Saolta
Grúpa Ollscoile Cúram Sláinte
University Health Care Group

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Letterkenny University Hospital

BLOOD TRANSFUSION USER MANUAL

1) Update information on use of compatibility tags (section 9)
2) Turnaround times updated to reflect referrals to IBTS in certain situations
3) Contingencies for delay in reporting of results/provision of blood products

Effective Date: October 2023

Due for Review: October 2025

GUIDE TO USING THIS MANUAL

This User Manual has been prepared in conjunction with The Pathology Department User Manual (MP-GEN-0064) to inform the users of the Saolta University Health Care Group, Letterkenny University Hospital, Pathology Department of which services are available within the Pathology Department and how to obtain the services required.

PLEASE REFER TO DOCUMENT MP-GEN-0064, THE PATHOLOGY DEPARTMENT GENERAL USER MANUAL FOR GUIDANCE ON USING THESE DOCUMENTS.

Documents are available on Q-Pulse and also on the HSE Website **http://www.hse.ie/lulPathology**

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1 INTRODUCTION

1.1 Scope and purpose

The Blood Bank Department comprises of the Blood Transfusion Laboratory and all Haemovigilance and Traceability activities. The Blood Bank provides Blood Transfusion service to Letterkenny University Hospital. Blood Group and Rhesus Types are processed. Antibodies are identified and phenotyping is carried out if necessary. Blood is stored and subjected to stringent compatibility testing and standard procedures ensure full traceability. The Blood Transfusion Department is accredited by the Irish National Accreditation Board (INAB) to ISO15189:2012 Standard (INAB Registration No 210MT) and AML BB Issue 2, a list of accredited tests is available on http://www.inab.ie

This manual in association with the Pathology Department General Information User Manual (MP-GEN-0064) is designed to provide users of the Blood Transfusion Service at Letterkenny University Hospital with information on the proper collection and handling of primary samples destined for examination in this laboratory.

Please note that this manual is intended for use as a guide only; should you require any further information or clarification, please contact the relevant section of the Blood Transfusion department prior to submission of the sample (for contact details, please refer to the General Section of the User Manual (MP-GEN-0064, Section 6).

1.2 Responsibility

The Chief Medical Scientist in charge of Blood Transfusion is responsible for ensuring the implementation and maintenance of this manual in conjunction with the Consultant Haematologist.

2 GENERAL INFORMATION

2.1 Services associated with the Blood Bank

Service Name	Service Description
Blood Transfusion Laboratory Monday-Friday 08:00- 20:00 (excluding Public Holidays) **Ext 3612**	The Blood Transfusion Laboratory offers a comprehensive laboratory service including: • ABO & Rh D Grouping and Antibody Screening • Antibody Identification • Cross-matched Blood • Direct Antiglobin Test • Phenotyping (if appropriate) • Transfusion Reaction Investigation (if indicated) • Provision of Blood Components i.e. SD-Plasma & Platelets • Provision of Coagulation Factors
Haemovigilance Monday-Friday 09:00-17:00 (excluding Public Holidays) **Ext 2773** **Bleep (6) 400**	This is a Consultant led service with a Haemovigilance Officer (HVO), who is responsible for the day to day management of education, surveillance, investigation of serious adverse events (SAE's) and serious adverse reactions (SAR's) and auditing activities. The HVO is responsible for the notification SAR's and SAE's to the National Haemovigilance Office following consultation with the Consultant Haematologist who shall clinically access each incident and decide whether the suspected SAR or SAE should be reported to the NHO. The HVO has a role in establishing and maintaining complete transfusion traceability in conjunction with the Blood Transfusion dept.
Consultant Service	A Consultant Haematologist (and clinical team) gives advice on Blood Transfusion issues (with 24/7 telephone cover). Blood Transfusion staff may offer advice on provision of blood and blood components/products.
Emergency out of hours service *Monday-Friday* *20:00 – 08:00* *Weekends and Public Holidays: 24 hour on-call service* 173-815 or via Switchboard	An on-call 24 hour Blood Transfusion service is provided. **Please note the emergency on-call telephone system is in place Monday – Friday from 5pm – 9 am and 24 hours Saturday, Sunday &Public Holiday**

Table 1: Services associated with the Blood Bank

2.2 Contact Details

Letterkenny University Hospital	(074) 9125888
Pathology Reception	(074) 9123557 Fax No: 074 9104652
Consultant Haematologist	Contact Blood Transfusion 074 9123660
Chief Medical Scientist	074 9123612
Blood Transfusion Laboratory	074 9123612
Haemovigilance Officer	074 9125888 ext 2773 or bleep 400

The Emergency on call mobile: 173 815 (internal) or contacted through the hospital switchboard

2.3 Blood Transfusion Staffing

The Blood Transfusion Laboratory is staffed by:

Consultant Haematologist (with 24/7 telephone cover)

Laboratory Manager: overall scientific responsibility of Laboratory

Chief Medical Scientist

Senior Medical Scientist

Staff Grade Medical Scientists

3 LABORATORY REQUEST FORMS/ SAMPLE CONTAINERS

See Section 4 for information specific to antenatal testing.

3.1 General Information:

This section outlines the information that is required to be documented on the Blood Transfusion Department request form and the sample tube, prior to the analysis of samples.

3.1.1 Blood Track "Tx" PDA Devices

The Blood Track system (Haemonetics Inc.) including "Blood Track Tx" is in use at LUH. This system allows pre-transfusion sampling, blood collection and transfusion practices to be electronically recorded using dedicated hardware (Blood Track Kiosks and PDA devices), software (Blood track manager and ward enquiry) and barcoded user identification badges.

Where pre-transfusion sampling is concerned (i.e. taking a sample for group and save/group and crossmatch) the Blood Track Tx PDA is the preferred method of sample/form labelling, except for exceptional circumstances (PDA not available for use/ Emergency situations). Please refer to Section 5.1 in such instances.

3.2 Blood Transfusion Department Tests

The Blood Transfusion Department performs the following tests: Group & Screen, Group & DCT, DCT and Crossmatch. All samples must be taken into a 6ml Pink Top Tube for adults or a 4ml Pink Top Tube for paediatrics.

<u>Do not attach Addressograph label to this tube---- labels generated from Bloodtrack PDA device at bedside ONLY. If PDA system is unavailable, all details must be handwritten.</u>

The Blood Transfusion Laboratory has one request form in circulation, MF-0230. It is used for requesting patient blood group, antibody screen, crossmatch, neonatal blood group and DCT test, DCT test and is also used for requesting blood components/products.

3.3 Completing the Request Form MF 0230:

The following essential information **must** be documented in a legible and accurate manner on the request form MF-0230:

- Patient's Hospital Number (PCN)
- Patient's Full Name (Surname, Forename)
- Patient's Date of Birth (DOB)
- Patient's Gender
- Name/signature and bleep number (if appropriate) of doctor/nurse
- Patient's Location
- Date and time of specimen collection, name and signature of person collecting sample

  Request form MF 0230 contains guidelines for ordering red cells and platelets based on international best practice. Please ensure requests for these products meet the criteria and tick appropriate box to indicate appropriate clinical situation. These guidelines are not prescriptive, discuss blood requirements not meeting these guidelines with blood bank or consultant haematologist.

With the exception of bleep number these details will be generated in a label if the Blood Track "Tx" PDA Device is used at the patient bedside together with patient identification wristband containing 2D barcode. This label may be placed on the request form.

The request form should also contain:

- The name of the requesting Clinician
- Tests or component required, The number of components/products together with date and time blood required
- Relevant clinical information appropriate to the test(s) requested must be supplied e.g. history of administration of drugs, antenatal history, blood transfusion history etc.
- The specific surgical procedure or reason for a transfusion request should be documented on the transfusion form.
- If antenatal patient, the estimated date of delivery (EDD) should be indicated.
- Clear indication should be made as to whether the tests requested are urgent or routine.

For the unconscious /unidentified patient, the minimum information on the request form is a unique identification number and the gender of the patient

3.3.1 Specific blood transfusion requirements:

If specific blood components are required i.e. CMV negative, irradiated, this must be indicated on the request form MF-0230.

4 IDENTIFYING THE PATIENT:

Inadequate patient identification or sample labelling may lead to ABO-incompatible transfusions. It is the RESPONSIBILITY OF THE PERSON COLLECTING the samples for transfusion purposes to confirm beyond all doubt, the identity of the patient.

4.1 Procedure for taking samples:

- Ensure the patient has a hospital identity wristband containing Name, PCN and DOB and 2D barcode for positive identification using Blood Track "Tx" PDA Device
- Ensure the request form is completed fully. It is vital that the request form is labelled prior to phlebotomy (either handwritten details or addressograph label attached to request form). This allows positive patient identification to be carried out at the patient bedside.
- Prepare all necessary equipment for venepuncture
- At the time of sample taking the conscious patient must be asked to identify himself/herself by stating a) first name b) surname c) date of birth
- Ask the patient for any relevant details, such as previous pregnancies, transfusions, and relevant drug treatments.
- Label the sample as outlined below in section 5.0

CRITICAL: All details recorded on sample tube must be done at the patient's bedside, immediately post sampling. The collection of blood, labelling of tubes and placing of tubes into request bags must be performed at the patient's bedside in one continuous, uninterrupted event. Only one patient should be bled at a time to minimise the risk of error. Do not allow yourself to be distracted during this process. Samples not conforming to form and sample labelling criteria will be discarded by the Blood Transfusion Department and a new sample will be required.

- If a patient is unconscious or confused, check the details on their wristband against their medical notes and the request form and verify their identity with another staff member.
- If patient is genuinely unidentifiable, minimum identifiers acceptable are unique L number and gender.

5 LABELLING THE SAMPLE

5.1 Labelling the sample bottle

The Blood Track PDA device can be used to generate a suitable "COLLECT" label with the patient details to attach to the specimen bottle.

If Bloodtrack PDA device is unavailable, sample details must be handwritten and the following essential information must be documented in a legible manner on the sample bottle:

- Patient's full name
- Date of birth
- PCN
- Date and time of sample collection
- The signature of the person collecting and labelling the sample.

NOTE: All details recorded on sample tube must be done at the patient's bedside, immediately post sampling.

Do Not Pre-Label Samples

Do Not Ask Another Person To Label a Sample For You.

Addressograph Labels are not permitted on sample bottles.

NOTE: "Hospital Transfusion Laboratory staff are acting correctly in refusing to accept a request for compatibility testing when either the request form or the sample is inadequately labelled" (National Blood Users Group).

6 ANTENATAL SAMPLES

All samples for blood grouping and antibody screening of antenatal patients are drawn when patient attends the Antenatal clinics in LUH.

Labelling requirements are outlined at section 5.1

In the event of a GP request for a blood group and where the PCN is unavailable the patient's address must present on sample and form.

Samples received > 48 hours after collection and not stored between +2°C and +8°C will also be rejected.

7 FURTHER ADDITIONAL TESTING & TIMING OF TAKING SAMPLES

When a patient with no historical blood group on file in the Laboratory Information System requires a blood transfusion a second sample must be sent to the laboratory for testing to confirm ABO/RhD group prior to issue of red cells.

In urgent situations where time does not permit a second sample to be taken, group specific components will be issued based on the ABO/RhD result of initial sample received provided the sample is labelled correctly.

If further additional testing is required on a sample already in the laboratory, please contact ext. 3612 to enquire about the feasibility of using the initial specimen. Only samples less than 72 hours are valid for additional testing. An add-on request form MF-0230 should be forwarded to the laboratory if the initial sample is deemed suitable. Blood /blood components are not issued without a request form.

8 QUALITY OF BLOOD SPECIMENS

Laboratory personnel inspect, prior to testing, each blood specimen received for:-

- Adherence to sample labelling requirements
- Evidence of Haemolysis
- Gross Lipaemia
- Adequacy of sample for testing

If the quality of the sample is inadequate, a repeat specimen will be requested

8.1 Non-Conforming Specimens, 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 will apply.

Sample/form issues	**Action**	**Documentation**
Inadequate /incorrect patient details PCN, DOB, Name. No signature on request form	Sample rejected. Repeat requested	Reason recorded on LIS
Inadequate/incorrect patient details PCN, DOB, Name. No signature on sample bottle	Sample rejected. Repeat requested	Reason recorded on LIS
Addressograph label used on specimen	Sample rejected. Repeat requested	Reason recorded on LIS
Details on request form or sample bottle do not match	Sample rejected. Repeat requested	Reason recorded on LIS
Sample haemolysed	Sample rejected. Repeat requested	Reason recorded on LIS
Inadequate sample	Sample rejected. Repeat requested	Reason recorded on LIS
Clotted sample	Sample rejected. Repeat requested	Reason recorded on LIS

Table 2

9 COMPATIBILITY/ TRACEABILITY LABEL

A Compatibility/ Traceability Label) is issued with all blood components and products from the Blood Transfusion Laboratory to the clinical areas. Components will have white compatibility label attached and manufactured products such as factor concentrates will have triplicate compatibility tag attached.

Components include

- Red Cells
- Platelets
- Plasma

To ensure full traceability the patient's Prescription chart must be completed for ALL transfusions.

Blood Track Tx PDA must be used (except where not available) to record all Red Cell, Platelet and Plasma transfusions. For all other products or when Blood Track Tx PDA is not available the prescription chart must be fully completed manually and the traceability label attached to the blood component must be filled in and returned to the Blood Transfusion Laboratory. If PDA is not being used, he white compatibility tag for blood components has a section at bottom which must be completed, torn off along perforated line and returned to blood bank. The triplicate compatibility tag used for manufactured products must be completed with yellow copy inserted into patient medical record and pink copy returned to blood bank. White copy of triplicate tag remains with product.

10 DELIVERY, PACKAGING AND TRANSPORT REQUIREMENTS

Please refer to Pathology Department General Information User Manual MP-GEN-0064.

11 STORAGE OF SAMPLES

Specimen Description	Storage Requirement	Storage Location	Retention Period	Responsibility
Primary Sample	4^{o}C	Blood bank reagent fridge/ Laboratory cold room	Samples are valid up to 72 hours after collection	Chief/Senior Medical Scientist

Table 3: Storage of samples

12 REPEAT EXAMINATION DUE TO ANALYTICAL FAILURE OR FURTHER EXAMINATION OF THE PRIMARY SPECIMEN:

It is the policy of the Blood Transfusion Laboratory in the event of an analytical failure to: Repeat the test using a back-up system or store the specimens in appropriate conditions until the cause of the analytical failure is identified, corrected and the test repeated. The urgency of the outstanding request/s is reviewed by the Chief Medical Scientist/ Consultant Haematologist.

13 FURTHER EXAMINATION OF THE PRIMARY SPECIMEN

The primary sample may be used in the further investigation of:

- Suspected transfusion reaction
- Direct Coombs Test
- Red cell phenotyping

Additional samples may be requested for referral to the Irish Blood Transfusion Service (IBTS) if results obtained in this laboratory prove inconclusive.

14 EXTERNAL LABORATORY TESTING

Some specimens are referred to external laboratories for testing. These will be recognised by the presence of the symbol" ⊕" after the test name in Table 4.

15 EMERGENCY OUT OF HOURS SERVICE

It is hospital policy to avoid routine transfusions out of hours. The out of hours transfusion service provided only applies to emergencies and to situations where patients cannot wait until the next routine period.

Tests provided out of hours in this laboratory will be identified by the presence of this symbol ∗ in the turnaround time column in Table 4. If any other test is required "out of hours" the person requesting the test should contact the Medical Scientist "on-call".

16 EMERGENCY ISSUE OF BLOOD

It is laboratory policy to avoid releasing uncrossmatched blood. However, in exceptional circumstances when time does not permit a full crossmatch to be performed, two units of O Rh D negative blood are available in the Blood Transfusion Laboratory for immediate release. To get these delivered contact the Portering department and the Blood Transfusion Laboratory. A compatibility tag is supplied with uncrossmatched blood. It is essential that details on the compatibility tag attached to the blood product are completed, signed and returned to the blood bank immediately following transfusion (see section 9 above) and that unit details are recorded in the prescription chart. This allows for traceability of blood components. Uncrossmatched

blood is only issued at the Senior Clinician request. The responsibility for transfusing uncrossmatched blood lies with the requesting physician. LP-BT-0012, Release of Blood in Emergency Situations, outlines the laboratory's procedure for emergency situations.
If further units of uncrossmatched blood are required, they will be issued as Group Specific or Group Compatible. It is essential that a blood sample from the patient is sent to the laboratory at the earliest opportunity in emergency situations so that suitable units can be selected for transfusion. A second sample should be taken shortly after first sample if patient does not have a historical blood group in LIS.

17 LABORATORY TEST/ PROFILE DESCRIPTION

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

- Requested test
- Sample type
- Tube type
- Volume required
- Turnaround time

Turnaround time is defined as the time from specimen receipt in the Pathology Department to the time results are available. The list of turnaround times is provided as a guide only and times may be significantly shorter or longer depending on the clinical scenario. Please contact the transfusion laboratory if you require specific guidance
Note: A delay in providing compatible blood or other blood product may occur due to a positive antibody screen. A second sample may be requested if additional testing is required due to positive antibody screen, grouping anomaly or no historical blood group in LIS.

18 BLOOD TRANSFUSION TESTS

Requested test	Sample type	Tube type	Volume req'd	Turnaround time from receipt of form MF 230 in blood bank
Group & Screen: Adult Paediatric	Blood Blood	EDTA EDTA	6 mls 4 mls	Routine : 4 hrs ∗ Urgent: 1 hr∗ Up to 24 hours if antibody investigation/referral to IBTS
Group & Crossmatch: Adult Paediatric	Blood Blood	EDTA EDTA	6 mls 4 mls	Routine: 4 hrs∗ Up to 24 hours for phenotype negative blood or compatibility testing by IBTS Urgent: • 2 units O Negative in Blood Bank for immediate use. • Group O uncrossmatched :10 min
Antibody Identification Adult Paediatric	Blood Blood	EDTA EDTA	6 mls 4mls	Dependant on complexity∗ Mat require referral to IBTS
Group & Antenatal screen	Blood	EDTA	6 mls	72 hrs
Group & Coombs	Blood	EDTA	1 ml	24 hrs∗
Direct Coombs Test	Blood	EDTA	1 ml	72 hrs
Anti D Quantitation Anti c Quantitation	Blood	EDTA	6 mls	Verbal report when test complete, written report within 2 weeks⊕
Cell Free Foetal DNA	Blood	EDTA	6 mls	written report within 2 weeks⊕
Antibody titre	Blood	EDTA	6 mls	When available⊕
Transfusion reaction investigations Adult Paediatric	Blood Blood Blood Urine Blood packs Blood	EDTA EDTA EDTA (FBC) Urine sample (first voided) All transfused blood packs if available Aerobic and anaerobic blood cultures	6 mls 3 mls 3 mls	24 hrs 10 days 5 days

Table 4. BLOOD TRANSFUSION TEST PROFILE/ REQUIREMENTS

*For paediatric tests 1 ml is the minimum requirement.

∗ test provided during emergency out of hours service
⊕ test referred to IBTS

19 PRODUCTS/COMPONENTS ISSUED BY BLOOD TRANSFUSION

Product	Special Requirements	Turnaround Time
Leucocyte depleted red blood cells		Refer to table 4 above, Group & Crossmatch
Leucocyte Depleted Red Blood Cells for Neonatal use (Pedi-pack)		4-6 hours ∗ (ordered when required from the IBTS). One unit on-site for emergency use.
Platelets		4-6 hours (ordered when required from the IBTS) One unit on-site for emergency use.
Anti D Immunoglobulin Antenatal (Rhophylac 1500 IU)	Maternal blood group on file in LIS▲	60 mins. If group and antibody screen is already done by laboratory 90 mins if G&S has to be done.∗ TAT may be longer if product is requested out of hours
Anti-D immunoglobulin---Post Natal (Rhophylac 1500 IU).	Maternal and baby blood groups available in LIS	60 mins ∗ TAT may be longer if product is requested out of hours
Solvent Detergent Plasma [Octaplas]		50 minutes if blood group already established by laboratory ∗ Minimum thaw time 30 mins. Expires 5 days after thawing
Albumin: 20% & 5%		60 minutes ∗
Octaplex (Prothrombin Complex Conc.).		15 minutes ∗
Prothromplex (Factor X conc.)		30 minutes ∗
Novo Seven (Factor 7)		10 - 30 minutes ∗
ELOCTA (Factor 8)		30 minutes ∗
Alprolix (Factor 9)		30 minutes ∗
Fibrinogen		10 - 30 minutes ∗
C1 Esterase		30 minutes ∗
Wilate (Factor 8 + VWF)		30 minutes ∗

Table5. Components/Products issued.

▲ A blood sample is required if the blood group has not been previously done by the laboratory.
∗ Test provided in the emergency out of hours service. Product may be issued sooner if clinical need demands. Request for some Blood Components / Products such as coagulation factor concentrates must be done in consultation with the Haematology Medical Team.

20 MAXIMUM SURGICAL BLOOD ORDERING SCHEDULE (M.S.B.O.S.) •

This is a guideline for ordering blood for surgical procedures. • A Group and Screen is where the sample is Grouped, screened for antibodies and plasma saved in advance of the proposed procedure. If the antibody screen is negative, crossmatched blood can be provided in an emergency within 45-60 minutes of a telephoned request. If the screen is positive provision of blood can take longer depending on the antibody. • Blood is not crossmatched for surgical procedures associated with little or no blood loss. • Blood is reserved for a period of 24 hours, from 09:00 on day of surgery, unless otherwise requested. • If the surgery has been cancelled, and blood has been ordered, inform the laboratory.

21 REPORTING OF TEST RESULTS

Please refer to Pathology Department General Information User Manual MP-GEN-0064 (Section 14). The criteria for phoning Blood Transfusion results is also detailed in MP-GEN-0064 (Section 15.1).

1 DELAY IN REPORTING RESULTS/PROVISION OF BLOOD PRODUCTS

Users will be informed in writing if there is a delay in provision of results. If there is a delay in provision of blood products, Consultant haematologist and Laboratory Manager will be informed. CMS/SMS will phone each clinical area to inform of delay and urgent requests will be given priority. When normal activity is resumed, users will be notified verbally and in writing if necessary. Examples leading to delays include:

Equipment/reagent failure
Unforseen staff shortage
Restriction on ordering blood components/products
LIS/I.T. failure or downtime

Non-conformances will be recorded on Q Pulse together with risk assessment and corrective/preventative actions. Users can contact blood bank at any time to discuss specific requirements, emergency release of blood components will be maintained during contingency events.