

## Bon Secours Hospital Galway Pathology Laboratory User Guide

Policy  SOP  Guidelines  Programme

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### SUMMARY OF CHANGES (from previous version)

Version/ Revision	Effective Date	Changes (list sections changes)	Change Author
3	27/11/25	Minor updates shaded in grey: Section 1.2: Added POCT Section 2.5.1 Ammonia, Amikacin/ Amikin updated	S Kenny
3	27/11/25	CR-25606: INAB NC PD/2025-01/01 Disclosure of Incidents that resulted or could have resulted in patient harm. Section 2.9 added	S Kenny
3	27/11/25	Section 3.3.2 Added Request form for Histology and Lyme Serology	S Kenny
3	27/11/25	CR-21976: Section 3.3.7 Added “Individual Pathology Departments can be contacted to ensure sample is within the allowable testing time from when sample collection was performed”.	S Kenny

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3	27/11/25	CR-23061: Updated Alzheimers test information in section 12.	S Kenny
3	27/11/25	CR-23874: Updated Lysozyme test information section 12	S Kenny
3	27/11/25	CR-23875: Added CJD Markers RT- Quik to section 12	S Kenny
3	27/11/25	CR-24546: Updated tests sent to Oxford i.e. Anti-Mog Ro, Yo, Musk etc to be referred to Biomnis	S Kenny
3	27/11/25	CR-24773: Temporal Artery- additional requirements add phone to GUH to book in advance added to Section12.	S Kenny
3	27/11/25	CR-24824: Added Nodal & Paranodal Antibody sent to oxford serum or CSF. A specific form is required and can be found on oxford website. Section 12	S Kenny
3	27/11/25	CR-25223: Removed Monospot test. Section 10.4 , 10.5 and 12. Added ESR TAT to section 10.4	S Kenny
3	27/11/25	CR-25509: Updated Homocysteine Test requirements in section 12.	S Kenny
3	27/11/2025	CR25623: Removed references to phlebotomy services on Saturday from page 10 and section 5. Updated TAT sections to include "Turnaround time stated below is for samples received within the hours of 09:00 to 16:00 Monday to Friday, 09:30 to 13:00 Saturday and 10:30 to 12:30 Sunday".	S Kenny

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## 1 INTRODUCTION

This Laboratory User Guide is designed to give an overall view of the services available in the Pathology Department at the Bon Secours Hospital, Galway (BSHG). This user guide may also be referred to as a user manual. It is intended as a reference guide for all clinical users of the Pathology Department. Every effort has been made to ensure that the information provided herein is current and accurate. This User Guide is subject to regular review, and authorised amendments may be implemented by the Pathology Department without notice.

Included in the guide are details about the scope of service, location and hours of operation of the laboratory, contact details for key laboratory personnel, availability of clinical advice, and lists by laboratory section of the range of tests currently available, expected turnaround times and other relevant notes. Please note turnaround times are from when samples are received in the pathology department to results authorised for clinician to review. Results are not issued directly to patients. The test repertoire of the Bon Secours Hospital Galway (including referral tests) is incorporated into this manual alphabetically. The Pathology Department refers some tests (including rare and unusual tests) to external laboratories and this manual lists the requirements for those tests referred to external laboratories. If a clinical user requires a test that is not detailed in this manual or is uncertain about some aspect of requesting or performing a test, they should contact the laboratory in advance of arranging the test.

The Pathology Department provides routine laboratory and on-call service to BSHG. The on-call services performed in BSHG is only available within the hours listed in section 2.2 below. All urgent samples excluding covid samples taken outside these hours are referred to Galway University Hospital Pathology Department. A list of services provided can be seen in section 2.5.1.

The services of the Pathology Department undergo continuous review through quality assurance and audit activities. The laboratory is committed to performing its activities in accordance with the requirements of applicable regulations and standards.

This manual should be used as a guide only, any queries arising or required in relation to laboratory services should be addressed directly by contacting the relevant department.

Pathology Department Disciplines & Associated Disciplines			
Key Disciplines		Key Support Services	
Biochemistry	Blood Transfusion,	Haemovigilance	Administration/ Finance
Haematology	Microbiology	Point of Care Testing	Infection Control
Quality Assurance	Specimen Reception	(POCT) Service	Stores Department

### 1.1 Organisation of the Pathology Department

The Pathology Department comprises four separate testing sections: Biochemistry, Blood Transfusion, Haematology and Microbiology. Specimen Reception is responsible for receipt of all Laboratory samples and referring tests to external laboratories. The Pathology Department also includes, Quality Assurance and Point of Care services. The Clinical Chemistry and Haematology laboratories together may be referred to as "Blood Sciences".

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## 1.2 Quality Management System and Quality Policy of the Bon Secours Hospital Galway

The Pathology Laboratory Department is committed to providing a high quality, efficient and comprehensive service to our patients and clinical users. Central to this commitment is the Quality Management System (QMS). The Haematology, Biochemistry and Blood Transfusion Services is accredited to the International Standard ISO 15189 from the Irish National Accreditation Board (INAB) and is in compliance with Articles 14 and 15 of EU Directive 2002/98/EC. The Microbiology department and POCT are committed to performing its activities in accordance with the requirements of international standards "ISO 15189". Details of the scope of accreditation can be found on the INAB website [www.inab.ie](http://www.inab.ie) (directory of accredited bodies, registration number 229MT), or on request from the laboratory.

The laboratory maintains a strong focus on continuous quality improvement for all aspects of its service. The quality of results is of fundamental importance and the laboratory operates to strict scientific and management standards. Results are authorised within a framework of comprehensive internal and external quality control and quality assurance. The Departments Quality Policy is displayed in the department and available at [www.bonsecours.ie](http://www.bonsecours.ie).

## 1.3 Philosophy, Mission and Values of the Bon Secours Health System (BSHS)

### 1.3.1 Philosophy

Bon Secours Health System CLG (Bon Secours) carries forward the healing ministry of Jesus, in succession to the Sisters of Bon Secours in Ireland, through the ownership, management and governance of facilities, programmes and services intended to improve the health and wellbeing of the community in general, and is dedicated to bringing 'Good Help' to those to whom it ministers, in particular to the sick and the dying, through compassion, healing and liberation, in a manner consistent with the teachings of the Catholic Church.

### 1.3.2 Our Mission

Founded by the Sisters of Bon Secours, our hospitals have as their mission, care for the sick, the dying and their families within a Catholic Ethos. Inspired by the Gospel and sharing in the healing mission of Jesus, we recognise the dignity and uniqueness of each person, seeking to provide high quality, holistic care which is characterised by compassion, respect, justice and hope.

### 1.3.3 Our Vision

Inspired by God's hope for the world, we will be a ministry where staff want to work, clinicians want to practice, people seek wellness and communities thrive.

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### 1.3.4 Our Core Values

- **Human Dignity:** We commit to uphold the sacredness of life and to be respectful and inclusive of everyone.
- **Integrity:** We commit to act ethically and to model right relationships in all of our individual and organisational encounters.
- **Compassion:** We commit to accompany those we serve with mercy and tenderness, recognising that “being with” is as important as “doing for.”
- **Stewardship:** We commit to promote the responsible use of all human and financial resources, including Earth itself.
- **Service:** We commit to provide the highest quality in every dimension of our ministry.

## 1.4 Guide to Using this Manual

Physical copies of this manual are located within the Pathology Department and on Phlebotomy trollies, Consultant’s Clinic and Nurse’s Stations for the convenience of relevant staff if requested. All physical copies are document controlled by the Laboratory Quality Coordinator/designated nominee and must remain in the designated location.

For internal users a controlled electronic version of the User Guide is available on Hospital Q-Pulse in a ‘read-only’ format. External users can access the Pathology Laboratory User Guide on [www.bonsecours.ie](http://www.bonsecours.ie).

The laboratory tests and profiles you require information on can be found under sections 8-11 traceable to the department where the tests are performed. In addition individual tests are detailed with specimen requirements in section 12 “Test Directory”.

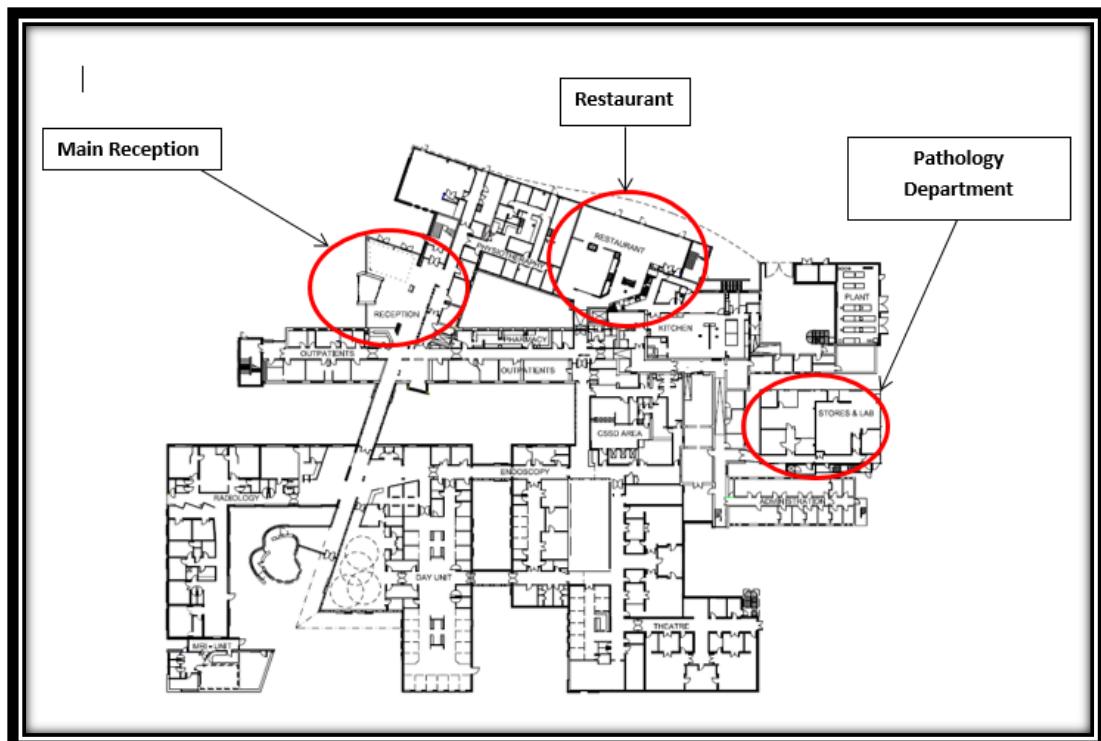
## 2 GENERAL INFORMATION

<b>Full name/address:</b>	Pathology Laboratory, Bon Secours Hospital Galway, Dublin Road, Renmore, Galway, H91 KC7H
<b>Telephone</b>	091 - 381960.
<b>Fax</b>	091 - 381961.
<b>E-mail</b>	<a href="mailto:lcunningham@bonsecours.ie">lcunningham@bonsecours.ie</a>
<b>Website</b>	<a href="http://www.bonsecours.ie">www.bonsecours.ie</a>

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## 2.1 Pathology Department Location

The Bon Secours Hospital Pathology Laboratory is located at the back of the Hospital. Access to the Pathology Laboratory is through coded security ID badge. There is no public access to the Laboratory. External users wishing to drop-off specimens must present themselves at OPD. Service engineers, sales personnel or other visitors are met at Hospital Reception by laboratory personnel and accompanied to the Pathology Laboratory.



Two Blood Fridges are in the Hospital. The blood stock fridge is in the Blood Transfusion Department in Pathology Laboratory. The Blood Issue fridge is located on the First Floor Theatre adjacent to the Theatre lift.

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## 2.2 Pathology Department Hours of Service

Department/Activity	Opening Hours
<b>Phlebotomy Service for In-Patients</b>	<b>Monday to Friday:</b> 07:00 to 16:00 hrs
<b>Phlebotomy Service for Out-Patients</b>	<b>Monday to Friday:</b> 08:30 to 15:00 hrs.  <b>Outside these hours</b> or in emergency situations, blood samples are taken by <b>medical or nursing staff</b>
<b>Routine Laboratory Service</b>  Monday to Friday	<b>Monday to Friday</b> 09:00 to 17:00 hrs ex. Bank Holidays  <b>Deadline 16:00hrs:</b> Routine Blood Transfusion, clinical chemistry and haematology specimens received by 16:00 hrs will be reported same day. Microbiology requests received by 16.00 hrs will be processed that day.  <b>Urgent</b> requests will be processed up to 17:00. (Please phone the Laboratory to inform the Medical Scientist of any sample being sent after 16:30)
<b>Restricted Laboratory Service</b>  Saturday & Sunday Mornings including Bank Holiday Mondays.  (Refer to list of tests performed on Saturday morning)	<b>Saturday:</b> 09:30 to 1:00 hrs (Urgent Samples only- Routine sample processed on Monday)  <b>Sunday:</b> 10:30 to 12:30 hrs (Urgent Samples only- Routine sample processed on Monday)  Urgent samples <b>only</b> to be sent to the Pathology Department taken before 11:00 am where possible. Any non-urgent blood samples should wait to be bled on Monday
<b>Emergency Out of Hours Service for Urgent Specimens ("On call Service")</b>  After 17:00 Monday- Thursday  <b>Refer to list of tests performed on-call</b>	Requests after 16:30 Monday-Friday/12.30 Saturday/Sunday – Please phone the Laboratory/on-call Medical Scientist to ascertain if the specimen can be analysed on-site  The Bon Secours Medical Scientist is contactable on the Laboratory On Call phone (087-7749674). The on call medical scientist must be phoned if: <ul style="list-style-type: none"><li>• any Blood Transfusion samples are sent to GBTE for Crossmatch or if</li><li>• any Respiratory Panel (Covid) requests are taken.</li></ul> If no Medical Scientist is available to process the test – please refer request to Galway University Hospital (GUH) (who provide an out-of-hours service for emergency/urgent requests). Refer to <b>BSG/PATH/SOP/004 "Procedure for the Out of Hours Referral and Transport of Diagnostic Samples to the Pathology Laboratory of Galway University Hospital"</b> for out of hours requests.

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**NOTE:** Routine/non-urgent samples arriving after the stated deadlines will be analysed the next routine working day. Please ensure that such samples are stored appropriately. Specimens which require storage at 2-8°C may be left in the fridge located in the Specimen Reception area of the Laboratory.

## 2.3 BSG Pathology Department Contact Numbers

The following numbers are used to contact individual laboratories during routine hours.

Contact	Contact Details/Telephone Number
<b>Laboratory Service Manager</b> Lucy Cunningham	091 381959/Internal Ext 580 <a href="mailto:lcunningham@bonsecours.ie">lcunningham@bonsecours.ie</a>
<b>Quality Coordinator</b> Siobhan Kenny	091 381956/Internal Ext 582 <a href="mailto:skenny@bonsecours.ie">skenny@bonsecours.ie</a>
<b>Haemovigilance Officer</b> Noreena O'Brien	091 381900/Internal Ext 575/Bleep 25 <a href="mailto:nobrien@bonsecours.ie">nobrien@bonsecours.ie</a>
<b>Phlebotomists</b>	Ext 576/Bleep 20/29
<b>Infection Control</b>	Ext 420
<b>Main Pathology Laboratory</b>	091 381960/Internal Ext 581
<b>Pathology Office (report enquiries)</b>	Internal Ext 587
<b>Haematology</b>	091 381967/Internal Ext 584
<b>Microbiology</b>	091 381926/Internal Ext 586
<b>Blood Transfusion</b>	091 381924/Internal Ext 583
<b>Clinical Chemistry</b>	091 381966/Internal Ext 585
<b>Out of Hours, Bon Secours Hospital Galway Medical Scientist.</b>	<b>087 7749674</b>
<b>Out of Hours, Galway University Hospital, On-Call Medical Scientist (via GUH switch)</b>	091 544544/524222
<b>BSG Consultant Directory</b>	
<b>Consultant Haematologist, Blood Transfusion</b> Dr Amjad Hayat	091 542625 or through BSG Hospital Reception. <a href="mailto:amjad.Hayat@hse.ie">amjad.Hayat@hse.ie</a>
<b>Consultant Microbiologist</b> Dr Joy Baruah	Contact via Hospital reception <a href="mailto:jbaruah@bonsecours.ie">jbaruah@bonsecours.ie</a>
<b>Consultant Chemical Pathologist</b> Dr Damian Griffin	091 544825 <a href="mailto:damian.griffin@hse.ie">damian.griffin@hse.ie</a>
<b>GUH Consultants (refer to Laboratory Medicine User Guide University Hospital Galway)</b>	091 – 544544/524222

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Contact	Contact Details/Telephone Number
	Phone BSG Laboratory for Consultant details per department
<b>Irish Blood Transfusion Service Contact Numbers</b>	
Irish Blood Transfusion Service Medical Emergency Contact	01-4322800 - Out of hours (Switch) Ask for Medical Scientist on duty/call or doctor on call/duty
Irish Blood Transfusion Service - Laboratory Office/ Switch Board or Red Cell Immunohematology Laboratory Routine Mon- Fri	01 4322966 or 01 4322973 or 01 4322972

## 2.4 GUH Pathology Laboratory Contact Numbers

The following numbers are used to contact individual laboratories during routine hours.

Department & Contact Numbers		
Blood and Tissue Establishment	Blood Transfusion Laboratory	544422 / 544909
	BT Surveillance Officers	544994
Clinical Biochemistry	Clinical Chemistry Office	544518/ 542740
	Clinical Chemistry Main Lab	544418
	Special Biochemistry	544280
Medical Microbiology	Microbiology Office	542477
	Microbiology Main Lab	544411
	Faeces	544669
	Respiratory & TB culture	542525
	Public Health Laboratory	544916
Haematology/ Coagulation	General Haematology	544419
	Special Haematology	544284
	Routine Coagulation	544283
	Special Coagulation	544995
	Haematinics	544880
Anatomic Pathology	Histology Office	544078
	Cytopathology	544883
Virology	General Enquiries	544398
Immunology	Immunology Main Laboratory	544401
	Immunology Office	544402

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## 2.5 Emergency Out of Hours Service (On-call Service)

GUH provide the out of hours service for emergency requests (exception is Sat and Sun morning when a service is provided in-house by the on-call Medical Scientist as in Section 2.2). Please refer to **BSG/PATH/SOP/004 "Procedure for the Out of Hours Referral and Transport of Diagnostic Samples to the Pathology Laboratory of Galway University Hospital"** for out of hours requests. Always critically assess the clinical requirement to take a specimen out of hours.

**DO NOT COLLECT** non-urgent samples or samples for external referral (not listed in the table below) on Saturday/Sunday. The only exception is if the patient is being discharged. Requesting of tests for external referral should be limited to routine hours, Mon-Fri.

### 2.5.1 Tests Available Out of Hours

Tests available both in BSHG/GUH are referred according to the service availability (i.e. processed in BSG Laboratory Sat/Sun morning, GUH at night).

Biochemistry	Hospital Laboratory	Unrestricted	Restricted*
ALT	BSHG / GUH	✓	
Albumin	BSHG / GUH	✓	
Alcohol(Ethanol)	GUH	✓	
Alkaline Phosphatase	BSHG / GUH	✓	
Ammonia	GUH	✓	
Amylase	GUH	✓	
AST	BSHG / GUH	✓	
Bicarbonate	GUH	✓ Available in GUH & on Blood Gas analysers BSHG	
Bilirubin (Total)	BSHG / GUH	✓	
Bilirubin (Total and Direct)	GUH	✓	
Blood Gases		Blood Gas analyser in CACU ward, BSG	
Calcium	BSHG / GUH	✓	
Carbamazepine	GUH		✓
Carboxyhaemoglobin	BSHG / GUH	✓ Available on Blood Gas analysers	
Chloride	BSHG / GUH	✓	
Creatine Kinase (CK)	GUH	✓	
Creatinine	BSHG / GUH	✓	
CRP	BSHG / GUH	✓	

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CSF (Glucose and Protein)	GUH	✓	
Digoxin	GUH	✓	
Gentamicin	08:00 – 20:00 only		
GGT	BSHG / GUH	✓	
Glucose	BSHG / GUH	✓	
Serum HCG	BSHG / GUH	✓	
Iron	BSHG / GUH	✓	
Lactate	BSHG / GUH	Available on Blood Gas analysers only	
LDH	GUH	✓	
Lithium	GUH	✓ Suspected toxicity only	
Magnesium	BSHG / GUH	✓	
Methotrexate	GUH		✓
Osmolality	GUH		✓
Paracetamol	GUH	✓	
Phenytoin	GUH		✓
Phosphate	BSHG / GUH	✓	
Potassium	BSHG / GUH	✓	
Protein - total	BSHG / GUH	✓	
Salicylate	GUH	✓	
Sodium	BSHG / GUH	✓	
Theophylline	GUH		✓
Thyroid Function Tests	GUH		✓
Troponin T	BSHG / GUH	✓	
Urea	BSHG / GUH	✓	
Uric Acid	BSHG / GUH	✓	
Urinary Creatinine	GUH		✓
Urinary Electrolytes	GUH		✓
Urinary Urea	GUH		✓
Urinary Osmolality	GUH		✓
Valproate	GUH		✓
Vancomycin	GUH	08:00 – 20:00 only	

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Haematology	Hospital Laboratory	Unrestricted	Restricted*
APTT	BSHG / GUH	✓	
D-Dimers	BSHG / GUH	✓	
Differential WCC	BSHG / GUH	✓	
ESR	BSHG / GUH		✓
Fibrinogen	BSHG / GUH	✓	
Full Blood Count	BSHG / GUH	✓	
Coagulation Screen	BSHG / GUH	✓	
Malaria Screen	GUH		✓
Prothrombin Time(PT)/ INR	BSHG / GUH	✓	
Reticulocyte Count	GUH		✓
Sickle Cell Screen	GUH		✓
Blood Transfusion	Hospital Laboratory	Unrestricted	Restricted*
Blood Products	BSHG / GUH	✓ Contact both on-call Scientists	
Direct Antiglobulin Test	BSHG / GUH	✓ Contact on-call Scientist	
Group and Crossmatch	BSHG / GUH	✓ Contact both on-call Scientists	
Group and Hold	BSHG / GUH	✓ Contact on-call Scientist	
Transfusion Reaction Investigation	BSHG / GUH	✓ Contact on-call Scientist	
Medical Microbiology	Hospital Laboratory	Unrestricted	Restricted*
Blood Culture	GUH	✓	
Covid-19 (PCR)	BSHG	✓ Contact on-call Scientist	
Respiratory Panel	Influenza A & B, RSV and SARS-CoV-2 PCR	✓ Contact on-call Scientist	
CSF – Culture & Microscopy	GUH	✓	
Urine Microscopy and Culture	BSG (Store in Specimen Reception fridge)	✓	
Amikacin/ Amikin	GUH	✓ (Send before noon)	
Tobramycin	GUH	✓	

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Histology - GUH	Hospital Laboratory	Unrestricted	Restricted*
Frozen Section	GUH		✓

## 2.5.2 Emergency Blood Transfusion

Blood and blood products may **only** be signed-out and collected by personnel who have completed appropriate Haemovigilance training.

**Two units of Group O Rh D Neg, K Neg, C-neg, E-neg, CMV Neg red cell concentrate** are available at all times in the Blood Issue Fridge for emergency use. These units may be used in an emergency for all patients. The removal or use of these units from the Blood Issue Fridge is a clinical decision and does not require the presence of the Medical Scientist On-Call; however the Medical Scientist on call must be informed of their removal from the Blood Issue fridge immediately.

**For out-of-hours crossmatches you MUST contact both Bon Secours on-call Medical Scientist at 087 7749674 and GBTE on-call Medical Scientist (544422 or via GUH Switch) prior to referring the sample.**

## 2.6 Repeat Examination due to Analytical Failure

In the event of an analytical failure, it is the policy of the Pathology Department either:

- to repeat the test using a back-up procedure or
- to store the specimen in appropriate conditions until the cause of the analytical failure is identified and corrected and then to repeat the test
- in the case of an urgent request, refer the sample to an external laboratory
- In all such cases, the relevant ward/Clinician will be informed by the Laboratory.

## 2.7 Complaints & Suggestions

### 2.7.1 Complaints

The Pathology Department aims to ensure that our users including patients receive accurate, reliable, meaningful and timely laboratory results. We are committed to a handling system for complaints such that:

- All complaints are handled rapidly and effectively.
- The difficulties experienced by the users are alleviated promptly.
- The cause of any problem is identified and corrected such that the same problem should be prevented from occurring again.
- The confidence of its users is restored.

If the service provided is not satisfactory, please contact the Quality Coordinator or Laboratory Services Manager. Refer to policy BSG/QA/SOP/028 Reporting and Management of Feedback and Complaints

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## 2.7.2 Suggestions

The Pathology Department welcomes any suggestions as to how its services might be improved from patients and users. Suggestions may be directed to any member of the Pathology Department staff; directly, over the phone or by email. Suggestions and feedback are then appraised and accepted or rejected through Q-Pulse. The Pathology Department is committed to carrying out regular surveys of user satisfaction. Patients also have an opportunity to give feedback through Cemplicity survey tool.

## 2.8 Data Protection & Confidentiality

The Laboratory complies with the policy of BSHG regarding the legislation pertaining to the rights of the patient and staff and to act in an ethical and responsible manner in maintaining the security and integrity of all personal information. It is the responsibility of all staff, as defined in their contract of employment to ensure that all information which they have access to as part of their work is treated in the strictest confidence and protected from unauthorised access. All Staff must acknowledge a confidentiality policy during their laboratory induction programme. Data protection and privacy statement can be viewed on the Bon Secours Website this lists the situations where the pathology department share patient information such as "There are limited circumstances in which your data may be used for medical research or public health purposes without your consent. Examples include our legal obligation to provide patient data to the National Cancer Registry, or the Health Protection Surveillance Centre". No other authorized by contractual arrangements are in place. The results are returned to requesting clinician only.

## 2.9 Disclosure of Incidents that resulted or could have resulted in patient harm

The pathology department Bon Secours Hospital Galway do not report results directly to patients. In cases where an incident has resulted or could have resulted in patient harm are managed as non-conformances. The pathology department inform the requesting clinician. The clinician is responsible for informing the patient if they deem it necessary. Evidence of the pathology department contacting the clinician must be held in the Non-Conformance record on Q Pulse.

# 3 USE OF THE LABORATORY

## 3.1 Register of Users

The Bon Secours Hospital Galway (BSHG) mainly provides testing services for in patients in Bon Secours Hospital Galway or preadmission/ Outpatients of BSHG Consultants/Doctors. All GPs who wish to submit specimens for analysis to the Laboratory must contact the pathology department in advance to ensure specimens will be accepted and analysed. Laboratory Services manager can be contacted using details listed above. GP's whose samples are accepted will be registered on the Laboratory IT system. Please ensure that the laboratory is kept updated of any changes to your contact details. It is essential that we have all service users most up to date contact details and email addresses for communication purposes.

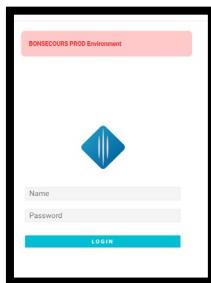
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## 3.2 Requests to the Laboratory Using Maxims Order Comm System

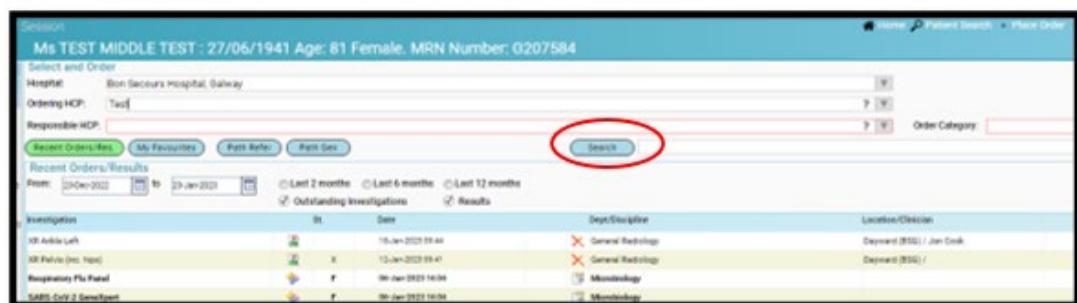
Maxims Order Comm system is the electronic test ordering system primary used for sample collection (excluding Blood Transfusion Samples) in the Bon Secours Hospital Galway.

### 3.2.1 Procedure for generating a request on Maxims Order Comm system

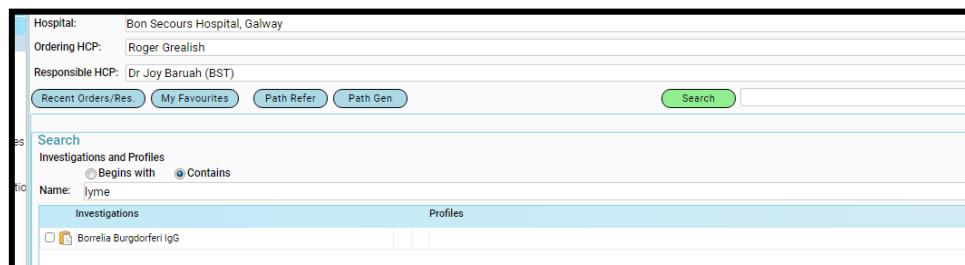
- Log onto Maxims, Enter Username and Password



- When Maxims opens under Galway section, search the patient on Maxims to create an order. Select “Patient Search” icon on left of screen, the into the box labelled MRN ID input the patients hospital number ensuring that the “G” prefix is added then click on magnifying glass icon.
- Check the correct patients details are displayed.
- Then select “Orders/Results” Tab and the drop down option “Select and Place Order”



- Tests can be selected from historical test, favourite test or by expanded referral test search.
- If test is not on template and requester wishes to find test on Maxims they must select the “search” icon that is circled in red on previous image. This search button allows all pathology tests to be seen. Use the Begins with or contain search fields.



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- Once tests are selected by ticking box on left side of test option the test transfers to investigations and information section. Select place “Place Order Test”.
- A page with Clinical Details appears which is mandatory, enter details. When this is completed select order type from down list and the click on “Order Investigations”.
- This request will now appear on the phlebotomy/ sample collect queues.

The screenshot shows a computer interface for a medical test request. At the top, it displays 'Ms TEST MIDDLE TEST : 27/06/1941 Age: 81 Female, MRN Number: 0207584'. Below this is a 'Submitted Order' header with buttons for 'Recent Orders/Res', 'My Favourites', 'Path Refer', and 'Path Gen'. A 'Search' button is also present. The main area is titled 'Question / Information' and 'Pathology'. Under 'Pathology', there is a 'Clinical details' section with a 'Testing' dropdown. At the bottom, there is a table for 'All Specimens' with columns for 'Collection Type', 'Specimen Collection Clinic', and 'Day(s)'. The table includes rows for 'Borreli Burgdorferi IgG', 'Serum UHC V...', and 'Patient Ward Collection Specimen Collection Clinic Specimen Already Collected'.

### 3.2.2 Labeling Sample containers

All blood samples taken using Order Comm system are **labelled at patients beside** with a Maxims label. Positive patient identification steps are completed to ensure correct patient is bleed. Sample container is labelled with maxims generated label which includes patient's full name, forename and surname, date of birth, hospital number.

## 3.3 Requests to the Laboratory using non Order Comm System process

The provision of legible and appropriate clinical details on the request form, together with a properly collected specimen, allows the Laboratory to issue relevant and accurate results and to assist the clinician in the interpretation of these results in the clinical context. Laboratory staff should be consulted where uncertainty exists about the availability, appropriateness, or selection of tests or the nature of the specimen required. Clinical interpretation of results is available from the clinical staff as identified in the contact information in this user guide. In order to ensure compliance with patient safety and accreditation requirements, requests not complying with the specimen and form acceptance criteria, outlined below will be rejected. In certain exceptional circumstances e.g. irretrievable samples, such requests may be processed.

All patient samples received in the Pathology Department are treated with care and respect.

### 3.3.1 Requests Not Processed

Non-specific and vague statements should not be used. Terms that are vague, undefined and unfocused should not be used in requesting tests. The following is a list of examples that will not be processed unless there is a more specific detailed request:

Cardiac enzymes	Vasculitis screen	Hormone profile	Viral screen
Haematinics	Tumour marker	Allergy testing	Antibody screen

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### 3.3.2 Request Forms

The Laboratory has a number of different request forms. It is important that the correct form is supplied for a particular request.

Request Type	Colour	Form Title	Form Number	Current Revision
Blood Transfusion (routine and out of hours)	Red	Blood Transfusion Request Form	BB101A	refer to Q-Pulse
Routine In-house Blood Sciences	Purple	Blood Sciences Request Form	BSG/PRF/001	refer to Q-Pulse
Routine Referred Externally	Blue	Referral Test Request Form	BSG/PRF/002	refer to Q-Pulse
In-house and Referred Microbiology	Yellow	Microbiology Request Form	BSG/PRF/003	refer to Q-Pulse
Histology Request Form	Green	Histology Request Form	BSG/PRF/004	refer to Q-Pulse
Lyme Disease Request Forms	Grey/Red	Lyme Disease Request Forms	BSG/PRF/005	refer to Q-Pulse
All Emergency (out of hours) Blood Sciences and Microbiology requests	White (with red text)	Emergency Request Form	LB104	refer to Q-Pulse

Additional Forms may need to accompany requests for specialised testing e.g. genetic testing, cytology screening, Quantiferon, Breast Check samples

External Users of the Pathology Department may use their own request forms provided that the criteria for completing the request form as listed are adhered to. The Consultants' Clinic at the Bon Secours Hospital is not considered an external user and must use the current version of the relevant request form. Addressograph labels should be used on all request forms including back copies where applicable.

Please note Separate forms and samples must be used when submitting requests for multiple departments.

### 3.3.3 Specimen Request Form Information

It is essential and of utmost importance that patients location and clinician are noted on each request form. This applies to Hospital and GP request forms. It is imperative the laboratory departments receive same to allow easy and immediate transmission of results. The patient identification section of the request form must be completed in detail.

Please note that the Hospital Number is one of the primary identifiers that should be documented on the request form to ensure the correct identification of the patient, this will enable the laboratory to promptly process and transmit critical results. The other two primary identifiers are the patients name and date of birth.

**Hospital Users:** Please use the patient's full name, forename (no initials, abbreviations etc) and surname, date of birth, hospital number, address, responsible clinician and patients' location. Addressograph label should be used for all request forms, please fix the label to the patient identification section of the form

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**GP/External users:** Please use the patient's full name, forename (no initials, abbreviations etc) and surname, date of birth, address and the doctors' name and surgery. If not using pre-printed addressograph system labels then hand written request forms must use block capitals.

The information on the specimen must correspond to that on the request form. The request form must include appropriate patient information, including specimen type, specimen site, medications and transfusion history where relevant. It is advised to label all specimens in the presence of the patient so that they can confirm correct identification. If this is not feasible, such as in a surgical setting where the patient is unconscious, a means of confirming the identity of the patient from whom the sample is collected must be in place and followed. Any difficulty in obtaining the specimen should be noted on the request form. In the case of short or scanty specimens list tests requested in order of priority.

### 3.3.4 Specimen Container

All specimen containers must be legibly labelled with patient's full forename, surname, date of birth, (Hospital Number if available), date and time of specimen collection and the signature of the person who collected the specimen.

- For patients whose request has been created through Maxims a maxims label is generated by scanning the patients wristband to ensure positive patient identification. The label created contains the three primary identifiers.
- PDA Labels created by Blood Track system contains information required for Blood Transfusion acceptance criteria. The BloodTrack labelling system should be used for all Blood Transfusion samples.
- Non-Blood Transfusion samples not taken using the Maxims system can be labelled with Addressograph labels.

If using Maxims/ BloodTrack/ addressograph labels these must be no larger than the specimen label on the container. Place the identification label over the container label so that horizontal visual inspection of the sample is not impeded. Addressograph labels must have all relevant details. Data on the addressograph label must not be modified. Sample fill line must remain visible on all coagulation/INR tubes. The Blood Transfusion Department do not accept addressograph labels on sample containers. The person who performs the phlebotomy must write their initials on the container. In the case of timed urine collections state the start and finishing times. If submitting an aliquot, state the timed urine volume.

\*Prior to taking any samples check the Expiry Date of the specimen bottle.

### 3.3.5 Patient Request Process per Location

In-Patients:

- If using physical request forms once completed place the completed request form in the designated blood request box in the nurse's station on each ward. For requests from Day Ward or Endoscopy patients, bleep the Phlebotomy staff on 20/29 and place the completed request form in the designated blood request box in the nurse's station. In the case of an urgent request during routine working hours, bleep the Phlebotomy staff on 20/29.

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- Maxims Orders can be viewed on Workstation on wheel (WOW) Computers by phlebotomy staff. In the case of an urgent request during routine working hours, bleep the Phlebotomy staff on 20/29.

**Out-Patients:**

- Appointment necessary service
- Referral letter from Doctor required
- Fasting for 8-14 hours required for fasting bloods (e.g. lipid profile, glucose)
- Outpatients must be registered at Out-patients reception before proceeding to Out-patients department for sample collection. A payment is collected from the patient by the Outpatient administration staff.

### **3.3.6 Patient Collected Samples**

Patient collected samples are accepted from General Practitioners/External locations for Haematology, Biochemistry and Microbiology departments.

- Patient collected samples are subject to the same acceptance/rejection criteria as BSG collected samples.
- Samples can be collected using Maxims OCS which eliminates the need for request forms.
- Patient collected samples are NOT accepted for Blood Transfusion requests. All Blood Transfusion requests must originate from within the BSG (i.e. in-patient, Consultant Clinic or pre-assessment).

### **3.3.7 Add-On (Additional) Test Requests**

It is the policy of the Pathology Laboratory to accept requests for additional tests using the same specimen, where pre-examination requirements permit (e.g. age of sample, volume, availability). Requests for additional tests may only be made by nursing staff or by the Clinician. Individual Pathology Departments can be contacted to ensure sample is within the allowable testing time from when sample collection was performed.

For all add-on test requests to the Laboratory, a completed request form must be sent clearly stating “add-on”. Urgent verbal request will be processed on the understanding that a completed request form will follow. Results of specimens processed without a request form will not be released from the Laboratory until a completed request form is received to ensure the correct patients sample is analysed.

### **3.3.8 Referred Specimens**

Tests not done on-site are pre-processed to ensure stability and referred to outside laboratories for analysis. Information on these tests is included in the test directory.

### **3.3.9 Collection of Specimens**

#### General Guidelines

Refer to the Test Directory for a list of tests performed, the specimen required, turnaround time, reference range and other information regarding specimen collection. Specimens for some tests must be collected

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with the patient fasting, or with knowledge of when food was last taken (e.g. glucose). Where doubt exists, the appropriate laboratory should be consulted.

### 3.3.9.1 Blood Specimen Collection:

Blood samples Hand hygiene must be performed prior to commencement. Greet the patient and identify yourself and indicate the procedure that will take place. Positive patient identification is MANDATORY. Verify that the patient meets and requirements for the testing to be undertaken e.g. fasting status, medication status, predetermined time for specimen collection, etc.

- 1 Standard precautions must be observed when taking blood.
- 2 Disposable non-sterile latex free gloves must be worn by the phlebotomist when taking blood in all circumstances.
- 3 Change gloves between patients
- 4 Wash hands or apply an antimicrobial gel before and after each procedure and on removal of gloves.
- 5 When sampling blood from any patient extreme care must be taken and every patient must be considered as potentially high risk.
- 6 When taking blood ensure the limb is well supported, and the patient is aware to keep it still. The limb may need to be supported by an assistant to achieve this.
- 7 When removing a blunted needle from a limb, ensure that the vacuum bottle has been disconnected from the multi sampler area. Leaving this in situ may cause blood droplets to spray.
- 8 Cover the puncture site with a sterile swab or cotton wool when removing the needle to reduce the risk of blood droplets spraying into the air.
- 9 Avoid spillage of blood. If spillage occurs, clean spillage immediately
- 10 If a sample bottle breaks, never attempt to pick it up. Avail of the nearest spillage kit and use accordingly to clean the hazardous material.
- 11 The user of 'sharps' is responsible for their safe and appropriate use and disposal. 'Sharps' must never be left for a colleague to tidy up.
- 12 Label the specimen with the appropriate patient details (Maxims /Addressograph/ PDA or handwrite).
- 13 Place the specimen in the bag attached to the request form. No request form required if Maxims label from OCS used.
- 14 Take care to prevent needle stick injuries when using and disposing of needles. Note: NEVER pour blood from one tube to another since the tubes can have different additives or coatings.

### 3.3.9.2 24 Hour Urine Collections

#### Obtaining 24 Hour Urine Containers

1. Plain (24 hour) urine containers can be obtained from the stores department.
2. When a 24 hour urine collection, which requires acid, is necessary for a particular test the Phlebotomist/Nurse will issue the patient with the necessary guidelines and materials.
3. 50% Hydrochloric Acid for 24-hour urine containers which require acid preservative (depending on the test) can be obtained from the Pathology Laboratory. **Caution: Care should be taken when handling.**

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## Instructions for Patients Regarding Collection of 24-Hour Urine Specimens

1. Please ensure the identification on the container(s) includes patient's name, date of birth, board number or address and the name of requesting doctor.
2. Depending on the test requested, the container may contain a special preservative. If required, such preservatives will be provided in the container by the Laboratory.
3. Do not discard any preservative provided or wash out the container.
4. Specific requirements relating to the measurement of individual urine analytes is given in the test information leaflet.
5. It is important that the following instructions are carried out with care otherwise the results of the test will be invalid.
6. Instruction leaflets for a 24 hour urine collection both with and without acid (see below), are available from the Laboratory and on Q-Pulse. Refer to BSG/MICRO/I/001 / BSG/MICRO/I/002
7. All acid containers given to out-patients are issued to patients by Nursing staff. Instructions for collection are clearly explained and a copy of instructions given to patient at the same time.

### Instructions for 24 Hour Urine Specimen Collection using Plain Container

It is important to collect ALL the urine passed over an EXACT 24-hour period. Loss of any urine or a collection timeframe more or less than 24 hours will invalidate the test and might lead to an incorrect diagnosis being made.

1. Immediately before the beginning of the collection period (usually the morning) the bladder must be emptied, and the urine discarded. Record the time and date on the container label.
2. ALL urine passed during the next 24 hours must be collected and added to the container. On each occasion pass urine into jug and add to container. Keep the container in a fridge if possible or in a cool place. If urine is accidentally discarded during the collection period throw away all the urine. Obtain a new container from the Laboratory and start the collection again.
3. At the end of the 24-hour period, the bladder must be emptied and the urine collected added to that already in the container. Record the time and date on the container label.
4. This completes the 24-hour collection.
5. Please ensure that the label on the container and the request form are fully completed and the cap closed securely. **Finally, place the container in the Pathology Specimen bag. (Request form not required if Maxims Labels are fixed to container).**
6. If not an inpatient, arrange delivery of the container to the Outpatients department of BSHG.

*\*BSG/MICRO/I/001 provides guidance on collection process.*

### Instructions for 24 Hour Urine Specimen Collection using Acid Container

- **20mL 50% Hydrochloric Acid (IRRITANT)** additive needs to be handled with care  
**Warning!** - keep out of the reach of children  
**Warning!** - do not pass urine directly into container; use the jug provided
- This container has a small amount of acid already added to it (do not empty the acid from the container), which is capable of causing irritation to eyes, respiratory system and skin.

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- If the acid comes in contact with skin, rinse the area immediately with plenty of water. In the event of splashing on to the eyes or mouth, or splashing to skin resulting in soreness or reddening, seek medical advice as soon as possible.

*\*BSG/MICRO/I/002 provides guidance on collection process.*

### **3.3.9.3 Random Urine Collection**

Mid-stream urine collected into a white top universal container should be sent to the Laboratory without delay. Urine specimens can be collected into a boric acid (red top) container for Microbiology (Urine Culture & Microscopy). Boric Acid specimens are UNSUITABLE for Biochemistry/Pregnancy testing. \*Boric acid containers not routinely available in BSHG.

### **3.3.10 Disposal of Materials used for Specimen Collection**

Dispose of all clinical waste in accordance with Hospital and National Guidelines

1. Universal precautions must be adhered to at all times
2. Gloves must be worn at all times
3. Gloves must be changed after each patient
4. Needles must not be recapped after use
5. Dispose of sharps in a suitable sharps container
6. Dispose of all clinical waste including gloves into yellow biological waste bag

*\*Pathology staff adhere to BSG/PATH/SOP/008 "Pathology Department Waste Disposal Policy"*

### **3.3.11 Collection Kits Available from the Pathology Laboratory**

- Blood Culture Bottles are available from the Laboratory
- Cytology Collection Fluid / Urine
- Cytology Collection Fluid / Breast Aspirate
- Chlamydia Collection Kit
- Influenza Collection Kit/ Respiratory Collection Panel
- Faecal Occult Blood Collection Kit if required, stool samples accepted for analysis.
- Quantiferon TB Collection Kit
- Cryoglobulin Bottles
- Petri Dishes (for Muscle or Nerve Biopsy)
- Covid-19 Swab Collection Kit

All other collection supplies must be obtained from the Stores department

### **3.3.12 Non-Conforming Request Forms and/or Specimen Containers/Bottles**

Laboratory personnel inspect incoming specimens to ensure that the completion of the request form and the labelling of the specimen container or bottle are completed as specified in sections 3.3.4 above. A sample will be rejected if the required acceptance criteria are not met or if judged unacceptable for testing. This policy is in place to ensure correct patient identification and to ensure accuracy of results.

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In all cases where a sample is being rejected, it is Laboratory policy to communicate this information to the patient's location and request a repeat sample. Where a sample cannot be replaced, amendments can be made as per Laboratory policy BSG/SR/SOP/001 and a non-conformance may be raised on Q-Pulse. Where required, the Medical Scientist may contact the relevant Consultant Pathologist who may then discuss the issue with the requesting Clinician.

Examples of irreplaceable samples include histopathology and certain cytology specimens, CSF, joint or body cavity fluids, samples from theatre, blood cultures taken before the institution of antibiotic treatment and bone marrow samples.

All Specimen/Form and quality issues are recorded within the Laboratory Quality Management System and monitored as a Quality Indicator. This information is reported to the Hospital Management Team on an on-going basis.

Sample/Form Issues	Action	Documentation
<b>Samples unlabelled</b>	Samples will not be processed. The affected location will be informed by Laboratory Specimen Reception.	Demographic details (from request form) will be entered and a report generated detailing reason for rejection.
<b>Mismatch. Critical identifier on sample and request form differs (name/DOB/Hospital number).</b>	Samples will not be processed. The affected location will be contacted by Laboratory Specimen Reception.	Demographic details (from request form) will be entered and a report generated detailing reason for rejection.
<b>Miscellaneous sample/form issues</b>	Samples may not be processed. A Senior member of staff in the relevant ward/department will be contacted.	Demographic details (from request form) will be entered and a report generated detailing reason for rejection.  If accepted for processing, a declaration form must be filled out in the laboratory, and details of amendment will be included on the test report.
<b>Minimum identifier(s) missing from samples or request form</b>	Samples will not be processed. Ward will be contacted by Laboratory Specimen Reception.	Demographic details (from request form) will be entered and a report generated detailing reason for rejection.

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## 4 SPECIFIC REQUEST FORM REQUIREMENTS PER DEPARTMENT

### 4.1 Blood Transfusion Request Form (BB101A)

The following information is required on the Request Form:

#### 4.1.1 Section A. Patient Details (To be completed by Nurse/Doctor)

- Patient's Surname and Forename
- Gender of Patient i.e. M/F
- Hospital Number
- Date of Birth
- Ward/Location
- Consultant's Name

(An addressograph label can be placed on the request form. Place addressograph label on both the top and bottom copy of the form)

#### 4.1.2 Section B. Clinical Details/Test Requested (To be completed by Nurse/Doctor)

- Clinical Details
- Test Request:
- Group & Hold
- Direct Antiglobulin Test
- Antibody Investigation
- Transfusion Reaction Investigation

If **URGENT** – Urgent tick box needs to be ticked and Laboratory phoned

#### 4.1.3 Section C. Clinical/Transfusion History (To be completed by person collecting the sample)

- History of any known antibodies.
- Transfusion History (details including dates).
- Previous bone marrow/organ transplant.

**Critical point:** If above questions are not answered, the Laboratory will presume the answer to be **NO**

- Name & Signature of Sampler (Electronic Sample Collect Label is accepted).
- Date and Time of collection (Electronic Sample Collect Label affixed in this section).

#### 4.1.4 Section D. Blood/Blood Product/Crossmatch Requests (To be completed by Doctor)

- Refer to MSBOS on the back of the Request Form.
- Blood/Blood product required & Number of Units.
- Date and Time required.
- If **URGENT** – Urgent tick box needs to be ticked and Laboratory phoned.

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- Special Requirements & Reason for Request i.e. CMV Neg. or Irradiated. Refer to Special Requirements on the back of the request form.

**Critical point:** If special requirements are not ticked, the Laboratory will presume none are required  
Refer to BSG/HV/FORM/014, Maximum Blood Order Schedule (MSBOS) and BSG/BB138, Indications for CMV Neg and Irradiated products - available on Q Pulse.

- Doctor's Name (Printed & Signature) and MCRN No. IS **MANDATORY** for Crossmatch Requests.
- If a Crossmatch is required urgently, the urgent tick box needs to be ticked & the Laboratory should also be contacted directly by phone to ensure no time is wasted in processing the request.

## 4.2 Blood Sciences Request Form

Blood Sciences consists of the Biochemistry and Haematology department of the Laboratory at the Bon Secours, Galway. A single purple request form is used for all Biochemistry and Haematology assays analysed In-house. Investigations are requested by ticking the required box only, no tests are to be written on this request form. All Blood Sciences tests/investigations offered in-house by BSG Laboratory are listed on the request form (Section C). The patient must be positively identified by the person collecting the specimen, prior to specimen collection, as per section 5.3.

- Section A must be completed with patient demographics ideally an addressograph label is to be fixed here.
- Section B. Clinical Details/Reason for Request are to completed here. This includes but is not limited to fasting sample, or details of Medication/Antibiotics. Time and date of sample collection and Identity of sample collector to be completed here. (PDA label can be used)
- Section C. Tests/Investigations. Clearly mark test requested. See tests appendix for specific details re test requested if required
- Section D. This section is completed by Laboratory personnel. Time of sample receipt in the Laboratory is used for the monitoring of request turnaround time.

## 4.3 Microbiology Request Form

The yellow Microbiology request form is to used for all in-house and externally referred GUH Microbiology testing. The patient must be positively identified by the person collecting the specimen, prior to specimen collection, as per section 5.3.

- Section A must be completed with patient demographics ideally an addressograph label is to be fixed here. **Critical point:** top and back copies of the external referred test request form must be labelled
- Section B. Clinical Details/Reason for Request are to completed here. This includes but is not limited to if fasting sample, or details of Medication/Antibiotics. Time and date of sample collection and Identity of sample collector to be completed here.
- Section C. Tests/Investigations. Clearly mark test requested. There are tick box options for the most common specimen types; urine (MSU), urine (CSU), faeces, swabs, tissue, blood cultures, sputum. Other specimen types must be specified, this includes CSF samples. The specimen type must be identified in this section of the request form. The specimen site must be detailed in the next box,

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where applicable. This is especially important for swabs and tissue specimens. Finally, the Microbiology testing required is specified. Refer to the test directory section of this manual for specific details re test requested if required.

- Section D. This section is completed by Laboratory personnel. Time of sample receipt in the Laboratory is used for the monitoring of request turnaround time.

#### 4.4 External Referral Test Request Form

The blue external referral test request form is used for any routine test request not analysed in-house at the BSHG Laboratory with the exclusion of referred Microbiology and Blood Transfusion requests. This includes, but is not limited to; external histology, cytology, immunology, biochemistry, haematology, virology, genetics and other specialist Laboratories. Refer to the test directory at the back of this manual for a detailed list of referred tests.

**Critical point:** a separate external referral test request form is required for each separate laboratory department tests are referred to. For example; if thyroid function tests and B12/Folate/Ferritin are required on patient, a separate form is required for the thyroid function tests and the haematinics as these are analysed in separate Biochemistry and Haematology laboratories.

The patient must be positively identified by the person collecting the specimen, prior to specimen collection, as per section 5.3.

- Section A must be completed with patient demographics ideally an addressograph label is to be fixed here. **Critical point:** top and back copies of the external referred test request form must be labelled
- Section B. Clinical Details/Reason for Request are to be completed here. This includes but is not limited to if fasting sample, or details of Medication/Antibiotics. Time and date of sample collection and Identity of sample collector to be completed here. (PDA Label can be used here)
- Section C. Tests/Investigations. Clearly mark test requested. Refer to the test directory section of this manual for specific details re test requested if required. Contact the Laboratory (ext. 581) for guidance when ordering externally referred testing, if required.
- Section D. This section is completed by Laboratory personnel. Time of sample receipt in the Laboratory is used for the monitoring of request turnaround time.

#### Quick Reference Guide (Back of Form)

1. The back of the form contains an outline of the most commonly requested externally referred tests from BSG. This list is not exhaustive and all referred testing is indexed in the test directory section of this manual.
2. Each table on the quick reference guide represents a separate external laboratory. Tests required from two of these laboratory's would require two separate external test request forms to be completed and so on.

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## 4.5 Emergency Request Form

Always critically assess the clinical requirement to take a specimen out of hours. Do not collect non-urgent/routine samples or samples for external referral on Saturday/Sunday. The only exception is if the patient is being discharged. Requesting of routine tests for external referral should be limited to routine hours, Monday to Friday, where possible.

**Critical point:** An individual emergency request form must be completed for each separate laboratory department in GUH specimens are being referred to.

The patient must be positively identified by the person collecting the specimen, prior to specimen collection, as per section 5.3.

- Section A must be completed with patient demographics ideally an addressograph label is to be fixed here. **Critical point:** top and back copies of the external referred test request form must be labelled and the back copy retained and sent to BSG Laboratory
- Section B. Clinical Details/Reason for Request are to be completed here. This includes but is not limited to if fasting sample, or details of Medication/Antibiotics. Time and date of sample collection and Identity of sample collector to be completed here.
- Section C. Tests/Investigations. The tests required are handwritten in this section. The person completing this section should be as specific as possible in completing the request. The majority of emergency out of hours test requests are catered for through the Biochemistry and Haematology departments of GUH. Cerebro-spinal fluid samples should be referred using the Microbiology Request Form only.

\*Send back copy of form to the BSHG Pathology Department.

## 4.6 Histology Requirements

All Histology requests from BSHG are referred to Division of Anatomic Pathology, GUH using the blue Referral Test Request Form.

The specimen site must be indicated and detailed on the request form *and* the specimen container. In the case of multipart container submission on a case, each part must be clearly identified as to the site and nature of the specimen. The detail on the request form and the specimen container must match. SHARPS containers must NOT be used as specimen containers.

- Patient demographics on the request form must be legible, consistent and must match the information on the specimen container.
- Use addressograph labels or print the information giving the following details:
  - The patient's full forename and surname.
  - The patient's date of birth DD/MM/YY (ensure a consistent date of birth).
  - Hospital number.
  - Patient's gender.
  - Home address of patient.
  - Consultant name and location.
  - Locum doctors must give practice doctors name and address.

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- The name and address of the doctor to whom the result should be communicated if different from the requesting doctor.
- Signature of the requesting doctor (must be legible).
- The required analysis.
- Clinical details.
- Date and time of sample collection, nature and site of specimen.

## 5 PHLEBOTOMY SERVICE

Phlebotomy hours are from **7.00 am - 4.00 pm Monday to Friday**. Bleep 20 is carried at all times by the phlebotomist. A second phlebotomist is on duty between 7 am and 11 am Monday to Friday. The second phlebotomist carries bleep 29. After 4.00 p.m. and on weekends, the R.M.O. or nursing staff collects the blood samples. BSG-PP-ORG-131 "Venepuncture Policy" is available on Q Pulse for further information re BSHG procedure.

Pathology tests can be requested using the Maxims Order Comm System or using Pathology Request Forms. Blood Transfusion tests are the only tests at present that are not ordered using Maxims OCS.

### 5.1 Patient Prioritisation

Patients are prioritised according to the following schedule:

- Urgent requirements
- Theatre/Endoscopy schedule
- Fasting
- Routine

### 5.2 Obtaining Consent

#### 5.2.1 Consent to Venepuncture

- Consent to take the blood sample is obtained from the patient.
- The procedure and reasons for it are explained to the patient, who then makes a decision to either give consent or refuse. Informed consent may be verbal or non-verbal e.g. patient extending arm or rolling up sleeve is accepted as non-verbal consent.
- Should the patient be unable to communicate, the phlebotomist should seek assistance in explaining the procedure to the patient from a carer who is familiar with the patient. The patient should understand the procedure before it is carried out.
- If the patient refuses to give the sample it is important that the phlebotomist notifies the nurse in charge, or the medical team looking after the patient. Document the refusal on the request form and sign and date.

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## 5.3 Patient Identification

### 5.3.1 Identification of the Conscious/Coherent In-Patient

To correctly identify an inpatient, the phlebotomist must:

- Ask the patient to state their name and their date of birth.
- Check this information matches that on the request form or maxims OCS
- Blood Transfusion samples: check patient's name, date of birth and hospital number on request form with name, date of birth and hospital number on patient's identification wristband. All data should correspond.

If the patient is not wearing a wristband, **do not** take a sample for Blood Transfusion. The phlebotomist is required to scan the patients armband when they are collecting samples using WOW's (workstations on wheels) for previously ordered bloods. The nurse in charge must be contacted to provide a wristband before the blood sample is taken. If any of the information does not correspond, the nurse in charge must be contacted to clarify and amend the details before any blood samples are taken. Only when satisfied that the patient has been fully identified should the blood sample be taken.

### 5.3.2 For Blood Transfusion samples:

- Affix BloodTrack PDA patient label to 'Sample Taken by' Section C on Request Form or
- (if PDA not used) Sign the 'Sample Taken by' Section C of the Request Form; to confirm the patient has been positively identified and their details checked with the wrist band.

### 5.3.3 For samples taken using Maxims OCS:

- Affix maxims generated patient label to sample bottle.

### 5.3.4 For Non-Blood Transfusion samples taken not using Maxims OCS:

- Affix patient's addressograph label to Request Form and sign the 'Sample Taken by' Section of the Request Form;
- to confirm the patient has been positively identified and their details checked with the wrist band.

### 5.3.5 Identification of the Unconscious/Incoherent In-patient

To correctly identify the unconscious patient, the phlebotomist must:

- Read the details written on the request form.
- Compare the details to those on the patient's wristband if wearing one.
- Confirm patient's identity with staff nurse or carer.

## 5.4 Order of Draw - Use of Blood Tubes (Greiner Vacuette Guide)

As, depicted below, if several different samples are required fill the tubes in the following order:

- Blood culture bottles (fill aerobic, purple-topped, bottle first)
- Citrate tubes (light-blue topped, for coagulation studies)
- Serum tubes (yellow topped) for tests on serum chemistries.

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- EDTA tubes (red-topped, for full blood counts and blood bank tubes etc.)
- Fluoride/oxalate tubes (grey-topped, for glucose)

NB- If using the Butterfly system, the yellow tube must be used first to prime the line *ahead* of the Coagulation bottle [Blue top] – this allows the removal of air that is in the Butterfly line. Should a Coagulation sample be required, this sample is suitable for testing.

Gently mix specimen containers immediately following collection by inversion 5 - 10 times (very gently).

Volume	Order of Draw	Cap Colour	Additive	Assays	Special Instructions
3 – 10mL (8-10 opt)	1		Aerobic & Anaerobic Bottles	Blood Culture	<b>Aerobic followed by anaerobic bottle</b> – if insufficient blood for both culture bottles, use the aerobic bottle only
3ml	2		Sodium Citrate Solution	PT, INR, APTT, Coagulation, D-Dimer, Fibrinogen, Thrombophilia Screen, Factor Assays	Fill tube to the <b>arrow</b> - inadequately filled tubes cannot be analysed
2ml	3		4NC ESR Sodium Citrate	ESR	
9ml	4			Procollagen, Cryoglobulins	Contact Laboratory prior to taking samples
5ml	5		Serum Gel	General Biochemistry Tests, Haematistics, Immunology & Virology Tests	
9ml	6		Lithium Heparin	Biochemistry tests (only if specimen is clotting in-vitro) Non-routine Biochemistry tests e.g. Amino Acids, Hydroxyproline	
3ml	7		EDTA	FBC, HbA1c, Malaria Parasites, Sickledex, Reticulocyte Count, ACTH, Renin, Cyclosporins, Haemochromatosis, Ammonia,	ACTH / Ammonia must be transported on <b>ice</b>
6ml	8		K2 EDTA	Group, Screen & Hold Crossmatch	PDA/handwritten details only - <b>no addressograph</b>
4ml	9		Fluoride Oxalate	Blood Glucose Levels & GTT	Specify collection time & state if sample is <b>fasting</b>
6ml	10		K2 EDTA	Trace Element Analysis Zinc Aluminum Cobalt Chromium	Take only when specifically requested

Venepuncture sites to be avoided:

1. The anterior veins in the wrist.
2. Sclerosed or thrombosed veins.
3. Veins close to a site of infection, bruising or haematoma.
4. Site of I.V. therapy (may be turned off by nursing staff for 5 minutes prior to venepuncture)
5. Affected side of previous mastectomy/axillary clearance, stroke, oedema fracture, burns, and amputation fistula.

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## 5.5 Sample Volume

It is preferable that blood tubes, especially those containing preservatives, are filled to their stated capacity (note fill line on specimen bottle). This avoids the risk of insufficiency or interference from excess preservative. Fill capacity is mandatory for some tests, e.g. coagulation tests (under-filling or over-filling invalidates the test). It may be possible to process other smaller samples (e.g. serum).

We endeavour to maximise the use of any sample. If low volume sample is due to difficult draw (e.g. patient with poor peripheral veins / circulation), please state this on the request form.

### 5.5.1 Information on Minimal Volume for Paediatric Samples and Repeat Blood Draws.

The Bon Secours Hospital Galway (BSHG) does not have a paediatric department. However, Children's ENT Surgery is offered at BSHG for children over 1 year. The procedures performed are:

- Adenoidectomy
- Glue ear
- Grommets

Tonsillectomy surgery is performed on patients over 2 years of age. Hospital policy is not to bleed patients for the above listed surgeries. If a clinician requests a blood test on a patient under 2 years of age the Pathology Department is to be contacted and paediatric sample bottles will be sent to the requesting location. All samples received on patients less than two years of age in BSHG will be referred to GUH for analysis.

Minimum Requirements refers to the minimum volume to be sent to the laboratory for examination. Note: Where multiple tests are required the minimum volume will increase but will not necessarily be the total volume of the individual tests.

Iatrogenic anemia, also known as nosocomial anemia or hospital-acquired anemia, is a condition in which a person develops anemia due to medical interventions, most frequently repeated blood draws. Some patients may require frequent phlebotomy in BSHG so the pathology department have conducted a study to give guidance on minimum volume required.

Sample Bottle	Minimal Volume of Blood Required
Serum Bottle (Yellow Top)	1.5 ml
Coagulation Bottle (Blue)	Up to Black Arrow indicator
EDTA- Haematology (Purple Top)	1.0 ml
EDTA- Blood Transfusion (Pink Top)	2.0 ml
ESR Bottle (Black Top)	2.0 ml

**Table 1.** Minimal Volumes Required

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## Haematology samples

See Table 1 and Figure 1 for guidance

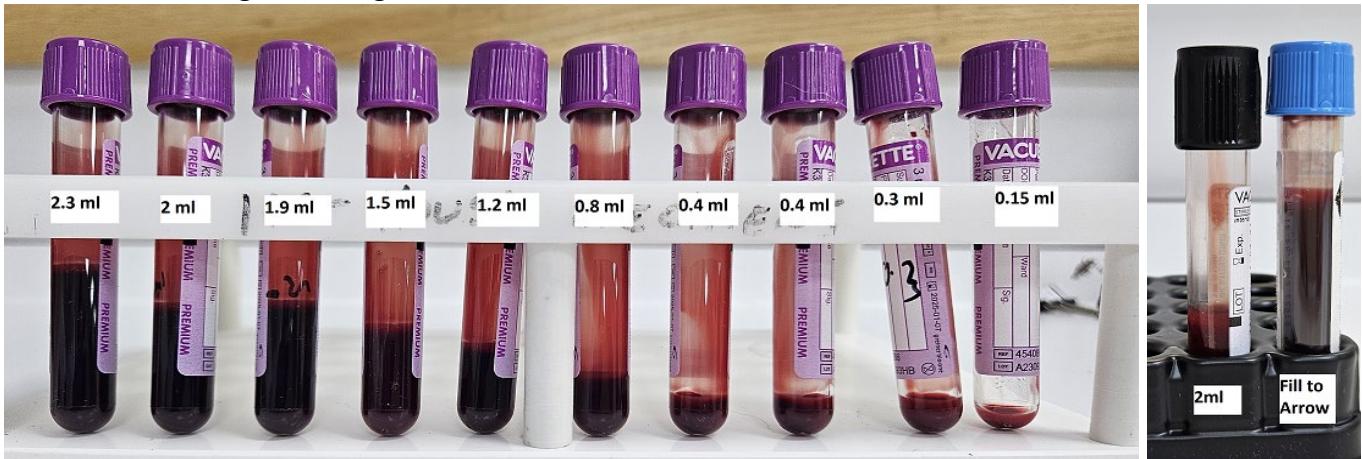


Figure 1 Volume of Blood in a 3m EDTA bottle, ESR bottle and Coagulation bottle.

## Biochemistry samples

See table 1 and figure 2 for guidance

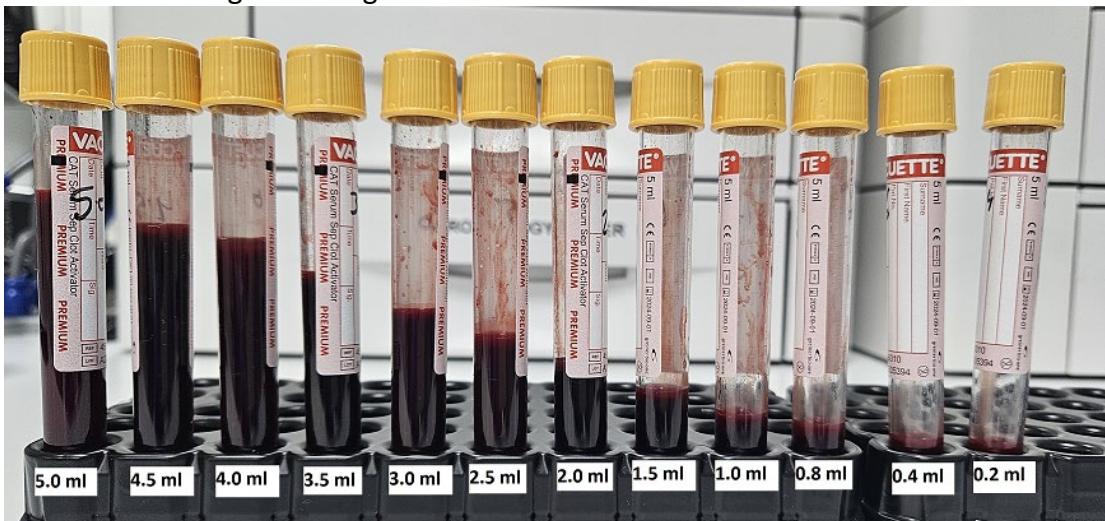


Figure 2 Volume of blood in a 5 ml serum bottle.

## Blood Transfusion Samples

A minimum of 2 ml of blood is required to ensure a Blood Group and Antibody Screen, 2 units Crossmatch and DCT test can be performed. See Table 1 and Figure 3 for guidance. If patient has a positive antibody screen this will not be sufficient as samples referred for additional testing.

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**Figure 3 Blood Transfusion EDTA bottle**

**\*Please note** all samples should be sent to pathology department if taken. If unsure minimum volume is obtained do not rebleed patient unless urgent sample. The pathology department will endeavour to test all samples unless samples volume too short and may cause erroneous results.

## 6 DELIVERY AND TRANSPORT OF SPECIMENS TO THE LABORATORY

At all times, specimens must be sent to the Laboratory as soon as possible after collection, in compliance with the requirements outlined in the relevant section of this user manual.

### 6.1 The Pneumatic Tube System

The Pneumatic Tube System (commonly referred to as the 'Chute') is used to deliver certain approved sample types from various satellite stations within the hospital to the Pathology Laboratory. Before using the Chute, please familiarise yourself with the correct operation and health and safety procedures. Please be aware of the specimen types that can and cannot be transported using the Chute including the carrier (pod) colour and type.

#### 6.1.1 Specimen Types Unsuitable for Delivery using the Chute

- Any irretrievable sample which may break or leak in the system
- known/suspected 'infectious/high risk' specimens (e.g. TB or blood-borne viral infections such as HBV, HCV or HIV) or Blood samples Query haemorrhagic fever
- 24-hour urines
- Bone marrow samples/slides, histopathology or cytology specimens
- Cerebrospinal Fluid (CSF) Specimens
- Blood units/blood products.

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## 6.1.2 Operation of the Pneumatic Tube System

### 6.1.2.1 Pod type:

- Red Pod – For all specimen types: blood, urine and stool samples, culture all with appropriate accompanying request form if not labeled using Maxims OCS with the exception of the examples listed in section 6.1.1.
- Green Pod – Pharmacy items
- Blue Pod – Paper/Reports

### 6.1.2.2 Hours of use:

- Monday to Friday: 7:00 to 17:00/ Saturdays and Sundays: 7:00 to 12:30

If there is no Medical Scientist in attendance, the protocol for sending samples to GUH or placing samples in the Pathology Laboratory overnight fridge is to apply.

### 6.1.2.3 Directions for use:

- Ensure that the primary specimen container is sealed tightly to prevent any leaks during transit.
- Place the specimen(s) in the biohazard bag attached to the request form and seal securely.
- If the specimen is urgent, place the specimen attached to the request form into a blue biohazard bag (this allows the person working in Specimen Reception to identify urgent requests among routine samples easily).
- Place the specimen attached to the request form into a RED pod (BLUE pods are for reports only).
- Close the container - ensuring the lid is fully shut.
- Dial destination required into the automatic station using the keypad (A directory is displayed on all PTS terminals throughout the Hospital).
- Place container gently into the dispatch slot on the Pneumatic Tube system.
- Wait to ensure pod has successfully sent.

## 6.2 Specimen Delivery from Within the Hospital

### 6.2.1 During Routine Hours

1. During Pathology Laboratory routine working hours, specimens may be delivered if suitable (see above) via the Chute.
2. There is routine delivery of histopathology & cytology specimens to the Pathology Laboratory by staff from Theatre, Minor Theatre, Endoscopy, X-Ray and the Consultant Clinic.
3. All other samples unsuitable for sending via the Chute (see above) must be hand delivered to the Pathology Laboratory by hospital staff.
4. Urgent/emergency samples taken during Pathology Laboratory routine working hours must be marked URGENT and sent in a BLUE biohazard bag.

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## 6.2.2 Urgent/On-Call Specimens Outside of Routine Pathology Hours

### 6.2.2.1 Saturday/Sunday Morning:

When the BSG Medical Scientist is in attendance, the same delivery protocol as per 6.2.1 applies.

### 6.2.2.2 On-call Hours (excluding sample referral to GBTE):

Specimens taken outside of routine hours, when the BSG Medical Scientist is not in attendance, are referred to the Pathology Laboratory, Galway University Hospital.

- Remove the **back copy** of the request form and forward to BSG Laboratory (to facilitate input of charges and documentation of the request on the patient's file in PIMS)
- Notify the On-Call Medical Scientist in the relevant department in GUH to inform them of the request being referred, to ensure they are available to receive and process it.

### 6.2.2.3 Crossmatch/Blood Product Request to GBTE During On-call Hours

1. Notify the On-Call Medical Scientist in GBTE inform them that a request has been sent for Crossmatch/Blood products
2. Notify the On-Call Medical Scientist in BSG (087-7749674) to inform them that a request has been sent for Crossmatch/Blood products.

**Critical point:** Due to the process involved in transportation of blood/blood products, the On-call Medical Scientist in both GBTE and BSG **must** be notified.

**Critical point:** Remove the **back copy** of the request form (or photocopy the form) and forward to BSG Laboratory.

3. Keeping a copy of the request form is MANDATORY for traceability purposes (and required to facilitate input of charges and documentation of the request on the patient's file in PIMS).

## 6.3 Specimen Delivery to an External Referral Laboratory

### 6.3.1 Packaging Requirements for an External Test Referral

To comply with ADR regulations for safe transport of dangerous goods by road, please ensure specimens are packaged as follows at ward level:

1. place the specimen in a Laboratory Biohazard bag containing a spill sheet and seal the bag
2. place the request form in the outside pocket of the Biohazard bag
3. Place the specimen bag into a Laboratory DGP Pathoseal specimen bag containing a spill sheet and seal
4. Place the Biohazard bag into a Brown Emergency Specimen envelope and seal
- Indicate which Laboratory department the specimen is to be delivered to

### 6.3.2 Transport of Referrals to GUH

Please note Separate forms/samples must be used, and individually packaged, when submitting requests for multiple departments.

- Bring the sealed envelope to Main Hospital Reception.
- Arrange with Reception staff for the relevant Taxi Company to be called to collect the specimen.

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## 6.4 Storage of Specimens Outside of Routine Pathology Hours/ Post Analysis

Specimens taken outside of routine Pathology Laboratory working hours that are not urgent and/or will not be processed immediately by the on-call Medical Scientist must be stored as follows in the Pathology Laboratory Overnight Fridge EXCEPT for Blood Culture samples. Blood Culture samples must be sent to GUH for analysis if taken out of hours. In general, routine blood samples should not be taken outside of the deadlines for receipt of such specimens by the Pathology Department (the exception being specific timed specimens such as cortisol or antibiotic levels). Refer to BSG/QA/SOP/009 "Procedure for the Control of Archive Specimens and Preparations" for storage post processing of samples.

## 6.5 Specimen Delivery from Clinical Users Outside of the Hospital

Specimens may be delivered from:

- General Practitioners (GPs)
- Nursing Homes
- Outpatients

All such specimens should reach the Pathology Laboratory by 16.00 hrs Monday to Friday. Do not send specimens outside of these hours. If specimens are being transported by courier to the Pathology Laboratory from an external clinical site, it must be ensured that they are sent in a timely fashion so that they arrive in the Pathology Laboratory before the deadlines outlined above.

# 7 REPORTING OF TEST RESULTS

## 7.1 Reports to Internal Users of the Laboratory Service

- Results will be reported via the Laboratory Information System (LIS) and are available electronically for viewing in clinical areas once authorised for release by Medical Scientists. iLAB interfaces with Maxims Order Comm System so results can be viewed on this also. This includes urgent results. In addition, where there has been a specific request to do so, or where they represent a critical value, results will be telephoned.
- Hard copy printed reports are issued throughout the day.
- The printed copy is sent to the originating clinical area of the specimen request.
- If the patient has been discharged, the report is sent to the requesting Clinician, who is responsible for returning it to Medical Records.
- Further printed copies may be requested for additional Consultants.
- The above scheme also applies to hard copy printed reports generated by external laboratories on behalf of the Pathology Laboratory.
- Consultants must indicate to the Pathology Laboratory administration staff where they wish their printed reports to be sent (collection from designated slot in the Laboratory, collection from Hospital Reception, or to an external postal address).

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## 7.2 Reports to External Clinical Users of the Laboratory Service

Reports for all test requests received from locations outside the hospital will be posted on a daily basis.

## 7.3 Telephoned Reports

It is the policy of the Pathology Department to telephone reports to the requesting Clinician or RMO when results for specific parameters have reached critical values or where a specimen is rejected. When specifically requested, urgent or other results outside of such critical values may also be telephoned to the requesting source/clinician (a contact number must be provided).

## 7.4 Reference Ranges

Reference ranges for different analytes are printed on the test reports. Please refer to the test result report but note that some reference ranges are dependent on age, gender or other specific factors.

## 7.5 Interpretation of Results

If clinical guidance is required to interpret results, this can be obtained by contacting the relevant Pathology Consultant. Numbers listed in section 2.3

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## 8 Blood Transfusion

The Blood Transfusion Laboratory provides routine and emergency pre-transfusion compatibility testing for both surgical and medical patients. It also provides blood components and products for clinical indications.

The following immunohaematological analyses are performed in-house:

- a) Group and Antibody Screen
- b) Red Cell Unit Crossmatch
- c) Direct Antiglobulin Test.

Antibody Identification is performed by the Galway Blood and Tissue Establishment, GUH.

### 8.1 Tests Available, Sample Type and Turnaround Time\*

Test	Sample Type	Turnaround Time
Blood Group and Antibody Screen (G&S)	6.0 ml EDTA K <sub>2</sub> E [Pink top]	Urgent Inpatient – 1 hour Routine Inpatient – 3 hours Pre-Assessment – 24 hours (Mon-Fri)
Crossmatch of antibody negative Red Cells	6.0 ml EDTA K <sub>2</sub> E [Pink top]	Urgent Inpatient – 1 hour Routine Inpatient – 3 hours Units may need to be ordered from GBTE
Crossmatch of antibody positive Red Cells (GBTE)	6.0 ml EDTA K <sub>2</sub> E [Pink top]	Urgent inpatient – result available within 40mins of GBTE receipt of sample if suitable RCC units available (see 7.2) Units then require transport to BSG
Investigation/Identification of atypical red cell antibodies (referred to GBTE/IBTS)	6.0 ml EDTA K <sub>2</sub> E [Pink top] <b>2</b>	Dependent on complexity of serological work required
Direct Antiglobulin Test	6.0 ml EDTA K <sub>2</sub> E [Pink top]	Urgent Inpatient – 1 hour Routine Inpatient – 3 hours
Blood Culture – for patient or RCC units	Aerobic and Anaerobic BacTec Blood Culture bottles	1 week. Gram stain results of all new positive blood cultures are telephoned to the relevant medical team within 2 hours of positivity. - out of hours samples should be sent to GUH ASAP

\*TAT stated is for samples received within routine working hours

### 8.2 Red Cell Concentrate Crossmatch Requests

A historical blood group record is required by the Blood Transfusion Department BSHG for all patient red cell unit requests before a crossmatch can proceed. The second sample rule requires that where there is no historical blood group record on the Access Package/iLAB in Blood Transfusion for a patient; a second Blood Transfusion sample is required to be taken at a separate time to the original request and ideally by a different Phlebotomist/Doctor/Nurse.

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**Critical Point:** Transfusion must be completed within 72hrs of sample collection for all patients.

### **8.3 Positive Antibody Screen**

If the antibody screen is positive, additional testing is referred to GBTE and will take two hours or longer. The Medical Scientist will inform the Nursing staff/Consultant of the approximate time of availability, subject to the referral of sample to GBTE and the availability of blood stock.

When a patient is found to have an antibody, it is recommended 2 units of crossmatched blood, which is negative for the corresponding antibody, should be requested prior to patient transfer to Theatre (This may require early admission of the patient). A Consultant may decide that they do not require two units to be crossmatched; this is recorded in the Blood Transfusion communications diary.

### **8.4 Blood Products**

For turnaround times of availability of blood products, please contact the Blood Transfusion Laboratory (ext. 583). The turnaround time will depend on the product requested, and its availability in BSHG/GBTE Laboratory.

### **8.5 Specimen Requirements**

#### **8.5.1 Factors Affecting Specimen Suitability/Results**

##### **8.5.1.1 Specimen Haemolysis and Lipemia**

The use of haemolysed or lipaemic specimens may create difficulties in evaluating test results. Blood Transfusion tests performed on a haemolysed specimen may mask antibody induced haemolysis; therefore, whenever possible, a haemolysed sample should be replaced with a new specimen. If a haemolysed specimen is used it should be recorded in the patients record. Should there be a problem with the analysis of any sample, the Laboratory will advise/request a repeat sample.

##### **8.5.1.2 Specimen Age and Validity**

Transfusion or pregnancy may stimulate the production of unexpected antibodies through either a primary or a secondary immune response. The timing of samples selected for crossmatching or antibody screening must take account of this, as it is not possible to predict when or whether such antibodies will appear. It is also important to note that any component containing residual red cells can elicit an immune response.

- All specimens arriving in the Laboratory must be received within 48 hours of sampling time as per BSG-BCSH-17 Guidelines for Pre Transfusion Compatibility procedures in Blood Transfusion Laboratories.
- The Medical Scientist receiving the specimens must ensure this time limit is adhered to before the sample can be processed for testing. If a sample is received between 2 – 48 hours after sample collection the Medical Scientist must confirm it has been stored between 2-8°C before accepting it for testing.
- No sample is accepted for testing which is received >48 hours after sampling time and these are therefore rejected by the Laboratory.
- The blood sample should be tested as soon as possible following collection as aged red blood cells may exhibit weaker reactivity than fresh cells due to antigen deterioration.

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- The sample is valid for the current admission only. Once an inpatient is discharged, the Blood Transfusion sample is no longer valid and a new sample is required on re-admission.
- Following Group and Antibody Screen analysis, the Blood transfusion sample is stored in the Blood Transfusion daily rack in the sample fridge at 2-8°C for 72 hrs. Transfusion based on a crossmatched sample has to be completed within 72 hours of sample collection.

#### **8.5.2 Inpatients**

For all inpatient Blood Transfusion samples, the sample is only valid for the current admission for up to 72hrs from the time the sample is taken. Once an inpatient is discharged, the Blood Transfusion sample is no longer valid and a new sample is required on next admission.

#### **8.5.3 Pre-assessment Patients**

For Pre-assessment patients, the group and antibody status is determined prior to admission. If there is a positive antibody screen the sample will be referred to GBTE for antibody identification. The sample is not valid for crossmatch. A new group and antibody screen sample will be taken pre-operatively on admission to the hospital (valid as a second sample).

### **8.6 Prescription of Blood/Blood Products**

All blood products must be prescribed on document BB102 "Blood & Blood Product Prescription and Transfusion Record."

- Thresholds and targets for transfusion are guided on Page 1 (as the National Institute Health & Care Excellence, 2015)
- The Doctor must sign and date the prescription legibly, MCRN must be included.
- Prophylactic diuretic therapy should be considered (particularly if compromised or low weight patients) to prevent Transfusion Associated Circulatory Overload (TACO).
- Prior to transfusion – Risk assessment for TACO is required which is signed by the prescribing doctor when completed.
- Nursing staff must follow instructions in BSG/HV/SOP/001 "Red Blood Cells & Platelets ordering/administration and Management of the Transfused Patient" and BSG/HV/SOP/011 "Blood Products and Components, Ordering and Administration" for all other Blood Components/Products.
- Used/transfused Blood Component/Product Packs MUST BE returned to the Laboratory. Place the used pack in a yellow bag with the patient's addressograph label on the outside. Leave in the bottom of the overnight fridge in the Laboratory.

**Critical Point:** Full documentation is of primary importance. It is a legal requirement that this documentation is filed in the Patient's Record.

#### **8.6.1 The Prescription and Transfusion Record, BB102 Includes:**

- Patient addressograph label or written details
- Consent tick-box.
- Previous reactions to Blood / Blood Components.

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- Requirement for Diuretics/Other Drugs tick-box - these are prescribed on patient Drug Prescription Record
- Prior to Transfusion – Risk Assessment for TACO signed by a Doctor
- Date of Prescription
- Blood Product required.
- Reason for transfusion/Laboratory Value.
- Special requirements e.g. CMV negative products, irradiated products, blood warmer
- Number of units to be transfused – each prescribed separately on one line.
- Running duration/rate.
- Doctor's Signature and MCRN No.

Crossmatched RCC Units are held for 24-48 hrs in the Issue Fridge. The Issue Fridge is located beside Theatre lift on 1st floor

## 8.7 Pre-Admission Screening

To ensure patient blood group and antibody history is identified prior to admission, a pre-admission testing service is available in BSHG, offering a laboratory work-up to include Blood Group and Antibody Screen.

- The sample for blood group and antibody screen is taken in the Pre-assessment Clinic / Outpatients Department after the patient's consultation with their doctor.
- The blood group and antibody screen is performed such that the antibody status of the patient is known ahead of admission.
- A new sample for blood group and antibody screen will be taken on the day of the patient's admission.
- If an Antibody is detected, the Consultant will be notified to admit the patient 1 day prior to their procedure and a new Blood Transfusion sample will be collected.
- Two units of appropriate blood will be crossmatched (MSBOS) and available prior to surgery for all antibody positive patients.
- A PIMS alert created by HVO if antibody screen is positive or if there is a history of same.

## 8.8 Reporting of Results

Results of Blood Group and Antibody Screen are reported as follows:

- Issued to the appropriate clinical area if an in-patient.
- Collected, reviewed and held by the Pre-assessment Clinic CNM until the admission of the patient (pre-admission testing service).
- The Consultant will be informed of the presence of an antibody and the possible time delay in providing units of blood. (Early admission of the patient will be required – notification of this is given to the Consultant by the Laboratory at time of issuing the pre-assessment test results).
- A Transfusion Alert notice, BSG/HV/FORM/008 and PIMS alert are generated by the HVO/deputy highlighting the presence of the antibody. All results available on iLAB also.

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## 8.9 Emergency O Rh (D) Negative Units

**Two Group O Rh (D) Negative units** are held in the Blood Issue Fridge for Emergency use. The attending Consultant / Anaesthetist are responsible for requesting un-crossmatched blood.

- A crossmatch sample must be collected before commencement of the Emergency Unit transfusion and **sent STAT to the laboratory**, unless a group and hold sample is already completed pre-op.
- A request form (BB101A), fully completed, must accompany this sample.
- In either case, the Laboratory or on-call Medical Scientist (BSHG) **MUST** be notified immediately once the emergency units are collected.
- A sign off sheet BSG/BB/FORM/017 Collection of Emergency O Rh D Negative Units is available at the Issue fridge and must be completed.
- Patient name, date of birth and hospital number as well as patient location and the requesting Consultant/ Anaesthetist are to be completed when known and if time permits against the O Rh (D) Neg units collected.
- Refer to BSG/HV/SOP/001 “Red Blood Cells & Platelets ordering/administration and Management of the Transfused Patient” & BSG/HV/SOP/002 “Management of Major/Massive Life-Threatening Haemorrhage”.

Group compatible blood is preferable if a transfusion can be delayed to accommodate a check on the patient and donor blood groups. If a Blood Transfusion sample is not already available in the Laboratory the patient will need to have a blood group established. In an emergency this blood group (ONLY) will take approximately 15mins from when the sample is received by the Laboratory. Second sample rule applies when releasing group compatible blood units.

## 8.10 Urgent Crossmatch/ Code Red, Major/Massive Life Threatening Haemorrhage.

Communication with the Laboratory regarding the emergency will ensure minimum time wasted. The doctor requesting the crossmatch must phone the Laboratory and communicate the critical details regarding the request. Adhere to BSG/HV/SOP/002, Management of Major/Massive Life-Threatening Haemorrhage and refer to relevant Clinical area Wallcharts to guide the process for activation of a CODE RED.

The reason for the transfusion will be recorded by the Doctor;

- in the patient's medical record
- on BSG-BB101A - Blood Transfusion Request Form
- on BSG-BB102 - Blood Prescription and Transfusion Record

The above records should be completed with the name of the Doctor ordering the blood/blood products and the reason for the transfusion.

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## 8.11 Transport of Blood/Blood Products in the Hospital

Blood/blood products **must** be transported to wards/theatre in the Red Blood Transport Box provided to each department.

## 8.12 Maximum Surgical Blood Ordering Schedule

A maximum blood-ordering schedule is in operation in BSHG and should be adhered to when ordering Blood for Surgical procedures. The MSBOS is available for review on Q-Pulse (BSG/HV/FORM 014). Each member of staff has a professional responsibility to avoid over exposure of patients to blood/blood products. Over ordering of blood/blood products must be avoided and time constraints adhered to in order to prevent wastage. Blood and blood products are extremely costly and are frequently in short supply.

## 8.13 Clinical Advice in Relation to Blood Transfusion

For clinical advice on Blood Transfusion matters contact the Consultant Haematologist, Dr Amjad Hayat on 091-544281 / via BSG Hospital reception (for contact through his mobile) or his deputy Consultant Haematologist, Dr Janusz Krawczyk on 091-544281 / via BSG Hospital reception (for contact through his mobile).

In addition to the Consultant Haematologist, the Irish Blood Transfusion Service Telephone No. 01-4322800 provides a consultative and advisory service and advice is available from the National Haemovigilance office (NHO) on 01-4322741/4322825.

## 8.14 Haemovigilance

The Haemovigilance Officer is Noreena O'Brien (**BLEEP 25, Ext 575**). Noreena is available to advise on, or investigate, any aspect of blood/blood product administration during routine working hours. The Haemovigilance Officer provides training to all new Nursing/Clinical staff. In the absence of Noreena O'Brien, the BT Senior Medical Scientist/ Quality Coordinator is her Deputy. The Haemovigilance Officer is the contact for the HTC.

## 8.15 Special Requirements in Blood/Blood Products

Special requirements should be indicated on BB101A, Transfusion Request form. Refer to BSG-BB138 Guidelines for the use of CMV Negative or Irradiated Blood /Blood Products on Q Pulse.

## 8.16 Blood and Blood Products

Refer to BSG/HV/SOP/011 Blood Product & Components, Ordering & Administration. When administering blood/blood products, the checking procedure as per the relevant policies, on Q-Pulse, must be adhered to.

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### 8.16.1 Thresholds / Targets/Dosage

The BSHG Transfusion Guidelines complies with a restrictive strategy as recommended by the National Institute Health & Care Excellence (NICE), 2015.

NICE Quality Statement, Red Cell Transfusion-<https://www.nice.org.uk/guidance/ng24>

Use restrictive red blood cell (RBC) transfusion thresholds for patients who need RBC transfusions and who do not have major haemorrhage; acute coronary syndrome; need regular blood transfusions for chronic anaemia.

- When using a restrictive RBC transfusion threshold, consider a threshold of 7gm/dl and a haemoglobin concentration target of 7-9g/dl after transfusion.
- Consider a RBC transfusion threshold of 8gm/dl and a haemoglobin concentration target of 8-10g/dl after transfusion for patients with acute coronary syndrome.
- Consider setting individual thresholds and haemoglobin concentration targets for each patient who needs regular transfusions for chronic anaemia.

#### Doses

- Consider single-unit red blood cell transfusions for adults (or equivalent volumes calculated based on body weight for children or adults with low body weight) who do not have active bleeding (also recommended by the Irish Blood Transfusion Service).
- After each single-unit red blood cell transfusion (or equivalent volumes, calculated based on body weight), clinically reassess and check haemoglobin levels unless patient is bleeding or are on a chronic transfusion program. Give further transfusions if needed

#### Transfusion Recommendations

The British Committee for Standards in Haematology, National Blood Transfusion Committee for Patient Blood Management recommends an evidence-based approach to patient care:-

- Investigate causes of anaemia – Iron, B12, folate investigations
- Consider alternatives – Iron Supplementation (also recommended by NICE)
- Only transfuse if the patient is symptomatic
- Transfuse a single unit & clinically reassess the patient for symptoms of anaemia
- Only transfuse second unit if patient is symptomatic

Transfusion Associated Circulatory Overload (TACO):-

Prior to Transfusion, Risk assessment for TACO is recommended. TACO Checklist is on Page of 3 of BB102 and the Yes/No tick box is selected for 'Risk of TACO' and signed by the Doctor on Page 1.

### 8.16.2 Documentation of Blood Products

All blood products may only be prescribed on the pink Blood and Blood Product Prescription & Transfusion Record, BSG-BB102: it is a legal requirement that this document is filed in the patient's record.

- The doctor must sign and date the prescription legibly, and the unit number/ batch number must be documented in BSG-BB102.
- All related compatibility labels/forms will be filled in BSG-BB102.
- Full details of blood product therapy must be recorded in the patient notes. A note of clinical outcome should also be made.

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**Critical point:** Full documentation is a requirement of the Irish National Accreditation Board.

**Critical point:** Expert advice is available from The Consultant Haematologist prior to administration of blood products if required.

### 8.16.3 Red Cell Concentrate Blood Groups Availability

Red Cell Concentrate Blood Groups in Stock	Red Cell Concentrate Blood Groups Ordered as Required
O (Rh)D Negative RCC (Emergency Use )	B (Rh) D Negative RCC
O (Rh) D Positive RCC	A (Rh) D Negative RCC
A (Rh) D Positive RCC	AB (Rh) D Positive RCC
B (Rh) D Positive RCC	AB (Rh) D Negative RCC

Where minimum stock levels cannot be maintained Doctors and Wards will be contacted to inform them of the shortage in supply.

### 8.16.4 Blood Products Available in BSG

- Fibrinogen 1g x 4 – Held in Blood Transfusion Laboratory, BSHG
- Octaplex (1,000IU(x2)/ 500IU (x2)) -Held in Blood Transfusion Laboratory, BSHG
- Immunoglobulins – Held in Pharmacy, BSHG

### 8.16.5 Blood Products Available from GBTE (ordered from BSHG Blood Transfusion Laboratory)

- Red Cell Concentrate
- Platelets (Pooled) / Platelets (Apheresed) - The Consultant Haematologist should be contacted beforehand. Platelets may not be available in GBTE so must be ordered in advance if possible
- LG Octaplas SD Frozen Plasma, A, B, O & AB
- 20% Albumin Human (Flexbumin) 100ml
- 5% Albumin Human Baxter 500ml
- Prothrombin Complex Concentrate (PCC) – Octaplex (1,000IU & 500 IU)
- Ig Anti-D RHOPHYLAC® IV 300ug
- C1-Esterase Inhibitor
- Factor IX RC [Alprolix]Human Hep B Ig, 2ml & 10ml [HEPATECT®]
- Fibrinogen 1g
- Human Hemin 25mg/ml (Normosang)
- Human Varicella Immunoglobulin (Varitect CP 500IU/20ml 125IU/5ml)
- Human FACTOR VIII/vWF 500IU & 1000IU WILATE
- Advate Recombinant FVIII, 250IU, 500IU, 1000IU & 1500IU
- 100KIU FACTOR VIIa (NOVOSEVEN)
- 50KIU FACTOR VIIa (NOVOSEVEN)

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- Coagadex (250IU, 500IU)
- Veyondi
- FEIBA®

## 8.17 Warfarin Reversal

### 8.17.1 No Bleeding or Minor Bleed

PATIENT'S INR	ACTION
>3.0 $\leq$ INR $\Rightarrow$ < 6.0 (target INR 2.5) >4.0 $\leq$ INR $\Rightarrow$ < 6.0 (target INR 3.5)	1. Reduce Warfarin dose or Stop 2. Restart Warfarin when INR < 5.0
>6.0 $\leq$ INR $\Rightarrow$ < 8.0, no bleeding or minor bleeding	1. Stop Warfarin 2. Restart Warfarin when INR < 5.0 3. If other risk factors for bleeding, give 1mg of Vitamin K orally
INR > 8.0, no bleeding or minor bleeding	1. Stop Warfarin 2. Restart Warfarin when INR < 5.0 3. Give 1-2.5 mg of Vitamin K orally. Recheck INR within 8 hours

### 8.17.2 Major Bleed or Emergency Surgery

<u>Life Threatening/ Major Haemorrhage</u> <ul style="list-style-type: none"> <li>• Intracranial bleed</li> <li>• Retroperitoneal bleed</li> <li>• Intraocular bleed</li> <li>• Muscle bleed with compartment syndrome</li> <li>• Pericardial bleed</li> <li>• Active bleed with hypotension or 2g fall in Haemoglobin</li> <li>• Surgery or Invasive procedure when there is insufficient time to allow Vitamin K to work (6hrs).</li> <li>• Elective Surgical procedures are NEVER an indication for PCC</li> </ul>	1. Stop Warfarin 2. Vitamin K 5 mg IV slowly 3. Consult Haematologist 4. Give PCC (e.g. Octaplex)	
	Patient's INR	Dose of PCC
	INR 2.0 – 3.9	25 IU / Kg
	INR 4.0 – 6.0	35 IU / Kg
	INR > 6.0	50 IU / Kg

- **Check Patient's INR post infusion and at 6 hours and 24 hours**
- Additional PCC is not usually required when Vitamin K has been given
- PCC is relatively contraindicated in the context of DIC, liver failure or recent thrombosis (Discuss with the Consultant Haematologist)

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## 8.18 Consent to receive Blood/Blood Products

A Blood Transfusion Patient Information Leaflet, BSG/HV/EXT/017 - National Transfusion Advisory Group, NTAG – You may need a blood transfusion, is given to the patient at phlebotomy by the staff member who takes the pre-transfusion sample or when a transfusion is thought possible or necessary.

Signed informed consent must be obtained by the patient's Consultant or other doctor deputised prior to the administration of blood or blood products and is to be documented on

Informed Consent Form BSHG 101. Should the patient refuse consent for whatever reason, the patient will be asked to sign a declaration against the transfusion of blood or blood derived products (BB128). Refer also to BSHS-ETH-PP7, Guidelines regarding Blood Transfusion of Jehovah Witness patients. The Consultant will have discussed and fully explained the consequences of refusing consent and this will be discussed with Hospital Management prior to any procedure/surgery being undertaken.

## 8.19 Investigation of a Suspected Transfusion Reaction

When a suspected transfusion reaction is identified within routine working hours (9.00am to 5.00pm), immediately notify the Blood Transfusion Laboratory and Haemovigilance Officer (Bleep 25). If out of hours, immediately contact the on-call Medical Scientist on 087 7749674.

Refer to BSG/HV/SOP/008 'Management of a Suspected Transfusion Reaction and Serious Adverse Reactions'.

**Critical Point:** Following clinical assessment and if required, contact the Consultant Haematologist for advice, as soon as possible, especially if acute.

There are many causes of adverse reactions during/following blood transfusion. As the consequences of immune mediated haemolysis has the most clinically significant outcome for the patient following the transfusion of incompatible blood, this possible cause must be investigated as a priority. Return the blood unit with the attached giving set and all previously transfused blood packs to the Blood Transfusion Laboratory.

A Transfusion Reaction Pack with the required sample bottles & documentation is located beside the blood issue fridge (1<sup>st</sup> floor level beside theatre lift).

### 8.19.1 Samples Required

Label the samples for the following tests with the three main patient identifiers: Name, Date of Birth & Hospital Number. No addressograph label should be used to label Blood Transfusion specimen bottles. Complete labelling of these bottles as per hospital protocol:

	Test	Sample Containers
1.	Full Blood Count	Purple Top (EDTA, whole blood)
2.	Full Biochemistry Profile (includes Renal and Liver Profile)	Yellow Top (Gel separator, serum)
3.	Lactate Dehydrogenase (LDH)	Yellow Top (Gel separator, serum)

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4.	Spare Serum Specimen	Yellow Top (Gel separator, serum) Please take a spare serum as this may be needed for further testing
5.	Coagulation Profile and Fibrinogen	Blue Top (Sodium citrate, whole blood, filled to the arrow)
6.	Group & Antibody Screen, Crossmatch and Direct Antiglobulin Test	Pink Top (EDTA, whole blood) Specimen labelling and BB101 A Blood Transfusion request form completed as BT process. (No addressograph label allowed on sample)
7.	Urine for Urobilinogen	White Top Universal Container (No additives)
8.	Urine for Culture & Sensitivity	White Top Universal Container (Only when infection is suspected)
<b><i>If a rise in temperature of &gt;1.5°C occurs, or where bacterial contamination is suspected by the Clinician. Blood Cultures must be taken</i></b>		
9.	Blood Cultures for Patient	Aerobic and anaerobic bottles
10.	Blood Cultures of Red Cell/Blood Product Unit	Aerobic and anaerobic bottles. Label the form and bottles with the red cell/blood product unit number. Do not include any of the patient details here.

**Critical point:** Check the expiry dates of all specimen containers prior to collection. All containers must be labelled with at least the three primary patient identifiers (1. Name 2. Date of Birth 3. Hospital Number).

These specimens, together with a completed Transfusion Request Form BB101A and a completed BB105 Blood/Blood Product Adverse Reaction Form should be sent to the Laboratory urgently requesting a transfusion reaction investigation.

The Laboratory will investigate any possible causes and a report will be issued as soon as work is completed, or if a significant finding is observed, results will be immediately communicated to the Consultant/requesting Clinician.

## 8.20 Serious Events, Near Misses and/or Non-conformances

Events, Near Misses and/or Non Conformances related to blood transfusion policy, which occur in the Bon Secours Hospital, will be dealt with immediately, reported to and investigated by the Haemovigilance Officer, the Hospital Blood Transfusion Department and the Quality Coordinator, if appropriate.

Refer to BSG/HV/SOP/014 Serious Adverse Events, Near Miss SAEs, Wrong blood in tube, Non Conformances & Rapid Alert Notification.

## 8.21 Sample Storage

Refer to BSG/BB/SOP/007 "Blood Transfusion Specimen Preparation and Storage" for sample storage, retention and disposal information.

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## 9 Biochemistry

### 9.1 Department Profile

The Clinical Biochemistry Department uses biochemical knowledge and techniques to understand human health and to assist in the detection, diagnosis and treatment of disease.

The Department provides a comprehensive analytical and interpretative service including assessment of liver function, kidney function, proteins, enzymes, bone health and biochemical compounds. Our role is to aid the clinician on patient diagnosis, prognosis, exclusion of disease, to monitor patient response to treatment, development or progression of disease and the management of chronic illness through risk stratification and the establishment of treatment/intervention targets.

The provision of a clinical biochemistry service in a prompt cost-effective, safe and user-friendly manner is dependant on highly automated analytical systems.

### 9.2 Clinical Advice and Service

Clinical advice and interpretation is available from the Consultant Chemical Pathologist GUH. Comments or suggestions relating to the service should be addressed to the Laboratory Services Manager.

### 9.3 Out of Hours Service

The out of hours service, and list of tests available is detailed in section 2.5.1.

### 9.4 Biochemistry Tests

Information on all Tests carried out in Clinical Biochemistry is to be found in the Test Directory of this manual (listed alphabetically). Stated volumes required apply to adult patients. Where small sample volumes are submitted, list the tests requested in order of priority as the volume of serum/plasma obtained will dictate how many can be performed. In the event of a specimen being unsuitable for processing or where there is an analytical failure, the clinician will be informed by phone or in writing.

#### 9.4.1 Test Profiles

The test profiles defined in the following table are available to requesting doctors. Please use the profile names given below as these are the only profiles defined and recognised by the Clinical Chemistry department.

Profile	Assays Included
Biochemistry Profile (BIOP)	Sodium, Potassium, Chloride, Urea, Creatinine, estimated Glomerular Filtration Rate (eGFR), Calcium, Adjusted Calcium, Phosphate, Uric Acid., Total Bilirubin, Total Protein, Albumin, Alkaline Phosphatase, Alanine

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	Aminotransferase, Aspartate Glutamyltransferase, Magnesium	Aminotransferase, Gamma
Renal Profile (RP)	Sodium, Potassium, Chloride, Urea, Creatinine, eGFR	
Creatinine & eGFR (CRX)	Creatinine, eGFR	
Liver Profile/Liver Function Tests (LFT)	Total Protein, Albumin, Total Bilirubin, Alkaline Phosphatase(ALP), Alanine Aminotransferase (ALT), Aspartate Aminotransferase (AST), Gamma Glutamyltransferase (GGT)	
Bone Profile	Calcium, Adjusted Calcium, Albumin, Alkaline Phosphatase, Phosphate, Total Protein	
Calcium Profile	Calcium, Adjusted Calcium, Albumin	
Lipid Screen (FLIP)	Cholesterol, High Density Lipoprotein (HDL), Triglycerides, Low Density Lipoprotein (LDL)	
Iron Studies (Iron)	Iron, Transferrin, calculated Total Iron Binding Capacity (TIBC), Transferrin Saturation	
CRP	C-Reactive Protein	
MG	Magnesium	
Glucose (Random or Fasting)	Glucose	
Troponin T (HSTT)	High Sensitivity Troponin T	
Serum HCG (BHCg)	Serum Beta Human Chorionic Gonadotropin	

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## 9.5 Turnaround Times

Turnaround time is defined as the time from receipt of specimen in the Laboratory until the result is authorised by the Medical Scientist and released to the LIS. Turnaround time is adversely affected when there are excessive demands for urgent assays. We will endeavour to meet the following turnaround times of routine requests reported within 3 hours and urgent requests reported within 90 minutes. Serum samples require at least 30 minutes of clotting time prior to centrifugation, and 10 minutes of settling time post centrifugation. These measures help to prevent analytical interferences and protect Laboratory personnel from potential biohazardous aerosols. Turnaround time stated below is for samples received within the hours of 09:00 to 16:00 Monday to Friday, 09:30 to 13:00 Saturday and 10:30 to 12:30 Sunday.

Test	Sample Type	Turnaround Time
Biochemistry Profile	6.0 ml SST [Yellow top]	Urgent – 90 minutes Routine – 3 hours
Troponin/ Serum HCG	6.0 ml SST [Yellow top]	Urgent – 90 minutes Routine – 3 hours

## 9.6 Critical Results

Results falling outside defined critical limits will be telephoned to the requesting Consultant or RMO caring for the patient.

## 9.7 Reference Intervals / Ranges

Reference Intervals are given on each individual report. Always take note of reference intervals and comments on individual reports as ranges may vary depending on the methodology used. Any significant changes will be published and consultants informed.

## 9.8 Interference

Many tests are subject to interference. This may be biological, where the offending substance alters the true concentration within the body, or analytical, where the method is not specific. The report may mention some of the more common interferences e.g. haemolysis, lipaemia and icterus. A list of substances that interfere with each method is available in the Clinical Biochemistry Laboratory.

# 10 HAEMATOLOGY (INCLUDING COAGULATION)

## 10.1 Department Profile

The Department of Haematology provides services to Bon Secours Hospital Galway and to some external users. The Haematology Laboratory provides diagnostic investigations in general Haematology and routine Coagulation. The Laboratory has an Internal Quality Control system and participates in national and External Quality Assurance schemes.

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## 10.2 Clinical Advice and Service

Clinical advice and interpretation is available from the Consultant Haematologist GUH. Comments or suggestions relating to the service should be addressed to the Laboratory Services Manager.

## 10.3 Out of Hours service

The out of hours service, and list of tests available is detailed in section 2.5.1.

## 10.4 Haematology Tests

Information on all Tests carried out in Haematology is to be found in the Test Directory of this manual (listed alphabetically). Stated volumes required apply to adult patients. In the event of a specimen being unsuitable for processing or where there is an analytical failure, the clinician will be informed by phone or in writing.

Profile	Assays Included
Full Blood Count	White cell count, Red cell count, Haemoglobin, Platelet count, Red cell indices, 5-part WCC Differential
Reticulocyte Count	Reticulocyte Count
Erythrocyte Sedimentation Rate	ESR
Coagulation Screen	PT, INR, APTT, Fibrinogen
INR Level	PT, INR
D-Dimer	D-Dimer
Fibrinogen	Fibrinogen
Blood Film	Routine Morphology

## 10.5 Turnaround Times

Turnaround time is defined as the time from receipt of specimen in the Laboratory until the result is authorised by the Medical Scientist and released to the LIS. Turnaround time is adversely affected when there are excessive demands for urgent assays. We will endeavour to meet the following turnaround times for routine assays: routine within 2 hours and urgent within 1 hour. Turnaround time stated below is for samples received within the hours of 09:00 to 16:00 Monday to Friday, 09:30 to 13:00 Saturday and 10:30 to 12:30 Sunday.

Test	Sample Type	Turnaround Time
Full Blood Count	3.0 ml EDTA [Purple top]	Urgent – 1 hour Routine – 2 hours
Coagulation Screen / Fibrinogen / D Dimer	2.7 ml Sodium Citrate [Blue top]; fill to the line – Delivered within 1 hour of collection.	Urgent – 1 hour Routine – 2 hours
ESR	4NC ESR Sodium Citrate	2 hours

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## 10.6 Critical Results

Results falling outside defined critical limits will be telephoned to the requesting Consultant or RMO caring for the patient.

## 10.7 Interfering Factors

Under filled coagulation Bottles, Incorrect order of draw, Clotted samples (Bad Veins)

## 10.8 Special Protocols

For bone marrow sampling, please contact the Haematology Department, BSG.

## 10.9 Haematology Reference Intervals/Ranges

Reference Intervals are given on each individual report. Always take note of reference intervals and comments on individual reports as ranges may be amended depending on methodology used. Any significant changes will be published, and Consultants informed.

# 11 MICROBIOLOGY

## 11.1 Department Profile

The Department of Microbiology provides routine diagnostic and screening services to Bon Secours Hospital Galway and to some external users. The Laboratory has an Internal Quality Assurance system and participates in national and international quality assessment schemes.

## 11.2 Clinical Advice and Service

Clinical advice and interpretation is available from the Consultant Microbiologist. For Clinical advice on specimens referred to GUH contact the Consultant Microbiologists in GUH. Comments or suggestions relating to the service should be addressed to the Laboratory Services Manager BSG.

## 11.3 Out of Hours service

The out of hours service, and list of tests available is detailed in section 2.5.1.

## 11.4 Microbiology Tests

Information on all Tests carried out in Microbiology is to be found in the Test Directory of this manual (listed alphabetically). In the event of a specimen being unsuitable for processing or where there is an analytical failure, the clinician will be informed by phone or in writing.

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Profile	Assays Included	Turnaround time
Urine Culture and Sensitivity	Urines for Colony count	24 hrs
	Antimicrobial Susceptibility testing	48 hrs
Methicillin Resistant Staphylococcus Screening	MRSA	Negative – 1 day Positive – 2 days
Helicobacter pylori Stool Antigen Test	HPSA	1 day
Urine HCG Test	Urine Pregnancy Test	1 hour
Faecal Occult Blood Test	FOB	1 day
SARS-CoV-2 PCR	SARS-CoV-2	2 hours
Respiratory Panel	Influenza A & B, RSV and SARS-CoV-2 PCR	2 hours

## 11.5 Turnaround Times

Turnaround time is defined as the time from receipt of specimen in the laboratory until the result is reported in the LIS. Details may be found in section 11.4 above.

## 11.6 Critical Results

Results falling outside defined critical limits will be telephoned to the requesting Consultant or RMO caring for the patient.

## 11.7 Interfering Factors

Contamination, sample leakage, incorrect specimen containers or inappropriate storage/transport temperature may cause unreliable results of investigations. Pre-analytical errors which will affect the quality of examinations will result in the specimen being rejected and the patient's location informed.

## 11.8 Microbiology Reference Intervals/Ranges

Reference Intervals, as applicable, are given on each individual report.

## 12 Test Directory

Please see tables on following pages for test directory.

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
11-DeoxyCortisol	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	CIRCADIAN RHYTHM: This biological molecule has a circadian rhythm (maximum concentration in morning), with a sufficiently significant amplitude to have an important influence on the clinical interpretation.
17-Hydroxyprogesterone (Synonyms: 17-OH-P, 17-OH progesterone, 17-alpha-Hydroxyprogesterone)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Specify the age, sex and phase of the cycle. For women, the sample must be taken at the start of the follicular phase
Acanthamoeba Molecular analysis (Amoebic Keratitis)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Corneal scraping on a dry sterile swab (available from Medical Microbiology)	Contact Medical Microbiology GUH for further details Sample referred to Micropathology Ltd., UK
Acetyl Cholinesterase Receptor Antibodies		Refer to "Anti-acetylcholine receptor antibodies"	
Aciclovir Pre Dose	Antimicrobial Reference Laboratory, Severn Pathology, Southmead Hospital Bristol, Southmead Road, Westbury-on-Trym, Bristol BS10 5NB.	5 mL blood in a plain gel tube	For Aciclovir monitoring, we recommend a pre dose sample and a post dose sample.
Aciclovir monitoring	CMMG Antimicrobial Reference Laboratory, Severn Pathology, Southmead Hospital Bristol, Southmead Road, Westbury-on-Trym, Bristol BS10 5NB.	5 mL blood in a plain gel tube	For CMMG monitoring, we require a pre dose sample only.
Aciclovir Pre Dose	Antimicrobial Reference Laboratory, Severn Pathology, Southmead Hospital Bristol, Southmead Road, Westbury-on-Trym, Bristol BS10 5NB.	5 mL blood in a plain gel tube	A post dose sample is taken either 1 hour after the end of iv administration or 2 hours after oral administration.

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
ACTH (Synonyms: Corticotrophin & Adrenocorticotrophic hormone )	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL EDTA Plasma + Aprotinine FROZEN. Blood draw between 07:00 and 10:00. Always indicate if it is a dynamic test	Sampling and transportation conditions: sampling on EDTA tube: sample on a cooled tube at 4°C, centrifuge at +4°C immediately and FREEZE the plasma immediately OR sampling on special tube (EDTA + Aprotinin) supplied upon request: centrifuge at +4°C and FREEZE the plasma. CIRCADIAN RHYTHM: This biological molecule has a circadian rhythm (maximum concentration in morning), with a sufficiently significant amplitude to have an important influence on the clinical interpretation. Provide an individual aliquot for this assay. Not to be performed on haemolysed sample. ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential to STOP treatment 8 days before taking the sample.
Acid Fast Bacilli Culture (AFB)	Refer to "Mycobacteria Testing"		
APTT	In-House Haematology	2.7 mL blood in a 0.109m Sodium Citrate tube. (Blue Top) Do not refrigerate specimen.	To be received in Lab within 6 hours of draw. Usually performed with PT as part of Coagulation Screen. Must fill bottle to mark.
Activated Protein C Resistance (APC-R) (see Thrombophilia Screen)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2.7 mL blood in a 0.109m Sodium Citrate tube (Blue Top- 2 samples required).	Fresh Specimens required. Must fill bottle to mark.
ADAMTS 13 (Factor Willebrand protease activity)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 x aliquots of 2 mL of citrated plasma	Plasma with platelets removed by double centrifugation: 2500 g 15 min and settled plasma. Freeze  The patient must not receive heparin  Enclose the specific clinical information form (R9-INTGB : ADAMTS13 testing)

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Adenovirus / Rotavirus Antigen	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Faeces collected in acute phase of illness 1-2 g in leak proof container. Delay > 2 h refrigerate @ 2-8°C	Rotavirus and Adenovirus are tested for in specimens from children aged less than 5 years of age.
Adjusted Calcium	In-House Biochemistry	Calculated Parameter	Part of Biochemistry Profile
Adrenal Antibody	Refer to "Anti-Adrenal Antibodies"		
Adrenaline/Noradrenaline /Dopamine	Refer to "Catecholamines/Fractionated Metanephhrines"		
Adrenocorticotrophic Hormone (ACTH)	Refer to "ACTH"		
Alanine amino Transferase (ALT)	In-House Biochemistry	5.0 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
Albumin	In-House Biochemistry	5.0 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
Albumin (Urine) / Microalbumin	Clinical Biochemistry (Roscommon (RCH)- GUH refer)	Urine in plain vacutainer – part of new BD urine collection system	Date of collection must be stated on the request form
Alcohol (Ethanol)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5.0 mL blood in a plain gel tube filled completely & delivered immediately to the laboratory	Please contact the laboratory if there is a delay in delivering sample. Do not use alcohol wipes. Analysis for medical use only
Aldolase	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5.0 mL blood in a plain gel tube	Blood draw preferentially after a 30-min resting period. Non haemolysed sample required.
Aldosterone	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	10ml EDTA (2 samples)	Pt ambulatory for 1 hour. Do not take on ice. Delivered to laboratory immediately. Please provide clinical/antihypertensive medication details Beta-blockers-ACE inhibitors etc.

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			Needs to be separated and frozen within 30 mins of draw. Spin and separate into one false bottom tube. Freeze in BSHG not in GUH To be sent frozen to GUH. List medications
Aldosterone/Plasma Renin Activity Ratio	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	10ml EDTA (2 samples)	Pt ambulatory for 1 hour. Do not take on ice. Delivered to laboratory immediately. Please provide clinical/antihypertensive medication details Needs to be separated and frozen within 30 mins of draw. Spin and separate into one false bottom tube. Freeze in BSHG not in GUH To be sent frozen to GUH. List medications
ALK Translocation (EML4-ALK translocation)	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Tissue samples already processed by the Histopathology Laboratory, arrange via consultant pathologist.	Contact the Department of Histopathology, Cytopathology and Molecular pathology on 4078
Alkaline Phosphatase (Alk Phos)	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
Alkaline Phosphatase (Isoenzymes) Bone Alk Phos. "Bone Specific Alkaline Phosphatase"	Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin 4.	5 mL blood in a plain gel tube *	Fasting Sample. *Biotin may cause some concentration dependent negative interference in this assay if high dose supplements are taken. If this is suspected, a repeat request 8 plus hours off. Biotin is recommended in the first instance. PATHOLOGY DEPARTMENT- Serum to be separated and aliquoted as soon as possible. Store sample at -20 or lower prior to transport. Transport frozen with Biomnis.
Allergen Specific IgE (Rast)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Must specify allergen according to history. Those not performed in GUH are referred to

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			Immunology Dept, Northern General Hospital, Sheffield
Alpha fetoprotein (AFP)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Alpha-1-Antitrypsin (AAT)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Alpha-1-antitrypsin in Faeces	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 g Stool sample Refrigerated	Enclose the specific clinical information form (R29-INTGB : Functional Coprology)
Alpha-1-Antitrypsin Phenotyping	Alpha-1 Foundation Ireland, RCSI Education & Research Centre, Beaumont Hospital, Dublin 9	5 mL blood in a plain gel tube	Confirm with BSG Laboratory prior to taking sample
Aluminium	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2ml Sodium heparin (Trace Element) Tube	Do not use tubes with separator gel. Refrigerated Spin down and immediately decant plasma from cells. Immediately decant the plasma.(maximum 1 hour)
Alzheimer's Biomarker	Department of Clinical Chemistry, Department of Laboratory Medicine, Tallaght University Hospital, Tallaght, Dublin 24	<p><b>Sample Type:</b> CSF should be collected into a blue top Sarstedt CSF collection device</p> <p><b>Sample Volume:</b> A minimum of 2.5ml of CSF is collected into polypropylene tubes through the drip method.</p>	Inform Pathology Laboratory that samples will be taken. Samples should arrive before 4 pm Monday- Friday. If unable to collect CSF sample within routine hours place sample in lab overnight fridge. Samples are received to the laboratory directly and stored at 4°C until testing is performed. Samples are stable at this temperature for 10 days. Any samples visibly contaminated with blood cannot be used. (If there will be a delay in transporting the samples to TUH. Frozen samples are stable and

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			best sent to TUH frozen (without thawing) so they remain stable until analysis.)
Amikacin	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	1.0 – 5.0 mL blood in a plain gel tube	Specify time specimen collected indicating Peak or Trough.
Amino Acid Chromat. Bld	Metabolic Laboratory, Childrens Hospital Ireland, Temple Street Children's University Hospital, Temple Street Dublin 1	Lithium Heparin	Volume required for test 1.2 ml. Clinical details required for interpretation and appropriate follow-up. State whether fasting of post prandial. If fasting, state length of fast.
Amino Acids (Also called Aminogram)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Heparin Plasma. Fasting sample. Specify the patient's age.	Sample to be frozen within 1 hour. Enclose the specific clinical information form (R1-INTGB : Amino Acids - Organic Acids)
Amino Acids (Urine)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	10 mL Early morning urine (fasting).FROZEN	Sample to be frozen within 1 hour. Enclose the specific clinical information form (R1-INTGB : Amino Acids - Organic Acids)
Aminophylline	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Take specimen immediately before next dose (trough specimen)
Ammonia	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	4.0mL EDTA stasis free whole blood. Inform laboratory in advance.	Please inform laboratory in advance. Place specimen on ice and transport to the laboratory immediately.
Amphetamine	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	10.0 mL fresh plain urine	User manual - Test information and contact details can be found at <a href="http://www.dtcb.ie/services/lab.asp">http://www.dtcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
Amylase	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Amylase/Creatinine Clearance Ratio (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube plus a random urine specimen	Please send with serum Amylase/ Creatinine for interpretation

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Androstenedione Delta 4	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0,	5 mL blood in a plain gel tube	
Amyloid A Protein	Refer to "Serum Amyloid A (SAA)"		
Angiotensin Converting Enzyme (ACE)	Biochemistry Dept, St. James's Hospital, James's Street, Dublin 8, Ireland.	5ml blood in a plain gel tube	
Angleman Syndrome	National Genetics Centre, Our Lady's Children's Hospital, Children's Health Ireland at Crumlin, D12 N512, Ireland.	3 ml whole blood in EDTA (red or purple top)	
Antenatal Serology	Blood & Tissue Establishment (GBTE), University Hospital Galway, Newcastle Road, Galway.	6.0 mL EDTA K2E blood	
Anti-Acetylcholine Receptor Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Non haemolysed serum FROZEN	
Anti-Adrenal Antibodies "Endocrine antibodies"	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	
Anti-Adalimumab Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Basal Ganglia Antibodies	Neuroimmunology & CSF Laboratory, Institute of Neurology (NHNN) Box 76, Queen Square, London WC1N 3BG.	5ml bloos in a plain gel tube	Serum samples may be stored at 2-8°C. for short periods (1 week) or frozen at -20oC for longer storage times. Serum samples may be shipped at ambient temperature, by First Class post,

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			assuming that they will arrive within 24 to 48 hours. Approved packaging must be used.
Anti-Beta-2 Glycoprotein-1 Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Beta-Interferon Neutralising Antibodies	Neuroimmunology & CSF Laboratory, Institute of Neurology (NHNN) Box 76, Queen Square, London WC1N 3BG.	5 mL blood in a plain gel tube	Samples should be unhaemolysed & transported by first class post from outside NHNN
Antibody Titration	Blood & Tissue Establishment (GBTE), University Hospital Galway, Newcastle Road, Galway.	6.0 mL EDTA K2E blood	
Anti-C1q Antibody (C1Q ANTIBODIES)	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Lipaemic, haemolytic and icteric samples should not be used in this assay
Anti-Cardiac Antibodies	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	
Anti-Cardiolipin Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-CCP (Citrullinated Cyclic Peptide)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Requests for Anti-CCP will also be tested for Rheumatoid Factor

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Anti-Centromere Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-D Quantitation	IBTS- RCI, Laboratory National Blood Centre (IBTS), James's Street, Dublin 8 D08 NH5R	6.0 mL EDTA K2E blood	Further details can be found online in -User Guide for the Red Cell Immunohematology Laboratory
Anti-Diuretic Hormone (Synonyms ADH Vasopressin)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	3 mL EDTA Plasma + Aprotinine FROZEN	1 individual aliquot for this analysis. Freeze the sample within 1 hour after sampling, Spin down in a refrigerated centrifuge
Anti-dsDNA Antibody	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Only performed in the context of positive ANA
Anti-ENA Screen (Extractable Nuclear Antigens: Sm / RNP / Ro / La / Scl-70 / Jo-1)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Endomysial Antibodies		See Coeliac Disease	
Anti-GAD antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-GAD Antibodies(CSF)	Neuroimmunology & CSF Laboratory. Institute of Neurology (NHNN) Box 76, Queen Square, London WC1N 3BG	Serum or CSF and serum.	Test for: Autoimmune diabetes and autoimmune stiff person syndrome. Special precautions/Transport: Samples should be unhaemolysed & transported by first class post from outside NHNN
Anti-Ganglioside Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	As several types of anti-ganglioside antibodies occur please specify test required and provide clinical details.
Anti-Gastric Parietal Cell Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-GBM Glomerular Basement Membrane (GBM) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Anti-Glutamic Decarboxylase Antibodies	Acid (GAD)		Refer to "Anti-GAD antibodies"
Anti-Histone Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Insulin Antibodies (Insulin Abs IgG)	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	
Anti-Intrinsic Antibodies	Factor Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Islet Cell Antibodies (ICA- Islet Cell Ab)	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	Anti-islet cell antibodies - ICA	
Anti-Jo-1 Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-La (SS-B) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Liver Microsomal Antibodies	Kidney (LKM) Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-M2 Mitochondrial (Pyruvate Dehydrogenase) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Anti-Mitochondrial Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Müllerian Hormone (AMH)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Restrictions apply. Must be authorised by Dr D Griffin.
Anti-Musk Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Myelin Associated Glycoprotein Antibodies (MAG)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Myeloperoxidase (MPO) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Natalizumab (Tysabri) antibody	St Barts, Immunology, The Royal London Hospital, 2nd Floor, Pathology & Pharmacy building, 80 Newark Street, Whitechapel, London, E1 2ES	1 x 1 mL fresh or frozen serum (serum separator tubes may be used)	See Guidelines. Contact Pathology Laboratory BSG for further information. 1 serum sample frozen within one hour of collection
Anti-Neuromyelitis Optica Antibodies NMO (Synonyms- Anti Aquaporin 4 antibodies)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Neuronal Nuclear Cell (Hu Ri) Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland .	5 mL blood in a plain gel tube	Supply clinical details and specify if other neuronal antibody tests required.
Anti-Neutrophil Cytoplasmic Antibodies (ANCA)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Positives tested for anti-MPO and anti-PR3. See report form for interpretative comment.

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Anti-NMDA Receptor Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Nuclear Antibody (ANA)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Ovarian Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland .	5 mL blood in a plain gel tube	
Anti-Paraneoplastic Antibodies: See anti-Hu Ri Yo (Also known as neuronal Abs)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Supply clinical details and specify if other paraneoplastic antibody tests ( CV2/CRMP5, Ma1/Ma2, anti-amphiphysin) required.
Anti-Pemphigus & Pemphigoid Autoantibodies (Circulating Antibodies (IgG)) Skin	Immunology Dept, St. James's Hospital, James's Street, Dublin 8, Ireland.	5 mL blood in a plain gel tube	
Anti-Phospholipase 2A receptor (PLA2R)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Phospholipid Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Done on same panel as cardiolipin antibodies
Anti-Platelet antibody investigation	IBTS, NHIRL, National Blood Centre, James's Street, Dublin 8, D08 NH5R	5-10 ml clotted blood sample. Use IBTS request form. Contact Pathology Department.	
Anti-potassium channel antibodies (Synonyms Potassium channels anti-antibodies and Anti-VGKC antibodies)	Refer to "Potassium channels anti-antibodies and Anti-VGKC antibodies"		

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Anti-Proteinase 3 (PR3) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Purkinje Cell (Yo) Antibodies- (Part of Neuronal Abs)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Supply clinical details and specify if other neuronal antibody tests required.
Anti-Ribosomal P Protein Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Ro (SS-A) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Saccharomyces cerevisiae antibodies - IgG/IgA (synonyms Saccharomyces cerevisiae anti-antibodies)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Salivary Antibodies	Gland Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Positive staining should be assessed against Liver, Kidney, stomach sections to determine autoantibody specificity and exclude other autoantibodies, especially anti-mitochondrial antibodies.
Anti-Scl-70 (Topoisomerase Antibodies)	1) Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Skeletal (Striated) Muscle Antibodies	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	
Anti-Sm (Smith) Antibody	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Anti-Smooth Muscle Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Soluble Liver Antigen (SLA) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Streptolysin-O (ASO)	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Available in specific cases only and by prior arrangement with a Consultant Microbiologist
Anti-Thyroid Peroxidase (TPO) Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Tissue TransGlutaminase (tTG) Antibodies (Coeliac Screen)		See Coeliac Screen	
Antithrombin (see Thrombophilia Screen)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2.7 mL blood in a 0.109m Sodium Citrate tube.	Requests should be received by the laboratory within eight hours of phlebotomy. Details of anticoagulant therapy required. Must fill bottle to mark.
Anti-Thyroglobulin (TG) Abs	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	The search for antithyroglobulin autoantibodies should only be performed in patients with suspected autoimmune thyroiditis despite the absence of antithyroid microsomal or antithyroxineperoxidase autoantibodies, or to validate an assay of a circulating thyroglobulin in a patient with thyroid carcinoma. ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential to STOP treatment 8 days before taking the sample.
Anti-Thyroid Receptor Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-TSH receptor antibodies (Synonyms LATS)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	The search for TSH antiretroviral autoantibodies should be restricted to pregnant women who have or have had Graves disease or autoimmune thyroiditis or during follow-up of patients with

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			Graves disease treated by synthetic antithyroid drugs.
Anti-tyrosine phosphatase antibodies - IA-2 - serum	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Non haemolysed sample required.
Anti-U1-RNP Antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Anti-Voltage Gated Calcium Channel (VGCC) Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Voltage Gated Calcium Potassium (VGKC) Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Anti-Xa Level (Low M.W. Heparin Assay)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2.7 mL blood in a 0.109m Sodium Citrate tube (2 samples required).	Requests should be received in the laboratory within one hour of phlebotomy and should be taken 4-6 hours post dose. Please include type of LMWH. State time of the last heparin dose on the request form and sampling time. Must fill bottle to mark.
Apolipoprotein A	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Fasting sample required.
Apolipoprotein B	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Fasting sample required.
Apolipoprotein (methylated gene-transmitted - whole blood)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	Whole blood Refrigerated	

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
<b>Aquaporin 4 Antibodies</b>	Refer to "Anti-Neuromyelitis Optica Antibodies NMO"		
<b>Arsenic</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	3 mL Heparin Plasma Refrigerated	
<b>Arsenic (Urine)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	10 mL Urine sample Refrigerated	
<b>Ascitic Fluid - Cytology</b>	Refer to "Effusions"		
<b>Ascitic Fluid (see Fluid / Tissue / Pus)</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Fluid including clots in sterile universal container. Delay > 2 h refrigerate @ 2-8°C	
<b>Aspartate amino Transferase (AST)</b>	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
<b>Aspergillosis - screening serology</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	If positive, the confirmation test is automatically performed
<b>Aspirates - Cytology</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Cells obtained from any palpable lump/mass or cyst	Prepare immediately on site: Clearly label 2 frosted coded slides with patient name, DOB or BN. Air dry one smear, label this slide 'Air Dried', and fix the second one with cytofix spray. Wash any fluid remaining in syringe/needle into green cyto fixative in a Universal container. In the case of pathology assisted F.N.A's this collection of specimens is performed by lab staff. For pathologist assisted FNA, please telephone the laboratory to prebook. Ref FNA.
<b>Autoantibody Tests</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Select specific autoantibody test(s) pending clinical picture

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Autoimmune Encephalitis Panel	Immunology Department, St. James's Hospital, James's Street, Dublin 8, Ireland.	<p><b>Sample Type:</b> Serum sample and/or CSF</p> <p><b>Sample Volume:</b> Serum = 5ml yellow. CSF = blue top Sarstedt CSF collection device or universal container with a minimum of 200ul of CSF.</p>	Inform Pathology Laboratory if CSF samples will be taken. Should be received during normal working hours and previously arranged. If unable to collect CSF sample within routine hours place sample in lab overnight fridge. Can be stored at 4°C once taken. No urgency in sending once taken - store at 4°C and send via courier on next working day.
Avian Precipitins (Bird Fancier's disease)	PHL, Cumberland Infirmary, Carlisle CAZ 7HY	5 mL blood in a plain gel tube	Contact Pathology Department prior to taking sample to ensure sample requirements are as stated in User Guide.
Bartholin's Abscess (see Swab / Pus)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Aspirate or swab pus using a sterile swab in charcoal agar. If delay refrigerate @ 2-8°C	Endocervical / Urethral swabs are routinely cultured for N. gonorrhoeae. All other specimens must specify N. gonorrhoeae on request if required.
Bartonella Henselae Antibodies (Catscratch Fever)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	If positive, titration will also be performed
BCR/ABL fusion gene	Cancer Molecular Diagnostics Laboratory, St. James's Hospital, Dublin 8	3 x 3.0 mL K3 EDTA blood, or Bone Marrow in RPMI	All samples for molecular testing should arrive in the laboratory as soon as possible post collection or if appropriate, refrigerated at 4 °C until dispatched <i>*If BCR ABL and PMN Screen requested only 3 samples required as same lab, CMD lab request form preferable</i>

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Bence - Jones proteins (Urine Free Light Chains)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	24 h urine for quantification or 20 mL for screening in plain container, no preservative	
Beta Carotene	Refer to "Vitamin A"		
Beta-2-Microglobulin	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Beta-2-Transferrin	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5.0 mL blood in plain gel tube and ear/nasal discharge in universal container	
Beta-D-Glucan antigen screening	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum decanted in sterile conditions (in a hood stopped) or centrifuged and not decanted on separator tube. FREEZE before sending	No haemolysed and no lipemic serum
Beta-hydroxybutyrate (Ketone)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Advanced notice must be given to Clinical Biochemistry (GUH),
Bicarbonate	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Bile Acids	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Bilirubin - Conjugated	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Direct Bilirubin
Bilirubin - Total	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
Biochemistry Profile (SMAC)	In-House Biochemistry	5 mL blood in a plain gel tube	Assays included in Biochemistry Profile: Sodium, potassium, chloride, urea, creatinine, calcium, albumin, inorganic phosphate, total protein, total bilirubin, alkaline phosphatase, alanine transferase, gamma GT, uric acid.m magnesium.

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Biopsy	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin	
BK polyomavirus	Refer to "Polyomavirus BK Virus"		
Bladder Stones	Refer to "Stone Analysis"		
Blood Culture	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	8.0 -10.0 mL in Bactec Aerobic and Anaerobic vial, 1.0 -3.0 mL in Paediatric vial. For Mycobacteria / Fungi use 1.0 -5.0 mL in Myco/Lytic vial	Deliver to Laboratory ASAP. Delivery by Porter if glass bottles. Bactec vials MUST reach Microbiology GUH within 4 hours of Collection.
Blood Film	In- House Haematology/ Haem GUH	3.0 mL K3 EDTA blood	Sample referred to GUH when requested and clinical details are provided from the consultant.
Blood Gases (pH, pCO <sub>2</sub> , pO <sub>2</sub> , Bicarbonate, Base Excess, Total CO <sub>2</sub> )	Available on Blood Gas analysers located in ADU	Blood in a Li Heparin syringe	If unavailable n BSHG send to GUH on ice ASAP
Blood Product for Culture	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Bactec Blood culture vials	Ensure labelling as per Haemovigilance procedure.
Body Cavity Fluid Cytology (Pleural, Peritoneal, Pericardial, Abdominal and Ascite Fluid).	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Collect fresh 10 – 20 mL specimens into twist top leak proof 20 mL or 50 mL Universal containers containing Shandon Cytospin Collection Fluid (green fixative solution). Refrigerate overnight if necessary.	Indicate type of primary specimen and site and side of origin (e.g. left lobe BAL). Indicate clinical history on test requisition and reason for test
Bone Turnover/Biomarker Profile (Blood)	Two locations Used 1. Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin (P1NP, OCL, BAP, CTX-1) 2. Clinical Chemistry GUH (PTH & Vit D.)	<ul style="list-style-type: none"> <li>Parathyroid Hormone (PTH)</li> <li>Vitamin D 25(OH)D (5 mL blood in a plain gel tube)</li> <li>P1NP - Total Procollagen Type 1 N-Propeptide (PINP)</li> <li>Osteocalcin (OCL)</li> <li>Bone Alkaline Phosphatase (BAP)</li> <li>C-Terminal cross-linking Telopeptide of type 1 Collagen (CTX-1) (5 mL blood in a plain gel tube)</li> </ul>	
Bone Biomarker Profile (Urine) • N-Terminal cross-	Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin 4.	2 hour timed urine or 2nd morning void,	Timed Urine collection to be obtained before 10.30 AM required. Bone Marker Protocol available from

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linking Telopeptide of Type 1 Collagen (NTX-1) • Calcium/Creatinine Ratio			Lab. Results affected by: Fasting, Circadian Variation. This species corresponds to the N-terminal telopeptide of Type I collagen and its level in the urine gives a measure of the rate of bone resorption. fasting Sample. Serum to be separated and aliquoted as soon as possible. Store sample at -20 or lower prior to transport. Transport frozen.
<b>Bone Marrow Culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	1.0 -3.0 mL in Paediatric vial. For Mycobacteria / Fungi use 1.0 -5.0 mL in Bactec Myco/Lytic vial.	
<b>Bone Marrow Examination (Aspirate)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	Bone Marrow Aspirate spread on glass slides. Aspirate and Biopsy fixed in Bouin's solution	All bone marrows are preauthorized by SPR Haematology and prearranged with both the laboratory and point of clinical activity. All BMA requests should be accompanied by an EDTA (FBC) specimen. All requests must be accompanied by fully completed relevant request forms for bone marrows, immunophenotyping or cytogenetics.
<b>Bone Profile (In House BP)</b>	In-House Biochemistry	5 mL blood in a plain gel tube	Assays included in Bone Profile:
<b>Bordetella Species (Whooping cough / Pertussis)- culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Perinasal swab (available from Medical Microbiology)	Contact Laboratory prior to sending to ensure fresh media is available. If delay refrigerate @ 2-8°C.
<b>Borrelia burgdorferi IgG antibodies (Lyme Disease)</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube. (For CSF-PCR see under Cerebrospinal Fluid)	A report is released as Not Detected, if negative. A Provisional report will be issued on any sample giving reactive findings on initial testing. These specimens are referred to the PHE, Rare and Imported Pathogens Laboratory, Porton Down for further testing and a final report.
<b>BRAF mutation</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Tissue samples already processed by the Histopathology Laboratory, arrange via consultant pathologist.	

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<b>Bronchial Brush Specimen</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Sample can be spread on a glass slide, one slide may be air dried and labelled for Diff quik stain, and one slide spray fixed. Label slides and container to include name, date of birth and sample site.	Indicate clinical history on test requisition, and the specific site sampled.
<b>Bronchial Wash Specimen</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Collect fresh specimens (0.5 – 50.0 mL) into twist top, leak proof 50 – 100 mL specimen cups. Do not add fixative but refrigerate if storage required. Transport to the laboratory, ASAP. Refrigerate or add fixative if delay unavoidable.	Indicate clinical history on test requisition, and the specific site sampled.
<b>Broncho Alveolar lavage fluid - Cytology</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Collect fresh 0.5 – 50 mL BAL (indicate if RUL, RLL, LUL, LLL) in a twist top, leak proof 50 – 100 mL specimen container. Submit to laboratory ASAP. Refrigerate or add fixative if delay unavoidable.	
<b>Broncho Alveolar lavage fluid (BAL) CD4/CD8lymphocytes</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	BAL in sterile container	
<b>Broncho Alveolar lavage fluid (BAL) - Culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	BAL in sterile container	
<b>Brucella Screening, Agglutination</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland		
<b>Bursa Fluid</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Fluid in sterile container	
<b>C Peptide</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL fasting blood in a plain tube delivered immediately to the laboratory	
<b>CA 125</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	

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CA 15-3	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
CA 19-9	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
CA 72-4	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential to STOP treatment 8 days before taking the sample
CA50	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Cadmium (Urine)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 mL Random urine Refrigerated	
Cadmium (Whole Blood)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Heparin whole blood (stored away from light) Refrigerated	
Caffeine	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum (do not use tubes with separator gel) FROZEN	Enclose the specific clinical information form (R13-INTGB : Medication quantification)
Calcitonin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Collect sample away from meal in order to avoid hypergastrinemy. ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential to STOP treatment 8 days before taking the sample. In case of protons pump treatment, we recommend to collect sample before intake, and in case of possible treatment stopping, please collect sample 2

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			weeks after treatment was stopped. PATHOLOGY DEPARTMENT: Spin, separate and freeze serum ASAP. Send Frozen. Allow to clot, separate serum from clot as soon as possible (within 4 hours) and freeze.
Calcium	In-House Biochemistry	5 mL blood in a plain gel tube	If calcium requested on its own albumin is also tested
Calcium (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour acidified urine collection	
Calcium Excretion	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube and Urine in plain universal container	Taken and sent to GUH at same time
Calcium -ionised	BSG- Blood Gas Analyser ADU	Blood in a Li Heparin syringe	
Calcium/Creatinine Ratio for Bone Biomarker Profile	GUH), University Hospital Galway, Newcastle Road, Galway.	2 hour timed urine or 2nd morning void,	Timed Urine collection to be obtained before 10.30 AM required. Bone Marker Protocol available from Lab. Results affected by: Fasting, Circadian Variation. PATHOLOGY LAB- Record total volume of urine collected. Label a plastic 13 x 75mm tube with patient details. Note date, start and finish time and aliquot approximately 3ml into the tube. Store sample at -20 or lower prior to transport. Transport frozen.
Calculi Analyses (Kidney Stone, Gall Stone)		Refer to "Stone Analysis"	
Calprotectin faecal	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 g (minimum) Stool specimen. Refrigerated- Specimen Clin detail form required Referred by Biomnis	Enclose the specific clinical information form (R29-INTGB : Functional Coprology)
CALR Mutation (CALR exon 9 mutations)	Cancer Molecular Diagnostics, St. James's Hospital, James's Street, Dublin 8, Ireland	EDTA Purple Top x3	All samples for molecular testing should arrive in the laboratory as soon as possible post collection

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			or if appropriate, refrigerated at 4 °C until dispatched
Cannabis	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	10.0 mL fresh plain urine	User manual - Test information and contact details can be found at <a href="http://www.d tcb.ie/services/lab.asp">http://www.d tcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
Carbamazepine (Tegretol)	Clinical Biochemistry (GUH), Galway University Hospital, Newcastle Road, Galway.	5mL blood in a plain gel tube	
Carbapenemase Producing Enterobacteriaceae (CPE) Screen	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Rectal swab in transport medium / faeces sample. Delay > 2 h refrigerate @ 2-8°C.	Carbapenemase Producing Enterobacteriaceae (CPE) are a type of extremely antibiotic resistant bacteria. Enterobacteriaceae which have become resistant to carbapenems are sometimes called Carbapenem Resistant Enterobacteriaceae (CRE).
Carbohydrate Deficient Transferrin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Do not use plasma
Carboxyhaemoglobin	BSG- Blood Gas Analyser ADU	Blood in a Li Heparin syringe	
Cardiac biopsy	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin	
Carnitine, Acetyl	Contact Biochemistry GUH Special Bio		
Carotene		Refer to "Vitamin A"	
Cat Scratch Disease Antibodies		Refer to "Bartonella henselae PCR"	

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Catecholamines (Blood)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 x Lithium Heparin plasma	Send to lab ASAP. Blood draw preferentially after a 30-min resting period. DIETRY REQUIREMENTS: do not eat chocolate, banana or citrus fruits and reduce the consumption of tea and coffee for 48 hours prior to testing. Fasting sample. PATHOLOGY DEPARTMENT: Spin, separate and freeze serum ASAP (<1 Hour). Send Frozen.1 individual aliquot for this analysis
Catecholamines (Urine)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	24 hour urine collection	Aliquot to be frozen before sending.
Catheter / Intravascular Cannulae / Tips	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Lines and Tips from arterial /venous lines cut to 4 cm in sterile container.	Only send where there is evidence of infection. Urinary catheters not tested. If delay refrigerate @ 2-8°C.
CD34 Viability	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	Frozen sample supplied from cryobiology lab , with special request form correctly filled	Requires prior arrangement with Haematology GUH
CD4, CD8 (T4, T8) T Cell Lymphocyte Subset Levels	Refer to "Lymphocyte Subsets"		
CEA (Carcinoembryonic Antigen)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Cerebrospinal Fluid Culture / Microscopy	- Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	3 specimens in sterile containers hand delivered to Pathology Staff without delay (OOH send to Microbiology GUH ASAP).	
Cerebrospinal Fluid Cytology	- Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	3ml – 20 mL cerebral spinal fluid, lumbar puncture or ventricular tap in a 20 mL universal container. Refrigerate overnight if necessary as the cells are sensitive to temperature and cellular degeneration	Indicate clinical history on test requisition and reason for test. Submit immediately to laboratory. Fixative may NOT be added if specimen is to be shared with microbiology for assessment. Please submit to microbiology department directly and request Urgent personal delivery directly from Microbiology for subsequent Cytological assessment.

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		occurs if left at room temperature for extended periods of time.	Please note there is no on call or emergency out of hours service available in the Diagnostic Cytology laboratory. Specimens must be received by 16:00 h for same day processing. There is no weekend service available in Diagnostic Cytology.
Cerebrospinal Fluid Glucose	- Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	1.5 mL CSF specimen	Send all CSF samples to Micro for processing, send simultaneous plasma glucose specimen
Cerebrospinal Fluid Oligoclonal bands and CSF IgG Index	- Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	Minimum of 0.5mL of CSF specimen and 5.0 mL blood in plain gel tube	Send all CSF samples to Micro for processing first.
Cerebrospinal Fluid Protein	- Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	1.5 mL CSF specimen	Send all CSF samples to Micro for processing, send simultaneous plasma glucose specimen
Cerebrospinal Fluid (Molecular analysis for Pathogens)	Contact Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway		
Cerebrospinal Fluid CSF Flow Cytometry	- Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	Transfix tube which must be collected from flowcytometry dept prior to lumbar puncture	Prior arrangement is required with flowcytometry. Samples must be returned directly after sampling, to the flow cytometry lab. Full clinical information and reason for request must accompany specimen
Cerebrospinal Fluid Shunt	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	4 cm cut from line placed in a sterile container.	Only send where evidence of infection. If delay refrigerate @ 2-8°C.
Ceruloplasmin	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
CH100		Refer to "Complement"	
Chlamydia pneumoniae IgM & IgG	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	

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Chlamydia psittaci	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Chlamydia trachomatis (PCR)	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	Abbott Multicollect swab preferably delivered to the laboratory within 24 h of collection. If delay refrigerate @ 2-8°C.	
Chloride	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Renal Profile
Chloride (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24hr urine collection	
Cholesterol	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Lipid Screen (LIP)
Cholesterol/HDL Ratio	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Lipid Screen (LIP)
Cholinesterase	Refer to "Pseudocholinesterase"		
Cholinesterase Phenotyping	Refer to "Pseudocholinesterase"		
Chromium	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2ml Sodium heparin (Trace Element) tube	
Chromogranin A	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	PPIs (proton pump inhibitors) should be stopped 2-3 weeks before the chromogranin A assay. PATHOLOGY DEPARTMENT: Centrifuge without delay, separate the supernatant and freeze
Chromogranin B	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1mL EDTA plasma + Aprotinin. Send to laboratory ASAP	Freeze with 1 Hour of taking.
Chromosome Analysis Haematology, BI/Bm (FISH) price/probe (to a)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Bone marrow or Lithium heparin Whole Blood @ Room T°	

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<i>maximum charge of two probes)</i>			
<b>Chromosome Analysis, Haematology, blood/bone marrow (Culture)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Bone marrow or blood/Heparin lithium	
<b>Chromosome Analysis, heparin whole blood (Culture)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Heparin Whole Blood @ Room T°	
<b>Clostridium difficile Toxin B gene detection</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Faeces 1-2 g during acute phase of illness in leak proof laboratory container. If delay 24h refrigerate @ 2-8°C. > 72 h – freeze @ -20°C.	
<b>Coagulation Factor Assays (incl Factors – II, V, VIII, VIII:C, IX, XI, XII, and FX)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2 x 2.7 mL blood specimens in 0.109m Sodium Citrate tubes, (1.0 mL Paediatric tubes are available).	Prior arrangement with the GUH coagulation laboratory, contact 091 544995. It is important that the specimen container is filled to the mark.
<b>Coagulation Screen</b>	In-House Haematology	2.7 mL blood in a 0.109m Sodium Citrate tube. Do not refrigerate specimen. To be received in Lab within 6 hours of draw.	
<b>Chromium</b>	Biomnis	Navy Top Bottle. Trace element free (royal blue top)	
<b>Cocaine</b>		Refer to "Toxicology"	
<b>Coeliac Screen (TTG &amp; EMA)</b>	Immunology (GUH), University Hospital Galway, Newcastle Road, Galway	5ml blood in a plain gel tube	Anti-Endomysial antibody test will only be performed if Anti-TTG test is positive.
<b>Cold Agglutinins</b>	Blood & Tissue Establishment (GBTE), University Hospital Galway, Newcastle Road, Galway.	6.0 mL EDTA K2E blood.	Specimen needs to be transported to the Blood & Tissue Establishment in a flask at 37°C before 15.30. Sample requirements as per all BT samples. No addressograph labels on sample, BT form required.
<b>Complement: C1 Esterase Inhibitor</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Complement: C1 Esterase Inhibitor Functional Assay	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Must arrive in Immunology on the same day it was taken. Time and date of collection must be stated on request form
Complement: C1q	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Complement: C2	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Transport fresh or freeze if sample is not sent on the day of venesection. Requests from outside Sheffield: Transport at ambient temperature via Royal Mail or Courier (frozen samples can thaw in transit).
Complement: C3 Nephritic Factor	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Requests from outside Sheffield: Freeze sample prior to dispatch and transport frozen sample at ambient temperature via Royal Mail or Courier (dry ice not required).
Complement: C3/C4	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Complement: C5/C6/C7/C8/C9	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Separate within 2 hours of venesection and store at -20C. Requests from outside Sheffield: Freeze sample prior to dispatch and transport frozen sample at ambient temperature via Royal Mail or Courier (dry ice not required).
Complement: CH100 (Total Haemolytic Complement) Functional Activity	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Must arrive in Immunology on the same day it was taken. Time and date of collection must be stated on request form
Conjunctivitis (Bacterial Culture)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab of conjunctiva in transport medium	

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<b>Conjunctivitis (Chlamydia trachomatis)</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab of conjunctiva in Abbott Multicollect tube. If delay refrigerate @ 2-8°C.	
<b>Copper</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a Sodium heparin (trace elements) tube	PATHOLOGY DEPARTMENT: Spin down and immediately decant plasma from cells. Immediately decant the plasma
<b>Copper (24 Hour Urinary)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 mL 24hr Urine collection Refrigerated	Specify diuresis
<b>Corneal Scrapings / Intraocular Fluids</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Pre-inoculated media available from lab/ If sufficient fluid use sterile container.	Contact Laboratory to collect fresh culture plates and slide for corneal scrapings. Deliver to Laboratory immediately.
<b>Cortisol</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
<b>Cortisol (24h Urinary Free Cortisol)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Non acidified 24hrs urine collection Refrigerated	Specify diuresis
<b>Coxiella burnetii Antibodies (Q fever) IgM</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
<b>Coxsackie B Virus</b>	Refer to "Enterovirus"		
<b>COVID-19/SARS-CoV-2 Genetic Sequencing (See also "SARS-CoV-2 PCR")</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	Nasopharyngeal swab AND oropharyngeal swab (either separately or combined), nasopharyngeal aspirate, endotracheal aspirate, BAL or sputum	Clinical details must be provided on the request form to include the following:  Travel History • Country / cities of travel • Date/s of travel • Date of arrival in Ireland • Any contact with confirmed or suspect cases

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			Clinical history • Date of onset and symptoms
Creatine Kinase (CK)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Creatinine	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Renal Profile
Creatinine (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine sample	
Creatinine Clearance	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine in plain container and 5 ml blood in plain gel tube taken at some point during the urine collection. It is important that the blood and urine are received in the laboratory as a matched pair.	
Creutzfeldt-Jakob disease RT-QuIC Test (Real Time Quaking Induced Conversion)	Neuropathology Dept, Beaumont Hospital, Beaumont Road, Dublin 9, D09 V2N0	<b>Sample Type:</b> CSF can be collected into a blue top Sarstedt CSF collection device or universal container. <b>Sample Volume:</b> The sample volume should be between 1-2mls and be clear and colourless (not blood stained)	Inform Pathology Laboratory that samples will be taken. Must be received before 4pm Monday- Friday. <u>CJD Questionnaire must accompany specimen. In House Laboratory Information:</u> Ideally CSF frozen at -70°C within 30 minutes of aspiration and transported to the Neuropathology Dept, Beaumont Hospital on dry ice. BSHG place sample in freezer on site once received, this must be couriered frozen to Beaumont on next working day.
CRP (C Reactive Protein)	In-House Biochemistry	5 mL blood in a plain gel tube	
Cryoglobulins	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	1 X Purple top & 1 x Gel Free Red Top	Please contact the laboratory before collection. Send to laboratory ASAP. The sample must be transported in a flask and arrive at the lab at 37 C.

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Cryptosporidium spp	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Faeces 1-2 g during acute phase of illness in leak proof Laboratory container.	
Crystals for Uric acid assessment		Refer to "Joint Aspirates"	
CSU – Catheter Urine	In House Microbiology	Specimen in Boric Acid Universal container. Use plain sterile universal container for Paediatric specimen or urine volumes >20ml	Routine submission of CSU is not appropriate.
CTX (C-Telopeptide of Type 1 Procollagen) CrossLaps	Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin 4.	5 mL blood in a plain gel tube *	Bone Marker Protocol available from Lab.*Biotin may cause some concentration dependent negative interference in this assay if high dose supplements are taken. If this is suspected, a repeat request 8 plus hours off Biotin is recommended in the first instance. PATHOLOGY DEPARTMENT- Serum to be separated and aliquoted as soon as possible. Label a plastic 13 x 75mm tube with patient details. Store sample at -20 or lower prior to transport. Transport frozen with Biomnis.
Curettings	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen to laboratory in 10% Neutral Buffered Formalin	
Cyanide (Thiocyanates ion) Serum	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Serum (do not use tubes with separator gel) Refrigerated	Collect prior to new drug intake, always indicate the clinical context (Urine test also available)
Cyclosporin (Neoral)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	4.0 mL K+ EDTA whole blood	Collect sample pre-dose. State date/time of sample collection clearly on request form
Cyfra 21-1 antigen	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential

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			to STOP treatment 8 days before taking the sample
<b>Cyst Fluid</b>	Refer to "Aspirates/effusions"		
<b>Cystic Fibrosis – Genetic Test</b>	National Genetics Centre, Our Lady's Children's Hospital, Children's Health Ireland at Crumlin, D12 N512, Ireland.	3 ml EDTA Blood	Additional CF Form from NGC MUST be downloaded and completed.
<b>Cystine</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	10 mL Early morning urine (fasting) FROZEN	Fasting sample. Sample to be frozen within 1 hour. Home sampling is not advisable. MUST Enclose the specific clinical information form (R1-INTGB : Amino Acids - Organic Acids)
<b>Cytogenetics</b>	Refer to "Chromosome Analysis"		
<b>Cytomegalovirus (CMV) IgG / IgM Antibodies</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>Cytotoxic Antibodies (solid organ transplantation)</b>	Typing Laboratory, Immunology, Beaumont Hospital, Dublin.	Not routinely requested in BSHG, contact pathology department if any queries.	
<b>D-Dimers</b>	Haematology BSHG	2.7 mL blood in a 0.109m Sodium Citrate tube.	.
<b>Dehydroepiandrosterone (DHEA), serum (RIA)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	CIRCADIAN RHYTHM: This biological molecule has a circadian rhythm (maximum concentration in morning), with a sufficiently significant amplitude to have an important influence on the clinical interpretation
<b>Dehydroepiandrosterone Sulfate (DHEAS), serum *</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential to STOP treatment 8 days before taking the sample.

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Dengue Fever Serology	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube.	
Dermatophytosis	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Hair, Nail clippings, skin scrapings in Dermapak.	
Dexamethasone Suppression Test (Cortisol)	Refer to "Cortisol"		
Di George Syndrome (Microdeletion syndromes)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Heparin whole blood Ambient temperature	For sample traceability purposes, we invite you to contact the International Division before sending samples. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist
Digoxin	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Take specimen six hours post dose, Hypokalaemia is associated with an enhanced response to digoxin. Potassium should always be measured when digoxin toxicity is suspected.
Dihydrotestosterone	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Diphtheria (Culture of Throat swab)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in charcoal medium. If delay refrigerate @ 2-8°C.	Contact Laboratory prior to sending swab to ensure fresh media is present.
Diphtheria IgG (Immunity)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Direct Antiglobulin Test	In House Blood Transfusion	6.0 mL EDTA K2E blood	
DNA for Haemochromatosis	Refer to "Haemochromatosis"		
Dopamine	Refer to "Catecholamines"		

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Duodenal Aspirate	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Fluid in sterile universal container	
Duodenal Smear for Giardia intestinalis trophozoites	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Smear on slide. If delay refrigerate @ 2-8°C	
Ear Swab	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab any pus or exudate with in transport medium	
Echinococcus Titre	Department of Clinical Parasitology, Hospital for Tropical Diseases, 3 <sup>rd</sup> floor, Mortimer Market Centre, Mortimer Market, London, WC1E 6JB.	5 mL blood in a plain gel tube	
ECHO Virus	Refer to "Enterovirus IgM antibodies"		
Ecstacy	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	Use clean plastic container without preservative. Preferably 70 ml yellow lidded Sarstedt urine pots. 20 - 30mls where possible.	If patient <18 parental consent required. User manual - Test information and contact details can be found at <a href="http://www.dtcb.ie/services/lab.asp">http://www.dtcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
Effusions	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Collect 10-20 ml fresh specimen into a twist top leak proof 20ml or 50 ml sample bottle containing Shandon Cytospin collection fluid (green fixative solution available from Laboratory).Refrigerate overnight if necessary	Indicate clinical history on test requisition, and reason for test. Do not submit drainage bags or large volumes of fluid for disposal in Laboratory
eGFR	In-House Biochemistry	5 mL blood in a plain gel tube	Calculated Parameter
EGFR Mutation analysis (Epidermal Growth Factor Receptor)	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Tissue samples already processed by the Histopathology Laboratory, arrange via consultant pathologist.	
Elastase- Stool	Refer to "Faecal Elastase"		
Electron Microscopy	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Tissue	Discuss with appropriate Consultant Histopathologist at least 24 hours in advance of surgery

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EMA screen for Hereditary spherocytosis	Refer to "Hereditary Spherocytosis Screen (Flow Cytometry)"		
Endocervical Swab	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium.	Endocervical / Urethral swabs are routinely cultured for N. gonorrhoeae. If delay refrigerate @ 2-8°C.
Enterobius vermicularis (Sellotape slide for Pinworms)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Apply sellotape to anal area, fix to slide, send to Laboratory. If delay refrigerate @ 2-8°C.	
Enterovirus (PCR)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	0.5 mL CSF in plain leak-proof sterile container	On Consultant Microbiologist request
Valporate (Epanutin)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Take specimen immediately before next dose (trough specimen)
Phenytoin (Epilim)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Take specimen immediately before next dose (trough specimen)
EPO	Refer to "Erythropoietin"		
Epstein – Barr Virus (EBV) Antibodies	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Erythropoietin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum or Heparin Plasma	Collect sample the morning between 7.30 and 12am recommended. Do not use EDTA, haemolysed samples. PATHOLOGY DEPARTMENT: Spin, separate and freeze.
ESR (Erythrocyte Sedimentation Rate)	In-House Haematology	4ml EDTA	
Erythrovirus B19 IgM + IgG antibodies (Parvovirus)	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5.0 mL blood in a plain gel tube. Available only in specific circumstances	

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<b>Ethosuximide (Synonyms: Zarontin)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube (do not use tubes with separator gel)	Always draw blood at the same time before another administration. Enclose the specific clinical information form (R13-INTGB : Medication quantification) PATHOLOGY DEPARTMENT: Spin, separate and freeze.
<b>Ethylene Glycol</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	In urine, it is necessary to assay oxalic acid which is the metabolite of ethylene-glycol. PATHOLOGY DEPARTMENT: Spin, separate and freeze.
<b>Extended Spectrum Beta Lactamase (ESBL) culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Rectal swab in transport medium/Faeces sample. Delay > 2 h refrigerate @ 2-8°C.	Generating an error. Katherine looking into it
<b>Eye Swab</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium (charcoal)	
<b>Factor Inhibitor Studies</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3 x 2.7 mL blood in a 0.109m Sodium Citrate tube	Prior arrangement with coagulation laboratory necessary. Must fill bottle to mark.
<b>Factor V Leiden Mutation</b>	Haematology Department, St. James's Hospital, James's Street, Dublin 8, Ireland.	1 x 4ml Purple EDTA and 2 x 3ml Light Blue Tri-Sodium Citrate.  Contact Pathology Department BSG for further information	Please follow links on St James Hospital website to the specific thrombophilia request form and the guidelines for thrombophilia testing. Testing for APCR, Factor V Leiden and Prothrombin gene mutation analysis requires genetic consent. A fully completed thrombophilia request form should be sent with samples for testing. The coagulation team can be consulted for advice for thrombophilia screen requests. Samples must be received in National Coagulation Lab, CPL by 4pm Mon-Fri. Requests for Factor V Leiden must be accompanied by either samples for APCR analysis or an APCR result from an external source

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Faecal Elastase	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	Blue top stool container	Enclose the specific clinical information form (R29-INTGB : Functional Coprology). Liquid stools are accepted but the dilution may result in underestimation of elastase levels.
Faecal Calprotectin	Refer to "Calprotectin faecal"		
Faecal Porphyrins	Refer to "Porphyrins"		
Faeces – Molecular analysis, Microscopy, Culture and Antigen Detection	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	1-2 g faeces collected in acute phase of illness in leak proof container. If delay refrigerate @ 2-8°C	
FDP's (Fibrinogen degradation products)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2.0 mL blood in special FDP bottle supplied on request by coagulation laboratory	Must fill bottle to mark.
Ferritin	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	5.0 mL blood in a plain gel tube. Specimen to be received within 24hrs of phlebotomy for whole blood and 3 days if sample spun	
Fibrinogen	Haematology BSHG	2.7 mL blood in a 0.109m Sodium Citrate tube.	
Fine Needle Aspirates (FNAs) of breast, thyroid, axilla, parotid, submandibular, lymph node and cysts.	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Superficial and deep seated lesions. Deep seated lesions that need ultrasonic, CT or fluoroscopic guidance may be required. Use a 22 – 25 gauge fine needle and a 10 – 20 mL syringe for collection of specimen. Clearly label two frosted glass slides with patients name, DOB, and /or BN. Prepare thin even smears. For optimal diagnosis, air dry one slide for diff quik stain, please label as 'Air Dried. Immediately after preparation, spray a complete even coating of Cell-Fixx onto the other slide(s) from a distance of 25 – 30 cm (10 – 12 inches). Fixed slides should be labelled in pencil with patient Name DOB and or BN.	Pathologist assisted FNAs must be prebooked by contacting the laboratory office ext:4078 / 4492 or Cytology laboratory Prep ext 4883. Contact with Pathologist rostered on Cytology may also be made via switchboard.

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		Labelling should be carried out before spray fixing. Fixed and air dried slides should be placed in slide mailers clearly labelled on the outside with patient's addressograph. Needle wash may be collected into Shandon Cytospin Collection Fluid in a Universal container green fixative solution and submitted to the laboratory for processing. Please indicate exact location of sample site on request form and specimen container.	
<b>Fine Needle Aspiration Biopsy - FNAB</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen to laboratory in 10% Neutral Buffered Formalin	
<b>FISH Bone Marrow</b>	Refer to "Chromosome analysis"		
<b>FISH for CLL</b>	National Genetics Centre, Our Lady's Children's Hospital, Children's Health Ireland at Crumlin, D12 N512, Ireland.	3 ml whole blood in EDTA (purple top)	Bone marrow aspirate in RPMI/heparin also accepted. Confirm prior to sending sample if addition request from required on Crumlin Clinical Genetics Lab user guide
<b>FISH, HER-2 Status Evaluation</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Tissue samples already processed by the Histopathology Laboratory, on Request from Consultant Pathologist only.	
<b>Flow Cytometry (Immunotyping of Leukaemias and Lymphomas)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood	Prior arrangement with the GUH Flow laboratory
<b>FLT3 – Mutation</b>	Cancer Molecular Diagnostics, St. James's Hospital, James's Street, Dublin 8, Ireland	3 x 3.0 mL K3 EDTA blood, or Bone Marrow in RPMI.	All samples for molecular testing should arrive in the laboratory as soon as possible post collection or if appropriate, refrigerated at 4 °C until dispatched

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Folate (Serum)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	5.0 mL blood in a plain gel tube.	Specimen to be received within 24hrs of phlebotomy for whole blood and 3 days if sample spun.
Fragile X DNA Studies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA whole blood. Ambient temperature	Attach the clinical data. Sample must be refrigerated if transport is > 48 hours. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics
Free Androgen Index Profile (Synonyms SDHA, SDHEA)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1mL Serum or Heparin Plasma	
Free light chains	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Free T4		Refer to "Thyroxine"	
Fresh Tissue	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory UNFIXED	Lymph nodes for query lymphoma, Frozen section and Muscle biopsy to be confirmed with Consultant Histopathologist on冻子 at least 24 hours in advance. Skin biopsies and renal biopsies for DIF to be confirmed with Histopathology laboratory staff at least 24 hours in advance. Health & Safety precautions
Frozen Sections	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	The unfixed tissue sample is transported directly to the laboratory in a fully labelled dry container accompanied by a fully completed request form. Include the contact details for immediate call back of frozen section result.	It needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised.

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Fructosamine (Synonyms: Glycosylated proteins)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
FSH (Follicle Stimulating Hormone)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Full Blood Count (FBC)	In-House Haematology	3.0 mL K3 EDTA blood	
Fungal Microscopy and Culture	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Transport swab. Tissue / pus in sterile container. Hair, nail clippings, skin scrapings in Dermapak. Delay > 2 h refrigerate @ 2-8°C.	For further information contact pathology department or refer to GUH Laboratory user manual section "Dermatophyte Culture – Collection and Transport"
G6PD Quantitation (Synonyms: Glucose-6-phosphate-Dehydrogenase)	Special Haematology, St. James's Hospital, James's Street, Dublin 8, Ireland	2 x 4ml EDTA Purple	
G6PD Screening	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood. (1.0 mL Paediatric tubes are available).	
Galactomannan antigen	Microbiology Department, St. James's Hospital, James's Street, Dublin 8, Ireland	Serum Sample	Alternative name/Profile: Aspergillus / Aspergillosis
Gamma-glutamyl-transferase (γ-GT)	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
Gastrin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Fasting Sample: After fasting period of minimum 10 to 12 hours. PATHOLOGY DEPARTMENT: Spin, separate and freeze.1 individual aliquot for this analysis.
Gastrin Hormone Level	Royal Victoria Hospital, Regional regulatory Peptide Laboratory, Second Floor, Kelvin Building, Department of Medicine, Royal Victoria Hospital, Belfast, BT 12 6BA.	1 x 3ml EDTA, to be taken on ice. Send to laboratory ASAP.	Separate and Freeze Aliquot. Send frozen.

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Genital Swab	Medical Microbiology (GUH), University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.°	Endocervical swabs and Urethral swabs are routinely cultured for N. gonorrhoeae. All other specimens must specify N. gonorrhoeae on request if required
Gentamicin / Genticin	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube.	State time collected and if Peak or Trough specimen
GHB - Gamma-hydroxybutyric acid -	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	10.0 mL fresh plain urine	User manual - Test information and contact details can be found at <a href="http://www.dtcb.ie/services/lab.asp">http://www.dtcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
Glucagon	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1ml EDTA plasma + Aprotinine. Send to laboratory ASAP.	Centrifuge at +4°C and FREEZE the plasma immediately. Non haemolysed
Glucose	In-House Biochemistry	4.0 mL Fluoride Oxalate blood	Fasting : Ideally a patient should fast for 12 hours. However, if a patient is unable or unwilling to fast for 12 hours a specimen taken after a 9 hour fast is acceptable".
Group and Antiglobulin	In House Blood Transfusion	EDTA K2E 6.0 mL blood	
Group and Crossmatch	In House Blood Transfusion	EDTA K2E 6.0 mL blood	If sample Urgent the Blood Transfusion Department MUST be phoned.
Group and Hold (Also referred to as Group and Save, Group and Antibody Screen)	In House Blood Transfusion	EDTA K2E 6.0 mL blood	If sample Urgent the Blood Transfusion Department MUST be phoned.
Growth Hormone	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube, must arrived in lab same day.	Must arrived in lab same day. It should only be requested as part of a dynamic function test. In general, a random growth hormone measurement has very little diagnostic value.

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Growth Hormone	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Fasting sample required. Specify if patient is under Somavert (Pegvisomant) treatment. PATHOLOGY DEPARTMENT: Spin, separate and freeze.
Haemochromatosis C282Y and H63D Genetic Mutations	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5.0 mL blood in EDTA tube	Must specify genetic test on request form. The patient must be >16 years old and the EDTA sample must be fresh and not used for other testing. Sample must be refrigerated if transport is > 48 hours. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist.
Haemoglobin A2	Haematology Department, St. James's Hospital, James's Street, Dublin 8, Ireland	1 x 4 ml purple EDTA & 1xGel Free Red Top	Request form must give clinical details, transfusion history and ethnic origin of patient.
Haemoglobin F	Haematology Department, St. James's Hospital, James's Street, Dublin 8, Ireland	1 x 4 ml purple EDTA & 1xGel Free Red Top	Request form must give clinical details, transfusion history and ethnic origin of patient.
Haemoglobin quantitation S	Haematology Department, St. James's Hospital, James's Street, Dublin 8, Ireland	1 x 4 ml purple EDTA & 1xGel Free Red Top	Request form must give clinical details, transfusion history and ethnic origin of patient.
Haemoglobinopathy Screen (Hbopathy Screen, Hb F, Hb A2, Hb H, Hb S)	Haematology Department, St. James's Hospital, James's Street, Dublin 8, Ireland	1 x 4 ml purple EDTA, 1 Red serum sample and a blood film.	External requests must be accompanied by a Haemoglobinopathy Request Form. A copy of the most recent FBC and ferritin result is also desirable
Haemophilus influenzae B Antibodies (IgG)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Haemosiderin (Urine)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	First morning urine specimen in a plain universal container	
Haptoglobin	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Hairy Cell Markers	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood, blood film	
HbA1c Glycosylated Haemoglobin	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	4.0 mL EDTA blood	
Heinz Bodies	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3EDTA blood (1.0 mL Paediatric tubes are available).	Prior authorization by Consultant Haematologist or SPR. Arrange with Haematology laboratory before taking specimen.
Helicobacter pylori Faecal Antigen Test	In-House Microbiology	Faeces collected in a leak proof container.	
Hepatitis A IgM Antibody	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Hepatitis A Virus Total Antibody	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Hepatitis B Antibody	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Requests for testing post "Needlestick" injury should be notified to the laboratory in advance of sending the specimen
Hepatitis B Core Antibody (anti-HBc)	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Hepatitis B DNA / Viral Load	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	8ml K2EDTA Greiner tube	Contact pathology department prior to taking sample to ensure sample requirements are as stated in User Guide. GUH Specimen must be delivered to a lab staff member within 3 hours of phlebotomy and before 4pm.
Hepatitis B Surface Antigen (Hepatitis Antigen on maxims)	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Requests for testing post "Needlestick" injury should be notified to the laboratory in advance of sending the specimen, as these samples are processed urgently

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
<b>Hepatitis C Antibody</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Requests for testing post "Needlestick" injury should be notified to the laboratory in advance of sending the specimen
<b>Hepatitis C Antigen</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Only available in very specific cases and following approval by a Consultant Microbiologist
<b>Hepatitis C PCR / Viral Load / Genotype</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	8ml K2EDTA Greiner tube	Specimen must be delivered to a lab staff member within 3 hours of phlebotomy and before 4pm.
<b>Hepatitis D Antibody</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube.	
<b>Hepatitis E Antibodies</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube.	
<b>Herpes Simplex Antibody</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube.	
<b>Herpes simplex virus - PCR</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	0.5 mL CSF in plain leak-proof sterile container	On Consultant Microbiologist request
<b>High Density Lipoprotein (HDL)</b>	In-House Biochemistry	5 mL blood in a plain gel tube	Ideally a patient should fast for 12 hours. However, if a patient is unable or unwilling to fast for 12 hours a specimen taken after a 9 hour fast is acceptable".
<b>High Vaginal Swab (HVS)</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium . Delay > 2 h refrigerate @ 2-8°C.	Endocervical swabs and Urethral swabs are routinely cultured for N. gonorrhoeae. All other specimens must specify N. gonorrhoeae on request if required

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Histamine	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Non haemolysed EDTA plasma	No sampling on glass tubes. Shake the tube gently by turning over. After an anaphylactic shock, sample 30 to 60 min after the onset of clinical signs (SFAR recommendations). PATHOLOGY DEPARTMENT: Spin, separate and freeze (Whole blood can be stored for 2 hrs at ambient temperature or 12 hrs at +4°C. During this time, centrifuge for 15 minutes at 1000g. Aspirate the plasma slowly, to at least 1 cm from the sediment).
Histology Tissue Specimen	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.	
HITS (Heparin Induced Thrombophilia Syndrome)	Special Haematology, St. James's Hospital, James's Street, Dublin 8, Ireland	2 x 5ml blood in a plain gel tube	A specific request form (On-line st James Path Dept) must be filled out and sent with samples for HIT testing. Samples must be received in National Coagulation Lab, CPL by 4pm Mon-Fri. Freeze samples on site prior to transport.
HLA (Human Leucocyte Antigen)Typing	IBTS- NHIRL, National Blood Centre, James's Street, Dublin 8, D08 NH5R	5 -10 ml EDTA blood- Use IBTS request form. Contact Pathology Department.	Sample should be sent to NHIRL when still fresh to minimise the chance of obtaining false negative/false positive reactions due to improper storage of specimens.
HLA B27, heparin whole blood (Flow Cytometry)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA Whole Blood Ambient temperature	
HLA Class II Typing, EDTA whole blood (Molecular Biology)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL of EDTA Whole Blood at ambient temperature or + 4°C (if transport time >24 hrs).	Sample must be refrigerated if transport is > 48 hours. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics

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HLA Typing ABC loci	IBTS- NHIRL, National Blood Centre, James's Street, Dublin 8, D08 NH5R	5 -10 ml EDTA blood- Use IBTS request form. Contact Pathology Department.	Sample should be sent to NHIRL when still fresh to minimise the chance of obtaining false negative/false positive reactions due to improper storage of specimens.
HLA B51	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA Whole Blood Ambient temperature	Sample must be refrigerated if transport is > 48 hours. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics
Homocysteine	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	Lithium Heparin Sample	Sample to be taken and placed on ice. To be transported to the pathology department BSHG. Pathology BSHG: Sample is to be spun, separated and frozen on site <1 hour. Once frozen sample to be sent to Biochemistry GUH.
Homogentisic Acid	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	10 mL early morning urine sample (stored away from light)	Sample to be frozen within 1 hour. Home sampling is not advisable. Enclose the specific clinical information form (R26-INTGB : Metabolic Biochemistry) PATHOLOGY DEPARTMENT: freeze sample.
Human Immunodeficiency (HIV) PCR / Viral Load / Genotype	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	One 8 ml Greiner K2EDTA Vacutte tube for viral load testing. Two tubes if Genotype is also required.	Specimen must be delivered to a Virology staff member within 3 hours of phlebotomy. Greiner tubes should be used to collect both adult and paediatric samples. Only samples collected in these tubes are suitable for processing. The Greiner tubes are available from Laboratory Stores GUH (Ext 4377), inform pathology BSG so they can arrange for tubes to be delivered. Samples must be received in the laboratory GUH before 4pm.

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Human Immunodeficiency Virus antigen/antibody	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Human Platelet Antigen Typing	IBTS- NHIRL, National Blood Centre, James's Street, Dublin 8, D08 NH5R	5 EDTA blood- Use IBTS request form. Contact Pathology Department.	
Human T Cell Lymphocyte Virus HTLV 1 +2	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube + 3mL whole blood EDTA (purple top)	
Huntington's Disease (Huntington's Chorea)	National Genetics Centre, Our Lady's Children's Hospital, Children's Health Ireland at Crumlin, D12 N512, Ireland.	3 ml whole blood in EDTA (red or purple top)	Patient consent required (contact BSG Lab); Presymptomatic testing is only carried out as part of a protocol run by this Department. Diagnostic test requests must be submitted by a Consultant Neurologist, Geriatrician, Psychiatrist or Geneticist.
Hurler's Syndrome Screen		Refer to "Lysosomal Enzyme Screen"	
Hydatid Cyst	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Fluid from liver to sterile container. Delay > 2 h refrigerate @ 2-8°C.	
IgF1		Refer to "Insulin Like Growth Factor 1" (also known as Somatomedin C)	
IGF2	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	PATHOLOGY DEPARTMENT: Spin, separate and freeze.
IGFBP 3 (Insulin-like Growth Factor Binding protein-3)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Provide clinical details. PATHOLOGY DEPARTMENT: Spin, separate and freeze.
IGHV Mutation	Cancer Molecular Diagnostics Lab St.James'	3ml EDTA	4°C

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IL28B genotyping (Interleukin 28B genotyping)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA whole blood Refrigerated	Sample must be refrigerated if transport is > 48 hours. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics
Immune Complexes (Circulating immune complexes)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum Refrigerated	
Immunofluorescence Biopsies - Renal	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Place the biopsy in normal saline to maintain hydration and deliver to the laboratory immediately include contact details on request form.	Please notify the Histopathology Department (ext. 4589) at least 24 hours in advance.
Immunofluorescence Bipsies - Skin	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Fresh tissue. Place in a fully labelled, suitable sized container on saline moistened gauze (Not Drenched), accompanied by a complete request form.	Please notify the Histopathology Department (ext. 4589) at least 24 hours in advance. Deliver immediately to lab. Include contact details and deliver immediately.
Immunoglobulin - IgA Subclasses (IgA1/2)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Immunoglobulin - IgD	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Requests from outside Sheffield: Transport at ambient temperature via Royal Mail or Courier.
Immunoglobulin - IgE (Total)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Immunoglobulin - IgG Sub Classes (IgG1+2+3+4), serum (Nephelometry)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Immunoglobulin - IgG Subclasses (IgG1, IgG2, IgG3)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Immunoglobulin - IgG Subclasses- IgG4	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Immunoglobulins - IgG / IgA / IgM and Serum Protein Electrophoresis	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
Immunophenotyping (Flow Cytometry)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood or Bone Marrow aspirate in RPMI or Lymph Node Biopsy in RPMI	Prior arrangement with Consultant Haematologist or SPR.
Immunoreactive Trypsin (TIR)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Sample to be frozen within 1 hour. PATHOLOGY DEPARTMENT: Spin, separate and freeze.
Influenza A virus	In- House Microbiology	Combined Nasopharyngeal swab in Viral Transport and preservation medium	Instruction form for collection of combined nasal and throat swab can be obtained from pathology department.
Influenza B virus	In- House Microbiology	Combined Nasopharyngeal swab in Viral Transport and preservation medium	Instruction form for collection of combined nasal and throat swab can be obtained from pathology department.
Infliximab Drug/ Antibody Levels	Immunology GUH	5 mL blood in a plain gel tube	
Inhibin A	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Always indicate the clinical context : - Menopausal women - Tumoral context. Enclose the specific clinical information form (R38-INTGB : Inhibin A) PATHOLOGY DEPARTMENT: Spin, separate and freeze.

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Inhibin B	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	ALWAYS collect sample between the 3rd and the 4th day of the menstrual cycle. ALWAYS attach the clinical and ultrasound information PATHOLOGY DEPARTMENT: Spin, separate and freeze.
INR (International Normalised Ratio)	In-House Haematology	2.7 mL blood in a 0.109m Sodium Citrate tube. Do not refrigerate specimen. To be received in Lab within 6 hours of draw.	Calculated based on PT
Insulin	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL fasting blood in a plain gel tube delivered immediately to the laboratory	
Insulin Like Growth Factor 1	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL fasting blood in a plain gel tube, delivered to laboratory same day	
Insulin Like Growth Factor Binding Protein 3		Refer to "IGFBP 3"	
Insulin-C-peptide		Refer to "C Peptide"	
Interleukin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	Contact Pathology Department-	Check Biomnis On line test guide
Intra - Uterine Contraceptive Device (IUCD)	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Intra Uterine Device. Delay > 2 h refrigerate @ 2-8°C.	Only submit for culture with relevant clinical details. Endocervical swabs and Urethral swabs are routinely cultured for N. gonorrhoeae. All other specimens must specify N. gonorrhoeae on request if required.
Intraocular Fluids / Corneal Scrapings	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Pre-inoculated media. If sufficient fluid use sterile container	Contact Laboratory to collect fresh culture plates and slide for corneal scrapings. Deliver to Laboratory immediately.
Intravascular Cannulae Culture	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Cut 4cm of line to sterile container. Delay > 2 h refrigerate @ 2-8°C.	Only submit specimen for culture where indications of infection are present
Iron	In-House Biochemistry	Fasting sample required. 5 mL blood in a plain gel tube	Part of Iron Profile
Iron Stain (Perla Prussian Blue – Cytochemical Stain)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	Bone marrow spread on a glass slide	As for BM testing

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Iron Studies (Iron)	In-House Biochemistry	5 mL blood in a plain gel tube	Assays included in Iron Studies (Iron): Iron, Transferrin, calculated TIBC, transferrin Saturation
IVHG Mutation	Cancer Molecular Diagnostics Laboratory, St. James's Hospital, James Street, Dublin 8.	3 x 3 ml EDTA whole blood (Purple top).	P53 mutation also available. Cancer Molecular Diagnostics Request Form immunophenotyping report
JAK- 2 Mutation	Cancer Molecular Diagnostics Laboratory, St. James's Hospital, James Street, Dublin 8.	3 x 3 ml EDTA whole blood (Purple top).	All samples for molecular testing should arrive in the laboratory as soon as possible post collection or if appropriate, refrigerated at 4 °C until dispatched.
JC Virus (IV Treatment Room Pts.)	Unilab a.s, Nygaardsvej 32 DK-2100 Copenhagen Denmark	Samples collected from Tysabri Patients in IV treatment room. All sampling and transport organised by IV Room.	Drug company organise testing with IV.
JC Virus (Polyomavirus JC Investigation)	Virus Reference Department, Microbiology Services, Public Health England, Colindale, 61 Colindale Ave, London, NW9 5HT	Contact Pathology Department accurate testing guideline	Request form from external laboratory must be completed
Joint Aspirates – Uric Acid Crystals	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	5-10 mls fresh specimen in a universal container. Do not use fixative. Specify if cytology or crystal analysis is required. Please do not inject any material into joint before obtaining joint fluid sample. Submit sample to laboratory ASAP. Refrigerate overnight if necessary. Please use powder free gloves to avoid contamination of sample by powder .	Clinical details required
Joint Fluid "Synovial Fluid"	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Specimen in sterile container. Delay > 2 h refrigerate @ 2-8°C.	
Joint Fluid – Uric Acid Crystals	Refer to "Joint Aspirates"		
Kappa Lambda 24 hr. Ur.	Refer to "Bence Jones Urine"		
Kappa Lambda Ratio	Refer to "Free Light Chains"		
Karyotyping	Refer to "Cytogenetics"		
Kidney stones	Refer to "Stone Analysis"		

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<b>Kleihauer Test for Foetal Cells</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood - fresh.	Limited service available. This test is not available in UCHG for Rh determination. Request form must contain relevant clinical details.
<b>KRAS Mutation analysis</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Tissue samples already processed by the Histopathology Laboratory, Request from Arrange via consultant pathologist	
<b>Lactate</b>	Available on Blood Gas analysers located in ADU	Blood in a Li Heparin syringe	
<b>Lactate Dehydrogenase (LDH)</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
<b>Lactate Dehydrogenase (LDH) Isoenzymes</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Not to be performed on haemolysed sample. The sample must reach external lab WITHOUT FAIL within 24 hrs of sampling.
<b>Lamotrigine (Lamictal)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum (do not use tubes with separator gel) Plain Red Tube Red Top. Freeze	Enclose the specific clinical information form (R13-INTGB : Medication quantification). The therapeutic drug monitoring code suggests that the sample should be carried out at the residual rate (just before taking medication). PATHOLOGY DEPARTMENT: Spin, separate and freeze.
<b>LATS</b>	Refer to "Anti-TSH receptor antibodies"		
<b>Lead</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Whole blood sodium heparin, lithium heparin, EDTA (prohibit use of tubes with separator) Or Navy Top Bottle. Trace element free (royal blue top)	Childhood lead poisoning: caution, all childhood lead blood testing requests must be accompanied by the "Lead poisoning in minor children" sheet downloadable on the site <a href="http://www.biomnis.com">www.biomnis.com</a> Special trace element tubes (sodium heparin) are recommended. The use of vacuum tubes is recommended. In order to avoid the risk of external pollution: Do not sample at the

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			contaminated site. The skin must be washed with disinfectant before sampling. Specimen must be referred immediately after sampling given that the stability of the sample is 14 days.
<b>Lead (24 Hour Urinary)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 mL End of working shift urine or Urine - 24-hour sample Refrigerated	
<b>Legionella culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Sputum or BAL in 60 mL sterile container. Delay > 2 h refrigerate @ 2-8°C.	Atypical pneumonia.
<b>Legionella pneumophila</b>	HPA Antimicrobial Resistance and Healthcare Associated Infections Reference Unit, Public Health England Wellington House, 133-155 Waterloo Road, London SE1 8UG	Contact pathology department for accurate testing guideline. Urine, BAL, Sputa etc. can be tested.	User Manual for National Infection Service, Reference Laboratories Colindale, Bacteriology Reference Department, can be found online with contact/test information.
<b>Legionella pneumophila Urinary Antigen</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	Plain random urine specimen in a sterile Universal container	Specimen to arrive in laboratory within 24 hours of collection
<b>Leptospirosis (Leptospira)</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube	
<b>Leptospirosis (Urine)</b>	Rare and Imported Pathogens Laboratory (RIPL) UK Health Security Agency, Porton Down, Salisbury' Wiltshire, SP4 0JG' United Kingdom	Urine Monovette Primary Tube	Please state patient's occupation or relevant leisure activities. Please give details of relevant symptoms. Please state date of onset of symptom
<b>Leucocyte Alkaline Phosphatase (LAP) Cytochemical Stain</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	6.0 mL Li Heparin blood	Prior authorization by Haematology SPR
<b>Leucocyte Esterase Stain (Cytochemical Stain)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood	Prior authorization by Haematology SPR

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Leucocyte Mixed-Esterase Stain (Cytochemical Stain)	Haematology (GUH), University Hospital, Newcastle Road, Galway	Bone marrow slides	Prior authorization by Haematology SPR
Leucodystrophy Screen	Refer to "Very Long Chain Fatty Acids"		
LH (Lutinising Hormone)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Refrigerated
Lipase	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Refrigerated
Lipid Screen (LIP)	In-House Biochemistry	5 mL blood in a plain gel tube	Assays included in Lipid Screen (LIP): Cholesterol, HDL, triglycerides, LDL, CHOL/HDL Ratio
Lipoprotein (a)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Lp(a) lipoproteins are not to be confused with LPA1 lipoparticles when preparing the request form. Word the request accurately
Listeria monocytogenes direct diagnosis - PCR	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL EDTA whole blood or EDTA plasma or serum, 500 µL (minimum) CSF Refrigerated	The use of the S14UK transport bag is Mandatory
Listeria monocytogenes serology - serum	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Lithium	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Sample 12 hours post dose
Liver core biopsy- (Hep C, Primary tumour or metastases)	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.	
Liver profile (LFT)	In-House Biochemistry	5 mL blood in a plain gel tube	Assays included in Liver profile (LFT): Total protein, albumin, total bilirubin, alkaline phosphatase, alanine transferase, gamma GT

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Lletz	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.	
Low Density Lipoprotein (LDL)	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Lipid Screen (LIP)
Lupus Anticoagulant Screen	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3 x 2.7 mL blood in 0.109m Sodium Citrate tubes	Details of anticoagulant therapy required. Must fill bottle to mark. Samples must submitted within 6 hours of draw.
Lyme Disease Antibodies	Refer to "Borrelia burgdorferi"		
Lymph Node	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Place the biopsy in a fully labelled, suitable sized container without any preservative and deliver to the laboratory immediately, with completed request form. Include contact details.	The following needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised.
Lymphocyte subsets CD3 (T cell) CD4 (T helper) CD8 (T cytotoxic) CD19 (B cell) CD16/56 (NK cell)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	2 x 3 mL blood in EDTA bottle. Do not refrigerate.	Record time and date of collection on form. Samples must be kept at room temperature, deliver to Immunology within 48 hours.
Lysozyme	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube (do not use tubes with separator gel)	Send to Pathology department ASAP. PATHOLOGY DEPARTMENT: Spin, separate and freeze <4 hours.
Magnesium	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile
Magnesium (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 h collection	
Malaria Screen	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood. Fresh sample required	Blood film is examined microscopically. The blood is tested for the presence of parasite associated enzyme. Positive specimen forwarded to Microbiology Laboratory. Travel history and

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			clinical details essential. When submitting malarial requests please alert the Laboratory.
<b>Malignancy</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.	
<b>Manganese - Serum</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2mL Serum in Gel Free Tube	
<b>Measles IgG antibody</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Test for immunity due to vaccination/past infection.
<b>Measles IgM antibodies</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube	Test for current recent infection
<b>Measles</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	Oracle swab for measles testing. Optimal sample collection	(Throat swabs (VTM or UTM) and mouth swabs (VTM or UTM) can be used to detect Measles RNA within 6 days of rash onset. It is recommended that these samples are collected by a health professional. These sample types are not suitable for IgM investigations. ) Throat swabs and mouth swabs: Measles RNA DETECTION ONLY within 6 days of rash onset.
<b>Meningo Slope ID and Sens</b>	Irish Meningitis and Sepsis Reference Laboratory (IMSRL), Temple Street Hospital, Dublin	Contact Pathology Department if any queries	All test for meningitis are referred to Medical Microbiology GUH. They refer any samples for meningitis that are not performed in house in GUH.
<b>Meningococcal PCR</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Greater than 200 ul CSF in a sterile plain tube or EDTA blood	Sample to be handed to staff member

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Mercury	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA whole blood or Heparin Refrigerated	Do not use tubes containing merthiolate
Mercury - Urine	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 mL Urine sample Refrigerated	Sample at end of work shift. Collect the sample on a plastic container
Metanephhrines (Plasma)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 x 2 mL lithium heparin plasma (Gel-free separator tubes)	Fasting sample required. Blood draw preferentially after a 30-min supine/resting period PATHOLOGY DEPARTMENT- Samples to be separated and aliquoted within 1 hour of collection.
Metanephhrines (Urine) (also referred to as Methoxylated derivatives of catecholamines)		See Catecholamines	
Methadone	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	10.0 mL fresh plain urine	User manual - Test information and contact details can be found at <a href="http://www.dtcb.ie/services/lab.asp">http://www.dtcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
Methaemoglobin	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0mL in a Lithium Heparin Syringe	
Methicillin-Resistant Staph aureus (MRSA)	In-House Microbiology	Blue Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
Methotrexate (Maxtrex)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	State date/time of sample collection clearly on request form. Measured on patients on high-dose Methotrexate. Contact Lab in advance and state time of infusion on request form.

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<b>Methylmalonic (Plasma)</b>	<b>Acid</b> Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Heparin Plasma	Send to laboratory BSG ASAP. Home sampling is not advisable. Enclose the specific clinical information form (R26-INTGB : Metabolic Biochemistry PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
<b>Methylmalonic (Urine)</b>	<b>Acid</b> Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	15 mL Early morning urine	Enclose the specific clinical information form (R26-INTGB : Metabolic Biochemistry. PATHOLOGY DEPARTMENT: Freeze sample on receipt and send frozen.
<b>Microalbumin (Albumin)</b>	<b>Urine</b> Immunology (GUH), Galway University Hospital, Newcastle Road, Galway <b>sent to</b> Roscommon General Hospital	Urine in plain universal container, no preservative	
<b>Microalbumin / Creatinine Ratio</b>	Refer to "Microalbumin"		
<b>Micropolyspora faenii</b>	Refer to "Farmer's Lung antibodies" not referred to in the guide. See GUH user guide		
<b>Mitotane</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Heparin Plasma	Sample to be sent to BSG Laboratory ASAP. Home sampling is not advisable. Enclose the specific clinical information form (R13-INTGB : Medication quantification. PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
<b>Molecular Genetics - Haematological and molecular cytogenetics - FISH</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 ml heparin whole blood, 2 mL bone marrow or ganglion Ambient temperature	Bone marrow: 1 heparinised syringe or medullary puncture transferred into a lithium heparinate tube, Glands: sterile bottle. ALWAYS attach: The clinical and therapeutic details, full blood count results, platelets levels. The bone marrow report Immunophenotyping report. The result of the

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			caryotype performed at the diagnostic step if not performed in Biomnis
<b>Molybdenum - Plasma</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Heparin Plasma Refrigerated	
<b>Morphine (Opiates)</b>	Refer to "Toxicology Screen"		
<b>Morphology</b>	Haematology	3.0 mL K3 EDTA blood or Blood film	Sample referred to GUH when requested and clinical details are provided from the consultant.
<b>Mouth Swab</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
<b>MRD-CLL (Minimum Residual Disease detection of Chronic Lymphocytic Leukaemia)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0ml K3EDTA	Samples must be received within 24 hours. Full clinical information and reason for request must accompany specimen.
<b>MRSA (Methicillin-Resistant Staph aureus)</b>	Refer to "Methicillin-Resistant Staph aureus"		
<b>MSU – Midstream Urine</b>	Refer to "Urine Culture – Midstream Urine"		
<b>MTHFR (Mutation Methylene Tetrahydrofolate Reductase Deficiency)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA whole blood Ambient temperature	Sample must be refrigerated if transport is > 48 hours. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics
<b>Mumps IgG antibody</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>Mumps IgM antibody</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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<b>Muscle Biopsies</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	In Petri dish, pinned to gauze and moistened with saline. Pined *Clinical history letter is required with all muscle specimens as these are referred to Beaumont Hospital	The following needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised.
<b>Mycobacteria Testing</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Specimen of sputa, BAL in sterile 60 mL container. Early morning urine in 100 mL sterile container by prior arrangement only. Fluids / tissues in sterile containers. Blood Culture / Bone Marrow aspirate, heavily blood stained fluids in Bactec Myco/Lytic (red cap) vials. Delay > 2 h refrigerate @ 2-8°C.	Decontaminated respiratory specimens are retained for 7 weeks. They are unsuitable for other investigations once decontaminated. The mycobacteria culture system is not validated for processing urine specimens
<b>Mycology</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	See "Dermatophytosis". Transport swab. Tissue / pus in sterile container. Hair, nail clippings, skin scrapings in Dermapak. Refer to Medical Microbiology section	For further information contact pathology department or refer to GUH Laboratory user manual section "Dermatophyte Culture – Collection and Transport"
<b>Mycoplasma pneumoniae antibody</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	5 mL blood in a plain gel tube	Available only in very specific cases and following prior arrangement with a Consultant Microbiologist
<b>Myelin Oligodendrocyte Glycoprotein Antibodies (MOG)</b>	Refer to "Anti-Myelin Oligodendrocyte Glycoprotein Antibodies (MOG)"		
<b>Myoglobin</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
<b>Myosite Markers - serum (See Biomnis website for complete list)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
<b>Myositis Antibody Screen</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Alternative names: Alternative name: Dermatomyositis (DM), Polymyositis (PM),

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			Paraneoplastic antibodies, Mi, TIF-1, MDA5, NPX2, NPX2, Ku, PM-Scl75, PM-Scl100, Signal Recognition Particle (SNP), Jo-1, PL-7, PL-12, EJ, OJ, Ro-52, Systemic Sclerosis, Autoimmun
<b>Neisseria gonorrhoea PCR</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	Abbott Multicollect swab delivered to the laboratory within 24 h of collection. If delay refrigerate @ 2-8°C.	
<b>Neisseria meningitidis PCR</b>		Refer to "Meningococcal PCR"	
<b>Neoplasm</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin	
<b>Neuronal Antibodies</b>		Refer to "Anti-Neuronal Nuclear Cell (Hu Ri) Antibodies"	
<b>Neutrophil Function Test – Dihydrorhodamine Flow Cytometry Assay of Respiratory Burst Activity</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in EDTA must be kept at room temperature. Do not refrigerate. Control sample must also be taken.	Testing must be first discussed with immunology medical/scientific staff
<b>NMDA Receptor Antibodies</b>		Refer to "Anti-NMDA Receptor Antibodies"	
<b>Noradrenaline (Adrenaline/Dopamine)</b>		Refer to "Catecholamines"	
<b>Norovirus detection</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Faeces in spoon container. Delay < 24 h refrigerate @ 2-8°C. Delay > 24 freeze @ -20OC.	Only processed by prior arrangement with microbiology consultant.
<b>Nose Swab</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
<b>NTX N-telopeptide of type 1 collagenen urine frozen (Synonyms Cross link,</b>	Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin 4.	2 hour timed urine or 2nd morning void,	This species corresponds to the N-terminal telopeptide of Type I collagen and its level in the urine gives a measure of the rate of bone resorption. Fasting Sample. PATHOLOGY LAB- Record total volume of urine

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Osteomark, Peptides from NTx collagen degradation, Collagen N-telopeptides, NTx,N-telopeptides)			collected. Label a plastic 13 x 75mm tube with patient details. Note date, start and finish time and aliquot approximately 3ml into the tube. Store sample at -20 or lower prior to transport. Transport frozen with Biomnis.
Oestradiol	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Oligoclonal Banding	See "Cerebrospinal Fluid – Oligoclonal bands and CSF IgG Index"	Paired CSF and serum samples must be submitted	
Opiates		Refer to "Toxicology Screen"	
Organic Acids - (qualitative and quantitative) Urine	Metabolic Laboratory, Childrens Hospital Ireland, Temple Street Children's University Hospital, Temple Street Dublin 1	5ml spot urine in universal container	Urine pH should be measured. Where the pH≥8.5, microbial contamination is suspected, continue to dispatch urine sample to TSCUH and please request a repeat urine sample on the patient. Freeze promptly, no preservative. If any delay in freezing store at 4o C up to 4-6 hours (make note of delay on request form).
Osmolality (Serum)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Osmolality (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	Plain random urine specimen	
Osmotic Fragility	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	5.0 mL Li fresh Heparin blood and a normal control specimen in 5.0 mL Li Heparin	Authorisation by Haematology SPR and arrangement with laboratory. The specimen must reach the laboratory before 11:00 on day of analysis
Osteocalcin	Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin 4.	5 mL blood in a plain gel tube *	Fasting Blood to be obtained before 10.30 AM required. Bone Marker Protocol available from Lab. *Biotin may cause some concentration dependent negative interference in this assay if high dose supplements are taken. If this is suspected, a repeat request 8 plus hours off Biotin is recommended in the first instance. PATHOLOGY DEPARTMENT- Serum to be separated and aliquoted as soon as possible. Label a plastic 13 x 75mm tube with

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
			patient details. Store sample at -20 or lower prior to transport. Transport frozen with Biomnis.
Ova / Cysts / Parasites	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Faeces in leak proof container. Delay > 2 h refrigerate @ 2-8°C.	Cryptosporidium and Giardia detection by molecular technique. Other ova and parasites are rarely detected in faeces. Examination for other O&P is only performed when specific additional parasite is specified on the request form, accompanied by relevant clinical information.
Ovarian Antibodies	Refer to "Anti-Ovarian Antibodies"		
Ovarian Cyst Fluid, Neoplastic/Non-Neoplastic Cells	Refer to "Effusions/FNA"		
Oxalate	Refer to "Serum Oxalate"		
Oxalate (24 Hour Urinary)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	Acidified 24 hr urine collection	The following is essential for the oxalic acid assay: 24-hour urine collection, keep refrigerated, indication of diuresis volume. PATHOLOGY DEPARTMENT. 50 mL Acidified 24 hr urine (pH 2-3) (acidification of urine by the sampling laboratory by adding hydrochloric acid (HCl) to obtain a urinary pH between 2 and 3) Refrigerate until Biomnis collection.
P1NP - Intact N-Terminal Propeptide of Type I Procollagen (Procollagen Type 1 Pro Peptide)	Clinical Chemistry Laboratory, St. Vincent's University Hospital, Elm Park, Dublin 4.	5 mL blood in a plain gel tube *	Fasting Blood to be obtained before 10.30 AM required. <b>Bone Marker Protocol available from Lab- Do we do this</b> *Biotin may cause some concentration dependent negative interference in this assay if high dose supplements are taken. If this is suspected, a repeat request 8 plus hours off. Biotin is recommended in the first instance. PATHOLOGY DEPARTMENT- Serum to be

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			separated and aliquoted as soon as possible. Label a plastic 13 x 75mm tube with patient details. Store sample at -20 or lower prior to transport. Transport frozen with Biomnis.
Pancreatic Polypeptide	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum (do not use tubes with separator gel)	Send to BSG laboratory ASAP. PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour. Centrifuge quickly at cooled temperature and immediately freeze serum
PAP smear	Refer to "Smear - Liquid based (Thin-Prep®) Cervical Smear (PAP)"		
Paracetamol	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Paraneoplastic Antibodies	Refer to "Autoantibodies: Anti-Neuronal Antibodies"		
Paranodal & Nodal Antibodies	Immunology Laboratory, Churchill Hospital, Churchill Drive, Headington, Oxford, OX3 7LE. Tel +44 (0)1865 225995	Serum or csf.	Specific request Form required when sending sample, obtain from Oxford website.
Paraquat - Serum	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Serum (do not use tubes with separator gel)	Send to BSG laboratory ASAP. PATHOLOGY DEPARTMENT: Spin, separate and freeze.
Paraquat - Urine	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 mL Urine sample Refrigerated	
Parvovirus / B 19 IgM Antibodies	Refer to "Erythrovirus B19"		
Pelvic Cavity Wash (Diaphragm, Gutter or Cul de sac Wash)	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Collect 10 - 20 mL fresh specimen into a twist top leak proof 20 mL or 50 mL universal sample bottle containing Shandon Cytospin Collection Fluid (green fixative solution). Refrigerate overnight if necessary.	Indicate clinical history on test requisition and reason for test.

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Penile Swab	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	Treated as skin swab. For investigation for <i>Neisseria gonorrhoeae</i> a Urethral swab must be sent.
Pericardial Fluid – Pleural Fluid - Cytology	Refer to "Effusions"		
Pericardial Fluid / Peritoneal Fluid / Pleural Fluid	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Specimen in sterile container (include clotted material). Delay > 2 h refrigerate @ 2-8°C.	Must be handed to a staff member
Peritoneal Fluid - Cytology	Refer to "Effusions"		
Pernasal Swab / Pertussis	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Pernasal swab (available from Medical Microbiology).	
Phenobarbitone / Phenobarbital (Synonyms Aparoxal, Barbituremia (barbiturate levels), Barbiturate, Alepsal)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Always draw blood at the same time before another administration. Enclose the specific clinical information form (R13-INTGB : Medication quantification)
Phenylalanine	Metabolic Laboratory, Childrens Hospital Ireland, Temple Street Children's University Hospital, Temple Street Dublin 1		Contact LABORATORY OFFICE CUH @ 01 878 4266 for information re test.
Phenytoin	Refer to "Epanutin"		
Phosphate (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine collection	Used in conjunction with serum inorganic phosphate to calculate IPeGFR
Phosphate -inorganic	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile
Phytanic Acid	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL EDTA plasma or Heparin plasma	Send to BSG laboratory ASAP. PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
Pinworm	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Apply sellotape to anal area, fix to slide, send to Laboratory. Delay > 2 h refrigerate @ 2-8°C.	

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Pippelle Biopsy	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen to laboratory in 10% Neutral Buffered Formalin.	
Placenta	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin	
Plasma Viscosity	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3 x 3.0 mL K3 EDTA blood	Must be received in GUH laboratory within 2 hours of phlebotomy
Platelet Aggregation	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	6 x 2.7 mL blood specimens in 0.109m Sodium Citrate tubes. Please supply samples from a normal control in conjunction with the test specimens.	Prior authorization by Consultant Haematologist or SPR. Arrange with Coagulation laboratory before taking specimen. Patient must not take any anti-platelet medications for 1 week prior to test (incl. aspirin, NSAIDA, Clopidogrel/plavix, cough suppressants). Discard the first specimen when obtaining blood from patient as there may be some platelet activation present which will influence the test results. Specimens must reach the Coagulation laboratory no later than 11:00 on the day of analysis. Must fill bottles to mark.
Platelet Antibodies	IBTS- NHIRL, National Blood Centre, James's Street, Dublin 8, D08 NH5R	5 -10 mL blood in a plain gel tube. - Use IBTS request form. Contact Pathology Department.	
Pleural Fluid - Cytology		Refer to "Effusions"	
Pleural Fluid Microscopy & Culture	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Pleural fluid in sterile container. Delay > 2 h refrigerate @ 2-8°C.	Must be handed to a staff member
Pneumococcal PCR	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Greater than 200 ul CSF in a sterile plain tube or EDTA blood	
Pneumococcus IgG/ IgG2 antibodies	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	

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Pneumocystis jiroveci investigation	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	BAL or induced sputum only. Delay > 2 h refrigerate @ 2-8°C.	
PNH Screening (Paroxysmal Nocturnal Haemoglobinuria) by Flow Cytometry	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood	
POC – Products of Conception	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen to laboratory in 10% Neutral Buffered Formalin.	
Porphyrin Screen	Biochemistry Laboratory, St. James's Hospital, James's Street, Dublin 8, Ireland.	10.0 mL EDTA blood, 10.0 mL Li Heparin blood, 5g fresh faeces and a 24 hour urine collection	All specimens must be protected from light. See Individual Porphyrin Tests
Porphyrins - Faeces	Biochemistry Laboratory, St. James's Hospital, James's Street, Dublin 8, Ireland.	10g Universal container of Faeces- protected from light	Appropriate clinical details, current medication and previous family history (if known) is required. Refrigerate sample for 24 hours, if longer delay is expected, please freeze.
Porphyrins - Plasma	Biochemistry Laboratory, St. James's Hospital, James's Street, Dublin 8, Ireland.	2 x 4 mL EDTA Purple or 2 x 3.5mL Lithium Heparin Green bottles protected from light.	Haemolysed samples unsuitable. Appropriate clinical details, current medication and previous family history (if known) is required. Send to lab without delay. If samples can't be sent to laboratory immediately please separate sample and freeze.
Porphyrins -Red Blood Cell	Biochemistry Laboratory, St. James's Hospital, James's Street, Dublin 8, Ireland.	2 X 3mL Purple EDTA bottles protected from light	EDTA Whole Blood protected from light. Do not freeze.
Porphyrins- Urine	Biochemistry Laboratory, St. James's Hospital, James's Street, Dublin 8, Ireland.	Urine Random urine - Protect samples from light and refrigerate, .	Universal container - At least 5mL, protected from light
Post-Vasectomy Analysis	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Semen	Please note post vasectomy sample processed only. Monday- Friday 9-4. Serum analysis not processed

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Test Name	In-house Test or Referral Laboratory Location	Specimen Type	Additional Requirements
Potassium	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Renal Profile
Potassium (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine collection	
Prader Willi Syndrome (Angelman / Prader-Willi Syndrome - uniparental disomy - mechanism identification)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA whole blood Ambient temperature	5 ml of whole blood on EDTA from each parent (quotation on request) is required to perform this test. According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics. Different variations of test available check Biomnis Website.
Prealbumin (Synonyms Transthyretin & TTR)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Pregnancy Test (Serum) - HCG	In-House Biochemistry	5 mL blood in a plain gel tube	
Pregnancy Test (Urine)- HCG	In-House Microbiology	Plain container with 20mls Urine	
Primidone/Mysoline	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Take specimen immediately before next dose (trough specimen)
ProBNP (BNP B-Type Natriuretic Peptide)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Procalcitonin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	PATHOLOGY DEPARTMENT: Spin, separate and freeze.

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Procollagen Peptide Type III	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube or red top serum clot activator	PATHOLOGY DEPARTMENT: Spin, separate and freeze ASAP.
Progesterone	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	7mL blood in a plain gel tube	
Prograf	Refer to "Tacrolimus"		
Proinsulin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	PATHOLOGY DEPARTMENT: Spin, separate and freeze.
Prolactin	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Prolactin molecular forms - serum (Monomeric etc.)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Enclose the specific clinical information form (R20-INTGB : Molecular forms of prolactin) PATHOLOGY DEPARTMENT: Spin, separate and freeze.
Prostate Specific Antigen Free (PSA)	Refer to "PSA Total"		
Prostatic Core Biopsy	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin. .	Ensure each container clearly indicates site and information matches details given on form.
Protein (Total)	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Liver Profile
Protein (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine collection	
Protein C	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2.7 mL blood in a 0.109m Sodium Citrate tube	Requests should be received in the laboratory within 2 hours of phlebotomy. Details of anticoagulant therapy required. Must fill bottle to mark

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Protein S & Free Protein S	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2.7 mL blood in a 0.109m Sodium Citrate tube	Requests should be received in the laboratory within 2 hours of phlebotomy. Details of anticoagulant therapy required. Must fill bottle to mark
Prothrombin Time (PT)	In-House Haematology	2.7 mL blood in a 0.109m Sodium Citrate tube. (1.0 mL Paediatric tubes are available).	
PSA Total (Prostate Specific Antigen)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
Pseudocholinesterase (Total activity and Phenotyping)	Department of Clinical Biochemistry, Manchester University NHS Foundation Trust, Oxford Road, Manchester, M13 9WL.	Serum or lithium heparin. 1ml required for test. Transport at 4°C	Specimens should be taken after the patient has fully recovered from anaesthetic. Do not take when under GA.
PTH (Parathyroid Hormone)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube delivered to the laboratory same day	
PTH Related Peptide (Parathyroid Hormone Related Protein)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL EDTA Plasma + Aprotinin	Special tube (EDTA + Aprotinin) supplied upon request. PATHOLOGY DEPARTMENT: Centrifuge at +4°C and FREEZE the plasma immediately. Sample on special tube (EDTA + Aprotinin) supplied on request.
Punch Biopsy	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin	Where specimen is for DIF do not use fixative. See Immunofluorescence
Q Fever		Refer to "Coxiella burnetii"	
Quantiferon test	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	Specific Instructions for sampling procedure available from pathology department or Immunology GUH.	See Instruction sheet. Scrupulous compliance with the pre-analytical phase is required to ensure the quality of the result. Only accepted in Bons Pathology Lab Mon-Thurs between 8.00 and 16.30 to ensure specimen can arrive in GUH before 5. No samples accepted

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			Friday, Saturday or Sunday. (If samples are taken outside M- T, incubate for 16-24 hours @37° C. Spin @ 2,600 RPM for 15 minutes and fridge until sending to GUH. Note specific times incubated and spun on form. )
Quinidine (Synonyms Surquina)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Serum (do not use tubes with separator gel)	Always draw blood at the same time before another administration. Enclose the specific clinical information form (R13-INTGB : Medication quantification PATHOLOGY DEPARTMENT: Spin, separate and freeze.
Radiation specimens	Surgical Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Histopathology Radiation Room	Formalin fixed tissue. Ensure that the container used is large enough to ensure volume of fixative x 2 times specimen size. Request form and specimen container must be clearly labelled as radioactive, with form information to include time, quantity and volume of dose given
RCD 11 Refractory Coeliac Disease Type 11 Detection by Flow Cytometry	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	Duodenal biopsies in RPMI.	Requires prior arrangement with flowcytometry. RPMI is supplied by flowcytometry lab. Scientist collects sample directly from ward.
Red Cell Folate	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood, (1.0 mL Paediatric tubes are available).	Requests should be received in the laboratory within 8 hours of phlebotomy
Reducing Substances (Faeces Sugars - screening - stool)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 g (minimum) Fresh stool specimen	4°C
Renal Biopsy for Direct Immunofluorescence (DIF)	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Place the biopsy in normal saline to maintain hydration and deliver to the laboratory immediately. Include contact details on request form.	The following needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised.

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<b>Renal Biopsy for Electron Microscopy</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Place the biopsy in normal saline to maintain hydration and deliver to the laboratory immediately. Include contact details on request form.	The following needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised.
<b>Renal Profile (U/E) also referred to as Urea &amp; Electrolytes</b>	In-House Biochemistry	5 mL blood in a plain gel tube	Assays included in Renal Profile: Sodium, potassium, chloride, urea, creatinine
<b>Renal stones</b>	Refer to "Stone Analysis"		
<b>Renin</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	2 x 5 mL: k+EDTA (Plasma) or 1 large Pink top. Delivered to laboratory immediately.	Pt ambulatory for 1 hour. Do not take on ice. Needs to be separated and frozen within 30 mins of draw.. To be sent frozen to GUH. Freeze in BSHG not in GUH. List medications
<b>Respiratory Panel (Influenza A &amp; B, RSV and Sars-CoV-2)</b>	In- House Microbiology	Combined Nasopharyngeal swab in Viral Transport and preservation medium	
<b>Respiratory Syncytial Virus (RSV)</b>	In- House Microbiology	Combined Nasopharyngeal swab in Viral Transport and preservation medium	
<b>Respiratory Syncytial Virus (RSV) Serum</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
<b>Reticulocyte Count</b>	In-House Haematology	3.0 mL K3 EDTA blood	
<b>Reverse T3 (Synonyms Reverse triiodothyronine, rT3)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Attach the thyroid evaluation results. Attach the clinical data. PATHOLOGY DEPARTMENT: Spin, separate and freeze.1 individual aliquot for this analysis
<b>Rheumatoid Factor IgM</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Requests for Rheumatoid Factor will also be tested for Anti-CCP

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<b>Ristocetin CoFactor (RiCof) (VW F : RiCof)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2 x 2.7 mL blood in a 0.109m Sodium Citrate tube. (1.0 mL Paediatric tubes are available).	Prior authorization by Consultant Haematologist or SPR. Arrange with coagulation laboratory before taking specimen. Must fill bottles to mark.
<b>Rotavirus / Adenovirus Faecal Antigen</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Faeces collected in acute phase of illness 1-2g in leak proof container. Delay > 2 h refrigerate @ 2-8°C.	Rotavirus and Adenovirus are tested for in specimens from children aged less than 5 years of age.
<b>Rt Ureteric stone for analysis</b>	Refer to "Stone Analysis"		
<b>Rubella IgG Antibody</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>Rubella IgM Antibody - Serology</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>Salicylate</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
<b>Salmonella Typing</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway		Refer to GUH Lab User Guide for more information. Contact Pathology Department BSG if any queries.
<b>SARS-CoV-2 PCR (2 hr turnaround time)</b>	In- House Microbiology	Combined Nasopharyngeal swab in Viral Transport and preservation medium	
<b>SAR-CoV-2 PCR (24 hr turnaround time)</b>	GUH Microbiology	Combined Nasopharyngeal swab in Viral Transport and preservation medium	
<b>Schistosoma haematobium</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Urine in sterile container. Delay > 2 h refrigerate @ 2-8°C.	Only performed on request on patients after recent travel to endemic area. Urine volume >10ml (The urine must be obtained between 10:00-14:00 h on the day of testing).
<b>Selenium</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5mL Navy Sodium Heparin Tube	4°C

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Selenium urine	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	20 mL Random urine Refrigerated	
Semen Analysis (Post Vasectomy ONLY)	Refer to "Post Vasectomy Analysis"		
Serotonin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 x 2 mL (IMPERATIF) Heparinised whole blood (no glass tubes) (prohibit use of tubes with separator)	DIET: within 48 hours prior to the assay, avoid consuming bananas, chocolate, dried fruit, citrus fruit, avocados, tomatoes, plums, kiwis, pineapples and molluscs. Send to laboratory BSG ASAP. Enclose the specific clinical information form (R26-INTGB : Metabolic Biochemistry PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
Serum Amyloid A Protein (Amyloid A Protein SAA )	Sheffield Protein Reference Unit & Immunology Department, Laboratory Medicine Building, North Lane, Northern General Hospital, Herries Road, SHEFFIELD, S5 7AU	5 mL blood in a plain gel tube	Turbid, icteric or lipaemic specimens interfere with analysis
Serum Oxalate (Oxalic acid - serum)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube Fasting	Enclose the specific clinical information form (R26-INTGB : Metabolic Biochemistry). Sample in a fasting state (for infants, draw sample 3-4 hours after bottle) Send to laboratory BSG ASAP. PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
Serum Protein Electrophoresis (SPE)	Refer to "Immunoglobulins"		
Sezary Cells	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood, blood film	

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SHBG (Sex Hormone Binding Globulin)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Female – only analysed where testosterone >1.2nmol/L.
Shigella Typing	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway		Refer to GUH Lab User Guide for more information. Contact Pathology Department BSG if any queries.
Sickle Screen (Sickledex)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood	Must give clinical details, transfusion history and ethnic origin of patient. Test not valid on children under six months of age. All sickledex requests are referred for further confirmation of results by HPLC.
Sirolimus (Rapamune®)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL EDTA whole blood Refrigerated	Residual level sample (just before administration). Enclose the specific clinical information form (R13-INTGB : Medication quantification)
Skin Punch Biopsy for Direct Immunofluorescence (DIF)	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Place the biopsy in a fully labelled suitable sized container without any preservative and deliver to the laboratory immediately, with completed request form. Include contact details. If the biopsy is from outside University Hospital, Galway, the sample may be sent in a suitable transport medium (e.g Michel's or Zeuss medium).	The following needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised.
Skin Swab	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
Smear - Liquid based (Thin-Prep®) Cervical Smear (PAP)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	Thin-Prep Vial	
Sodium	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Renal Profile
Sodium (Urine)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine collection or spot urine	

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<b>Soluble transferrin receptor</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	4°C
<b>Somatomedin (IGF1)</b>	Refer to "IGF1"		
<b>Sputum – Cytology Not in GUH user guide</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Sputum should be collected on at least three occasions if underlying lung carcinoma is suspected. Early morning samples on 3 consecutive days are recommended. One specimen may be a post bronchoscopy sputum specimen which is produced immediately after the bronchoscopy. If possible one smear should be prepared immediately on site, and allowed to air dry. This smear should be labelled "Air Dried" and submitted to the laboratory for Diff quick staining. 0.5 ml to 20 mL spontaneous or induced fresh specimen collected into a 20 mL or 50 mL twist top leak proof universal container containing Mucolexx fixative (available on request from Cytopathology lab).	Indicate clinical history on test requisition and reason for test. Sputum must be deeply coughed from lungs. Avoid oral contamination and saliva. Early morning upon rising is the preferred collection time. Refrigerate if necessary.
<b>Sputum Culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Purulent specimen in 60ml sterile container. Delay > 2 h refrigerate @ 2-8°C.	Salivary specimens will be discarded. Specimens >48hr old will be rejected for culture.
<b>Stem Cell Quantification</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood or specimen from aphaeresis collection.	All Stem Cell quantifications must be preauthorized by Consultant Haematologist or SPR and prearranged with both laboratory and point of clinical activity. Specimen must be accompanied by special request form available from the Haematology laboratory and signed on receipt in the laboratory.
<b>Stone Analysis (Renal Calculi)</b>	Mater Misericordiae University Hospital, Eccles St, Dublin 7	Sterile container 70 mL (yellow lid)	

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<b>Sulphonylureas - Random Urinary</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Urines	Pathology Department: Freeze upon receipt
<b>Sural Nerve Biopsies</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Fresh tissue. Place in a fully labelled, suitable sized container on saline moistened gauze (Not Drenched), accompanied by a complete request form.	Needs to be booked in advance with Histology Department in GUH (544078/ 544589) 24 hours in advance and inform the laboratory in Bon Secours Hospital also as transport will need to be organised. Include contact details and deliver immediately.
<b>Surgical Specimens for Histological Examination</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Formalin fixed tissue	
<b>Swab Culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2h refrigerate @2-8°C	
<b>Sweat Test</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	Sweat collected by the Macroduct Sweat Collection System. Contact GUH	Contact Biochemistry GUH
<b>Synovial Fluid</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Specimen in sterile container. Delay > 2 h refrigerate @ 2-8°C.	
<b>Synovial Fluid Cytopathology</b>	Refer to "Joint aspirate"		
<b>Syphilis (Treponema pallidum) antibodies</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>T3 (Total)</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Assay only available by request from Endocrine Team or by prior agreement with Consultant
<b>T3 (Free)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	• ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential

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			to STOP treatment 8 days before taking the sample.
<b>Tacrolimus (FK506) / Prograf/Advagraf</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	4.0 mL K+ EDTA blood	Collect sample pre-dose. State date/time of sample collections clearly on request form
<b>Tartrate Resistant Acid Phosphatase (TRAP) Cytochemical Stain</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	3.0 mL K3 EDTA blood/Bone marrow slides	Prior authorization by Haematology SPR. To reach lab within 8 hours of phlebotomy
<b>Tear Duct - Culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in Transport medium. Delay > 2 h refrigerate @ 2-8°C.	
<b>Tegretol</b>		See Carbamazepine	
<b>Teicoplanin (Targocid®)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Enclose the specific clinical information form (R13-INTGB : Medication quantification)
<b>Temporal Artery</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), , Newcastle Road, Galway.	Place the biopsy in a fully labelled, suitable sized specimen container with formalin.	Phone GUH in advance
<b>Total Testosterone</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Collected between 8 -10 am
<b>Testosterone (Free)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	PATHOLOGY DEPARTMENT: Spin, separate and freeze. Non haemolysed and non lipemic samples only.
<b>Tetanus Toxoid IgG Antibodies</b>	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>Theophylline</b>		Refer to "Aminophylline"	
<b>Thiamine</b>		Refer to "Vitamin B"	
<b>Thin Prep HPV</b>	See "Smear - Liquid based (Thin-Prep®) Cervical Smear (PAP)"		

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Thiopurine methyl transferase (TPMT)	Refer to "TPMT"		
Throat Swab	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
Thrombophilia Screen (incl: PT/INR, APTT, Fibrinogen (derived), Antithrombin, Protein C, Free Protein S, APCResistance, Lupus inhibitor)	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	4 x 2.7 mL blood in a 0.109m Sodium Citrate tube	Requests should be received in the laboratory within 4 hours of phlebotomy Mon – Fri during routine working hours. Clinical details and relevant patient and family history are required. Testing should not be done during thrombotic period or while the patient is on anticoagulant therapy. Must fill bottles to mark
Thyroglobulin	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	ATTENTION: interference possible in patients treated with biotin (vitamin B7, B8 or H) or taking any food supplement containing biotin. Essential to STOP treatment 8 days before taking the sample. PATHOLOGY DEPARTMENT: Spin, separate and freeze. Non haemolysed.
Thyroid Function Test	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	TSH and T4 are individual tests that make up TFT's
Thyroid Peroxidase Antibody (TPO)	Refer to "Anti-thyroid peroxidase antibodies"		
Thyroxine Free (Free T4)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Part of Thyroid Function Test
Tissue	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin.	
Tissue / Biopsy	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Specimen in Sterile container for routine culture and microscopy. Delay > 2 h refrigerate @ 2-8°C.	
Tissue Transglutaminase IgA, Coeliac Disease (TTG)	Refer to "Coeliac Screen"		

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<b>Tobramycin (Synonyms: Tobrex®, Nebcine®, Tobradax®, Tobi®)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Residual level = before injection; Peak = 30 min after end of infusion or 1 hr after IM injection. Enclose the specific clinical information form (R18-INTGB : Infectious agents) PATHOLOGY DEPARTMENT: Spin, separate and freeze.
<b>Total Iron Binding Capacity (TIBC)</b>	In-House Biochemistry	5 mL blood in a plain gel tube. Fasting sample recommended	Part of Iron Profile
<b>Toxicology / Drug Screen Urine (Benzodiazepines, barbiturates, opiates, cocaine, propoxyphene, cannabis, amphetamine, methadone, phencyclidine, phenothiazine, alcohol)</b>	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	10.0 mL fresh plain urine	User manual - Test information and contact details can be found at <a href="http://www.dtcb.ie/services/lab.asp">http://www.dtcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
<b>Toxoplasma gondii IgG antibodies</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>Toxoplasma gondii IgM antibodies</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	
<b>TPMT (Thiopurine S-methyltransferase)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL EDTA whole blood Refrigerated	ALWAYS attach the medical prescription, medical certificate and patient consent form (B1164)
<b>Transferrin</b>	In-House Biochemistry	5 ml blood in plain gel tube. (Fasting)	Part of Iron Profile
<b>Transferrin Saturation %</b>	In-House Biochemistry	5 ml blood in plain gel tube. Fasting specimen required- Calculated Parameter	Part of Iron Profile
<b>Transfusion Pack (Blood product) for culture</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Bactec Blood culture vials	Ensure labelling as per Haemovigilance procedure
<b>Transthyretin (pre-albumin)</b>	Refer to "pre-albumin"		

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Trichomonas vaginalis	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Urethral or Endo-Cervical swab in transport medium (charcoal).	
Triglycerides	In-House Biochemistry	5 mL blood in a plain gel tube	Ideally a patient should fast for 12 hours. However, if a patient is unable or unwilling to fast for 12 hours a specimen taken after a 9 hour fast is acceptable. Part of Lipid Screen (LIP)
Troponin T	In-House Biochemistry	5 mL blood in a plain gel tube	
Tryptase ( Serum)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	Sample taken as soon as possible after anaphylactic shock, and then at +2 hrs and +8 hrs. Ensure times taken are on samples.
Tryptase (Mast Cell)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	For investigation of anaphylaxis serial samples are required and the timing must be specified. Timing of samples: Immediately after resuscitation (record time) ; At 1-2 hours post reaction (record time) and at 24 hours post reaction (baseline)
TSH (Thyroid Stimulating Hormone)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	Part of Thyroid Function Test
TSH Receptor Antibodies	Refer to "Anti-TSH receptor antibodies"		
Tuberculosis Testing	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	See "Mycobacteria Testing". Specimen of sputa, BAL in sterile 60 mL container. Early Morning Urine in a 100 mL sterile container. Fluids / Tissues to Sterile containers. Blood Culture / Bone Marrow aspirate, heavily blood stained fluids to Bactec Myco/Lytic (red cap) vials. See "	The mycobacteria culture system is not validated for processing urine specimens. The Department of Medical Microbiology does not routinely accept more than three sputum specimens for Mycobacterium culture in a single episode of illness
Tumour	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen intact to laboratory in 10% Neutral Buffered Formalin	

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<b>TNF-alpha - Tumour Necrosis Factor</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube. Frozen with 4 hours	
<b>TURP</b>	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Submit specimen to laboratory in 10% Neutral Buffered Formalin	
<b>UGT1A1 Genetic Test (Gilbert Syndrome Screening)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL Lithium heparin whole blood (do not use gel separator tubes) Refrigerated	According to regulation, each request must ALWAYS be accompanied by a consent form signed by the patient and the prescribing pathologist. Enclose the specific B12-INTGB request form: Molecular Genetics
<b>Ulcer Swab</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	Rejected in the absence of relevant clinical details
<b>Urea</b>	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile /Renal Profile
<b>Urea (Urine)</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine collection	
<b>Ureteric Stones (See Stone Analysis)</b>	Refer to "Stone Analysis"		
<b>Urethral Swab</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 hr Refrigerate @ 2-8°C.	
<b>Uric Acid</b>	In-House Biochemistry	5 mL blood in a plain gel tube	Part of Biochemistry Profile
<b>Uric Acid (Urine)</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	24 hour urine collection	
<b>Urinalysis</b>	Refer to "Urine culture – Mid-Stream Urine"		
<b>Urinary 5 HIAA (5-hydroxyindoleacetic acid)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	24 hour urine collection (Acidified)	Foods containing 5-hydroxy-tryptamine (serotonin) must be avoided. Medications including MAO inhibitors should be discontinued

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			prior to sample collection. Contact the Laboratory for a detailed list.
Urinary Aldosterone	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	24hrs urine collection (Non acidified )	Specify diuresis. DIET INFORMATION: our reference ranges are only valid for a normal salt intake (80-250mEq/24hrs natriuresis) PATHOLOGY DEPARTMENT: Remove an aliquot (5 mL) and freeze. Send frozen.
Urinary Casts	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Vacuette urine tube	The urine is collected into the Vacuette collection container and then transferred to the urine tube via the needle on the top of the collection container. Both Vacuette urine tubes and collection containers are yellow in colour and are stored at Laboratory specimen reception
Urinary hCG (Pregnancy Test)	Refer to "Pregnancy Test"		
Urine - Diagnostic Cytology	Department of Histopathology, Cytopathology and Molecular Pathology (GUH), University Hospital Galway, Newcastle Road, Galway.	Immediate fixation is necessary. Collect 10 – 20 mL fresh voided or catheterized urine or bladder wash specimen into a universal bottle containing Shandon Cytopsin Collection Fluid (green fixative solution) available from the Diagnostic Cytology laboratory.	
Urine Culture – Midstream Urine	In-House Microbiology	Use plain sterile Universal container	Delay >2 h refrigerate @ 2-8°C
Urine Protein Creatinine Ratio (PCR)	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	Urine: Early morning sample preferred	
Urine Protein Electrophoresis (Urine Bence Jones Protein)	Immunology (GUH), Galway University Hospital, Newcastle Road, Galway	24 hour urine sample preferred. 20 mL urine acceptable if 24 hour sample not possible, plain bottle, no preservative	

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<b>Urine Schistosomiasis (see Schistosoma haematobium)</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	(see Schistosoma haematobium) On patients after recent travel to endemic area. Urine volume >10mL. (The urine must be obtained between 10:00-14:00 on the day of testing). Delay > 2 h refrigerate @ 2-8°C.	
<b>Urine Toxicology Screen</b>	HSE National Drug Treatment Centre, McCarthy Centre, 30-31 Pearse Street, Dublin 2, D02 NY26	20 ml Fresh Urine	User manual - Test information and contact details can be found at <a href="http://www.dtcb.ie/services/lab.asp">http://www.dtcb.ie/services/lab.asp</a> . Ring BSG Pathology if any queries.
<b>Uteric Stones</b>	Refer to "Stone Analysis"		
<b>Vaginal Swab</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	Endocervical swabs and Urethral swabs are routinely cultured for N. gonorrhoeae. All other specimens must specify N. gonorrhoeae on request if required.
<b>Vancomycin</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube.	State time collected and if Peak or Trough specimen
<b>Vancomycin Resistant Enterococci (VRE)</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Rectal Swab in transport medium/Faeces sample. Delay > 2 h refrigerate @ 2-8°C.	
<b>Varicella Zoster IgM</b>	National Virus Reference Laboratory, University College Dublin, Belfield, Dublin 4, Ireland, D04 V1W8.	Vesicular fluid or skin scrapings in a Remel M4RT Transport Medium swab	
<b>Varicella-zoster Virus IgG antibodies</b>	Virology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Samples from pregnant patients who have been in contact with chickenpox are processed urgently if received before 2pm Monday to Friday. The request must be marked as Urgent with clinical details, and the requesting clinician's contact number, clearly stated. The virology laboratory GUH should be contacted (Ext 4398) to alert staff that the sample is in transit.
<b>Vasoactive Intestinal Peptide (VIP)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL EDTA plasma + Aprotinin - non haemolysed FROZEN	Sample on special tube (EDTA + Aprotinin) supplied on request. PATHOLOGY DEPARTMENT: Sample to be frozen within 1 hour.

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<b>Very Long Chain Fatty Acids (Fatty acids essential fatty acids C16 to C22:6)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL EDTA plasma or Heparin plasma	PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
<b>Vigabatrin (Synonyms: Sabril®)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL Serum (do not use tubes with separator gel)	Enclose the specific clinical information form (R13-INTGB : Medication quantification) PATHOLOGY DEPARTMENT: Spin, separate and freeze. Sample to be frozen within 1 hour.
<b>Vincent's Angina</b>	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Mouth Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
<b>Vitamin A (Retinol)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Heparin Plasma Frozen. Protect from light	PATHOLOGY DEPARTMENT: Spin, separate and freeze. 1 individual aliquot for this analysis. Sample to be frozen within 90 minutes .
<b>Vitamin B1 (Thiamine)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	3 mL EDTA whole blood (purple top) (protected from light), Do not use tube with separator gel	PATHOLOGY DEPARTMENT: freeze the whole blood sample. Do not centrifuge or separate the specimen
<b>Vitamin B12</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	5 mL blood in a plain gel tube	Specimen to be received within 24 hours of phlebotomy if whole blood and within 3 days if spun.
<b>Vitamin B2 (Riboflavin)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	1 mL EDTA whole blood (kept away from light), Do not use tube with separator gel	PATHOLOGY DEPARTMENT: Spin, separate and freeze.
<b>Vitamin B6 (Pyridoxyl Phosphate)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL EDTA whole blood (kept away from light), Do not use tube with separator gel	PATHOLOGY DEPARTMENT: Spin, separate and freeze.
<b>Vitamin C (Ascorbic Acid)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Lithium heparin plasma (stored away from light) (tubes with gel separators are prohibited)	Send to Pathology Department ASAP. PATHOLOGY DEPARTMENT: Centrifuge, separate and freeze within 20 minutes. 1 individual aliquot for this

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<b>Vitamin D (1,25-Dihydroxy or D3)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
<b>Vitamin D (25 Hydroxy Vitamin D3/Hydroxycholecalciferol)</b>	Clinical Biochemistry (GUH), University Hospital Galway, Newcastle Road, Galway.	5 mL blood in a plain gel tube	
<b>Vitamin E (Tocopherol)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Heparin Plasma Frozen. Protect from light FROZEN	PATHOLOGY DEPARTMENT: Centrifuge, separate and freeze within 90 minutes. 1 individual aliquot for this . Protect from light
<b>Vitamin K (Phylloquinone)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	2 mL Serum (do not use tubes with separator gel) FROZEN (kept away from light)	PATHOLOGY DEPARTMENT: Centrifuge, separate and freeze within 90 minutes. 1 individual aliquot for this
<b>VMA (Vanilmandelic acid)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	24 hours plain container	Send aliquot frozen
<b>Von Willebrands Factor Antigen (vWF:Ag)</b>	Haematology (GUH), Galway University Hospital, Newcastle Road, Galway	2 x 2.7 mL blood in 0.109m Sodium Citrate tubes	To reach lab within 8 hours of phlebotomy. Must fill bottles to mark
<b>VRE</b>	Refer to "Vancomycin Resistant Enterococci"		
<b>Weil's Disease</b>	Refer to "Leptospira IgM"		
<b>Whipple's Disease PCR (Tropheryma whipplei direct diagnosis - PCR)</b>	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	BAL, Plasma or EDTA whole blood, serum, biopsy, stool, puncture fluid, saliva, 0.5 mL CSF (minimum), urine Refrigerated	Swab samples require the use of a virus transport medium supplied upon request. Biopsies should be placed as they are, in a dry tube .All histological fixatives are forbidden. The use of the S14UK transport bag is Mandatory.other biological samples must not be diluted, to be sent in a plain tube. Check Biomnis website for further information.
<b>White Blood Cell Differential Cell Count</b>	In-House Haematology	3.0 mL K3 EDTA blood, (1.0 mL Paediatric tubes are available) or Blood film. Laboratory will make blood film on fresh blood.	
<b>White Cell Enzyme Studies (Screen for Hurler's)</b>	Refer to "Lysosomal Enzyme Screen"		

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Whooping Cough	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Pernasal swab (available from Medical Microbiology). Delay > 2 h refrigerate @ 2-8°C.	Contact Laboratory prior to ensure fresh media is available
Whooping Cough antibodies		Refer to "Bordetella pertussis"	
Wound Swab	Medical Microbiology (GUH), Galway University Hospital, Newcastle Road, Galway	Swab in transport medium. Delay > 2 h refrigerate @ 2-8°C.	
Xantochromia	?CORK CUH	CSF (Container must be protected from light)	
Yersinia Antibodies	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	5 mL blood in a plain gel tube	
Zinc (Serum)	Eurofins Biomnis Ireland, Three Rock Road, Sandyford Industrial Estate, Dublin 18, D18 A4C0, Ireland	Sodium heparin plasma ((do not use tubes with separator gel)/ Trace Elements samples	

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