate identification of patients and specimens, it is essential that request forms be completed fully, legibly and accurately. **The use of patient addressograph labels on request forms is recommended.** The request forms in use in Laboratory are:

Laboratory	Request Forms in use
Haematology/Biochemistry	Form 124A
Microbiology and Molecular Diagnostics	Form 124B
Blood Transfusion	Form 165 (or MN-CMS request form *)
Histology	Form 164 (or MN-CMS request form *)

***Request forms are accepted from the Maternity and Newborn Clinical Management System (MN-CMS) in UHK for Blood Transfusion and Histology and in the case of add-on test requests for Biochemistry, Haematology and Microbiology.

Separate specimens and request forms are required if tests are being sent to more than one department. It is Laboratory policy not to split samples between laboratories. **Please remember that inadequate information on your request form makes it impossible to issue a report or contact the doctor in case of urgent or unexpected results. Requests may be rejected if adequate information is not provided on request form.**

The following essential information must be documented in a legible manner on the request form: -

- Patient's Medical Record Number – MRN ('C' number).
- Patient's Date of Birth
- Patient's Gender
- Patient's Full Name (Surname, Forename) or proper coded identifier (e.g. STD< HIV specimens)
- Patient's Full Home Address
- Patient's Location (Hospital Ward, OPD). Where the requesting Physician is at an external location to that of University Hospital Kerry, the GP location code should be provided.
- Name of Consultant
- The name and signature of the requesting Clinician and bleep number.
- The name and signature of the person drawing the blood sample.
- Specimen type and anatomical site where appropriate
- Examination(s) required
- Date and time of specimen collection
- ***Relevant clinical details** appropriate to the test(s) requested must be supplied e.g. history of administration of drugs, antenatal history, blood transfusion history etc. Increasingly, greater emphasis will be placed on clinical information. Requests may be rejected if adequate information is not supplied in certain cases *
- **URGENT SAMPLES**: If a specimen is urgent please indicate on the request form and the request will be prioritised. If results are extremely urgent please contact the relevant laboratory. Overuse of the urgent service will adversely affect the turnaround time for all urgent tests.
- Clearly state any possible infection risk, particularly Category 3 infections such as TB, Hepatitis B or C, HIV.

* Clinical details are mandatory for some tests e.g. B12 and Folate (KBF) and requests maybe rejected if clinical details are not provided. User information and advice on other test requests e.g. Vitamin D and NT pro BNP among others is available in national HSE guidelines on the following link Advice and Guidance - HSE.ie
* Clinical details and relevant treatment information are extremely useful to the laboratory in interpreting results.

Desirable information
Previous address & patient's maiden name

Specific requirements of individual laboratories for completing request forms:

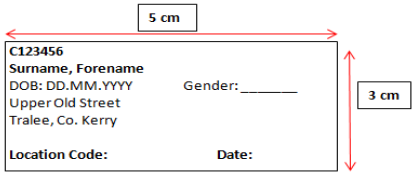
Blood transfusion
- If specific blood products are required i.e. CMV negative, irradiated, this MUST be requested on Form 165 or MN-CMS request form.
- The specific surgery or reason for a transfusion request must be documented on the transfusion from.
- Patient's transfusion history & obstetric history
- Signature of the person drawing the blood
- Time required

Microbiology
- Specimen type, site and clinical details are essential.
- Antibiotic details if prescribed.
- Separate Blood Sample and Microbiology Form are required for Virology/Serology tests.

Histology
- Specimen **type and site must** be stated on the request form **and** container.

4.3.2 Addressograph label format

Where addressograph labels are used on request forms the format of the labels should meet the following criteria.
The size should be a minimum of 5cm x 3cm and the type size should be a minimum of font size **Arial 12** and follow the format:
- Medical Record Number (Preferably 'C' number)
- Patient Surname, Patient Forename
- Date of birth and Sex
- Patient address



It is important that the addressograph label contains the MRN 'C' number and no other number is used e.g. medical card numbers as this may lead to errors. The clinicians name should not be above the patients name as this may also lead to errors. To ensure the labels meet our requirements please contact the laboratory for details.

4.4 Collection of Specimens

Accurate and timely collection of samples is a critical step in the total processing of a sample. The venepuncture technique and the associated skills of drawing blood are

central to the pre analytical phase. An improper technique or incorrectly drawing blood may lead to an increase in the number of haemolysed samples, contaminated samples or more serious labelling errors. This ultimately impacts on a patients result and could have a negative impact on quality of patient result and turnaround time. To ensure the accuracy of patient results it is essential that the pre-analytical steps are correctly performed and this includes using the correct sample tubes for tests requested (Refer to Attachment I), the correct order of draw is performed (Refer to Attachment II) and good venepuncture techniques are carried out (Refer to Attachment III).
Positive patient identification at the time of sample collection is imperative for patient safety, as detailed on 'Keep me safe' poster.

See Attachment I Tube Guide
See Attachment II - Order of draw
See Attachment III -Venepuncture Techniques - for phlebotmomy instructions

Refer to the A-Z Test Directory section for a list of tests performed, the sample required, turnaround time, reference range, and other information regarding specimen collection.

4.5 Terms and Conditions for Test Requesting:

- Requests for laboratory tests must be made by a registered medical practitioner or an appropriately qualified healthcare professional acting on the instructions of a registered medical practitioner. Requests for laboratory tests must **not** be taken or requested on oneself as the laboratory does not return reports to patients themselves. Self-referral of own/family/relatives/friends for clinical specimens for Laboratory testing without instruction or approval from a registered Medical Practitioner is prohibited
- Issues concerning patient consent for laboratory investigations are the responsibility of the requesting doctor. The Laboratory assumes that specimens submitted to it were obtained with the consent of the patient for the performance of scientific analysis to facilitate diagnosis and treatment.
- The service provided is intended to assist in the clinical management of patients and is not provided for medico-legal or forensic purposes or criminal investigations.
- Information provided on the request form and the results of laboratory investigations will be stored by the laboratory in accordance with the policies of the Health Service Executive on data storage and document retention.
- Requests for tests not performed in this laboratory will be referred to specialist external laboratories, where available, and will involve the communication of patient information and clinical details to the external laboratory.
- The patient identification details given in laboratory reports are drawn from the Patient Administration Systems of the Health Service Executive and are based on the information supplied on the request form by the requesting doctor.
- Results are reported to the appropriate hospital clinician or general practitioner, who can then explain their significance to the patient within the context of their discussions of the clinical problem as a whole.
- Laboratory reports are copyright of the Health Service Executive.
- Unless a specific request is made, a patient is deemed to accept the usual procedures of the Laboratory relating to the storage and disposal of specimens. Any such specific request made must be practical, reasonable and given with sufficient notice.

4.6 Patient preparation

Specimens for some tests must be collected with the patient fasting, or with knowledge of when food was last taken. Some tests must be collected in the basal state or with due regard to diurnal variations. Some tests may be performed only after prior arrangement with the laboratory. Special requirements (if required) are included with the individual test details in A-Z section.
Where doubt exists, the appropriate laboratory should be consulted.

4.6.1 Instructions for Completion of 24-Hour Urine Collection

Approved containers for the collection of 24-hour urine are available from Laboratory Reception. Please ensure that the container is correctly labelled. The following are instructions for the patient and these instructions are also available from Laboratory Reception. Refer to **[LI-BIO-24HRCOL].** Depending on the test requested the container might require a special preservative. If required, such preservative will be provided in the container by the laboratory. Do not discard any preservative provided or wash out the container.

1. Write NAME (surname and first name) and Date of Birth (DOB) on outside of container. (An unlabelled container will be rejected)
2. Before starting a 24 hour collection, ensure bladder is empty. For example: after getting up in the morning empty bladder into the toilet. Then start collecting all urine passed after this in the container provided. This is the START time for collection.
3. Write START time on container.
4. Collect all urine that is passed during the next 24 hours in the container provided. Ensure a complete cycle of 24 hours is collected e.g. 8am to 8am next day.
5. Write FINISH time on container.
6. Ensure cap is closed securely and the container is kept upright.
7. Bring container and patient request form to the laboratory specimen reception, University Hospital Kerry, Tralee.

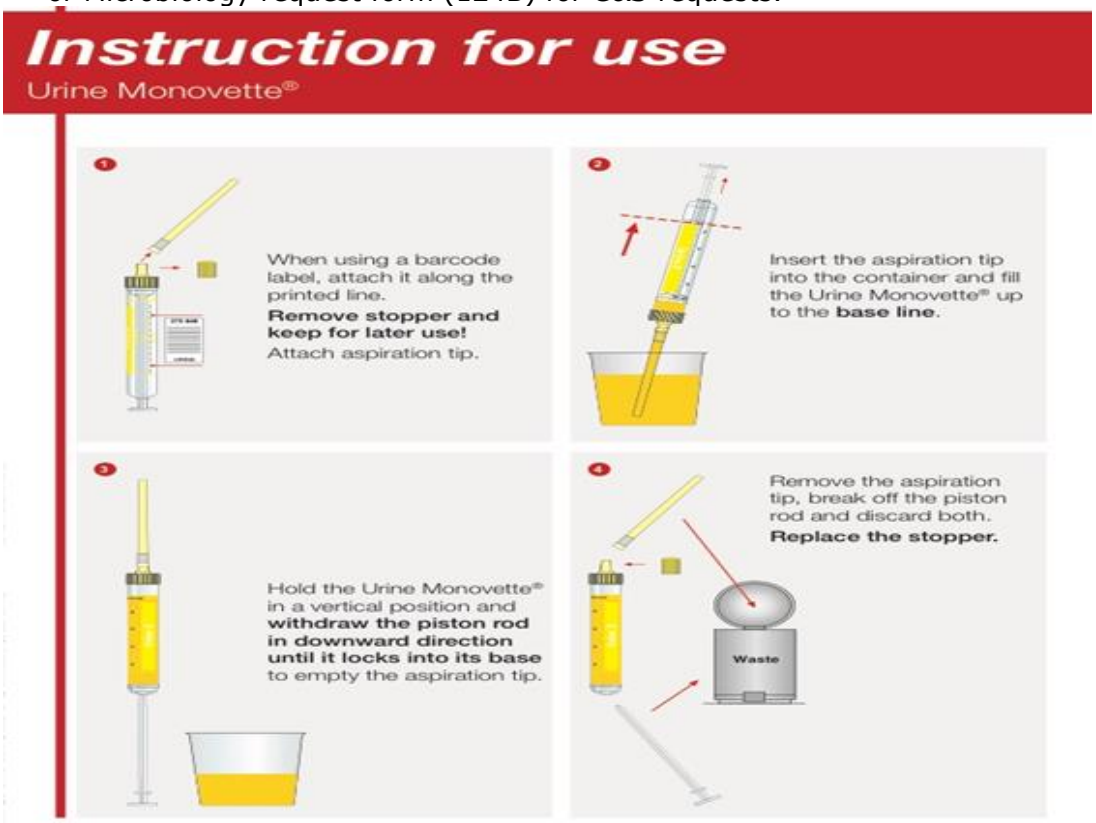
Note: It is important to collect all the urine passed for a full 24 hours exactly. Loss of any urine or a collection made for less than 24 hours will invalidate the test and might lead to an incorrect diagnosis. Please inform laboratory staff if this is the case.

4.6.2 Instructions for Fasting Patients

- Some tests require patients to be in a fasting state such as Glucose Tolerance Tests. The patient must ensure they are fasting from all foods at least 8 up to 12 hours prior to the sample being taken. It is important that the patient does not eat or drink anything but water during this time.
- It is important to avoid fasting beyond 14 hours because it will have a negative effect on the results. Ensure to drink plenty of water to stay hydrated.
- The doctors advice on fasting preparation must be adhered to as there may be other factors specific to each patient which must be taken into account.

4.6.3 Instructions for the use of Urine Monovette Tubes

- Urine monovette tubes are the sample tube of choice for Microbiology culture and sensitivity testing and Biochemistry urine chemistry testing. The monovette tube kit comes with a stopper and aspiration tip. Please see below instruction for use on how to fill a monovette tube.
- A mid stream urine sample is the preferred sample as the first sample may be contaminated with bacteria from the skin.
- Prior to collection the genital area should be cleaned with tap water. Use soap and water if the area is soiled. Antiseptics should not be used.
- You should pass some urine into the toilet then without stopping the flow of urine, catch some urine in a collecting container and finish passing urine into the toilet.(Note: Collecting containers are not part of the monovette kit)
- As per instruction for use below, remove stopper from monovette tube and attach aspiration tip
- Insert the tip into a collecting container of urine
- A minimum volume of > 5 mLs is recommended (where possible).
- When complete hold the tube in a vertical position and drawn the piston down until it locks in place.
- Remove aspiration tip and break off piston rod. Discard both safely
- A patient label can be placed onto the monovette tube for both Microbiology and Biochemistry and this reduces the need to hand write tubes.
- Please note: A separate urine sample is required for each department
- Send sample along with appropriate request for examination to the laboratory for analysis. Use Biochemistry request form (124A) for urine chemistry requests or Microbiology request form (124B) for C&S requests.



4.7 Patient Consent

When obtaining samples from patients verbal or written consent should be obtained. Upon admission to UHK it is understood that consent has been given by way of signature for invasive procedures, e.g. surgery, and for transfusion of blood components and/or products.
Consent for individual investigations such as Genetic tests may require agreement with the patient or guardian. Information on specific genetic consent forms are described in the A-Z section of this manual.
For most routine tests consent can be inferred when a patient willingly and voluntarily presents for blood collection procedures such as venepuncture.
If obtaining consent is not possible e.g. in emergency situations, the laboratory may carry out necessary procedures, provided they are in the patient's best interest.
Issues concerning patient consent for laboratory investigations are the responsibility of the requesting doctor. Users of the Laboratory Service are advised to familiarise themselves with the publication – HSE National consent policy NOHREP-CONS-001 available on HSE website and internally on Q-pulse **[RD-PATH-CONSENT]**
Samples submitted for analysis may be used anonymously for quality control purposes following completion of testing.

4.8 Health and Safety

- Universal precautions are adhered to at all times:
- Gloves to be used when dealing with patients.
- Needles and Holders to be disposed of safely.
- Sharps bins should be used for disposal of sharps.
- Yellow bags should be used for disposal of any bloodstained material.
- Spillages of blood/body fluid should be dealt with according to Infection Control Guidelines.

4.9 Labelling the Specimen Container

2 patient identifiers are required on **every** sample as a minimum requirement. **3 patient identifiers** are required for all blood transfusion samples.

- These identifiers must be documented in a **legible** manner on the specimen container:
  - Patient's full name or proper coded identifier (e.g. STD< HIV specimens)
  - Medical Record Number (MRN), where available
  - Date of birth
  - Date and time of specimen collection (where applicable).
- The patients name or proper coded identifier (e.g. STD< HIV specimens) is a compulsory identifier.
- For in-house patients the MRN is the preferred 2nd identifier (DOB can be used where MRN is not yet available).
- For external patients the date of birth is the preferred 2nd identifier.
- **In-House: Labels generated using the MN-CMS and BT3 PDA's are permitted** on patient samples as these labels are printed at the bedside following Positive Patient identification.
- **GP Practices:** GP practices may use patient labels of a specific format on blood bottles. The format of the addressograph label must comply with laboratory requirements. Hand written bottles are **ALWAYS** accepted in the laboratory and this is the standard contingency plan where labels cannot be used.

Specific labelling Requirements of individual laboratories:

Blood Transfusion:

- **Three** identifiers e.g. Patient's name, MRN, date of birth, address (if MRN is unavailable). Signature of person drawing the blood is required.
-

Microbiology:

- Specimen type, specific site and clinical details are essential for Micro samples.

Histopathology:

- Specimen type and site **must** be identified on the container and request form. This is essential if more than one specimen is received from one patient.

4.10 Quality of Blood Specimens

A number of factors are known to significantly affect performance of examination or interpretation results for example: The increasing time from when a sample is drawn contributes to the quality of the sample and can affect the integrity of the sample. Incorrect storage temperature may affect the quality of the sample. Laboratory personnel inspect samples prior to testing for the presence of: Haemolysis, Lipaemia and clots. In some instances, a repeat specimen may be requested and the issued report will have a comment noting the presence of haemolysis, lipaemia, clots or too old for analysis as appropriate

4.11 Specimen Rejection

It is assumed that the person requesting and collecting the sample has ensured that they have correctly identified and confirmed the patient details, prior to collection. To reduce the risk of pre-analytical error the Laboratory department has a strict sample accept/reject policy in place **[LI-PATH-ACCREJT]**. The following table is taken from the accept/reject policy **[LI-PATH-ACCREJT]** and outlines the reasons why samples/request forms are rejected.

SPECIMEN REJECTION CRITERIA [LI-PATH-ACCREJT]
1. Unlabelled/Mislabelled Specimens are rejected for the following reasons: • Unlabelled specimens • Specimens which are incorrectly labelled. • Specimens must have at least **2** matching correct identifiers (Blood Transfusion: 3 matching correct identifiers) of which one is the patient's full name. • Specimen details which do not match the accompanying requisition form. • Illegible handwriting on the sample • For electronically generated MN-CMS labels, the patient details must be clearly identifiable and present on the label.
2. Request forms are rejected for the following reasons: • Request form details which do not match the accompanying specimen. • Illegible handwriting on the request form • Request forms which do not contain accurate details of the requesting consultant/GP and the surgery/clinic location will be rejected • The request form is signed by the requesting consultant/GP who will receive and manage abnormal results. This signature must **not** be from the subject of the request (patient).

3. Incorrect Specimen Type, Incorrect Container or Preservative

- Specimens which are unsuitable for the procedure requested e.g. (urine for FBC testing, serum for Glucose testing) will be rejected.
- Specimens received in an incorrect container/tube/bottle or in a container inappropriate for the test (e.g. urine for culture in a non-sterile container) will be rejected.
- Specimens received in a container without appropriate preservative which would invalidate the results will be rejected.
- If insufficient specimen is received for all procedures requested and the specimen is easily re-collectable (urine, stool, sputum, blood, etc.) a repeat collection will be requested. Procedure(s) for which there is sufficient specimen will be performed.

4. Specimen Integrity and Timing of Specimen Delivery

- Specimens which are leaking or grossly contaminated and which may pose a significant health and safety risk to scientists/staff will be rejected.
- Specimens contaminated by another source (e.g. urine should not contain stool).
- Specimens in containers which are beyond their valid expiry date will be rejected.
- If the integrity of a sample is compromised due to a delay in delivery or specific handling requirements such as keeping warm or on ice.
- Specimens not collected according to the Order of Draw (e.g. EDTA contamination) or from improperly cleared lines. (This is carried out by the individual laboratories)
- Specimens which require testing or additional testing but where the stability of the analytes can deteriorate over time (This is carried out by the individual laboratories).
- Haemolysis, clotting or other factors which render the tests unsuitable may also be rejected and are dealt with by the relevant laboratories procedures.
- Specimens from the MN-CMS system which are outside a **15** minute safety time (from draw to electronic collection) will be rejected.

4.11.1 Exceptions to acceptance/rejection criteria

Exception to the rejection criteria is made where a sample is clearly irreplaceable or deemed critical, provision will be made to facilitate the processing of non-compliant test requests. Extra consideration is also given to samples from bleeding patients, paediatrics, geriatrics, oncology and palliative care patients. These deviations will be communicated to the requesting doctor as soon as is practicably possible. In such instances, the requesting doctor will be asked to sign a Correction of Patient Demographics (COD) Form to allow the laboratory to proceed with the test and release test results. As laboratories have different specimen requirements, the outcome may vary.
Examples of irretrievable specimens include: Cerebrospinal fluid (CSF), Pleural fluid, Genital swab specimens, Blood Cultures, Peritoneal fluid, Synovial fluid, Surgical specimens, Cytology specimens, Time-dependent tests. This is not an exhaustive list and each laboratory may decide on this matter

4.11.2 Notifying the user of a Rejected Sample

The laboratory will endeavor to inform users of sample issues as soon as possible. It may not be feasible to phone every external rejected requests but this is considered good practice and is carried out for all urgent/time-dependent requests at a minimum. Individual departments will phone other rejected requests as they see fit. Final reports will contain a rejected result and a reason for rejection for ease of reading.

4.12 Additional Testing

Not all additional testing can be facilitated by laboratories as this is dependent on the age of the specimen, assay stability, volume, storage times, correct sample types. These may impact on the validity of test results. The A-Z section of this manual contains more

information on specific tests and time limits are provided where possible. If additional testing of a sample is required, please contact Central specimen reception or the appropriate department to investigate the feasibility of using the initial specimen for such analysis. A request form **must** accompany add-on requests including those requested through the Maternity and Newborn Clinical Management System (MN-CMS).

Department	Tests with limitations for on add-on requests
Biochemistry	Add-on Alcohol < 4hours Add-on Sodium, Potassium, Chloride, Phosphate, Magnesium are not performed on uncentrifuged samples >24 hours Add-on Bicarbonate testing is not advised on sample that is already exposed to the air
Haematology	• Retics on FBC samples < 8 hours post phlebotomy • Blood Films Manual diff and red cell morphology <24 hrs slide platelet check <72 hours post phlebotomy • D-Dimer < 4hours post phlebotomy • APTT < 8 hours post phlebotomy • Fibrinogen < 12 hours post phlebotomy • Malaria on FBC < 2 – 3 hour
Microbiology	Additional testing may be performed up to the storage time of sample i.e. approximately 1 week. Please contact the laboratory directly
Blood Transfusion	Blood Transfusion samples are valid for 72 hours

4.13 Repeat Examination Due to Analytical Failure

It is the policy of the Laboratory department in the event of an analytical failure to repeat the test using a back-up instrument, or store the specimens in appropriate conditions until the cause of the analytical failure is identified and corrected and then repeat the test. The urgency of the outstanding specimens is reviewed by the relevant laboratory Consultant or Head of Department.

5.0 DELIVERY, PACKING, TRANSPORT AND DISPOSAL OF SPECIMENS

5.1 General Information

It is the policy of the Laboratory Department to treat all specimens and samples as potentially infectious or high risk. Therefore, we advise you to take universal precautions in the collection, packaging and the delivery of specimens being sent to the Laboratory Department for analysis.

The transport of specimens to the laboratory must be done so as to minimise the risk of infection to those who may come in contact with the specimens e.g. taxi drivers, postal workers, porters, laboratory staff etc.

Please identify known high risk biohazardous samples.

- Specimens must be placed within the bag that is attached to the request form or in a biohazard bag.
- This bag must then be sealed.
- Specimen containers or request forms that are contaminated externally must not be sent to the laboratory.
- When sending several samples to the laboratory Biohazard bags should be used.
- Specimens must never be sent in paper carrier bags.
- Under no circumstances should anyone transport specimen containers in their hands or pockets.
- The specimen container and request form must be adequately labelled to enable laboratory staff to identify the source of the sample quickly should the need arise (e.g. after a laboratory accident).
- To avoid specimen rejection, please follow the specimen requirement instructions in the test directory. If in doubt contact Central specimen reception or the appropriate lab.

5.2 Specimen Delivery From Within the Hospital

5.2.1 Samples taken during routine hours

It is the responsibility of the person taking the sample to ensure that it is delivered to the laboratory. Samples are transported to the laboratory at room temperature from within the hospital. The pneumatic chute system allows for direct delivery from the ward to the laboratory. In-house sample request forms are time and date stamped upon receipt in Central Specimen Reception, Blood Transfusion and Histology.

5.2.2 Pneumatic system address numbers

Location and Numbers					
Laboratory	4364/4157	Clonfert	4359		
A/E	4305	CSSD	4295	Palliative day care	5555
AMU	4306	Dialysis	4330	Palliative care IP	3028
Aghadoe	4346	Emly	4349	Pharmacy	4282
Annagh ICU	2929	Gallarus	4318	Phlebotomy	4233
Annagh	4345	HDU/CCU	4373	Psychiatry	4475
Ardagh	4119	Kells/Ardfert	4324	Rathass	4336
Carrig Ward	4397	Muckross	4411	Sceilig/CCU	4412
Cashel	4360	OPD	4242	Theatre	4388

5.2.3 Instructions on use of pneumatic chute system

- All samples must be securely contained in a sealed plastic bag.
- Place the items to be transported into the carrier.
- Dial the required 4-digit Address Number.
- Place the carrier into the sending Funnel.

Do not send CSF's OR BLOOD TRANSFUSION PACKS/PRODUCTS in the chute

There are a number of specimens that will not fit into the carriers; these include some Histology specimens and 24-hour urine containers.

The risk of breakage is high and any internal leakage in the system will cause its shut down until an off-site engineer can decontaminate it.

These specimen types can also be delivered by all trained personnel, which include doctors, nurses, porters and care assistants.

5.2.4 Samples taken out of hours:

The pneumatic chute system allows for direct delivery of samples from the ward to the laboratory.

The on-call scientists must be phoned to alert them that urgent testing is required.

Non-urgent specimens are stored on the sorting bench in Specimen reception.

Please Note:

- Histopathology specimens are not accepted out of hours.
- Microbiology samples must be put into the fridge in Microbiology laboratory.
- Urgent Blood transfusion samples are preferably delivered to scientific staff by hand.

5.3 Delivery of urgent samples to the laboratory

- Urgent requests can be made during routine hours and all urgent requests will receive priority once they are received in the laboratory.
- Urgent out of hours service is provided by the on-call scientist who must be phoned and informed of the urgent test requirement
- Urgent requests need to be clearly identified on the request form.
- Each department will process urgent requests as required and may have further individual requirements for urgent requests (Refer to individual department disciplines)
- Urgent request forms are time and date stamped upon receipt in Central Specimen Reception and Blood Transfusion.
- **Urgent Blood Bank samples <u>must</u> be hand delivered to the Blood Bank laboratory**
- Once urgent results become available the results are released (Refer to A-Z for specific test TAT's).

5.4 Delivery of biological specimens from GP surgeries/off-site hospitals/clinics

5.4.1 Requirement for transport of biological substances

Transport of biological specimens by public road must be in compliance with the the **European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).**

It is the responsibility of the consignor to comply with these regulations. This standard is to safeguard the drivers of vehicles carrying diagnostic specimens on the road between sites and provides protection to passengers and/or the emergency services in the event that the vehicle is involved in a road traffic accident.

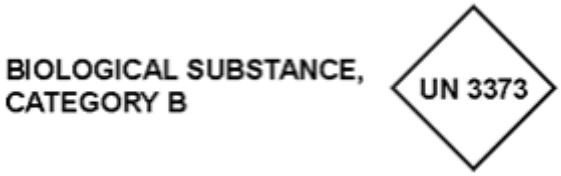
The consignor is defined as

- The routine courier e.g. Southdoc etc who are contracted to transport specimens from General Practitioners Surgeries in accordance with ADR Transport Regulations.
- The GP surgery sending specimens when routine contracted courier is not used.
- The external hospitals / nursing home / clinics sending specimens to a Laboratory

Samples must be transported within ambient temperature range (2°C – 28°C). Samples should be transported directly to the Laboratory in a timely fashion from the point of collection. Samples should not be stored overnight in the transport vehicle. The Laboratory checks sample transport temperature to verify ambient temperature conditions are met during transportation. It is the responsibility of the consignor to ensure that transport containers are maintained in good condition and are cleaned regularly using detergent.
Most samples can be transported as UN 3373 BIOLOGICAL SUBSTANCE, CATEGORY B in accordance with Packing Instruction 650.

To comply with packing instruction 650 for road transport, the following requirements must be satisfied.

- The specimen must be contained in a primary leak proof container.
- The primary receptacle must be contained in a secondary leak proof container.
- There must be sufficient absorbent between the primary and secondary container to absorb the entire amount of liquid in the primary containers should they leak.
- Either the primary or secondary container must be able to withstand an internal pressure of 95 kPa – the primary container in use for the UHK laboratories satisfies this requirement.
- The secondary container must be contained in an outer package with at least one minimum surface dimension of 100 x 100 mm.
- The outer package must display the following markings:



- Either the secondary or outer packaging must be rigid.
- The assembled package should be capable of withstanding a 1.2 m drop test without leakage from the primary container.

5.4.2 Routine Scheduled Collections

The companies/couriers who currently provide transport and delivery services of samples to Laboratory department in UHK use commercially available transport systems which consist of a rigid secondary container capable of holding a significant number of primary receptacles and a rigid outer transport box. It is the responsibility of the consignor to purchase these containers and to be compliant with regulations on transport of dangerous goods. When using such containers the consignor must ensure that:

- There is sufficient absorbent material in the secondary container.
- That the secondary container is closed correctly.
- That there are no visible signs of damage to the outer container – all defective transport boxes should be removed from service.
- The correct UN 3373 BIOLOGICAL SUBSTANCE, CATEGORY B label is visible on the outer transport box.

Note: Completed 24 hour urine containers should be hand delivered to the laboratory reception.

5.5 Disposal of Waste Material used in Sample Collection

All materials used in specimen collection should be treated as potentially hazardous and discarded using sharps containers and other appropriate colour coded bags. For in-house waste disposal please refer to the current hospital guidelines for Waste Management prepared by Infection Control.

6.0 AUXILIARY SERVICES AVAILABLE

SERVICE	DESCRIPTION
Haemovigilance Service	A Haemovigilance service is available in the hospital. Haemovigilance procedures are available on every ward PC, accessible through 'UHKNOTICEBOARD' icon. Training on haemovigilance is required for any staff involved in the blood transfusion process. Further information is available from Haemovigilance officer who can be obtained at Ext: 54155
Phlebotomy	The Phlebotomy department is responsible for taking blood samples for diagnostic testing during routine phlebotomy working hours. The phlebotomy department is located on the ground floor of the hospital and appointments can be made at Ext:54233
Consultant Service	There is a Medical Consultant Haematologist available in Haematology/Blood Transfusion. There is a Consultant Chemical Pathologist consultant available in Biochemistry. There is a consultant Microbiologist available in Microbiology. There is no Histopathologist on-site at University Hospital Kerry. The consultant service for a specific Histology sample is that of the referral location i.e. Bon Secours Hospital Tralee, Cork University Hospital and the National Maternity Hospital.

7.0 LABORATORY TESTS AVAILABLE ROUTINELY AND OUT OF HOURS

The laboratory tests available in UHK are listed in the A-Z section of this manual. Some tests are carried out in-house at UHK while other tests are referred to external laboratories as defined for each test in A-Z section.

7.1 Laboratory Disciplines

Departments will be described in the following sections:

- **Histopathology/Cytology** **Section 10.0**
- **Blood Transfusion** **Section 11.0**
- **Microbiology/Molecular Diagnostics** **Section 12.0**
- **Haematology** **Section 13.0**
- **Biochemistry (including Immuno & Endo)** **Section 14.0**
- **Genetics** **Section 15.0**

7.2 Laboratory tests available (A-Z Section)

Each laboratory discipline provides a description of the tests it provides, including information on the following (where applicable): -

- Laboratory (laboratory carrying out testing or laboratory referring to external laboratory)
- Specimen type/site
- Comment – this includes Patient preparation, e.g. fasting, Consent form, if applicable, Special timing for collection of samples e.g. pre and post drug administration, Any special handling needs between time of collection and time received by the laboratory (transport requirements, refrigeration, warning, immediate delivery etc.). The comment section also provides information which tests are accredited in Biochemistry
- Turnaround time (Turnaround time is defined as the time from specimen receipt in the Laboratory Department to the time a report is available electronically).
- Reference Range

7.3 Laboratory Tests not Listed in A-Z Section

If you require a diagnostic test that is not listed in the A-Z, please contact the Laboratory department which will endeavour to outsource, as appropriate, your test requirement or provide information regarding the relevant laboratory. Where a test is specifically required and is not listed the request will be redirected to the laboratory manager.

7.4 External Laboratory Testing

Some specimen/samples are referred to external laboratories for testing. This will be stated in the **A to Z** index of Laboratory Tests. The details of referral locations are available from the individual laboratories should they be required.

7.5 Emergency Out of Hours Testing

Please note that the on-call service is restricted to true emergencies and tests should only be requested if it is not possible to defer the request to the next routing working day.

Test	Laboratory	Unrestricted	Special Request
U&E	Biochemistry	√	
Troponin I	Biochemistry	√	
Glucose	Biochemistry	√	
Cardiac enzymes	Biochemistry	√	
Amylase	Biochemistry	√	
Paracetamol, Salicylate	Biochemistry	√	
Alcohol	Biochemistry	√	
Urinary screen for drugs of abuse	Biochemistry	√	
Liver function tests	Biochemistry	√	
Bone profile	Biochemistry	√	
CRP	Biochemistry	√	
Uric acid	Biochemistry	√	
Gentamicin & Vancomycin levels	Biochemistry	√	
Total B-HCG (Blood)	Biochemistry		√
Li, Iron and Therapeutic Drugs	Biochemistry		√
CSF	Microbiology	√	
Blood Cultures	Microbiology	√	
Urine Microscopy	Microbiology		√
Respiratory PCR testing-(weekends 8am-8pm only)	Microbiology	√	
FBC	Haematology	√	
Coagulation screen	Haematology	√	
Fibrinogen	Haematology	√	
D-dimers	Haematology	√	
Sickle cell & Malaria screen	Haematology	√	
Infectious Mononucleosis (IM) Screen	Haematology	√	
Direct Coomb's test	Blood Bank		√
Blood components and products	Blood Bank	√	
Group & Save/Crossmatch	Blood Bank	√	
Transfusion reaction investigations	Blood Bank	√	

Tests in the special request column will be deferred by the lab until routine hours, unless a specific verbal request for immediate processing has been made by a senior Registrar or a Consultant. Any tests not included in the list above must be requested by a Hospital Consultant. The doctor completing the request form must state on the form why immediate processing is needed. Specific protocols govern the availability of these tests.

The on-call service is restricted to true emergencies. The turn-around time is adversely affected if excessive demands are made on the service. From 8.00pm-8.00am out of hours service is currently delivered by two scientists, one manning a Haematology/Blood Transfusion rota, the other a Biochemistry rota. The limited range of Microbiology testing is split between these rotas. At weekends (Sat, Sun and BH) from 8am-8pm, the Microbiology on-call service is provided by Microbiology scientists. There is a collective obligation on the Laboratory staff to ensure a viable out of hours service.

8.0 INSTRUCTIONS FOR USING LAB ENQUIRY (Not applicable to GP's)

8.1 Instructions for using Lab Enquiry

The iLaboratory web enquiry system can be used by clinical areas (e.g. wards, A&E and some out-patient clinics) to view patient's results. The *i*Laboratory web enquiry system is not applicable to GP surgeries.
The procedure and instruction for using the iLaboratory web enquiry system is available on the HSE internal UHKnoticeboard which can be downloaded from URL location http://pkghiis001.healthirl.net/UHKPortal/Laboratory

9.0 REPORTING OF TEST RESULTS

Reports contain reference intervals and/or suitable interpretive comments wherever appropriate, to aid interpretation of results. Reports will only be provided to the requesting clinician. For reports which are obtained from referral locations, the Laboratory department, UHK, (not the referral laboratory) is responsible for ensuring that examination results of the referral laboratory are provided to the person making the request.
It is the policy of the laboratory not to provide reports directly to patients with the exception of requests made through FOI.

9.1 Reporting of Results within the Hospital

All results, once released, are available on the hospital computer system. Hardcopy reports (if required) are printed and are collected by the respective ward clerk. Blood transfusion blood product issue documentation are stored in the concertina file beside blood issue fridge, these are filed in alphabetical order by surname.
Hardcopy reports from external referral locations are sent to the referring clinician and in the majority of cases a scanned copy of the referral report is also available on the patient LIS record on the hospital computer system. Electronic reports are available from some referral locations and are available on the patient LIS record.

9.2 Reports for External locations

Electronic reporting of results is available to all GP surgeries with the required hardware. Hardcopy reports (if required) are printed and posted to the GP surgeries.
Hardcopy reports from external referral locations are sent to the referring clinician and in the majority of cases a scanned copy of the referral report is also available on the patient LIS record on the hospital computer system. Electronic reports are available from some referral locations and these results once released, are available on the patient LIS record on the hospital computer system

9.3 Telephoned Results

It is the policy of the Laboratory Department to telephone results only when results for specific clinical parameters have reached critical levels. Requests for verbal reports can be made in urgent cases. The laboratory does not provide results to patients.
The Blood Bank does not give a phoned blood group report under any circumstances

9.4 Faxed Reports

In general, reports are not faxed. However where necessary for patient care reports may be faxed following authorisation by the Head of Department/most senior grade nominee. In such instances, every practicable effort will be made to ensure the confidentiality of the patient. Prior to a fax being sent to a location the requestor is required to complete a confirmatory fax-back form. This is to ensure fax location is secure.

9.5 Reference Ranges (Biological Reference Intervals)

Reference intervals for tests are documented on reports to assist the clinician in interpretation and to be used in conjunction with clinical details. Reference intervals are derived from a healthy non-pregnant population. They comprise 95% of values in this population with 5% showing results that are higher or lower than those in the reference interval. There are accepted variations from this principle such as the 99th centile of a healthy population for cardiac specific troponins and therapeutic intervals for therapeutic drug monitoring.
Laboratory results must always be interpreted by clinicians who have all the patients' personal medical and clinical information and can decide, whether or not, the results indicate a medical condition.

The reference intervals are a guide. The intervals cited on reports from UHK do not take specific situations into account -such as pregnancy related changes to hemoglobin and other red blood cell indicators -where changes in normal laboratory values induced by pregnancy are well known.

Warning: Many diaries and handbooks provide lists of reference intervals for common analytes. You are asked not to refer to these in the interpretation of results generated by the University Hospital Kerry Laboratory. If you are in doubt about the validity of any reference interval provided to you, please contact the Laboratory for clarification

9.6 Turnaround Times (TATs)

Turnaround time (TAT) is given as the maximum number of working hours/days between electronic sample receipt and issuing a report electronically. In addition to the routine service each department operates an "urgent" system whereby the target turnaround time is shorter. The turnaround time for individual tests is given in the A-Z Test Directory in this User Handbook. The laboratory aims to reach its stated target TAT ≥ 90% of the time subject to the availability of sufficient resources and operational functionality of analysers and supporting IT systems.
For referral tests the TAT stated is the overall time taken to refer the sample to the referral location, processing time in the referral centre and returning reports from referral centres. The turnaround times for receipt of hardcopy reports of tests referred to external specialist laboratories can take a number of weeks.
Overuse of the urgent service will adversely affect the turnaround time for all urgent tests. Many specialised tests are performed on a weekly basis; if such tests are required urgently please phone the appropriate laboratory to discuss the request.
TAT's are routinely monitored as part of the laboratories quality improvement program.

10.0 HISTOPATHOLOGY

10.1 Department Profile

The mission of the Histopathology Department is to provide a quality service to all its clients. The Department provides a Histopathology service to users in University Hospital Kerry and General Practitioners in County Kerry. Histology samples are directly referred from UHK to Cork University Hospital, Bon Secours Hospital Tralee and National Maternity Hospital for examination, processing and reporting.

10.2 Routine Histological Examination

This is the appropriate request for all specimens requiring general histopathological examination.
Specimens should be submitted intact. Specimens should not be dissected in theatre as this may prevent proper gross examination in the laboratory and may interfere with the selection of appropriate tissue sections for microscopy. Histology specimens for routine examination **must** be received in containers containing 10% buffered formalin.

10.2.1 Histology Containers

Pre-purchased formalin-filled containers for small biopsies and empty larger containers are available from the Supplies Department, UHK. 10% Buffered formalin for the larger tissue specimens is available from the Laboratory. Ensure that the container selected is large enough to allow the specimen to be immersed in at least twice its own volume of buffered formalin. The container (not the lid) must be clearly labelled with

- Patient's full name (Forename and Surname)
- Date of birth and/or Medical Record Number
- Specimen type (if more than one specimen per patient is submitted)
- Patients address

10.2.2 Histology Request Form

The Laboratory Request form in use for Histology requests is **Form 164**. A MN-CMS request form is required for requests made through the MN-CMS. All request forms must provide appropriate detailed information and the following are minimum criteria for acceptance of specimens for histopathological examination:

- Patient's full name (Forename and Surname)
- Patient's address
- Patient's date of birth and /or Medical Record Number
- Requesting consultant/clinician/GP
- Requesting clinical location
- Clinical history
- **Clearly state any possible infection risk, particularly Category 3 infections such as TB, Hepatitis B or C, HIV.**
- Addressograph labels on Histopathology request forms and specimens are acceptable. Specimen type must be stated on both the form and the specimen container.

10.2.3 Expected turnaround times

The TAT's are specific to the referring locations i.e. Bon Secours Hospital Tralee, Cork University Hospital and National Maternity Hospital

10.2.4 Specimen delivery from theatre and endoscopy unit

Specimens delivered to the Histopathology laboratory by portering staff are signed for by histology staff. Specimens are accepted from 8am-4pm Monday to Friday.

10.2.5 If a sample is taken outside of laboratory hours

When a sample is taken out of hours, place the specimen in formalin and keep until delivery to the Histopathology laboratory during the next working day.

10.2.6 GP Samples

For GP samples, the sample should be delivered to the Histopathology laboratory at the address above (Section 4.2) in secure packaging as per section 5.3.

10.3 Diagnostic Cytology

Specimens for cytological examination are referred by the Histopathology Dept in UHK to the Cytology laboratory in Cork University Hospital.

Expected turnaround time: 3-5 days

10.4 Post vasectomy specimens

Post vasectomy specimens are referred monthly and may be posted or hand delivered to the histology laboratory Monday to Friday.
Expected turnaround time for post-vasectomy specimens: 3-4 weeks

11.0 BLOOD TRANSFUSION

11.1 Department Profile

Blood Transfusion department provide blood and blood products. Blood group serology and monitoring of ante-natal patients.

11.2 Request Form Requirements:

The Laboratory Request form in use for Blood Bank is **Form 165**. A MN-CMS request form is required for requests made through the MN-CMS.

11.3 Storage of Specimens for Archive and Look-Back Purposes

Specimen Description	Storage Requirements	Storage Location	Minimum Retention Period	Responsible
Serum (if requested only)	-20°C	Blood Bank Freezer	14 Days	Scientist
Whole Blood	4°C	Blood Bank Reagent fridge	7 days	Scientist

Storage of request forms will be permanent (at least 30 years)

11.4 Specimens including specimens referred to External Laboratories

Test	Specimen Type	Specimen Requirements			Special Requirements
		Additive	Vol(ml)**	Container Type**	
Anti D * Quantification	Blood	EDTA	6	Pink Capped	None
Anti c * Quantification	Blood	EDTA	6	Pink Capped	None
Antibody Identification	Blood	EDTA	6	Pink Capped	None
Antibody Titration	Blood	EDTA	6	Pink Capped	None
Antigen Typing	Blood	EDTA	6	Pink Capped	None
CFF DNA	Blood	EDTA	8	Pink Capped	None
Cold Agglutinins	Blood	EDTA	6	Pink Capped	Transport at 37°C
Cytotoxic Antibodies*	Blood	Clotted	10	Red capped	None
Foetal Typing*	Blood	EDTA	See A-Z	Pink Capped	See A-Z
Group (Baby or Cord)	Blood	EDTA	3	Purple/ Pink capped	Cord Sample
Direct Coombs Test	Blood	EDTA	3	Purple/ Pink capped	Fresh
FMH	Blood	EDTA	6	Pink Capped	See A-Z
Group & Antibody screen	Blood	EDTA	6	Pink Capped	None
Group & Hold	Blood	EDTA	6	Pink Capped	
Group & Crossmatch	Blood	EDTA	6	Pink Capped	
HLA Typing*	Blood	EDTA	3 x 3ml	Purple Capped	None
Platelet/WCC / Ab*	Blood	Clotted	10	Red capped	None
Transfusion Reaction Investigation	Blood Packs and Blood Samples	EDTA, Clotted	6	Red, Purple and Pink capped	None

*indicates referred tests

**Volume/container type is for adult samples. Paediatric specimens are acceptable provided the correct specimen container is used. (Paediatric EDTA= red top, Paediatric clotted = brown top).

11.5 Blood Products/Components for Transfusion

Product	Specimen Type	Specimen Requirements		
		Additive Required	Volume Required ml*	Container Type*
Albumin 20% 100ml 5% 250ml	None	None	None	None
Anti D I.M	Blood.	EDTA	6	pink capped
F IX Concentrate	None	None	None	None
C 1 Esterase Inhibitor	None	None	None	None
V W Factor	None	None	None	None
Hepatitis Immunoglobulin 10ml	None	None	None	None
Factor VIII Concentrate	None	None	None	None
Factor VIIa Concentrate	None	None	None	None
Fibrinogen Concentrate	None	None	None	None
Frozen Plasma	Blood	EDTA	6	Pink Capped
Gammaglobulin	None	None	None	None
Prothrombin Complex	None	None	None	None
Platelets	Blood	EDTA	6	Pink Capped
Varicells Zoster I.G	None	None	None	None

*Volume/container type is for adult samples. Paediatric specimens are acceptable provided the correct specimen container is used. (EDTA= red top).

11.6 Red Cell Concentrates

Transfusion of red cells must begin within 30 minutes of the unit being removed from the fridge. If the transfusion has been deferred for any reason the blood must be returned to the issue fridge within 30 minutes. If the transfusion has not begun within the 30 minutes the blood bank should be contacted for advice.
Units of red cells should be transfused within 4 hours from the start of collection to avoid the possibility of bacterial contamination of the unit.

11.6.1 Routine Blood Requests

Blood samples for cross-match should be submitted to the blood bank in a timely manner. Routine blood requests should reach the blood bank before 4 p.m. on routine day prior to planned transfusion or 2pm at weekends. Patients going to theatre after 10am may be performed at 8am.
For clinically stable patients a single unit transfusion is recommended however it could be ordered and cross-match as 2 units at the same time (1 unit transfused and 1 unit kept on stand-by)
Pre-op cross-match is performed by Blood Bank staff at 8a.m. on the morning of planned theatre and will generally be held for 24 hours.

The blood bank should be notified promptly if a planned transfusion or surgical procedure is cancelled.
Compatible blood may take longer to obtain for patients whose blood contains irregular antibodies or where there are special requirements. To minimise delays the blood bank should be informed before admission if possible. Kleihauer tests must be received before 12 noon in order to be tested on the same day.
A second sample is recommended for all patients requiring transfusion it is recommended that a second sample is sent for group & hold either at pre-op assessment stage or on admission.

11.6.2 Urgent Blood Requests

Emergencies will receive priority status. When blood is required urgently contact the Scientist in the blood bank (on-call if appropriate) and maintain open lines of communication.
All urgent specimens must be hand delivered directly to the Blood Bank laboratory.
Every effort should be made to send an appropriately labelled specimen to the blood bank to facilitate rapid ABO and Rh D grouping. Group specific blood will then be issued.
Where there is insufficient time to obtain a patient specimen two units of O Rh D Negative blood are available from the Blood Issue fridge in the laboratory.
The laboratory must be informed if these units are used and the accompanying fate of units report must be fully completed and returned to the laboratory.

11.6.3 Ordering Additional Units

Where a period of more than 72 hours have elapsed post transfusion of the first unit of red cell concentrate, a fresh specimen is required.
If a patient has been transfused in the past 3 months, a group and hold specimen is only valid for 72 hours.
All patients require a new specimen after 7 days.

11.6.4 Phoned Requests

Phoned requests for compatible blood to Extention 54366 should be followed up by a written request.

11.7 Octaplas

Plasma should be ordered by telephoning the UHK transfusion laboratory, ext 54366 followed up by a written/electronic (in the case of MN-CMS) request.
If a current group is not available on the patient a sample is required.
Plasma is stored at -18°C in the blood transfusion laboratory. Thawing takes 20-30 mins. Once thawed it must be infused within 1 hour, except in cases where there is a risk of circulatory overload.
Octaplas is available in groups O, A, B and AB.
Plasma is not routinely necessary in the management of over-anticoagulation; refer to the **Procedure for the ordering, prescription and administration of blood components (Excluding factor concentrates and anti-D) PR-KGH-HVO30** for indications for use and recommendations for administration of Plasma.

11.8 Cryoprecipitate

Cryoprecipitate is no longer routinely available in UHK and is obtained by special request only. Cryoprecipitate is only given under haematologist advice. The routine product of

choice to increase fibrinogen levels is fibrinogen concentrate. Cryoprecipitate contains the major portion of Factor VIII, Von Willebrand, Fibrinogen, Factor XIII and Fibronectin pooled from five units of fresh frozen plasma.
Cryoprecipitate should be ordered by telephoning the blood transfusion laboratory, ext 54366 followed up by a written/electronic (in the case of MN-CMS) request.

11.9 Platelets

Platelets must be ordered through the blood transfusion laboratory.
Platelets for transfusion are provided in bags containing approximately 24 x 10^{10} platelets suspended in 200-300mls of plasma. This represents a typical adult dose of platelets. This dose should raise the patients' circulating platelet count by 25x10^{9}/L.

Stocks of platelet are routinely stored in the UHK Blood Transfusion lab. Stock platelets are kept for emergencies. For planned platelet transfusion, contact Blood bank and communicate to scientists at least 24 hours prior to requirement to obtain group specific platelets.
Elective platelet transfusions should be ordered on the day prior to the planned transfusion to facilitate transport.
Platelets must be ordered by telephoning the UHK blood transfusion laboratory, ext 54366 and should be followed up by a written/electronic (in the case of MN-CMS) request.
If a current Group and Hold is not available on the patient a sample is required prior to administration.

11.10 Protocol for Out of Hours Transfusion Requesting

All **routine pre-op work** is deferred from on-call to early next morning. Groups and saves on patients with normal haemoglobin who are clinically stable are deferred to working hours. Anaemia patients should only be grouped and cross-matched out of hours if the patient is clinically unstable.
Emergency admissions with no evidence of bleeding and normal haemoglobin – Defer to working hours.
Arrangements will be made in the transfusion laboratory to ensure that pre-op work is done on the morning of operation so that blood will be available from 10 o'clock for surgery. This may not be possible where antibodies and special requirements are required.
It is important to check that these results are available and liaise with blood bank medical scientists if priority changes.

11.11 Turnaround time in the blood bank

The turnaround times given in this manual are for routine testing.
The blood bank will endeavour to meet user specified turnaround times assuming this is longer than the routine turnaround times given.
Urgent requests will receive priority. In urgent situations, blood components and products will be available for patients that do not have irregular antibodies in 1 hour during core routine working hours and in 1.5 hours at all other times provided the patient does not have antibodies.

11.12 Maximum Surgical Blood Ordering Schedule (MSBOS)

The MSBOS in the table below has been developed as a reference and means of preventing the misuse of blood supplies. A surgeon may if deemed necessary override the MSBOS.

Description	Recommended number of units
Abdomino-perineal Resection	2
Amputation	G/H
Anterior Resection	G/H or 2 (clinical decision)
Austin Moore Prosthesis	G/H
Caesarean section	G/H
Cholecystectomy	G/H (not required by Mr. Mc Cormack)
Colectomy/Hemicolectomy	G/H or 2 (Whichever requested)
Commando Procedure	4
Dynamic Hip Screw Insertion	G/H
Ectopic Pregnancy	G/H
Gastrectomy (distal)	G/H
Total Gastrectomy	2
Hysterectomy (with/without vaginal/abdominal)	G/H
Intermedullary Nail Femur/Tibia	G/H
Laparotomy	G/H
Laparotomy with GI bleed	4
Laryngectomy	3
Mastectomy	G/H
Myomectomy	G/H
Neck Dissection	2
Nephrectomy	G/H
Panproctocolectomy	3
Parotidectomy	G/H
Pelvic Floor Repair (without hysterectomy)	G/H
Revision of total hip replacement	G/H
Thyroidectomy/Para thyroidectomy	G/H
Total Hip Replacement	G/H
Total Knee Replacement	G/H
Transcervical Resection of the Endometrium	G/H
Transvaginal Tape	G/H
TURP	G/H

12.0 MICROBIOLOGY

12.1 Department Profile

The Microbiology Department investigates patient samples for bacterial and viral pathogens using standard referenced clinical microbiology procedures. The Departments primary role is to isolate and identify bacteria, select viral pathogens and provide antimicrobial susceptibility test results. The department also participates in monthly external quality assessments.

There is no Serology Department at UHK, all blood serology tests are referred through the Microbiology Department.

12.2 Request Form.

For non-electronic requests, Microbiology samples must be sent with a completed Yellow Microbiology request form 124B. Some Reference laboratory requests may also require a second referral laboratory form to be completed. These are listed in the A to Z index.
Request for examinations are placed electronically with GP ordercomms and in wards using MN-CMS. For MN-CMS specimens no request form is required as orders are placed electronically. For GP ordercomms and add-on MN-CMS requests a printed request form from the electronic system is required.

12.3 Consultation Service

There is a Microbiology Consultation Service available on-site and through switch at UHK.

12.4 Out of Hours Service

The Microbiology Department is open for routine work Monday – Friday 8am to 8pm (with the exception of Bank Holidays). Refer to Section 7 for out of hours test requests for Microbiology.

12.5 Referred Test

A number of tests listed in the A to Z index are referred through the Microbiology Department at UHK. Below is a list of laboratory locations and web sites where further information on referred tests can be obtained. All specimens are sent by courier in the morning before 10.30am Monday to Friday (except Bank Holidays). Please add time for transportation to the turnaround time (TAT) given in the A to Z index.
Urgent tests may be sent by taxi at the request of a Consultant and in discussion with the Microbiology Department.

12.6 General Collection and Transport Guidelines

- Please use monovette tubes for all urine samples for UTI investigations.
- Where possible, collect specimen prior to the administration of antimicrobial therapy.

- Collect specimen with as little contamination from indigenous microbial flora as possible to ensure that the sample will be representative of the infective site.
- Collect specimen using sterile equipment and aseptic technique to prevent introduction of foreign micro organisms.
- Collect an adequate amount of specimen. Inadequate amounts may yield false-negative results.
- Swabs for C&S should be transported in a Amies transport medium with charcoal
- Specimens collected with a dry swab are unacceptable.
- Provide clinical details and accurate site description to ensure accurate processing.
- Specimens should be transported as soon as possible. If processing is delayed, refrigeration is preferable to storage at ambient temperature, with the following exceptions: Blood cultures and CSF samples - hold specimen at room temperature. CSF's must be hand delivered.
- Please do not refrigerate samples for fungal testing

12.7 Sample Containers.

Ensure the correct sample container is used for each test and check the expiry date of the container. Sample containers for each test can be obtained from the Stores Department at UHK with the exception the following:

- Paediatric Blood Culture Bottles – Central Reception, Laboratory, UHK.
- Quantiferon TB Kits – Microbiology Department, UHK.
- Oral Fluid/Buccal Swabs – Microbiology Department, UHK.

12.8 Reports.

All Microbiology final reports and report updates are available on the Laboratory Information System (LIS). Final reports are available electronically and in print format if required. Hard copy of reports received from referral laboratories are copied onto LIS and then issued to the requesting clinician directly.

13.0 HAEMATOLOGY

13.1 Department Profile

The Haematology department offers a wide range of investigations including cellular haematology and coagulation. More specialised investigations such as cell-markers and thrombophilia screens are referred to reference laboratories for analysis.
The Academy of Clinical Science and Laboratory Medicine approves the department as a training laboratory for Biomedical Science Students. All staff are involved in the training process.

13.2 Request Form Requirements:

The Laboratory request form in use for Haematology requests is Form 124A. No request form is necessary in the case of MN-CMS requests as orders are placed electronically.

13.3 Oral Requests - Add-on requests

The laboratory accepts add on requests on samples where the assay stability and timing of the original sample are taken into account. A request form must be sent to the laboratory reception which documents the patient details and the additional test required. Form MN-CMS requests for an add-on or specialized referral test a MN-CMS add-on request form is required. Request forms are scanned to the LIS for confirmation of examination request.

13.4 Availability of Clinical advice and Interpretation

Clinical advice regarding the results of laboratory investigations is available from the Haematology consultant on-site and/or haematology medical team in Cork University Hospital.

13.5 Out of Hours Service

A detailed list of on-call tests is outlined in the section 7.0.
Routine post-op haemoglobins should be sent within laboratory working hours or otherwise deferred. Coagulation screens should be deferred unless clinically indicated (e.g. history of bleeding, current bleeding, receiving anticoagulant medications and unstable)

13.6 Haematology Tests

- Full Blood Count, which includes WBC Differential and NRBC count on samples, are carried out on samples which are received within 24 hours. FBC specimens which are greater than 48 hours old will not have the reduced FBC profile due to the age of the specimen.
- Manual Blood Film Examination including Red Cell Morphology when indicated.
- Reticulocyte Counts.
- Infectious Mononucleosis Screens.
- Malaria Screens.
- HbS Screens.

Referred Tests
Specimens sent to Haematology CUH on a daily basis for:

- HbA1c (i.e. Glycosylated Haemoglobin assays).
- Hb Electrophoresis – used to investigate possible Haemoglobinopathy.

13.7 Storage of examined specimens

Storage is for the purpose of identification and traceability, noting that repeat testing may not be technically reliable after 2 days. Blood films which are reviewed by scientists in Haematology laboratory are stored for minimum 4 weeks, post examination.

Specimen Description	Storage Requirements	Storage Location	Minimum Retention Period	Responsible
EDTA specimens	4°C	Sample fridge and cold room	48 hours	Scientist
Sodium citrate specimens	RT	Coag sample rack in Haematology	48 hours	Scientist
Stained Blood film	RT	Slide rack in Haematology	4 weeks	Scientist
Serum specimens	4°C	Sample fridge and cold room	48 hours	Scientist

13.8 Coagulation Tests

(Investigations for inherited and acquired bleeding and thrombotic disorders, monitoring of anticoagulation therapy).

Coagulation Studies involved in monitoring anticoagulant therapy:

Test	Purpose
INR	To monitor Warfarin and Di-coumarin therapy
APTT	To monitor intravenous Heparin therapy
APTTR	To monitor unfractionated heparin (available to ICU and CCU in house only)
Anti-Factor Xa*	To monitor Low Molecular Weight Heparin therapy

* Test available in CUH – contact Haematology, UHK for instructions.

Please note: With the use of new oral anticoagulants (**eg. *Dabigatran, Rivaroxaban & Apixaban)*** **APTT** and /or **PT** results may be abnormal. In a patient who is over-anti coagulated with newer anticoagulation agents results can be misleading. **Seek Haematologist advice if necessary.**

13.9 Coag/D-Dimer requesting protocol

Test/test code	Criteria for request
INR (INR)	This test **only** applies to patients on warfarin and should not be requested on any other type of patient.
PT / APTT (TCOAG)	Request this profile on patients requiring a coagulation assessment.
PT / APTT / D-dimers (TCOAGD)	Request this profile only when thrombosis is suspected.

PT	Request for analysis of paracetamol OD & liver disease assessment.
INR & D-dimers (INR & CDD)	For patients on warfarin with a suspicion of thrombosis.
APTT	Used to monitor patients on unfractionated Heparin.
Fibrinogen (FIB)	Used to evaluate a Coagulopathy / severe bleeding

Please note that Coagulation studies are time sensitive and need to be processed within a specific time frame:

INRs / PTs	Process within 48 Hours
APTTs / Fibrinogen	Process within 8 Hours
D-dimers	Process within 4 Hours

For further details refer to the wallchart on the internal hospital portal UHKnoticeboard *Recommendations for Management of Bleeding and Excessive Oral Anticoagulation and on Q-Pulse documents* **[WC-HVO-MANANTI]**

13.10 Routine Screen for investigation of Bleeding Disorders

- INR, APTT, and platelet count.
- Fibrinogen assay available if necessary e.g. in D.I.C. or Massive haemorrhage
- In the event of abnormal results occurring in the Intrinsic or Extrinsic Pathways the relevant Factor deficiencies are investigated in CUH including screens for Von Willebrand's disease and individual factor assays. See A-Z of Tests for instructions.
- D-Dimer Estimation (only in cases of suspected DVT or PE)–available in Haematology, UHK.
- Platelet abnormalities are investigated in CUH by performing Platelet Function Tests using platelet diagnosis ADP, Collagen, Adrenaline, and Ristocetin and PFA 100. See A-Z of Tests for instructions.
- Lupus Anticoagulants are immunoglobulins that interfere with phospholipids-dependent coagulation tests. Screening for them includes the following tests: PT, APTT, Fibrinogen assay, ActinFSL, and DVTT. This screen is available in CUH. See A-Z of Tests for instructions.
- Thrombophilia Screen: The following tests are undertaken in CUH for a full Thrombophilia screen: INR, APTT, Fibrinogen, Actin FSL, DVV test, Antithrombin III (AT), Protein C, Activated Protein C Resistance (APCR), Protein S assays, and Anti cardiolipin antibodies.

If results of the screen are positive then samples are sent to referral laboratories for Factor V Leiden (FVL) tests and Prothrombin Gene Variant G20210A testing. See A-Z of Tests for instructions.

Note:

- Patients on Warfarin can have blood analysed for APCR, AT, FVL and Prothrombin 20210 only. Patients on Heparin will not have accurate AT.
- Patients who have a large acute thrombosis (e.g. DVT or PE) should not have samples taken for Thrombophilia Screen in the acute phase, as results can be inaccurate.
- For a full Thrombophilia Screen patients should be off Warfarin and Heparin for at least 2 weeks.
- Aspirin does not interfere.

13.11 Guidelines for Investigation of Thrombophilia

Indications:

- Established Venous Thromboembolism (VTE) before the age of 45 years.
- Recurrent VTE or Thrombophlebitis in the absence of cancer.
- Thrombosis in unusual site e.g. mesenteric vein, cerebral vein etc.
- Unexplained neonatal thrombosis.
- Skin necrosis, particularly if on coumarins.
- Arterial thrombosis before the age of 30 years.
- Relatives of patients with thrombophilic abnormality.
- Patients with clear family history of venous thrombosis in 2 or more first-degree relatives.
- Patients with recurrent foetal loss (on 3 or more occasions).

13.12 Sample Collection Procedures for Specialised Coagulation Testing (e.g. Thrombophilia Screens, Factor Assays, etc).

- Samples for specialised coagulation tests **MUST** be taken by phlebotomy either on the ward of in the blood room in OPD by prior appointment.
- Samples cannot be taken by GPs.
- Samples must be taken in the morning and arrive in the laboratory before 09.30am.
- Specific request form and patient consent forms must be completed.
- Clinical details **MUST** be clearly written on the request form (specialised coagulation tests have strict requesting protocols which must be adhered to).
- Please refer to the A-Z section for the sample types and number of samples for individual tests/profiles. Contact the laboratory for further details if necessary

13.13 Flow Cytometry

Available in CUH – contact Haematology UHK for instructions.
Flow Cytometry is used to produce quantitative data on mononuclear blood cells, such as lymphocytes, which are morphologically similar. The technique is also used to classify malignant/blast cells as are found in blood dyscrasia. This technique uses chromogen-conjugated monoclonal antibodies directed against specific cell membrane antigen sites. Antibody combination panels available at present provide information on cell clusters, e.g. CD5/19, in chronic lymphocytic leukaemia, as well individual cell markers.

Investigations available:

- T and B lymphocyte differentiation.
- CD4 Quantification in the monitoring of HIV treatment.
- Lymphocyte differentiation in chronic lymphocytic leukaemia, lymphoma.
- Acute leukaemia classification: myeloid, lymphoid, monocytic, myelomonocytic

13.14 Malaria Screening

- Malaria testing consists of a screening test and blood film examination for presence of malaria parasites.
- Requesting clinician **MUST** contact the laboratory before sending a sample
- Request form must contain **ALL** relevant clinical details including travel history (where & when), medication/prophylaxis history and presenting symptoms.
- Samples **MUST** be received in the laboratory asap

13.15 Red Cell Enzyme Assays (i.e. G6PD and Pyruvate Kinase)

See A-Z of Tests for instructions.

14.0 BIOCHEMISTRY

14.1 Department Profile

Clinical Biochemistry deals with the biochemical basis of disease and the use of Biochemical tests for its diagnosis, prognosis, screening and management. The Laboratory provides a reliable quality assured analytical service and as well as routine diagnostic work. Clinical advice regarding results of laboratory investigation is available to MS and medical teams off-site from consultant Chemical Pathologist.

The Department provides a comprehensive analytical service for indices of fluid balance, liver function, renal function, carbohydrate and lipid metabolism, and for various hormones, proteins, enzymes, therapeutic drugs, tumour-associated substances and many other chemical and biochemical compounds.
The provision of a clinical biochemistry service is dependent on highly automated analytical systems, electronic data processing and information technology.
The department has an extensive internal quality assurance system and participates in the national and international quality assessment schemes.
The Clinical Biochemistry Service is supported by on-going training programmes and by research focused on improving patient care. The department is also actively involved in teaching students of medical science.

Tests include:

- Routine Clinical Biochemistry e.g. liver, renal, cardiac, bone, glucose etc.
- Lipids, e.g. cholesterol, triglycerides, HDL and LDL.
- Endocrinology, e.g. thyroid function, infertility testing, pituitary disorders etc.
- Specific proteins e.g. immunoglobulins, allergies, acute phase proteins etc.
- Therapeutic drugs.
- Cardiac markers.
- Toxicology.
- Immunology e.g. allergy screening
- Protein electrophoresis

14.2 Request Form Requirements

The Laboratory request form in use for Biochemistry requests is Form 124A. No request form is necessary in the case of MN-CMS requests as orders are placed electronically.

14.3 Service Comments

Comments or suggestions relating to the service should be addressed to the Laboratory manager and/or Quality Manager.

14.4 Storage of examined samples

Specimens are stored at 4oC in storage module and/or fridges for up to one week before disposal.

14.5 Test Profiles

The test profiles defined in the following table are available to requesting doctors. If all the tests within the profile are not required you may revert to ordering the individual tests. *****These tests are not issued on samples which are >24 hours and un-centrifuged due to the stability of the tests.

GP Test Profile code	Specimen type	Test available
TGPRO (Random GP profile)	Clotted	Urea, Creatinine, Total protein, Albumin, AST, ALT, ALP, GGT, Total Bilirubin, Calcium, Cholesterol, Triglyceride, HDL and LDL
TGPFO (Fasting GP profile)	Clotted	Urea, Creatinine, Total protein, Albumin, AST, ALT, ALP, GGT, Total Bilirubin, Calcium, Cholesterol, Triglyceride, HDL, and LDL
TED (For ED and ITU use only)	Clotted	Renal profile, Liver profile, Bone profile, CRP
TRFT	Clotted	**Renal Function Profile**: Sodium*****, Potassium*****, Chloride*****, Urea and Creatinine
TUC	Clotted	Urea and Creatinine
TLFT	Clotted	**Liver function Profile:** Total protein, Albumin, AST, ALT, ALP, GGT, Total Bilirubin
TBO	Clotted	**Bone Profile**: Calcium, Magnesium*****, Phosphate***** and ALP
TLIP	Clotted	**Lipid Profile**: Cholesterol, Triglyceride, HDL and LDL
TCP	Clotted	**Cardiac Profile:** Troponin I (hs), AST, CK and LDH
TFEP	Clotted	**Iron Profile:** Iron, Transferrin, TIBC, % Sat
TTFT	Clotted	**Thyroid function tests:** TSH and FT4
TFHOR	Clotted	**Female Hormone Profile:** LH, FSH, Oestradiol

14.6 Biochemistry Tests (Blood, Urine and Faeces)

Information on all tests carried out in Biochemistry is to be found in the Test Directory (A-Z) of this manual (listed alphabetically within the Laboratory Test Directory). Stated volumes required apply to adult patients. In the case of paediatric patients please send as much blood as possible, using appropriate paediatric bottles. The volume of serum/plasma obtained will dictate how many of the requested tests can be performed.

14.7 Paediatric Patients

Requesting doctors are advised to liaise with the laboratory in advance of specimen collection when difficulties in obtaining blood specimens are expected. In these situations, test requesting should be ranked in order of priority

14.8 Turnaround Times

The Clinical Biochemistry Laboratory will attempt to meet the stated turnaround times, subject to the availability of sufficient resources, operational functionality of the analysers and the continued smooth running of the ward enquiry system. A/E, ITU, AMU, neonatal unit and all Urgent Samples will be given priority status and results released as soon as they are available.

Specimens referred to external specialist laboratories for analysis are dispatched by courier service. The turnaround times for receipt of hardcopy reports of tests referred to external specialist laboratories is generally of the order of two to three weeks.

14.9 Oral Requests - Add on Test Requesting

Routine clinical biochemistry specimens are retained for up to 7 days depending on space allowance. Subject to individual analyte stability, volume of sample required and sample type already received, further tests on a specimen that is already in the laboratory can be requested by contacting the department. A separate request form stating the additional tests is required and to indicate on the form that tests are add-on requests. Patient details are required on the request form. Where an add-on request is required on MN-CMS an add-on MN-CMS request form is required.

14.10 Referral Specimens

Tests not done on-site are sent to outside accredited laboratories for analysis. Information on these tests is included in the test directory A-Z and is also available on the individual referral laboratories websites.

14.11 Critical Results

Unexpected abnormal results falling outside defined limits will be telephoned to the requesting source. The phoning criteria for Biochemistry **[LI-BIO-TALERTS]** are based on national laboratory guidelines on the communication of critical laboratory results. It is important that the laboratory is informed as soon as possible if results appear to be inconsistent with the patient's condition or at variance with previous results. The following table is the phoning criteria for Biochemistry **[LI-BIO-TALERTS]** Version 5 active since 24.09.2024 and is current at the time of publication.

Telephone alert list for Biochemistry tests.

Test	Critical Alert Concentrations	Category	Ref
General Clinical chemistry			
NA mmol/L	<120 >150	A	1
K mmol/L	<3.0 (GP) ≤2.5 In House ≥6.0	A	1,2
Urea mmol/L	≥30 (> 10 if <16 yr) New presentation, non dialysis	A	1
Creat µmol/L	≥354 (200 if <16 yr) New presentation, non dialysis	A	1
eGFR ml/min	≤15 New presentation	A	1
GLU mmol/L	≤2.5 ≥25	A	1
AST/ALT IU/L	≥525 (x15 Upper Limit Normal)	B	1
ALP IU/L	>500	B	2
GGT IU/L	>500	B	2
TBili µmol/L	>180 in paediatrics	B	2
TP g/L	>90 (suggest addition of TELP)	B	2
CA mmol/L	≤1.8 ≥3.0	A	2
Mg mmol/L	≤0.4	A	1
Phos mmol/L	≤0.3 and >3.0	A	1
	≤0.45	B	1
CK IU/L	≥ 5000	A	1
Hs TROP I ng/L	Males >19.8 ng/L; Female: >11.6 ng/L	A	1

CRP mg/L	≥300	A	1
Amy IU/L	≥500	A	1
Trig mmol/L	>20	B	1
CSF	CSFG <2.0mmol/L CSFTP >45mg/dL (Neonates ≤6 days old: CSFTP>130mg/dL)	A	2
Toxicology			
SAL mg/L	>300	A	2
PAR mg/L	>30	A	2
Lithium mmol/L	≥1.5	B	1
Iron μmol/L	> 50	B	2
Osmolality			
Serum Osmolality	≤240 ≥310 mOsm/Kg H_2O	B	2
Immunoglobulins/Electrophoresis			
Hypogamma-globulinaemia g/L	IgG<3 with Low IgA and IgM	C	1
Paraprotein	Any IgE/IgD or IgG >15 IgA>10 or IgM>10 that is First time band	C	1
Endocrinology			
Cort nmol/L	≤50 (unless dexamethasone suppression test)	A	1
CARB μmol/L	≥105	B	1
DIG nmol/L	≥3.2	B	1
FT4 pmol/L	≥50	C	1
TSH mIU/L	≥50	C	2
Ferritin	≥ 1500 (GP requests only)	C	1
PSA μg/L	>20	B	1
Vancomycin	All values outside the upper limits of the therapeutic range	A	1
Gentamycin	All values outside the upper limits of the therapeutic range	A	1
ALWAYS PHONE THE FOLLOWING:			
All results for DKA Paediatric Patients All incidences of query contaminated samples or clotted samples Samples where critical results are affected by integrity of sample			

Category A: this result is likely to require action within **2 hours.**
Category B: this result has urgent implications for the patient and must be communicated to the relevant ward/location or clinician **today.**
Category C: this result has implications for the patient and should be communicated to the relevant ward/location or clinician **in the next 24 hours**.

14.12 Reference Intervals

Clinical biochemistry results are reported with reference intervals or target values. Reference intervals may be gender and age specific. The reference interval defines the values of a biochemical test found in 95% of normal non-pregnant subjects against which the patient's value can be compared.
Reference intervals may be obtained from a number of sources including National and International bodies, recommendation from the suppliers of equipment or by recommendation from clinical leads. Analytes such as Cholesterol and Triglyceride have target values assigned on the reports. Refer to section 9.5.

14.13 Dynamic Function Tests

Correct sample collection protocols for DFTs are very important.

Biochemistry Laboratory UHK, DFTs	Enquiries
Glucose Tolerance Tests	Diabetic Specialist Nurse Tel: 54146
Synacthen Tests	Consultant Endocrinologist Tel: 54405

14.14 Therapeutic Drug Monitoring

Measurement of the circulating concentration of certain drugs can be an invaluable aid to patient management in allowing dosage regimes to be tailored to the individual. This approach is useful for a limited number of drugs where the therapeutic response correlates better with the circulating level than the dose administered. There is a therapeutic range of concentrations within which the majority of patients experience maximum clinical benefit with the minimum of toxic side effects.
The optimum sampling time for each of the drugs tested is included in the details of the Test Directory.

14.15 Point of Care Testing

Point of care testing (POCT) is testing performed by non-laboratory staff near to the patient on the clinical wards. The convenience and speed of obtaining a result can contribute positively to improved outcomes for patients. POCT is comprised of Arterial Blood Gas (ABG) analysis, Blood Glucose/Ketone analysis, Blood Haemoglobin A_1C (HbA1c) analysis, Respiratory Viral Swab Screen Molecular (POCT), Blood High Sensitivity Troponin-I (HsTnI) analysis, Urine Multistix® Urinlaysis and Urine pregnancy testing. It is essential that correct sampling techniques and analysis techniques are used to ensure the accuracy of the final POCT result. Training in the correct use of POCT ABG, Glucose/Ketone, Viral PCR, HbA1c and HsTnI devices is organised periodically by the Point of Care Testing Department. Clinical Skills Facilitators and some ward staff are trained as cascade trainers. These trainers can train new staff in their own working area. The certification of new staff is centrally controlled and is managed by laboratory staff. POCT Devices **MUST NOT** be used unless training has been completed. Follow the instructions for the disposal of waste in order to minimise health, safety and cross infection risks.

List of analysers:

Blood Gas Analysers (POCT) – GEM5000 Blood Gas Analysers are located in Intensive Care (Annagh ICU), Labour ward (Ardfert), Emly Ward, Coronary Care Unit (CCU/HDU), ED RESUS, ED Triage Hub, Chronic Disease Management (CDM) Hub and Theatre.
In the event of a breakdown an ABG analyser from another ward location (preferably in close proximity) may be used as a back-up contingency.

Blood Glucose Meters (POCT) – Nova Statstrip Glucose/Ketone Meters are located throughout the hospital to monitor Glucose and Ketone levels. Blood Glucose/Ketone Meters are located throughout the Hospital to monitor known diabetics and to detect Hyperglycaemia and Hypoglycaemia. Glucometers are not to be used for the diagnosis of diabetes mellitus, for which blood specimens must be sent to the laboratory

HbA1c analysers (POCT) – DCA Vantage HbA1c analysers are located in Diabetic Unit and CDM Hub and and must only be used for patients who are attending these clinics.

Viral Respiratory PCR Analyser (POCT)- Genexpert POCT analyser for SARS-CoV2/ FluA/Flu B, RSV testing is located in ED. Viral PCR POCT testing is restricted to certified personnel.

hsTnI Analysers (POCT)- There are two hsTnI POCT analysers located in ED Triage Hub and are to be used in accordance with the UHK Pathway for Management of Adult acute cardiac chest pain.

HCG/Urinalysis Analysers (POCT) – Clinitek HCG/Urinalysis devices are located throughout the hospital.

15.0 Genetics Section

15.1 Test Requests

15.1.1 Genetic Requests

Genetic requests are varied in nature and samples are referred from either Biochemistry or Haematology Departments to the relevant referral locations for analysis.

Biochemistry Referral: Samples referred from the Biochemistry laboratory include the genetic test requests for Chromosome, Microdeletions, Angelmans Syndrome, BRACA, Constitutional Chromosome on new-borns and children < 5yrs, Cystic Fibrosis, Duchenne/Becker Muscular Dystrophy, Fragile X, Friedreich Ataxia, Huntingtons Disease, Microarray, Praeder Willi syndrome and other specific genetic test requests

Haematology Referral: Samples referred from the Haematology Department include tests requests for haematological malignancy including cytogenetics on Bone marrow, JAK2 analysis, Factor V Lieden, Philadelphia Analysis BCR-ABL, Prothrombin Gene Mutation (PT20210A)

15.1.2 Routine examination

Samples are referred for genetic testing for several reasons for antenatal workups for paediatric developmental workups and specific genetic disorder diagnosis.

15.1.3 Requesting Genetic Tests

In general genetic requests are specific and should be ordered at the request of a UHK consultant

15.1.4 Urgent test requests

Due to the nature of the request all samples are referred on the same day or next day of service.

15.1.5 Expected turnaround times

Genetic results from Department of Clinical Genetics at Children's Health Ireland Crumlin: 2-4 weeks
Genetic results from Biomnis: 2-4 weeks
Genetic results from external laboratories other than Department of Clinical Genetics at Children's Health Ireland at Crumlin or Biomnis may take longer.

15.2 Genetic Requests - Phlebotomy Instructions

15.2.1Specimen Requirements

All samples must comply with the policy on requirements of samples submitted for genetic analysis.

15.2.2 Request Forms and Consent Forms

Consent forms are required for genetic tests and these forms are available from the laboratory and also from the respective websites as referenced in A-Z section. Some genetic tests require specific forms e.g. Cystic Fibrosis. All request forms, consent forms and specimens must have correct patient details and completed in full.

All Genetic requests are checked upon receipt in the laboratory to ensure any issue can be corrected while the patient remains on site.
Department of Clinical Genetics at Children's Health Ireland Crumlin genetic consent forms must be signed by requesting consultant and includes MC number.

15.2.3 Policy for dealing with discrepancies between the details on the sample and those on the referral documents

- All discrepancies are dealt with as per the Laboratory Accept Reject policy on sample acceptance. It is to be noted that some referral sites may have their own acceptance criteria therefore for the Department of Clinical Genetics at Children's Health Ireland Crumlin it is possible to include an addressograph label with the referral samples for clarity of name.
- As with Laboratory Accept Reject Policy any unlabelled sample will not be accepted.

15.3 Storage of Specimens and Reports

- Specimens for referral are referred only and any spare samples received are retained in the laboratory until the allowable storage time for all other samples expires.
- Copies of consent forms and request forms are retained electronically in the laboratory.
- Original reports are returned to the requesting clinician and copies of the reports are stored electronically in the laboratory.

15.4 Reference Intervals and Interpretation of Results.

- Each referred test will have its own result and individual interpretation of results as per referral site. Queries can be made to the referring laboratory should they arise.

A TO Z INDEX OF LABORATORY TESTS

Acanthamoeba (amoebic keratitis)	
Contact Microbiology Dept. CUH	
Acetaminophen (PAR)	
See "Paracetamol"	
Acetylcholine Receptor Antibodies – Anti Acetylcholine Receptor Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Sample must be separated and frozen <4 hours
Turnaround:	2-3 weeks
Ref range:	See report form, or visit internet site www.eurofins.ie/biomnis
Activated Partial Thromboplastin Time (APTT)	
Laboratory:	Haematology
Specimen:	Adult: 3ml **Blue** top Vacuette® (sodium citrate 3.2%). Paediatric: 1.3ml Sarstedt (sodium citrate) –available in Haematology
Comment	Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed. Samples for APTT are accepted for analysis up to **8** hours old. APTT and /or PT results may be abnormal in a patient who is over anti-coagulated with newer anticoagulation agents such as Dabigatran, Rivaroxaban & Apixaban but results can be misleading.
Turnaround:	Emergency specimens <2 hours. In-house patients <4 hours. Out-patient & GP specimens <24 hours.
Ref. Range:	As per report form.
Activated Partial Thromboplastin Time Ratio (APTTR)	
Laboratory:	Haematology
Specimen:	Adult: 3ml **Blue** top Vacuette® (sodium citrate 3.2%). Paediatric: 1.3ml Sarstedt (sodium citrate) –available in Haematology
Comment	APTT Ratio (APTTR) is available to ICU and CCU for patients on unfractionated heparin **only**. Order test with APTT Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed. Samples for APTT are accepted for analysis up to **8** hours old. APTT and /or PT results may be abnormal in a patient who is over anti-coagulated with newer anticoagulation agents such as Dabigatran, Rivaroxaban & Apixaban but results can be misleading.
Turnaround:	Emergency specimens <2 hours. In-house patients <4 hours.
Ref. Range:	As per report form.
Acyl Carnitine	
Laboratory:	Sample referred from Biochemistry to the Metabolic Laboratory, Children's Health Ireland, Temple Street
Specimen:	Heel prick blood spot on Gutherie card
Comment	Please complete a specific request form with relevant clinical details i.e. Temple Street Metabolic Investigations Request Form
Turnaround:	3 weeks
Ref. Range:	As per report form.

Adalimumab and antibodies (Humira)	
Laboratory:	Samples referred from Biochemistry to Blood Sciences Lab, Royal Devon University Healthcare NHS Foundation Trust
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Other names Humira, Amgevita
Turnaround:	2 – 3 weeks
Ref. Range:	As per report form.
Adenosine Deaminase	
Laboratory:	Samples referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	CSF, pleural & Ascitic Fluid
Comment:	Haemolysis invalidates testing
Turnaround:	4 – 6 weeks
Ref. Range:	As per report form
Adenovirus PCR	
Laboratory:	Specimen referred from Microbiology to NVRL.
Specimen:	Serum, Stool, Respiratory swab.
Turnaround:	1 week
Ref. Range:	As per report form.
Adenovirus Stool Antigen Testing	
Refer to section – Rotavirus/Adenovirus Antigen Testing	
Adrenocorticotrophin Hormone (ACTH)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood in an EDTA+Aprotinine bottle – **Pink** which may be obtained only from the Biochemistry Department.
Comment:	Send to laboratory immediately. Centrifuge and freeze in < 30mins.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Alanine Amino Transferase (ALT)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This assay is available as part of the liver test profile.
Turnaround:	UHK in-house request: Urgent <2hrs, Routine 2-4 hrs, GP requests 3 – 5 working days
Ref. Range:	As per report form
Albumin (Blood)	
Laboratory:	Biochemistry, UHK
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Blood- This assay is available as part of the liver test profile.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report form
Albumin/Microalbumin (Urine)	
Laboratory:	Biochemistry, UHK
Specimen:	A random/spot urine sample is required in urine monovette tube
Comment:	Can be ordered individually or as part of Microalbumin:Creatinine ratio

Turnaround:	3-5 working days
Ref. Range:	As per report form
Albumin for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No Specimen required
Comment:	Request form must be completed indicating the volume and % albumin required. Form must be signed by the requesting Doctor 5% albumin available in volumes of 250ml 20% albumin available in 100ml The sodium content of the 20% albumin is ¼ that of the 5% albumin. Albumin is issued on a patient named basis through the blood transfusion department. A stock of emergency 5% albumin is stored in the collection area of the blood transfusion department. Please complete attached documentation. It is important to sign for all albumin removed from the laboratory. Please refer to hospital policy for further information. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround:	2 hours Available on Call
Ref. Range	Not applicable
Alcohol (Ethanol)	
Laboratory:	Biochemistry, UHK
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This assay is intended to assist in the clinical management of the patient and is NOT provided for medico-legal purposes. This test is only available for in-patients. Do not use alcohol swabs prior to venesection. Add-on Alcohol < 4hours due to labile nature of the analyte
Turnaround:	UHK in-house request routine 2-4 hrs, urgent <2hrs
Ref. Range:	As per request form
Aldolase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Aldosterone Blood	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood EDTA – **Purple** top Vacuette® **Paediatric**: 1.3 mL EDTA **Red** capped paediatric EDTA sample
Comment:	Must be **separated and frozen < 4 hrs.** **Used in the reporting of Aldosterone/Renin ratio**
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Alkaline phosphatase (ALP)	
Laboratory:	Biochemistry, UHK

Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Activity is higher in children, in pregnancy and in specimens stored at room temperature
Turnaround:	UHK in-house request routine 2-4 hrs, urgent <2hrs GP request 3 – 5 working days
Ref. Range:	As per report form
Alkaline Phosphatase (ALP) Isoenzymes – Bone, Liver, Intestinal and Macromolecular.	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**If the objective is to identify pregnancy-specific placental isoenzymes, this MUST be specified on the request form.**
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis
Allergen Screens (FOOD, ECZ, RHI & ASM)	
Laboratory:	Biochemistry, UHK
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	***Note**: This is not an INAB accredited test* **Food**: Egg white, Soya milk, Milk, Codfish, Wheat and Peanut, **Eczema**: House dust mite, Egg white, Soya and wheat, **Rhinitis**: House dust mite, Timothy grass, Birch, Dog and Cat dander **Asthma**: House dust mite, Cat dander, Dog dander, Birch, Aspergillus, Timothy grass**. Appropriate clinical details are required**
Turnaround:	2-3 weeks
Ref. Range:	As per report
Alpha-1-Antitrypsin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood, clotted specimen – **Red** top Vacuette®
Comment:	Phenotype study advised if result is below 1.6 g/L. Genetically determined deficiency of this protease inhibitor may result in emphysema and cirrhosis of the liver.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Alpha-1-Antitrypsin Genotyping	
Laboratory:	Sample referred from Biochemistry to Beaumont Alpha One Foundation
Specimen:	1 mL blood clotted – **Red** top Vacuette®
Turnaround:	2 -3 weeks
Ref. Range:	As per report.
Alpha Fetoprotein (AFP)	
Laboratory:	Biochemistry, UHK
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	State gestation length for pregnant females.
Turnaround:	UHK in-house urgents < 24 hours Routine requests 5-8 working days

Ref. Range:	As per report
Alpha-Galactosidase A	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	EDTA Whole Blood spot on Guthrie Card
Comment:	Biomnis Metabolic Clinical Information Form must be completed by Consultant
Turnaround:	4 – 6 weeks
Ref. Range:	As per report
Alpha Gliadin Antibodies	
See *"Coeliac Screen"*	
17-Alpha-OH-Progesterone	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	The specimen should be drawn between *8 and 9am and before the day's medication is taken.* Newborns should be at least 48 hours old before being tested.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis.
Aluminium	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 3.0 mL Lithium Heparin non-gel plasma – **Green** top Vacuette®
Comment:	This specimen should be collected first if other tests are requested to avoid contamination.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Amikacin - Pre and Post	
Laboratory:	Sample referred from Biochemistry to Microbiology Laboratory, CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Take sample immediately pre-injection (trough) and again 0.5hr post IV infusion or 1.0 hour post IM injection (peak).
Turnaround:	1 week
Ref. Range:	Please see report form or contact Microbiology laboratory at CUH
Amino Acids	
See "Metabolic Screen – Blood and urine"	
Amiodarone (Cordarone®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **Red** top Vacuette® Must be **separated and frozen < 1hr.**
Comment:	Sample should be drawn at least **8 hours after the last dose.**
Turnaround	2 – 3 weeks
Ref. Range	See report form, or visit internet site www.eurofins.ie/biomnis
Ammonia	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 3ml EDTA– **Purple** top Vacuette® **Paediatric**: 1.3mL EDTA **Red** capped Paediatric sample.
Comment:	Sample must be separated and **frozen in <30mins**

Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Amoeba Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Amphetamine	
Comment:	See "Toxicology / Drug Screen".
Amylase Blood	
Laboratory:	Biochemistry, UHK
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Activity in plasma lower in infants.
Turnaround:	**Blood** - UHK-in-house urgent <2hrs, request routine 2-4 hrs, GP request 3-5 working days
Ref. Range:	As per report form
Amylase Urine	
Laboratory:	Biochemistry, UHK
Specimen:	Spot urine collection. An aliquot of this collection together with the total volume and timing details should be sent to the laboratory.
Turnaround:	3-5 working days
Ref. Range:	As per report form
Amyloid A Protein	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis
Androgen Index/Profile	
See "*Sex Hormone Binding Globulin*"	
Androstendione	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4ml blood clotted – **Red** top Vacuette® Paediatric: 1.3 mL serum **brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis
Angiotensin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 2.0 mL EDTA whole blood – Purple top Vacuette® Paediatric: 1.3 mL serum **red** capped paediatric sample
Turnaround:	1 - 2 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis
Angiotensin Converting Enzyme	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4ml blood clotted – **Red** top Vacuette® Paediatric: 1.3 mL serum **brown** capped paediatric sample

Comment:	ACE inhibitors, e.g. captopril, enalapril inhibit ACE activity
Turnaround:	1 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis
Antenatal Screen Virology	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	4 ml blood clotted – **Red** top Vacuette®
Comment:	Screen includes Rubella IgG, Hepatitis B Surface antigen, HIV Ag/Ab, Syphilis antibody. **Please note:** Varicella zoster IgG must be specifically requested if required.
Turnaround:	Negative sample - 36 hours. Please allow extra time for samples testing positive in-house for HIV Ag/Ab and Syphilis antibody (external confirmatory testing required)
Ref. Range:	As per report form
Antenatal Serology	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette®
Clinical indications:	Antenatal blood grouping and antibody screening and identification in antenatal women.
Comment:	Pregnant women should be tested at booking and 28 weeks and Rh D negative women should receive prophylactic Anti D immunoglobulin at 28 weeks. Where clinically significant red cell antibodies are detected, the Patients should be retested monthly to 28 weeks and every 2 weeks thereafter, unless otherwise indicated on the blood group report form. For antibodies not clinically significant in pregnancy re-testing once at 28-34 weeks is sufficient, unless otherwise indicated on blood group report form. Cord blood investigation should be carried out on all Rh D negative women and on any women who had an antibody during pregnancy.
Turnaround:	1 week
Ref. Range:	Not applicable
Antibody Elution	
Laboratory:	Blood Transfusion Laboratory for referral to the MRTC
Specimen:	3x 6 mL EDTA **Pink** top Vacuette®
Clinical indications:	Technique to remove antibodies coating red cells as a causative agent of positive Direct Coombs Test. Removed antibody may subsequently be identified from resulting eluate.
Comment:	Clinical information and urgency of request is essential
Turnaround:	Depends on complexity and urgency of situation. Discussion with scientific staff is mandatory
Ref. Range:	Not Applicable
Antibody Titration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette®
Clinical indications:	A semi-quantitative estimation of red cell antibody levels in patient plasma.

	It is useful to monitor the continuing development of a clinically significant antibody over time.
Comment:	A rise in titre of more than double is considered significant. Where the antibody is Anti D or Anti c, quantitation of the antibody is considered to be more useful in predicting the severity of haemolytic disease of the newborn.
Turnaround:	2 routine working days
Ref. Range:	Neat (Titre = 1) to (Titre = >2056)
Anti Acetylcholine Receptor Antibodies	
See "*Acetylcholine Receptor Antibodies*"	
Anti Adrenal Cortex Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis
Anti-Aquaporin 4 (anti-Neuromyelitis Optica Ab's)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti Calcium Channel Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis
Anti Cardiolipin Antibodies	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; Adult: 4mL **Red** top Vacuette® (clotted blood). Referred to CUH daily (Mon-Fri).
Comment:	Also known as Anti-phospholipid antibodies. Clinical Details are mandatory. Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart. See section 13.12 for special collection procedures.
Turnaround:	3-4 weeks
Ref. Range:	As per report form or contact Haematology, CUH.
Anti-CCP (Anti - Cyclic Citrullinated Peptide Antibody)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis

Anti-Centromere Antibodies	
Laboratory:	Sample Referred from Biochemistry to Autoimmune serology lab, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti Diuretic Hormone-Vasopressin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	3 ml minimum EDTA+Aprotonin Tube– Tube available from Biochemistry **Samples must be separated immediately and frozen <1hrs.**
Comment:	Contact the Biochemistry Laboratory before initiating the request so that all collection requirements can be met.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information**.**
Anti D immunoglobulin for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette®
Comment:	The standard preparation used in UHK is a 1500 IU blood product. 1 vial of 1500 IU neutralises a bleed of 12 ml Rh D positive cells. For very large bleeds a large IV preparation may be required and should be used with haematologist advice. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000. The volume of anti D required in antenatal (>20 weeks)/post natal settings should be determined by estimation of the amount of foetal bleed.
Turnaround:	2 hours Available on call
Ref. Range:	Not Applicable
Anti D Quantitation	
Laboratory:	Blood Transfusion Laboratory for referral to the IBTS Dublin
Specimen:	6 mL EDTA **Pink** top Vacuette®
Clinical indications:	Antenatal women whose serum contains immune anti D. This test is used to monitor the strength of the anti D and to assist in predicting the severity of Haemolytic Disease of the newborn. Anti D <4 low risk Anti D >4 and < 15 moderate risk Anti D >15 high risk
Comment:	Quantitation referred to: I.B.T.S., National Blood Centre, James's St., Dublin 8.
Turnaround:	2 weeks
Ref. Range:	See Report Form
Anti c Quantitation	
Laboratory:	Blood Transfusion Laboratory for referral to the IBTS Dublin
Specimen:	6 mL EDTA **Pink** top Vacuette®
Clinical indications:	Antenatal women whose serum contains immune anti c.

	This test is used to monitor the strength of the anti c and to assist in predicting the severity of Haemolytic Disease of the newborn. Anti c <7.5 low risk Anti c >7.5 and < 20 moderate risk Anti c >20 high risk
Comment:	Quantitation referred to: I.B.T.S., National Blood Centre, James's St., Dublin 8.
Turnaround:	2 weeks
Ref. Range:	See Report Form
Anti-DNA Antibody – Anti Double Stranded DNA Antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-ENA Antibody screening - Extractable nuclear Antigens	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimune serology Laboratory CUH
Anti-Endomysial Antibodies (EMA)	
See "*IgA Anti-Endomysial Antibodies*"	
Anti-Epidermal Basement Membrane Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Anti-GAD antibodies (Glutamic acid decarboxy antibodies)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Gastric Parietal Cell Antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH

Anti-Glomerular Basement Membrane antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-21-Hydoxylase Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	Sep & freeze < 4 hours
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Anti-Intracellular Subs Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Anti-Islet Cell Antibodies (PICA)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Anti-Jo Antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-LKM Antibodies – Liver/Kidney/Microsomal	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-MAG Antibodies	

Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Mitochondrial Antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-Mullerin Hormone (AMH)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette®
Comment	**Separate and freeze serum**
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Musk Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Myeloperoxidase Antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-Neutrophilic Cytoplasmic Antibody screening – pANCA and cANCA	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-Neuron antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Tests included are anti Hu, Yo, Ri, CV2, MA2 and Amphiphysin

Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-NMDA (N methyl D aspartate) Receptor Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Nuclear Antibody	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-PLA2B antibody (Anti-Phospholipase A2 antibodies)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	Not Applicable
Anti-Platelet antibody investigation for investigation of transfusion reaction only.	
Laboratory:	Blood Transfusion Laboratory for referral to IBTS Dublin
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Samples referred to: I.B.T.S., National Blood Centre, James's St. Dublin 8
Turnaround:	3 weeks
Ref. Range:	Not Applicable
Anti-Potassium Channel Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Profile includes Anti-Lgi1 autoantibodies and Anti-Caspr2 antibodies
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Proteinase 3 Antibodies	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-Ribosomal-P Protein	

Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-RNP Antibodies (RNP)-	
See *"Anti ENA Antibody screening"*	
Anti-Scl-70 Antibodies	
See *"Anti ENA Antibody screening"*	
Anti-Smith Antibodies	
See *"Anti ENA Antibody screening"*	
Anti-Smooth Muscle Antibodies	
Laboratory	Sample Referred from Biochemistry to the Autoimmune serology Laboratory CUH Extn - 22512
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround	2 weeks
Ref.Range:	As per report or contact the Autoimmune serology Laboratory CUH
Anti-SS-A Antibodies (RO)	
See *"Anti ENA Antibody screening"*	
Anti SS-B Antibodies (LA)	
See *"Anti ENA Antibody screening"*	
Anti-Streptodornase Antibodies	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Anti-Streptolysin-O (ASO) Titre	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	>200IU/mL may indicate acute streptococcal infection
Turnaround:	2 - 3 days
Ref. Range:	As per report form
Anti Synthase Antibodies	
See *"Myositic Marker Antibodies"*	
Anti-Thrombin III	
Laboratory:	Samples referred from Haematology to Haematology CUH

Specimen:	Blood; 2x 3mL **Blue** top Vacuette® (sodium citrate 3.2%)
Comment:	Specimens, which are haemolysed, underfilled or overfilled, cannot be analysed. Forms part of a Thrombophilia Screen. Samples referred to CUH Mon-Fri. Clinical details are mandatory. Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart. See section 13.12 for special collection procedures.
Turnaround:	3-4 weeks
Ref. Range:	As per report form or contact Haematology, CUH.
Anti-Transglutaminase Antibodies/Anti Ttg	
See *"Coeliac Screen"*	
Anti-TSH Receptor Antibody/Anti-Thyroid Receptor Antibody (THYRAB)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-Tubular Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Anti-U1RNP antibodies	
Laboratory:	Sample referred from Biochemistry to serology laboratory CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or ccontact Autoimmune Serology Laboratory, CUH.
Apolipoprotein A1	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Fasting sample
Turnaround:	1 - 2 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Apolipoprotein B	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4ml blood clotted – **Red** top Vacuette® Paediatric: 1.3 mL serum **brown** capped paediatric sample
Turnaround:	1 - 2 weeks

Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Arbovirus Screen	
Laboratory:	Sample referred from Microbiology to NVRL
Specimen:	**CSF (1mL) or** **Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Includes West Nile Virus, Dengus Virus, Japanese Encephalitis, Tick borne encephalitis, Yellow fever
Turnaround:	1 – 2 weeks
Ref. Range:	See report form
Arsenic	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4ml Lithium heparin – **Green** top Vacuette® plus a random urine sample and a specimen of hair.
Comment:	The lithium heparin is centrifuged and separated in the laboratory
Turnaround:	4 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Ascitic Fluid	
See "Sterile Body Fluid – Microscopy and Culture".	
Aspartate amino Transferase (AST)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**This test is also available as part of the cardiac test profile and liver test profile.** Whole blood sent by post may not be suitable if delayed more than 2 days. Haemolysis and lipaemia may invalidate.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report form
***Aspergillus* Antibodies**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Anti IgG antibodies tested
Turnaround:	1 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Aspergillus* PCR**	
Laboratory:	Samples referred from Microbiology to Micro laboratory CHI at Crumlin
Specimen:	**Adult**: 4ml blood EDTA – **Purple** top Vacuette® **Paediatric**: 1.3 mL EDTA **Red** capped paediatric EDTA sample
Comment:	Whole blood must be frozen at -20oC. This test is for Crumlin patients only
Turnaround:	1 week
Ref. Range:	See report form.
Autoimmune Screen (Autoantibody Screen)	

Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, CUH. Extn - 22512
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This screen includes ANF, anti-mito, smooth muscle and GPC antibodies
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Avian Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Barbiturates	
Refer to "Toxicology/Drug Screen".	
Bartholin's Abscess	
Laboratory:	Microbiology
Specimen:	Aspirate using a syringe (ideally a minimum of 1mL) or using sterile swab. Specimens should be taken before antimicrobial therapy where possible. Transport ASAP in charcoal containing transport media. The viability of *N. gonorrhoeae* is lost over time. If processing is delayed refrigeration is preferable to storage at room temperature.
Comment:	Test performed routinely Monday – Friday 9-5pm
Turnaround:	Up to one week
Report Format:	Microscopy reports on the presence or absence of Intracellular Gram-negative diplococci and WBCs. Culture report: Any clinically significant isolate with the appropriate sensitivities.
Bartonella Antibodies (Cat Scratch)	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Bence-Jones Protein (BJP)	
Laboratory:	Samples referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	20mL of early morning urine (EMU) sample must be taken into a universal container. A 24 hour urine collection of which an aliquot can be taken is also acceptable
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Benzodiazepines	
Comment:	**See** "Toxicology / Drug Screen".

Beta-D-Glucan Ag	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	**Sample must be separated and frozen** Used for diagnosis of Invasive Aspergillus
Turnaround:	1 – 2 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Beta- Hydroxybutyrate Profile (includes Acetoacetate)	
Laboratory:	Sample referred from Biochemistry to Enzyme Lab, Great Ormond St Hospital, London
Specimen:	**Paediatric**: 2 x Lithium Heparin 1.3mL samples- **Orange** cap paediatric bottle
Comment:	Part of the Hypoglycaemia profile. **Bring to the lab immediately for separation & freezing.**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.labs.gosh.nhs.uk for up to date referral test information.
Beta-2-Microglobulin (B2M)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Beta HCG (See Human Chorionic Gonadotrophin)	
See Human Chorionic Gonadotrophin	
Bicarbonate (HCO3)	
Laboratory:	Biochemistry UHK and also available on Blood Gas Analysers in UHK (Refer to Blood Gases section below)
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	Forms part of Pre Dialysis Profile and is also requested on its own. Add-on Bicarbonate testing is not advised on sample that is already exposed to the air
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP requests 3-5 working days
Ref. Range:	As per report form
Bile Acids	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Bilirubin - Conjugated (Direct Bilirubin or DBIL)	
Laboratory:	Biochemistry

Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Haemolysis, lipaemia and prolonged exposure to light may invalidate.
Turnaround:	UHK in-house request routine 2-4 hrs, urgent <2hrs GP requests 3-5 working days
Ref. Range:	As per report
Bilirubin - Total	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Haemolysis, lipaemia and prolonged exposure to light may invalidate..
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3 -5 working days
Ref. Range:	As per report form
BK Virus Molecular	
Laboratory:	Microbiology laboratory referred to NVRL
Specimen:	4 ml blood clotted – **Red** top Vacuette® or Urine (>2mL)
Comment:	Serum must be frozen <24 hours Other samples types store at 4oC.
Turnaround:	1 week
Ref. Range:	As per report form
Biotinidase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	Separate and freeze < 4hrs
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Blood Component or blood product issue (TX)	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® **For Paediatrics:** 1.3 mL EDTA Pink/Red Capped Tube (Paediatric Bottle).
Clinical indications:	Requirement to treat patient with specific blood components or blood products.
Comment:	The indications for the use of all blood components and products are indicated in the haemovigilance section on the hospital portal. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000. Refer to individual products and hospital transfusion policy for further information.
Turnaround:	Varies depending on component or product, contact scientist. Available on Call
Ref. Range:	Not Applicable
Blood Culture	
Laboratory:	Microbiology

Specimen:	Aerobic and anaerobic blood culture bottle kits are available from stores, UHK. Paediatric blood culture bottles are available from the Laboratory Department specimen reception. There is an expiry date on each bottle and they should not be used after this date. Store protected from direct sunlight at room temperature 15-30°C. **Adults** A volume of 8-10 mL of specimen per vial. **Children/neonates:** Use paediatric bottles – preferably, a volume of 1-4mL. Do not exceed the manufacturer's recommended maximum volume for each bottle.
Comment:	**Blood cultures should be taken using a blood culture kit. The Procedure and Policy for taking Blood Cultures is available on the UHK Notice Board under Infection Control.** • If blood for other tests such as blood gases or ESR is to be taken at the same venepuncture, the blood culture bottles should be inoculated first to avoid contamination. • It is preferable to take blood for culture separately. • Disinfect the skin at the venepuncture site and allow to dry. • Disinfect the septum of the blood culture and allow drying. • For diagnosis of bacteraemia withdraw blood from a peripheral vein and divide the sample equally among blood culture bottles. If the patient has a central line or other vascular access site, it is often appropriate to take both central and peripheral blood cultures. • For neonates consider the use of a single aerobic paediatric bottle appropriate for small volumes of blood. • Indicate if specific organisms are sought e.g. Brucella spp. Or causative agents of Endocarditis • **Blood cultures should be transported to the laboratory as soon as possible after venipuncture as delays can lead to false negative results.** **NB.** Do **not** refrigerate or place on radiators
Turnaround:	Most organisms will be detected within 24-48 hrs and normally blood cultures are incubated for up to 5 days but this time may be extended e.g. 10 days if endocarditis is suspected. Positive Gram Stains will be phoned. All Positive Blood cultures which are tested for Molecular targets on Film array results will be phoned when complete.
Report	All Positive Blood culture results will be phoned when complete.
Blood Culture PCR – Positive Blood Cultures	
Laboratory	Microbiology
Specimen:	Positive blood culture
Comment:	Molecular PCR is performed on positive blood cultures outside of routine working hours. Targets include: *Enterococcus faecalis, Enterococcus faecium, Staphylococcus spp, Staphylococcus aureus, Staphylococcus epidermidis, Staphylococcus lugdunensis, Streptococcus spp. , Streptococcus agalactiae, Streptococcus pneumonia, Streptococcus pyogenes, Acinetobacter calcoaceticus-baumannii, Bacteroides fragilis, Haemophilus influenza, Neisseria meningitidis, Pseudomonas aeruginosa, Stenotrophomonas maltophilia, Enterobacterales, Enterobacter cloacae, E. coli, Klebsiella pneumonia, Klebsiella aerogenes, Klebsiella oxytoca, Proteus spp, Salmonella spp, Serratia marcescens, Candida albicans, Candida auris,*

	Candidi glabrata, Candida krusei, Candida parapsilosis, Candida tropicalis and *Cryptococcus neoformans/gatii*. Antibiotic Resistance Markers include: methicillin (*mecA/C),* vancomycin (*vanA* and *vanB*), ß-lactams including penicillins, cephalosporins, monobactams, and carbapenems (*bla*CTX-M, *bla*IMP, *bla*KPC, *bla*NDM, *bla*OXA48-like, *bla*VIM) and colistin (*mcr-1).* **Note:** Due to the limitations associated with the assay as detailed below the Blood Culture molecular results will be reported as a preliminary result until confirmed by culture. **Note:** Blood culture media may contain non-viable organisms and/or nucleic acid at levels that can be detected by the assay, leading to false positive test results. A negative assay result does not exclude the possibility of bloodstream infection.
Turnaround:	2 hours.
Ref. Range:	As per report form
Blood Gases (pH, pCO_2, pO_2, tHb, O_2Hb, COHb, MetHb, HHb, sO_2, TCO_2, BEecf, BE(B), p_{50}, HCO_3^-(c), HCO_3^-std)	
Laboratory:	Available in Intensive Care (Annagh ICU), Labour ward (Ardfert), Emly Ward, Coronary Care Unit (CCU/HDU), ED RESUS, ED Triage Hub, Chronic Disease Management (CDM) Hub and Theatre. Devices are not available in the Laboratory
Specimen:	Lithium heparin blood gas syringe or capillary
Comment:	Specimen must be analysed within 15 mins of sampling. ***Note****: This is not an INAB accredited test*
Turnaround:	Daily throughout 24 hours
Ref. Range:	As per report form
Bone Marrow Examination	
Laboratory:	Samples referred from Haematology to Haematology Dept, C.U.H.
Specimen:	Fresh bone marrow spread on slides and in 3mL purple Vacuette (EDTA).
Comment:	Please contact laboratory prior to taking bone marrow sample. Marrow Slides referred to Clinical Haematology team, C.U.H.
Turnaround:	3-4 days.
Ref. Range:	N/A
***Bordetella pertussis* Antibodies**	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Bordetella pertussis* PCR**	
Laboratory:	Samples referred from Microbiology to Micro laboratory CHI at Crumlin
Specimen:	**Pernasal swab**
Comment:	Please store at 4oC if delay in transportation
Turnaround:	1 week
Ref. Range:	See report form.
***Bordetella* Species (Whooping Cough)- PCR**	
Laboratory:	Sample referred from Microbiology to Our Ladies Children's Hospital, Crumlin.

Specimen:	**Pernasal swabs** (Dacron ™ with flexible wire shaft) are inserted through a nostril and advanced along the floor of the nose until it reaches the nasopharynx. It has been suggested that the swab be held against the posterior nasopharynx for up to 30 seconds or until the patient coughs. In practice, it is more likely that a patient will only be able to tolerate this for a few seconds. **Note**: Cough plates and throat swabs are unsatisfactory and will not be processed. **Note**: the in-house Respiratory Viral Screen may detect *Bordatella pertussis/parapertussis*, however due to sensitivity/specificity limitations this assay should not be used where whooping cough is clinically indicated.
Comment:	Molecular testing is more sensitive and rapid in comparison to culture. Testing performed twice a week.
Turnaround:	11 days.
Report:	As per report form.
Borrelia burgdorferi antibodies	
See "Lyme serology"	
BRACA (Genetic Testing)	
Laboratory:	Sample referred from Biochemistry to Cancer Molecular Diagnostics (CMD), St James's Hospital, Dublin 8
Specimen:	**Adults**: 3-5mls EDTA Specimens must be accompanied by a **consent form signed by patient and requesting consultant**
Comment	Please contact lab prior to taking samples to check if requirements have been updated. CMD Consent form required.
Turnaround:	4 – 6 weeks
Ref. Range:	See report form, or visit internet site www.stjames.ie for up to date referral test information.
Branched Chain Amino Acids	
Laboratory:	Sample referred from Biochemistry to Metabolic Laboratory, Children's Health Ireland, Temple Street.
Specimen:	**Paediatric**: 1.3 ml Lithium Heparin - **Orange** cap paediatric bottle
Comment:	Send to lab immediately for freezing. Temple Street request form must be completed.
Turnaround:	2-3 weeks
Ref.Range:	See report or contact Metabolic Laboratory Temple Street Hospital.
Bronchoalveolar lavage (BAL) fluid Culture	
Laboratory:	Microbiology for C & S. Referred for TB testing to Microbiology CUH
Specimen:	Specialist collection according to local protocols. It is difficult to be specific on volume required; in principle as large a volume as possible is preferred. The specimen should be collected into a clean, sterile, leakproof container. Transport specimens ASAP. If processing is delayed, refrigeration is preferable to storage at ambient temperature. Please include any appropriate clinical details e.g. "Cystic fibrosis patient". If an unusual pathogen is suspected, the laboratory should be informed, *e.g.* anaerobes, *Burkholderia pseudomallei* and *Nocardia* sp require longer incubation of cultures. Refer to Mycobacteria Testing for instructions for sputum collection for TB.
Comment:	Test performed routinely Monday–Friday

Turnaround:	Up to one week
Report:	Significant organisms with antibiotic susceptibilities. Microscopy and culture for Mycobacteria if requested.
Brucella Antibodies IgG, IgM and Total	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 weeks.
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Bursa Fluid	
See "Sterile Body Fluid – Microscopy and Culture".	
C1 Esterase Inhibitor - functional (CIEF)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4.0 mL whole blood clotted – **Red** top Vacuette® + 5 mL citrated whole blood - **Blue** top Vacuette®. **Do not separate COAG tube. Store at 4°C.**
Comment	Samples must be referred to Biomnis within 48 hours
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
C1 Esterase Inhibitor – Total (CIE)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Separate and freeze < 4 hours
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
C1 Esterase Inhibitor for Administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No specimen required
Turnaround:	2 hours Available on call
Ref. Range:	Not applicable
C3 & C4	
See "*Complement C3 & C4*"	
CA 125	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette®
Comment:	This test should not be used for initial diagnosis but may be helpful for the detection of metastases and assessment of response to treatment.
Turnaround:	Routine request 5-8 working days**.**
Ref. Range:	As per report form
CA 15-3	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4 ml blood clotted – **Red** top Vacuette®

Comment:	This test should not be used for initial diagnosis but may be helpful for the detection of metastases and assessment of response to treatment.
Turnaround:	Routine request 5-8 working days
Ref. Range:	As per report form
CA 19-9	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4 ml blood clotted –**Red** top Vacuette®
Comment:	This test should not be used for initial diagnosis but may be helpful for the detection of metastases and assessment of response to treatment.
Turnaround:	Routine request 5-8 working days
Ref. Range:	As per report form
Cadmium	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4 mL Lithium Heparin – **Green** top Vacuette®
Comment:	Whole blood Do not separate
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Caffeine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	**Separate and freeze <4 hrs.**
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Calcitonin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	**Separate and freeze <4 hrs.**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Calcium Blood	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Blood** - Aged samples, Haemolysis and lipaemia may invalidate result.
Turnaround:	UHK-in-house request routine2-4 hrs, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report form
Calcium Urine	
Laboratory:	Biochemistry
Specimen:	**Urine** - 24hr collection with acid added. Containers available from the laboratory. An aliquot of this collection together with the total volume and timing details should be sent to the laboratory.
Turnaround:	3-5 working days

Ref. Range:	As per report form
Calprotectin (Faecal)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	20 g minimum stool specimen. **Do not freeze,** **Note**: Please return stool samples to the laboratory on the day they collect the sample or early the day after collection. Ask patients to write the collection date on the stool container and on the request form.
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Campylobacter IgG	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Candida albicans* Antibodies**	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Candida Mannane* Antigen**	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cannabis/THC/Marijuana	
See "Toxicology / Drug Screen".	
CAPD	
See "Continuous Ambulatory Peritoneal Dialysis Fluid"	
Carbamazepine (Tegretol®)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Take sample immediately before next dose**
Turnaround:	Routine request 5 - 8 working days
Ref. Range:	As per report form
Carbapenamase Producing *Enterobacteriaceae Screening (CPE Screen)*	
Laboratory:	Microbiology
Specimen:	Rectal swab, placed in charcoal containing transport media.
Comment:	Test performed Monday to Friday 9 – 5pm.

Turnaround:	48 hours for negative. Positives are referred to CPE reference laboratory in University Hospital Galway for further characterisation.
Ref. Range:	As per report form
Carboxyhaemoglobin	
Laboratory:	Blood Gas Analyser: Available in A/E, CCU, Ardfert, EMLY and ICU ward
Specimen:	Li Heparin syringe
Comment:	**If** delay between sampling and analysis is greater than 15 mins, sample must be kept on ice.
Turnaround:	Daily throughout 24 hours
Ref. Range:	As per report
Carcinoembryonic Antigen (CEA)	
Laboratory:	Biochemistry
Specimen:	Adult: 4 ml blood clotted –**Red** top Vacuette®
Comment:	This test should not be used for initial diagnosis but may be helpful for the detection of metastases and assessment of response to treatment.
Turnaround:	5-8 working days
Ref. Range	As per report form
Carnitine Free & Carnitine Total	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult:** 4 ml blood Lithium Heparin - **Green** top Vacuette® **Paediatric**: 1.3mL **Orange** cap Li Hep paediatric samples
Comment:	Specimen must be **separated and frozen < 1 hour.**
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Carotene (Pro Vitamin A)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Specimen must be **separated and frozen < 1 hour.** Send sample to the laboratory immediately and **protect sample from light**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Catecholamines - Blood	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 3.0 mL Lithium Heparin plasma – **Green** top Vacuette®
Comment:	**Specimen must be separated and frozen < 1 hour**. Fasting sample required Catecholamines comprise adrenaline, noradrenaline, dopamine, epinephrine and norepinephrine.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Catecholamines – Urine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab

	Paediatric samples are sent to Beaumont Hospital
Specimen:	24-hour urine sample collected into a container that has acid added. 24 hour urine containers are available from the laboratory. **Note: For paediatric samples (up to 14 years of age**) the test is performed on a 20ml urine sample. **The sample must be brought to the laboratory immediately after collection.** Acid preservative is added upon receipt in the laboratory.
Comment:	**Patient must not eat the following items 48 hours before collection;** bananas, chocolate, tomatoes, grapefruit, walnuts, plums, dried fruit, citrus fruit, avocado, grapefruit, tea and coffee.
Turnaround:	2-3 Weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Catheter blood lines/Intravascular Cannulae	
Laboratory:	Microbiology
Specimen:	Disinfect the skin around the cannula entry site, remove cannula using aseptic technique, and **cut off 4cm** of the tip into a sterile container using sterile scissors. The specimen should be collected into a clean, sterile, leak-proof container and should be transported ASAP to prevent drying. If processing is delayed, refrigeration is preferable to storage at ambient temperature. Samples will be rejected if not received in a sterile container.
Comment:	Please send IV devices only if an infection is queried upon clinical review. The routine culture of devices removed for other reasons is unnecessary. **Urine catheters** are **not suitable for culture**.
Turnaround:	Up to one week
Report:	Culture report: Any clinically significant isolate (> 15 cfu) with the appropriate sensitivities.
CD4 Count	
Laboratory:	Samples referred from Haematology to Haematology, CUH
Specimen:	Blood; 3mL **Purple** top Vacuette® (EDTA). Specimens may be refrigerated overnight.
Comment:	A screening procedure to monitor the immune status of patients. Fresh samples (ideally <24hrs) referred to CUH daily (Mon-Thur) – by appointment with Haematology, UHK.
Turnaround:	24 - 72 hours (from receipt in CUH)
Ref. Range:	As per report form or contact Haematology, CUH.
CD8 Count	
Laboratory:	Samples referred from Haematology to Haematology, CUH
Specimen:	Blood; 3mL **Purple** top Vacuette® (EDTA). Specimens may be refrigerated overnight.
Comment:	Fresh samples (ideally < 24hrs) referred to CUH daily (Mon-Thur) – by appointment with Haematology, UHK.
Turnaround:	24 - 72 hours (from receipt in CUH)
Ref. Range:	As per report form or contact Haematology, CUH.
CD4/CD8 Ratio	
Ref. Range	As per report form or contact Haematology, CUH.
CD3/CD19/CD56 Counts and CD34 Counts	
Laboratory:	Samples referred from Haematology to Haematology, CUH

Specimen:	Blood; **Purple** top Vacuette® (EDTA). Fresh samples (ideally < 24hrs) referred to CUH daily (Mon - Thur) – by appointment with Haematology, UHK. Specimens may be refrigerated overnight.
Comment:	CD3/CD19/CD56 counts are used as a screening procedure to monitor the immune status of patients. CD34 count is used to monitor bone marrow functioning and response post myeloablative treatment. Tests available Mon - Fri during routine working hours in CUH.
Turnaround:	24 - 72 hours (from receipt in CUH)
Ref. Range:	As per report form or contact Haematology, CUH.
Cerebrospinal Fluid/Shunts - Culture/Microscopy	
Laboratory:	Microbiology
Specimen:	Ideally, the laboratory should receive a minimum volume of 1mL taken in to 3 separate sterile universal containers. Specimens should be labelled sequentially and 2 request forms completed one for microbiology and one for biochemistry. Microbiology will refer the CSF to Biochemistry for Glucose, Protein and Oligoclonal Bands or Histopathology for Cytology investigations. If additional testing is clinically indicated e.g oligoclonal bands, it is recommended that additional samples are collected. If insufficient samples are received in Microbiology for the tests required priority testing will be requested. For Mycobacteria, as large a volume as possible should be sent (given the patient's clinical circumstances) All specimens should be taken before antimicrobial therapy where possible, but therapy should not be delayed unnecessarily pending lumbar puncture.
Comment:	Test performed as an urgent sample and all samples must be hand delivered to a microbiology medical scientist or Biochemistry Scientist on call. **Do not refrigerate specimen.** **Do not send through the pneumatic tube.** **Hand Deliver only.**
Turnaround:	Microscopy within 2 hours of receipt. Urgent report telephoned when available. Culture: Prelim: 24 hours; Final: 72 hours.
Report Format:	The appearance of the CSF, the presence of a clot if applicable and the presence of absence of xanthochromia. Cell counts of WBCs/cmm and RBCs/cm are reported on two specimens, generally No.1 and No.3 or the last numbered sample. Cell counts are not performed on specimens containing a clot, which would invalidate the cell count. For haemorrhagic CSFs, a WBC:RBC ratio of 1:500 is generally regarded as **not** indicative of infection. A differential leucocyte count is reported when sufficient cells are counted ≥ 20 WBCs/cmm. Please note: An accurate Leucocyte Differential may not be possible if WBC is below 100. Culture report: Any organism isolated with the appropriate sensitivity results.
Cerebrospinal Fluid – CJD associated 14-3-3 and S100 protein	
Laboratory:	Referred from Microbiology to Neurology Dept., Beaumont Hospital

Specimen:	Ideally 2-5mL of clear and colourless CSF (blood stained unsuitable) in a white vacuette tube. The sample needs to be **frozen within 30mins**, therefore **hand deliver** to a Microbiology Medical Scientist immediately. It is also necessary to complete a referral form which is available from Microbiology. The information regarding suspected Prion disease MUST be indicated on the request form.
Turnaround:	2 - 3 weeks
Ref. Range:	As per report form
Cerebrospinal Fluid – Viral, Bacterial, Cryptococcus PCR	
Laboratory:	Microbiology
Specimen:	Minimum 200µl of CSF
Comment:	**Targets include:** cytomegalovirus, enterovirus, herpes simplex virus 1, herpes simplex virus 2, human herpesvirus 6, human parechovirus, varicella zoster virus, *Escherichia coli* K1, *Haemophilus influenza, Listeria monocytogenes, Neisseria meningitidis* (encapsulated), *Streptococcus agalactiae, Streptococcus pneumonia* and *Cryptococcus neoformans/gattii*
Turnaround:	Approx. 2 hours for PCR result
Ref. Range:	As per report form
Cerebrospinal Fluid – Glucose and Protein	
Laboratory:	Biochemistry
Specimen:	CSF supernatant
Comment	All CSF samples are sent to the Microbiology laboratory first for cell count before they are sent to Biochemistry for Protein/Glucose analysis.
Turnaround:	UHK-in-house request urgent <2hrs
Ref. Range:	As per report
Cerebrospinal Fluid - Oligoclonal bands and CSF IgG Index (CSFOB)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	1.5 mL CSF supernatant **and** a 4 ml blood clotted – **Red** top Vacuette®
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cerebrospinal Fluid (CSF) - Cytology	
Laboratory:	Referred from Histopathology UHK to NeuroLaboratory Department CUH.
Specimen:	Ideally the specimen should contain a minimum of 3ml of CSF collected in a sterile Universal Container.
Comment:	Deliver directly to the Histopathology lab and CUH are phoned to make them aware of the sample
Turnaround:	3-5 days
Ref. Range:	Not applicable
Ceruloplasmin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks

Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cervical swab	
See "Genital swab"	
Cff DNA (Cell free fetal DNA)	
Laboratory:	Sample referred from Blood Transfusion to IBTS Dublin
Specimen:	2 x 6 ml EDTA –**Pink** top Vacuette®
Clinical Indications	Rh D Negative women ≥11 weeks gestation. This test examines the baby's DNA in maternal blood to predict the baby's Rh D blood group and determine whether anti D immunoglobulin needs to be administered at 28 weeks of after a PSE
Comment:	Specimen referred to IBTS Dublin for cff DNA typing
Turnaround:	2 weeks
Ref. Range	See report form.
Chicken pox immunoglobulin for administration	
Laboratory:	Blood transfusion
Specimen:	No specimen required
Clinical indications:	Prevention of Varicella (chicken pox) after exposure for: • Immunosupressed children • Neonates whose mothers contracted chicken pox within 5 days before birth or shortly afterwards. • Children suffering from other infectious diseases during suspected infections with chicken pox • Pregnant women after suspected infection with the pathogens of chicken pox/zoster who have not had chicken pox. • Treatment of zoster infections in high risk patients such as after radiation exposure or bone marrow transplantation.
Comment:	Treat as soon as possible and within 96 hours of exposure.
Turnaround:	1 routine working day Product is ordered as required from supplier through the blood transfusion laboratory. Available on call
Ref. Range:	Not applicable
Chikungunya antibodies	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	**Adult**: 4 ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3mL serum **Brown** capped paediatric sample
Turnaround:	By arrangement
Ref. Range	As per report form
***Chlamydia pneumonia* Antibodies IgG/IgM**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.

Chlamydia psittaci Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Chlamydia trachomatis PCR	
Laboratory:	Samples referred from Microbiology to Microbiology CUH
Specimen:	HVS, Endocervical, Throat, Vaginal and Urine These must be collected using the Cobas kit. It is important to follow the exact instructions for different sample types to avoid unnecessary rejection. Cobas Kits are available from Stores UHK. Please read the kit insert for information on specimen collection and **ensure** the specimen **collection tube is not expired**.
Comment:	Test available Monday - Friday. The assay is verified for use with female Endocervical swab specimens, HVS specimens and male/female urine specimens. (These specimens will also be tested for *Neisseria gonorrhoea* DNA). Refer to the CUH user manual for further information.
Turnaround:	1 week
Ref. Range:	As per report form
Chloride (Blood)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Haemolysis invalidates. Results not issued on samples > 1 day old if sample has not been centrifuged on the same day as collection
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3-5 working days.
Ref. Range:	As per report form
Chloride (Urine)	
Laboratory:	Biochemistry
Specimen:	**Urine -** 24-hour sample.
Comment:	24 hour urine containers available from the laboratory.
Turnaround:	3 - 5 working days
Ref. Range:	As per report form
Cholesterol	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	UHK-in-house request routine 2-4 hrs GP request 3-5 working days
Ref. Range:	Cholesterol Target Value <5.0 mmol/L
Cholesterol HDL and LDL fractions	
See "*HDL and LDL respectively*"	
Cholinesterase – Enzymatic	

Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Non-haemolysed sample required
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cholinesterase – Erythrocyte	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml EDTA Whole blood - **Purple** top Vacuette®
Comment:	Do not centrifuge. Whole blood only
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Chromium	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4 ml Lithium Heparin – **Green** top Vacuette® non-gel
Comment:	Non-Gel. Whole Blood. Do not centrifuge
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Chromogranin A	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4 ml blood clotted –**Red** top Vacuette®
Comment:	**Separate and Freeze < 4 hours**
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Chromogranin B	
This test is no longer available	
Chromosome Analysis- Biochemistry	
Laboratory:	Referred from Biochemistry to NCMG for <18 years Referred from Biochemistry to Eurofins Biomnis Ireland Lab > 18years.
Specimen:	**Adult**: 5ml Lithium Heparin, whole blood – **Green** top Vacuette® **Paediatric**: 1.3mL Li Hep **Orange** Cap paediatric tube
Comment:	Full clinical details must be supplied along with a **Genetic Tests Consent form** available from the laboratory or downloaded from www.eurofins.ie/biomnis and/or www.genetics.ie Ideally samples should be received on Monday, Tuesday or Wednesday Please contact laboratory before taking samples to check that requirements have not changed.
Turnaround:	2 – 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Chromosome Analysis- Haematology	
See "Cytogenetics". Sample referred from the Haematology Laboratory when investigating haematological conditions	

Citrate (Urine)	
Laboratory:	Referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen	**Urine** - 24hr collection. Containers available from the laboratory.
Comment	**Bring to laboratory on completion, as an aliquot requires freezing.**
Turnaround	2 – 3 weeks
Ref. Range	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Citrulline	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen	Adult: 5mL Li Heparin plasma – **Green** top Vacuette Paediatric: 1.3mL **Orange** cap Paediatric sample.
Comment	Sample must be separated and frozen < 1 hour.
Turnaround	*2 – 3 weeks*
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Clonazepam (Rivotril®)	
Laboratory:	Referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	4 ml blood clotted –**Red** top Vacuette® **Separate and Freeze < 4 hours**
Comment	Take sample immediately before the next dose always at the same time. **Every order MUST include:** • The reason for the test (investigation of efficacy and/or toxicity) • The time of collection • The date on which treatment was begun and if relevant, of any adjustment of dose • Details of the dosage (dose frequency and route of administration) The patients age, sex and weight
Turnaround:	2 – 3 weeks
Ref. Range	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Clostridium difficile* Molecular Analysis**	
Laboratory:	Microbiology
Specimen:	Fresh faeces sample. 1-2g (1-2mL) is sufficient. Liquid/loose stools that take the shape of the container will be tested for *C.difficile*. Formed stools are unsuitable and will be rejected. The specimen should be collected into a clean, sterile, leak-proof container. Ideally, all specimens should be taken as soon as possible after onset of symptoms. Transport specimens to Microbiology **ASAP**. If processing is delayed, specimens **must be refrigerated.** If additional testing for Norovirus (SRSV) or parasitology is required please send multiple samples.
Comment:	In accordance with the HPSC guidelines the following guidelines apply: 1. Testing on children <2 yrs of age will not be performed. Exceptions may be made at the discretion of the Paediatrician or Infection Control. 2. Do not send stool samples for test of cure after treatment or if a patient is on treatment.

	3. Once *C. difficile* testing has been performed after onset of symptoms re-testing is not performed for 21 days unless specifically requested by the Consultant, Clinician, or Infection Control. 4. Repeat samples sent within 10 days of a negative test **For GP patients** C. difficile testing will be performed in the following scenarios • All patients ≥ 65 years old • Patients < 65 years old when specifically requested with relevant clinical details and risk factors Similar to currently existing procedures the following samples will not be tested unless discussed with the Clinical Microbiology medical team: • Samples from children <16 years of age • Repeat samples sent within 28 days of a patient testing positive •Repeat samples sent within 10 days of a negative test
Turnaround:	24 hours (Monday – Friday).
Report:	C.difficile toxin B gene Detected/NOT detected
Clozapine (Clozaril®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2ml blood clotted – **Red** top Vacuette® **Separate and Freeze < 4 hours**
Comment:	Take sample immediately before the next dose always at the same time. **Every order MUST include:** • The reason for the test (investigation of efficacy and/or toxicity) • The time of collection • The date on which treatment was begun and if relevant, of any adjustment of dose • Details of the dosage (dose frequency and route of administration) • The patients age, sex and weight
Turnaround:	2 - 3 Weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Coagulation Factor Inhibitors - Quantitation of	
Laboratory:	Samples referred from Haematology to Haematology C.U.H.
Specimen:	Blood; 2x 3mL **Blue** top Vacuette® (sodium citrate 3.2%). Fresh samples to reach lab. by 10am
Comment:	See section 13.12 for special collection procedures. Test available Monday to Friday, during routine working hours in C.U.H. Quantitation of coagulation factor inhibitors reported in Bethesda Units.
Turnaround:	2-4 weeks
Ref. Range:	As per report form or contact Haematology, CUH.
Coagulation Factor Inhibitor Screen	
Laboratory:	Samples referred from Haematology to Haematology C.U.H.
Specimen:	Blood; 2x 3mL, **Blue** top Vacuette® (sodium citrate 3.2%). Fresh samples to reach lab. by 10am
Comment:	See section 13.12 for special collection procedures. Screen for coagulation factor inhibitors. Test available Monday to Friday during routine working hours in C.U.H.
Turnaround:	2-4 weeks
Ref. Range:	As per report form or contact Haematology, CUH.

Coagulation Screen	
Laboratory:	Haematology
Specimen:	Adult: 3ml **Blue** top Vacuette® (sodium citrate 3.2%). Paediatric bottles: 1.2ml paediatric sodium citrate available in Haematology
Comment:	Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed). Samples for Coag screen are accepted for analysis up to **8** hours old. This is a basic screening profile, which incorporates two tests: the prothrombin time (PT) and the activated partial thromboplastin time (APTT). Together these provide a sensitive test of most of the coagulation factors involved in clotting. APTT and /or PT results may be abnormal in a patient who is over anti-coagulated with newer anticoagulation agents such as Dabigatran, Rivaroxaban & Apixaban but results can be misleading.
Turnaround:	Emergency specimens < 2hrs. In-house patients < 4 hrs. Out-patient and GPs specimens < 24 hrs.
Ref. Range:	As per report form.
Cobalt	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml Lithium Heparin **Whole blood** - **Green** Top Vacuette® non-gel
Comment:	Non-gel tube
Turnaround:	2 – 3 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cocaine (Urine)	
See "Toxicology / Drug Screen".	
Coccidioides Antibodies	
Laboratory:	Samples referred from Microbiology to UKHSA Mycology Reference Laboratory Bristol
Specimen:	4ml blood clotted – **Red** top Vacuette®
Turnaround:	1month
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Coeliac Screen	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	***Note**: This is not an INAB accredited test* See "*IgA Anti-Endomysial Antibodies*"
Turnaround:	2-3 weeks
Ref. Range	As per report
CoEnzyme Q10	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample

Comment:	**Separate and Freeze < 4 hours**
Turnaround:	2-3 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cold Agglutinins	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® Specimen must be kept **@ 37°C**
Comment:	Titres above 40 are considered elevated. Unless the specificity is anti i haemolytic anaemia is not usually seen unless the titre is above 640.
Turnaround:	2 routine working days
Ref. Range:	Not applicable
Complement 1	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Complement - C3, C4 components (C3, C4)	
Laboratory:	Sample referred from Biochemistry to Biochemistry CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 week
Ref. Range:	As per report form.
Complement CH50 - Whole Titre	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Must be **separated and frozen < 1hr.** ***Send to laboratory immediately***
Turnaround:	2 - 3 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Compound F	
See 'Salivary Cortisol'	
Connective Tissue Disease (CTD)	
Laboratory:	Sample Referred from Biochemistry to the Autoimmune serology, Biochemistry Department CUH. Extn - 22535
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Where anti-nuclear Ab is requested CTD will be performed initially, if negative no further testing is performed, if positive the ANA investigations will be performed
Turnaround:	2 weeks
Ref. Range:	As per report or contact the Autoimmune serology Laboratory CUH
Conjunctivitis	
See "Eye Swab".	

Continuous Ambulatory Peritoneal Dialysis Fluid	
Laboratory:	Microbiology
Specimen:	Ideally, **a minimum volume** of 20mL should be collected into a clean, sterile, leak proof container. In addition, blood culture bottles should be inoculated aseptically with 5-10mL of dialysate. Transport ASAP. If processing is delayed, refrigeration is preferable to storage at room temperature.
Comment:	Test performed as an urgent sample. If routine cultures are negative and abnormal dialysate findings persist, please discuss with the microbiology medical staff.
Turnaround:	Microscopy: 2 hours. Urgent report telephoned when available. Prelim: 48 hours; Final: 5 days. Clinically urgent isolates are telephoned when available.
Report format:	White Cell count, gram stain and aerobic culture. Where the white cell count is ≥100/cmm a white cell differential is performed.
Copper (Blood)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample 5ml.
Comment	Diurnal variation – peak in the morning. Increased levels during pregnancy and when taking oral contraceptives.
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Copper (Urine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Urine** – 24-hour collection, container available from the laboratory.
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cortisol (Blood)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Avoid venous stasis and stress to patient. Write **time of collection** on sample tube and request form – Preferably early morning sample See also *"Synacthen test"*
Turnaround:	Routine request 5-8 working days
Ref. Range:	As per report form
Cortisol (Saliva)	
Laboratory:	Referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Saliva collected in universal container.
Comment	**Bring to lab immediately for freezing.**
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cortisol (Urine)	
Laboratory:	Sample referred from Biochemistry to Mater Hospital Dublin

Specimen:	**Urine -** 24 Hour urine collection. Containers available from the laboratory.
Turnaround:	2 – 3 weeks
Ref. Range:	As per report form
Cortisone (Compound E) (Blood)	
Laboratory:	Referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml Lithium Heparin Plasma - **Green** Top Vacuette® **Paediatric**: 1.3mL Lithium Heparin Plasma – **Orange** Cap
Comment:	Separate & refrigerate sample
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cortisone (Urine)	
Laboratory:	Referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	24Hr Urine collection. Containers available from laboratory.
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cotinine (Urine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Spot Urine (10-20 ml)
Turnaround:	2 – 3 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Covid-19 IgG antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	2 – 3 weeks
Ref Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Coxiella burnetii* IgG and IgM (Q fever)**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 - 2 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Coxsackie B* PCR**	
See "Enterovirus PCR".	
C Peptide	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Separate and freeze < 4hours **Patient must be fasting.** Haemolysis invalidates result.
Turnaround:	2 - 3 weeks
Ref. Range	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.

Creatinine Kinase	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**This test is also available as part of the cardiac profile.** Haemolysis and lipaemia may invalidate.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Creatinine Kinase Isoenzymes (CKMB/CKMM/CKBB)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	There is **restricted availability** on this test. Please contact the lab prior to taking sample. ***Haemolysed samples are unsuitable.***
Turnaround	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Creatinine (Blood)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	UHK- in-house request routine 2-4 hrs, urgent <2hrs GP request 3 – 5 working days
Ref. Range:	As per report
Creatinine (Urine)	
Laboratory:	Biochemistry
Specimen:	**Urine -** 24-hour sample. Containers available from the laboratory.
Turnaround:	3 - 5 working days
Ref. Range:	As per report
Creatinine Clearance	
Laboratory:	Biochemistry
Specimens:	24-hour urine collection and 4.0 mL blood clotted – **Red** top Vacuette®
Comment:	**Serum sample must accompany the 24 hour urine collection within 48 hours**
Turnaround:	3-5 working days
Ref. Range:	As per report form
C Reactive Protein	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	UHK in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 working days
Ref. Range:	As per report form.
Crimean Congo Haemorrhagic Fever Virus	
Laboratory:	Samples referred from Microbiology to NVRL

Specimen:	**Serum or EDTA**
Turnaround:	By arrangement with NVRL
Ref. Range	As per report form
Cross Laps - Beta	
Laboratory:	Referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
	Separate and freeze in <4 hours
Turnaround:	2-3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cryoglobulin (CRYO)	
Laboratory:	Clinical Biochemistry, CUH (Immunology Laboratory)
Comment:	Patient must go to CUH for the analysis to be performed but **Pre-arrange** with Laboratory – Ext. 22535 for an appointment.
Ref. Range:	As per report
Cryoprecipitate for administration **Cryoprecipitate no longer routinely available in UHK See Fibrinogen Concentrate**	
Laboratory:	Blood Transfusion Laboratory
Turnaround:	**By special request only contact laboratory.** Available on call
Ref. Range:	Not Applicable
***Cryptococcal Soluble* Antigen**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **Red** top Vacuette® or CSF (0.3mL minimum), BAL, 10ml Urine (stored at 4°),
Turnaround:	1 week
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cryptosporidium parvum/hominis	
Laboratory:	Microbiology (Molecular Diagnostics)
Specimen:	Faeces Specimen (refer to Faeces Molecular Analysis)
Comment:	Performed routinely on all suitable faeces samples submitted for routine Faeces Molecular Analysis
Turnaround:	24 hours (Monday – Friday).
Report:	Detected or Not Detected
CSF – Culture & Microscopy / Glucose /Protein etc.	
See "Cerebrospinal Fluid – Culture and Microscopy / Protein / Glucose"	
CSF Oligoclonal bands and CSF IgG Index: Test done in Biochemistry	
See "Cerebrospinal Fluid - Oligoclonal bands and CSF IgG Index"	
CSU - Catheter Urine	
See "Urine Microscopy and Culture".	
Cyclosporin	
Laboratory:	Specimen is referred from Biochemistry to Mater Hospital Dublin
Specimen:	**Adult**: 4ml whole blood EDTA – **Purple** top Vacuette®

	Paediatric: 1.3 mL serum **Red** capped paediatric sample
Comment	Trough sample required **Every order must include;** • The reason for the test (investigation of efficacy and/or toxicity) • The time of collection • The date on which the treatment was begun and, if relevant, of any adjustment of the dose • Details of the dosage (dose, frequency and route of administration) • The patients age, sex and weight
Turnaround:	1 week
Ref. Range:	See report form
Cymzia and Antibodies	
Laboratory:	Specimen is referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cystatin C	
Laboratory:	Specimen is referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Cystic Fibrosis - Genetic Test (CF)	
Laboratory:	Referred from Biochemistry to CHI at Crumlin NCMG Laboratories
Specimen:	5ml EDTA whole blood – **Purple** top Vacuette® **Patient consent form required - available online or from the laboratory** Recommend **not** to take samples on Friday of Bank Holiday as samples need to be referred by the laboratory to Dublin ≤ 5 days
Comment	The 32 most common mutations are tested. Ensure patient **consent form** is completed, signed by patient and requesting consultant and enclosed with specimen. Please contact laboratory first as some requirements may change with time.
Turnaround:	From 1 week to 10 weeks where rare mutations are being examined
Ref. Range:	See report form, or visit internet site www.genetics.ie for up to date referral test information
Cytogenetics for constitutional studies	
Laboratory:	Referred from Biochemistry to Cytogenetics lab OLHSC, Crumlin
Specimens:	**For Constitutional studies:** Blood - Adult: Lithium Heparin sample **Green** top Vacuette® – 2 mLs Blood –Paediatric: Lithium Heparin sample **Green** top Vacuette® 1.3 mL (or as close to 1ml as possible) in paediatric bottle. Do not refrigerate samples.

	Do not send sample in post over weekend. Otherwise post is ok.
Comment:	See www.genetics.ie for request forms, further details of tests available and specimens required. Please contact laboratory prior to taking samples as requirements may change.
Turnaround:	See web site.
Ref. Range:	See report form or contact Cytogenetics Dept. OLHSC, Crumlin.
Cytogenetics for Oncology Studies	
Laboratory:	Referred from Haematology Lab when investigating haematological conditions to Cytogenetics, Dept. of Clinical Genetics, Children's Health Ireland at Crumlin, Dublin 12. Consultant recommendation required.
Specimens:	**For Oncology Studies:** Bone Marrow / Blood (blood only suitable if Absolute Blast cell count is high): Place 0.5 – 1ml of bone marrow or 1-2ml blood directly into transport medium (RPMI) with heparin. **N.B**. - indicate clearly on form and bottle whether bone marrow or peripheral blood. Haematology requires 24hrs notice to acquire transport medium. Sample to reach Crumlin same day ideally or send next day to reach Crumlin by 3.30pm. Samples must be kept at room temperature and must never be frozen.
Comment:	See www.genetics.ie for request forms, further details of tests available and specimens required. Please contact laboratory prior to taking sampes as requirements may change.
Turnaround:	See web site.
Ref. Range:	See report form or contact Cytogenetics Dept. OLHSC, Crumlin.
Cytological Examination - Diagnostic Specimens	
Laboratory:	Histopathology (Cytology) Laboratory referred to Cytology CUH
Specimen:	Sputa/bronchial washings, serous fluids, urines etc.
Comment:	Health and Safety Precautions
Turnaround:	3-5 days
Clinical Indications	See Section 10.4
Cytomegalovirus (CMV) IgG and IgM	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	CMV IgM and CMV IgG antibodies are tested separately. The clinician must indicate the appropriate test by full history *etc*.
Turnaround:	2 – 3 days
Ref. Range:	As per report form.
Cytomegalovirus PCR	
Laboratory:	• CSF sample is processed in Microbiology UHK • Blood and urine samples referred from Microbiology to National Virus Reference Laboratory
Specimen:	CSF, BAL, 10ml Urine (stored at 4°), EDTA **Purple** top Vacuette® (requires freezing)
Comment:	Plasma must be frozen within 24 hours. Refer to cerebral spinal fluid for further information.
Turnaround:	Microbiology UHK: Approx. 1 hr. for positive CSF samples. Next routine working day for negative CSF samples.

	NVRL: Provisional report if positive within 3-4 days, hard copy reports and negative reports within 1weeks
Ref. Range:	As per report form.
Cytotoxic antibodies	
Laboratory:	Blood transfusion for referral to Beaumont hospital
Specimen:	Blood 10mL **Red** top Vacuette®
Clinical indications:	To monitor antibody status of patients on transplant panel
Comment:	Referred to HLA department Beaumont hospital from the blood transfusion laboratory.
Turnaround:	N/A
Ref. Range:	N/A
D-dimers	
Laboratory:	Haematology
Specimen:	Adult; 3mL **Blue** top Vacuette® (sodium citrate 3.2%). Paediatric: 1.2mL sodium citrate **green** top paediatric bottles are available in Haematology.
Comment:	Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed). Samples for D-Dimers are accepted for analysis up to **4** hours old. This test should only be requested to outrule DVT or PE. The presence of D-dimer is diagnostic for lysis of a fibrin clot. A normal D-dimer level is one of the criteria to out-rule DVT / PE. Test available Monday to Friday during routine working hours, and for emergency reasons at all other times. Clinical details are required.
Turnaround:	Emergency specimens < 2hrs. In-house patients < 4hrs. Outpatients and GP's < 24 hrs.
Ref. Range:	As per report form.
Dehydroepiandrosterone (DHEA)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
7- Dehydrocholesterol	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Paediatric**: 1.3 mL serum **Brown** capped paediatric sample Only available on Mondays
Comment:	Protect from light and send to lab immediately for separation and freezing. Please complete the Specific Clinical Information Form R26-INGTB available from Biochemistry
Turnaround	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Dehydroepiandrosternoe-sulphate DHEA Sulphate (DHEAS)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample

Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Dengue Virus IgG and IgM	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	2 weeks
Ref. Range:	As per report form.
11-Deoxycorticosterone (11DE)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
11-Deoxycortisol (11DC)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Dermatophytosis	
See "Mycology"	
Diabetic Screen (Zinc Transporter Enzyme, anti GAD Abs, IA2 Abs)	
Laboratory:	Sample referred from Biochemistry to Blood Sciences Lab, Royal Devon and Exetor Hospital, Royal Devon University Healthcare,
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form
Digoxin (Digitalis)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	Routine request 5- 8 working days, Urgent- same day – by special request
Ref. Range:	As per report form
Di-hydropyrimidine dehydrogenase (DPD)	
Laboratory:	Sample referred from Biochemistry to Synnovis, Purine Research Labl, London
Specimen:	Adult: 4.0 mL blood EDTA - **Purple** top Vacuette® Whole blood only
Comment:	Do not separate plasma – Whole Blood Only
Turnaround:	2 - 3 weeks
Ref. Range:	See report form
Di-hydrotestosterone (DHT)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab.

Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
1,25-Dihydroxyvitamin D	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1-2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Diphtheria IgG serology	
Laboratory:	Referred from Microbiology to Eurofins Biomnis Ireland Lab.
Specimen:	4 mL blood clotted - **Red** top Vacuette®
Comment:	Used to determine vaccine immunological response and degree of protection
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Direct Coombs Test	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® or 3 mL **Purple** top Vacuette® (FBC) **For Paediatrics:** 1.3 mL EDTA Pink/Red Capped Tube (Paediatric Bottle),
Clinical indications:	Investigation to demonstrate whether red cells are coated in vivo with immunoglobulins and/or complement. Significant in auto immune disease, haemolytic disease of the newborn, suspected cases of serological incompatibility of red cells post transfusion and drug induced haemolytic anaemia.
Turnaround:	Routine 1 working day Urgent 1.5 hours Available on call
Distomatosis Screening serology (Fasciola Hepatica/Fluke)	
Laboratory:	Referred from Microbiology to Eurofins Biomnis Ireland Lab.
Specimen:	4 mL blood clotted - **Red** top Vacuette®
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Double stranded DNA (DS-DNA)	
Laboratory:	Sample referred from Biochemistry to autoimmune serology, CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	1 week
Ref. Range:	As per report form.
DVVT	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)

Comment:	Forms part of a Thrombophilia and / or Lupus screen. Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart. See section 13.12 for special collection procedures.
Turnaround:	2-3 weeks.
Ref. Range:	As per report form or contact Haematology, CUH.
Ear Swab	
Laboratory:	Microbiology
Specimen:	Swab any pus or exudates.
Comment:	Test performed routinely Mon–Fri. Transport specimens ASAP in charcoal containing transport media. If processing is delayed, refrigeration is preferable to storage at room temp. If fungal culture is desired scrapings are preferable to swabs (see – Mycology).
Turnaround:	Up to one week
Report:	Culture report: Any clinically significant isolate with the appropriate sensitivities.
Ebola Virus	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	**EDTA or Serum**
Comment:	Test performed by arrangement only. To be discussed with NVRL clinical team before sending samples
Turnaround:	By arrangement
Ref. Range:	As per report form.
***Echinococcus* (Hydatid cyst) Screening Serology**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab.
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
***E. coli* PCR**	
Laboratory:	CSF sample is processed in Microbiology UHK. Blood sample is referred from Microbiology to IMSRL, CHI at Temple St.
Specimen:	**CSF sample (200µL) or** **Adult**: 1 x 3mL **Purple** top Vacuette® (EDTA) **Paediatric** 1 x 1.3mL **Red**-capped paediatric EDTA.
Comment:	CSF: Refer to cerebral spinal fluid PCR for further information. Blood: Please complete IMSRL request form. Only in infants <7 days, for children ≥ days discuss with IMSRL Sample should be collected as close to onset as possible and prior to administration of antibiotics.
Turnaround:	In-house: Approx. 2 hours for positive CSF samples and next day for negative CSF. IMSRL Referral lab: Same day TAT (between 16.00-17.00) if received before 11.00am otherwise next working day.
Ref. Range:	As per report form

Ecstasy (urine)	
See "Toxicology / Drug Screen".	
eGFR (estimated glomerular filtration rate)	
Laboratory:	Biochemistry
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Calculation is based on the 4v-MDRD Formula (with creatinine assay calibration traceable to ID-MS) and is only applicable to adults (i.e. patients greater than 18 years old).
Turnaround:	UHK in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 working days
Ref. Range:	eGFR Reference Range Units = ml/min/1.73m2 >90 Normal 60-89 Only significant with other features of renal disease. 30-59 Indicates moderate renal impairment. <30 Indicates severe renal impairment eGFR is calculated using the 4-Variable MDRD Formula. eGFR calculation is not recommended for patients < 18 years or pregnant women. eGFR result should be multiplied by 1.212 for African-Caribbean patients.
Electrolytes	
See "*Sodium, Potassium and Chloride respectively*"	
Electrophoresis	
Refer to "*Protein Electrophoresis*"	
EMA	
See "Hereditary Spherocytosis"	
Endocervical swab	
Refer to "Genital swab"	
***Enterobius vermicularis* (Sellotape slide for Pinworm)**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab.
Specimen:	Slide - The specimen is collected first thing in the morning, before the patient has bathed or used the toilet. Apply sellotape to the perianal region, pressing the adhesive side of the tape firmly against the left and right perianal folds several times. Smooth the tape back on the slide, adhesive side down. The sellotape slide should be kept in a slide box in a sealed plastic bag. It is recommended that samples should be taken for at least 4-6 consecutive days.
Comment:	Transport specimens ASAP. Do not refrigerate or incubate specimens. Occasionally, an adult worm may be collected from a patient and should be sent in saline or water in a leak-proof container for identification.
Turnaround:	1 week
Report:	As per report form
Enterovirus Molecular	
Laboratory:	• Samples referred from Microbiology to the NVRL • CSF sample is processed in Microbiology UHK. Nasopharyngeal viral swab testing is available upon consultant approval.

Specimen:	NVRL: CSF (0.2ml), Faeces (2-5g), viral nasopharyngeal swab, EDTA **Purple** top Vacuette® Microbiology UHK: CSF & nasopharyngeal viral swabs. Samples must be refrigerated.
Comment:	Plasma must be separated and frozen within 24 hours, all other samples must be kept refrigerated. NVRL: Blood samples are of limited value in the diagnosis of enterovirus infection. Blood samples are not routinely tested in those >3 yrs of age.
Turnaround:	Microbiology UHK: Approx. 2 hr. for CSF samples. Nasopharyngeal viral swab result TAT dependent on testing protocol. Assay TAT is approx. 3 hr. NVRL: 7 working days, additional time required for positive samples
Report:	As per report form.
Epanutin®	
See "*Phenytoin*"	
Epilim®	
See "*Valproate*"	
Epstein-Barr Virus (EBV) IgM and IgG START HERE	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	EBV IgM (VCA) performed in CUH EBV IgG (VCA and NA) testing is performed by NVRL
Turnaround:	2 – 3 days for EBV IgM, 5 working days for EBV IgG
Ref. Range:	As per report form.
Epstein-Barr Virus (EBV) Molecular	
Laboratory:	Referred from Microbiology to the National Virus Reference Laboratory
Specimen:	**Adult**: 1 x 3mL EDTA **Purple** top Vacuette® **Paediatric**: 1 x 1.3mL EDTA **Red** capped paediatric bottle
Comment:	Plasma must be frozen within 24 hours.
Turnaround:	5 working days
Ref. Range:	As per report form
Erythropoietin (EPO)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
	Separate and freeze <4 hours
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit www.eurofins.ie/biomnis for latest information
ESR	
Laboratory:	Tests done on ward, in phlebotomy and in GP surgery.
Specimen:	Blood; 3mL **Black** (sodium citrate) top Vacuette®
Comment:	ESR measurement is a non-specific test of inflammation and tissue damage.
Turnaround:	N/A
Ref. Range:	Males: 0 – 10mm/hour Females: 0 – 20mm/hour
Estradiol (OEST)	

See "*Oestradiol*"	
Ethanol (Alcohol)	
See "*Alcohol*"	
Ethosuximide (Zarontin®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Always draw specimen at the same time & immediately before the next dose.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Ethylene Glycol	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4 mL blood clotted – **Red** top Vacuette®
Comment:	Separate and freeze <4 hours
Turnaround:	1-2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Eye Swab	
Laboratory:	Microbiology
Specimen:	Swab both eyes with separate sterile charcoal swabs for culture. Any available pus should be sampled as well as the area of interest. Transport specimens ASAP in charcoal containing transport media. If processing is delayed, refrigeration is preferable to storage at ambient temperature. Separate swabs in appropriate transport media are needed for the diagnosis of viral and chlamydial infections.
Comment:	Test performed routinely Monday–Friday
Turnaround:	Up to one week
Report Format:	Culture report: Any clinically significant isolate with the appropriate sensitivities.
Eye Viral Screen	
Laboratory:	Referred from Microbiology to the National Virus Reference Laboratory
Specimen:	**Viral Swab**
Turnaround:	1 week
Ref. Range:	As per report form
Factor I (see Fibrinogen)	
See: Fibrinogen	
Factor II	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top) See section 13.12 for special collection procedures.
Comment:	Determines the activity of coagulation Factor II (Prothrombin).
Turnaround:	Routine: 2 – 3 weeks, Urgents: as per arrangement with CUH.

Ref. Range:	As per report form or contact Haematology, CUH.
Factor V	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top) See section 13.12 for special collection procedures.
Comment:	Determines the activity of coagulation Factor V.
Turnaround:	Routine: 2 – 3 weeks, Urgents: as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor V Leiden Screen	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood: 1 X 3mL **Purple** top Vacuette® (EDTA) plus Blood 2 X 3ml **Blue** Vacuette (sodium citrate 3.2%).
Comment:	Forms part of a Thrombophilia screen or requested as a single test if required. Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart. See section 13.12 for special collection procedures
Turnaround:	6-8 weeks
Ref. Range:	As per report form or contact Haematology, CUH.
Factor VII	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Determines the activity of coagulation Factor VII.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor VIII	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Determines the activity of coagulation Factor VIII.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor VIII Inhibitors	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Demonstrates the inhibitory effect of Factor VIII antibodies. Quantitative assays performed by reference laboratory.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor VIII Related antigen	
Laboratory:	Samples referred from Haematology to Haematology CUH.

Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. The quantitative determination of Von Willebrand's factor antigen is required for differential diagnosis of coagulation disorders associated with the Factor VIII complex.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor IX	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Determines the activity of coagulation Factor IX.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor X	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Determines the activity of coagulation Factor X.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor Xa	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top). Take sample 2-4 hours post heparin administration.
Comment:	See section 13.12 for special collection procedures. Used to monitor the effectiveness of low molecular weight heparin (LMWH) therapy. Time of administration of LMWH and collection of samples must be stated on the request form.
Turnaround:	1 week.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor XI	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Determines the activity of coagulation Factor XI.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor XII	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. Determines the activity of coagulation Factor XII.

Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor XIII (Urea Clot Lysis Time)	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) or paediatric (1.2 mL Sodium Citrate Green Top)
Comment:	See section 13.12 for special collection procedures. A qualitative assay to diagnose congenital deficiency of Factor XIII.
Turnaround:	Routine: 2 – 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Factor VII concentrates for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No specimen required
Comment:	Product contains recombinant coagulation factor VIIa.
Turnaround:	1.5 hours Available on call
Ref. Range:	Not applicable
Factor VIII concentrates for administration (including VWF)	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No Specimen required
Comment:	Products available in UHK are: a recombinant factor VIII used (VWF Human). It is strongly advised to contact the haematologist through the switch board or outside of routine hours the CUH haematologist or the National Centre for Hereditary Coagulation Disorders at St James Hospital if in any doubt about the course of treatment or dosage required Telephone 01 4162141/4162142. Patients with haemophilia should be treated in a haemophilia centre where possible.
Turnaround:	1.5 hours Available on call
Ref. Range:	Not applicable
Factor IX concentrates for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No specimen required.
Clinical indications:	Used for control and treatment of bleeding and the prevention of bleeding in patients with factor IX deficiency (Haemophilia B or Christmas disease)
Comment:	Products available in UHK are: a recombinant factor IX It is strongly advised to contact the haematologist through the switch board or outside of routine hours the CUH haematologist or the National Centre for Hereditary Coagulation Disorders at St James Hospital if in any doubt about the course of treatment or dosage required Telephone 01 4162141/4162142. Patients with haemophilia should be treated in a haemophilia centre if possible.
Turnaround:	1.5 hours Available on call
Ref. Range:	Not applicable
Faecal Elastase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab

Specimen:	20 g minimum Stool specimen. **Note**: Please return stool samples to the laboratory on the day they collect the sample or early the day after collection. Ask patients to write the collection date on the stool container and on the request form.
Comment:	Specimen must be taken on a Monday, Tuesday and Wednesday to ensure that the sample will be analysed within 48 hours post collection.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Faecal Reducing Substances	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	20 g minimum Stool specimen. **Freeze immediately**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Faeces –Molecular Analysis and Culture	
Laboratory:	Microbiology
Specimen:	Fresh faeces specimen. 1-2g (1-2mL). Liquid/loose stools. Formed stools are unsuitable and will be rejected. Faeces samples for molecular analysis detect *Salmonella* spp., *Shigella* spp./ Enteroinvasive E. coli (EIEC), *Campylobacter* spp. *(jejuni/coli/lari)*, Verotoxigenic *E. coli* (VTEC) (VT1/VT2), *Cryptosporidium parvum/hominis* and *Giardia lamblia*). The specimen should be collected into a clean, sterile, leakproof container. Ideally, all specimens should be taken as soon as possible after onset of symptoms. Transport specimens to Microbiology **ASAP**. If processing is delayed, specimens **must be refrigerated.** A number of important pathogens such as *Shigella* species may not survive the pH changes that occur in faeces specimens that are not promptly delivered to the laboratory, even if refrigerated. If additional testing for Norovirus (SRSV) or parasitology is required please send separate samples.
Comment:	Rectal swabs are **not** suitable. Full clinical information should be provided, esp. presence and duration of symptoms, recent travel or shellfish ingestion and previous antibiotics. If *Vibrio cholera* and *Yersinia enterocolitica* are clinically suspected request these on the request form. Such samples will be referred to CUH for testing upon acceptance by the CUH Microbiology Medical Team. Repeat samples from hospital inpatients that have been tested within the last 14 days will not be tested provided they have not been discharged and readmitted. Exceptions may be made at the discretion of the Consultant. The system is not designed to detect asymptomatic carriage of *Salmonella* spp. If this test is required please indicate on the request form and culture will be performed. Please refer to individual sections for *Clostridium difficile*, Parasitology, Norovirus (SRSV), Rotavirus/Adenovirus and other Faecal viruses.

Turnaround:	**Negative**: within 24 hours (Monday – Thursday). Samples received after 11am on Friday should be reported before 5pm on the following Monday (Tuesday on Bank Holidays) **Positive**: VTEC, *Campylobacter* spp., *Cryptosporidium parvum/hominis* and *Giardia lamblia* are reported within 24 hours (Monday – Thursday). Please factor in the weekend delays highlighted in the TAT for negative results. *Salmonella* spp. and *Shigella* spp./EIEC are reported provisionally within 24 hours and require culture confirmation prior to report finalisation within 72 hours. VTEC, *Salmonella* spp. and *Shigella* spp. isolates are referred to reference laboratories for further characterisation.
Report:	**Faecal PCR:** Report the presence/absence of specific pathogens as target detected/target not detected respectively. **Faecal Culture:** Report the presence/absence of Salmonella spp. or Shigella spp. as isolated/not isolated. **Reference Laboratory:** Samples with VTEC detected are referred to the Public Health Laboratory, Cherry Orchard Hospital for further typing. Samples with Salmonella or Shigella isolated are referred to The National Salmonella, Shigella & Listeria Reference Laboratory (NSSLRL) UHG for further typing. **Notes:** Genetic material from gastrointestinal pathogens may be present in the absence of clinical infection in cases where an infection is improving; a patient has chronic carriage or if dead organisms are present (e.g. post treatment). The quality of molecular results is dependent on the quality of the sample and old samples that have not been refrigerated may result in false negative results. A target not detected does not automatically exclude infection from the tested enteric pathogens as the level of DNA present may be lower than the limit of detection of the assay. A mutation in the primer binding area of the pathogen may result in a false negative result.
Faeces for Viral Screen	
Laboratory:	Referred from Microbiology to the National Virus Reference Laboratory
Specimen:	Faeces
Comment:	Includes Adenovirus type F DNA, Astrovirus RNA, Norovirus RNA, Rotavirus RNA and Sapovirus RNA.
Turnaround:	1 week
Ref. Range:	As per report form
Fallopian Tube Aspirate / Tubo-ovarian Fluid	
See "Sterile Body Fluid – Microscopy and Culture".	
Farmers Lung Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Fasting Lipid Profile	
See "Lipid profile"	
Fatty acids, Very Long Chain	

See "Very Long chain fatty acids"	
Ferritin	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	The level of serum ferritin correlates well with the body iron reserves under various physiological and pathological conditions.
Turnaround:	UHK-in-house routine requests 24 - 48 hrs GP request 5-8 working days
Ref. Range:	As per report
Fertility Screen	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Screen includes Hepatitis B surface antigen, anti-HBcore, HIV Ag/Ab, anti-HCV.
Turnaround:	Negative samples: 36 hours. Please allow extra time for samples testing positive in house for HIV and anti-HCV (external confirmatory testing required)
Ref. Range:	As per report form.
Fetal Typing of Maternal Blood	
Laboratory:	Blood transfusion laboratory for referral to IBGRL Bristol
Specimen:	4 x 6 mL EDTA **Pink** top Vacuette® from antenatal patient and 6 mL EDTA **Pink** top Vacuette® from partner.
Clinical Indications	Fetal DNA in maternal plasma may be used to identify the Rhesus (D,C,c,E,e) and Kell status of foetuses at risk from haemolytic disease of the newborn
Comment	Pregnancy should be at least 16 weeks gestation. Prior arrangement is necessary as specimens must reach the lab in Bristol within 48 hours of venipuncture.
Turnaround:	3 weeks
Fibrinogen Concentrate for administration	
Laboratory	Blood Transfusion
Specimen	No Specimen required
Clinical Indications	For treatment of patients with acquired hypofibrinogenaemia, for example in patients with disseminated Intravascular coagulation, severe blood loss, or failure of hepatic synthesis
Comment	Quantitation of fibrinogen levels by haematology laboratory is a useful indicator of requirement to administer fibrinogen concentrate. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround	1.5 hours Available on call
Reference range	Not applicable
Fibrinogen - Factor I	
Laboratory:	Haematology
Specimen:	Blood; 3mL **Blue** top Vacuette® (sodium citrate 3.2%). Paediatric bottles (1.2ml) are available in Haematology.

Comment:	Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed). Samples for Fibrinogen are accepted for analysis up to **8** hours old. Fibrinogen is an acute phase protein, increased in inflammatory conditions. Level may be markedly decreased in acute haemorrhage **or** where D.I.C. is suspected. Test available Monday to Friday, during routine working hours, and for emergency reasons at all other times.
Turnaround:	Emergency specimens < 2hrs, in-house patients < 4hrs, outpatients and GPs < 24 hrs.
Ref. Range	As per report form.
Filaria Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Fine Needle Aspirates (FNAS)	
Laboratory:	Histopathology UHK and sample is referred to Cytology Laboratory, CUH
Specimen:	Aspirate is placed unfixed or into cytolyte as required. Pre-prepared fixed slides e.g. Salivary glands, thyroid glands, breast, lymph node may also be referred.
Turnaround:	2-4 days.
Clinical Indications	See Section 11.4
FK 506 (Tacrolimus/Prograf®) (TAC)	
See "Tacrolimus"	
Flecainide (Tambocor®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2 mL blood clotted – **Red** top Vacuette® **frozen < 3 hours**
Comment:	Every order must include the following: • The reason for the test (investigation of efficacy and/or toxicity) • The time of collection • The date on which the treatment was begun and, if relevant, of any adjustment of the dose • Details of the dosage (dose, frequency and route of administration) • The patients age, sex and weight if possible
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Fluorine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2 mL Serum **non-gel tube** –available from Lab, **frozen < 3 hours**
Turnaround:	2-3 weeks

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Folate	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Forms part of the investigation of Megaloblastic Anaemia. Folate is part of a KBF profile with Vitamin B12.
Turnaround:	5 – 8 working days
Ref. Range:	As per report form.
Fragile X Chromosome (FRAGX)	
Laboratory:	Sample referred from Biochemistry to National Centre for Medical Genetics
Specimen:	**Paediatrics**: 1ml EDTA & 1ml Lithium Heparin bloods **Adults**: 3-5mls EDTA & 2mls Lithium Heparin bloods Specimens must be accompanied by a **consent form signed by patient and requesting consultant**
Comment	Please contact lab prior to taking samples to check if requirements have been updated. NCMG Consent form required.
Turnaround:	4 – 6 weeks
Ref. Range:	See report form, or visit internet site www.genetics.ie for up to date referral test information.
***Francisella tularensis* Antibodies**	
Laboratory:	Samples referred from Microbiology to Infectious Diseases Serology CUH
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Test performed a reference laboratory (Rare & Imported Pathogens Laboratory (RIPL), Porton Down)
Turnaround:	3 weeks
Ref. Range:	As per report form
Free Fatty Acids (non-esterified)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL Lithium Heparin **Green** top Vacuette **Paediatric**: 1.3mL **Orange** cap paediatric sample **Separate and freeze in <1hr.**
Comment	Requested as part of a hypoglycaemic workup (TBOHP) Please contact laboratory for pre-prepared sample pack.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral information
Free Kappa/Lambda Light chains and Kappa: Lambda Ratio	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	Adult: 2ml blood clotted – **Red** top Vacuette®
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
(Free T3) Tri-iodothyronine	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette®

	Paediatric: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	Routine request 5 - 8 working days, Urgent request same day
Ref. Range:	As per report
(Free T4) Thyroxine	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	Routine request 5 - 8 working days, Urgent request same day
Ref. Range:	As per report form
Free Testosterone (corrected)	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze <4 hours.** Haemolysis and lipaemia invalidate test
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Frozen plasma for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® For Paediatrics: 1.3 mL EDTA Pink/Red Capped Tube (Paediatric Bottle).
Clinical indications:	INDICATIONS FOR USE: • Single factor deficiency where no concentrate available, factor v or in factor X1 deficiency where there is concern about the potential thrombogenicity of factor X1. • Multiple coagulation factor deficiencies associated with severe bleeding and or in DIC with bleeding • Plasma exchange for TTP • In overdosed patients on warfarin who are bleeding and PCC not available • Bleeding due to haemorrhagic disease of the newborn(10-20ml/kg with iv vik K) • Neonates with coagulapathy who are bleeding and undergo invasive procedures(dose approx 15ml/kg as well as dose of vik K) • Plasma with low titre anti T may be indicated if there is a high suspicion of T-activated haemolysis in babies with NEC or a similar septic condition. CONTRA-INDICATIONS: • In overdosed patients on warfarin who are bleeding and PCC is available • In patients who have inadequate vit k intake • In patients with liver disease and a PT more that 4 s longer than control are unlikely to benefit from Frozen plasma • Prevention of intraventricular haemorrhage in preterm infants • Polycythaemia in infancy • Hypovolaemia • Plasma exchange except for TTP • Reversal of prolonged INR in the absence of bleeding

	Fresh frozen plasma rather than Octaplas is the product indicated if required in patients diagnosed with C1 esterase inhibitor deficiency.
Comment:	Octaplas should not be used to correct hyperfibrinolysis caused by a deficiency of the plasma inhibitor alpha 2-antiplasmin. Octaplas should be used with caution in patients with risk for thrombotic complications because of potential increased risk of venous thromboembolism due to reduced protein S activity compared with single donor Fresh frozen plasma. Fresh frozen plasma is the product indicated in the treatment of C1 esterase inhibitor deficiency Plasma should be used immediately post thaw. It is recommended that plasma is transfused within one hour post thaw but discretion may be given in the case of a risk of circulatory overload.
Turnaround:	1.5 hours Available on call
Ref. Range:	Not Applicable
Fructosamine	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and store at 4oC**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
FSH - Follicle Stimulating Hormone	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	State day of cycle.
Turnaround:	5 – 8 working days
Ref. Range:	As per report form.
Full Blood Count	
Laboratory:	Haematology
Specimen:	**Adult**; 3mL **Purple** top Vacuette® (EDTA) **Paediatric** 1.3mL **Red**-capped paediatric EDTA.
Comment:	This is a basic haematological investigation, which includes WCC, RBC, Hct, Hb, Red Cell Indices and Platelet count. WBC differential is included on fresh specimens. Test available Monday to Friday, during routine working hours and for emergency reasons at all other times. Where FBC samples cannot be processed within 48 hours the complete FBC profile will not be reported due to the age of the sample
Turnaround:	Oncology patients < 1.5hrs, Emergency specimens < 2hrs, in-house patients < 4hrs, outpatients and GPs < 2 working days.
Ref. Range:	As per report form.
Fungal Microscopy and Culture	
See: Mycology	
Furosemide (Lasix)	

Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	Adult: 4.0 mL blood clotted – **Red** top Vacuette®
Comment:	Include dosage details
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
G6PD ASSAY	
Laboratory:	Referred from Haematology to Haematology CUH.
Specimen:	**Adult**: 2 x 3mL **Purple** top Vacuette® (EDTA) **Paediatric** 2 x 1.3mL **Red**-capped paediatric EDTA.
Comment:	Fresh sample required (<24hrs old). Used in the investigation of Hereditary Haemolytic Anaemias. It is recommended that assays not be performed after severe haemolytic crisis, since G6PD levels may be falsely elevated. Unsuitable for analysis if Reticulocyte count > 150 x 10^9 / L. Sulfasalazine or its metabolites may interfere with this test, so results are not valid for individuals taking these medications. Consultant recommendation required. Clinical details are a mandatory requirement.
Turnaround:	1-2 weeks
Ref. Range:	As per report form.
Gabapentin (Neurontin®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4ml blood clotted **non-gel tube** –available from lab, **Separate & store at 4oC**
Comment	Always take sample before the next dose. **The following information must be included:** • Indications, patients age weight and height • Time of collection • Dosage regimen and mode of administration (IV, IM)
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Galactomannan Antigen (Aspergillus soluble Antigen)	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample **Broncheolar lavage** (BAL)
Comment:	**Send BAL samples to the laboratory promptly - frozen < 4 hour** Serum sample are stored at 4oC. If requested by shared care team in Crumlin Galactomannan requests will be referred to Microbiology CHI at Crumlin.
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Galactose-1 Phophate Uridyl Transferase	
Laboratory:	Sample referred from Biochemistry to Metabolic lab Temple Street
Specimen:	**Paediatric**: 1.3mL Lithium Heparin **Orange** cap sample
Comment:	Mon-Wed only for delivery to Bristol within 24hrs
Turnaround:	2 - 3 weeks
Ref. Range:	As per report form

Gamma-Glutamyl-Transferase (GGT)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	Haemolysis and lipaemia may invalidate.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 working days
Ref. Range:	As per report form
Gastrin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Separate and freeze < 1 hour Fasting sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Genital Swab Culture and Microscopy (vaginal, cervical, urethral, Penile)	
Laboratory:	Microbiology
Specimen:	Because genital specimens are often taken from sites harbouring large numbers of commensal (normal) flora, attention to specimen selection and collection methods is critical. It is important to avoid vulval contamination of the swab. The posterior fornix, including any obvious candidal plaques should be swabbed. Low vaginal swabs are discouraged because the presence of high numbers of commensal flora makes them difficult to interpret. Specimens should be collected using a sterile swab and transported ASAP in charcoal containing transport media. If processing is delayed, refrigeration is preferable to storage at ambient temperature. The viability of *N. gonorrhoeae* is lost over time. See *Neisseria gonorrhoea* PCR for Gonorrhoea testing. See *Chlamydia tracomatis* PCR for *Chlamydia* testing. A HVS is the appropriate specimen type for *Trichomonas vaginalis* testing (testing only performed when specifically requested). BV is done by request only on HVS swabs on female patients between the ages of 16 to 50 years. LVS/Anorectal swabs are the preferred sample type for Group B streptococci screening in pregnancy. If PID is to be investigated the appropriate specimen type is an aspirate collected from the fallopian tube or a TOA or peritoneal fluid. Clinical information is importance in the interpretation of results and must be indicated on the request for e.g. postpartum endometritis, orchitis, etc.

	In the case of a persistent genital tract infection other organisms for consideration include: *Mycoplasma hominis, Ureaplasma urealyticum* (see Mycoplasmas (urogenital) section) and viruses.
Turnaround:	Up to one week
Report	As per report form
Gentamycin (Pre Single Dose, Pre Multi Dose & Post Dose)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Trough level** = before injection **Peak Level** = 30 min after end of infusion or 1 hour after IM injection
Turnaround:	UHK-in-house request routine 2-4 hrs, Urgent <2hrs
Ref. Range:	See report form
Genital ulceration panel PCR	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Mucocutaneous viral swab**
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
GIT Hormones - Gastrointestinal Tract Hormones	
See Gastrin, Pancreatic Polypeptide (PP), Vasoactive Intestinal Polypeptide (VIP), Glucagon, Somatostatin	
Glucagon	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4.0 mL EDTA + Aprotinine – **Pink**. Centrifuge, **separate plasma and freeze < 1 hr.**
Comment:	EDTA + Aprotinine bottles available from Biochemistry.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Glucose (Random / Fasting)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL Sodium fluoride **–** **Grey** top Vacuette® **Paediatric**: 1.3 mL Sodium fluoride **–** **Yellow** top
Comment:	State if fasting or number of hours post-prandial.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 working days
Ref. Range:	The generally accepted cut-off levels for the diagnosis of Diabetes Mellitus are: (a) random plasma glucose of equal to or greater than 11.0 mmol/L (b) fasting plasma glucose of equal to or greater than 6.9 mmol/L
Glucose (POCT)	
Laboratory:	Performed on Point of Care devices which are available throughout Hospital wards in UHK
Specimen:	Whole Blood Capillary (Fingerprick)
Comment:	POCT Glucose results are for monitoring only and should NOT be used for diagnosis of Diabetes Mellitus. ***Note**: This is not an INAB accredited test*
Turnaround:	Time to result: 6 secs

Ref. Range:	The normal adult Fasting Glucose range for a non-Diabetic person: <5.55 mmol/L and <7.77mmol/L 1-2 hours after meals
Group – Baby/Cord Blood Group	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® **In the case of New-borns:** Cord Blood Sample in 6 mL EDTA **Pink** top Vacuette **For Paediatrics:** 1.3 mL EDTA Pink/Red Capped Tube (Paediatric Bottle)
Clinical indications:	Usually performed on New-borns. The group is performed so that Rh D negative women who deliver Rh D positive babies can be identified so that they can receive the anti D immunoglobulin if appropriate.
Turnaround:	Routine: 1 routine working day Urgent:1.5 hours Available on call
Ref. Range:	Not Applicable
Group and Crossmatch	
Laboratory:	Blood Transfusion Laboratory
Specimen:	**Adult**: 6 mL EDTA **Pink** top Vacuette® **Paediatrics:** 1.3 mL EDTA Pink/Red Capped Tube (Paediatric Bottle). Note: May require sample from mother of infant for crossmatching: 6 mL EDTA Pink Capped Tube
Clinical indications:	To reserve a specific number of red cells for a patient for a specific time.
Comment:	Samples for crossmatching for elective surgery or planned transfusion should arrive in laboratory before 4 p.m. on day before surgery/transfusion to avoid undue delay. Requests that arrive after 4 pm will be processed the following routine working day unless otherwise specified. Blood for theatre is crossmatched in accordance with the locally agreed Maximum Surgical Blood Ordering Schedule (MSBOS), except in exceptional cases. Arrangements are in place for the emergency issue of blood. In exceptional circumstances, blood may be issued uncrossmatched on request. It is vital to communicate with the blood transfusion department regularly in urgent or massive transfusion situations. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround:	Urgent group specific (including on call) = 45 minutes Fully crossmatched blood urgently required = 90 minutes (if antibody screen negative). Fully crossmatched blood for patients with positive antibodies or specific rare group requirements= up to 3 days
Ref. Range:	Not Applicable
Group and antibody screen	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® **For Paediatrics:** 1.3 mL EDTA Pink/Red Capped Tube (Paediatric Bottle)

	Note: May require sample from mother of infant for crossmatching: 6 mL EDTA Pink Capped Tube
Clinical indications:	Blood is grouped and an antibody screen is performed. Blood may be crossmatched subsequently on that sample within an appropriate time frame: 1 week for all patients. 72 hours if the patient had a transfusion within the last 3 months REFER TO MSBOS in transfusion section of this manual.
Turnaround:	1 routine working day Available on call Ante-natal specimens = one week
Ref. Range:	Not applicable
Group B Streptococcal PCR	
Laboratory:	CSF sample is processed in Microbiology UHK. Blood sample is referred from Microbiology to IMSRL, CHI at Temple St.
Specimen:	**CSF sample (200μL)** **Adult**: 1 x 3mL **Purple** top Vacuette® (EDTA) **Paediatric** 1 x 1.3mL **Red**-capped paediatric EDTA.
Comment:	CSF: Refer to cerebral spinal fluid PCR for further information. Blood: Please complete IMSRL request form. Only in infants <7 days, for children ≥ days discuss with IMSRL Sample should be collected as close to onset as possible and prior to administration of antibiotics.
Turnaround:	In-house: Approx. 2 - 3 hours for positive CSF samples. Next day for negative CSF. IMSRL Referral lab: Same day TAT (between 16.00-17.00) if received before 11.00am otherwise next working day.
Ref. Range:	As per report form.
Growth hormone (Somatotropin)	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	Separate sample and **freeze <4 hrs.** The physiological state of the patient must be noted on the request form e.g. fasting, sleeping, feeding, active.
Turnaround:	2-3 Weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Gut Hormone profile	
See "GIT Hormones"	
Haemochromatosis Testing	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	4.0mL blood clotted – **Red** top Vacuette® **and** 4.0mL EDTA – **Purple** top Vacuette® together with the UHK Haemochromatosis Request & Consent form (available from the laboratory as required) and the UHK Biochemistry/Haematology Request Form.
Comment:	Samples referred if carrier status is required (first degree relatives only) and/or for diagnostic purposes (**fasting** transferrin saturation

	levels >50%). HH testing is not carried out on children <16 years of age.
Turnaround:	6-8 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Haemoglobin A_1C (HbA1C) (Glycosylated Haemoglobin)	
Laboratory:	Samples referred from Haematology To Haematology CUH.
Specimen:	Adult: Blood; 3mL **Purple** top Vacuette® (EDTA) Paediatric sample (red-capped) 1.3 mL (EDTA). Specimens must be < 5 days old on receipt in CUH.
Comment:	Where both an HbA1C and an FBC are required, 2 EDTA samples are necessary. The measurement of HbA_1c reflects the effectiveness of treatment in diabetes mellitus.
Turnaround:	1 week
Ref. Range:	As per report form or contact Haematology, CUH.
Haemoglobin A_1C (HbA1C) (POCT)	
Laboratory:	HbA1C performed on POCT devices which are available in Diabetic Unit and CDM Hub of UHK.
Specimen:	Whole blood sample (finger-prick) Minimum sample volume = 1 μL of whole blood
Comment:	Availability is restricted to patients attending Diabetic Unit and CDM Hub Clinics.
Turnaround:	6 minutes
Ref. Range:	As per report
Haemoglobin Electrophoresis (Hb electrophoresis)	
Laboratory:	Samples referred from Haematology To Haematology CUH. Samples referred to Crumlin for patients <6months
Specimen:	Blood; 3mL **Purple** top Vacuette® (EDTA) or paediatric sample (red-capped) 1.3 mL (EDTA).
Comment:	Determines the presence of Haemoglobin variants.
Turnaround:	Routine: 1 - 2 weeks, Urgent requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Haemoglobin S Sickle Screen	
Laboratory:	Haematology UHK (urgents) and Haematology CUH (Routine)
Specimen:	Blood; 3mL **Purple** top Vacuette® (EDTA) or paediatric sample (red-capped) 1.3 mL (EDTA).
Comment:	Used in screening for sickle cell anaemia. In infants < 6 months old Hb F will be present in large amounts and so may mask the presence of Hb S. If necessary sickle screens should be repeated after 6 months of age. All Sickle Screens performed in UHK are confirmed by Hb (haemoglobin) electrophoresis in CUH.
Turnaround:	Emergency specimens as per arrangement. Routine: 1 - 2 weeks
Ref. Range:	As per report form or contact Haematology, CUH.
Haemoglobinopathy Investigation	
Laboratory:	Sample referred from Haematology to Haematology CUH.

	CUH then refer samples to the National Haemoglobin Reference Laboratory, Oxford Haemophilia Centre, Churchill Hospital, Oxford OX3 7LJ. Specific request form needs to be completed.
Specimen:	**Purple** top Vacuette® EDTA sample: minimum 2 mls blood
Comment:	Consultant recommendation required. Due to elevated levels of HbF, Thalassaemia screening is unsuitable for neonates and patients <6 months A consent form is required to perform this test and is available at www.ouh.nhs.uk/molhaem (Haemoglobinopathies website)
Turnaround:	12 weeks but may vary depending on complexity of analysis
Ref. Range:	See report form.
***Haemophilus influenzae* B Serology**	
Laboratory:	Referred from Microbiology to Eurofins Biomnis Ireland Laboratory
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Used to determine immune status post vaccination.
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
***Haemophilus influenzae* PCR**	
Laboratory:	• CSF sample processed for PCR in Microbiology UHK • EDTA sample referred for PCR from Microbiology to IMSRL, CHI at Temple St.
Specimen:	**CSF** (0.2mL) or **Adult**: 1 x 3mL **Purple** top Vacuette® (EDTA) **Paediatric**: 1 x 1.3 mL serum **Red** capped paediatric sample
Comment:	CSF: Refer to Cerebral Spinal PCR for further details. Blood: Please complete IMSRL request form. Only NICU or PICU patients or patients ≥ 65 years old Sample should be collected as close to onset as possible and prior to administration of antibiotics.
Turnaround:	CSF: Approximately 2 - 3 hour for positive CSF samples. Next routine working day for negative CSF samples. Blood: Samples received by IMSRL before 11am, result between 4pm and 5pm the same day.
Ref. Range:	As per report form.
Hantavirus Antibodies	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Discuss with NVRL clinical team before sending sample.
Turnaround:	By arrangement
Ref. Range:	As per report form
Haptoglobin	
Laboratory:	Specimen referred from Biochemistry to Biochemistry CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form
***Helicobacter pylori* Antigen**	

Laboratory:	Specimen referred from Microbiology to Eurofins Biomnis Ireland Laboratory
Specimen:	**1-2g of stool sample. Sample must <72 hours and frozen upon receipt to laboratory. Watery stools are not suitable for analysis**
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Helicobacter pylori* IgG Serology**	
Laboratory:	Specimen referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This test cannot be processed on samples stored >7 days at 2-8ºC.
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Helminthes-protozoaires PCR	
Laboratory:	Specimen referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**1-2g of stool sample.**
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Helicobacter pylori* Breath Test**	
Contact Endoscopy (066 71854242) for information	
Heparin Induced Thrombocytopaenia (H.I.T.) Screen	
Laboratory:	Samples referred from Haematology to Coagulation Centre in St. James' Hospital, Dublin
Specimen:	Blood: 2 x 4mL **Red** top Vacuette® (clotted). Fresh samples to reach Haematology. The following completed St. James' request form is required: http://www.stjames.ie/media/HIT%20request%20form.pdf
Comment:	H.I.T. may be observed in rare cases in patients who experience marked thrombocytopenia post heparin infusion. H.I.T. screen may identify the particular heparin antibody present.
Turnaround:	1 week.
Ref. Range:	As per report form.
Hepatitis A IgG Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Test is used to determine the immune status to Hepatitis A and is often used to monitor the success of Hepatitis A vaccination. It is often performed prior to vaccination in certain risk groups, e.g., army personnel going on overseas duty.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Hepatitis A IgM Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample

Comment:	A qualitative test for the detection of IgM antibody to Hepatitis A virus. It can be used to determine whether a patient has, or has recently had, acute or asymptomatic Hepatitis A infection. Hepatitis A IgM testing is only routinely performed on samples from children <14yrs or on samples from people recently returned from overseas. Anti-HAV IgM reactivity should be correlated with patient history and other hepatitis markers for diagnosis of past or present infection.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Hepatitis B Australia Antibody (Anti-HBs)	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This test is used to check the immune status to hepatitis B and is often used to monitor the success of hepatitis B vaccination. Please indicate patient vaccination history on the request form.
Turnaround:	Routine: 2 – 3 days. Urgent: within 2 hours of receipt in CUH
Ref. Range:	As per report form
Hepatitis B Core Antibody (anti-HBc)	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Test will detect total antibody to Hepatitis B Core antigen, i.e., IgM and/or IgG. A positive result indicates present or past infection with the Hepatitis B virus. This test should be interpreted in conjunction with other Hepatitis B markers.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Hepatitis B Surface Antigen	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	A positive result may indicate acute or chronic carriage of the Hepatitis B virus. Positive specimens are considered presumptive positive only and a repeat specimen is requested. Positive specimens are tested with a full Hepatitis B virus marker profile, which includes anti-HBc, HBeAg, anti-HBe and anti-HBsAg.
Turnaround:	Routine: 2 – 3 days. Urgent: within 2 hours of receipt in CUH
Ref. Range:	As per report form
Hepatitis B immunoglobulin for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No specimen required.
Clinical indications:	Used for prophylaxis in persons who have had brief contact with persons suffering from hepatitis B. Prophylaxis of infections, which likely occur after needle stick injuries or after contact of the mucosa with hepatitis B positive material. Prophylaxis in newborns of HBs-antigen positive mother.
Turnaround:	1.5 hours Available on call

Ref. Range:	Not applicable
Hepatitis B PCR	
Laboratory:	Referred from Microbiology to Dr. Liam Fanning, MVDRL, CUH.
Specimen:	**Adult**: 2 x 4mL EDTA Blood **Purple** top Vacuette® (preferred sample) **Paediatric**: 2 x 1.3mL paediatric **Red** capped EDTA sample
Comment:	Sample must be separated and frozen within 6 hours. Please complete MVDRL request and transport forms. These forms are available from the Microbiology lab or online: https://www.ucc.ie/en/meddept/people/liam-fanning/mvdrl/
Turnaround:	1 – 2 weeks
Report:	As per report form
Hepatitis C Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Positive specimens are considered presumptive positive only and a repeat specimen is requested. All new positive are referred to NVRL for confirmation.
Turnaround:	Routine: 36 hours. Urgent: within 2 hours of receipt. Please allow more time for samples testing positive in house.
Ref. Range:	As per report form
Hepatitis C Antigen	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette®
Comment:	Test performed weekly. This test is restricted to dialysis patients. A repeat sample is requested for all new positives.
Turnaround:	8 days
Report:	As per report form
Hepatitis C PCR	
Laboratory:	Referred from Microbiology to Dr. Liam Fanning, MVDRL, CUH.
Specimen:	**Adult**: 2 X Blood 4mL **Red** top Vacuette® **Paediatric**: 2 x 1.3 mL serum **Brown** capped paediatric sample
Comment:	Sample must be separated and frozen within 6 hours. Please complete MVDRL request and transport forms. These forms are available from the Microbiology lab or online: https://www.ucc.ie/en/meddept/people/liam-fanning/mvdrl/
Turnaround:	2 – 3 weeks
Report:	As per report form
Hepatitis D (Delta) Virus	
Laboratory:	Referred from Microbiology to NVRL
Specimen:	**Adult**: 2 X Blood 4mL **Red** top Vacuette® **Paediatric**: 2 x 1.3 mL serum **Brown** capped paediatric sample
	Hepatitis delta virus (HDV) is a sub-viral particle that relies on hepatitis B virus (HBV) to cause infection in humans. Hep B status must be provided when requesting HDV. HDV is not tested on HBsAg negative samples.
Turnaround:	1 week
Report:	As per report form

Hepatitis E IgG	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: Blood 4mL **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 – 3 working days
Report:	As per report form
Hepatitis E IgM	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: Blood 4mL **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 – 3 working days
Report:	As per report form
Hepatitis Screen	
See: Hepatitis B Surface Antigen and Hepatitis C Antibody	
Hereditary Spherocytosis (HS) Screen	
Laboratory:	Samples referred from Haematology to Crumlin (for Paeds) or St James' (for adults)
Specimen:	**Paediatric**: - 2 x Paediatric 1.3mL EDTA specimens to reach Haematology before 10 am daily. Samples referred to Crumlin Children's Hospital for Hereditary Spherocytosis (HS) Screen. **Adult**: 2 X 3mL EDTA **Purple** top Vacuette® to reach Haematology before 10 am daily. Samples referred to St James' Hosp for staining of RBCs. Consultant recommendation and clinical details are required.
Comment:	H.S. is an inherited disorder of red cell membrane resulting in reduced red cell lifespan and spherocytosis. EMA is a protein, which is reduced or absent in HS.
Turnaround:	1 week.
Ref. Range:	As per report form.
Herpes Simplex virus IgG	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	5 working days
Ref. Range:	As per report form
Herpes Simplex Virus 1/2 Molecular	
Laboratory:	• CSF sample processed in Microbiology, UHK • Swabs, blood samples etc referred from microbiology to NVRL
Specimen:	Viral swab, CSF (200µl), urine, nasopharyngeal aspirate, sputum, broncho-alveolar lavage, 3mL EDTA **Purple** top Vacuette®
Comment:	CSF: Refer to cerebral spinal fluid for further information. Plasma must be frozen within 24 hours.
Turnaround:	Microbiology UHK: Approx. 1 hr. for positive CSF samples. Next routine working day for negative CSF samples. NVRL: 5 working days
Ref. Range:	As per report form
High Density Lipoprotein (HDL)	
Laboratory:	Biochemistry

Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	If performed as part of a Lipoprotein Profile, the patient MUST be fasting for a minimum of **14 hours** prior to obtaining sample.
Turnaround:	UHK-in-house request routine 2-4 hrs GP request 3-5 working days
Ref. Range:	HDL Target Male >1.0 mmol/L – Female >1.2 mmol/L
High Vaginal Swab (HVS)	
See: Genital Swab	
Histone Antibodies –	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Histoplasma Antibodies	
Laboratory:	Samples referred from Microbiology to UKHSA Mycology Reference Laboratory, Bristol
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 month
Ref. Range:	As per report form
HLA Typing	
Laboratory:	Blood Transfusion Laboratory for referral to IBTS Dublin
Specimen:	3 x 3mL EDTA **Purple** top Vacuette®,
Clinical indications:	Antigen typing of human leukocyte antigens used for tissue typing of prospective donors and recipients. Some association of certain antigens with disease is noted e.g. HLA B27 with ankylosing spondylitis.
Comment:	Please state family relationships, if applicable HLA typing referred to: HLA Department, I.B.T.S., National Blood Centre, James's St., Dublin 8.
Turnaround:	3 weeks.
Ref. Range:	Not Applicable
Homocysteine (HOMOC)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4 mL blood EDTA- **Purple** top Vacuette® Samples must be **separated and frozen < 4 hrs.**
Comment :	Homocysteine is a sulphur-containing amino- acid present in plasma in bound and free forms collectively known as homocysteine
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Homocysteine, Total (Methionine and cystine)	
Laboratory:	Sample referred from Biochemistry to Metabolic Laboratory, Children's Health Ireland, Temple Street
Specimen:	**Paediatric**: 2 x 1.3 mL Lithium Heparin bottles – **Orange** cap paediatric tubes

Comment :	Phone specimen reception prior to taking samples as there are special preparation requirements for samples on receipt of this request.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form
Homovanilic Acid (HVA)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	24-hour urine sample collected into a container that has acid added. 24 hr urine containers are available from the laboratory.
Comment:	**The patient must not eat the following items 48 hours before collection;** bananas, chocolate, tomatoes, grapefruit, walnuts, plums, dried fruit, citrus fruit, avocado, grapefruit, tea and coffee.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Horse Dander	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	*Note: This test is not accredited by INAB* Clinical details to be provided
Turnaround:	2-3 weeks
Ref. Range:	See report form.
Human Papilloma Virus (HPV)	
No test available in UHK. For further information contact the Cill Ide Colposcopy Clinic in UHK.	
HTLV-I / II Antibodies	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	**Adults**: Blood 4mL **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Performed by a reference laboratory (NVRL)
Turnaround:	5 working days
Ref. Range:	As per report form
Human Chorionic Gonadotrophin (βHCG)	
Laboratory:	Biochemistry
Specimen:	**Adult: Blood** - 4.0 mL blood clotted – **Red** top Vacuette®
Comment:	Levels increase progressively throughout pregnancy from the first to the twelfth week and then gradually fall until term. HCG testing of **urine** samples is available at ward level
Turnaround	UHK-in-house request routine 24-48hrs, urgent <2hrs GP request 5 - 8 working days
Ref. Range:	As per report
Human Chorionic Gonadotrophin Pregnancy Test (POCT)	
Laboratory:	Available throughout UHK wards on urinalysis devices
Specimen:	Urine - 200 µL of Urine required
Comment:	A confirmatory serum HCG should be sent to the Laboratory for all Positive results. ***Note**: This is not an INAB accredited test*

Turnaround	Test time: 5 minutes
Ref. Range:	Positive, Negative or Inconclusive
Human Herpes Virus 6 (HHV-6) Molecular	
Laboratory:	• CSF sample is processed in Microbiology UHK • Blood samples referred from Microbiology to NVRL.
Specimen:	3mL EDTA **Purple** top Vacuette®,
Comment:	Serum must be frozen within 24 hours Blood samples are not routinely tests in those >3yrs of age
Turnaround:	Microbiology UHK: Approx. 1 hr. for positive CSF samples Next routine working day for negative CSF samples NVRL: 5 working days
Ref. Range:	As per report form
Human Herpes Virus 7 (HHV-7) Molecular	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	3mL EDTA **Purple** top Vacuette®, Blood 4mL **Red** top Vacuette®
Comment:	Plasma must be frozen within 24 hours, please contact to NVRL prior to ordering
Turnaround:	2 - 3 weeks
Ref. Range:	As per report form
Human Herpes Virus 8 (HHV-8) Molecular	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	3mL EDTA **Purple** top Vacuette®, Blood 4mL **Red** top Vacuette®
Comment:	Plasma must be frozen within 24 hours, please contact to NVRL prior to ordering
Turnaround:	2 - 3 weeks
Ref. Range:	As per report form
Human Immunodeficiency Virus (HIV) Serology	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adults**: Blood 4mL **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Detects HIV antigen and antibody to HIV1 and HIV2. Newly positive specimens are referred to the NVRL for confirmation. A repeat specimen is requested on all newly diagnosed positive patients.
Turnaround:	Negative samples: 36 hours Samples positive in house: 2 weeks (confirmation required)
Ref. Range:	As per report form
Human Immunodeficiency Virus (HIV) PCR	
Laboratory:	Specimen referred from Microbiology to Dr. Liam Fanning, MVDRL, CUH.
Specimen:	**Adult**: 2 x 4mL EDTA Blood **Purple** top Vacuette®. **Paediatric**: 1 x 1.3mL EDTA **Red** capped paediatric bottle
Comment:	Plasma must be separated and frozen within 6 hours. Please complete MVDRL request and transport forms. These forms are available from the Microbiology lab or online: https://www.ucc.ie/en/meddept/people/liam-fanning/mvdrl/
Turnaround:	5 days
Ref. Range:	As per report form
Human Metapneumovirus Molecular	

Laboratory:	Specimen referred from Microbiology to NVRL.
Specimen:	NVRL: Viral swab (nasopharyngeal, throat), nasopharyngeal aspirate, sputum, broncho-alveolar lavage. Microbiology UHK: Nasopharyngeal viral swab
Comment:	Included as part of the Respiratory Viral screen
Turnaround:	NVRL: 5 days UHK Microbiology: Dependent on testing protocol. Assay TAT is approx. 1 hr.
Ref. Range:	As per report form
Hydatid Cyst	
See: Echinococcus Antibodies	
5 Hydroxyindolacetic Acid - 5-HIAA	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 24-hour acidified urine sample collected into a container. 24 hr urine containers are available from the CSR laboratory. **Paediatrics**: Spot urine
Comment:	**The patient must not eat the following items 48 hours before collection;** bananas, chocolate, tomatoes, grapefruit, walnuts, plums, dried fruit, citrus fruit, avocado, pineapple tea and coffee.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Hydroxyproline – Blood	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4 mL Li Heparin Blood **Green** top Vacuette®.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Hydroxyproline – Urine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	24-hour urine collection, no additive required. **Aliquot and freeze < 30 mins post collection.**
Comment:	Patient should be on **GELATIN-FREE DIET (no meat or fish) for 72 hours** prior to and during test**.** Please supply height and weight of patient if correction for body surface required.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
IgA Anti-Endomysial Antibodies	
Laboratory:	Specimen referred from Biochemistry to CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Samples **only** referred to CUH following an **equivocal/positive** Tissue Transglutaminase antibody (Ttg) result which is part of coeliac screen. See "Coeliac Screen"
Turnaround:	2 - 3 weeks
Ref. Range:	See report form
IgE Total	

Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	***Note****: This is not an INAB accredited test* IgE levels may be raised in atopic allergies. Total IgE levels correlate with allergy in 70% of cases.
Turnaround:	Routine request 2 – 3 weeks
Ref. Range:	See report form.
IgG Subclasses (IGG 1,2,3,4)	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	Subclasses are measured in suspected cases of immunodeficiency and are requested as a profile.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Immunofixation (part of electrophoresis profile)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette®
Clinical Data:	Immunofixation is performed on samples with suspect protein bands or results fall into criteria for fixing. Immunofixation is reported in conjunction with electrophoresis
Comment:	Non haemolysed samples only
Turnaround:	2 - 3 weeks
Ref. Range:	As per report form
Immunoglobulins (IgA, IgG, IgM)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical data:	Elevated levels of a single immunoglobulin class are seen in myeloma (See "***Protein Electrophoresis"***). • A predominant **increase of IgG** is found in infections, auto-immune disease and chronic active hepatitis; • **IgA increase** is seen in chronic intestinal disease, respiratory infections and alcoholic cirrhosis; • **IgM increase** may be found in parasitaemia and primary biliary cirrhosis.
Comment:	Immunoglobulin levels are analysed separately or as part of an Electrophoresis screen (See also "*Protein Electrophoresis"*).
Turnaround:	UHK-in-house request routine 2-4 hrs GP request 3 – 5 working days
Ref. Range:	As per report
Immunoglobulins D	
Laboratory:	Specimen referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Immunoglobulin gamma for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No Specimen required
Clinical indications:	Replacement therapy in adults and juveniles of 12 years and older in primary immunodeficiency syndromes. Replacement therapy in myeloma or chronic lymphatic leukaemia with severe secondary hypogammaglobulinaemia and recurrent infections. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Comment:	Available in preparation that contains 5g in 50ml. Administered via subcutaneous or intramuscular route.
Turnaround:	1 routine working day Product is ordered from the supplier on a patient named basis
Ref. Range:	Not Applicable
Immunophenotyping	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Fresh blood or bone marrow; 3mL **Purple** top Vacuette® (EDTA). Fresh sample to reach Haematology UHK by 10am.
Comment:	Blood or bone marrow samples may be required for immunophenotyping to elucidate markers for identification and monitoring of particular disease states, such as leukaemia. Immunophenotyping is a specialised test, usually performed at request or recommendation of Haematology clinicians in CUH. Provide relevant clinical details on request form.
Turnaround:	Routine 72 hrs upon receipt in CUH. Urgent as per arrangement with CUH.
Ref. Range:	As per report form.
Imuran (Azathiaprine)	
See 'Thiopurine S-methyltransferase' TPMT	
Infectious Mononucleosis Antibody	
Laboratory:	Haematology.
Specimen:	Blood: 3mL **Purple** top Vacuette® (EDTA) or Red capped Paediatric 1.2 mL EDTA. Specimens must be < 3 days old. Note: Serum samples are also suitable in the absence of EDTA samples however EDTA is the preferred sample type.
Comment:	Results should be assessed in conjunction with clinical and haematological findings.
Turnaround:	Emergency < 4hrs, In-house < 8hrs, out patients and GPs < 2 routine working days.
Ref. Range:	As per report form
Infliximab and Antibodies	
Laboratory:	Sample referred from Biochemistry to Blood Sciences Lab, Royal Devon University Healthcare NHS Foundation Trust
Specimen:	4ml blood clotted – **Red** top Vacuette®
Comment:	Also known as Remsira and Inflectra

Turnaround:	2 - 3 weeks
Ref. Range:	See report form
Influenza Virus A and B Molecular	
Laboratory:	Testing for flu A/B is performed in Microbiology laboratory UHK in combination with RSV and SARS CoV-2 testing.
Specimen:	Viral swab -nasopharyngeal (preferred) or nasal & throat
Comment:	Please note: This test is **only** available in-house. For other requesting locations please refer to Respiratory Viral Screen Molecular.
Turnaround:	<4 hours (Monday – Sunday 8 am to 8pm)
Ref. Range:	As per report form.
Inhibin B	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4ml blood clotted – **Red** top Vacuette® **Separated and frozen <4 hour**
Clinical Data:	Inhibin B serum concentration provides a measure of ovarian reserve, the ovary's capacity to respond to gonadotropin stimulation.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
INR Prothrombin Time (INR)	
Laboratory:	Haematology
Specimen:	Adult: Blood; 3mL **Blue** top Vacuette® (sodium citrate 3.2%). Paediatric bottles (1.2mL Sodium Citrate **Green** Top) are available in Haematology.
Comment:	Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed. Samples for INR are accepted for analysis up to **48** hours old. The test is used to monitor warfarin (and other coumarin drug) therapy. Many commonly administered drugs may affect the results. This should be kept in mind especially when unusual or unexpected results have been obtained.
Turnaround:	Emergency < 2hrs, In-house < 4hrs, out patients and GPs < 24hrs.
Ref. Range:	As per report form
Insulin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze within 4 hours** • Patient should be fasting. • Haemolysis may invalidate.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Insulin Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 4 hours**

Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Insulin Like Growth Factor 1 (IGF1) (Somatomedin C)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	**Separate and freeze < 4 hour**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Insulin Like Growth Factor 2 (IGF2)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 4 hours**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Insulin Like Growth Factor Binding Protein – 3 (IGF-BP3)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 4 hours**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Interleukin 6	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood EDTA – **Purple** top Vacuette®. **Separate and freeze < 4hrs.**
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Intraocular Fluids / Corneal Scrapings	
Testing not available in Microbiology UHK. Please contact Microbiology CUH for information.	
Intra-Uterine Contraceptive Device (IUCD)	
Laboratory:	Microbiology
Specimen:	Testing is indicated only in the case of query infection. Place the entire IUD, including any exudate, in a clean, sterile, leak-proof container. Transport ASAP. If processing is delayed, refrigeration is preferable to storage at room temperature.
Comment:	*Actinomyces* spp. testing is available on request only. *Actinomyces* spp. testing will automatically be performed if morphologically evident on the gram stain. Test performed Mon–Fri.
Turnaround:	Prelim: 24 hours; Final: 48 - 72 hours. Note: Culture for Actinomycosis takes up to 10 days.

Report:	As per report form
Intra-Uterine Infection Screen / TORCH Screen	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	TORCH Screen includes *Toxoplasma gondii* IgM, Rubella IgM, CMV IgM and Parvovirus B19 IgM.
Turnaround:	3 – 4 days for Toxoplasma IgM, Rubella IgM, CMV IgM and Parvovirus B19 IgM. Positive Toxoplasma IgM must be confirmed by reference laboratory – at least 3 weeks.
Ref. Range:	As per report form
Intravascular Cannulae - Culture	
See: Catheter/Intravascular Cannulae	
Intrinsic Factor Antibodies	
Laboratory:	Samples referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Blood; 4mL **Red** top Vacuette® (clotted blood)
Comment:	Tests for IF antibodies are carried out on patients with suspected megaloblastic anaemia and a depressed serum vitamin B_{12} to aid in the diagnosis of pernicious anaemia.
Turnaround:	1 – 2 weeks.
Ref. Range:	As per report or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Iron Profile	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**A fasting specimen is recommended**. Marked haemolysis invalidates the result Iron profile includes Iron, Transferrin, % transferrin saturation (Calculated) and TIBC (Calculated)
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 days
Ref. Range:	As per report
JAK2	
Laboratory:	Samples referred from Haematology to CMD, St. James' Hospital, Dublin
Specimen:	Blood; 3 X 3mL **Purple** top Vacuette® (EDTA)
Comment:	The JAK2 V617F test may be used along with other tests such as erythropoietin to help diagnose the myeloproliferative disorders (MPDs), polycythemia vera (PV), essential thrombocythemia (ET), and agnogenic myeloid metaplasia (primary myelofibrosis, PMF). Consultant recommendation and clinical details required.
Turnaround:	3-4 weeks
Ref. Range	As per report
Japanese Encephalitis Virus	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample

Turnaround:	1 - 2 weeks
Ref. Range:	As per report form
JC Virus Molecular	
Laboratory:	Microbiology laboratory referred to NVRL
Specimen:	4 ml blood clotted – **Red** top Vacuette®, Urine, CSF
Comment:	Serum must be frozen <24 hours
Turnaround:	5 working days
Ref. Range:	As per report form
Joint Fluid - Microbiology	
See: Sterile Body Fluid – Microscopy and Culture.	
Keppra® (Levetiracetam)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **White** top Vacuette® **Separate and freeze within 4 hrs.**
Clinical data:	Large inter-individual differences exist between the dose/plasma concentration response of levetiracetam and there is a concentration range within which the drug is generally effective and unlikely to cause toxicity.
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Ketones (POCT)	
Laboratory:	Available throughout Hospital wards on POCT device
Specimen:	Whole Blood Capillary (Fingerprick)
Turnaround:	Time to result: 10 secs
Ref. Range:	0 - 0.6 mmol/L
***Kingella kingae* PCR**	
Laboratory:	Sample referred for PCR from Microbiology to IMSRL, CHI at Temple St.
Specimen:	**Fluid, Aspirate, Pus, Tissue**
Comment:	Indications for testing: Osteomyelitic/septic arthritis only if <5 yr old. Sample should be collected as close to onset as possible and prior to administration of antibiotics.
Turnaround:	1 -2 working day
Ref. Range:	As per report form.
Kleihauer Test for Foetal Cells	
Laboratory:	Blood transfusion
Specimen:	6 mL EDTA **Pink** top Vacuette®
Comment:	It is a procedure that identifies individual cells containing HB F, it has proved useful in determining the extent of foetal bleed into the maternal circulation, and can be used to calculate the dose of Anti D Immunoglobulin to be administered to the patient.
Turnaround:	1 routine working day (Mon – Fri) No arrangements for emergency specimens
Ref. Range:	Bleed Volume dictates amount of Immunoglobulin required.
Lacrimal (Tear duct)	
Laboratory:	Microbiology (Main laboratory)

Specimen:	Stones / secretions should be collected into a clean, sterile, Leak-proof container and immediately transported to the laboratory.
Comment:	Test performed routinely Mon–Fri.
Turnaround:	Prelim: 24 hours; Final: 48 - 72 hours.
Report:	Culture report: Any clinically significant isolate with the appropriate sensitivities.
Lactate (Blood Gas) (POCT)	
Laboratory:	Performed on Blood Gas POCT devices which are available in Intensive Care (Annagh ICU), Labour ward (Ardfert), Emly Ward, Coronary Care Unit (CCU/HDU), ED RESUS, ED Triage Hub, Chronic Disease Management (CDM) Hub and Theatre. Not available in the Laboratory.
Specimen:	Lithium Heparin syringe or Capillary 150uL required for full test panel
Comment:	Only available on ABG analysers.
Turnaround:	Immediately and daily throughout 24 hours
Ref. Range:	See report form
Lactate (Paediatrics - for Metabolic Screening and Newcastle Workups Only)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Paediatric**: 1.3 ml Sodium Flouride – **Yellow** top Paediatric Bottle
Comment:	**Separate and freeze < 1 hour**
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lactate dehydrogenase (LDH)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Note**: Transport of the sample via pneumatic tube system may cause elevated LDH. If elevated LDH does not fit the clinical picture for this patient, please send a repeat sample and hand deliver to the laboratory **Note**: Activity in blood may be higher in infants.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP requests 3 - 5 working days
Ref. Range:	See report form.
Lamotrigine (Lamictal®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4ml blood clotted – White top Vacuette®. **Do Not use gel separator tubes** **Separate and freeze within 4 hrs.**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Largactil® (Chlorpromazine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4ml blood clotted – White top Vacuette®. **Separate and freeze within 4 hrs.**
Turnaround:	2-3 weeks

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lassa Virus	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Sample must be separated and frozen at -20°C. Discuss with NVRL clinical team before sending samples
Turnaround:	1 - 2 weeks
Ref. Range:	As per report form
Latex (K82)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment	Latex is performed in UHK Biochemistry
Turnaround:	2-3 weeks
Ref. Range:	See report form
Lead (PB)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 3.0 mL Lithium Heparin non-gel plasma – **Green** top Vacuette®
Comment:	Do **not** separate the sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Legionella pneumophilia* Urinary Antigen**	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	10 ml Urine
Comment:	Test performed only by special arrangement with Microbiology Consultant
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Leishmania Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Leptospira interrogans IgM	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	IgM serology is recommended from the 2nd week until 2-3 months. Only to be performed during the immune phase approximately 7 days after the onset of the disease.
Turnaround:	1 – 2 weeks

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Leptospirosis PCR	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette® **Purple** top Vacuette® EDTA, Urine, CSF
Comment:	PCR tests are recommended: in blood up to D10, in CSF from D5 to D15 and in repeated urine samples from D15 to around D25.
Turnaround:	1 week.
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lidocaine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Separate and freeze within 4 hours
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lipase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 ml blood clotted – **Red** top Vacuette®
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lipid Profile	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 ml blood clotted – **Red** top Vacuette®
Comment:	Lipid profile consists of Cholesterol, Triglycerides, HDL and LDL
Turnaround:	UHK-in-house request routine 2-4 hrs, GP request 3 - 5 working days
Ref. Range:	As per report form
Listeria monocytogenes PCR	
Laboratory:	CSF sample is processed in Microbiology UHK. Blood sample is referred from Microbiology to IMSRL, CHI at Temple St.
Specimen:	**CSF sample (200µL)** **Adult**: 1 x 3mL **Purple** top Vacuette® (EDTA) **Paediatric** 1 x 1.3mL **Red**-capped paediatric EDTA.
Comment:	CSF: Refer to cerebral spinal fluid PCR for further information. Blood: Please complete IMSRL request form. Only in infants <7 days, for children ≥ days discuss with IMSRL Sample should be collected as close to onset as possible and prior to administration of antibiotics.
Turnaround:	In-house: Approx. 1 hr. for positive CSF samples and next day for negative CSF. IMSRL Referral lab: Same day TAT (between 16.00-17.00) if received before 11.00am otherwise next working day.
Ref. Range:	As per report form
Lithium	

Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Comment:	Optimal therapeutic range for sample taken 12 hours post dose at steady state.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 working days
Ref. Range:	As per report
Long Chain Fatty Acids C12 to C20	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2mL **Purple** top Vacuette® (EDTA). **Paediatric**: 1.3mL **Red** cap paediatric bottle
Comment:	**Separate and freeze < 1 hour** **Clinical details required**
Turnaround:	2-3 Weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Low Density lipoprotein (LDL)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Patient should be fasting for at least 14 hours.** This is a calculated test available as part of a lipoprotein profile. If Triglyceride levels are >4.5mmol/L the LDL result is not accurate & will not be provided in the final report.
Turnaround:	UHK-in-house request routine 2-4 hrs GP request 3 - 5 working days
Ref. Range:	LDL Targets <3.0 mmol/L
Lupus Anticoagulant Screen	
Laboratory:	Samples referred from Haematology to Haematology. CUH.
Specimen:	Blood; 2 x 3mL **Blue** top Vacuette® (sodium citrate 3.2%) & 1 x 4ml **Red** top Vacuette®
Comment:	See section 13.12 for special collection procedures. Test available Monday to Friday, during routine working hours in C.U.H. Lupus anticoagulants are immunoglobulins that interfere with phospholipid -dependent coagulation tests. The screen includes the following tests: PT, APTT, Fibrinogen assay, AFSL, and DVVT. Use specific request form and patient consent form available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart.
Turnaround:	Routine: 2 - 3 weeks, Urgents requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Luteinising Hormone - LH	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Comment:	State day of cycle.
Turnaround:	Routine request 5 – 8 working days
Ref. Range	As per report form

Lyme Serology (*Borrelia burgdorferi)* Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Blood 4mL **Red** top Vacuette®, CSF (1 mL)
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lyme PCR (*Borrelia burgdorferi)*	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	Biopsy (skin, joint), joint fluid, CSF (1mL), Blood 4mL **Red** top Vacuette®, 2mL **Purple** top Vacuette® (EDTA).
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Lysosomal Enzyme Screen	
Laboratory:	Sample referred from Biochemistry to Great Ormond Street Hospital via Biomnis Courier
Specimen:	**Adult**: 2 x 4.0 mL Lithium Heparin whole blood - **Green** top Vacuette® & MSU (**Freeze urine immediately)**
Comment:	**Information form must be completed**
Turnaround:	2 months
Ref. Range:	As per report
Magnesium (Blood)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	This test is also available as part of the Bone Profile.
Comment:	Haemolysis may invalidate result. Results not issued on samples > 1 day old if sample has not been centrifuged on the same day as collection
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3 - 5 working days
Ref. Range:	As per report
Magnesium (Urine)	
Laboratory:	Biochemistry
Specimen:	24-hour urine sample collected into a container, which has been acidified. 24 hr urine containers are available from laboratory reception. A spot urine may also be used.
Turnaround:	Routine request 3-5 working days
Ref. Range:	As per report
Malaria Antibodies	
Not indicated for diagnosis. Refer to "Malaria Screen".	
Malaria Screen	
Laboratory:	Haematology
Specimen:	Blood; 3mL **Purple** top Vacuette® (EDTA) or paediatric 1.2 mL EDTA Red Top. Sample should be < 2hrs old ideally but will be accepted up to 24 hrs. A fresh repeat sample may be required to identify species / refer for confirmation if too old.

	Clinical details are **mandatory** to include recent travel and prophylactic drugs. **Haematology must be notified by phone of all Malaria requests.**
Comment:	An immunodiagnostic test is used for the detection of circulating *Plasmodium falciparum* and *Plasmodium vivax* antigens in whole blood. Blood films are examined to confirm presence of same and to identify other forms of Malaria e.g. *P. malariae, P. ovale and P. knowlesi* Percentage of parasitic infestation is provided for *P.falciparum* & *P. knowlesi.*
Turnaround:	Results available in < 24 hours. Confirmation referral report available in 1 week approximately.
Ref. Range:	As per report form.
Manganese	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4.0 mL blood **Blue** top Vacuette® in a **"Trace free metal tube"** – available from the laboratory.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Measles IgG antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Is also included as part of the MMR screen.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Measles IgM antibody	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	Blood 4mL **Red** top Vacuette® , oral fluid NB: A specific buccal foam swab and request form for oral fluid are required, both of which are available from Microbiology.
Comment:	Measles IgM is done on all positive measles PCR results.
Turnaround:	1 week
Ref. Range:	As per report form
Measles Molecular (RNA)	
Laboratory:	Samples referred from Microbiology to the NVRL
Specimen:	Blood 4mL **Red** top Vacuette®, oral fluid, Urine, CSF NB: A specific buccal foam swab and request form for oral fluid are required, both of which are available from Microbiology.
Comment	Serum must be frozen >24 hours Other sample type 4oC.
Turnaround:	7 working days
Ref. Range:	As per report form
Meningitis C Vaccine Antibodies	
Laboratory:	Referred from Microbiology to the IMSRL, Temple St,
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Test performed by reference laboratory.
Turnaround:	8-10 weeks
Ref. Range:	As per report form

Meningococcal PCR	
See: Neisseria meningitidis PCR	
Mercury (HG) – Blood	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 3.0 mL Lithium Heparin non-gel plasma – **Green** top Vacuette®
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Mercury –Urine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Spot Urine (10-20ml)
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
MERS CoV	
Laboratory:	Referred from Microbiology to the NVRL
Specimen:	Respiratory Throat Swab
Comment:	By arrangement with consultant microbiologist.
Turnaround:	Organised by arrangement
Ref. Range:	As per report form
Metabolic Screen - Blood (Serum Amino Acids)	
Laboratory:	Sample referred from Biochemistry to the metabolic laboratory, Children's Health Ireland, Temple Street, Dublin preferably on Mon and Tues
Specimen:	**Paediatric:** 1.3mL Lithium Heparin **Orange** cap paediatric bottle. Please complete specific Temple Street request form with each request
Comment:	**Separate and freeze < 1 hour. Clinical details required**
Turnaround:	2-3 weeks
Ref. Range:	See report or contact Metabolic Laboratory Temple Street Hospital.
Metabolic Screen - Urine (Urinary Amino Acids)	
Laboratory:	Sample referred from Biochemistry to the metabolic laboratory, Children's Health Ireland, Temple Street, Dublin preferably on Mon and Tues
Specimen:	Spot urine, **Freeze immediately**
Comment:	**Clinical details required**
Turnaround:	2-3 weeks
Ref. Range:	See report or contact the Metabolic Laboratory, Temple Street Hospital.
Metanephrine Profile - Blood	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 3.0 mL Lithium Heparin non-gel plasma – **Green** top Vacuette® **Paediatric**: 1.3 mL Lithium heparin – **Orange** top
Comment:	***Specimen must be*** *separated and frozen < 1 hour.* ***Fasting sample required***
Turnaround:	2 - 3 weeks

Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Metanephrine Profile – Urine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Acidified urine collection required. 24 hour urine containers are available from the laboratory reception.
Comment:	**Patient must not eat the following items 48 hours before collection;** bananas, chocolate, tomatoes, grapefruit, walnuts, plums, dried fruit, citrus fruit, avocado, grapefruit, tea and coffee.
Turnaround:	2-3 Weeks
Ref. Range:	See report form or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Metformin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4.0 mL clotted blood - **White** top Vacuette®
Comment:	Gel Separator tubes should **not** be used
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Methadone	
See: "Toxicology / Drug Screen".	
Methaemoglobin	
Laboratory:	Presently available on Point of Care blood gas analysers
Specimen:	Lithium Heparin syringe
Clinical Data:	There are two different types of methhaemoglobin: one is due to the congenital haemoglobin abnormality (M) and the other type, true methaemoglobin can be reduced back to haemoglobin by certain enzymes and Laboratory in this case is due either to a deficiency of these enzymes or poisoning.
Comment:	If delay between sampling and analysis is greater than 15 mins, sample must be kept on ice.
Turnaround:	Daily, throughout 24 hours
Ref. Range:	As per report
Methamphetamine (Urine)	
See: "Toxicology / Drug Screen".	
Methicillin-Resistant *Staph aureus* (MRSA)	
Laboratory:	Microbiology
Specimen:	Swabs should be placed in Ames charcoal containing transport media. Use a clean, sterile, leak-proof container for urine and sputum. Transport specimens ASAP. If processing is delayed, refrigeration is preferable to storage at ambient temperature.
Comment:	Test performed Mon–Fri. Label all microbiology forms with MRSA SCREEN. Indicate if the patient was previously MRSA positive. In screening investigations, patient surveillance cultures often include one swab from both nares and one swab form both sides of groin (2 swabs). The anterior nares are the usual site cultured from hospital staff.

	Axilla swabs are not tested as part of the recommended screening protocol. If axilla swab testing is required if requested by an external hospital please indicate this on the request form. Swabs from nares, groin and umbilicus are sufficient for infants and neonates. A separate specimen is required if routine culture and sensitivity is required.
Turnaround:	24 – 72 hours
Report	As per report form
Methotrexate	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted - **White** top Vacuette®
Comment:	Full details of dose size, dose regimen and mode of administration must accompany request. Monitoring of drug levels is appropriate only for patients on moderate to high dose Methotrexate treatment (i.e. >50mg/m^2)
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Methylmalonic acid	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL Lithium Heparin plasma - **Green** top Vacuette®
Comment:	**Freeze in <1hr**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Methylene Tetra Hydrofolate Reductase (MTHFR)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 3.0 mL **Purple** top Vacuette® (EDTA).
Turnaround:	2 - 3 weeks.
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Microalbumin & Microalbumin:Creatinine Ratio	
Laboratory:	Biochemistry, UHK
Specimen:	A random/spot urine sample is required in a urine monovette tube
Comment:	Can be ordered individually or as part of Microalbumin:Creatinine ratio
Turnaround:	3-5 working days
Ref. Range:	As per report form
Microarray	
Laboratory:	Sample referred from Biochemistry to National Centre for Medical Genetics (NCMG)
Specimen:	**Paediatric**. 1.3mL EDTA bottle **Red** top paediatric bottle.
Comment	NCMG request form available on www.genetics.ie
Turnaround:	6 – 10 weeks
Ref. Range:	As per report form.
Midstream Urine (MSU)	

See: Urine Microscopy and Culture	
Monkey Pox	
Laboratory:	Sample referred from Microbiology to NVRL
Specimen:	**1 viral swab of the lesion fluid**.
Comment	Specimen must be double bagged and hand delivered to laboratory. All requests must be consultant approved.
Turnaround:	1 week
Ref. Range:	As per report form.
Morphine	
See: "Toxicology / Drug Screen".	
Mouth Swab	
Laboratory:	Microbiology
Specimen:	Swab pus if present otherwise swab any lesions or inflamed areas with a sterile swab in Ames charcoal transport medium. A tongue depressor or spatula may be helpful to aid vision and avoid contamination from other parts of the mouth. If processing is delayed, refrigeration is preferable to storage at ambient temperature.
Comment:	Test performed routinely Mon–Fri. For possible herpes infection consider a Viral Culture (see "Herpes Simplex Virus" section). In such cases a separate viral transport swab is required. Indicate if Vincent's angina is suspected.
Turnaround:	Microscopy for Vincent's angina (by request only): 24 hours. Culture: up to one week.
Report:	As per report form
Mucopolysacharrides (GAGS)	
See: Metabolic Screen- Urine. Part of Urinary Metabolic screen. Refer	
Mumps IgG Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Test is included as part of the MMR screen.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Mumps IgM antibody	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Mumps IgM is done on all positive Mumps PCR results
Turnaround:	1 week
Ref. Range:	As per report form
Mumps Molecular	
Laboratory:	Samples referred from Microbiology to the NVRL
Specimen:	Oral fluid, viral throat swab, CSF, urine, Blood 4mL **Red** top Vacuette® NB: A specific buccal viral foam swab and request form for oral fluid are required, both of which are available from Microbiology.
Comment	Serum must be frozen <24 hours Other sample types 4°C

Turnaround:	11 week
Ref. Range:	As per report form
Muscle Biopsies	
Laboratory:	Histopathology (Referred to CUH, NeuroLaboratory Dept.)
Specimen:	Fresh Tissue
Comment:	Immediate dispatch to (UHK) laboratory. Inform (UHK) laboratory 24 hours before taking the biopsy.
Turnaround:	5-10 days.
Clinical Indications	Refer to Laboratory User Manual, CUH, or contact Histopathology laboratory, CUH
Mycobacteria Testing	
Laboratory:	Samples referred from Microbiology to TB Laboratory, CUH
Specimen:	**Sputum –** collect early in the morning on at least 3 consecutive days. Sputum should be expectorated from the lower respiratory tract by deep coughing. Preferably, collect a minimum volume of 5mL per sample. Saliva and postnasal secretions are not suitable. Specimens collected on 3 consecutive days should not be pooled. This may be important if Mycobacteria other than Mycobacterium tuberculosis are isolated as interpretation is based on repeated isolation. **Bronchial washings –** Minimum sample size is preferably 5 mL. **Urine –** Urine samples are not routinely processed, please contact CUH for advice if required. **Gastric lavage fluid –** It is essential to contact CUH prior to taking this sample to arrange processing of same. Collect early in the morning (before breakfast) on 3 consecutive days. Preferably, collect a minimum volume of 5 mL per sample. If processing is delayed for more than 4h, the gastric acid should be neutralised by adding approximately 100mg of sodium carbonate to approximately 50 mL of specimen. **CSF, body fluids, aspirates, pus –** collect aseptically as much as possible into a sterile container. Preferably, a volume of 5-10 mL of CSF is required. **Skin/tissue biopsy/post-mortem specimens –** collect aseptically into a sterile container without preservative. Select a caseous portion if possible. The majority of organisms will be found in the periphery of a caseous lesion. As large a sample as possible should be sent. Microscopy is generally not performed on swabs.
Comment:	• Microscopy and culture performed routinely Monday to Friday 9-5pm. If smear results are desired on the same day that the specimen is submitted, the specimen should reach the TB lab before 3pm and the TB laboratory notified. • For the initial diagnosis of mycobacterial infection all specimens should be fresh and taken when possible before anti-tuberculosis treatment is started. Specimens should be transported as soon as possible. • Specimens other than blood should be refrigerated if transport to the laboratory or specimen processing is delayed for more than 1h. • For body fluids use a sterile, leak proof, disposable plastic container. • Swabs should be transported in Amies transport medium with charcoal.

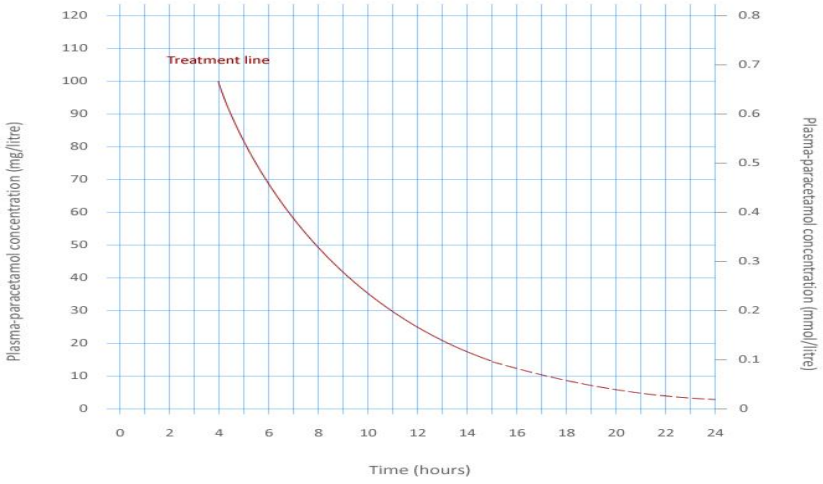
	• Laryngeal swabs are not recommended and only be used when pus or sputum is unobtainable. • Isoniazid, rifampicin and ethambutol susceptibility reported where appropriate. • Pyrazinamide and streptomycin susceptibility testing performed in the IMRL, St. James', Hospital.
Turnaround:	Microscopy: 24-72 hours Culture: 6-8 weeks Positive smear and culture results are telephoned to requesting clinician.
Report Format:	As per report form
Mycobacteria PCR	
Laboratory:	Samples referred from Microbiology to TB Laboratory, CUH. Tests must be sanctioned by consultant microbiologist
Specimen:	Sputum
Comment:	Testing is only performed if clinically indicated and must be requested by consultant microbiologist
Turnaround:	2 working days
Ref. Range:	As per report form
Mycology – Fungal Microscopy and Culture (Dermatophytosis – skin, nail, hair)	
Laboratory:	Samples referred from Microbiology to Microbiology CUH
Specimen:	**Scalp specimens** are best obtained by scraping with a blunt scalpel. The contents should include hair stubs, the contents of plugged follicles and skin scales. Hair may also be plucked from the scalp with forceps (infected hairs are usually easy to remove in this way). Cut hairs are unsatisfactory as the focus of infection is usually below or near the surface of the scalp. **Nail clippings** should be taken from any discoloured, dystrophic or brittle parts of the nail. These should be cut as far back as possible from the free edge of the nail and include its full thickness, scrapings can also be taken from beneath the nail to supplement the clipping sample. **Skin samples** should be collected by scraping outwards from the edges of the lesions, with either a blunt scalpel blade or with the edge of a glass microscope slide. The edge of the lesion is where there is likely to be the most fungus.
Comment:	Some general points on specimen collection are given below: • It is often helpful to clean the lesions of the skin or scalp (and sometimes nail) with surgical spirit or 70% alcohol prior to collection of samples as this improves the chances of detecting the fungus by microscopy and also reduces the likelihood of contamination of subsequent cultures. Prior cleaning is essential if greasy ointments or powders have been applied to the region. • Transport at room temperature. • Do not use fixatives. • All specimens should be collected and transported in properly labelled, sealed sterile container i.e. universal containers, Mycological Transport Pack or glass slides in the appropriate slide holder. Loose slides should not be used. The use of clear sticky tape (sellotape) is not recommended.

	• Important Note: If you suspect Hendersonula toruloidea which causes dermatophyte-like lesions of the palms, soles and toe-webs or Tinea nigra, which is a rare condition which causes dark pigmented areas, usually on the skin of the palm, and is clinically distinctive from dermatophyte lesions, please inform the Microbiology Lab CUH when skin samples for analysis.
Test Method:	Keratinised tissues are treated with potassium hydroxide in the laboratory to detect hyphae of dermatophytes. Many pathogenic fungi will grow slowly on conventional media but may be recovered more reliably on special fungal media, which require incubation for up to 4 weeks. Some isolates may require referral to the Mycology Reference Laboratory in Bristol for identification and/or susceptibility testing which can take up to an additional 4 weeks.
Turnaround:	Direct smear: 1 week Culture: 1-3 weeks
Report Format:	As per report form
Mycophenolate	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4.0 mL EDTA – **Purple** top Vacuette® **Separate upon receipt in lab**
Comment:	Separate plasma upon receipt in laboratory
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Mycoplasma genitalum	
Laboratory:	Sample referred from Microbiology to NVRL
Specimen:	Urine samples or Anogenital swabs collected in Aptima collection tubes which are available from Microbiology laboratory. Storage: 4°C
Comment:	Note: There are separate urine and swab Aptima collection containers.
Turnaround:	1 week
Ref. Range:	As per report form
***Mycoplasma pneumoniae* IgG**	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	3 – 5 days
Ref. Range:	See report for
***Mycoplasma pneumoniae* IgM**	
Laboratory:	Samples referred from Microbiology to NVRL
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	3 – 5 days
Ref. Range:	See report for
Myoglobin – Serum	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Haemolysis invalidates
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Myoglobin – Urine	

Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Spot urine. No additive required. Freeze immediately
Comment	Centrifuge and freeze supernatant immediately
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Myositis Marker Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Includes Anti- Mi2 Alpha, Mi2 Beta, Ku, PM100, PM75, Jo1, SRP, PL7, PL12, EJ, OJ, Mi2B, TIF1Y, MDA5, NXP2 and SAE antibodies
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Neisseria gonorrhoea* PCR**	
Laboratory:	Specimens referred from Microbiology to Microbiology CUH
Specimen:	Nucleic acid amplification method. Appropriate PCR STD Specimen Collection and Transport Kits must be used (COBAS); Available from Stores UHK. Please read the kit insert for information on specimen collection and associated limitations.
Comment:	Test available Monday-Friday. The assay is verified for use with female Endocervical swab specimens, HVS specimens and male/female urine specimens. (Theses specimens will also be tested for *Chlamydia trachomatis* DNA). Refer to the CUH user manual for further information.
Turnaround:	4 – 5 days
Ref. Range:	As per report form
***Neisseria meningitidis* PCR**	
Laboratory:	• CSF sample processed in Microbiology UHK • Blood sample referred from Microbiology to IMSRL, CHI at Temple St.
Specimen:	CSF (0.2mL) or **Adult**: 3mL **Purple** top Vacuette® (EDTA) **Paediatric**: 1.3 mL EDTA **Red** capped paediatric EDTA sample
Comment:	Blood: Please complete IMSRL request form. All patients ≥ 7 days of age; for infants <7 days discuss with IMSRL. CSF: Refer to Cerebral Spinal Fluid PCR for further details. Test is performed on Neilsseria meningitis screening PCR positive samples only
Turnaround:	Microbiology UHK: Approximately 2 - 3 hour for positive CSF samples. Next routine working day for negative CSF samples IMSRL: 1-2 days.
Ref. Range:	As per report form
Nerve Biopsies	
Laboratory:	Histopathology (Referred to CUH, NeuroLaboratory Dept.)
Specimen:	Fresh Tissue
Comment:	Immediate dispatch to laboratory. Inform laboratory 24 hours before taking the biopsy.

Turnaround:	5-10 days.
Clinical Indications	Refer to Laboratory User Manual, CUH
Neuron Specific Enolase (NSE)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4.0 mL blood clotted - **Red** top Vacuette® **Specimen must be separated and frozen <4 hrs**
Comment:	Haemolysis interferes with analysis.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Non-esterified (Free) Fatty Acids	
See: 'Free Fatty Acids'	
Neurontin® (Gabapentin)	
See "Gabapentin"	
Norovirus (SRSV) PCR	
Laboratory:	Microbiology
Specimen:	A fresh liquid faeces specimen is essential (1-2ml).
Comment:	Norovirus testing is available in UHK.
Turnaround:	1-2 routine days
Report:	As per report form
Nose Swab	
Laboratory:	Microbiology
Specimen:	Sample anterior nares gently rotating the swab on the surface. Transport specimens ASAP in charcoal containing transport media. If processing is delayed, refrigeration is preferable to storage at ambient temperature.
Comment:	Aerobic culture - To detect nasal carriage of bacteria, especially *Staphylococcus aureus* during an outbreak of staphylococcal infection. Test performed routinely Mon–Fri. A nasal swab is not the appropriate specimen type for the investigation of sinusitis, please send an sinus aspirate or antral washout.
Turnaround:	Up to one week
Report:	Presence of *Staphylococcus aureus* reflects carrier state.
NT-pro BNP (Brain Naturitic Peptide)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette®
Comment:	Chronic disease management (CDM) requests from GP's must be accompanied by specific NT pro BNP request form available from laboratory **[LF-BIO-BNPREQFM].**
Turnaround:	5 - 8 working days
Report:	As per report
5' Nucleotidase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Turnaround:	1 - 2 weeks

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Oestradiol (OEST)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Turnaround:	Routine request 5 - 8 working days
Ref. Range:	As per report
Opiates (TDSU)	
See: "Toxicology / Drug Screen".	
Organic Acids	
See: Metabolic Screen	
Osmolality – Serum	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	Batches run during routine week day Mon – Fri
Ref. Range:	As per report form
Osmolality - Urine	
Laboratory:	Biochemistry
Specimen:	Spot urine sample.
Turnaround:	Batches run during routine week day Mon – Fri
Ref. Range:	As per report
Osmotic Fragility	
See: Hereditary Spherocytosis Screen	
Ovary Antibodies	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Oxalic Acid (Oxalate) -Blood	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Comment:	**Separate and freeze < 1 hour**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Oxalate - Urine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	24hr Acidified Urine collection, Containers available from the Lab reception
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Pancreatic Polypeptide	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab

Specimen:	4.0 mL EDTA + Aprotinine – **Pink**. **Centrifuge**, **separated plasma must be frozen < 1 hr.**
Comment:	EDTA + Aprotinine bottles available from Biochemistry.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Paracetamol	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Interpretation of Paracetamol toxicity is highly dependent on time of putative overdose. In the event of a suspected Paracetamol overdose please refer to the appropriate treatment nomogram for paracetamol overdose. Please interpret Creatinine, HDL, Uric Acid, Total Bilirubin and Direct Bilirubin results with caution for any Blood Paracetamol level >/= 80 mg/l as Paracetamol metabolites at this level may generate erroneously low results.
Turnaround:	UHK-in-house request Urgent < 2 hours Routine 2-4 hours
Ref. Range:	As per report Paracetamol nomogram for overdose guidance 
Paraneoplastic antibodies	
See: 'Anti Neuron antibodies'	
Parainfluenza Molecular	
Laboratory:	Sample referred from Microbiology to NVRL
Specimen:	Viral swab (nasopharyngeal, throat), respiratory secretions
Comment:	Included as part of the Respiratory Viral Screen
Turnaround:	5 working days
Ref. Range:	As per report form
Paraquat (PQTS/UPQT)	
Laboratory:	Samples referred from Biochemistry to Toxicology Laboratory, Beaumont Hospital, Dublin. **Contact lab immediately** so arrangements can be made to send the samples via taxi.

Specimen:	**Random urine specimen** with no additive and **4 ml blood clotted** – **Red** top Vacuette® **Separate & freeze serum in <4hrs**
Turnaround:	On request
Ref. Range:	As per report or contact the Toxicology Laboratory, Beaumont Hospital, Dublin.
Parasitology (enteric)– Ova, Cysts and Parasites (OCPs)	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Eurofins
Specimen:	Fresh faeces specimen in a sterile leak proof container. Do not refrigerate or incubate specimens. 3 specimens 2-3 days apart within a 10 day period are recommended for best recovery of parasites as shedding of cysts is intermittent. If *Entamoeba histolytica* or *Giardia lamblia* are suspected and the 1st 3 samples are negative, 3 additional specimens should be submitted at weekly intervals.
Comment:	Full clinical details are essential. Full parasitic examination is only performed if there is a history of foreign travel, if parasitic infection (please specify) is highly suspected (chronic diarrhoea) or if parasitic infection is suspected on an immunocompromised patients. Please state if specific parasites are sought. *Cryptosporidium parvum/hominis* and *Giardia lambia* are included as part of the faeces molecular testing. Please refer to *Enterobius vermicularis for details on* Sellotape slide for Pinworm
Turnaround:	1-2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Parechovirus Molecular	
Laboratory:	• CSF sample is processed in Microbiology UHK • Samples referred from Microbiology to NVRL.
Specimen:	Respiratory secretions, stool, CSF or **Adult**: 4.0 mL EDTA – **Purple** top Vacuette® **Paediatric:** 1.3 mL EDTA **- Red** capped
Comment:	For EDTA separate and freeze <4hrs All other specimen 4°C
Turnaround:	Microbiology UHK: Approx. 1 hr. for positive CSF samples Next routine working day for negative CSF samples NVRL: 5 working days
Ref. Range:	As per report form
Parathyroid Hormone (PTH)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL EDTA – **Purple** top Vacuette® **Paediatric:** 1.3 mL EDTA **- Red** capped **Separate and freeze <4hrs**
Comment:	Send to laboratory immediately
Turnaround:	1-2 weeks
Ref. Range:	As per report form
Paroxetine	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2.0 mL clotted blood- **White** top Vacuette® **Separate & freeze in <4hrs**
Comment:	Do **not** use Gel Separator tubes
Turnaround:	**2-3 weeks**

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Parvovirus B19 IgM and IgG	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Parvovirus B 19 PCR	
Laboratory:	Sample referred from Microbiology to the NVRL
Specimen:	Blood 4mL **Purple** top EDTA Vacuette® or Amniotic Fluid
Comment:	Plasma must be frozen < 24 hour Other sample types 4°C
Turnaround:	1 week
Ref. Range:	As per report form
Penicillin Profile	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Includes Penicillin G (allergen) & Penicillin V (allergen)
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Penile swab	
See: "Genital swab"	
Pericardial Fluid / Peritoneal Fluid / Pleural Fluid	
See: "Sterile Body Fluid – Microscopy and Culture".	
Pernasal Swab /Pertussis	
See: Bordetella pertussis/parapertussis PCR	
Phenobarbitone/Phenobarbital	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Sample should be drawn before the next oral dose with the patient at the steady state.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Phenotyping Red Cell Antigens	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette®
Clinical indications:	Antigen type red cells to ensure best selection of donor blood if required. May be useful in antenatal studies in risk assessment of HDNB. The partner of an antenatal patient with clinically significant antibodies is tested.
Turnaround:	Routine: 1 routine working day Urgent:2-3 hours

	Available on call
Ref. Range:	Not Applicable
Phenylcyclidine (PCP) (Angel dust)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2.0 mL clotted blood- White top Vacuette® **Separate & freeze in <4hrs**
Comment:	Do **not** use Gel Separator tubes
Turnaround:	**2-3 weeks**
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Phenytoin (Epanutin®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Sample should be drawn before the next oral dose with the patient at the steady state.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Philadelphia Chromosome (BCR ABL)	
Laboratory:	Samples referred from Haematology to CMD, St. James' Hospital
Specimen:	Blood; 3 X 3mL **Purple** top Vacuette® (EDTA) **N.B**. This is an RNA-based test and has to reach St. James' within 24 hrs of venepuncture. Take sample on Mon, Tues or Wed.
Comment:	The BCR-ABL gene is thought to play a pivotal role in the genesis of chronic phase CML. Consultant request and full clinical details required.
Turnaround:	2 – 3 weeks
Ref. Range:	As per report form.
Phosphate (Blood)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	This test is available on its own or as part of the Bone Profile.
Comment:	Results not issued on samples > 1 day old if sample has not been centrifuged on the same day as collection Haemolysis invalidates result.
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report form
Phosphate (Urine)	
Laboratory:	Biochemistry
Specimen:	24-hour urine sample collected into a container, which has acid added. 24 hr urine containers are available from laboratory reception.
Turnaround:	Routine request 3-5 working days
Ref. Range:	As per report form
Phytanic Acid	

Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL EDTA – **Purple** top Vacuette®
Comment:	Separate and freeze < 1 hour Clinical Details required
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for latest up to date referral test information

Pinworm

See: Parasitology (enteric)– Ova, Cysts and Parasites (OCPs)

Platelets for transfusion

Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® For Paediatrics: 1.3 mL EDTA Red/Pink Capped Tube (Paediatric Bottle),
Clinical indications:	To increase the number of circulating platelets. Platelet transfusions are indicated in: • Bone marrow failure • Platelet counts<10x10^9/l • Platelet counts<20x10^9/l with evidence of infection, pyrexia or fresh bleeding other than purpura. • DIC where the bleeding is associated with thrombocytopenia • Cardio-pulmonary bypass if there is microvascular bleeding or bleeding that cannot be surgically corrected. • Immune thrombocytopenias: platelet transfusions should only be given to patients with life threatening haemorrhage. • Prophylaxis for surgery: • For lumber puncture, insertion of dwelling lines, transbronchial biopsy, laparotomy liver biopsy where Platelet count<50x10^9/l • (b) Epidural anaesthesia, ophthalmic surgery, neurosurgery where the platelet count<100x10^9/l • Thrombocytopenia in neonates <50-100x10^9 in preterm infants <20-30x10^9 in full term infants • Neonatal Alloimmune thrombocytopenia is a rare serious condition and specialist advice should be obtained from the haematologist who can be contacted through the switchboard in CUH ext 22000
Comment:	Elective platelet transfusions should be ordered on the day prior to the planned transfusion to facilitate transport. Platelets for transfusion are provided in bags containing approximately 24x10^10 platelets suspended in 200-300ml plasma. This represents a typical adult dose of platelets. This dose should raise the patients' circulating platelet count by about 25x10^9/l. On the following day the circulating platelet count should ideally still be 10x10^9/l above the original level. Platelet transfusions must commence within 30 minutes of platelets being removed from storage area Platelet count should be checked one hour and 24 hours post transfusion to monitor increment rise of platelets. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366

	or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround:	4 hours Available on call
Ref. Range:	Non applicable
Platelet Function Tests	
Laboratory:	Test performed in Haematology CUH.
Specimen:	Samples to reach Haematology CUH within 1 hour of being taken. ***It is required that the patient travels to Cork to have these bloods taken due to the short time period required to reach the lab***
Comment:	The process of platelet adhesion and aggregation following a vascular injury is simulated in vitro, and the platelet aggregates which form as a result of being exposed to collagen, ADP and epinephrine are detected by changes in light transmittance. The most common causes of platelet dysfunction are related to uraemia, von Willebrand disease and exposure to agents such as acetyl salicylic acid.
Turnaround:	Requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
***Pneumocystis jirovecii* (PCP)**	
Laboratory:	Specimen referred from Microbiology to Eurofins Biomnis laboratory
Specimen:	5 ml BAL, Bronchial secretions
Comment:	Refrigerate specimen after collection and transport to Microbiology promptly
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for latest up to date referral test information
Pneumococcal Antibodies (IgG)	
Laboratory:	Specimen referred from Microbiology to Eurofins Biomnis Laboratory
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Used to determine post-vaccination status
Turnaround:	3 weeks
Ref. Range:	As per report form
Pneumococcal Urinary Antigen	
Laboratory:	Samples referred from Microbiology to Infectious Diseases Serology CUH
Specimen:	Minimum 2ml urine (refrigerated)
Comment:	Please include relevant clinical details
Turnaround:	36 hours
Ref. Range:	As per report form
Pneumococcal (*Streptococcus pneumonia*) PCR	
Laboratory:	• CSF sample is processed in Microbiology UHK • Blood Specimens referred from Microbiology to IMSRL, CHI at Temple St.
Specimen:	**CSF** (0.2mL) or **Adult**: 3mL **Purple** top Vacuette® (EDTA) or CSF (0.2mL) **Paediatric**: 1.5mL **Red** capped paediatric EDTA sample
Comment:	Blood: Please complete IMSRL request form. Only if there is radiographic evidence of pneumonia.
Turnaround:	NVRL: Samples received by IMSRL before 11am, result between 4pm and 5pm the same day.

	Microbiology UHK: Approx. 1 hr. for positive CSF samples. Next routine working day for negative CSF samples.
Ref. Range:	As per report form
PNH Screen - Ham's Test	
Laboratory:	Samples referred from Haematology to Haematology St. James' Hosp
Specimen:	Blood: 2 x 3mL **Purple** top Vacuette® (EDTA). Samples must be taken on Mon – Wed only Prior arrangement with St. James' is required.
Comment:	PNH is characterised by intermittent intravascular haemolysis. Consultant recommendation and clinical details are required.
Turnaround:	1 – 2 weeks
Ref. Range:	As per report form.
Polio Antibodies	
Laboratory:	Referred from Microbiology to Eurofins Biomnis Laboratory
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Includes anti-poliovrus 1 & 3 antibodies
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for latest up to date referral test information
Polyoma Viruses Molecular	
See: BK Virus Molecular or JC Virus Molecular	
Porphyrin Screen - Red cell Porphyrin (TRCP), Urinary Porphyrin (TUP), Faecal Porphyrin (TFP)	
Laboratory:	Sample referred from Biochemistry to Biochemistry, St. James's Hospital
Specimen:	**Porphyrin Screen Pack available from lab** **Red Cell Porphyrin** –2 x 4mL EDTA whole blood- **Purple** top Vacuette® **Urinary Porphyrin** – 1 spot urine (EMU) **Faecal Porphyrin** – 1 spot faecal collection
Comment:	**All samples must be protected from light at all times using tinfoil.** **Freeze** urine & stool samples 1 EDTA plasma **separated & frozen** & 1 EDTA whole blood at **4 degrees**.
Turnaround:	4-6 weeks
Ref. Range:	See report form
Potassium - Blood (K)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Note**: Transport of the sample via pneumatic tube system may cause elevated Potassium. If elevated Potassium does not fit the clinical picture for this patient, please send a repeat sample and hand deliver to the laboratory Haemolysis invalidates result. Results not issued on samples > 1 day old if sample has not been centrifuged on the same day as collection
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs

	GP request 3-5 working days Test not carried out on samples > 1 day old unless centrifuged.
Ref. Range:	As per report form
Potassium - Urine (UK)	
Laboratory:	Biochemistry
Specimen:	Spot or 24 Hr sample (non-acidified)
Turnaround:	Routine requests 3-5 working days
Ref. Range:	As per report form
Pouch of Douglas Fluid	
See: "Sterile Body Fluid – Microscopy and Culture"	
Pregnancy Tests (Blood)	
See: Human Chorionic Gonadotrophin (HCG)	
Primidone (Mysoline®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2.0 mL clotted blood- **White** top Vacuette® **Separate & freeze in <4hrs**
Clinical Data:	Metabolised to Phenobarbital so this must be assayed in parallel.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Pro-calcitonin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 4 hours**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Pro-collagen Type III (PT3)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 4 hours**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Progesterone	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted – **Red** top Vacuette®
Clinical Data:	Useful in evaluation of infertility. Sample should be taken in second half of cycle (approximately day 21) to determine whether ovulation has occurred.
Comment:	For females please state date of LMP.
Turnaround:	Routine request 5 - 8 days
Ref. Range:	As per report form
Prograf® (Tacrolimus/FK 506)	
See: "Tacrolimus"	

Pro-insulin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 4 hours**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Prolactin (PRL)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Comment:	***Avoid taking sample after mammary or pelvic examination.*** ***The stress of venipuncture may induce mild hyperprolactinaemia.***
Turnaround:	5 - 8 working days
Ref. Range:	As per report
Protein C for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No specimen required
Clinical indications:	Protein C is used in: Purpura fulminans and coumarin induced skin necrosis in patients with severe congenital protein C deficiency. Short term prophylaxis in patients with severe congenital Protein C deficiency in which: • surgery or invasive therapy is imminent • initiating coumarin therapy alone is not sufficient, • coumarin therapy alone is not sufficient or feasible.
Comment:	It is advisable to seek haematologist advice. Advice can be obtained from the Haematologist available through the switchboard or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround:	Product is ordered from supplier on a patient named basis through the blood transfusion laboratory. 1 routine working day Available on call
Ref. Range:	Not Applicable
Protein C	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 3ml **Blue** top Vacuette® (sodium citrate 3.2%), Paediatric bottles (1.2mL Sodium Citrate Green Top) available in Haematology lab.
Comment:	See section 13.12 for special collection procedures. Decreased levels are reported in congenital abnormalities, also in patients with hepatic disorders, those receiving oral anticoagulants and in cases of DIC. Congenital abnormalities often result in severe recurrent venous thrombosis. This assay forms part of the Thrombophilia screen. Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-

	Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart.
Turnaround:	Routine: 3-4 weeks, Urgent requests as per arrangement with CUH.
Ref. Range:	As per report form, or contact Haematology lab, CUH.
Protein:Creatinine Ratio	
Laboratory:	Biochemistry, UHK
Specimen:	Spot urine sample in a urine monovette tube
Turnaround:	In-house and GP request 1-3 working days
Ref. Range:	As per report
Protein S	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood; 3ml **Blue** top Vacuette® (sodium citrate 3.2%), Paediatric bottles (1.2mL Sodium Citrate Green Top) available in Haematology lab.
Comment:	See section 13.12 for special collection procedures. Protein S is a vitamin K dependent protein, which serves as a co–factor for the anticoagulant activity of activated protein C in the degradation of factors V and VIII. This assay forms part of the Thrombophilia screen. Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart.
Turnaround:	Routine: 3-4 weeks, Urgent requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Protein Electrophoresis (TELP)/ Myeloma screen	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted - **Red** top Vacuette®
Comment:	*Haemolysis invalidates test.* Total protein, albumin, Immunoglobulin IgA, IgG and IgM are reported as part of the full electrophoresis profile. Paraprotein levels and Immunofixation is performed as follow up to electrophoresis profile on samples with criteria for immunofixation.
Turnaround:	2 - 3 weeks
Ref. Range:	As per report
Protein, Total – Blood (TP)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Haemolysis and lipaemia may invalidate.
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Protein, Total – Urine (UTP24)	
Laboratory:	Biochemistry
Specimen:	Spot or 24 Hour sample
Comment:	Can be requested individually or as part of Protein:Creatinine Ratio for spot

Turnaround:	UHK-in-house urgent request same day GP request 3-5 working days
Ref. Range:	As per report
Prothrombin complex concentrates for administration	
Laboratory:	Blood Transfusion Laboratory
Specimen:	No Specimen required
Clinical indications:	• Treatment of bleeding and perioperative prophylaxis: • Of bleeding in acquired deficiency of the prothrombin complex coagulation factors, such as deficiency caused by the treatment of vitamin K antagonists, when rapid correction of the deficiency is required due to life threatening haemorrhage – e.g. intra cerebral or GI. It is recommended to administer vitamin K intravenously in addition to Octaplex. • In congenital deficiency of any of the vitamin K dependent coagulation factors when purified specific coagulation factors are not available.
Comment:	Dose of octaplex required for the management of reversal of over anticoagulation: INR 2-3.9 requires 25 iu/kg INR 4-6 requires 35 iu/kg INR>6 requires 50 iu/kg Octaplex should not be given to patients with known hypersensitivity to any of the substances contained in the product or hypersensitivity to heparin or a history of heparin induced thrombocytopaenia. Consultant haematologist advice should be sought especially in patients with a potential risk of thromboembolic complications. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround:	1.5 hours. Available on call.
Ref. Range:	Not applicable
Prothrombin DNA Mutation Studies (PT20210A)	
Laboratory:	Sample referred from Haematology to Coagulation Centre St. James' Hosp. Dublin daily.
Specimen:	Blood; 3mL **Purple** top Vacuette® (EDTA).
Comment:	Prothrombin Gene Mutation (20210A) is an inherited disorder of the prothrombin gene, which may exist in heterozygous or homozygous forms. It has been associated with varying degrees of thrombophilia disorders and increased susceptibility to developing clots. May be a single test or form part of a Thrombophilia screen. St. James' Thrombophilia Screen Request form must be completed and sent to lab. Consent for genetic analysis must be obtained (to be retained in patient's chart).
Turnaround:	8 weeks
Ref. Range:	As per report form.
Prothrombin Time (PT)	
Laboratory:	Haematology
Specimen:	Blood; 3mL **Blue** top Vacuette® (sodium citrate) or Paediatric (1.2mL Sodium Citrate Green Top)

Comment:	Specimens **MUST be correctly filled** to where indicated on side of sample bottle. Specimens which are haemolysed, underfilled or overfilled cannot be analysed). Samples for PT are accepted for analysis up to **48** hours old. The prothrombin time (PT) is reported in seconds and form part of the routine coagulation screen. This test is used as a screen to detect single or combined deficiencies of the extrinsic system, liver disease or vitamin K deficiency. APTT and /or PT results may be abnormal in a patient who is over anti-coagulated with newer anticoagulation agents such as Dabigatran, Rivaroxaban & Apixaban but results can be misleading.
Turnaround:	Emergency Samples < 2 hrs, In-House patients < 4hrs. Outpatients and GP's < 24 hrs.
Ref. Range	As per report form.
PSA (Free)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette® **frozen in <4hrs**
Comment:	Please send to laboratory immediately
Turnaround:	3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
PSA Total (PSA)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Turnaround:	Routine request 5 - 8 working days
Ref. Range:	As per report form
Pseudocholinesterase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted – **Red** top Vacuette®
Comment:	Non haemolysed sample required
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Pseudomonas aeruginosa Antibody Levels	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Laboratory
Specimen:	4 ml blood clotted – **Red** top Vacuette®
Comment:	Deliver to Microbiology promptly, refrigerate specimen after collection
Turnaround:	3 weeks
Ref. Range:	As per report form
PTH Related Peptide (PTHRP)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 1ml EDTA sample - **Purple** top Vacuette® **Separate and freeze in <1hr.**
Comment:	**Send to laboratory immediately**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Pus Sample	

See: 'Wound Swabs'	
Pyruvic Acid/ Pyruvate	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2ml lithium heparin whole blood– **Green** top Vacuette®.
Comment:	**Transport to laboratory immediately (for PCA treatment)**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Pyruvate Kinase	
Laboratory:	Samples referred from Haematology to Biomnis, Dublin
Specimen:	Samples required are: 1 x 6mls ACD whole blood @ 4oC. Sample bottles are available from Haematology Department – Reagent fridge. Samples are referred from UHK to Biomnis (Mon–Thurs)
Comment:	Non-spherocytic congenital haemolytic anaemia may be the result of a deficiency of the red cell enzyme pyruvate kinase (PK). Consultant recommendation and clinical details required.
Turnaround:	1 month
Ref. Range:	As per report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
QuantiFERON-TB Gold test	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Laboratories
Specimen:	Special kit available from the Microbiology laboratory. Please follow the manufacturer's instructions supplied with the kit. **NB. Only 1 ml of blood per tube (up to indicator mark on blood tube)**. Shake vigorously x10 times. Return the complete kit (in box) to the lab immediately for overnight incubation. Please complete Quantiferon Request form. The specimens are sent the next day to the reference laboratory.
Comment:	Do not refrigerate the kit at any time.
Turnaround:	1 week
Ref. Range:	As per report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Q Fever	
See: Coxiella burnetii IgG and IgM	
Rabies Antibody Level	
Laboratory:	Referred from Microbiology to Eurofins Biomnis Laboratory
Specimen:	4 ml blood clotted – **Red** top Vacuette®
Comment:	This test is designed to identify the patient's response to vaccination
Turnaround:	2-3 weeks
Ref. Range:	As per report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Reducing substances (Faeces)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	20g of faecal collection
Comment:	**Transport to laboratory immediately for freezing**
Turnaround:	2-3 weeks

Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Renin (REN)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 1ml EDTA sample - **Purple** top Vacuette®
Comment:	Must be **separated and frozen < 4 hrs.** **Used in the reporting of Aldosterone/Renin ratio**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Respiratory Syncytial Virus (RSV) Molecular	
Laboratory:	Microbiology for RSV/flu season. Referred from Microbiology to the NVRL outside of RSV/flu season (see Respiratory Viral Screen).
Specimen:	Viral swab (nasopharyngeal or nasal & throat)
Comment:	Reported with infleunza A & b or other pathogens as outlined in Respiratory Viral Screen for in-house testing. Please note: This test is **only** available in-house. For other requesting locations please refer to Respiratory Viral Screen Molecular
Turnaround:	< 24hours Monday - Friday.
Ref. Range:	As per report form.
Respiratory Viral Screen Molecular	
Laboratory:	• Microbiology UHK: Available with consultant approval. (Viral swab only) • Referred from Micro to NVRL: Specimen referred from Microbiology to NVRL – all other specimens referred to NVRL
Specimen:	Microbiology UHK: Nasopharyngeal viral swab **ONLY** NVRL: All other swabs including nasopharyngeal aspirate, sputum, broncho-alveolar lavage. These samples must be refrigerated.
Comment:	The NVRL and Microbiology UHK report an extended respiratory profile which includes; influenza A/B, RSV, adenovirus, parainfluenza 1/2/3/4, human metapneumovirus, *Chlamydia pneumoniae*, *Mycoplasma pneumonia*, rhinovirus, enterovirus, coronavirus229E/HKU1/NL63/OC43, and boccavirus. The microbiology UHK report includes the above and also includes: MERS-CoV, SARS-CoV-2 and excluding boccavirus. *Bordatella pertussis/ parapertussis* may be detected but this methodology should not be used if *Bordatella pertussis/parapertussis* infection is clinically suspected. Refer to Bordatella PCR section. Rhinovirus/enterovirus cannot be differentiated with this assay.
Turnaround:	NVRL: 5 days Microbiology UHK: Dependent on testing protocol. Assay TAT is approx. 2 hr.
Ref. Range:	As per report form
Respiratory Viral Screen Molecular (POCT) (SARS-CoV-2, FluA, FluB and RSV)	
Laboratory:	Performed on Genexpert POCT device which is available in Emergency Department **with restricted use**.
Specimen:	Nasopharyngeal viral swab **ONLY**

Comment:	A confirmatory Laboratory sample is not required
Turnaround:	30 Minutes
Ref. Range:	As per report form
Reticulocyte Count	
Laboratory:	Haematology
Specimen:	Blood; 3ml **Purple** top Vacuette® or Paediatric (1.2mL) EDTA to be received in Haematology within 8hrs of venipuncture.
Comment:	The number of reticulocytes present in blood is an index of RBC production by the bone marrow and as such is one of the most valuable observations in diagnostic haematology.
Turnaround:	Urgent Samples < 2hrs, In-house < 4hrs, out patients and GPs < 24hrs.
Ref. Range	As per report form.
Retinol Binding Protein	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Reverse T3	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Send specimen to laboratory immediately. Sample must be centrifuged and separated in < 4 hours
Turnaround:	3 - 4 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Rheumatoid Factor (RFACT)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical data:	A test that detects a group of IgM factors present in 60-70% cases of rheumatoid patients. Patients with a number of other diseases as well as healthy individuals in the older age groups may give positive results. High titres often correlate with systemic involvement, vasculitis and poorer overall prognosis.
Turnaround:	UHK-in-house request routine 2-4 hours GP request 3 – 5 working days.
Ref. Range:	As per report form
Rifampicin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4 ml blood clotted – **Red** top Vacuette®
Comment:	Include dosage details
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Rickettsioses serology – R. conorii, R. typhi	

Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **Red** top Vacuette®.
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Rotavirus / Adenovirus Antigen Testing	
Laboratory:	Microbiology
Specimen:	Fresh faeces sample 1-2g is sufficient.
Comment:	Immunochromatographic test performed Mon–Fri. Testing is performed on any stool sample on children <7yrs sent for routine investigation or where specifically requested. The specimen must be refrigerated after collection if transportation is delayed. If accurate results are to be obtained the specimen must be tested within 48 hrs of collection. A negative result does not exclude the presence of rotavirus or adenovirus. Note: Recent rotavirus vaccination may produce false positive results for rotavirus.
Turnaround:	24 hours (Monday-Thursday). Samples received after 11am on Friday will be reported before 5pm on the following Monday (Tuesday on Bank Holidays).
Report:	Detected or Not Detected.
Rubella IgG Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This test is used in the determination of immune status to rubella. Typically, this test is done as part of an antenatal or occupational health screen. Rubella IgM testing is recommended for the diagnosis of recent primary rubella infection.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Rubella IgM Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Patient history required. The presence of IgM antibodies suggests recent infection with the virus.
Turnaround:	2 – 3 days
Ref. Range:	As per report form
Rubella PCR	
Laboratory:	Samples referred from Microbiology to National Virus Reference Laboratory
Specimen:	Blood 4mL **Red** top Vacuette® or Oral Fluid
Comment:	Serum sample must be separated and frozen at -20°C. All other sample types to be stored at 4°C.
Turnaround:	1 week
Ref. Range:	As per report form
Salicylate (SAL)	
Laboratory:	Biochemistry

Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	Measured to check therapeutic effect or toxicity. There is a good correlation between plasma levels and response to treatment in rheumatic fever.
Comment:	**Peak serum level is reached 1 –2 hours after oral administration.** Toxicity may occur at levels over 300 mg/l. Levels in excess of 450 mg/l may require treatment by alkaline diuresis etc.
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs
Ref. Range:	As per report form
Salicylic acid allergen	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Salivary Cortisol (Compound F)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	5 ml Saliva (1mL for paediatrics)
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Salmonellosis (paratyphoid) serology	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
SARS-CoV-2 (Covid 19) serology	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Serological tests are not recommended for the early diagnosis of infection
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Scabies screening	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Skin scrapping**
Turnaround:	1 - 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Schistosoma haematobium	
Laboratory:	Specimen referred from Microbiology to Eurofins Biomnis Laboratory

Specimen:	Collection of a terminal urine specimen is recommended (between 10.00h and 14.00h is the period of maximum activity). Sterile containers without boric acid must be used. In patients without haematuria, eggs may be found trapped in the blood and mucus in the terminal portion of the urine specimen. Transport specimens ASAP. If processing is delayed refrigeration is preferable to storage at room temperature. Delays of over 48h are undesirable.
Turnaround:	1 week
Report:	As per report form
Schistosomiasis serology (Bilharzia Antibodies)	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Laboratory
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Selenium (SE)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2.0 mL clotted blood- **White** top Vacuette® **Separate & store at 4 degrees**
Comment:	Do **not** use Gel Separator tubes
Turnaround:	2-3 Weeks
Ref. Range	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Sellotape slide for Pinworm	
See: Enterobius vermicularis	
Semen Analysis For Post Vasectomy	
Laboratory:	Histopathology
Specimen:	Semen for post vasectomy
Comment:	Batched and carried out Monthly, See Section 10.6
Turnaround:	4 weeks
Serotonin (5HT) (5-HydroxyTryptamine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2.0 mL Lithium Heparin whole Blood non-gel **Green** top Vacuette® **Whole Blood, no not separate, freeze sample immediately,**
Comment:	Do **not** use Gel Separator tubes 48 hours before collection, do not eat bananas, chocolate, tomatoes, grapefruit, walnuts, avocado, pineapple, plums, dried fruit and citrus fruit
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Serotonin (Urine- 24Hr)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	10mL aliquot of a 24hr collection, **Freeze aliquot immediately**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.

Sex Hormone Binding Globulin	
Laboratory:	Referred from Biochemistry to Biochemistry CUH
Specimen:	**Adult**: 4.0 mL blood clotted - **Red** top Vacuette®
Comment:	Please send separate sample for CTE (AI, SHBG & Testosterone) SHBG is analysed (females only, unless consultant requested) in conjunction with testosterone. Androgen index (AI) is then calculated. Please state if on oestrogen or pregnant.
Turnaround:	1-2 weeks
Ref. Range:	As per report
Severe Acute Respiratory Syndrome Coronavirus 2 (Covid-19)	
Laboratory:	Microbiology UHK: In-house, occupation health and urgent community samples (by agreement only). Sputum and other mucoid samples send to Mercy University Hospital for testing. Public Health coordinated community samples sent to designated reference laboratory from community testing center.
Specimen:	UHK testing: Combined nasopharyngeal/oropharyngeal viral swab. Referral lab: BAL, endotracheal aspirate or sputum preferred in severe illness. FluA/B/RSV may also be tested routinely when requesting SARS Cov-2 testing, based on the advice of the Clinical Microbiologist at UHK at times during the year
Comment:	Samples must be kept **refrigerated**. Please hand deliver urgent samples to the laboratory
Turnaround:	2 – 3 hours
Ref. Range:	As per report
Shellfish Profile	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Includes Blue Mussle, Crab & Crayfish
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Sirolimus (Rapamune®)	
Laboratory:	Sample referred from Biochemistry to Biochemistry in Mater Hospital
Specimen:	**Adult**: 2.0 mL EDTA whole blood – **Purple** top Vacuette® **Paediatric**: 1.3 mL EDTA Red cap
Comment:	Sample should be taken in the trough level just before administration.
Turnaround:	1-2 weeks
Ref. Range:	See report form
Skin Swab	
See: "Wound Swab"	
Sodium Blood (NA)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	This test is also available as part of the Renal Profile**.**

Comment:	Sodium is not tested on samples >1day old unless centrifuged on the day of taking the sample. Haemolysis invalidates result. Lipaemia or hyperproteinaemia may cause falsely low sodium.
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Sodium Urine (UNA)	
Laboratory:	Biochemistry
Specimen:	Spot or 24 hour sample. 24 hour urine containers available from the laboratory reception
Turnaround:	Urgent request same day Routine requests 3-5 working days
Ref. Range:	As per report

Somatostatin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Somatostatin**: 4.0ml EDTA + Aprotinine – **Pink.** Centrifuge**, separate plasma and must be frozen < 1 hr**
Comment:	EDTA + Aprotinine bottles available from Biochemistry.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Sputum Culture	
Laboratory:	Microbiology
Specimen:	Sputum from the lower respiratory tract expectorated by deep coughing. Check that specimen is of adequate quality as samples of saliva and postnasal secretions are usually unsuitable. Send a minimum volume of 1mL of purulent sputum. The specimen should be collected into a clean, sterile, leak-proof container. Send separate samples for TB and routine C&S testing. Sputum may be refrigerated for up to 2 – 3h without an appreciable loss of pathogens. Any delay beyond this time may allow overgrowth of Gram-negative bacilli, and *Haemophilus* species and *S. pneumoniae* may die. Transport specimens ASAP. If processing is delayed, refrigeration is preferable to storage at ambient temperature.
Comment:	Please include any appropriate clinical details e.g. "Cystic fibrosis patient". If an unusual pathogen is suspected, the laboratory should be informed, *e.g. Burkholderia pseudomallei* and *Nocardia* sp require longer incubation of cultures. Refer to Mycobacteria Testing for instructions for sputum collection for TB culture. Test performed Mon-Fri.
Turnaround:	Up to one week
Report:	Culture report: Any clinically significant isolate with the appropriate sensitivities.

Stelera (Ustekinumab)	
Laboratory:	Sample referred from Biochemistry to Royal Devon University Health Care NHS UK
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Alternative names Stelera, Ustekinumab, Pyzchivia
Turnaround:	2-3 weeks
Ref. Range::	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Sterile Body Fluid - Microscopy and Culture	
Laboratory:	Microbiology
Specimen:	Specialist collection according to local protocols. Ideally, a minimum volume of 1mL should be collected into a clean, sterile, leakproof container. The volume of specimen influences the transport time that is acceptable. Large volumes of purulent material maintain the viability of anaerobes for longer. Transport specimens ASAP. If processing is delayed, refrigeration is preferable to storage at ambient temperature. Total white cell counts are not performed on specimens containing a clot, which would invalidate the cell count. Fluids may be collected aseptically into blood culture bottles however if a cell count, gram and differential testing are required the specimen needs to be additionally taken into a sterile universal container.
Comment:	Test performed routinely Mon–Fri.
Turnaround:	Microscopy: 2 hours. Culture: Up to one week.
Report Format:	Microscopy: Total white Cell Count, differential leucocyte (if appropriate), Gram Stain. Culture: Isolates are reported with appropriate sensitivities.
STI Blood Screen	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	Blood 4mL **Red** top Vacuette®
Comment:	Screen includes Hepatitis B Surface antigen, HIV Ag/Ab, Syphilis antibody
Turnaround:	Negative samples: 36 hours. Please allow extra time for samples testing positive in house for HIV Ag/Ab and Syphilis antibody (external confirmatory testing required).
Report Format:	As per report form
Streptococcus pneumonia serology (Pneumococcal Ab IgG)	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This test should not be used to diagnose an acute infection which must be done by bacterial screening and identification of the organism.
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Strongyloidiasis serology	
Laboratory:	Samples referred from Microbiology to Infectious Diseases Serology CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Serological results are often difficult to interpret because of the many possible cross reaction, mostly with other nematodes.

Turnaround:	1 – 2 weeks
Report Format:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Sudan Black B Stain Cytochemical Stain	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Fresh blood / bone marrow films. Discuss with Haematology Consultant, CUH before ordering.
Comment:	Sudan Black B is considered a useful adjunct in the identification of myeloid and myelomonocytic leukaemias.
Turnaround:	24 - 48 hrs
Ref. Range:	As per report
Sulphonylureas	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Spot urine
Comment:	**Freeze in <4hrs**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Surgical Specimens for Histological Examination	
Laboratory:	The majority of surgical specimens for histological examination are referred to CUH, Bon Secours Hospital Tralee and the National Maternity Hospital, Holles Street, Dublin. The remainder of the specimens, are processed in Histopathology, UHK and the slides are sent to BSHT for microscopic examination and reporting.
Specimen:	Formalin Fixed Tissue
Turnaround:	Small biopsies: 3-4 working days Large specimens: 5-8 working days Urgent cases can be fast-tracked by request
Clinical Indications:	See Section 11.2
Sweat Test	
Test no longer available from biochemistry Lab.	
Synovial Fluid	
See: "Sterile Body Fluid – Microscopy and Culture".	
Syphilis Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	Blood 4ml **Red** top Vacuette®
Comment:	Positive sera are further tested by RPR (rapid plasma reagin) and TPPA (*Treponema pallidum* particle agglutination). RPR and/or TPPA positives are sent to a reference laboratory for confirmation.
Turnaround:	Negative: 36 hours and Referred samples: 2 weeks.
Ref. Range:	As per report form
T3 (Total) (T3)	
Laboratory:	Sample referred from Biochemistry to Biochemistry CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	High levels of both T3 and T4 are found in hyperthyroidism and low levels in primary or secondary hypothyroidism. T3 may be elevated in the presence of a normal T4 in so called T3-toxicosis. Value is influenced by

	level of carrier proteins (e.g. TBG) so that measurement of free triiodothyronine (free T3) is generally preferred.
Turnaround:	3 Days
Ref. Range:	As per report or contact Biochemistry CUH
Tacrolimus (FK506/Prograf)	
Laboratory:	Specimen is referred from Biochemistry to Biochemistry CUH
Specimen:	**Adult**: 2.0 mL EDTA whole blood – **Purple** top Vacuette®
Comment:	The following information **must** be included on the request form: Indications, Time of collection, Dose and Dosage regimen
Turnaround:	1-2 Weeks
Ref. Range:	See report form.
Tamabocor® (Flecanide) (FLEC)	
See "Flecanide"	
Tear Duct – Culture	
See "Lacrimal"	
Tegretol® (Carbamazepine) (CARB)	
See "Carbamazepine"	
Teicoplanin (Pre & Post level)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted – **Red** top Vacuette® **Trough level:** before injection. **Peak concentration:** 30mins after IV injection and 2-3 hours after IM injection
Comment:	The following information **must** be included on the request form: Indications, Time of collection, Dose and regularity
Turnaround:	2-3 Weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Testosterone (TES)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 Ml blood clotted – **Red** top Vacuette®
Comment:	May be requested on its own or as part of CTE screen (See SHBG) Haemolysis and lipaemia may invalidate.
Turnaround:	5 - 8 working days
Ref. Range:	As per report
Tetanus Antibodies (IgG)	
Laboratory:	Referred from Microbiology to Eurofins Biomnis Laboratories
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Used to determine immune status to the Tetanus Vaccine
Turnaround:	2 – 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Theophylline (THEO)	
Laboratory:	Referred from Biochemistry to Biochemistry CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 week

Ref. Range:	As per report
Throat Swab	
Laboratory:	Microbiology
Specimen:	Swab the tonsillar area and/or posterior pharynx avoiding the tongue and uvula. Transport specimens ASAP in charcoal containing transport media. If processing is delayed, refrigeration is preferable to storage at ambient temperature. If diphtheria or gonorrhoea or pertussis is suspected special testing should be requested. Specimens for gonorrhoea need to be transported to Microbiology immediately after collection. Specimens for *Bordatella pertussis* need to be collected using a Pernasal swab (see *Bordatella pertussis* section). Specimens for viral isolation should be collected in the appropriate viral transport medium (refer to specific viral test for guidelines).
Comment:	Clinical information is essential when determining test performance Test performed routinely Mon–Fri.
Turnaround:	Up to one week
Report:	As per report form
Thrombophilia Screen	
Laboratory:	Samples referred from Haematology to Haematology CUH. Fresh samples to reach Haematology UHK by 09.30am. Phlebotomist to be notified in advance.
Specimen:	6 specimens in total i.e. Blood: 3 x 3mL **Blue** top Vacuette® (sodium citrate) or Paediatric bottles (1.2mL Sodium Citrate Green Top) available form Haematology lab. Blood: 1 x 4mL **Red** Vacuette® (clotted specimen). Blood: 1 x 3 ml **Purple** top Vacuette® or Paediatric (1.2ml) bottles (EDTA)
Comment:	Specific Thrombophilia request form, patient consent form and patient information leaflet available on: http://www.cuh.hse.ie/Our-Services/Our-Specialities-A-Z-/Laboratory-Medicine/Publications-Downloads/ Tick box on request form to confirm consent has been obtained. Consent form to be retained in patient's chart. Samples without clinical details will not be processed. Thrombophilia screen consists of: INR, APTT, FIB, Actin FSL, DVVT, Antithrombin, Protein C, Activated Protein C Resistance and Protein S assays. Anti-Cardiolipin and Beta-2 glycoprotein 1 are also included as part of the screen if a clotted sample is received. EDTA specimen sent for Factor V Leiden if results indicate.
Turnaround:	Routine: 3-4 weeks. Urgent requests as per arrangement with CUH.
Ref. Range:	As per report form or contact Haematology, CUH.
Thyroid Antibodies: Thyroid Peroxidase (TPO) (TTYABP)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4.0 mL blood clotted – **Red** top Vacuette®
Comment:	This test is used for thyroid dysfunction
Turnaround:	2-4 weeks
Ref. Range:	See report form.
Thyroglobulin Level & Anti Thyroglobulin Antibodies (CTHYG)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2 x 4.0 mL blood clotted – **Red** top Vacuette® **Separate & freeze immediately**

Comment:	**Requested for thyroid cancer monitoring only** **Clinical details essential**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Thyroid Binding Globulin (TBG)/ Thyroxine binding glubulin	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4.0 mL blood clotted – **Red** top Vacuette®
Comment:	**Separate & freeze in <4Hrs**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Thyroid Receptor Antibody (TSH/LATS/anti-microsomal thyroid receptor Antibody)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood clotted – **Red** top Vacuette®
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Thyroid Stimulating Hormone (TSH)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	This test is available as part of the Thyroid Function profile (fT4 & TSH)
Turnaround:	Urgent request- same day, Routine request- 5 - 8 working days
Ref. Range:	As per report
Thyroxine – Free T4 (FT4)	
See: 'Free T4'	
Thiopurine S-methyltransferase (TPMT)	
Laboratory:	Sample referred from Biochemistry to Black Country Pathology Services, Specialist Chemistry Postal Reception, Pathology Dept. Sandwell General Hospital Lyndon West Bromwich B71 4HJ UK, UK
Specimen:	**Adult**: 2 x 4.0 mL blood EDTA – **Purple** top Vacuette®
Turnaround:	2-3 weeks
Ref. Range:	See report form.
Tick Borne Encephalitis Virus (TBEV)	
Laboratory:	Sample referred from Microbiology to National Virus Reference Laboratory
Specimen:	**Adult**: 4ml EDTA blood –Purple top Vacuette® **Paediatric**: 1.3 mL EDTA **Red** capped paediatric sample
Turnaround:	1 week
Ref. Range:	See report form
Tissue / Biopsy	
Laboratory:	Microbiology
Specimen:	**Tissue samples for microbiology must not be placed in formalin.** The specimen should be collected into a clean, sterile, leak-proof container. For small samples, add several drops of sterile saline to keep

	moist (include on label the nature of any additives e.g. 10Ml saline). **Do not allow tissue to dry out.** Bone marrow aspirates should be inoculated directly into a blood culture bottle as per the Blood Culture guidelines. Transport specimens ASAP. If processing is delayed, refrigeration is preferable to storage at room temperature.
Comment:	Test performed routinely Mon–Fri 9- 5pm. The volume of specimen influences the transport time that is acceptable. 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.
Turnaround:	Up to one week
Report:	Microscopy: Gram stain reports on the presence of WBC's and the presence of organisms if present. Culture report: Any clinically significant isolate with the appropriate sensitivities.
Tobramycin	
Laboratory:	Sample referred from Biochemistry to Microbiology Dept, CUH
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Take sample immediately pre-injection (trough) and again 0.5 hours post IV infusion or 1 hour post IM injection (peak)
Turnaround:	Same day TAT
Ref. Range:	See report form
Topiramate (Topamax®) (TOP)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	2 ml blood clotted – **White** top Vacuette® **Separate and freeze within 4 hrs.** Do **not** use Gel separator tubes.
Turnaround:	2-3 Weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
TORCH (TOR)	
See: "Intra-Uterine Infection Screen"	
Total Iron Binding Capacity (TIBC)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	This is a calculated test available as part of an iron profile which includes Iron, Transferrin, % transferrin saturation (Calculated) and TIBC (Calculated)
Turnaround:	UHK-in-house routine request- same day, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Toxicology/Drug Screen: Urine	
Laboratory:	Biochemistry
Specimen:	Random urine in a universal container
Comment:	***Note**: This is not an INAB accredited test*

	Tested for Amphetamines, Barbiturates, Benzodiazepines, Cannabis, Cocaine, Ecstasy, Methadone, Metamphetamine, Opiates/Morphine, Tricyclics. Analysis provides a qualitative screen only. **This service is only available to UHK in-house patients**
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs
Ref. Range:	Negative/Positive. A negative result indicates that the substance is either not present or is present at levels below the cut-off threshold for this test.
Toxicology Screen– Confirmatory Testing (Barbiturates Benzodiazepines, Cannabis, Cocaine, Methadone, Metamphetamines, Opiates, Phencyclidines & tricyclics)	
Laboratory:	Sample referred from Biochemistry to Toxicology Laboratory Beaumont Hospital Dublin.
Specimen:	Random urine sample in a universal container
Comment:	Confirmation test on urine only
Turnaround:	2-3 weeks
Ref. Range:	See report form or contact Beaumont Toxicology Dept. Tel (01) 8092673 / (01) 8092675, Emergency after hours (087) 2590749, Fax (01) 8093986.
Toxocara Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	3 days
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Toxoplasmosis PCR	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**EDTA (1ml), bronchial aspirations, BAL, aqueous humor, CSF, biopsy (lymph node and brain), cord blood**
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
***Toxoplasma gondii* Serology**	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	Blood 4mL **Red** top Vacuette®
Turnaround:	2 – 3 days if negative. 2 weeks for if confirmation is required.
Ref. Range:	As per report form
TPMT	
See: 'Thiopurine S-methyltransferase'	
Transferrin	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Transferrin is part of an iron profile which includes Iron, Transferrin, % transferrin saturation (Calculated) and TIBC (Calculated)
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report form

% Transferrin Saturation	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This is a calculated test which forms part of an iron profile which includes Iron, Transferrin, % transferrin saturation (Calculation) and TIBC (Calculation)
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report form
Transfusion Reaction Investigation	
Laboratory:	Blood Transfusion Laboratory
Specimen:	6 mL EDTA **Pink** top Vacuette® Donor unit(s) Tests for FBC, Coag screen, Renal function, Blood cultures on Patient, Ward urinalysis on first sample post reaction should also be performed. In cases of suspected viral transmission a full viral screen should be requested.
Clinical indications:	To determine if there was a serological incompatibility or bacterial contamination of transfused blood
Comment:	Please notify haemovigilence/ medical scientist in the blood transfusion department immediately. Advice can be obtained from the Haematologist available through the switchboard, Scientists in the blood transfusion department ext 54366 or out of hours the Haematologist in CUH who can be contacted through the switchboard in CUH ext 22000
Turnaround:	6 hours. Available on call
Ref. Range:	Not applicable
Treponema pallidium (Syphillis) PCS	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis laboratory Ireland.
Specimen:	**Mucocutaneous sampling, biopsy (except umbilical cord and placenta biopsy), CSF, cord blood, nasal secretions**
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Trichinella Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis laboratory Ireland.
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Trichomonas vaginalis PCR	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis laboratory Ireland.
Specimen:	**Genital samples, urine**
Turnaround:	1- 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Trichomonas vaginalis	
Laboratory:	Microbiology

Specimen:	For Trichomonas, a High Vaginal Swab from the posterior fornix should be swabbed. The swab should then be placed in charcoal containing transport media and transported ASAP. Delays of over 48h are undesirable.
Comment:	This examination must be specifically requested
Turnaround:	24 hours.
Report:	"*Trichomonas vaginalis* not seen" **or** "*Trichomonas vaginalis* seen"

Tricyclics
See: Toxicology/Drug Screen

Triglycerides (TRIG)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	Triglyceride Target Value <1.7 mmol/L.

Trileptal® (Oxacarbazepine & Hydroxycarbazepine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – White top Vacuette® **Separate and freeze within 4 hrs.** Do **not** use Gel separator tubes.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.

Tropheryma whipplei - PCR	
Laboratory:	Sample referred from Microbiology to Eurofins Biomnis laboratory Ireland.
Specimen:	**EDTA (4mL), Serum (4mL), Saliva, Stool, Biopsy, BAL, puncture fluids, joint fluids, CSF, urine, aqueous humor**
Comment:	PCR must be performed on an appropriate sample.
Turnaround:	1 week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information

Troponin I (hs)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	UHK-in-house request routine 2-4 hrs, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Troponin I (hs) (POCT)	
Laboratory:	Performed on POCT device which is available in Emergency Department
Specimen:	Whole Blood EDTA minimum volume 175 µL
Comment:	A separate whole blood EDTA must be taken for POCT hsTnI analysis. ***Note**: This is not an INAB accredited test*
Turnaround:	13 minutes
Ref. Range:	As per report
***Trypanosoma cruzi* Antibodies (Chagas disease)**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
***Trypanosoma gambiense* serology (Sleeping sickness)**	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Trypsin (Immunoreactive Trypsin)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 Ml blood clotted – **Red** top Vacuette®
Comment:	Separate and freeze < 4 hours
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Tryptase	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Draw blood as soon as possible after anaphylactic shock, again at 2 hours and 8 hours after**.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Tuberculosis Testing	
See: "Mycobacteriology"	
Tularemia – Francisella tularensis serology total antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab

Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Ulcer Swab	
See "Wound Swab"	
Urate/Uric acid (Blood)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Haemolysis and lipaemia may invalidate.
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Urate/Uric acid (Urine)	
Laboratory:	Biochemistry
Specimen:	Spot or 24 hour urine collection with no additive. Refrigerate specimen during and after collection. 24 hour urine containers available from the laboratory reception.
Turnaround:	3-5 working days
Ref. Range:	As per report
Urea Blood (UR)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Clinical Data:	This test is also available as part of the Renal Function test.
Comment:	Grossly haemolysed samples may invalidate results.
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Urea Urine (UUR)	
Laboratory:	Biochemistry
Specimen:	Spot or 24 hr urine collection with no additive. Refrigerate specimen during and after collection.
Turnaround:	UHK-in-house request routine 24-48 hours, urgent <2hrs GP request 3-5 working days
Ref. Range:	As per report
Urethral swab	
See: "Genital swab"	
Urinalysis (POCT)	
Laboratory:	Available throughout Hospital wards
Specimen:	Urine (Dip strip)
Turnaround:	***Note**: This is not an INAB accredited test*
Ref. Range:	1 minute
Urogenital (ureaplasma urealyticum), mycoplasma (mycoplasma hominis) serology	

Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Samples to be taken at a distance (>72hrs) from any antibiotic treatment
Turnaround:	1 – 2 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.

Urinary schistosomiasis

See: "Schistosoma haematobium"

Urine Microscopy and Culture

Laboratory:	Microbiology
Specimen:	• Please use monovette tubes for all urines for UTI testing • Use urine dip sticks at ward level to rule out negatives. • Ideally, a minimum volume of 2.5 mL is required for routine microscopy culture. • Excessive fluid intake will dilute the urine and may decrease the colony count. • Separate samples must be collected for detection of Mycobacteria or S. haematobium (see same). Specimen Types: **Midstream urine (MSU):** Recommended for routine use. Genitalia are cleaned. The first part of voided urine is discarded and without interrupting the flow, approximately 10 mL is collected into a sterile container. The remaining urine is discarded. **Bag urine:** Used commonly for infants and young children. The sterile bags are taped over the genitalia and the collected urine is transferred to a monovette tube. There are frequent problems of contamination with this method of collection. **Clean catch urine (CCU):** Thorough periurethral cleaning is recommended. The whole specimen is collected into a sterile container and then an aliquot sent for examination**.** **Suprapubic aspirate (SPA)**: The use of this invasive procedure is usually reserved for clarification of equivocal results from voided urine e.g. in infants. **Catheter urine (CSU):** May be obtained from suprapubic or per urethral catheters. The specimen should not be obtained from the collection bag. **Ileal conduit-urostomy:** Urine is collected via a catheter passed aseptically into the stomal opening after removal of the external appliance. Results from this type may be difficult to interpret and should be performed only if there is an indication for treatment, such as pyrexia or constitutional upset. **Cystoscopy urine:** obtained directly from the bladder using a cystoscope.
Comment:	It is important that there should be minimal delay before culture. If processing is delayed >6h, the following is recommended: Refrigeration for up to 48hrs or use the dip sticks at ward level to rule out negatives.
Turnaround:	**Microscopy**: Routine: 24 hours. Urgent: 2 hours of receipt **Culture**: Preliminary Culture Report: Available after 24 hours on contact with Department; Final Report : 1 to 5 days

Report:	**Microscopy**: Report on the range of WBCs and RBCs per cmm as well as the presence of epithelial cells, bacteria, yeasts and Trichomonas spp. (if present). **Culture**: Report bacterial growth in orgs/mL with sensitivities and comment where appropriate. Culture will only be carried out where WCC is >25/µL AND organisms are seen, but the following are cultured **in all cases**; Antenatal, <16 year, Renal, ICU, potentially immunocompromised.
Urine Steroid Profile	
Laboratory:	Sample referred from Biochemistry to Steroid Laboratory, Viapath, Kings College Hospital, London
Specimen:	20 mLs of mid stream urine (MSU). Freeze immediately.
Comment:	Urine sample must be frozen immediately
Turnaround:	2 – 3 weeks
Ref. Range:	As per report form
Valproate (Epilim®)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Sample drawn before the next oral dose with the patient at the steady state.
Turnaround:	UHK-in-house urgent requests<2hrs Routine request 5 - 8 working days
Ref. Range:	As per report
Vancomycin Pre/Random	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4 ml blood clotted – **Red** top Vacuette®.
Comment:	State whether pre or post dose. Trough sample immediately prior to next dose. Peak sample 1-2 hours after a 60 minute iv infusion.
Turnaround:	UHK-in-house request routine 2-4 hours, urgent <2hrs
Ref. Range:	As per report
Vancomycin Resistant Enterococci (VRE)	
Laboratory:	Microbiology
Specimen:	Rectal swab, placed in charcoal containing transport media.
Comment:	Testing restricted to ICU, CCU, Dialysis and CUH transfers.
Turnaround:	Prelim: 24 hours; Final: 48-72 hours
Ref. Range:	As per report form
Vanillyl Mandelic Acid / VMA (Colloquial name for Hydroxymethoxy Mandelic Acid, HMMA) (TCAT)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	24-hour urine sample collected into a container, which has **acid added**. 24 hour urine containers are available from the Biochemistry laboratory.
Comment:	**In the 48 hours prior to and during urine collection** avoid eating collagen rich foods e.g. meat, jelly or gelatine, ice cream and cooked meat.
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Varicella-zoster Immunoglobulin for Administration	

See: 'Chicken Pox'	
Varicella-zoster Virus IgG Antibody	
Laboratory:	Samples referred from Microbiology to Serology CUH
Specimen:	**Adult**: Blood 4mL **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	As per report form
Varicella-zoster Virus Molecular	
Laboratory:	• CSF sample processed in Microbiology UHK • Remaining samples referred from Microbiology to NVRL
Specimen:	CSF (0.2mL), viral swab (skin, eye), vesicle fluid, or **Adult**: Blood 4mL **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Serum must be separated and frozen at -20°C <24 hours All other sample type t be stored at 4°C. CSF: refer to cerebral spinal fluid for further information. **Note**: Blood samples are not routinely tests in those >3 years old.
Turnaround:	NVRL: 5 working days Microbiology UHK: Approx. 1 hr. for positive CSF samples. Next routine working day for negative CSF samples.
Ref. Range:	As per report form
Vasculitis Screen	
Laboratory:	Sample referred from Biochemistry to Autoimmunne Serology Lab, CUH Extn 22512
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Clinical details required
Turnaround:	2 weeks
Ref. Range:	See report form or contact autoimmune serology laboratory, CUH
Vasoactive Intestinal Polypeptide (VIP)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4.0ml EDTA + Aprotinine – **Pink.**
Comment:	Separate and freeze < 1 hour
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Venlafaxine (Effexor®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **White** top Vacuette® **Separate and freeze within 4 hrs.** Do **not** use Gel separator tubes.
Comment:	Include dosage details
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information.
Very Long Chain Fatty acids (C22-C26)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 3mL Lithium Heparin plasma - **Green** top Vacuette®

Comment:	Separate and freeze < 1 hour
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vigibatrin (Sabril®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – White top Vacuette® **Separate and freeze within 4 hrs.** Do **not** use Gel separator tubes.
Comment:	Include dosage details
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vincent's Angina	
See: "Mouth Swab".	
Viral Screen	
Please refer to the specific virus for information. A specimen requesting 'viral screen' will not be processed.	
Viral Haemorrhagic Screen	
Please refer to the specific virus for information. A specimen requesting 'viral haemorrhagic screen' will not be processed.	
Viscosity (VISC)	
Laboratory:	Referred from Biochemistry to Haematology St. James' Hospital, Dublin
Specimen:	**Adult**: 2 x EDTA Whole blood–**Purple** top Vacuette®.
Comment:	Samples must be kept at room temperature and are stable for 5 days
Turnaround:	1-2 weeks
Ref. Range:	As per report or contact the Haematology Dept. St. James' Hospital
Vitamin A (Retinol)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	**Separate and freeze < 1 hour** **Protect from light by foil wrapping the sample**
Turnaround:	2-3 weeks week
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vitamin B1 (Thiamine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2mL whole blood **Purple** top Vacuette® (EDTA). **Paediatric:** 1.3 mL whole blood **Red** capped EDTA
Comment:	**Do not separate** **Protect from light by foil wrapping** **Freeze samples < 1 hour**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vitamin B2 (Riboflavin)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab

Specimen:	**Adult**: 2mL whole blood **Purple** top Vacuette® (EDTA). **Paediatric:** 1.3 mL whole blood **Red** capped EDTA
Comment:	**Do not separate** **Protect from light by foil wrapping** **Freeze samples < 1 hour**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vitamin B3 (Niacin)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2mL whole blood **Purple** top Vacuette® (EDTA). **Paediatric:** 1.3 mL whole blood **Red** capped EDTA
Comment:	**Do not separate** **Protect from light by foil wrapping** **Freeze samples < 1 hour**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vitamin B6 (Pyridoxyl Phosphate)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 2mL whole blood **Purple** top Vacuette® (EDTA). **Paediatric:** 1.3 mL whole blood **Red** capped EDTA
Comment:	**Do not separate** **Protect from light by foil wrapping** **Freeze samples < 1 hour**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vitamin B12	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Vitamin B12 is a coenzyme necessary to the biosynthesis of DNA and RNA. Deficiency in man is associated with megaloblastic anaemia, it is also vital to the normal metabolism of folic acid. Vitamin B12 is part of KBF profile with Folate.
Turnaround:	5 – 8 working days
Ref. Range:	As per report form
Vitamin C (Ascorbic Acid)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4.0 mL blood Lithium Heparin tube – **Green** top Vacuette®. **Paediatric**: 1.3 mL lithium heparin **Orange** top
Comment:	1. Do not use gel separator tube 2. Separate and freeze <30mins. If this is not possible, the sample may be kept on wet ice for up to 4 hours prior to separation and freezing. **3.** Protect from light by foil wrapping
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information

Vitamin D (25 Hydroxy Vitamin D3/Hydroxycholecalciferol)	
Laboratory:	Biochemistry
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	5 - 8 working days
Ref. Range:	Vitamin D (25-OH-VITAMIN D), cut-offs based on dietary reference intakes Increased risk of deficiency: <30 nmol/L Increased risk of inadequacy: <40 nmol/L Adequacy: >50 nmol/L Increased risk of excess: >125 nmol/L. References: (a) IOM 2011:Dietary reference intakes for Calcium and Vitamin D. Washington, DC: The National Academies Press. (b) J Clin Endocrinology Metabolism, October 2011, 96 (10): 2987-2996
Vitamin E (Tocopherol)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **White** top Vacuette® **Do not use Gel separator tubes.** **Separate and freeze <1 hrs.**
Comment:	**Protect from light by foil wrapping.**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Vitamin K (Phytonadione/Phylloquinone)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **White** top Vacuette® **Do not use Gel separator tubes.** **Separate and freeze <1 hrs.**
Comment:	**Protect from light by foil wrapping**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Voltage Gated Potassium Channel Antibodies (AVGK)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Profile includes Anti-Lgi1 autoantibodies and Anti-Caspr2 antibodies
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Von Willebrands Screen	
Laboratory:	Samples referred from Haematology to Haematology CUH.
Specimen:	Blood: Adults: 3 x 3mL **Blue** top Vacuette® (sodium citrate) Children: 3 x 1.2mL paediatric (sodium citrate Green Top) Fresh samples to reach Haematology UHK before 10am. Prior appointment with phlebotomist necessary.
Comment:	Screen includes Factor VIII assay, vWF:ag (FVIII Related Antigen), vW Factor Activity (Ristocetin Co-Factor)

Turnaround:	3 - 4 wks
Ref. Range:	As per report form or contact Haematology, CUH.
Von Willebrands Factor for administration	
See: Factor VIII concentrates for administration	
West Nile Virus Antibodies	
Laboratory:	Samples referred from Microbiology to National Virus Reference Laboratory
Specimen:	**CSF or** **Adult**: Blood 4mL **Red** top Vacuette®**,** **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Discuss with consultant microbiologist prior to referral.
Turnaround:	By arrangement only with NVRL
Ref. Range:	As per report form
White Cell (Leucocyte) Antibody Investigation	
Laboratory:	Blood Transfusion Laboratory for referral to IBTS Dublin
Specimen:	4.0 mL blood in a plain tube - **Red** top Vacuette®
Clinical indications:	Identification of leucocyte HLA antibodies. Useful to identify the HLA causative antibodies in a febrile reaction to transfused blood.
Comment:	Samples referred to: I.B.T.S., National Blood Centre, James's St., Dublin 8.
Turnaround:	2 Weeks
Ref. Range:	Not Applicable
Whooping Cough	
See: "Bordetella pertussis/parapertussis – PCR".	
Wound Swab (Skin/Wounds/Abscess/Ulcer/Bite/Burn swab)	
Laboratory:	Microbiology
Specimen:	Always list site and type of wound on request form. Samples of pus, if present, are preferred to swabs. **Pus/fluids** up to a volume of 20 mL should be supplied (ideally a minimum of 1mL). **Swabs** should be soaked in exudate where possible. Sample a representative part of the lesion. Sample the deepest part of the wound, avoiding the superficial microflora. Use Ames charcoal transport swabs.
Comment:	The volume of specimen influences the transport time that is acceptable. Large volumes of purulent material maintain the viability of anaerobes for longer. Samples should be transported to the laboratory within 3 hours after which the recovery of anaerobes is compromised. Results from delayed samples must be interpreted with caution bearing in mind the difficulties in isolating anaerobes from these samples. **Note:** Routine processing of superficial swabs of ulcers should be discouraged. Swabbing dry crusted areas is unlikely to be helpful. If specimens are taken from ulcers the debris on the ulcer should be removed, the ulcer cleaned with saline and either a biopsy, or preferably a needle aspiration of the edge of the wound taken. A less invasive irrigation –aspiration method may be preferred. Using a small needle-less syringe, place the syringe tip under the ulcer margin and irrigate gently with at least 1 mL sterile 0,085% NaCl without preservative. After massage of the ulcer margin, repeat the irrigation with a further 1 mL sterile saline. Massage

	the ulcer margin again, aspirate approximately 0.25mL of the fluid and place in a sterile, leak-proof container.
Turnaround:	Up to one week.
Report:	As per report form
Xylose (Blood)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Adult: 4.0 mL clotted blood - **Red** top Vacuette®
Comment:	**Separate and freeze < 4hours**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Xylose (Urine)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	Spot urine sample
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Yellow Fever Virus	
Laboratory:	Samples referred from Microbiology to National Virus Reference Laboratory
Specimen:	**CSF or** **Adult**: Blood 4mL **Red** top Vacuette®**,** **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	Please discuss with consultant microbiologist before sending samples
Turnaround:	By arrangement only with NVRL
Ref. Range:	As per report form
Yersinia Antibodies	
Laboratory:	Samples referred from Microbiology to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	2 - 3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Zarontin® (Ethosuximide) (ETHO)	
See *"Ethosuximide"*	
Zika Virus IgG	
Laboratory:	Samples referred from Microbiology to National Virus Reference Laboratory
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Turnaround:	1 – 2 weeks
Ref. Range:	As per report form
Zika Virus PCR	
Laboratory:	Samples referred from Microbiology to National Virus Reference Laboratory
Specimen:	4ml of Urine or Serum or Plasma (CSF upon request (1mL))

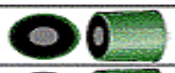
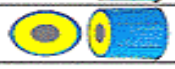
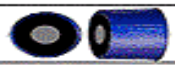
Turnaround:	1 – 2 weeks
Ref. Range:	As per report form
Zinc (Blood)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	**Adult**: 4ml blood clotted – **Red** top Vacuette® **Paediatric**: 1.3 mL serum **Brown** capped paediatric sample
Comment:	This specimen should be collected first if other tests are requested to avoid contamination
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information
Zonisamide (Zonegran®)	
Laboratory:	Sample referred from Biochemistry to Eurofins Biomnis Ireland Lab
Specimen:	4 ml blood clotted – **White** top Vacuette® **Do not use Gel separator tubes.** **Separate and freeze <1 hrs.**
Turnaround:	2-3 weeks
Ref. Range:	See report form, or visit internet site www.eurofins.ie/biomnis for up to date referral test information

16.0 ATTACHMENTS

Attachment I Tube Guide for Adults and Paediatrics

a) Adult tube guide

Tube Guide

Vacuette® tube type	colour-coding of cap	additive	intended purpose
Serum		Clot activator	Determinations in serum for clinical chemistry, microbiological serology, immunology, TDM
Serum Gel		Clot activator and Gel	Determinations in serum for clinical chemistry, microbiological serology, immunology, TDM
Serum Beads		Clot activator and Beads	Determinations in serum for clinical chemistry, microbiological serology, immunology
Serum Crossmatch		Clot activator	Determinations in serum for crossmatch testing
Plasma		Sodium Heparin Lithium Heparin Ammonium Heparin	Determinations in heparinised plasma for clinical chemistry
Plasma Gel		Lithium Heparin and Gel	Determinations in heparinised plasma for clinical chemistry
EDTA		K_2 EDTA K_3 EDTA	Determinations in EDTA whole blood for haematology
EDTA Crossmatch		K_3 EDTA	Determinations in EDTA whole blood for crossmatch testing
EDTA Gel		K_2 EDTA / Gel	Determinations in EDTA plasma for molecular biological identification of viruses, parasites und bacteria
Coagulation		Citrate Solution (3.2%) Citrate Solution (3.8%)	Determinations in citrated plasma for coagulation testing
CTAD		CTAD (3.2%)	Determinations in citrated plasma for coagulation testing where the artificial entry of platelet factors into the plasma is avoided
Glucose		Anticoagulant Glycolysis inhibitor	Determinations in stabilised anticoagulated whole blood or plasma for glucose and lactate testing
Trace Elements		Clot activator Sodium Heparin	Determinations in serum / heparinised plasma for trace elements testing
Blood Grouping		ACD-A ACD-B CPDA	Determinations in ACD / CPDA whole blood for blood grouping

b) Paediatric tube guide

Paediatric Tubes: Note: cap colours of paediatric tubes are <u>different</u> to adults as follows:

Tube Type	Colour of Paediatric Caps	Additive
Serum	**Brown** Cap	Clot activator
Lithium Heparin	**Orange** Cap	Sodium/Li heparin
EDTA	**Red** Cap	K2 EDTA, K3 EDTA
Sodium Flouride	**Yellow** Cap	NaF
Coagulation bottle	**Green** Cap	Citrate

Attachment II: Order of Draw [LI-PATH-ORDDRAW]

Please use the following guide when taking more than one sample type. It is important that samples are taken in this order to avoid the risk of cross-contamination of additive between tubes. For the ED department only a white discard tube is taken first followed by the order of draw.

University Hospital Kerry Pathology Department Order of Draw Guide	LI-PATH-ORDDRAW Effective Date: 23.08.2021	Version 1 Review Date: See Q-Pulse

Order of Draw Guide

1. Check name and DOB with your patient,
2. Check name and DOB on patient wrist band,
3. Check name and DOB on request form
4. Take the required samples (See table). NOTE: different colour tube caps for adults and paediatrics
5. For BT3 and MN-CMS ONLY use the generated printed labels to label bloods. Otherwise hand-write patient details on tubes
6. Send samples to laboratory. Phone laboratory with Urgent requests. Hand deliver Urgent Blood Transfusion requests.

Order of Draw	ADULT Coloured Caps	Tube Contents	PAEDIATRIC Coloured Caps	Most Common Tests	Mixing instructions	Special instructions
1st		Trisodium Citrate Solution		Coagulation, INR, D-Dimer, Fibrinogen	After collection, invert 4 times	Fill Tube to Line - Inadequately Filled Tubes cannot be used
2nd		Serum Gel		General Biochemistry, TDMs Endocrinology, Immunology, Virology/Serology & Haematinics,	After collection, invert 5-10 times	Allow 30 minutes before centrifuging.
3rd		Lithium Heparin		Dialysis patients (and patients on high levels of Heparin)	After collection, invert 5-10 times	Allow 30 minutes before centrifuging.
4th		EDTA		FBC, HbA1C, PTH, HH, DNA testing, meningococcal PCR, CF, Fragile X	After collection, invert 8-10 times	
5th		EDTA		Blood Grouping, Cross Match	After collection, invert 8-10 times	Urgent requests must be hand delivered to Blood Bank laboratory.
6th		NaF Potassium Oxalate		Blood Glucose, GTT's	After collection, invert 5-10 times	Specify Collection Time Specify RANDOM or FASTING

Attachment III: Venepuncture techniques

Patient Identification and Taking Blood Samples

Section A: For patients attending GP practices and OPD phlebotomy services

- **Ask the patient to say their name and DOB**
- **Check this name and DOB with the name and DOB on the request form.**
- If you are satisfied that the patient has been fully identified take the blood sample.
- Hand label each blood specimen container with the patients' full name, DOB and MRN (if available) at the patients side. Initial the specimen.
- Label at patient's side and deal with one patient at a time.
- Do not under any circumstances pre-label bottles away from patient's side.
- Place the blood samples into the plastic bags attached to the request form. Seal the bag.

Section B: For Hospital in–patients:

Go to the patient and if he/she is conscious -

- **Ask the patient to say their name and DOB.**
- **Check this name with the name and DOB on the request form.**
- Check the name and Hospital Number on the patient's wristband against the form.
- If the patient does not have a wristband, contact the nurse in charge.
- If you are satisfied that the patient has been fully identified take the blood sample.
- If using **BT3 PDA's** the patients wrist band is scanned to confirm patient details, the barcoded labels are printed out and these can be placed directly onto the specimen tube. If BT3 PDA's are not in use then hand-write each specimen container with the patients' full name, DOB and MRN at the patient's side. Initial the specimen. Note: This also applies to blood culture bottles.
- Label at patient's bed side and deal with one patient at a time.
- Do not under any circumstances pre-label bottles away from patients side.
- Place the samples into the plastic bags attached to the request form and seal the bag.

Section C: For Hospital in–patients:
Identifying an Unconscious/Incoherent Patient/Patient too young to identify themselves:

- Check Name, D.O.B. and M.R.N. on request form against the patients wrist-band.
- Carer, relative or nursing staff should verify details.

- If you are satisfied that the patient has been fully identified take the blood sample.
- If using **BT3 PDA's** the patients wrist band is scanned to confirm patient details, the barcoded labels are printed out and these can be placed directly onto the specimen tube. If BT3 PDA's are not in use then hand-write each specimen container with the patients' full name, DOB and MRN at the patient's side. Initial the specimen. Note: This also applies to blood culture bottles.
- Place the samples into the plastic bags attached to the request form and seal the bag.

Section D: For Hospital MN-CMS in-patients

Go to the patient bedside, bring the mobile cart with you (if you are taking a sample for blood transfusion bring the requisition form also to the beside)

- Ask the patient to say their name and date of birth.
- Verify that the patients name and date of birth is identical on the patient's hospital identification wrist band.
- Verify that the patients name and date of birth is identical on the patient's notes- electronic health record.
- Navigate to the Specimen collection tool bar
- Scan the patients wrist band using the barcode scanner
- **If you are satisfied that the patient has been fully identified take the blood sample.**
- Find the required specimen and right click on the line, select Print- label.
- The label printer attached to the computer should default to the printer on the mobile cart.
- Check the details on the labels to ensure the label printed correctly.
- Affix the labels to the samples ensuring the correct labels are fixed to the correct sample types. Also ensure the label is placed straight and in the correct position.
- Once the process has been completed right click on the specimen again and select 'Collected'
- The specimen should disappear from the list. Press sign on the right corner of the window.
- In the case of Blood transfusion specimens check the sample identifiers against the details on the request form.
- Place the samples into a plastic biohazard bags (along with the request form in the case of Blood Transfusion)**.**
- **Send the samples to the lab immediately**

Section E: <u>For Hospital MN-CMS out-patient department</u>

Go to the patient, bring the mobile cart with you (if you are taking a sample for blood transfusion bring the requisition form also to the patient)

- **Ask the patient to say their name and date of birth.**
- **Verify that the patients name and date of birth is identical on the patient's notes- electronic health record.**
- Navigate to the Specimen collection tool bar
- Select 'unable to scan barcode' in the out-patient setting only.
- **If you are satisfied that the patient has been fully identified take the blood sample.**
- Find the required specimen and right click on the line, select Print- label.
- The label printer attached to the computer should default to the printer on the mobile cart.
- Check the details on the labels to ensure the label printed correctly.
- Affix the labels to the samples ensuring the correct labels are fixed to the correct sample types. Also ensure the label is placed straight and in the correct position.
- Once the process has been completed right click on the specimen again and select 'Collected'
- The specimen should disappear from the list. Press sign on the right corner of the window.
- In the case of Blood transfusion specimens check the sample identifiers against the details on the request form.
- Place the samples into a plastic biohazard bags (along with the request form in the case of Blood Transfusion)**.**
- Send the samples to the lab immediately.

Section F: Additional labelling requirements for Blood Transfusion blood component requests

Specimens with requests for blood product issue must be labelled clearly and handwritten and

contains **3 unique patient identifiers,** i.e**.**:

- Patients full name,
- MRN when available, otherwise address
- DOB

And must be:

- Signed by the person who took the specimen.
- In emergency situations where the Patient is unknown the specimen must be labelled with a unique identifier and MRN

Section G: Request forms for all laboratory disciplines must contain the following information:

- Patients full name,
- MRN when available,
- DOB
- Ward
- Address
- Consultant or GP
- Signed, dated and timed by the person who has made the request
- Signed, dated and timed by the person who took the specimen.
- Test request

Request forms should also contain

- The indications for the request

Request forms for blood component or product issue must also contain

- The date and time the blood components or products are required
- Any special requirements

The request form should also contain:

- Transfusion history
- Obstetrical history where applicable

Section H: Phlebotomy Guidelines on Order of Draw

If several different samples are required fill the tubes in the following order:

Order of Draw:

- Blood culture bottles (fill anaerobic, purple-topped, bottle first)
- Citrate tubes (light-blue topped, for coagulation studies)
- Dry tubes (red topped) for tests on serum.
- Heparin tubes (green-topped, for plasma chemistries etc.)
- EDTA tubes (lavender-topped, for full blood counts and blood bank tubes etc.)
- Fluoride/oxalate tubes (Grey-topped, for glucose)
- Sodium Heparin (Navy topped, for Zinc and Lead)

Gently mix specimen containers immediately following collection by inversion five times (very gently).

Section I: Collection of Blood Cultures.

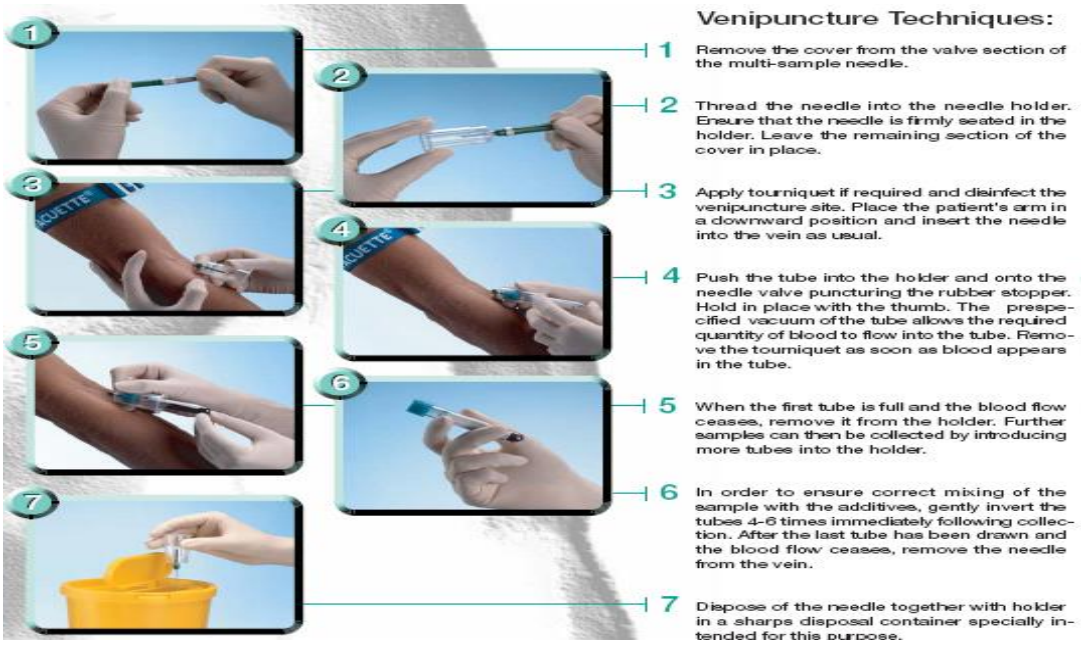
- **For the Procedure and Policy on taking Blood Cultures, refer to the UHK Notice Board under Infection Control.**
- **Refer to UHK, Sepsis Management Guidelines on when to take Blood Cultures and for further information on sepsis management.**
- Blood culture collection Kits are available on the ward or from stores for adult collection.
- Blood Cultures are an urgent test and therefore samples must be delivered to the laboratory as soon as possible after venipuncture.
- Read the Procedure for Taking Blood Cultures and the Policy Document 'Taking Blood Cultures' before taking a Blood Culture.

- Refer to the A to Z Index for information on Bottle types and specimen handling.

Section J: Haemolysed Specimens

Factors in performing venipuncture, which may account for haemolysis include:

- Using a needle with a small diameter (e.g. 23 gauge or more)
- Using a small needle with a large vacutainer tube.
- Using an improperly attached needle and syringe so that frothing occurs as the blood enters
- Drawing blood from indwelling line.
- Pulling the plunger of a syringe back too quickly.
- Shaking or vigorous mixing of blood collection tubes.
- Forcing blood from a syringe into a blood collection tube, especially through a needle.
- Failure to allow the blood to run down the side of the tube when using a syringe to fill the tube.
- Failure to allow alcohol swab to dry
- Drawing from site of haematoma
- Very slow flow into tube



Attachment IV: Name and Address of Referral Laboratories

Name of referral laboratory	Address of Referral Laboratory	Referring Laboratory UHK
Beaumont Hospital www.beaumont.ie/	Toxicology Laboratory / Endocrine Laboratory / Biochemistry Laboratory Beaumont Hospital, Dublin 9	Biochemistry
Beaumont Hospital www.alpha1.ie	Alpha One Foundation Alpha 1 Suite, RCSI Smurfit Building, Beaumont Hospital, Dublin 9	Biochemistry
Beaumont Hospital www.beaumont.ie/	Neuropathology Laboratory Microbiology laboratory Beaumont, Dublin 9	Microbiology
Beaumont Hospital www.beaumont.ie/	The Pneumococcal Typing Project, Department of Microbiology, RCSI Education and Research Centre, Smurfit Building, Beaumont Hospital,	Microbiology
Beaumont Hospital www.beaumont.ie/	HLA Tissue Typing Lab Blood Transfusion Beaumont, Dublin 9	Blood Transfusion
Biomnis Laboratories www.eurofins.ie/biomnis	Three Rock Road, Sandyford Business Estate Sandyford, Dublin 18	Biochemistry
Biomnis Laboratories www.eurofins.ie/biomnis	LCL Laboratoire De Cytogenetique, 37 Rue Boulard, Paris 75014, France	Biochemistry
Biomnis Laboratories www.eurofins.ie/biomnis	Three Rock Road, Sandyford Business Estate Sandyford, Dublin 18	Microbiology
Biomnis Laboratories www.eurofins.ie/biomnis	Three Rock Road, Sandyford Business Estate Sandyford, Dublin 18	Haematology
Biomnis Laboratories www.eurofins.ie/biomnis	Three Rock Road, Sandyford Business Estate Sandyford, Dublin 18	Molecular Diagnostics (HH)
Black Country Service - City Hospital Birmingham www.cityassays.org.uk	Black Country Pathology Services Specialist Chemistry Postal Reception, Pathology Dept. Sandwell General Hospital Lyndon West Bromwich B71 4HJ UK	Biochemistry
Bon Secours Hospital Tralee www.bonsecours.ie	Histology Laboratory, Pathology Dept Bon Secours Hospital Tralee, Tralee Co. Kerry	Histology
Cherry Orchard Hospital	Public Health Laboratory HSE Cherry Orchard Hospital Ballyfermot, Dublin 10	Microbiology
Children Health Ireland at Crumlin (Our Lady's Hospital) www.genetics.ie	NCMG/Dept. of Clinical Genetics Our Lady's Hospital Crumlin, Dublin 12	Biochemistry
Children Health Ireland at Crumlin (Our Lady's Hospital) www.genetics.ie	Microbiology Department Our Lady's Children's Hospital Crumlin, Dublin 12	Microbiology
Children Health Ireland at Crumlin (Our Lady's Hospital) www.genetics.ie	Cytogenetic Lab, Our Lady's Children's Hospital Crumlin, Dublin 12	Haematology
Children Health Ireland at Temple Street Hospital www.cuh.ie	Metabolic and/or Biochem Lab Children's University Hospital, Temple Street, Dublin 1	Biochemistry
Children Health Ireland at Temple Street Hospital www.cuh.ie	IMSRL Children's University Hospital Temple Street, Dublin 1	

Name of referral laboratory	Address of Referral Laboratory	Referring Laboratory UHK
Children Health Ireland at Temple Street Hospital www.cuh.ie	The Pneumococcal Typing Project EMBU Children's University Hospital Temple Street, Dublin 1.	Microbiology
Cork University Hospital www.cuh.hse.ie	Bio/Micro/Immunology Departments Cork University Hospital, Wilton Road, Wilton, Cork	Biochemistry
Cork University Hospital www.cuh.hse.ie	Micro/Serology Departments Cork University Hospital Wilton Road, Wilton, Cork	Microbiology
Cork University Hospital www.cuh.hse.ie	Dr. Liam Fanning MVDRL Molecular Virology Diagnostic & Research Laboratory (MVDRL) Clinical Investigations Building Cork University Hospital Wilton Road, Wilton, Cork	Microbiology
Cork University Hospital www.cuh.hse.ie	Haematology and Coagulation Cork University Hospital Wilton Road, Wilton, Cork	Haematology
Cork University Hospital www.cuh.hse.ie	Histopathology Department, Cork University Hospital Wilton Road, Wilton, Cork	Histology
Great Ormonde Street London www.gosh.nhs.uk	Enzyme lab Chemical Pathology Camelia Botnar Laboratories Great Ormond Street Hospital London UK WC1N 3JH	Biochemistry
IBTS – MRTC, Cork (Munster Regional Transfusion Centre) www.ibts.ie	MRTC, St Finbarr's Hospital, Douglas Rd, Cork City	Blood transfusion
IBTS – NBC, Dublin (National Blood Centre) www.ibts.ie	National Blood Centre, IBTS James's Street, Dublin 8	Blood transfusion
Mater Misericordiae University Hospital Dublin www.mater.ie	Biochemistry Dept, Mater Misericordiae University Hospital, Eccles Street Dublin 7	Biochemistry
National Maternity Hospital Holles Street www.nmh.ie	Histology Laboratory Holles Street Dublin 2	Histology
National Virus Reference Laboratory www.ucd.ie/nvrl	Viral and Molecular Virology National Virus Reference Lab, University College Dublin, Belfield, Dublin 4	Microbiology
Public Health England www.gov.uk	HPA Malaria Reference Lab., Dept of Infectious &Trop Diseases London School of Hygiene & Tropical Medicine Keppel Street, London WC1E 7HT	Haematology (Malaria)
Public Health England www.gov.uk	Antimicrobial Resistance & Healthcare associated infections Lab (AMRHAI) Public Health England 61 Colindale Avenue, London NW9 5EQ	Microbiology
Public Health England www.gov.uk	Cryptosporidium reference unit (CRU) Public Health Wales Microbiology ABM, Singleton Hospital, Sketty Swansea SA2 8QA	Microbiology
Q-Plus Fertility	Q Plus Fertility No 3 Abhainn Beag Baltimore Rd Skibbereen, Co. Cork	Histology
Rotunda Hospital http://rotunda.ie/	Parnell Square E, Rotunda, Dublin 1	Blood Transfusion

Name of referral laboratory	Address of Referral Laboratory	Referring Laboratory UHK
Royal Devon & Exeter Hospital	Immunology Laboratory, Area A2, Royal Devon & Exeter Hospital, Barrack Road, Exeter, EX2 5DW, UK	Biochemistry
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	Haematology & Bio Laboratories, St. James's Hospital, James's Street, Dublin 8	Biochemistry
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	National MRSA Reference Lab St. James's Hospital James's Street, Dublin 8.	Microbiology
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	Gonococcal Reference Laboratory Microbiology Department St. James Hospital Dublin 8	Microbiology
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	CMD Cancer Molecular Diagnostic Lab, St. James's Hospital James's Street, Dublin 8.	Haematology
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	CMD Cancer Molecular Diagnostic Lab, St. James's Hospital James's Street, Dublin 8.	Biochemistry
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	Special Haematology Lab, St. James's Hospital James's Street, Dublin 8.	Haematology
St James's Hospital www.stjames.ie/ www.nmrsarl.ie	NCHCD Lab, St. James's Hospital James's Street, Dublin 8.	Haematology
University Hospital Galway http://www.nuigalway.ie/research/salmonella_lab/	National *Salmonella, Shigella & Listeria* Reference Lab (NSSLRL) Department of Medical Micro University Hospital Galway, Galway City	Microbiology
University Hospital Galway http://www.nuigalway.ie/research/salmonella_lab/	Carbapenemase Producing Enterobacteriaceae (CPE) Reference Laboratory Department of Medical Micro University Hospital Galway, Galway City	Microbiology
Viapath - Kings College Hospital, London www.kch.nhs.uk/	Steroid Laboratory, King's College Hospital, Denmark Hill, London SE5 9RS UK	Biochemistry
Synnovis www.synnovis.co.uk	Purine Research Lab, Central Specimen Reception Synnovis, Friars Bridge Court 41-43 Blackfriars Road, London SE1 8NZ, UK	Biochemistry