MIDLAND REGIONAL HOSPITAL
PORTLAOISE

LABORATORY
USER HANDBOOK

(including Haemovigilance & Traceability)

Pathology Department
Midland Regional Hospital @ Portlaoise
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Portlaoise
Co. Laois

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P/PATH/GDE/001
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Printed copies of the current edition are valid for use for 24 hours

Change History

A record of the change details from the previous revision of this document is listed in the table below.

Review Date	Section	Change Details
01/06/22	2.0	Updated how the Laboratory User Handbook can be accessed
	3.1	Updated On call service details split rota for Biochemistry/Microbiology and Haematology/Blood Transfusion
	3.2 3.3 9.0	Updated contact numbers
	3.6	Updated staff in Laboratory to include Surveillance Scientist (based in MRH Portlaoise) and Medical Laboratory aides
	4.2.1	Updated request forms in use
	4.3.1	Added additional sample bottle in use Dark Red Thromboexact Tube. This tube is used for platelet estimation where required.
	4.2.2	Added the Patient Contact number (GPs only) should be documented in a legible manner on the request form including all duplicates.
	4.6	Updated Acceptance/Rejection for Request Forms
	5.3	Updated Storage for examined specimens
	9.0	Updated Haemovigilance guidelines are available in Nursing Administration and on Hospital Q Pulse.
	9.2	Added DO NOT take two Blood Transfusion specimens/ request forms in advance.
	9.6	Added If patient details are changed/updated on iPIMS, a new identity bracelet be applied. The Laboratory must be informed.
	9.7	Updated Blood Transfusion Request Form and Specimen Labelling for Blood Transfusion If the date and time on the EBTS labels do not match on the sample and request form, then the sample is rejected. If the EBTS label on the sample has been placed over another EBTS label already on the sample with a different date and time, then the sample is rejected.

	9.7.6 9.10.2 9.11	Updated Blood Transfusion Labelling Specimens Addressograph/ Sample labels are <u>not</u> permitted on specimens.
	9.13.3	Updated Blood Transfusion Emergency Cross matching A written request is required. Uncrossmatched, group specific blood is available for issue in extreme emergencies if the patient's Blood Group has been determined on a valid sample already in the Laboratory. Uncrossmatched, group specific blood should be issued when possible to save the O Negative Flying Squad stock.
	9.20.1	Added Inform the Blood Transfusion Department regarding unused Blood/Blood Components and Products.
	10.6	Updated Microbiology tests
	14.3	Removed * Test not within current scope of accreditation Added 'Tests performed within the Pathology Laboratory, MRH Portlaoise and currently accredited by INAB to ISO 15189 are available on:https://www.inab.ie/inab-directory/laboratory-accreditation/medical-testing-laboratories/ For tests sent to MRH Mullingar and MRH Tullamore accreditation status can be found on the link above'.
	14.3	Amended Turnaround time for Blood Films as follows – Blood Film Urgent review: changed from 4 hours to 1 day Blood Film for Routine Consultant review: changed from 21 days to 30 days Blood Film for Urgent Consultant review: changed from 6 hrs to 1 day Added Serum sample can be used for Troponin T Updated locations of Blood Gas Analysers
	14.5	Updated On call service details regarding emergency service available out of hours
	14.6	Updated tests available on call
	15.4	Updated Ward Enquiry look up NOTE: it is important to scroll back to see other results even from the same date but a different Laboratory number.

TABLE OF CONTENTS

1.0 INTRODUCTION

This manual is designed to give an overall view of the services available in the Pathology Department, MRH Portlaoise. It is intended as a quick reference guide for all Pathology users.

1.2 The Pathology Department is committed to providing a comprehensive service of the highest quality. It is comprised of the following key disciplines

- Biochemistry
- Blood Transfusion including Haemovigilance
- Haematology
- Microbiology

All departments are performing their activities in accordance with the requirements of the International Standard 1SO 15189 (current version) as detailed in scope registration number 203MT. All Pathology services undergo continuous review through quality assurance and audit activities.
The Irish National Accreditation Board (INAB) monitors the quality management system and compliance with the EU Blood Directive 2002/98/EC.

1.3 This manual is intended for users of the Pathology Services both within the hospital, and those from outside agencies.

1.4 Laboratory management are committed to:-

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

2.0 GUIDE TO USING THIS MANUAL

This manual contains details of, the analytical services available, advice of sample collection and transport and contact numbers for your information. Also included is a guide to appropriate use of Blood and Blood Products,

Within the hospital, the manual can be accessed in the following ways:-

1) For HSE employees on the Internet, the manual can be accessed using a link. Contact the laboratory for details of the link or search for Portlaoise Laboratory User Handbook.

2) For staff members of MRHP, the manual can be accessed on the 'MRHP Medicines App'
A password is required. Contact the Laboratory for details,

3) For staff members of MRHP, the manual can be accessed on the Hospital Q Pulse. Use search criteria key words 'Laboratory User Handbook'

Outside the hospital.
For external users who have internet facilities, the manual can be accessed using a link. Contact the laboratory for details of the link or search for Portlaoise Laboratory User Handbook

A controlled hardcopy of this manual is available on request.

Disclaimer
The information provided in this user manual is correct at the time of writing and is a broad guideline to the use of the most common laboratory requests. Medical and Scientific staff in each speciality are available to discuss any aspect of the service in more detail.

Feedback
Comments or suggestions regarding this user manual should be addressed to:
Laboratory Quality Officer,
Pathology Department,
Midland Regional Hospital Portlaoise
Dublin Rd
Portlaoise
Co. Laois

Phone: 057 869 6278
email: jennifer.cooper@hse.ie

An alphabetical table of laboratory tests /profiles carried out in the Midland Region is located in section 14.0 of this manual, where tests are traceable to the department and where the tests are performed. Microbiology tests are detailed in section 10.0.

3.0 GENERAL INFORMATION

The Pathology Department Midland Regional Hospital, Portlaoise provides a comprehensive clinical diagnostic laboratory service including

- Biochemistry
- Blood Transfusion including Haemovigilance
- Haematology
- Microbiology

Infection Control Services and advice are also provided.
The Laboratory serves the acute Midland Regional Hospital at Portlaoise, District Hospitals, Nursing Homes, General Practitioners and Prison Service.

The Laboratory in Portlaoise is part the Dublin Mid-Leinster Group. It is one of three Laboratories in the Midland Area. The other two laboratories are located in the Midland Regional Hospital, Tullamore and the Midland Regional Hospital, Mullingar. Through this network there is access to an extensive range of laboratory tests.

In the Midland Regional Hospital, Portlaoise we are committed to providing the highest quality of laboratory service. All departments are performing their activities in accordance with the requirements of the International Standard 1SO 15189 (current version) as detailed in scope registration number 203MT. All Pathology services undergo continuous review through quality assurance and audit activities.

3.1 Pathology Department Opening Times

The Laboratory provides a routine service to the hospital and to general practitioners.
An on call service is provided to the hospital only for processing of non deferrable/urgent test requests.
Please note that there is no routine service provided on Saturday/Sunday/Bank Holidays.

Pathology Reception
Monday to Friday 08.00 – 17.30

Routine Laboratory Diagnostic Service
Monday to Friday 08.00 – 18.00

Limited laboratory Diagnostic Service
Monday to Friday 18.00 – 20.00

Emergency out of hours service (on call diagnostic service)
Monday to Friday, 20.00 – 08.00
Saturday/Sunday/Bank Holidays (24 Hours)

Routine Specimens
To ensure routine processing on the day of receipt, specimens should arrive before 16:00 and before 15:30 for Blood Transfusion Requests.

Urgent Specimens
Telephone urgent requests directly to the laboratory to ensure priority processing and send the specimen immediately to the Laboratory Reception.

Out of hours ensure the relevant Medical Scientist on call is contacted for the handling of urgent specimens.

The Medical Scientist on call for Biochemistry/Microbiology is contacted on the laboratory 'on call' mobile phone, speed dial *51769 (087 2511468).

The Medical Scientist on call for Haematology/Blood Transfusion is contacted on the laboratory 'on call' mobile phone, speed dial *51775. (087 6394811)

Alternatively the Medical Scientist on call can be contacted through the switch board (dial 3000).
Emergency on call request forms are provided to the clinical areas for Biochemistry and Haematology test requests.

- Biochemistry Green On Call Form

- Haematology Pink On Call Forms
- Microbiology routine form
- Blood Transfusion routine form

A **request form** must accompany each specimen and must be fully completed and legible.
Ensure specimen(s) and form(s) are sent to the laboratory ASAP. via the pneumatic tube system to:

Destination number 001 for Biochemistry/Microbiology

Destination number 012 for Haematology/Blood Transfusion

Refer to section 5.2.1 for exceptions.

3.2 Pathology Department Telephone Numbers

For **telephone queries please direct all calls to the laboratory office where possible.** Please limit the number of calls regarding patient results as the majority of results are available on ward enquiry for internal patients or healthlink for external patients.

Portlaoise Laboratory

SECTION	**IN HOUSE**	**FROM OUTSI OF HOSPITA**
Biochemistry	96267	057 869626
Blood Cultures/Faeces/Molecular Tests	96273	057 869627
Blood Transfusion	96269	057 869626
Emergency On Call Phone Biochemistry/Microbiology	*51769	087 251146
Emergency On Call Phone Haematology/Blood Transfusion	*51775	087 6394811
External Tests	96280	057 269628
Haematology	96274	057 869627
Laboratory Fax	96275	057 869627
Laboratory Office/ Result Enquiries	**96270/96271**	**057 8696 057 8696**
Specimen Reception	**96848**	**057 8696**
Laboratory Reception	96843 96851	057 869684 057 869685
Microbiology	96266	057 869626
Phlebotomy Service	96614	057 869661
Quality Office	96278	057 869627

Key Personnel, their position and contact information

KEY PERSONNEL	IN HOUSE	FROM OUTSIDE OF HOSPITAL
Consultant Pathologist Dr. Nurul Nor		087 9913563
Consultant Pathologist Dr Margaret Lynch		087 2346389
Consultant Haematologist(s) Dr. Gerard Crotty Dr Kanthi Perera	*51920 (Switch MRH Tullamore) or 8348 (Haematology Dept MRH Tullamore)	057 9321501 (Switch MRH Tullamore) or 057 9358348 (Haematology Dept MRH Tullamore)
Consultant Microbiologist Dr. Cathal O' Sullivan	58349 *51205	057 9358349 086 0404894
Deputy Consultant Microbiologist Dr Emilia Mamwa		0044 7899972361
Consultant Chemical Pathologist Dr Vivion Crowley		087 4156911 (Use first) 01 4162935
Deputy Consultant Chemical Pathologist Dr Gerard Boran		01 4143952 (Switch at Tallaght University Hospital)
Laboratory Manager Shay Conroy	96844	057 8696844
Biochemistry Chief Medical Scientist Ms Sharon Ayres	96285	057 8696285
Haematology/Blood Transfusion Chief Medical Scientist Ms Frances Earley	96840	057 8696840
Microbiology Chief Medical Scientist Ms Aideen Joyce	96852	057 8696852
Lab Office/Result Enquiries	96270/96271	057 8696270/8696271
Infection Control Ms Claire Dowling Ms Ruth Curran Ms Anne Marie Hogan	*51917	086 3802615
Area Medical Officer Dr Kathleen Dunne	*51748.	087 3430064
Antimicrobial Pharmacist Mr Ciaran O'Flaherty	Bleep 143	

Haemovigilance Officer Ms Eithne Lacey	96066 Bleep 072	057 8696066
Quality Officer Ms Jennifer Cooper	96278	057 8696278
IT Pierce Walsh ICT Business Co ordinator	96099	086 1972596
Surveillance Scientist Ms Breda Duffy	57774	057 9357774
Surveillance Scientist Mr Gordon Lalor	96847	057 8696847

Mullingar Laboratory

SECTION	**IN HOUSE**	**FROM OUTSIDE OF HOSPITAL**
Midland Regional Hospital at Mullingar	*51005	044 9340221
Biochemistry	044 9394328	044 9394328
Blood Transfusion	044 9394329	044 9394329
Endocrinology	044 9394334	044 9394334
Haematology	044 9394333	044 9394333
Immunology	044 9394339	044 9394339
Laboratory Office / Result Enquiries	**044 9394327**	**044 9394327**
Laboratory Reception	044 939 4330	044 939 4330
Microbiology	044 9394332	044 9394332

Tullamore Laboratory

Section	**IN HOUSE**	**FROM OUTSIDE OF HOSPITAL**
Midland Regional Hospital at Tullamore	*51920	057 9321501
Biochemistry	58504	057 9358504
Blood Transfusion	58385	057 9358385
Haematology	58351	057 9358351
Histology	58338	057 9358338
Laboratory Office / Result Enquiries	**58342**	**057 9358342**
Microbiology	58507/58508	057 9358507

Other Useful Numbers:

Section	IN HOUSE	FROM OUTSIDE OF HOSPITAL
Beaumont Hospital	*51041	01 8377755
Eurofins Biomnis Laboratory	*51395	01 2958545
Coombe Hospital	*51053	01 4085200
Cytology Lab, Rotunda	*51207	01 8720919
Irish Blood Transfusion Service (I.B.T.S)	*51240	01 4322800
CHI Crumlin	*51050	01 4558111
Peamount Hospital	*51068	01 6280685
St. James' Hospital	*51074	01 4534941
St. Vincent's Hospital	*51080	01 2694533
Temple St. Hospital	*51049	01 8748763
Virus Reference Lab, UCD, Belfield	*51224	01 7067777

3.3 Pathology Department Fax Number

057 8696272 (Laboratory Office)
057 8696275 (Laboratory)

3.4 Pathology Department Postal address

Pathology Department
Midland Regional Hospital Portlaoise
Dublin Rd
Portlaoise
Co. Laois
R32 RW61

3.5 Central Telephone Number

Main switchboard number for Midland Regional Hospital at Portlaoise
057 8621364

3.6 Staffing

The Pathology department team consists of:-

- Consultant Pathologist(s) (Three in Midland Area)
- Consultant Haematologist(s) (Two based in MRH Tullamore)
- Consultant Microbiologist (based in MRH Tullamore)
- Consultant Chemical Pathologist (based in St James' Hospital, Dublin)
- Laboratory Manager
- Heads of Department – Chief Medical Scientist/Senior Medical Scientist
- Laboratory Staff – Senior Medical Scientists/Medical Scientists Medical Laboratory Aides
- Laboratory Quality Officer
- Transfusion Surveillance Officer
- Surveillance Scientist (based in MRH Tullamore)
- Surveillance scientist (based in MRH Portlaoise)
- Support Services
    - Information Technology
    - Secretarial
    - Specimen Reception
    - Housekeeping

3.7 Where to find us

The Pathology Department (Haematology, Blood Transfusion, Biochemistry and Microbiology) is located beside the outpatient (OPD) clinic in the Midland Regional Hospital, at Portlaoise. The building is a single story building on the right hand side when approaching the main hospital entrance from the car park.

3.8 Visitors

To ensure safety, all visitors must introduce themselves at Pathology reception, and wait there until they are met by the person they wish to see. It is best to make appointments in advance. There is a sign-in register for people visiting the laboratory.

3.9 Consent

For routine Laboratory procedures consent is inferred. Written consent is obtained if required.
Consent for Blood Transfusion is obtained where possible, by the Clinical Team in line with Hospital Guidelines.

3.10 **Data Protection/GDPR**

The Pathology Department MRH Portlaoise complies with Data Protection and General Data Protection Regulation (GDPR) laws 1988 – 2018 with regard to processing personal data.
All staff are bound by confidentiality and the data protection laws.

3.11 **Complaints/Compliments**

The Laboratory has a documented procedure for the management of complaints and compliments.

Users of the service may make a complaint/compliment about any aspect of the pathology service to any member of staff.
Complaints/compliments may be received verbally, by letter, fax or e-mail.
Alternatively the complainant may:

- Complete the HSE Leaflet titled *'your service your say'*
- email: yoursay@hse.ie
- Use website comments and complaints facility ww.hse.ie
- Contact HSE information line 1850 241 850
- Use website www.healthcomplaints.ie for more information

All complaints are acknowledged, investigated and responded to within a specified timeframe.

4.0 LABORATORY REQUEST FORMS, SPECIMEN BOTTLES AND CONTAINERS

4.1 Patient Identification and Specimen Collection

The patient's identity **must** be positively confirmed prior to the completion of the request form and reserving of the specimen. Ask the patient to state his/her name and Date of Birth, and check the patients stated details against their identity bracelet.

All Portlaoise Identity bands are clearly labelled with Midland Regional Hospital Portlaoise to differentiate them from other hospital bands.

If the patient is not wearing an identity bracelet, the blood specimen must not be taken until one is applied (in-patients only). If at any stage an identity bracelet is removed e.g. for cannulation then it is the responsibility of the person who removed it to re-apply a new identity bracelet immediately.

The laboratory uses the SARSTEDT monovette system for blood collection and has a number of different request forms. These are used for different pathology analyses as outlined in section 4.2. It is important that the correct specimen is supplied for a particular test.

Phlebotomists, Doctors, registered nursing staff or parents who have completed an approved training course may carry out venepuncture in the Midland Regional Hospital Portlaoise.
The Electronic Blood Tracking System is the preferred method for labelling inpatient samples and request forms. Hand held devices are available in all clinical areas.

It is the responsibility of the doctor or trained nurse taking the blood to:

- Inform the patient of the procedure that is to be carried out and gain consent when required.
- Check Patient identification.
- Ensure the patient is fasting if required.
- Take blood into the appropriate specimen container for the tests required using recommended order of draw. Section 4.3.3
- Label the specimen container.
- Ensure the form is properly completed.
- Ensure specimen is sent to the Laboratory within the appropriate time frame.

Refer to section 9.0 for details pertaining to specimen collection for Blood Transfusion.

4.2 Request forms

4.2.1 Request forms in Use

Reference Number	Request Form	Description
P/PATH/LF/001	General Request Form for Haematology, Coagulation, Biochemistry and External tests	White multileaf form with a blue stripe across the top
P/MIC/LF/001	Microbiology	White multileaf form with Green stripe across the top
P/BT/LF/001	Blood Grouping/Cross Matching/DAT & Cord testing/ issue Blood products	White form with Red background, Black stripe across the top
P/BT/LF/009	Order Form for Additional Blood, Blood Components or Products when a valid sample is already in the Lab	Yellow A4 request form
P/PATH/LF/012	Biochemistry Emergency Request Form	Green Form
P/PATH/LF/013	Haematology Emergency Request Form	Pink Form
	Histology/Cytology	White MRH Tullamore form
	Antenatal Antibody screen	MRH Mullingar Pink form
	Cervical Smears	Coombe Cytology Form White Cervical Check Form for National Cervical Screening.

A request form must accompany each specimen and should be fully completed and legible. It is important that the correct form is supplied for a particular test. **If using Addressograph Labels, these must be placed on every page of the request form.**
Note:
1) For Dynamic tests or timed specimens, ensure a request form is completed for each specimen.

2) **For External tests ensure a separate request form is completed**.
NOTE: A separate sample is required for Endocrinology tests.
A separate sample is required for Immunology tests.
Another separate sample is required for each External test. (Refer to section 14.0)

4.2.2 Completing all Request Forms

Refer to section 9.0 for information regarding completion of Blood Transfusion Request Forms.

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

1. Patient's Full Name (Surname, Forename)
2. Patient's Date of Birth (tests will not be reported if DOB is not given)
3. Patient's Hospital Number (if available)
4. Patient's gender
5. Examination(s) required
6. Patient's Location (Hospital Ward). If the requesting Physician is at a location external to the Midland Regional Hospital, at Portlaoise the postal address of the requestor should be included.
7. The name of the requesting Doctor/GP

The following information should be documented in a legible manner on the request form including all duplicates.

1. Patient's Full Home Address (if available)
2. Date and time of specimen collection (e.g. Troponin, Coagulation)
3. Specimen type and anatomical site where appropriate
4. Relevant clinical information appropriate to the test(s) requested must be supplied e.g. date and time of clinical symptom onset, history of administration of drugs, antenatal history, blood transfusion history etc.
5. A clear indication as to whether the tests requested are urgent or routine. All tests are treated as routine unless indicated otherwise by Clinician/Nurse.
6. The signature of the person who took the specimen and contact Number where appropriate.
7 Patient Contact number (GPs only)

The Electronic Blood Tracking System is the preferred method for labelling inpatient samples and request forms. Hand held devices are available in all clinical areas

Note: Some of the laboratory request forms have more than one page. If using Addressograph Labels, these must be placed on every page of the request form.

4.3 Specimens

4.3.1 Sampling System in Use

The **SARSTEDT monovette system** for blood collection is used in the Midland Regional Hospital Portlaoise. The following blood bottle types are most commonly used. Please ensure bottles are within their expiry date. Samples sent to the laboratory using expired sample bottles will be rejected.
Note the bottles are also available in a smaller size for Paediatric use.

Blood Culture bottles: Refer to section 10.3 of this manual

Green*: Contains trisodium citrate and **must be filled to the line** with blood.
This bottle is used for PT/INR/APTT/D-Dimers/ Fibrinogen.

Mauve: Contains tri sodium citrate and **must be filled to the line** with blood.
This bottle is used for ESR. (Erythrocyte sedimentation rate).

White: SERUM: Contains no anticoagulant or gel. This bottle is used for Biochemistry and external tests.

Brown:** SERUM: Contains an inert polymer gel
This bottle is used for biochemistry and external tests.

Orange: PLASMA: Contains Lithium heparin. This bottle is used for, Vancomycin, Biochemistry and external tests.

Red: Haematology EDTA. This bottle is used for full blood counts and HbA1C's and some external tests.

Red Blood Transfusion EDTA bottles

Yellow: Contains fluoride/oxalate. This bottle is a used for blood glucose and lactate tests.

Red Dark Red Thromboexact Tube. Contains magnesium. This tube is used for platelet estimation.

.*Recommended to draw a discard tube first when a citrate tube is the first tube needed. *(Sarstedt recommendation in line with CLSI standard H3-A6)*

**** A separate sample is required for Endocrinology tests.**
A separate sample is required for Immunology tests.
Another separate sample is required for each External test. (Refer to section 14.0)

For further details on blood collection refer to the:
1) Blood Sampling by Venepuncture (Nursing & Midwifery SOP)
2) Peripheral Intravenous Cannulation (Nursing & Midwifery SOP)
3) Procedure for taking Blood Cultures (Infection Control SOP)
4) Phlebotomy Service (Refer to section 12.0 of this manual)

4.3.2 Specimen Contamination

Anticoagulants present in specimen bottles may cause problems if carried over from one type of container to another. Cross contamination should not occur if the monovette system is used as designed, as the caps are not removed from the tubes. The bottles will automatically fill with blood to the appropriate fill-line due to the vacuum. The bottles are siliconised to reduce adhesion of clots to the tube walls and cap, and to reduce the risk of haemolysis.

Fill specimen bottles in the correct order (section 4.3.3) to avoid contamination.
If caps are removed, replace on correct bottles.

Blood culture bottles are easily contaminated. Always fill blood culture bottles first. Refer to Procedure for taking Blood Cultures. Infection Prevention Control Procedure IPCR 24.

Never take specimens from close to a drip site, venesection bag etc

4.3.3 Order of Draw for Specimen Bottles when using the Sarstedt Monovette System

The guidelines for order in which blood specimens should be drawn are as follows:

Blood Culture Bottles (if required)	
COAG Citrate	Green*
ESR Citrate	Mauve
Serum	White
Serum (with gel)	Brown
Lithium Heparin	Orange
EDTA	Red
Fluoride Oxalate	Yellow

*Recommended to draw a discard tube first when a citrate tube is the first tube needed.
(Sarstedt recommendation in line with CLSI standard H3-A6)

4.3.4 Labelling the Specimen Container

Refer to section 9.0 for information regarding completion of Blood Transfusion Specimen.

The Electronic Blood Tracking System is the preferred method for labelling inpatient samples and request forms. Hand held devices are available in all clinical areas.

The following essential information must be documented in a legible manner on the specimen container (DO NOT put large addressograph labels on specimen containers. Refer to section 4.6):-

1. Patient's Full Name (surname and forename)
2. Date of Birth

The following essential information should be documented in a legible manner on the specimen container

1. Hospital no (if available)
2. Ward
3. Date and Time of Sampling
4. Where appropriate, type of specimen and anatomical site of origin

Specimens must be identifiable. **Unlabelled specimens are not processed.** Refer to section 4.6 of this document.

Specimens should be transported to the laboratory as soon as possible after collection to ensure that no significant deterioration occurs before processing.

Regrettably specimens may have to be discarded if the patient's identification is in doubt i.e. if they have leaked or have been contaminated. In these circumstances every effort is made to inform the requesting doctor. Refer to section 4.6 of this document.

4.3.5 High Risk Specimens

Specimens that carry a high risk of infectious disease MUST include clinical details on the request form.
High risk categories include:

- Jaundice
- Patient from high risk group
- Drug Addiction
- Known HIV, Hepatitis e.t.c.

4.4 Disposal of Waste Materials used in Specimen Collection

All materials used in specimen collection should be treated as potentially hazardous and discarded using sharps containers and other appropriately colour coded bags/bins.

4.5 Quality of Blood Specimens

Laboratory personnel inspect each blood specimen during testing for:-

- Evidence of Haemolysis
- Gross Lipeamia
- Presence of clots in FBC, ESR and coagulation specimens
- Correct volume
- Icteric samples
- Contaminated/haemodilute specimens
- Cold agglutinins
- Expiry Date

In such instances, a **second specimen** may be requested or the **issued report** will have an appended comment as appropriate.

4.6 Non-Conforming Specimen Bottles, Forms or Specimen Quality Issues

Where the requirements with respect to labelling the request form and specimen container or specimen quality issues are not met the following acceptance/rejection criteria will apply:-
(Refer to section 9.0 for requirements for Blood Transfusion specimen/form labelling.)

Acceptance/Rejection for Specimen Reception

	Specimen Issues	**Action**	**Documentation**
1	No Specimen received	Reject.	Report will show non conforming event.
2	Unlabelled specimen	Reject.	Report will show non conforming event.
3	Incorrect specimen	Reject.	Report will show non conforming event.
4	Incorrect forename or No Forename	Reject.	Report will show non conforming event.
5	Incorrect surname or No Surname	Reject.	Report will show non conforming event.
6	Completely different D.O.B or No D.O.B	Reject.	Report will show non conforming event.
7	Forename, 1st initial only.	Reject.	Report will show non conforming event.
8	Incorrect D.O.B. **(One digit change only**)	Written verification. Accept.	Report will show evidence of amendment.
9	Misspelled name **(One letter change only)**	Written verification. Accept.	Report will show evidence of amendment.
10	First name abbreviated e.g. Joe for Joseph, Mgt for Margaret, may be on form and/or specimen	Accept	Comment on Report will show use of abbreviated name.

	Request Form Issues	Action	Documentation
1	No Request Form received	Reject.	Report will show non conforming event.
2	Incorrect forename or no forename	Reject	Report will show non conforming event.
3	Forename, 1st initial only.	Reject.	Report will show non conforming event.
4	Incorrect surname or no surname	Reject	Report will show non conforming event.
5	Incorrect D.O.B or No D.O.B	Reject	Report will show non conforming event.
6	Incorrect D.O.B. **(One digit change only**)	Written verification. Accept.	Scan Data Confirmation form. Report will show evidence of amendment.
7	Misspelled name **(One letter change only)**	Written verification. Accept.	Scan Data Confirmation form. Report will show evidence of amendment.
8	No Laboratory Test requested	Written verification. Accept.	Written request scanned to DART as evidence.
9	No Gender on form.	Verbal verification. Accept.	Confirm Gender with requestor if not available on iPIMS. Report will show correct gender.
10	First name abbreviated e.g. Joe for Joseph, Mgt for Margaret, may be on form and/or specimen	Accept	Comment on Report will show use of abbreviated name.
11	No name of the requesting Doctor	Verbal verification. Accept.	Report will show evidence of amendment.
12	No Patient's Location (Hospital Ward).	Verbal verification. Accept.	Check with Hospital Reception Report will show correct Location
13	No Date/time Specimen taken for time sensitive laboratory test requests.	Verbal verification. Accept.	Report will show evidence of amendment.
14	Addressograph Labels not identical on all parts of the request form	Reject	Report will show non conforming event

Note: Emergency cases or where the specimen cannot be replaced, the requesting physician or person responsible for the primary specimen collection takes responsibility for identifying and accepting the specimen. The signature of the person taking responsibility for the primary specimen identification must be recorded on the disclaimer form.

Specimen Appearance/ Quality Issues	Action	Documentation
➢ Evidence of Haemolysis ➢ Gross Lipemia ➢ Icteria ➢ Specimen under filled/overfilled ➢ Age of specimen ➢ Contaminated/Haemodilute specimens	➢ The Pathology Department will make a decision on whether or not the specimen is suitable for testing and a second specimen and request form is requested as appropriate. ➢ The Pathology Department may report results within a multi test profile on analytes unaffected by the specimen quality, while not reporting affected analytes in the profile.	Report will show non conforming event.
➢ Presence of clots in specimens requesting FBC, ESR and coagulation tests. ➢ Leaked/Contaminated specimens.	➢ Reject	Report will show non conforming event.
➢ Incorrect specimen bottle/ incorrect bottle cap received for test requested	➢ Reject	Report will show non conforming event.
➢ Presence of an addressograph label which hinders the checking of sample quality/volume/interferes with operation of the analyser.	➢ Reject	Report will show non conforming event
➢ Sample bottle/swab expired	➢ Reject	Report will show non conforming event.

4.7 Further Additional Testing

If, **further additional testing** is required on a sample already in the Laboratory, please contact the appropriate section of the Pathology department to investigate the feasibility of using the initial specimen for analysis.
Age of specimen/sample quality may impact on the validity of test results.

An additional request form is required for such a request.
Document on the request form, patient demographics, sample date, test request and 'sample already in lab'.

Additional samples may be required if the test required is performed in an external laboratory.

Where results of requested tests suggest further investigation the laboratory may perform additional tests on the primary specimen.

4.8 Pathology Supplies

Pathology supplies including specimen bottles, request forms and 24hr urine containers may be obtained from Laboratory Reception **ONLY** during routine working hours.
External service users should phone laboratory reception ext 96283 for stock requests.
Orders may only be collected during routine working hours. This is for the safety of the laboratory staff.

Users of the Laboratory service are advised to:

- Check the expiry dates on any blood bottles and swabs which they have in stock and to discard any items which have expired.
- Rotate stock.
- Avoid overstocking in order to minimise the wastage of blood bottles and swabs.

Samples received in expired containers will be rejected by the laboratory.

5.0 PACKING AND TRANSPORT REQUIREMENTS FOR SPECIMENS

5.1 General Information

Take standard precautions in the collection, packaging and the delivery of specimens being sent to the Pathology Department for analysis. Specimens should be packed and transported in accordance with the European Agreement concerning the International Carriage of Dangerous Goods by Road (UNADR) current version.

5.2 Packing and Transport of Specimens (Routine and Urgent)

5.2.1 Packing and Transport Procedure for Specimens within the hospital

1 Place the specimen(s) in the bag attached to the request form where appropriate, remove strip and seal.

Where there is no specimen bag attached to the form place the specimen in a plastic Bio-Hazard bag. Insert the request form into the side pocket of the Bio Hazard bag.

NOTE If specimens are known high risk specimens place the form and specimens into another Bio-Hazard bag.

NOTE: A pneumatic tube system is installed and is currently in use for all wards in the hospital for the rapid transport of samples to the laboratory (Destination number 001). All specimens may be sent in a pod container via the pneumatic tube system with the exception of:-

- CSF specimens
- Histology/Cytology specimens.
- Thrombophilia screen and coagulation factor assays

A porter may be called to transport specimens unsuitable for transport in the pod container.

2. Put the specimen(s) and request form(s) in the pod container and send to the laboratory.

In the case of an urgent specimen the doctor or a trained nurse who has taken a specimen must send it to the Laboratory by the pneumatic tube system or arrange for a porter to take it to the laboratory reception.

It is the responsibility of the requesting doctor/nurse to alert the laboratory about urgent specimens by telephone to ensure priority processing.

Do not use the pneumatic tube system post midnight for non urgent specimens.

5.2.2 Packing and Transport Procedure for Specimens From Outside of the Hospital

1. Place the specimen(s) in the bag attached to the request form where appropriate, remove strip and seal.
   Where there is no specimen bag attached to the form place the specimen in a plastic Bio-Hazard bag. Insert the request form into the side pocket of the Bio Hazard bag.
2. Place the specimen(s) and request form(s) in a padded envelope where possible.
3. Label the envelope with a hazard warning note, "Diagnostic Specimen".
4. Place the name, address and contact number of the destination Laboratory on the outside of the envelope.
5. Arrange for the Specimen to be transported to the Laboratory immediately. If specimen must be stored, keep refrigerated between 2°C and 8°C unless otherwise specified.
   Refer to sections 10.5 and 14.3.
6. Ask the taxi/courier to ensure that the specimens are not exposed to extremes of temperature during transport.
7. If a patient is delivering specimens to the Laboratory, issue a note to the patient instructing them to deliver the specimen to the Laboratory immediately and to protect specimens from extremes of temperature.

General public, GP's or couriers may drop in specimens to laboratory reception. Routine specimens are accepted between 08.00 and 17.30 on weekdays. Outside of these hours specimens may be dropped through the hatch at Laboratory Reception. To ensure routine processing on the day of receipt, specimens should arrive before 16.00.

Note: Specimens should not be forwarded to the Laboratory by Post as recommended by current ADR regulations.

For details on the procedures for the transport of Infectious or suspected Infectious Specimens for Delivery from inside/outside the Hospital please contact the Laboratory.

5.3 Storage of examined specimens

Department	Clinical Material	Storage Temp	Minimum Retention Time	Comment
Biochemistry	Serum, Plasma other body fluid	4°C	48 hrs	
Biochemistry	Aliquots of Serum, Plasma other body fluid	4°C	48 hrs	
Biochemistry	24hr Urine, random urine	RT	48 hrs	
Haematology	FBC (EDTA) & Misc tests	4°C	24 hrs	
Haematology	ESR (sodium citrate)	RT	48 hrs	
Haematology	Blood Films	RT	1 year	
Haematology	Coagulation (sodium citrate)	RT	24hrs	
Blood Transfusion	Transfusion Specimens	4°C	14 days	
Blood Transfusion	Separated Plasma	-30°C	14 days	
Microbiology	Urine	4°C	48 hrs	
Microbiology	Sputum	4°C	48 hrs	
Microbiology	Body Fluids/ Aspirates/Swabs	4°C	48 hrs	
Microbiology	Faeces	4°C	48 hrs	
Microbiology	CSF's	4°C	48 hrs	
Microbiology	Blood Cultures	RT	48 hrs	
Microbiology	Microbiology Slides	RT	See comment	*Wet Preparations: Discard* *Gram stains: 7 days* *Other stained slides: 7 days*
Microbiology	Microbiology Cultures/Isolates	RT	See comment	*Clinically Significant: 7 days* *Not Clinically Significant: Discard within 24-48 hours*
Microbiology	Microbiology Slopes	RT	See comment	*Hold until receipt of the laboratory's final report. Slopes are retained for ~ 6 months.*
Microbiology	Freeze dried or other permanent Cultures	-18°C	Long Term	*Variable*
Immunology	Serum/Plasma	RT	48 hrs	*Specimens are retained for 7 days*

Virology	Serum from Needle Stick Injury	-18°C	2 years	*Stored in VRL*

5.4 Specimen Transport to External Referral Laboratories

Specimens for testing by external referral laboratories are sent daily Monday to Friday (excluding Bank Holidays) by:

- Scheduled Taxi to Regional Hospitals Tullamore and Mullingar at 08:00
- Scheduled Minibus Service to Dublin at 08:00
- Scheduled collection by Eurofins Biomnis at 17:00. Specimens should be in the Laboratory before 16:00 to allow sufficient time for processing.

Specimens for non deferrable/urgent test requests may be sent outside of these hours by:

- Unscheduled Taxi during the routine working day Monday to Friday
- Unscheduled Taxi /Blood Bikes Service out of hours

This service is for genuine medical emergencies ***only***, where the results are likely to influence immediate management of the patient.

6.0 Advisory Services

Clinical Advice

The Pathology Service in Midland Regional Hospital Portlaoise is a Consultant led service. The Laboratory Medical Consultants, Scientific staff and Haemovigilance staff provide extensive advisory services.

There is a Medical Consultant available for the following departments:
Biochemistry
Haematology/Blood Transfusion including Haemovigilance
Histopathology
Microbiology.including Infection Control and Surveillance

Consultant personnel welcome direct enquires on clinical matters and encourage consultation about the selection of investigations.

Biochemistry

Biochemistry clinical advice is given by the Consultant Chemical Pathologist. The Consultant Chemical Pathologist is based in St James Hospital, Dublin and may be contacted at 087 4156911 or 01 4162935.

Haematology/Blood Transfusion including Haemovigilance

Haematology/Blood Transfusion (including Haemovigilance) clinical advice is given by:
Consultant Haematologist(s)
Specialist Haematology Registrar (under supervision of the Consultant Haematologist(s))
Transfusion Surveillance Officer (under supervision of the Consultant Haematologist(s))

Two Consultant Haematologist(s) are based at the Midland Regional Hospital at Tullamore may be contacted through the switchboard (*51920 or 057 9321501).

The Transfusion Surveillance Officer (TSO) is based on site and may be contacted 057 8696066 or Bleep 072.
The National Haemovigilance scheme is dedicated to the achievement of a national standard practice and quality of care for all patients, before, during and following completion of transfusion.

The Transfusion Surveillance Officer and the Blood Transfusion staff report all serious reactions and adverse events and near miss events to the National Haemovigilance Office (NHO) & both participate in compiling the annual report to the Health Products Regulatory Authority (HPRA).

Histology and Cytology
Histology clinical advice is given by the Consultant Histopathologist(s). The Consultant Histopathologist(s) are based at the Midland Regional Hospital at Tullamore may be contacted by phone or email. Refer to section 11.0 for contact details and details on the service provided.

Microbiology including Infection Control and Surveillance
Microbiology clinical advice is given by the Consultant Microbiologist. The Consultant Microbiologist is based at the Midland Regional Hospital at Tullamore and may be contacted on office direct dial 58349 or mobile speed dial *51205 (086 0404894).

Infection Control and Surveillance
The infection control team are available for education and advice in the acute hospitals, district hospitals and the community.

A Surveillance Scientist co-ordinates the Microbiology surveillance programme for notifiable diseases. All notifiable diseases are reported to the Health Protection Surveillance Centre (HPSC).

The Area Medical Officer co-ordinates the management of notifiable diseases.
Refer to section 10.0 for contact details and details on the service provided.

Scientific Advice
Scientific staff are authorised to give advice on choice of examinations, use of services including required type of sample. Where appropriate, interpretation of results of examinations is provided. Please contact the relevant Department.

7.0 Biochemistry

Biochemistry Department
Phone 96267 (057 8696267)

Consultant Chemical Pathologist
Dr Vivion Crowley
087 4156911 or 01 4162935

The Biochemistry Department provides a routine service to the hospital and to general practitioners. In addition a referral service for more specialised tests is provided.
An on call service is provided to the hospital only for processing of non deferrable/urgent test requests.

7.1 Routine Biochemistry Tests and Profiles

Routine Biochemistry Tests and Profiles are available daily.
Refer to section 14.0 for alphabetical table of examinations available in the Midland Area and specimens required.

Please Use Blue and White General Biochemistry/Haematology Forms

Inpatient Specimens must be received in the department no later than 16.00 to ensure same day analysis.
If results are required by a certain time please INDICATE CLEARLY ON THE REQUEST FORM.
Urgent requests must be telephoned to the laboratory so that tests can be given priority.

For Paediatric specimens, please try and provide 1ml of blood in a small paediatric bottle. For very small specimens please indicate the priority of the tests.

7.2 Dynamic Function tests

Protocols for dynamic function tests are available by contacting extension 96280 during routine hours.
Note:
For Dynamic tests or timed specimens ensure a request form is completed for each specimen.

7.3 24hr urine collections

Urine Creatinine	24° Urine Container
Urine Protein Microalbumin	24° Urine Container
Urine Calcium/Phosphorous/Urate	24° Urine Container

For an Estimated 24hr protein/Estimated 24hr Microalbumin a random spot urine in a plain universal container is required.

24hr urine containers may be obtained from Laboratory Reception.
Refer to section 14.0 for alphabetical table of examinations available in the Midland Area and specimens required for a range of investigations available on urine.
Please ensure each urine container is labelled and accompanied by a request form.

7.4 Endocrinology /Immunology

A range of Endocrinology/Immunology Tests and Profiles are provided in MRH Mullingar Endocrinology/Immunology departments.
Requests for tests that are not performed in the Pathology Lab Portlaoise:

- MUST be sent with a separate sample
- If requesting additional Immunology or other specialist tests, a separate form MUST also be sent

NOTE: A separate sample is required for Endocrinology tests and another separate sample is required for Immunology tests.

Refer to section 14.0 for alphabetical table of examinations available in the Midland Area and specimens required.

Please Use Blue and White General Biochemistry/Haematology Forms.

B12/Folate requirements

Demand management for Vitamin B12 and Folate requests was implemented by MRH Mullingar in June 2019 for GP users

A completed "Vitamin B12/Folate Clinical Information form" is required with each patient's sample. This is mandatory requirement as of 24th of June 2019.

7.5 Tumour Markers

A range of Tumour Markers are provided in **Midland Regional Hospital Tullamore** Biochemistry department.
Refer to section 14.0 for alphabetical table of examinations available in the Midland Area and specimens required.

Please Use Blue and White General Biochemistry/Haematology Forms.
Another separate sample is required for each External test. (Refer to section 14.0).

7.6 Specialised tests

DO NOT SEND REQUESTS FOR SPECIALISED TESTS DURING OUT OF HOURS.
A wide range of specialised tests are referred to external Laboratories. Many of these are included in our Laboratory User Handbook in alphabetical listing and may require specialised sampling and/or patient preparation.

Note this is not an exhaustive list and IF IN DOUBT please discuss with a Medical Scientist before taking the specimen (extension 96280 during routine hours or the 'on call' phone (*51769/087 2511468) out of hours). Most specialised Biochemistry and Immunology requests are referred to:

Eurofins Biomnis Laboratories Phone *51395 (01 295 8545)
National Virus Reference laboratory NVRL *51224 01 7067777
St. James Hospital, Dublin Phone *51074 (01 453 4941)
Clinical Details must be provided.

7.7 Point of care testing

At the Midland Regional Hospital in Portlaoise, there are several Point of Care analysers on site.

Blood Gas Analysers are located in the Emergency Department, ICU - CCU, Paediatrics, and Maternity clinical areas.
Trained staff in the Biochemistry Department offer a support service to hospital blood gas analysers during routine working hours Monday to Friday excluding Bank Holidays. Contact the staff in the Biochemistry department regarding any issues during routine hours.

Glucose Meters and Urinalysis Meters are located on all wards.
Staff on each ward are responsible for daily QC and patient testing.
It is recommended to wipe down devices after each use.

7.8 Criteria for phoning critical results in Biochemistry

Serum Chemistry	Units	Critical Phone Limits GP and OPD	Critical Phone Limits In Patients and Emergency Department
Sodium	mmol/l	≤ 125 ≥150	≤ 125 ≥150
Potassium	mmol/l	≤ 3.0 ≥ 6.0	≤ 2.8 ≥ 6.0
Urea*	mmol/l	> 15 mmol/l provided result > 8 mmol/l above baseline/ preceding result	> 15 mmol/l provided result > 8 mmol/l above baseline/ preceding result
Creatinine*	µmol/l	> 150 µmol/l male, >124 µmol/l female, provided the results > 44 µmol/l above admission/ preceding result	> 200 µmol/l male, >175 µmol/l female provided the results > 44 µmol/l above admission/ preceding result
Corrected Calcium *Corrected Ca= Pts Ca =[(40- Pts alb) x 0.02]*	mmol/l	≤ 1.90 ≥ 3.0	≤1.8 ≥3.0
Phosphate	mmol/l	≤ 0.45	≤0.40
Magnesium	mmol/l	≤ 0.40 ≥ 1.8	≤0.3 ≥2.0
Glucose	mmol/l	≤ 3.0 ≥ 20.0	≤ 3.0 ≥ 20.0
Amylase **	IU/L	≥ 450	≥ 450
CK**	IU/L	≥ 1000	≥ 1000
AST**	IU/L	≥ 400	≥ 400
ALT**	IU/L	≥ 350	≥ 350
Troponin T	ng/l	***Test not routinely available	≥53 ng/l
Lithium	mmol/l	> 1.2	> 1.2
Total Bilirubin (Neonates)	µmol/l	> 300	> 300
Gestational Glucose Tolerence Test GTT	mmol/l	≤3.5 ≥10 mmol/l fasting ≤3.5 ≥15 mmol/l 1Hr ≤3.5 ≥15 mmol/l 2Hr	≤3.5 ≥10 mmol/l fasting ≤3.5 ≥15 mmol/l 1Hr ≤3.5 ≥15 mmol/l 2Hr
Lactate	mmol/l	> 4 mmol/l	> 4 mmol/l
Gentamicin (Random)	mg/l	***Test not routinely available	≥ 10 mg/l
Gentamicin (Peak)	mg/l	***Test not routinely available	≤ 6 > 10 mg/l
Gentamicin (Trough)	mg/l	***Test not routinely available	< 0.5 > 2 mg/l
Paracetamol	mg/dl	≥5	≥5
CRP	mg/L	≥300	≥300
Ethanol	mg/dl	≥400	≥400
Uric acid	µmol/l	≥340 Antenatal Indication Only	≥340 Antenatal Indication Only
Vancomycin	µg/ml	Test not routinely available	>20.0

* Urea results above 15 mmol/l will be phoned if there are no recent results (within the last 3 months) available for comparison or if there is greater than (>) 8 mmol/l increase above the baseline admission result or the immediately preceding result, whichever is the more recent.

Similarly for Serum Creatinine any results above the critical phone limit will be phoned if there are no recent results (within the last 3 months) available for comparison or if there is greater than (>) 44 mmol/l increase above the baseline admission result or the immediately preceding result, whichever is the more recent.

** Results will be phoned if there are no recent results available for comparison, or if the results are significantly (≥ 50%) higher than previous levels reported.

*** Tests not routinely available through GP/OPD. Refer to Critical Phone Limits In Patients and Emergency Department if received.

8.0 Haematology Department

Haematology Department
Phone 96274 (057 8696274)
96279 (057 8696279)
Dr Kanthi Perera, Consultant Haematologist
Phone *51920 (057 9321501)

Dr Gerard Crotty, Consultant Haematologist
Phone *51920 (057 9321501)

The Haematology Department provides a routine service to the hospital and to general practitioners. In addition a referral service for more specialised tests is provided.
An on call service is provided to the hospital only for processing of non deferrable/urgent test requests.

8.1 Routine Haematology tests and profiles

Routine Haematology Tests and Profiles are available daily.
Refer to section 14.0 for alphabetical table of examinations available in the Midland Area and the specimens required.

Refer to section 14.3 for appropriate bottle type.

Please Use Blue and White Biochemistry/Haematology Forms and include relevant clinical details and details of anticoagulant therapy.

Inpatient Specimens must be received in the department no later than 16:00 to ensure same day analysis. If results are required by a certain time please indicate this clearly on the request form.

Urgent requests must be telephoned to the laboratory so that tests can be given priority.

8.2 Bone Marrows

Bone Marrows are performed in the Day Ward MRH Tullamore by arrangement with the Consultant Haematologist. They are processed in the Haematology Department at Midland Regional Hospital, Tullamore.
For Bone Marrow RESULTS contact the Haematology Department Midland Regional Hospital, Tullamore 58352 or (057) 9358352.

8.3 Haematology Clinical Service

The Haematology Department offers a clinical service, both for diagnosis and management advice. The Consultant Haematologist(s) may be contacted on *51920.
Haematology Clinics are held every Monday in Portlaoise.
Appointments can be made by sending a referral letter to the Haematology Secretary in the Laboratory in the Midland Regional Hospital at Tullamore.

8.4 Anticoagulant Service

An Anticoagulant Clinic, for the monitoring of Warfarin treatment, is held daily, in the out-patients department. New patients should be referred directly to the Warfarin Clinic, with the anticoagulant referral form or letter. Please indicate clearly the level and duration of anticoagulant treatment required.

The Warfarin clinic is managed jointly by the Medical Consultants. The Consultant Haematologist(s) is available to discuss complicated issues relating to anticoagulation.

8.5 Specialist Testing

In addition to routine Haematology testing, a number of specialist tests are also available including:

D-Dimers
Wells score and /or appropriate clinical details should be provided.

Fibrinogen
Appropriate clinical details should be provided.

Malaria screening
Requests must be accompanied by a completed Malaria Screening questionnaire available from the Haematology Department
Positive Malaria screens are sent to the reference laboratory for confirmation.

Sickle Cell Screen
Positive sickle cell screens and all screens on children under 6 months are referred to St James' Hospital.

Infectious Mononucleosis Screen.
Appropriate clinical details should be provided.

Feto Maternal Haemorrhage (Kleihauer)
A routine service is provided on Monday, Wednesday and Friday.
Samples must be received in the lab by 3pm to ensure same day analysis.
Appropriate clinical details should be provided.
Positive results > 4mls are sent for confirmation by Flow Cytometry to the Coombe Hospital.

Blood Films
Blood films are prepared and examined by Medical Scientists, if requested by a Clinician or if indicated by the FBC results. If the film shows marked abnormalities it is referred to a Consultant Haematologist.

Other
All other specialist Haematology/Coagulation requests should only be made after consultation with the Haematology Consultants.

8.6 Criteria for phoning critical results in Haematology and Coagulation

- Hb <8.0g/l, >19g/l, (for adults)
- WBC >25.0 x 10^9/L
- Neutrophils < 1.0 x 10^9/L
- Platelets on all new patients <100 x 10^9/L (check for clots/platelet clumps), >1000 x 10^9/L (
- ESR's > 100
- Significantly Abnormal Coagulation screens where patient is **not** on anticoagulant therapy.
- INR's >5.0 for Patients on Warfarin
- APTT > 100 secs for patients on IV Heparin.
- Fibrinogen ≤ 1.5 g/l
- D Dimers >10,000 ng/ml
- Positive Malaria screens. (notifiable disease contact Area Medical Officer)
- Positive Sickle Cell Screens on inpatients.
- All positive Infectious Mononucleosis
- Kleihauer results where foetal cells are noted and indicate a bleed > 2 mls.
- All significantly abnormal results should be phoned to the appropriate Doctor.
- Any unexpected result should be also be discussed with the appropriate Consultant/Doctor.
- Any findings suggesting a previously undiagnosed Haematological abnormality should be phoned to the Consultant Haematologist

9.0 Blood Transfusion (including Haemovigilance and Traceability)

Dr Kanthi Perera, Consultant Haematologist
Phone *51920 (057 9321501)

Dr Gerard Crotty, Consultant Haematologist
Phone *51920 (057 9321501)

Blood Transfusion Laboratory
Phone 96269 (057 8696269)
Haemovigilance
Phone 96066 (057 8696066)

Haemovigilance guidelines concerning the ordering and clinical use of blood, blood components and products are available in Nursing Administration in a red folder titled 'Blood Transfusion Policies, Procedures and Guidelines' and on Hospital Q Pulse.

9.1 Blood Transfusion Requests during Routine/Out of Hours including Urgent Requests

Routine Blood Transfusion Requests during Routine Hours
Blood Transfusion Specimens and request forms may be sent through the pneumatic tube system.

Urgent Blood Transfusion Requests during Routine Hours
Please telephone urgent requests directly to the laboratory (Ext.96269) to ensure priority processing.

All Blood Transfusion Requests Out of Hours
The Medical Scientist on call **MUST** be contacted on speed dial *51775 (087 6394811) or through the switch board (dial 3000) for the processing of **all Blood Transfusion requests that need to be processed out of normal working hours.**

Refer to Pathology Department Opening Times section 3.1.

9.2 Blood Transfusion Specimen and Request Form General Information

A blood transfusion specimen and request form is required for all Blood Transfusion tests/requests listed in the Table below.

The Electronic Blood Tracking System (EBTS) is the preferred method for labelling inpatient samples and request forms. Hand held devices are available in all clinical areas.
When the EBTS is not working, handwritten specimens and request forms are permitted.

Check with the Blood Transfusion Department to see if there is a valid Group and Screen Sample and request form already available in the Blood transfusion Department to prevent duplicate testing.

2nd Sample Requirements:

If a patient requires transfusion of Red Cells, Plasma, Platelets and/or Anti D and they do not have an historical blood group on the Laboratory Information System, then a properly labelled 2nd Blood Transfusion sample and request form will be requested for ABO/Rh confirmation by the Laboratory who will contact you.
The 2nd sample will only be requested by the Laboratory if transfusion is required.
DO NOT take two Blood Transfusion specimens / request forms in advance.
The 2nd sample MUST be taken at a separate time.
Failure to provide this 2nd sample will result in the patient having to receive O Negative units.

All units of blood/blood components/products are labelled with patient's details.
Refer to section 9.9 for further information on additional requests.

Blood Transfusion Specimens

Please ensure bottles are within their expiry date. Samples sent to the laboratory using expired sample bottles will be rejected.

Test Name	Specimen Type for Adults	Specimen Type for Neonates/ Paediatrics/ Cord (see note)	Turnaround Time *
Group & Antibody Screen /Hold**	7.5 ml whole blood SARSTEDT EDTA Red bottle	4.5 ml whole blood SARSTEDT PAEDIATRIC EDTA red bottle Minimum volume 2 ml	1 day
Group & Antibody Screen /Hold(Antenatal)**	7.5 ml whole blood SARSTEDT EDTA Red bottle	N/A	3-5 days
Group, Screen & Cross-match**	7.5 ml whole blood SARSTEDT EDTA Red bottle	4.5 ml whole blood SARSTEDT PAEDIATRIC EDTA red bottle Minimum volume 2 ml	1 day Emergency cross match minimum 45 mins
Group, Screen & Cross-match on Neonates 0-4 months of age NOTE Mothers Sample/request Form and Baby's sample/ request form required	Maternal transfusion specimen 7.5ml EDTA KE in a RED Blood Transfusion SARSTEDT bottle.	Baby's transfusion specimen: 4.5ml EDTA KE in a RED Paediatric Blood Transfusion SARSTEDT bottle.	1 day Neonatal Paedipack needs to be ordered from IBTS
Blood, Blood Components & Products for Transfusion	**Refer to sections 9.12 to 9.19**		
Group & Coombs Test (Cord Blood)	N/A	7.5 ml whole blood SARSTEDT EDTA Red bottle	1 day
Group & Coombs Test	7.5 ml whole blood SARSTEDT EDTA Red bottle	4.5 ml whole blood SARSTEDT PAEDIATRIC EDTA red bottle Minimum volume 2 ml	1 day
Direct Coombs Test	7.5 ml whole blood SARSTEDT EDTA Red bottle	4.5 ml whole blood SARSTEDT PAEDIATRIC EDTA red bottle Minimum volume 2 ml	1 day
Transfusion Reaction Investigation**	**Refer to section 9.23**		Contact Laboratory

* Routine working day

** If Antibody Identification is required, this will necessitate a delay. Further investigation may also be required by referral to the IBTS. The Medical Scientist will contact a member of the patient's medical team.

Note DO NOT USE 1.3 ml Paediatric FBC or 2.7ml FBC bottles.

9.3 Blood Transfusion Reports

Blood Transfusion reports are dispatched to the ward areas by the portering staff twice daily at 1pm and 5pm, excluding weekends and bank holidays. Urgent reports are phoned/faxed.
Any unexpected results/issues pertaining to transfusion are phoned to the relevant clinican/team.
It is the policy of the Blood Transfusion Laboratory NOT to give verbal reports of Blood Groups.

9.4 Patient Consent and Patient Information Leaflets

A verbal consent is required for transfusion of blood, blood components and products (except in emergency cases). Consent should be recorded by the attending doctor, by ticking the box on the front of the 'Blood Component/Product Transfusion and Prescription Record Sheet' (BTPRS).

A Blood Transfusion information leaflet should be provided before commencing the transfusion. Refer to Haemovigilance guideline P/BT/HV/008 titled 'The completion and use of a Blood Component/ Product Transfusion and Prescription Record Sheet'.

If the patient is unable to receive the leaflet (e.g. unconscious) then they should be informed, by their clinician that they have received a transfusion as part of their treatment.

If the patient is unable to understand the leaflet (e.g. child, or an adult with comprehension or language difficulties) then the information should be related to them in a language they understand. This may necessitate requesting an interpreter.

9.5 Prescription

Red Cells, Plasma, Platelets, Coagulation Factors and Anti D are issued from the Blood Transfusion Laboratory. Refer to section 9.19 for further details on Coagulation Factors issued by the Laboratory.

- For the prescription of Red Cells, Plasma, Platelets and Coagulation Factors, refer to Haemovigilance guideline P/BT/HV/008 titled 'The completion and use of a Blood Component/Product Transfusion and Prescription Record Sheet' (BTPRS).
- Anti D is prescribed on an 'Anti D Prescription and Administration document'.
- Albumin and Immunoglobulin are prescribed on a Drug Prescription Record Sheet and are issued by the Pharmacy Department.

9.6 Patient identification

The patient's identity **must** be positively confirmed prior to the completion of the request form and reserving of the specimen.
Ask the patient to state his/her name and Date of Birth, and check the patients stated details against their identity bracelet.

All Portlaoise identity bands are clearly labelled with Midland Regional Hospital Portlaoise to differentiate them from other hospital bands.

If the patient is not wearing an identity bracelet, the blood specimen must not be taken until one is applied (in-patients only). If at any stage an identity bracelet is removed e.g. for cannulation then it is the responsibility of the person who removed it to re-apply a new identity bracelet immediately.

If patient details are changed / updated on iPIMS, a new identity bracelet be applied. The Laboratory must be informed.

9.7 Request Form and Specimen Labelling for Blood Transfusion

Requirements for Request Form and Specimen Labelling for Blood Transfusion are detailed in sections 9.7.1 to 9.7.6.

The Electronic Blood Tracking System is the preferred method for labelling samples.

The Blood Transfusion laboratory has a Zero Tolerance policy on specimen/request form amendments.
Regardless of whether a sample is a correctly labelled handwritten sample or has an EBTS label, if there is also an addressograph / sample label (full or partial) present on the sample bottle, the sample is rejected.
If the date and time on the EBTS labels do not match on the sample and request form, then the sample is rejected.
If the EBTS label on the sample has been placed over another EBTS label already on the sample with a different date and time, then the sample is rejected.

For further details on Request Form and Specimen Labelling for Blood Transfusion:
1) Haemovigilance procedure P/BT/HV/001 titled 'Completion of the Request form for the Transfusion Laboratory.'
2) Haemovigilance procedure P/BT/HV/002 titled 'Labelling of the Blood Transfusion sample bottle.'

9.7.1 Completing Request Forms for Blood Transfusion for:

a) Group and Antibody Screen
b) Group, Screen & X-match
c) Requests for Blood, Blood Components and Products

An Addressograph / EBTS label is permitted on the patient demographic section of the request form.

The Request form **must** contain the following information:

- Unique patient identification number
- Patient's surname
- Patient's forename
- Date of Birth
- Patients Gender
- Ward (if not available on sample)
- The test required
- Any special requirements where applicable must be indicated
- The date, time and name of the person who took the specimen with a contact number (if applicable).

The Request form **should** contain the following information:

- Patient's address
- Consultant's name
- Clinical details
- Reason for Transfusion
- Previous Blood Group (if known)
- Previous Transfusion History, Obstetric History, known Red Cell antibodies or any adverse reactions.
- The number and type of blood components/products required
- Time /Date test is required should be recorded

The only exceptions to the above are:

In an **Emergency situation** (identified patient) the **MINIMUM** information that must be on the transfusion request form is:

- Unique patient identification number
- Patient's surname
- Patient's forename
- Patients DOB

The request form must also have:

- The date, time and name of the person who took the specimen with a contact number (if applicable).

For the **Unconscious/Unidentified** patient*, the minimum information necessary on the request form is:

- Unique patient identification number
- Gender of the patient.

The request form must also have:

- The date, time and name of the person who took the specimen with a contact number (if applicable).

*NOTE If iPIMS is used to register the Unconscious/Unidentified patient, EBTS can then be used for sample/form labelling.

Refer to Hospital Policy, HMP014 The Identification and Labelling of Patients and Deceased Persons at the Midland Regional Hospital Portlaoise.

9.7.2 Labelling Specimens for Blood Transfusion for:

a)Group and Antibody Screen
b)Group, Screen & X-match
c)Requests for Blood, Blood Components and Products

Addressograph/Sample labels are **not** permitted on transfusion specimens.

The Electronic Blood Tracking System is the preferred method for labelling samples.
Specimen bottles must never be labelled in advance of sampling. Transfusion Specimens must be labelled at the patient's bedside.

The specimen label **must** contain the following information:

- Unique patient identification number.
- Patient's surname.
- Patient's forename.
- Date of Birth.
- Date specimen taken.
- Time specimen taken (if not on request form).
- Ward (if not on request form)
- Sampler name.

The only exceptions to the above are:

In an **Emergency situation** (identified patient) the **MINIMUM** information that must be on the transfusion specimen is:

- Unique patient identification number
- Patient's surname
- Patient's forename
- Patients DOB
- Sampler name

For the **Unconscious/Unidentified** patient*, the minimum information necessary on the specimen is:

- Unique patient identification number
- Gender of the patient.
- Sampler name

*NOTE If iPIMS is used to register the Unconscious/Unidentified patient, EBTS can then be used for sample/form labelling.
Refer to Hospital Policy, HMP014 The Identification and Labelling of Patients and Deceased Persons at the Midland Regional Hospital Portlaoise. For the unconscious/unidentified patient: as soon as the patient is identified and stable the Blood Transfusion Laboratory must be informed and a properly labelled Transfusion specimen and request form forwarded.

9.7.3 Completing Request Forms for Cord Blood testing

The Electronic Blood Tracking System is the preferred method for labelling samples.

An Addressograph / EBTS label is permitted on the patient demographic section of the request form.

The request form **must** contain the following information:

- Unique patient identification number
- 'Baby of' or 'Twinone of' or 'Twintwo of'
- Mother's surname.
- Mother's forename.
- Baby's Date of Birth
- Baby's Gender
- Ward (if not available on specimen)
- The date, time and name of the person who took the specimen with a contact number (if applicable).

The request form **should** contain the following information:

- Maternal Blood Group
- Yellow Cord Blood sticker
- Mother's address.
- Consultant's name
- The test required should be clearly marked
- Clinical details

NOTE:

Twins **must always** be booked into the iPIMs system as 'Twin-one' or 'Twin-two' ie all one word. Staff in Maternity are trained as such.
iPIMs can NOT accept more than 2 spaces in forename details (same applies for surname details).
Failure to register Twins as above will cause the mother's forename to be deleted off the EBTS labels. These will be rejected in the Laboratory as 'Twin one of' only appears for the forename.

9.7.4 Labelling Specimens for Cord Blood testing

Addressograph / Sample labels are **not** permitted on specimens.

The Electronic Blood Tracking System is the preferred method for labelling samples. (See note in 9.7.3)

The Specimen label **must** contain the following information:

- Unique patient identification number
- 'Baby of' or 'Twin-one of' or 'Twin-two of'
- Mother's surname
- Mother's forename
- Baby's Date of Birth
- Date specimen taken
- Signature of sampler

The Specimen label **should** contain the following information:

- Ward
- Mother's address.
- Yellow Cord Blood sticker
- Time specimen taken

9.7.5 Completing Request Forms for Group & Coombs/DAT testing

The Electronic Blood Tracking System is the preferred method for labelling samples. (See note in 9.7.3)

Addressograph / EBTS labels are permitted on the request form

The request form **must** contain the following information:

- Unique patient identification number
- 'Baby of' or 'Twin-one of' or 'Twin-two of' with Mother's forename and surname

OR

- Patient's Forename and Surname
- Patient's Date of Birth
- Patient's Gender
- Ward (if not available on specimen)
- The date, time and name of the person who took the specimen with a contact number (if applicable).

The request form **should** contain the following information:

- Maternal Blood Group (if applicable)
- Patient's address
- Consultant's name
- The test required should be clearly marked
- Clinical details

9.7.6 Labelling Specimens for Group & Coombs/DAT testing

The Electronic Blood Tracking System is the preferred method for labelling samples. (See note in 9.7.3)

Addressograph / Sample labels are **not** permitted on specimens.

The Specimen label **must** contain the following information:

- Unique patient identification number
- 'Baby of' or 'Twin-one of' or 'Twin-two of' with mother's forename and surname

OR

- Patient's Forename and Surname
- Patient's Date of Birth
- Date specimen taken
- Signature of sampler

The Specimen label **should** contain the following information:

- Ward
- Patient's address.
- Time specimen taken

9.8 Blood Transfusion Specimen and Request Form Amendment/ Rejection Policy.

Incorrectly labelled specimen bottles/request forms ***will not*** be processed by the laboratory.

The Blood Transfusion laboratory has a Zero Tolerance policy on specimen/request form amendments.

The Blood Transfusion Lab will contact the person who took the specimen or a member of the team to inform them of the rejection and to request a repeat specimen and request form if required. A report outlining the reason for rejection will be sent to the requesting area.

9.9 Requests for additional products

A blood transfusion specimen and request form is required for the ordering of blood, blood components and products.

If a transfusion specimen and request form is already in the laboratory:

- Check with the laboratory that the request is still valid (72 hours) and a new specimen and request form are not required.

- Additional requests for blood, blood components and products may be telephoned to the Blood Transfusion Laboratory but **must be** verified in writing by completing the A4 request form titled 'Order form for additional Blood, Blood Components and Products' and forwarding it to the laboratory.

9.10 Blood Group only testing (from GPs and outpatients)

The Blood Transfusion Laboratory offers very limited **Blood Group only** Testing

The Portlaoise Transfusion Request Form **must** be used.

This specimen and request form **will never** be used for Transfusion purposes.

The Laboratory must be contacted prior to requesting this service.

9.10.1 Completing Request Forms for Group only testing.

Addressograph labels are permitted on the request form only.

Complete all sections of the transfusion request form in full in legible handwriting.

The Request form **must** contain the following information:

- Unique patient identification number (if available)
- Patient's surname
- Patient's forename
- Date of Birth
- Patient's Gender
- Patient's Address if no patient identification number
- 'Blood Group Only' recorded on form
- Ward (if applicable)
- Consultant's/ Clinician's name
- Clinical details
- The date, time and the signature of the person who took the specimen with a contact number if applicable

9.10.2 Labelling Specimens for Group Only testing

Addressograph/Sample labels are **not** permitted on Transfusion specimens.

Specimen bottles must never be labelled in advance of sampling.

Specimen bottles must be accurately and completely labelled before leaving the patient

Complete all sections of the specimen bottle label using a ball point pen.

The specimen label **must** contain the following information:

- Unique patient identification number (if available)
- Patient's surname
- Patient's forename
- Date of Birth
- Patient's address if no patient identification number
- Ward (if applicable)
- Time specimen taken.
- Date specimen taken.
- Signature of sampler.

9.11 Antenatal Testing

Routine Antenatal Group and Antibody Screen specimens are tested at MRH Mullingar. The Mullingar Antenatal request form **must** be used. The request form and specimen should be fully completed. However in the case of an emergency, e.g. Unbooked delivery or E.D.D of **< 7 days,** the Blood Group and Antibody Screen will be performed at Portlaoise Transfusion Laboratory if requested on a Portlaoise Blood Transfusion request form. Refer to sections 9.7.1 and 9.7.2 for Request Form and Specimen labelling requirements.

Completing Request Forms for Antenatal Testing in Mullingar (Form M/BT/215):

An Addressograph label is permitted on the patient demographic section of the request form.

The Request form **must** contain the following information:

- Unique patient identification number*
- Patient's surname
- Patient's forename
- Date of Birth
- Patients Gender
- The date, time and name of the person who took the specimen
- If Anti D given in the last 6 months and date of administration

*For partners (only) of antenatal patients with antibodies, the partners address MUST be used as the third identifier instead of a chart number.

The Request form **should** contain the following information:

- Patient's address
- Consultant's name
- Ward
- Test required
- Clinical details
- Expected Delivery Date (if known)
- Previous Transfusion History, Obstetric History, known Red Cell antibodies or any adverse reactions.
- Signature of requestor

Labelling Specimens Antenatal Testing in Mullingar:

Addressograph/Sample labels are **not** permitted on transfusion specimens.

Specimen bottles must never be labelled in advance of sampling.

Transfusion Specimens must be labelled at the patient's bedside.

The specimen label **must** contain the following information:

- Unique patient identification number *
- Patient's surname.
- Patient's forename.
- Date of Birth.
- Date specimen taken.
- Time specimen taken.
- Sampler name.

*For partners (only) of antenatal patients with antibodies, the partners address MUST be used as the third identifier instead of a chart number.

9.12 Indications for Cytomegalovirus (CMV) Negative and Irradiated Blood Components

Refer to Haemovigilance Guideline P/BT/HV/011 titled 'Guideline for the use of Cytomegalovirus (CMV) Negative and Irradiated Blood Components' for:
1) Indications for Cytomegalovirus (CMV) Negative Blood Components.
2) Indications for Irradiated Blood Components.

9.13 Red Cells General Information

Compatibility Tables
For Compatibility Tables for administration of Red Cells, refer to guideline P/BT/HV/006 titled 'The Administration of Blood Components and Products'

Indications for Red Cells
No single criterion can be identified as a "trigger for transfusion" as there is no readily available indicator of critical tissue oxygenation.

Complications of Red Cell Transfusion
For complications of red cell transfusion refer to guideline P/BT/HV/005 titled 'Management of Adverse Transfusion Reactions and Events'

Optimal Timing of Transfusion
Routine Transfusion should be performed during the routine day wherever possible as there are more nursing and medical staff on duty and the patient is more alert.

Maximum Blood Ordering Schedule
A poster format of the Maximum Blood Ordering Schedule (MBOS) for red cells is displayed in those clinical areas where routine surgery workup is performed. For further information refer to P/BT/HV/001 titled 'Completion of the request form for the Transfusion Laboratory' attachments 7.1 and 7.2.

9.13.1 Routine Crossmatching

Please send request at least 24 hours before blood may be required for routine transfusions and for theatre work-up if possible. This will give sufficient time to ensure blood is available for patients who have irregular antibodies.

Blood 'Group & Screen' specimens for elective surgery must arrive in the lab before 15:30 the previous day. Routine specimens arriving after 15:30 will NOT be processed until the following day.

Cross– matched blood will be made available for the time and date given on the request form, unless the Blood Transfusion Department is informed otherwise.

Blood is held for up to 48 hours only after Crossmatching.

9.13.2 Specimen and Request form timing requirements

Transfusion or pregnancy may stimulate the production of antibodies. To ensure the specimen used for Group, Antibody Screening and Compatibility testing is representative of a patient's current immune status, serological testing should be performed using blood collected no more than 3 days in advance of the actual transfusion.

All patients need a new request every 72 hours*.

The 72 hours is calculated from the time the specimen was taken.

***Exceptions:**

- may be made in the case of a Placenta Praevia in-patient who is repeatedly sampled. A 7 day interval may be approved by contacting the Consultant Haematologist.
- Babies <1 year old *may* have their requests extended to 120 days at the discretion of the Chief/Senior Medical Scientist in Blood Transfusion as it is based on test results etc.

Massive Transfusion

Refer to table for Acute Massive Blood Loss: Template Guideline for use @ MRH Portlaoise for information on Massive Transfusion Guidelines.
Refer to Massive Transfusion Protocol (MTP) Adult only.
It is recommended to send a new Transfusion specimen and Request form 24 hours after the start of a massive transfusion.

9.13.3 Emergency Crossmatching and the use of Emergency Stock O Rhesus (D) Negative Red Cells

Please inform the laboratory of urgent or emergency cross-match requests by telephone and liaise with Blood Transfusion Medical Scientific staff for blood, blood component and product requirements during the course of the emergency.

Crossmatched blood may be made available in **45 minutes** in an emergency if no irregular red cell antibodies are present and the patient's plasma aliquot has not been frozen.

The Blood Transfusion Laboratory must be contacted as soon as possible if you need to use uncrossmatched Red Cells.

A specimen should be taken from the patient prior to the transfusion of any emergency units.

Uncrossmatched Emergency O Rh (D) Negative (Flying Squad) units are available if necessary.
It is the responsibility of the Doctor to request uncrossmatched Red Cells. A written request is required.

Uncrossmatched, group specific blood is available for issue in extreme emergencies upon request if the patient's Blood Group has been determined on a valid sample already in the Laboratory.
Uncrossmatched, group specific blood should be issued when possible to save the O Negative Flying Squad stock.

There is also an uncrossmatched unit of O Rh (D) negative red cells for emergency transfusion of neonate and paediatric patients < 1 year old.

Uncrossmatched units will be issued with labels and compatibility reports stating **"Uncrossmatched blood at request of Medical Doctor".**

Emergency O rhesus (D) negative red cells should not be used for elective and/or non critical patients with red cell antibodies, as these units are not typed for all antigens.

Refer to guideline P/BT/HV/014 titled 'A guideline for the use of Blood, Blood Components and Products in the management of a massive haemorrhage'.

9.14 Transfer of Red Cells

Where red cells need to be transferred with the patient **please contact the Blood Transfusion laboratory first** so red cells can be appropriately packed in a transport box and the documentation prepared. Please give at least 15 minutes notice to the blood transfusion laboratory where possible.

Red cells **MUST** also be packed in a transport box if (when time allows)
1) > 2 units are taken from the laboratory at the same time for the same patient.
2) Units are required on standby in the clinical area.

If blood components/products other than red cells need to be transferred, they are transported in a clean container. They must not be placed in the BC15 with the red cells which have been prepared.

Platelets and Products such as Plasma and Coagulation Factors must be administered in the stated time frame.

9.15 Platelets

For clinical advice contact the Consultant Haematologist(s).

Compatibility tables
For Compatibility Tables for administration of platelets, refer to guideline titled '*The Administration of Blood Components and Products'.*

Ordering and Issue of Platelets
Platelets are not kept in stock and need to be ordered from the Irish Blood Transfusion Service (IBTS).
Requests for platelets must be sent through the laboratory in MRH Portlaoise.

A blood transfusion specimen and request form is required to determine the patient's blood group.

For Oncology / Haematology shared care children, Apheresis platelets are the first choice to limit donor exposure.

For Oncology / Haematology shared care children with a history of previous reactions to platelets, please follow patient specific protocol in their healthcare records. These patients may require pooled in additive solution (PAS) platelets. This MUST be ordered on the request form.

One pack of platelets (not in mls) is the standard order.

Allow a minimum of 3 hours turnaround time for transportation and issue.
Platelets should be transfused immediately as they need to be transfused within 6 hours. Check compatibility report for time of expiry.

Platelets are issued ABO and Rhesus compatible when available.

If Rhesus (D) positive platelets are given to a female of child bearing potential who is Rh (D) negative, this must be discussed with a Consultant Haematologist as the patient may require Anti-D Immunoglobulin.

Dosage
Only <u>one unit of platelets (1 dose)</u> may be ordered at a time for adults, paediatrics and neonates (more may be required for active bleeding).

Contact the Consultant Haematologist(s) for advice if more than one unit (1 dose) of platelets is required.
Standard treatment for an adult is "1 adult dose" in 24 hours which should raise the platelet count by 20 X 10^9/ L. Failure of the platelet count to rise to/above the target should be discussed with the Consultant Haematologist.

Children < 20 kgs dose = (10-20 mls/kg). For shared care with Our Ladys Childrens Hospital Crumlin (OLCHC) see OLHSC "Shared Care" manual.

In the event of a massive haemorrhage, you may need to use platelets before laboratory results are available. However it is important to take the FBC beforehand as this will serve as a baseline.

A Platelet count, (30-60 minutes post infusion to assess the effectiveness of the treatment) is recommended, especially if the patient's responsiveness to platelet transfusions is unknown.

Complications of Platelet Transfusions

Refer to P/BT/HV/005 titled 'Management of Adverse Transfusion Reactions and Events'

9.16 Plasma

For clinical advice contact the Consultant Haematologist(s).

Compatibility tables
For Compatibility Tables for administration of plasma, refer to guideline titled *'The Administration of Blood Components and Products'.*

Ordering and Issue of Plasma
Plasma is available as Group O, A, B and AB LG-Octaplas.

The objective of a plasma transfusion is to replace coagulation factors where there is evidence of critical deficiencies.

A Group and Antibody Screen specimen and request form must be sent to the Blood Transfusion department.

The laboratory should be notified at least 30 minutes in advance as these units must be thawed (2 units thawed at a time).
Allow a minimum of 40 mins turnaround time for thawing and issue of 2-4 units of plasma.

For indications, ordering and complications of Plasma refer to guideline titled 'The Administration of Blood Components and Products'.

Currently Fresh Frozen Plasma (FFP) is not routinely available. Octaplas is the replacement product for FFP.

Dosage
The dose of plasma is determined by the clinical condition of the patient and the underlying disease. 12-15 mls/kg is a generally accepted starting dose.

A unit of plasma (200 mls) can be transfused to an uncompromised adult over 30 minutes.

However for an elderly patient, very small and /or cardiac or respiratory compromised patients, the infusion rates should not exceed 2-4 mls/kg per hour.

Complications of Plasma Transfusion
Refer to P/BT/HV/005 titled 'Management of Adverse Transfusion Reactions and Events'.

9.17 Administration of Red Blood Cells, Plasma and Platelets

For detailed information refer to Haemovigilance Guideline P/BT/HV/006 titled 'The Administration of Blood Components and Products'.
Red Blood Cells, Plasma and Platelets must be administered through a 170-200 micron filter).

The administration set is changed after every two units or after every six hours whichever comes first, and if changing to a different blood component/blood product.

Red cells, plasma and Platelets must never be mixed in the same giving set.

If the cannula becomes tissued, it must be re-sited and the transfusion restarted within 30 minutes, otherwise the unit is discarded.

Red Cell Administration
Adult Patient: an individual unit of red cells can be completed in approximately 2 hours in an uncompromised patient or at a rate of 2-4mls/kg/hour.
The length of transfusion of one unit should never exceed four hours due to the risk of bacterial proliferation.
Note: Compromised patients should be transfused slowly and closely observed. Restriction of transfusion to one unit of RCC in each 12 hour period.

Paediatric patient: Refer to local guidelines.

Platelet Administration
Each dose of platelets should be transfused over a period of 30–60 minutes through a blood giving set.

Administration of Plasma
After thawing, plasma **must** be transfused **within the time period stated on the compatibility report**.

Red Cells, Plasma and Platelets should never be transfused using the same administration set.
Drugs must never be added to blood components/products.

On completion of the unit: There is no need to flush any remaining component/ product in the administration set, however if needs be NaCL is the solution to be used.

For the return of unused units refer to section 9.20.1

The appropriate laboratory tests e.g. PT/ INR, and APPT should be carried out to assess the effectiveness of treatment. Please send Coagulation samples to the laboratory, within 30 minutes of completion of treatment.

9.18 Cryoprecipitate

Cryoprecipitate is no longer available; **Fibrinogen** is now considered the product of choice. Refer to section 9.19 for the use of Fibrinogen.

9.19 Coagulation Factor Concentrates

The Consultant Haematologist(s) **must always** be contacted for advice and dosage prior to ordering Coagulation Factor Concentrates from the Blood Transfusion laboratory.

For dosage and monitoring of response, reconstitution, method of administration, complications and contra-indications of Coagulation Factor Concentrates, refer to product insert and guideline P/BT/HV/007 titled 'The Use of Factor Concentrates'.

Ordering and Issue of Coagulation Factor Concentrates

There is no requirement to send a blood transfusion specimen as no group is required for selecting coagulation factors.

A transfusion request form must be completed for the initial written request.

A request for Coagulation factors may also be received on a valid Blood Transfusion request already in the laboratory. An 'Order form for additional Blood, Blood Components or Products' form must be completed and sent to the Laboratory.

Table: Coagulation Factor Concentrates available from the Blood Transfusion Department and their proposed use

Coagulation Factor	Proposed Use
Human Prothrombin Complex * (Factors II,VII,IX,X) e.g. Octaplex	Warfarin overdose with bleeding Peri operative prophylaxis Congenital deficiencies of factors II, VII, IX or X
Recombinant Coagulation Factor IX (e.g. Alprolix)	Treatment of Haemophilia B
Recombinant Coagulation Factor VIII (e.g. Elocta)	Treatment of Haemophilia A
Recombinant Coagulation Factor VIIa (Activated) (e.g.NovoSeven)	Haemophilia with inhibitors. Glanzmann's Thrombasthenia Inherited Factor VII deficiency May also have a role in the control of severe bleeding.
Fibrinogen (eg Riastap)	Hypofibrinogenaemia e.g. massive transfusion resulting in haemodilution
Intermediate Purity Factor VIII (eg Wilate)	Von Willebrands disease bleeding

*** Human Prothrombin Complex** *(e.g Octaplex) is currently the product of choice for the reversal of the effects of Warfarin.*

9.19.1 Recombinant Coagulation Factor VIII (e.g. ELocta) and Recombinant Coagulation Factor IX (e.g.Alprolix)

A Consultant Haematologist must be contacted in the event of a haemophilia patient attending hospital in an emergency situation. The Haematologist will advise you on the relevant dosage of factor concentrate for your patient.
All haemophilia patients that are known to us in the region are registered with the National Centre @ OLCHC (children) and @ the National Centre for Hereditary Coagulation Disorders at St. James's Hospital (adults) where you may contact the Haematology Registrar on call

9.19.2Human Prothrombin Complex e.g. Octaplex

Human Prothrombin Complex (Octaplex) is licensed for use in the Republic of Ireland. Refer to Coagulation Factor Concentrates table section 9.19.

For further information on Human Prothrombin Complex (Octaplex), refer to product insert and P/BT/HV/007 titled 'The use of Factor Concentrates'.
Note: - For reversal of Warfarin in non-emergency situations, administration of Vitamin K and/or reduction/discontinuation of Warfarin may be sufficient. The Consultant Haematologist may be contacted for advice.

Table: Recommendations for Management of Bleeding & Excessive Anticoagulation

<table>
<tr><td>INR * 3– 6 (target INR 2.5)
INR 4–6 (target INR 3.5)
No bleeding or minor bleeding</td><td colspan="2">1. Reduce or stop Warfarin dose
2. Restart Warfarin when INR <5.0</td></tr>
<tr><td>INR 6 – 8;
No bleeding or minor bleeding</td><td colspan="2">1. Stop Warfarin
2. Restart Warfarin when INR < 5.0
3. If other risk factors** for bleeding give 0.5 – 1.0mg of Vitamin K (oral)</td></tr>
<tr><td>INR >8.0, no bleeding or minor bleeding.</td><td colspan="2">1. Stop Warfarin
2. Restart when INR is <5.0
3. Give 1 – 2 mg of Vitamin K (IV or oral). Recheck INR after 6 and 12 hours.</td></tr>
<tr><td rowspan="5">Life Threatening bleeding/ Emergency Surgery</td><td colspan="2">1. Stop Warfarin
2. Consult Haematology Team
3. Give 5-10 mg of Vitamin K, IV
4. Give Human Prothrombin Complex (Octaplex) 25 – 50 iu/kg or if contraindicated SD Plasma 12- 15 mls/kg.</td></tr>
<tr><td>Patient's INR</td><td>Recommended dose of Human Prothrombin Complex (Octaplex) based on F IX content</td></tr>
<tr><td>INR 2.0 – 3.9</td><td>25iu/kg</td></tr>
<tr><td>INR 4.0 – 6.0</td><td>35iu/kg</td></tr>
<tr><td>INR > 6</td><td>50iu/kg</td></tr>
</table>

Notes:
* INR = International Normalised Ratio
** Risk Factors are: Age of patient > 70 and/or previous history of bleeding
Identify cause of excessive anticoagulation & in general start Warfarin at a lower dose.

9.19.3 Recombinant Coagulation Factor VIIa (Activated) eg Novoseven

Recombinant Coagulation Factor VIIa (Activated) eg Novoseven is licensed for use in the Republic of Ireland. Refer to Coagulation Factors table section 9.19.

Possible Off-Licensed Use
Recombinant Coagulation Factor VIIa may be used to correct coagulopathy associated with severe bleeding where other treatments have failed.
Refer to guideline P/BT/HV/014 titled '*Guideline for the use of Blood and Blood Components in the management of a Massive Haemorrhage'*. If, despite all the usual measures a patient is still bleeding, Recombinant Coagulation Factor VIIa (Activated) can be life saving.

As this product is not from blood donors, it may be acceptable to Jehovah Witnesses in a variety of coagulopathies that would usually be treated with blood products.

The use of this product in reversal of Warfarin overdose has been described but other than in Jehovah Witnesses, Human Prothrombin Complex (Octaplex) is recommended.

9.19.4 Intermediate Purity Factor VIII (eg Wilate)

This is indicated for patients with severe Von Willebrand's Disease (vWD) with major haemorrhage.

Most patients with VWD can be managed with antifibrinolytic agents and/or Desmopressin (DDAVP).

9.19.5 Fibrinogen (e.g.Riastap)

This is indicated for patients with Hypofibrinogenaemia e.g. massive transfusion resulting in haemodilution.

Laboratory tests to monitor response to Coagulation Factors

Table: Appropriate laboratory tests for monitoring response to Coagulation Factors

Product	Coagulation Test	Comments
Human Prothrombin Complex (e.g. Octaplex)	PT	1 dose (based on patient's weight) should correct INR of patient's on Warfarin to near normal. Should be checked at 1 hour and 6 hours post infusion.
Recombinant Coagulation Factor VIIa (Activated) (e.g.Novoseven)	No Specific Measurement	Monitor clinically and as per massive blood loss i.e. PT/APTT/Fib/Plt/Hb.
Intermediate Purity Factor VIII (e.g. Wilate)	VIIIc/ WFAg/ Ristocetin co-factor	Send Coagulation sample to lab in Portlaoise to send to SJH
Recombinant Coagulation Factor VIII (e.g. Elocta)	VIII APTT in an emergency	1 dose should correct to normal. Coagulation sample can be sent to SJH for Factor VIII levels.
Recombinant Coagulation Factor IX (e.g. Alprolix)	IX APTT in an emergency	1 dose should correct to normal. Send Coagulation sample to the Lab in Portlaoise to send to SJH for Factor IX levels.
Fibrinogen (e.g. Riastap)	Fibrinogen	1 g will increase plasma Fibrinogen level by 0.25g/L. Usual dose 2-4 gm

9.20 Traceability of units for Blood Transfusion

All units issued from the laboratory must be definitively fated. Units which are commenced must be clearly identifiable from the supporting documentation. Therefore the administrators must:

1. Sign Prescription sheet

2. Use the Electronic Blood Track System to fate units where appropriate
   or
   detach and complete the traceability label on each pack when the EBTS is not used for fating.

3. To complete the Traceability label the administrator is required to record:
   - Signature
   - Printed Name
   - Date
   - Time

4. Return the Traceability label to the Laboratory in red envelope provided using the pneumatic tube chute system.
   Alternatively place the red envelope in the lab specimen collection box if the pneumatic tube chute system is out of order.

This ensures 100% traceability and fating of each blood unit transfused as required by the EU Directive 2002/98/EC.

9.20.1 Unused Blood/Blood Components and Products

Any unused Blood/Blood Components and Products must be returned to the Laboratory as soon as possible and within 30 minutes to avoid Clinical wastage. Inform the Blood Transfusion (BT) Department.

Un-spiked units out of the BT Issue fridge for <30 minutes, if not for immediate use, can be returned to the fridge for later usage to avoid wastage.

Un-spiked units out of the BT fridge for >30 minutes, can be held in a clean area in the clinical area but must be completely transfused to the patient within 4.5 hours from the time they were originally removed from the BT fridge. After 4.5 hours RCC units can be returned for discard to the BT lab and fated as NOT transfused on the Traceability label. Inform the BT Department.

Units, which have been temporarily disconnected from the patient, must be restarted within 30 minutes or discontinued completely and discarded. Refer to Haemovigilance guideline P/BT/HV/006 or contact the clinical team.
If additional units are required, contact the BT Laboratory.

Spiked units must only ever be returned to the BT laboratory if it is thought they have adversely affected the patient and a reaction is suspected.

9.21 Albumin

Albumin is available from the Pharmacy in MRH Portlaoise.

Refer to Product insert for Complications and Contraindication of Albumin Transfusions

9.22 Anti-D Immunoglobulin

Anti-D is available from the Laboratory for:

Termination of Pregnancy
Antenatal sensitising events
Routine Antenatal Anti D Prophylaxis
Post-natal administration

For Indications, Ordering, Prescribing and Administration and Anti D: Refer to obstetric guideline PHOG006 titled 'Guideline for the Administration of Anti-D Immunoglobulin (including Routine Antenatal Anti D Prophylaxis – RAADP)'.

For collection of Anti D from the Laboratory:
Refer to Haemovigilance guidelines
P/BT/HV/003 titled 'The collection of blood components and blood products from the laboratory'.

9.23 Suspected Transfusion reactions

A reaction can occur at any stage of a transfusion. For Management of an Acute Transfusion Reaction refer to P/BT/HV/005 titled 'Management of Adverse Transfusion Reactions and Events'.

In the case of a **suspected transfusion reaction** the medical staff should contact the Consultant Haematologist(s) or Haematology Registrar for advice. They can be contacted through the switch board at the Midland Regional Hospital at Tullamore (*51920 or 057 9321501).

The laboratory should only be contacted when the Consultant Haematologist(s)/Registrar decides that a transfusion reaction needs to be **investigated and what tests are required**. The appropriate specimens (and relevant request forms) are selected from the list below, **depending on the type of Transfusion Reaction suspected**.

The reporting of Serious Adverse Reactions and Events is a mandatory requirement under the EU Directive 2002/98/EC.

In the event of a suspected Transfusion Reaction it is the Clinical Team's responsibility to record any reaction, and the management of that reaction in the Patient's healthcare records.

For Symptoms and Signs, Causes, Management and Investigations required for Acute and Delayed Transfusion reactions refer to Guideline P/BT/HV/005 titled 'Management of Adverse Reactions and Events'.

Further information or clarification may be obtained from the Consultant Haematologist and/or Laboratory Medical Scientist and/or TSO.

Contact the Blood Transfusion Laboratory or the 'on call' Medical Scientist on duty if you suspect a transfusion reaction due to:

- Bacterial contamination of the blood component/product
- Transfusion Related Lung Injury (TRALI)

Rapid Alert to the Irish Blood Transfusion Service is necessary.

Selection of Tests which may be Required (depends on type of reaction suspected)

- The suspect unit with all lines attached and administration set must be secured in the off position and sealed in a rigid container for return to Blood Transfusion Laboratory.

- 7.5 ml EDTA SARSTEDT Red bottle for Blood Transfusion specimen for repeat ABO, Rh, antibody screen & X-match and Direct Antiglobulin test (DAT).

  Complete a **new** transfusion request form.

- 2.7 ml whole blood in EDTA, SARSTEDT Red bottle for repeat FBC and Blood film.

- 3 ml citrated plasma in a SARSTEDT Green bottle for coagulation screening.

- 4.9ml Serum in SARSTEDT Brown gel bottle for U&E, LFT and LDH.

- Blood Cultures on patient (aerobic & anaerobic).

- Urine Specimen-first voided specimen to check for Haemolysis, Haemoglobin and Urobilinogen.

- 2 x 4.9ml whole blood in SARSTEDT Brown gel bottle for White Cell Antibodies, Platelet Antibodies, Immunoglobulin testing or Haptoglobins.

- **Repeat** Coagulation, FBC & U&E every 2-4 hours.

Note specimens from children may also be taken into SARSTEDT Paediatric bottles.

9.24 Haemovigilance Service

The Haemovigilance Service in Midland Regional Hospital, Portlaoise is a Consultant led service with one Transfusion Surveillance Officer (TSO) on site. The National Haemovigilance scheme is dedicated to the achievement of national standard practice and quality of care for all patients, before, during and following completion of transfusion.

Haemovigilance Officer Ms Eithne Lacey	96066 Bleep 072	057 8696066

9.25 Termination of Pregnancy (TOP)

Medical Termination of Pregnancy (TOP) prior to 7 weeks does NOT require Rhesus Testing or administration of Anti D as the risk of sensitization is negligible.

Termination of Pregnancy >/= 7 weeks requires Blood Group and Antibody Screen Testing prior to administration on Anti D.

Contact the Blood Transfusion Laboratory for sample requirements.

For Indications, Ordering, Prescribing and Administration and Anti D: Refer to obstetric guideline PHOG006 titled 'Guideline for the Administration of Anti-D Immunoglobulin (including Routine Antenatal Anti D Prophylaxis – RAADP)'.

10.0 Microbiology

Microbiology Department
Phone 96266 – (057 8696266)

Consultant Microbiologist-
Dr Cathal O Sullivan
Speed Dial *51205 (086 0404894)

The Microbiology Department provides a routine service to the hospital and to general practioners. In addition a referral service for more specialised tests is provided.
An on call service is provided to the hospital only for processing of non deferrable/urgent test requests.
There is no routine service provided on Saturday/Sunday/Bank Holidays and this may result in a delay in the final report.

10.1 Antibiotic Service

The Microbiology Department offers a clinical service, both for diagnosis and management advice. The Consultant Microbiologist may be contacted on office direct dial 58349 or mobile speed dial *51205 (086 0404894).
An Antimicrobial Pharmacist is based on site and may be contacted on Bleep 143.

When prescribing Antibiotics the generic name should be used. No more than two antibiotics should be used except in exceptional circumstances.
Refer to the HSE Guidelines for the use of Antibiotics**.**

10.2 Infection Control and Surveillance

Infection Control for the Laois area in the Midland Health Board includes:

- 2 Infection Prevention and Control Nurses (Clinical Nurse Manager CNM11) based in MRH Portlaoise.
- 1 Infection Prevention and Control Nurse (Clinical Nurse Manager CNM11) based in the Community
- Regional Assistant Director of Nursing (ADON).

The infection control team are available for education and advice in the acute hospitals, district hospitals and the Community.
Contact Phone Number: *51917 (086 3802615).

A Surveillance Scientist co-ordinates the Microbiology Surveillance Programme for notifiable diseases for MRH Portlaoise and MRH Tullamore. All notifiable diseases are reported to the Health Protection Surveillance Centre (HPSC).

The Area Medical Officer co-ordinates the management of notifiable diseases. Contact phone number *51748 (087 3430064

10.3 Blood Cultures

Using aseptic technique blood (adult 8-10ml, child 1-4 ml) is taken using vacuated system into appropriate blood culture bottles.

Adults	Blue (*O2*) & Purple (*AnO2*),
Paediatric.	Yellow

Specimens must be sent to the laboratory immediately for incubation at 37ºC.
Refer to Infection Prevention Control Guideline IPCR 24 in the clinical area titled 'Procedure for taking Blood Cultures for further information'.

All positive blood culture microscopy (gram stain) results are phoned when available.

10.4 Cerbro Spinal Fluid CSF

Please schedule CSF specimens during the routine day, where possible and send to the laboratory for testing prior to 4 pm to facilitate processing by Microbiology Department staff.

A CSF specimen should be collected sequentially into three or more separate plain sterile universal containers which should be numbered consecutively (e.g 1, 2, and 3)

Specimens must be labelled with the patient details and be accompanied by a microbiology request form.
CSF specimens must be transported to the laboratory immediately in a sealed plastic bag via porter.
DO NOT USE PNEUMATIC TUBE SYSTEM

Refer to section 10.6 Microbiology tests for further detail

CSF for Xanthchromia
Xanthchromia test requests are processed Monday to Friday in Beaumount.
A Plain Brown tube for Xanthochromia must be obtained from Microbiology prior to testing.
1 ml of CSF in a plain brown tube must be sent for Xanthochromia testing and sent to the Laboratory immediately.

CSF for Virology
CSF test requests for Virology are processed Monday to Friday in the Virus Reference Laboratory (VRL).
The list of Viral tests required is MANDATORY.

CSF for Bacterial PCR
CSF for Bacterial PCR are processed Monday to Friday in Temple Street.

- **The list of Bacterial PCR tests required is MANDATORY.**
- **Temple Street Request Form is MANDATORY.** Available from web site. Specimen requirements and testing rules are detailed on the back of the request form.
- **PATIENT ADDRESS is MANDATORY**

10.5 Criteria for phoning critical results in Microbiology

Faeces
Salmonella
Shigella
Campylobacter
E coli 0157/H7
Cholera
Rotavirus
Adenovirus
Cryptosporidium
Giardia

CSF
All CSF microscopy results.
All Positive culture results.

HVS
Gonococcus
Listeria monocytogenes

Blood Cultures All positive blood cultures

Intra operative gram stain request from theatre

PCR
All first time positive CPE
Influenza Screens (A, B & RSV)
Clostridium difficile toxin positive
Norovirus
Covid 19 Positive

MRSA Swabs All new MRSA positive inpatients.
(Inform Infection Control Nurse)

Sputum Aspergillus (inform Consultant Microbiologist)

Referred Samples
All positive PCR results:
Bordetella pertussis
Positive TB results
All first time positive syphilis
All first time positive HIV
VRL phoned results (all)

10.6 Specimen Requirements

Please ensure bottles/swabs are within their expiry date. Samples sent to the laboratory using expired sample bottles will be rejected.

Each laboratory test will be described under the following headings:-

- **Test Name**
  Full name of the test

- **Test code**
  The abbreviated name for test commonly used

- **Laboratory /Department**
  Specifies the location where the test is performed
  PB Portlaoise Biochemistry
  PM Portlaoise Microbiology
  MM Mullingar Microbiology

- **Specimen**
  The type of specimen required is stated.

- **Volume**
  The volume of the required specimen container is stated.

- **Container**
  The type of container/additive is stated

- **Colour Code**
  The colour code of the container is stated

- **Turnaround time**
  Turnaround time is defined as the time from specimen receipt in the Pathology department to the time results are available.

- **Comment**
  Comment identifies any further action required when requesting or taking a particular specimen. Special requirements are detailed where necessary including but not limited to:
  - Patient preparation, e.g. fasting
  - Special timing for collection of specimens
  - Any special handling needs between time of collection and time received by the laboratory (transport requirements, refrigeration, warming, immediate delivery etc.)

MICROBIOLOGY TESTS

Test Name	Code	Dept	Specimen	Volume	Container	Colour code	Turnaround time	Comment
Aspirates	ASP	PM	Aspirates	2-3 ml minimum	Plain sterile universal container	Yellow lid	48-72 hours	
Blood Cultures.	BC	PM	Blood	Adult 8-10 mls per bottle Child 1-4 mls	Adult Aerobic Anaerobic Paediatric	Blue Purple Yellow	7 days Blood Cultures are incubated for up to 5 days.	Specimens must be sent to the laboratory immediately for incubation @ 37^0C. Blood culture bottles must not be refrigerated. **Do not cover/remove the detachable bar code label from the bottles; these are for laboratory use only.**
Bordetella pertusis		Crumlin	Perinasal swab culture		Perinasal swab	Blue Cap Swab	5 days	Contact Microbiology Lab ext. 96266 for pertussis swabs if required
Central line tip culture		PM	Central line tips.	N/A	Plain sterile universal container	Yellow lid	48-72 hours	Use sterile scissors or cutter.
Cerbro Spinal Fluid	CSF	PM	Cerobrospinal Fluid		Plain sterile universal container labelled 1, 2, 3 Minimum volume of 1.0 ml/container is recommended	Universal container/ CSF pack	Cell counts, glucose and protein processed immediately. Culture requires 48 – 72 hours incubation.	Label specimens 1,2,3. Specimens must be taken to the laboratory Immediately. **Send to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.**

Cerbro Spinal Fluid for Xanthochromia	CSF	PM	Cerobrospinal Fluid		Plain Brown tube for Xanthochromia (available from Microbiology Lab if required) Minimum volume 1.0ml	Brown	Xanthochromia 1-2 days. Available Mon to Friday from Beaumount	Specimens must be taken to the laboratory Immediately. **Send to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.**
Cerbro Spinal Fluid for Virology	CSF	PM	Cerobrospinal Fluid		Plain sterile universal container labelled 1, 2, 3 Minimum volume 0.5ml	Universal container/ CSF pack	Cerbro Spinal Fluid for Virology 1-2 days Available Mon to Friday from VRL	**List Viruses required.** Specimens must be taken to the laboratory Immediately. **Send to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.**
Cerbro Spinal Fluid for Bacterial PCR	CSF	PM	Cerobrospinal Fluid		Plain sterile universal container labelled 1, 2, 3 Minimum volume 0.25ml	Universal container/ CSF pack	Cerbro Spinal Fluid for Bacterial PCR 1-2 days Available Mon to Friday from Temple Street	**List Bacterial PCR test required.** **MUST USE Temple Street Form. Patient address is MANDATORY** Available from web site Specimens must be taken to the laboratory Immediately. **Send to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.**

Chlamydia/ Gonorrhoea PCR		NVRL	APTIMA Urine container APTIMA Swab	Fill to line N/A	APTIMA containers	White lid White swab	1 week	Follow instructions on pack Contact laboratory reception for APTIMA containers
Chlamydia/ Gonorrhoea PCR		Mullingar	COBAS PCR Urine container COBAS Dual Swab	Fill to line N/A	COBAS PCR Urine containers COBAS Dual Swab	Yellow lid Yellow swab	1 week	Follow instructions on pack Contact laboratory for COBAS containers
Covid 19 PCR SARS-CoV-2		PM	Naso-pharyngeal swab	N/A	Naso-pharyngeal collection kit	Red Naso-pharyngeal swab	1 day	Urgent Samples for same day testing must be received before 23:00 weekdays. SAT/SUN/BH before 17:00
CPE Screen (PCR)	CPE	PM	Rectal swab	N/A	A Copan transystem double swab	Red swab	1 day	Service available Monday to Friday. Samples must be received before 3pm. SAT/SUN/BH before 9am
CPE Culture	CPE	PM	Faeces Rectal swab/	5-10 gm (walnut size.) N/A	Blue capped universal container with spoon. Black Charcoal swab	Blue Lid Black	24-72 hours	

Crypto sporidium Parasite		PM	Faeces	5-10 gm (walnut size.)	Blue capped universal container with spoon.	Blue	48-72 hours	
Ear Swab culture & sensitivity		PM	Ear Swab.	N/A	Charcoal transport swab.	Black	48-72 hours	
Fluid culture & sensitivity		PM	Fluid.	2-3ml	Plain sterile universal container	Yellow lid	48-72 hours	
Fluid for Acid Fast bacilli (A.F.B.)		St James Hosp	Fluid	2-3 mls	Plain sterile universal container	Yellow lid	6 weeks for culture result	
Fluid for malignant cells.		Tullamore Histology	Fluid	2-3ml	Plain sterile universal container	Yellow lid	1-2 weeks	Specimens must be sent in a separate container and request on a histology form.
Influenza Screen (PCR)	FLU	PM	Naso-pharyngeal swab	N/A	Naso-pharyngeal collection kit	Red Naso-pharyngeal swab	1 day	Service available during peak flu season Samples must be received before 3pm weekdays. SAT/SUN/BH before 9am
Legionella Urinary Antigen		TM	Urine	10ml	Plain sterile universal container	Yellow lid	1 – 2 days	Only ICU samples and requests from the Consultant Microbiologist are processed.
MRSA Screen		PM	Nasal swab Groin Swab Umbilicus (babies)	N/A	Charcoal transport swab.	Black	24-72 hours	See MRSA guideline

Mycology		MM	Skin scrapings & clippings	N/A	Plain sterile universal container	Yellow lid	6 -8 weeks	Note: do not put Skin scrapings & clipping between slides
Nasal swab culture and sensitivity		PM	Nasal swab	N/A	Charcoal transport swab.	Black	48-72 hours	
Norovirus		Virus Reference Lab Dublin/ PM	Faeces	5-10 gm	Blue capped universal container with spoon.	Blue	48 hours maybe longer during outbreaks	Service available for In-house patients only Monday to Friday. Samples must be received before 2pm
Occult Blood		PM	Faeces	5-10 gm	Blue capped universal container with spoon.	Blue	24 hours	
Pneumococcal Urinary Antigen		TM	Urine	10ml	Plain sterile universal container	Yellow lid	1 – 2 days	Only ICU samples and requests from the Consultant Microbiologist are processed.
Pus/fluid culture & sensitivity		PM	Pus & fluid.	2-3ml	Plain sterile universal container	Yellow lid	48-72 hours	
Rota Virus/ Adeno virus (children < 5 years)		PM	Faeces	5-10 gm	Blue capped universal container with spoon.	Blue	48- 72 hours	Performed routinely on children under 4 years.
Semen Analysis		Rotunda						By arrangement only. Contact Rotunda
Sputum	.	PM	Sputum	1-2ml	Plain sterile universal container	Yellow lid	48-72 hours	

Sputum for Acid Fast bacilli (A.F.B.)		St James Hosp	Sputum	2-3 mls	Plain sterile universal container	Yellow lid	6 weeks for culture result	Send one purulent specimen each day for 3 consecutive days, in separate containers.
Sputum for malignant cells.		Tullamore Histology	Sputum	1-2mls	Plain sterile universal container	Yellow lid	1-2 weeks	Advise patient to rinse mouth with water prior to collecting the specimen. Sputum for these specimens must be sent in a separate container and request on a histology form.
Sputum for Cystic Fibrosis.		Crumlin	Sputum	1-2mls	Plain sterile universal container	Yellow lid	Up to 5 days	Highlight sample from CF patient Samples sent to OLHSC Crumlin
Stool for C&S.,.		PM	Faeces	5-10 gm (walnut size.)	Blue capped universal container with spoon.	Blue	48-72 hours	
Stool for parasites.		Eufofins/ Biomnis	Faeces	5-10 gm (walnut size.)	Blue capped universal container with spoon.	Blue	1 week	Clinical details essential e.g. Travel abroad etc.
Stool for C Difficle	C Diff	PM	Faeces	5-10 gm (walnut size.)	Blue capped universal container with spoon.	Blue	24 -48 hours	Antibiotic history must be included. Specimen must be in lab by 14:00

Swabs for C&S.,		PM	Swab	N/A	Charcoal transport swab.	Black	48-72 hours	Indicate type eg vaginal, throat etc. If wound swab indicate site i.e. skin lesion or deep seated
Swabs for Virology		Virus Ref lab Dublin	swab	N/A	Red transport swab available in Lab.	Pink Swab	approx. 10 days Check with virus ref lab if required	Please hand deliver for urgent Lab attention: Monday- Friday. Sent to Virus Reference Lab
Throat swab (bacterial)		PM	Throat swab	N/A	Charcoal transport swab.	Black	48-72 hours	
Throat swab (viral)		Virus Ref lab Dublin	Throat swab	N/A	Red transport swab available in Lab.	Red	Check with virus ref lab	Please hand deliver for urgent Lab attention: Monday- Friday. Sent to Virus Reference Lab
Tissue for bacteriological examination.		PM	Tissue	N/A	Plain sterile universal container.	Yellow lid	48-72 hours	N.B. No formalin.
Umbilical swab.		PM	Umbilical swab	N/A	Charcoal transport swab.	Black	48-72 hours	
Urethral swab.		PM	Urethral swab	N/A	Charcoal transport swab.	Black	48-72 hours	
Urine for C&S or M.S.U.	.	PM	Urine	Minimum 10ml. Max 30ml	Plain sterile universal container	Yellow lid	48-72 hours Urine dipstick for glucose, protein etc is <u>not</u> routinely performed on urines.	Make sure the container is properly sealed

Urine for T.B. culture.	.	St. James's Lab	Urine	30mls	Plain sterile universal container	Yellow lid	6 weeks	Early morning specimens on three consecutive days. Doctor must contact SJH to request this test as they are not routinely performed
Urine for malignant cells.		Tullamore Histology	Urine	Minimum 10ml. Max 30ml	Plain sterile universal container	Yellow lid	1-2 weeks	Specimens must be sent in a separate container and request on a histology form.
Vaginal swab. (High)	HVS	PM	Vaginal swab	N/A	Charcoal transport swab.	Black	48-72 hours	Clinical details essential
VRE Culture	VRE	PM	Rectal swab/ Faeces	5-10 gm (walnut size.)	Charcoal transport swab Blue capped universal container with spoon.	Blue	48-72 hours	
Vulval swab.		PM	Vulval swab	N/A	Charcoal transport swab.	Black	48-72 hours	

11.0 Histology and Cytology

Histology Department,
Midland Regional Hospital at Tullamore
Phone 58342 (057 9358342)

Dr Nurul Nor, Consultant Pathologist
Phone 58279 (057 938279)
087 9913563
email: nurul.nor1@hse.ie

Dr Margaret Lynch, Consultant Pathologist
Phone 58383 (057 9358383)
or 087 2346389
email: Margaret.lynch3@hse.ie

Please **address all queries** to the Histology/Cytology secretary based in the Midland Regional Hospital, at Tullamore extension 58342 (057 9358342) in the first instance. The Histology Laboratory is contactable at extension 58338 (057 9358338).

11.1 Histology Surgical Specimens/Biopsies

All specimens for routine histology should be fixed in 10% buffered formal saline.

All specimens must be accompanied by a white histology form, fully completed. Relevant **Clinical Details/History** is essential. Incomplete forms may result in the specimen being returned for completion of clinical details and a delay in tissue processing. The requesting Clinician/NCHD should sign the form LEGIBLY and include a bleep number.
(Note: Description of the specimen does not constitute clinical details)

All histology specimens are sent to Tullamore for processing. A taxi leaves Portlaoise hospital at approx. 8.00am daily with these specimens.

Specimens must be clearly labelled with patient's name, date of birth and the nature of specimen at a minimum.
Send Histology/Cytology specimens to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.

Turnaround times for reports vary. Immunohistochemistry may be required and this can result in a longer turnaround time.

Where results are particularly **urgent** please write **'URGENT'** on the request form and call the Histology Laboratory extension 58338 (057 9358338) to advise laboratory staff that the specimen is urgent. Urgent samples can be processed and reported the next day if they are fixed and arrive before 4pm to the Histology Department MRH Tullamore.

Please **direct all queries** to the Histology/Cytology secretary based in the Midland Regional Hospital, at Tullamore extension 58342 (057 9358342).

11.2 Cytology

The cytology laboratory in the Midlands region is based at Tullamore. Dr Margaret Lynch is the lead Cytopathologist. If there are any queries around sample preparation please contact Dr Lynch directly (phone or email above). In general FNA specimens should be performed by using a small 25 gauge needle and using direct air dried slides which are labelled in pencil with the patients name at the frosted end. The needle should then be rinsed in a vial of CytoLyt solution (available from the laboratory MRHP). As much clinical information as possible should be entered on the request card. If a sample is urgent it should be labelled URGENT. When sending fluid samples e.g. pleural fluid/ascitic fluid/urine samples please ensure an adequate volume of fluid is supplied eg at least 30 mL. Please ensure that the fluid sample arrives in Tullamore laboratory ON THE SAME DAY that it is taken from the patient. Rapid transport is essential to avoid sample degeneration.

11.3 Frozen section bookings

Frozen Sections are not processed in the Midland Regional Hospital, at Portlaoise. However Frozen section bookings can be arranged in advance by calling the Histology Laboratory in Tullamore, extension 58338 (057 9358338)

Arrangements must be made for the specimen to be transported immediately to the Histology Laboratory in Tullamore. Contact the Laboratory in Portlaoise to arrange a taxi. Please include a mobile phone number/extension number on the request form so that results can be phoned as soon as they are ready.

11.4 Requests for Post Mortems

Please inform Nursing Administration MRH Portlaoise, extension 6439 (057 8696439) or bleep 035 as soon as the death of a patient has taken place. It should then be decided whether the case is a **Coroners case** or a **Non Coroners case**.

If the cause of death is unknown and a death certificate cannot be written then it is likely that the patient will require a coroners post mortem. If the patient died within 24 hours of admission then the case should be discussed with the coroner. This does not necessarily mean that a post mortem will be ordered (unless the cause of death is unknown) and a death certificate cannot be issued. All discussions with the Coroner and Pathologist should take place as soon as possible after the death has occurred so as not to delay funeral arrangements.

There are other reasons why cases come under the jurisdiction of the Coroner (Coroners Act 1962) such as a death following a procedure e.g. operation or after a fall. All Coroners cases require direct discussion between the clinical team and the Coroner by telephone. In addition a fax is sent to the Coroner to inform him of the death. The patients Chart/Medical Notes should accompany the remains to the Mortuary in all cases.

If there is any uncertainty about whether a post mortem will be required then the clinical details should be discussed with the Coroner for County Laois, Mr Eugene O'Connor (086 8131317/057 8621329) and Dr Lynch Consultant Pathologist (087 2346389). The Coroner may decide to order a Post Mortem depending on the circumstances.

Coroner's cases DO NOT require a signed consent form. House cases (Non Coroners cases) do require a signed consent form. The Consultant Pathologist(s) are happy to provide advice to NCHD's when obtaining consent for Non Coroners cases particularly in relation to organ retention.

Neonatal post mortems
Neonatal post mortems may be arranged through Nursing Administration who will then contact a perinatal pathologist who may arrange to do the post mortem on site or may be facilitated at an offsite location. In any event the medical notes and the placenta will be required at the time of the post mortem. A consent form will need to be signed if the case is not a coroners case. The requesting doctor should as a matter routine discuss the case with the perinatal pathologist. Issues around organ retention may need to be communicated to the family.

In the case of a paediatric death the case may be a coroners case depending on the circumstances. Some paediatric cases may be done

on site locally. Others may require the expertise of a Paediatric Histopathologist and may be transferred to Our Ladys Hospital Crumlin, again after discussion and agreement with the Pathologist in Crumlin.
Contact the Pathologist who carried out the Post Mortem regarding any queries relating to Neonatal Post Mortems.

A leaflet in relation to Post Mortem procedures and organ retention is available in Nursing Administration and should be given to the families of all patients undergoing a Post Mortem.

In general post mortem reports take at least 3 to 6 months to be finalised. If a report is required urgently please contact the relevant Pathologist directly.

Louise Cooke (Bereavement Support Nurse mobile 086 4177400) is available Monday to Friday 8am to 5pm, to inform families about issues pertaining to organ donation.

11.4 Special requirements for specimens, including cervical smears

Tissue: Tissue removed from theatre for **culture** must not be placed in formalin, but should be sent unfixed to the microbiology lab as soon as possible, with a separate request form.

Skin biopsies for immunofluorescence: It is essential to contact the Histology Department, in the Midland Regional Hospital at Tullamore **before** the biopsy is taken, as arrangements must be made with St James laboratory in advance. These specimens must **not** be placed in formalin.

Cervical Cytology: Cervical cytology is done in the Coombe Hospital, Dublin. Specimens may be sent directly or via the laboratory. Results may take some time and the Coombe Hospital; Cytology Department should be contacted if there are queries in relation to reports. Screening cytology (National Screening Programme) is sent directly to Quest Laboratories.

Sputum cytology for malignant cells: This request requires a separate specimen (plain 60 ml white container) and a white histology/ cytology form. The mouth should be rinsed with water before collection. An expectorated sputum specimen is necessary – saliva is useless. The physiotherapist may provide assistance in producing a sputum specimen by assisting the patient with deep coughing following inhalation of nebulised saline.

Other body fluids for Cytology: Please send to laboratory in plain container as soon **after** collection as possible, with an appropriate request form. Relevant clinical details are essential for proper assessment. Ideally specimens for cytology should reach the Histology Department in Tullamore on the day that they are taken as they can deteriorate quickly. If Fine Needle Aspiration Cytology (FNAC) is required please contact Dr Lynch who may be able to perform the FNA or give advice in the appropriate preparation of the specimen.

12.0 Phlebotomy Service

A Phlebotomy Service is available for in-patients at the Midland Regional Hospital, Portlaoise. The Phlebotomists are under the control of the Director of Nursing. The phlebotomists visit the wards Monday to Friday between 7.30am to 12.30pm.
A routine phlebotomy service is available on Saturdays, Sundays or Bank Holiday from 7.30am to 12.00 md.

Doctors are requested to ensure that request forms are completed before the phlebotomist arrives.

Should a patient be unavailable for venepuncture, or if a specimen cannot be obtained, the phlebotomist will notify the ward staff as soon as possible.

NCHD's are responsible for taking specimens at all other times. All inpatient routine specimens on Saturdays, Sundays or Bank Holidays must reach the laboratory before 12pm for same day processing.

Refer to procedure in the clinical area for Blood sampling by Venepuncture, and Procedure for taking Blood Cultures.

This service is for genuine medical emergencies **only**, where the results are likely to influence immediate management of the patient.

13.0 QUALITY ASSURANCE

All laboratory departments aim to give the highest quality of service with the minimum of delay. To ensure this, all departments participate in recognised External Quality Assurance Schemes. There are also extensive internal quality control checks. Any problems regarding the quality of service should be brought to the attention of the Head of Department concerned.

13.1 External Third Party Assessment Programme

The Pathology Department **participates** in relevant available **external third party assessment schemes**. This includes schemes operated by:-

- NEQAS (UK, National External Quality Assurance Scheme)
- IEQAS (Irish External Quality Assurance Scheme)
- RIQAS (Randox International Quality Assurance Scheme)
- BIO-RAD Laboratories EQAS (BIO-RAD Laboratories External Quality Assurance Services)
- Labquality External Quality Assurance Scheme

The Pathology Department is committed to participating in other schemes, as they become available and are required, to ensure comprehensive assessment of the test repertoire.

14.0 LABORATORY TESTS/PROFILES AVAILABLE

14.1 Laboratory Tests/Profiles available in the Midland Region

Details of requirements for laboratory tests /profiles available can be found in the table in section 14.3**.** This section contains an **alphabetical list of Laboratory tests available from the Pathology Service in the Midland Region** including the Pathology Departments located at MRH Portlaoise, MRH Tullamore and MRH Mullingar.
Refer to Microbiology Section 10.0 details on Microbiology specimen requirements.
Refer to Histology and Cytology section 11.0 for details on Histology and Cytology specimen requirements.

DO NOT TAKE SAMPLES FOR EXTERNAL TESTS OUT OF HOURS.

TESTS AVAILABLE OUT OF HOURS ARE LISTED IN SECTION 14.6.

Specimen Handbook

A Specimen Handbook is available in the laboratory for laboratory test requests referred to external laboratories. This contains a detailed alphabetical list of laboratory tests and any special requirements. Note this is not an exhaustive list and if in doubt please discuss with a medical scientist before taking the specimen (ext 96280).

14.2 Laboratory Test/ Profile Description

Each laboratory test will be described under the following headings:-

- **Test Name**
  Full name of the test
- **Test code**
  The abbreviated name for test commonly used

- **Laboratory /Department**
  Specifies the location where the test is performed
  PB Portlaoise Biochemistry
  PC Portlaoise Coagulation
  PH Portlaoise Haematology
  PHos Portlaoise Hospital
  PM Portlaoise Microbiology
  PT Portlaoise Transfusion
  TB Tullamore Biochemistry
  TH Tullamore Haematology
  THis Tullamore Histology
  TM Tullamore Microbiology
  MB Mullingar Biochemistry
  MI Mullingar Immunology
  MM Mullingar Microbiology

- **Specimen**
  The type of specimen required is stated.

- **Volume**
  The volume of the required specimen container is stated.

- **Container**
  The type of container/additive is stated.

- **Colour Code**
  The colour code of the container is stated
  Use appropriate small paediatric bottles for children/infants.

- **Turnaround time**
  Turnaround time is defined as the time from specimen receipt in the Pathology Department to the time results are available.
  1 day refers to 1 routine working day.

- **Comment**
  Comment identifies any further action required when requesting or taking a particular specimen. Special requirements are detailed where necessary including but not limited to:
  - Patient preparation, e.g. fasting
  - Consent form
  - Special timing for collection of specimens e.g. pre and post drug administration
  - Any special handling needs between time of collection and time received by the laboratory (transport requirements, refrigeration, warming, immediate delivery etc.)

14.3 LABORATORY TESTS/ PROFILES AVAILABLE

Information on the specimen sizes available for both adult and paediatric specimen types.

Department	Specimen Type	Test	Adult Size	Paediatric Size
Haematology	EDTA (Red) Tri Na Cit (Purple) EDTA (Red)	FBC ESR	2.7ml 3.5ml	1.6 ml 1.6 ml
Blood Transfusion	EDTA (Red)	Group and Hold Cord Blood	7.5ml	4.5ml 7.5ml
Coagulation	Na Citrate (Green)	PT APTT Fibrinogen D dimer	3ml	1.4ml
Biochemistry	Serum (Brown) Serum (White)	Refer to table	4.9ml	1.1ml 1.2ml 1.3ml 1.2ml
Biochemistry	Glucose (Yellow)	Glucose/ Lactate	2.7ml	1.3ml 1.2ml
Biochemistry	Lithium Heparin (Orange)	Refer to table	2.7ml	1.2ml
Microbiology	Blood Culture	Blood Culture	8-10 ml per bottle	1-4 ml

LABORATORY TESTS/ PROFILES

This table specifies only the adult specimen volumes. Paediatric samples for Biochemistry test requests should be taken into paediatric sample bottles.
Please ensure bottles are within their expiry date. Samples sent to the laboratory using expired sample bottles will be rejected.
Refer to section 10.0 for Microbiology.

'Tests performed within the Pathology Laboratory, MRH Portlaoise and currently accredited by INAB to ISO 15189 are available on:https://www.inab.ie/inab-directory/laboratory-accreditation/medical-testing-laboratories/
For tests sent to MRH Mullingar and MRH Tullamore accreditation status can be found on the link above'.

Test Name	Code	Dept	Specimen	Vol	Container	Colour code	Turnaround Time	Comment
Activated Partial Thromboplastin Time	APTT	PC	Blood	3ml	Na Cit	Green	1 day	Record Date & time taken on sample /request form. Must be processed within 8 hrs Fill to green line on bottle.
Adenovirus		PM	Faeces		Universal Container	Blue	1-3 Days	
Alanine aminotransferase	ALT	PB	Blood	4.9ml	Serum	Brown	1 day	
Albumin	ALB	PB	Blood	4.9ml	Serum	Brown	1 day	
Alcohol	ALC	PB	Blood	4.9ml	Serum	Brown	1 day	
Alkaline Phosphatase	ALP	PB	Blood	4.9ml	Serum	Brown	1 day	
Allergy screen		MI	Blood	4.9ml	Serum	Brown	7 days	Specify Allergy test required
Alpha -1-Anti-trypsin		MI	Blood	4.9ml	Serum	Brown	5 days	
Alpha Feto Protein.	AFP	TB	Blood	4.9ml	Serum	Brown	3 days	
Alpha Gliadin Antibodies	AGA/tTG	MI	Blood	4.9ml	Serum	Brown	10-20days	
Aminophylline	Theo	MB	Blood	4.9ml	Serum	Brown	1 day	Theophyline
Ammonia		MB	Blood	2.7ml	EDTA	Red	Arrange with Lab	Phone lab, samples must be sent immediately and separated and frozen within 15 minutes. .
Amphetamine	AMP	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse. ONLY
Amylase	AMY	PB	Blood	4.9ml	Serum	Brown	1 day	

Anti Centromere Antibodies		MI	Blood	4.9ml	Serum	Brown	5 days	Part of auto antibody screen
Anti DNA Antibodies	dsDNA	MI	Blood	4.9ml	Serum	Brown	5 days	
Anti Gastric Parietal Antibodies	GPC	MI	Blood	4.9ml	Serum	Brown	5 days	
Anti Liver Kidney Muscle Antibodies	LKM	MI	Blood	4.9ml	Serum	Brown	5 days	
Anti Lupus Antibodies		MI	Blood	4.9ml	Serum	Brown	5 days	Part of auto antibody screen
Anti Mitochondrial Antibodies	AMA	MI	Blood	4.9ml	Serum	Brown	5 days	Part of auto antibody screen
Anti Nuclear Antibodies	ANA	MI	Blood	4.9ml	Serum	Brown	5 days	
Anti Nuclear Factor	ANF	MI	Blood	4.9ml	Serum	Brown	5 days	
Anti Ro/La Antibiodies	Ro/La	MI	Blood	4.9ml	Serum	Brown	7-14 days	Part of ENA screen
Anti Smooth Muscle Antibodies	ASMA	MI	Blood	4.9ml	Serum	Brown	5 days	Part of auto antibody screen
Anti Streptolysin titre	ASOT	PH	Blood	4.9ml	Serum	Brown	1 day	
Anti thyroid peroxidise antibodies	TPO	MI	Blood	4.9ml	Serum	Brown	7-14 days	
Anti trypsin		MI	Blood	4.9ml	Serum	Brown	5 days	See Alpha -1-Anti Trypsin
Aspartate amino-transferase	AST	PB	Blood	4.9ml	Serum	Brown	1 day	
Auto-Antibodies		MI	Blood	4.9ml	Serum	Brown	5 days	Includes ANA, ASMA, AMA, GPC,
B12		MB	Blood	4.9ml	Serum	Brown	5 days	See Vitamin B12 Include the completed MRH M form 'Vitamin B12/Folate Clinical Information Form'
B2 Microglobulin		MI	Blood	4.9ml	Serum	Brown	5 days	
Barbiturates	BAR	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse. ONLY
Bence Jones Protein	BJP	MI	Urine		Universal Container	Yellow	5 days	Early morning sample or an aliquot from a 24hr collection
Benzodiazepine	BZD	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse. ONLY

Beta HCG	HCG	TB	Blood	4.9ml	Serum	Brown	1-3 days	See Human Chorionic Gonadotrophin. Tumour Markers
Beta HCG	HCG	PB	Blood	4.9ml	Serum	Brown	1-3 days	See Human Chorionic Gonadotrophin.
Bicarbonate	HCO3	PHos	Blood	1 - 5ml	Hep Syringe/ Caplllary	N/A	Must be processed immediately	Blood gas analysers located in ED, ICU - CCU, PAEDS.
Bilirubin		PB	Blood	4.9ml	Serum	Brown	1 day	See Total and Direct Bilirubin
Blood Culture		PM	Blood	8-10 mls per adult bottle 1-4 mls paediatric bottle	Adults Aerobic Anaerobic Paediatric	Blue Purple Yellow	7 days	Bring to lab ASAP for incubation
Blood Film Routine review		PH	Blood	2.7ml	EDTA	Red	1–3 days	
Blood Film Urgent review		PH	Blood	2.7ml	EDTA	Red	1 day	
Blood Film For Routine Consultant review		PH	Blood	2.7ml	EDTA	Red	30 days	
Blood Film For Urgent Consultant review		PH	Blood	2.7ml	EDTA	Red	1 day	
Blood Gas Arterial/Venous/ Capillary		PHos	Blood	1 - 5ml	Hep Syringe/ Caplllary	N/A	Must be processed immediately	Blood gas analyser located in ED, ICU - CCU, PAEDS and Maternity.
Blood Group		PT	Blood	7.5ml	EDTA	Red	1 day	Refer to Haemovigilance folder on wards re specimen/form labelling.
Blood Group (Antenatal)		MT	Blood	7.5ml	EDTA	Red	3-5 days	Refer to section 9.11for further details.
Bone Marrow	BM	TH	Bone Marrow Aspirate					Contact Haematologist. By arrangement.

Bone Marrow Aspirate Cytogenetics		TH	Bone Marrow Aspirate		RPMI Media			Contact Haematologist. By arrangement.
Bone Profile		PB	Blood	4.9ml	Serum	Brown	1 day	Calcium, Inorganic phos, Alk phos, Magnesium, Corrected Calcium
Bowel tumor markers		TB	Blood	4.9ml	Serum	Brown	3 days	See CEA , AFP
Breath Test								Non-invasive test for H Pylori Contact Surgical ward for further information
C Reactive Protein	CRP	PB	Blood	4.9ml	Serum	Brown	1 day	
C_2H_5OH		PB	Blood	4.9ml	Serum	Brown	1 day	See Ethanol
CA 125		TB	Blood	4.9ml	Serum	Brown	3 days	
CA 15.3		TB	Blood	4.9ml	Serum	Brown	3 days	
CA 19.9		TB	Blood	4.9ml	Serum	Brown	3 days	
Caeruloplasmin		MI	Blood	4.9ml	Serum	Brown	5 days	
Calcium	CA	PB	Blood	4.9ml	Serum	Brown	1 day	
Calcium/Creatinine ratio		PB	Urine	90 ul			1-3 days	Calculated test
Calcium ionised	ABG	PB	Blood		Hep Syringe/ Capillary		1 day	Blood gas analysers available in ED ICU – CCU, Paediatric ward.
Cannabis (Marjuana)		PB	Urine	2ml	Universal Container	Yellow	1 day	See drugs of abuse only
Carbamazepine		MB	Blood	4.9ml	Serum	Brown	5 days	Tegretol
Carboxy Haemoglobin		PHos	Blood	1 - 5ml	Hep Syringe/ Caplllary	N/A	Must be processed immediately	Blood gas analyser located in ED, ICU - CCU, Paediatric ward.
Carcinoembryonic Antigen	CEA	TB	Blood	4.9ml	Serum	Brown	3 days	
Cardiac Profile/ enzymes	CE	PB	Blood	4.9ml	Serum	Brown	1 day	AST, CK
Cerebrospinal Fluid Glucose		PB	CSF	80ul			1 day	Send to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.
Cerebrospinal Fluid Protein		PB	CSF	80ul			1 day	Send to the Laboratory with Porter. DO NOT USE PNEUMATIC TUBE SYSTEM.

Chlamydia/ Gonorrhoea (PCR)		MM			Chlamydia/ Gonorrhoea media		7 days	Contact lab for swab/urine containers
Chloride	CL	PB	Blood	4.9ml	Serum	Brown	1 day	
Cholesterol	CHOL	PB	Blood	4.9ml	Serum	Brown	1 day	Random or fasting
Cocaine	COC	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse ONLY
Coag Screen	CS	PC	Blood	3 ml	Na Cit	Green	1 day	Record Date & time taken on sample /request form. Must be processed within 8 hrs (24 hrs if on Warfarin). See PT/APTT. Fill to green line.
Coeliac Screen		MI	Blood	4.9ml	Serum	Brown	10-20 days	See Tissue Transglutaminase antibodies, Endomysial antibodies. Note Endomysial Antibodies (EMA) are done on all samples positive for tTg
Collagen Screen		MI	Blood	4.9ml	Serum	Brown	5 days	See Rheumatoid arthritis screen/ Anti Nuclear Antibodies
Complement C3	C3	MI	Blood	4.9ml	Serum	Brown	5 days	
Complement C4	C4	MI	Blood	4.9ml	Serum	Brown	5 days	
Coombs Test		PT	Blood	4.9ml	EDTA	Red	1 Day	Refer to Haemovigilance folder on wards re specimen/form labelling.
Cord Blood		PT	Cord Blood	7.5ml	EDTA	Red	1 Day	Refer to Haemovigilance folder on wards re specimen/ form labelling.
Corrected Calcium		PB	Blood	4.9ml	Serum	Brown	1 day	Calculated method
Cortisol AM		MB	Blood	4.9ml	Serum	Brown	5 days	Ensure time taken is noted on sample and request form.
Cortisol PM		MB	Blood	4.9ml	Serum	Brown	5 days	Ensure time taken is noted on sample and request form.
Creatine kinase	CK	PB	Blood	4.9ml	Serum	Brown	1 day	
Creatinine	CREAT	PB	Blood	4.9ml	Serum	Brown	1 day	
Creatinine Clearance		PB	Urine and Blood	2 ml 7.5 ml	Universal Container Serum	Yellow Brown	1-3 days	Aliquot from a 24 hr urine collection... No Preservative Total Volume must be stated. Serum sample also required. Serum to be taken during 24hr urine collection

D-dimer	DD	PC	Blood	3 ml	Na Cit	Green	1 day	Record Date & time taken on sample /request form. Must be processed within 8 hrs Fill to green line. Wells score/clinical details should be indicated.
Deximethesone (Cortisol)		ME	Blood	4.9ml	Serum	Brown	3 days	Contact Biochemistry MRH Mullingar for details.
Differential White Cell Count	Diff	PH	Blood	2.7ml	EDTA	Red	1 day	
Digitalis		MB	Blood	4.9ml	Serum	Brown	5 days	See Digoxin
Digoxin	DIGOX	MB	Blood	4.9ml	Serum	Brown	5 days	
Direct Bilirubin	BILDIR	PB	Blood	4.9ml	Serum	Brown	1 day	
Direct Coombs Test	DCT	PT	Blood	7.5 ml	EDTA	Red	1 day	Refer to Haemovigilance folder on wards re specimen /form labelling
DNA antibodies		MI	Blood	4.9ml	Serum	Brown	5 days	See Anti DNA Antibodies
Drugs of Abuse Qualitative Screen Amphetamine, Barbiturates, Benzodiazepine, Cocaine, Methadone, Methamphetamine, Opiates Marajuna Tricyclic Antidepressants		PB	Urine	2ml	Universal Container	Yellow	1 day	
Ecstasy (Opiates)		PB	Urine	2ml	Universal Container	Yellow	1 day	
Electrolytes		PB	Blood	4.9ml	Serum	Brown	1 day	See Sodium/ Potassium/ Chloride
Electrophoresis		MI	Blood	4.9ml	Serum	Brown	5 days	See Serum Electrophoresis
Endomysial Antibodies	EMA	MI	Blood	4.9ml	Serum	Brown	10-20days	See Tissue Transglutaminase Antibodies

Epanutin		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	**See Phenytoin**
Epilim		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	**See Valporate**
Erythrocyte sedimentation rate	**ESR**	**PH**	**Blood**	**3.5ml**	**Tri Na Cit**	**Purple**	**1 day**	**Fill to correct level**
Estimated Glomerular Filtration Rate	**eGFR**	**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	**Calculated result**
Estradiol	**E2**	**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	**See oestradiol**
Ethanol		**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	
Extractable Nuclear Antigen	**ENA**	**MI**	**Blood**	**4.9ml**	**Serum**	**Brown**	**7-14 days**	
Fasting Glucose		**PB**	**Blood**	**7.5 ml/4.9ml/ 2.7ml**	**Serum/ Flu Ox**	**Brown/ Yellow**	**1 day**	**Serum (inpatients only) or Fluoride Ox (outpatients)**
Ferritin		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	
Feto-Maternal Haemorrhage Estimation	**FMH**	**PH**	**Blood**	**2.7 ml**	**EDTA**	**Red**	**1-3 days**	**By arrangement** Samples must be received in the lab by 3pm to ensure same day analysis. **Routine service Mon, Wed & Fri FMH's > 4ml bleed, are sent to the Coombe for confirmation by Flow Cytometry.**
Fibrinogen	**FIB**	**PC**	**Blood**	**3 ml**	**Na Cit**	**Green**	**1 day**	**Record Date & time taken on sample /request form. Must be processed within 8 hrs Fill to green line.**
Folate		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	**Include the completed MRH M form 'Vitamin B12/Folate Clinical Information Form'**
Folic acid		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	
Follicle stimulating hormone	**FSH**	**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	**Indicate if mid cycle, follicular, luteal, menopausal or male**
FreeT3		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**7 days**	
FreeT4		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	
Full Blood Count	**FBC**	**PH**	**Blood**	**2.7ml**	**EDTA**	**Red**	**1 day**	
Gamma-glutamyl-transferase	**GGT**	**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	

Gentamicin Post (PEAK)	GENT	PB	Blood	4.9ml 2.7 ml	Serum Li Hep	Brown/ Orange	1 day	
Gentamicin Pre (TROUGH)	GENT	PB	Blood	4.9ml I	Serum	Brown/	1 day	
Globulin	GLOB	PB	Blood	4.9ml	Serum	Brown	1 day	See Total Protein/ Albumin
Glucose (Fasting)	GLU	PB	Blood	7.5 ml/ 2.7ml	Serum/ Fluoride Ox	Brown/ Yellow	1 day	See Blood Glucose. Serum (inpatients only) or Fluoride Ox (Outpatients)
Glucose (random)	GLU	PB	Blood	7.5 ml/4.5ml/ 2.7ml	Serum/ Fluoride Ox	Brown/ Yellow	1 day	See Blood Glucose. Serum (inpatients only) or Fluoride Ox (Outpatients)
Gestational Glucose Tolerance	GTT	PB	Blood	2.7ml See comment	Flu Ox	Yellow	1 day	3 specimens /request forms required in total. Fasting Blood 1 Hour PP Blood, 2 Hour PP Blood. Record time taken on sample /request form.
Glucose Tolerance		PB	Blood	2.7ml See comment	Flu Ox	Yellow	1 day	Fasting 2 hour Record time taken on sample /request form.
Glycosolated Haemoglobin		MB	Blood	2.7ml	EDTA	Red	5 days	See HbA1c
Group & Antibody Screen/Hold		PT	Blood	7.5 ml/	EDTA	Red	1 day	Refer to Haemovigilance folder on wards re specimen form labelling
Group & Antibody Screen/Hold (Antenatal)		MT	Blood	7.5 ml	EDTA	Red	3 – 5 days	Refer to section 9.11for further details.
Group & Coombs' Test		PT	Blood	7.5 ml	EDTA	Red	1 day	Refer to Haemovigilance folder on wards re specimen form labelling
Group & Coombs' Test	CORD BLOOD	PT	Cord Blood	7.5 ml	EDTA	Red	1 day	Refer to Haemovigilance folder on wards re specimen form labelling
Group, Screen & Cross match	G & XM	PT	Blood	7.5 ml	EDTA	Red	1 day	Refer to Haemovigilance folder on wards re specimen form labelling

Haematinics		MB	Blood	4.9ml	Serum	Brown	5 days	Vit B12, Folate and Ferritin Include the completed MRH M form 'Vitamin B12/Folate Clinical Information Form'
Haematocrit	HCT	PH	Blood	2.7ml	EDTA	Red	1 day	
Haemochromatosis Screen (Genetic screen)	HLA-H	MM	Blood	2.7ml x2	EDTA	Red	1-14 days	Consent form required. Haemochromitis genetic screen only carried out if Transferrin Saturation is raised or family history.
Haemoglobin	Hb	PH	Blood	2.7ml	EDTA	Red	1 day	
Haemolysis Screen/Haemolytic Screen		PL/MI	Blood Urine	2 X2.7 ml and 2 X 7.5 ml	EDTA Serum Universal Container	Red Brown Yellow	1-5 days	Request FBC, Blood Film, Retic Count, Direct Coombs Test (DCT), Haptoglobin, LFT's, LDH, Vit B 12, Urine for Haemosiderin
Haemosiderin		THis	Urine		Universal Container	Yellow		By arrangement
Haptoglobins		MI	Blood	4.9ml	Serum	Brown	5 days	
HbA1c		MB	Blood	2.7ml	EDTA	Red	5 days	Send second sample if FBC is required.
High Density Lipoprotein	HDL	PB	Blood	4.9ml	Serum	Brown	1 day	
Hormone assay		MB	Blood	4.9ml	Serum	Brown	5 days	FSH/LH/Prolactin
Human Chorionic Gonadotrophin	HCG	PB	Blood	4.9ml	Serum	Brown	1 -3 days	Quantitative (Pregnant women only for query bleed/ectopic)
Human Chorionic Gonadotrophin Beta	HCG	TB	Blood	4.9ml	Serum	Brown	3 -5 days	- tumor marker (non pregnant, non menopausal or males)
Immunofixation	IFE	MI	Blood	4.9ml	Serum	Brown	5 days	
Immunoglobulin A	IgA	MI	Blood	4.9ml	Serum	Brown	5 days	(adult)
Immunoglobulin D	IgA	MI	Blood	4.9ml	Serum	Brown	5 days	(adult)
Immunoglobulin E	IgE	MI	Blood	4.9ml	Serum	Brown	10 days	(total and subclasses available)
Immunoglobulin G	IgG	MI	Blood	4.9ml	Serum	Brown	5 days	(adult)
Immunoglobulin M	IgM	MI	Blood	4.9ml	Serum	Brown	5 days	(adult)

Infectious mononucleosis	**IM**	**PH**	**Blood**	**4.9ml /2.7 ml**	**Serum/ EDTA**	**Brown/ Red**	**1-2 days**	
Inorganic phosphorus		**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	
International Normalised Ratio	**INR**	**PC**	**Blood**	**3 ml**	**Na Cit**	**Green**	**1 day**	**Record time taken on sample /request form. Must be processed within 8 hrs (24 hrs if on Warfarin).Fill to green line**
Ionised calcium	**BG**	**PHos**	**Blood**	**1 - 5ml**	**Hep Syringe/ Caplllary**	**N/A**	**Must be processed immediately**	**Blood gas analysers located in ED, ICU - CCU and Paediatric Ward..**
Iron	**FE**	**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	
Iron Studies		**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1-7 days**	**Includes Iron, UIBC, TIBC, Iron, Transferrin Saturation**
Ketones (Urine)		**PM**	**Urine**	**2 ml**	**Universal container**	**Yellow**	**1 day**	**Qualitative**
Kleihauer		**PH**	**Blood**	**2.7ml**	**EDTA**	**Red**	**1-3 days**	**See Feto-Maternal Haemorhage estimation.** **By arrangement** Samples must be received in the lab by 3pm to ensure same day analysis. **Routine service Mon, Wed & Fri. FMH's > 4ml bleed, are sent to the Coombe for confirmation by Flow Cytometry.**
Lactate		**PB**	**Blood**	**2.7ml**	**Flu Ox**	**Yellow**	**1 day**	**Phone lab.** **Specimens must be centrifuged within 15 minutes of collecting. Document Date and Time taken on the specimen/request form.**
Lactate Blood Gas	**BG**	**PHos**	**Blood**	**1 - 5ml**	**Hep Syringe/ Caplllary**	**N/A**	**Must be processed immediately**	**Blood gas analyser located in ED, ICU – CCU and Paediatric Ward.**
Lactate Dehydrodenase	**LDH**	**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	
Lanoxin		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 days**	**See Digoxin**
Lipid Profile	**LIP**	**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	**See CHOL and TRIG**

Lipid Profile (fasting)	LIP	PB	Blood	4.9ml	Serum	Brown	1 day	See CHOL, TRIG, HDL and LDL
Lithium	LITH	PB	Blood	4.9ml	Serum	Brown	1 -2 days	Serum only
Liver function tests	LFT	PB	Blood	4.9ml	Serum	Brown	1 day	ALT/ ALK PHOS/ GGT/ TOTALBILIRUBIN/ ALB
Low Density Lipoprotein	LDL	PB	Blood	4.9ml	Serum	Brown	1 day	
Luteinizing hormone	LH	MB	Blood	4.9ml	Serum	Brown	5 days	Indicate if follicular, luteal, mid cycle, menopausal or male
Magnesium	MG	PB	Blood	4.9ml	Serum	Brown	1 day	
Malaria Screen	MAL	PH	Blood	2.7ml	EDTA	Red	1 day	Contact Lab. Must be sent to the lab with a completed questionnaire.
Malaria Confirmation		MRL	Blood	2.7ml	EDTA	Red	7 days	MRL Malaria Reference Laboratory London
Marjuana		PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse ONLY
Metabolic profile		PB	Blood	4.9ml	Serum	Brown	1 day	(Adults) CA, PHOS, Uric Acid
Methadone	MTD	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse ONLY
Methamphetamine	MET	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse ONLY
Microalbumin		PB	Urine	2 ml	Universal Container	Yellow	1-3 days	See Urinary Microalbumin
Morphine	MOP	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse ONLY
Myeloma Screen		MI	Blood Urine	4.9ml See Comment	Serum Universal Container	Brown Yellow	5 days	Send samples for Serum protein electrophoresis AND urine protein electrophoresis PLUS Serum for Immunoglobulin IgG A, IgG G & IgG M
Nt pro BNP		PB	Blood	4.9ml	Serum	Brown	1-3 days	By Arrangement
Oestradiol		MB	Blood	4.9ml	Serum	Brown	5 days	Indicate if follicular, luteal, mid cycle, menopausal or male
Oestrogen		MB	Blood	4.9ml	Serum	Brown	5 days	See oestradiol

Opiates		PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse.
Osteoporosis Screen		TB	Blood	2X 2.7ml	EDTA	Red	7 days	Contact Lab Tullamore P1NP, CTX, NTX
Paracetemol		PB	Blood	4.9ml	Serum	Brown	1 day	
Paraproteins		MI	Blood	4.9ml	Serum	Brown	5 days	See Serum Protein Electrophoresis
Parietal Cell Antibodies	PCA	MI	Blood	4.9ml	Serum	Brown	5 days	See Anti Gastric Parietal Antibodies
Paul Brunell		PH	Blood	4.9ml /2.7 ml	Serum/ EDTA	Brown/ Red	1 day	See Infectious Mononucleosis
Phenobarbital/ Phenobarbitone		MB	Blood	4.9ml	Serum	Brown	5 days	
Phenytoin		MB	Blood	4.9ml	Serum	Brown	5days	(EPANUTIN)
Phosphorous	PHOS	PB	Blood	4.9ml	Serum	Brown	1 day	
Platelets	PLT	PH	Blood	2.7ml	EDTA	Red	1 day	
Potassium	K	PB	Blood	4.9ml	Serum	Brown	1 day	
Pregnancy test		PB	Urine	2ml	Universal Container	Yellow	1-3 days	Early morning urine
Priadel (Lithium)		PB	Blood	4.9ml	Serum	Brown	1 day	See Lithium. Lithium Heparin bottle not suitable
Pro BNP		PB	Blood	4.9ml	Serum	Brown	1-3 days	By arrangement Refer to nt pro BNP
Progesterone		MB	Blood	4.9ml	Serum	Brown	5 days	Indicate if follicular, luteal, mid cycle, menopausal or male
Prolactin		MB	Blood	4.9ml	Serum	Brown	5 days	
Prostate specific antigen	PSA	MI	Blood	4.9ml	Serum	Brown	5 days	
Protein Electrophoresis		MI	Blood	4.9ml	Serum	Brown	5 days	See Serum Protein Electrophoresis
Proteins		PB	Blood	4.9ml	Serum	Brown	1 day	See Total protein/ Albumin
Prothrombin Time	PT	PC	Blood	3 ml	Na Cit	Green	1 day	Fill to green line. Record Date &time taken on sample /request form. Must be processed within 8 hrs (24 hrs if on Warfarin).

Random blood sugar		PB	Blood	7.5 ml/4.9ml/ 2.7ml	Serum/ Fluoride Ox	Brown/ Yellow	1 day	See Blood Glucose. Serum (inpatients only) or Fluoride Ox (outpatients)
Renal profile	RENAL	PB	Blood	4.9ml	Serum	Brown	1 day	Urea/Sodium/Potassium/ Creatinine /Chloride
Reticulocytes	RETIC	PH	Blood	2.7ml	EDTA	Red	1 day	Retics can be performed on EDTA samples up to 24 hours from time taken
Rheumatoid arthritis screen	RA/RF	PH	Blood	4.9ml	Serum	Brown	1 day	
Rheumatoid factor	RF	PH	Blood	4.9ml	Serum	Brown	1 day	
Rotavirus		PM	Stool		Universal Container	Blue	1-3 days	
Salicylate	SALIC	PB	Blood	4.9ml	Serum	Brown	1 day	
Serum Protein Electrophoresis	SPE	MI	Blood	4.9ml	Serum	Brown	5 days	
Sickle Cell Screen Urgent	SC	PH	Blood	2.7ml	EDTA	Red	1 day	Positive samples and samples on children < 6 months sent to St James' for electrophoresis
Sickle Cell Screen Routine	SC	PH	Blood	2.7ml	EDTA	Red	1 -3 days	
Sickle Cell Screen Electrophoresis	SC	PH	Blood	2.7ml	EDTA	Red	14 days	Positive samples and samples on children < 6 months sent to St James' for electrophoresis
Sodium	NA	PB	Blood	4.9ml	Serum	Brown	1 day	
Sweat chloride	Sw Cl	PB	Sweat	60ul			1 day	Kit available in Paeds or contact Lab
Sweat Sodium	Sw Na	PB	Sweat	60ul			1 day	Kit available in Paeds or contact Lab
Sweat Test		PB	Sweat	60ul			1 day	Kit available in Paeds or contact Lab
Synacthen (Cortisol)		MB	Blood	4.9ml	Serum	Brown	5 days	Contact Lab
T 3		MB	Blood	4.9ml	Serum	Brown	7 days	
T 4		MB	Blood	4.9ml	Serum	Brown	5 days	
Testosterone		MB	Blood	4.9ml	Serum	Brown	5 days	Male samples proccssed in MB, Female samples sent to Biomnis
Theophylline	THEO	MB	Blood	4.9ml	Serum	Brown	5 days	
Thyroid peroxidise antibodies		MB	Blood	4.9ml	Serum	Brown	5 days	See Anti Thyroid Peroxidase Antibodies

Thyroid function tests	TFT	MB	Blood	4.9ml	Serum	Brown	5 days	See TSH/ Free T4
Thyroid Microsomal Antibodies		MI	Blood	4.9ml	Serum	Brown	7-14 days	
Thyroid stimulating hormone	TSH	MB	Blood	4.9ml	Serum	Brown	5 days	
Thyroxine		MB	Blood	4.9ml	Serum	Brown	5 days	See T4
Tissue transglutaminase antibodies	tTG	MI	Blood	4.9ml	Serum	Brown	10-20days	Note Endomysial Antibodies (EMA) are done on all samples positive for tTG
Total Bilirubin	TBILI	PB	Blood	4.9ml	Serum	Brown	1 day	
Total IgE		MI	Blood	4.9ml	Serum	Brown	7-10 days	See Immunoglobulin E
Total Iron Binding Capacity	TIBC	PB	Blood	4.9ml	Serum	Brown	1-7 days	Calculated result
Total Protein	TP	PB	Blood	4.9ml	Serum	Brown	1 day	
Total Protein (urinary)		PB	Urine				1 -3 days	See Urinary Protein 24Hr or Random
Toxicology screen		PB	Blood/ Urine	4.9ml	Serum/ Universal Container	Brown/ Yellow	1 day	Serum, includes Salicylate/ Paracetamol/Ethanol (quantitative) and /or Urine for qualitative screen for drugs of abuse
Transaminase		PB	Blood	4.9ml	Serum	Brown	1 day	See Alanine aminotransferase (ALT) Aspartate aminotransferase (AST)
Transferrin Saturation		PB	Blood	4.9ml	Serum	Brown	1-7 days	Calculated method
Tricyclic Antidepressants	TCA	PB	Urine	2ml	Universal Container	Yellow	1 day	See Drugs of Abuse ONLY
Triglyceride	TRIG	PB	Blood	4.9ml	Serum	Brown	1 day	
Troponin T	TROP	PB	Blood	4.9ml 2.7ml	Serum Li Hep	Brown Orange	1 day	Special Blue form required Include clinical details
Unconjugated Iron Binding Capacity	UIBC	PB	Blood	4.9ml	Serum	Brown	1-7 days	
Ur Calcium (24 Hour)	UR.CA	PB	Urine	2 ml	24 Hr Urine Container	Yellow	1-3 days	No Preservative. Total Volume must be stated

Ur Calcium (Random Spot)	UR.CA	PB	Urine	2 ml	Universal Container	Yellow	1-3 days	
Ur Creatinine (24 Hour)	UR CRE	PB	Urine	2 ml	24 Hr Urine Container	Yellow	1-3 days	No Preservative. Total Volume must be stated
Ur Creatinine (Random Spot)	UR CRE	PB	Urine	2 ml	Universal Container	Yellow	1-3 days	
Ur Microalbumin (24 Hour)	UR.MI	PB	Urine	2 ml	24 Hr Urine Container	Yellow	1-3 days	No Preservative. Total Volume must be stated
Ur Microalbumin (Estimated) (Random Spot)		PB	Urine	2 ml	Universal Container	Yellow	1-3 days	
Ur Phosphorus/ Phosphate (24 Hour)	UPHOS	PB	Urine	2 ml	24 Hr Urine Container	Yellow	1-3 days	No Preservative. Total Volume must be stated
Ur Phosphorus/ Phosphate (Random Spot))	UPHOS	PB	Urine	2 ml	Universal Container	Yellow	1-3 days	
Ur Potassium (24 Hour)	UR.K	PB	Urine	2 ml	Universal Container	Yellow	1-2 days	
Ur Potassium (Random Spot)	UR.K	PB	Urine	2 ml	Universal Container	Yellow	1-2 days	
Ur Protein (24 Hour)	UR.PRO	PB	Urine	2 ml	24 Hr Urine Container	Yellow	1-2 days	No Preservative. Total Volume must be stated
Ur Protein (Estimated) (Random Spot)	UR.PRO	PB	Urine	2 ml	Universal Container	Yellow	1-2 days	
Ur Sodium (24 Hour)	UR.NA	PB	Urine	2 ml	Universal Container	Yellow	1-2 days	Ur Sodium (Random Spot)
Ur Sodium (Random Spot)	UR.NA	PB	Urine	2 ml	Universal Container	Yellow	1-2 days	
Ur Uric Acid (24 Hour)	UR.URC	PB	Urine	2 ml	24 Hr Urine Container	Yellow	1-2 days	No Preservative. Total Volume must be stated
Ur Uric Acid (Random Spot)	UR.URC	PB	Urine	2 ml	Universal Container	Yellow	1-2 days	
Urea	UREA	PB	Blood	4.9ml	Serum	Brown	1 day	
Urea Breath Test for Helicobacter Pylori								Non invasive test for H Pylori Contact Surgical ward for further information

Uric Acid	**UA**	**PB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**1 day**	
Urine Drug Screen		**PB**	**Urine**	**2ml**	**Universal Container**	**Yellow**	**1 day**	**See Drugs of Abuse**
Urine protein electrophoresis	**UPE**	**MI**	**Urine**		**See comment**		**7 days**	**24 hr urine collection. No Preservative. Total Volume must be stated (Qualitative & Quantitative) OR Early morning Urine (Qualitative only)**
Valporate		**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 day**	**Epilim**
Vancomycin	**VANC**	**PB**	**Blood**	**2.7 ml**	**Plasma**	**Orange**	**1 day**	
Vitamin B12	**Vit B12**	**MB**	**Blood**	**4.9ml**	**Serum**	**Brown**	**5 day**	**Include the completed MRH M form 'Vitamin B12/Folate Clinical Information Form'**

14.4 Repeat Examination due to Analytical Failure

It is the policy of the Pathology department in the event of an analytical failure to:-

- Repeat the test using a back-up instrument.
  or
- Store the specimens in appropriate conditions until the cause of the analytical failure is identified and corrected and then repeat the test. The urgency of the outstanding specimens is reviewed by the relevant laboratory Consultant or nominee.

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14.5 Emergency Out of Hours Service

This service is for genuine medical emergencies ***only***, where the results are likely to influence immediate management of the patient. The Pathology Department in MRH Portlaoise provides an emergency out of hours service (on call diagnostic Service) for urgent requests.

- Monday to Friday, 20.00 – 08.00
- Saturday / Sunday / Bank Holidays (24 Hours)

Two members of the technical staff cover all disciplines
One Medical scientist for the Biochemistry /Microbiology Rota
One Medical scientist for the Haematology /Blood Transfusion Rota

Call out after 12 midnight should be curtailed as much as possible.

On call staff **must** be contacted by phone for all on call emergency requests.
The Medical Scientist on call for Biochemistry/Microbiology is contacted on the laboratory 'on call' mobile phone, speed dial *51769 (087 2511468).

The Medical Scientist on call for Haematology/Blood Transfusion is contacted on the laboratory 'on call' mobile phone, speed dial *51775. (087 6394811)

Alternatively the Medical Scientist on call can be contacted through the switch board (dial 3000).

Request Forms
Emergency on call request forms are provided to the clinical areas for Biochemistry and Haematology test requests.

- Biochemistry Green On Call Form
- Haematology Pink On Call Forms
- Microbiology routine form
- Blood Transfusion routine form

Emergency on call forms **must** be fully completed.

A **request form** must accompany each specimen and must be fully completed and legible.
Ensure specimen(s) and form(s) are sent to the laboratory ASAP.via the pneumatic tube system to:

Destination number 001 for Biochemistry/Microbiology

Destination number 012 for Haematology/Blood Transfusion
Results

Results of tests performed on site during emergency service hours are available on the Laboratory ward look up System (excluding Blood Transfusion).

Critical results are phoned/ faxed to the relevant ward as per laboratory procedure P/QA/SOP/041 Criteria and Procedure for Phoning Critical Results.

14.6 Tests Available On-Call

Department	Tests Available	Comment
Haematology	FBC	
	ESR	Only if indicated by clinical findings
	Retics	Only if indicated by clinical findings
	Infectious Mononucleosis	Only if indicated by clinical findings
	Kleihauer test	Only if indicated by clinical findings
	Blood Film	Only if indicated by clinical findings
	Malaria Screen	Only if indicated by clinical findings
	Sickle Cell Screen	Only if indicated by clinical findings and approved by Consultant
	PT, INR,APTT	Only if clinical findings or history indicates a coagulation defect.
	D Dimer	Wells Score/clinical details should be provided
	Fibrinogen	Only in cases of DIC or massive haemorrhage
Blood Transfusion	Group and Hold	Emergencies only, not elective surgery
	Group and Crossmatch	Emergencies only, not elective surgery
	Cord Bloods	Only at weekends
	Group and Coombs	Only if indicated by clinical findings
Biochemistry	Alcohol	
	Amylase	
	Bilirubin (Total/direct)	Neonates only
	βHCG.	Only if indicated by clinical findings. The Consultant must contact on call staff directly
	Calcium	
	Cardiac Enzymes	(AST, CK)
	C Reactive Protein (CRP)	
	Fasting Lipids	(Cholesterol, Triglyceride, HDL, LDL)
	Gentamycin	
	Glucose	
	Iron	
	Lactate	
	Lipids	(Cholesterol, Triglyceride)
	Lithium	
	LDH	
	Liver Function Test (LFT)	(ALT, GGT, ALKP, Total Bilirubin, Alb)
	Magnesium	
	Paracetamol	
	Phosphate	
	Salicylate	
	Troponin T	
	Urea Electrolytes and Creatinine (U&E)	(Urea, Creatinine, Sodium, Potassium, Chloride)
	Uric acid	
	Vancomycin	
	Urine Drugs of Abuse	
	Urine Pregnancy test	
	Urinary Protein/ Estimated 24 hour urinary protein/ Spot Protein.	Only if indicated by clinical findings. The Consultant must contact on call staff directly

	CSF Glucose	
	CSF Protein	
Microbiology	CSF	Microscopy
	MSU	Paediatric Specimens only
	Blood Cultures	
	Covid 19	

Urgent Test Requests

Contact the laboratory regarding critical urgent samples.

Urgent test requests must be telephoned to the laboratory so that tests can be given priority.

The turnaround time for phoned emergency requests is 1 hour on receipt of specimen in laboratory.

If any other test is required the person requesting the test should contact the relevant Laboratory Medical Consultant or Chief/Senior Medical Scientist to request the test

15.0 REPORTING OF TEST RESULTS

15.1 General Information

Test reports from the Pathology Department in the Midland Regional Hospital at Portlaoise, once released, are available on the Laboratory Information System (LIS) with the exception of specimens sent for analysis to external laboratories.
Test reports from MRH Mullingar Endocrinology and Immunology are available on LIS.

Test reports from the other two laboratories in the Midland Area i.e. Midland Regional Hospital at Tullamore and the Midland Regional Hospital at Mullingar are sent directly to appropriate ward/clinician.

Test reports from all other external laboratories are scanned retrospectively on the Laboratory Information System and the hard copy report is sent directly to appropriate ward/clinician.

15.2 Printed Reports within the Hospital

Printed laboratory reports are dispatched to the ward areas by the portering staff twice daily at 1pm and 5pm, excluding weekends and bank holidays.

15.3 Printed Reports for External Locations

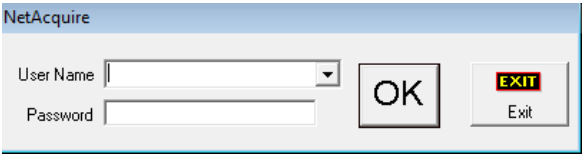
Printed laboratory reports for locations outside the hospital are sent via internal mail, courier or by post on the day of testing where results are available before 3.30 p.m.

15.4 Ward Look up

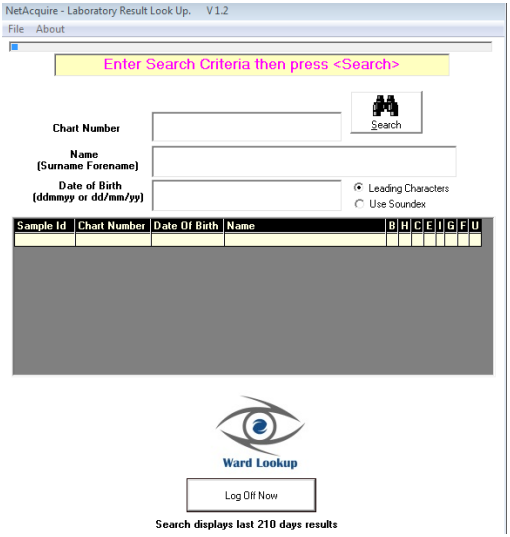
Ward look up is a facility where validated Laboratory results may be accessed from the Laboratory Information System (LIS) at a remote terminal. The system is password controlled and available to authorised personnel only. Currently this is available only in clinical areas within the Midland Regional Hospital at Portlaoise.

Ward Enquiry
Click the 'Click to Log On' icon to activate the log on screen.
Click ward enquiry icon to activate the laboratory result look up screen.

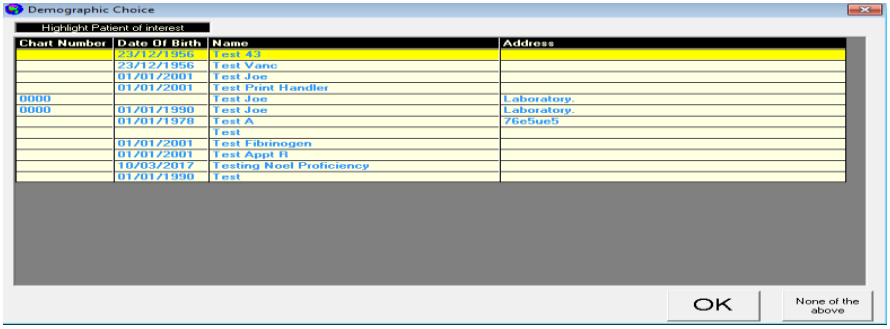
Log on
Enter user name as follows, first name followed by surname
Enter your six digit password. This gives access to the search screen.



Search screen

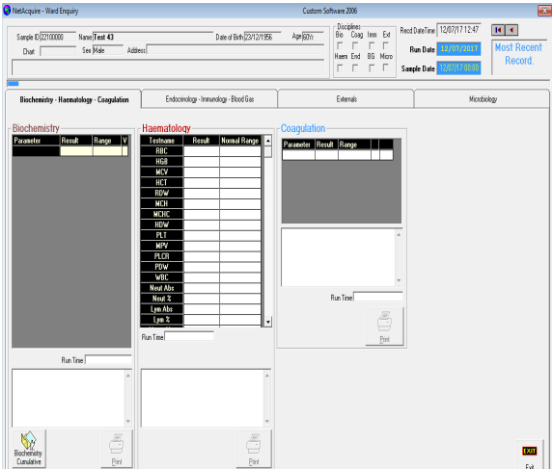


Search for a patient by using any one of the three options above as described.
This will present you with a list of patients to choose from. The patient with the most recent lab results is always displayed at the top of the list.



Highlight the patient required and select OK to return the results.
If the patient required is not on the list then select ‘’None of the Above’’ to start again.

Result Screen



The view result screen displays the result for the selected patient.
The Run Date and sample Date is highlighted
The arrow keys move you through records in increments of one.

NOTE: it is important to scroll back to see other results even from the same date but a different Laboratory number.

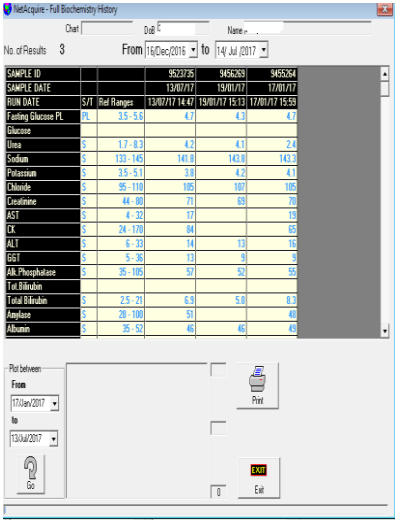
The top right hand indicator check boxes inform you of the departments with results.
Sample comments will appear below the results e.g. Haemolysis, clotted.
You can move between departments by clicking on the Tabs above the results.
The Print icon allows you to print the results displayed on the screen.
The cumulative icon allows you to view cumulative results

Notes

- Endocrinology and Immunology tests are available under the Endocrinology Tab.
- Tests sent to external laboratories may not be on ward enquiry. Contact Laboratory Office.
- User passwords expire every 90 days.
- The system will prompt you to enter a new six digit password.
- Remember your password and don't give it to others.
- If you believe your password is compromised contact the laboratory for a new password.
- Only validated results will be available for viewing.
- An audit on all look ups is maintained by the system.
- **Print all results. Please Do Not transcribe results on paper**.

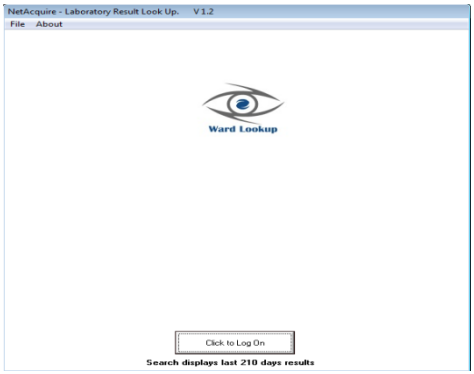
- Refer to IT Acceptable Usage policy available on the HSE intranet
- A Hard copy of Laboratory results will be forwarded to the clinical area.

Cumulative Result Screen



Log out

Select file and Exit to close the application



15.5 Healthlink

Healthlink is National Project to facilitate GP electronic access to validated Laboratory results.

Validated Laboratory results are securely transferred from the Laboratory Information System (LIS) through the government Virtual Private Network (VPN) to the Mater Hospital. GP's may access laboratory results from the Mater using a remote terminal, via **secure access** on the internet.

15.6 Urgent Critical Results

Results of urgent investigations and all abnormal/critical results will be telephoned/faxed. We appreciate it if telephone enquiries are limited to those results that are urgent or delayed. Please check there is no electronic, written or faxed report before enquiring over the telephone. Reports are faxed to agreed supervised fax machines only. Records of phoned/faxed results are maintained.

Refer to section 7.0 for Criteria for phoning critical results in Biochemistry.

Refer to section 8.0 for Criteria for phoning critical results in Haematology and Coagulation.

Refer to section 10.0 for Criteria for phoning critical results in Microbiology.

15.7 Reference Ranges (Biological Reference Intervals)

Reference ranges for tests are documented on all reports where applicable. Please take into account the patients clinical condition when interpreting results.

Warning:
Many diaries and handbooks and laboratories provide lists of reference intervals for common analytes. You are asked not to refer to these in the interpretation of results generated by the Pathology Department MRH Portlaoise. The reference intervals printed are dependent on the method of analysis used and are also specific to the population which we serve. The use of inappropriate reference intervals can be at best confusing and at worst dangerous. If you are in any doubt about the validity of any reference interval provided to you, please contact the relevant department of the Pathology Department for clarification.

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Reference Ranges in Pregnancy:
All reference ranges quoted relate to the Non-Pregnant state and for certain analytes are also age and gender specific. A list of pregnancy related reference ranges specific to the methodology used in the Pathology Laboratory in MRHP and obtained from a dedicated Maternity Hospital is available on the MRHP Intranet, the MRHP Medicines app and in an attached Memo on Healthlink'.

Appendix 1 – (Members of the Working Group/PPPG Development Team)
Please list all members of the working group (and title) involved in the development of the document.

Name	**Title**	**Signature/Date***
Jennifer Cooper	Laboratory Quality Officer	
Shay Conroy	Laboratory Manager	
Frances Earley	Chief Medical Scientist Haematology/Blood Transfusion	
Eithne Lacey	Transfusion Surveillance Officer	
Aideen Joyce	Chief Medical Scientist Microbiology	
Sharon Ayres	Chief Medical Scientist Biochemistry	

Appendix 2 – (Members of the Service Management Group)
Please list all members of the Service Management group (and title) who have final approval of the document.

Name	**Title**	**Signature/Date***
Shay Conroy	Laboratory Manager	
Dr Kanthi Perera	Consultant Haematologist	
Dr Vivion Crowley	Consultant Chemical Pathologist	
Dr Cathal O'Sullivan	Consultant Microbiologist	

* A signed copy is held in the Laboratory