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1 INTRODUCTION

1.1 The Aberdeen & North East Scotland Blood Transfusion Centre (BTC) is part of the Scottish National Blood Transfusion Service (SNBTS) which is a division of NHS National Services Scotland (NSS).

SNBTS - Aberdeen
Blood Transfusion Centre
Foresterhill Road
Aberdeen
AB25 2ZW

1.2 The SNBTS - Aberdeen Blood Bank laboratory provides a 24 / 7 service, offering:

- Pre-transfusion and antenatal testing.
- Issue of blood and blood components compatible for transfusion to patients.
- Support for emergency transfusion.
- A limited test repertoire is available outside routine hours.
- It also provides both clinical and laboratory support for other hospital Blood Banks including Dr Gray’s in Elgin, Gilbert Bain in Lerwick, Balfour Hospital in Kirkwall and Albyn Hospital Aberdeen.

1.3 The SNBTS- Aberdeen Molecular Immunohaematology laboratory operates from 9am – 5pm offering:

- Platelet and granulocyte immunohaematology testing.
- Non Invasive Pre Natal Diagnostic testing.

1.4 Stem cell processing is performed in the SNBTS head quarters in Jack Copland Centre (JCC) in Edinburgh. Stem cell therapies for Aberdeen patients are managed and supported by CAU, MI and Blood Bank staff.

1.5 Cell Separator Unit (CAU) undertakes clinical apheresis including haematopoietic stem cell collection, venesection and therapeutic plasma exchanges.

1.6 Cytotoxic T-cell Lymphocytes (CTL)
Aberdeen BTC provides blood donor-derived Anti-Epstein-Barr virus cytotoxic lymphocytes (EBV-CTLs for the treatment of EBV-associated lymphomas), mainly in the post-transplant setting. Any potential patient should be discussed with Professor M. Vickers.

1.7 BONE BANK SERVICE HOURS
Requests for surgical bone can be made by telephoning JCC (Jack Copland Centre, SNBTS) on 0131 314 5535. At least 48hrs notice is required for requests but preferably 1 weeks notice. Minimum details required will be -

The patient’s full name, date of birth, CHI, gender and RhD group, the approximate weight of bone required and the type of operation. The hospital, ward, theatre of destination, date and time of the planned procedure should also be provided.

1.7.1 Samples below for tests listed will be referred to the following laboratories via SNBTS – Aberdeen Blood Bank.

- CD34 – NHS Grampian Haematology laboratory.
- FMH – SNBTS – West of Scotland BTS Gartnavel.
- Red cell genotyping - West of Scotland BTS Gartnavel.
- Antibody Quantitation (anti-D and anti-c) – SNBTS – West of Scotland BTS Gartnavel.
- FNAIT – H&I REI Edinburgh.
- Platelet Disorders - H&I RIE Edinburgh.
- HLA Antibodies and Typing - H&I RIE Edinburgh.
- HLA B27 - H&I RIE Edinburgh.
2 PATIENT SERVICES STAFF

2.1 Medical

2.1.1 Prof M A Vickers
- Consultant Haematologist, a Lead Clinician and in charge of the haematopoietic stem cell collection, cellular therapies and molecular immunohaematology.

2.1.2 Dr. Margarita Gonzalez
- Consultant in Transfusion Medicine, is in charge of therapeutic plasma exchange and clinical immunohaematology, which includes the Blood Bank service, antenatal serology, reference red cell serology.

The National SNBTS medical staff in conjunction with NHS Grampian Haematology staff also provide an out-of-hours service for transfusion medicine advice.

2.2 Laboratory

2.2.1 Regional Head of Service in Aberdeen SNBTS: Marion Mathie.

2.2.2 Blood Bank (BB) Laboratory Department Head: Lorraine Jappy.

2.2.3 Molecular Immunohaematology (MI) Laboratory Department Head: Fiona Sellers.

2.2.4 Cell Separator Unit / Nursing (CAU) - Clinical Team Manager Donna Cook.

2.2.5 Quality Department Manager Neil Fraser

3 PATIENT SERVICES CONTACT LIST

3.1 Aberdeen Blood Bank

3.1.1 Blood Bank and Duty Medical Officer (24 hours)
- 01224 552322
- 01224 552512
- 01244 812474

FOR MASSIVE HAEMORRHAGE протокол 2222
FOR CODE RED PROTOCOL (A&E ONLY) 2222
POST ACTIVATION PROTOCOL 50522

3.1.2 If you need to speak to one of our consultants out of hours, you can contact the national on-call consultant: 07559 915 600

3.1.3 Blood Bank Laboratory Fax 01224 662200
3.1.4 Others
Molecular Immunohaematology 01224 812461
Bone requests 0131 314 5535
Therapeutic Apheresis 01224 812436 / (5)51370
NHS Grampian (24 hours) 0845 0345 456 6000
Edinburgh Histocompatibility and Immunogenetics Laboratory 0131 242 7528

3.2 Medical Staff
Prof Mark A Vickers (Consultant) 01224 812401 m.a.vickers@abdn.ac.uk
Dr Margarita Gonzalez (Consultant) 01224 812409 margarita.gonzalez@nhs.net

3.3 Laboratory Staff
Marion Mathie (Regional Head of Service) 0141 433 5856 marion.mathie@nhs.net
Lorraine Jappy (Lab Head - Blood Bank) 01224 812476 ljappy@nhs.net
Fiona Sellers (Lab Head – MI) 01224 812472 fiona.sellers@nhs.net

3.4 Nursing Staff
Clinical Apheresis Nurses 01224 812436 / (5)51370
Transfusion Practitioner 01224 812427

3.5 Quality Department
Neil Fraser 01224 812485 neil.fraser@nhs.net

4 NEQAS AND ACCREDITATION
4.1 External Quality Assurance Schemes
SNBTS Aberdeen Blood Bank participates in the relevant external quality assurance schemes as listed below:-

- **UK NEQAS Blood Transfusion Laboratory Practice**
  Examinations covered: ABO and RhD typing, antibody screening, antibody identification, cross matching including emergency situations, red cell phenotyping, selection of suitable units, titration and blood group genotyping

- **UK NEQAS Feto-maternal haemorrhage (FMH)**
  Examinations covered: estimation of FMH by acid elution

- **IPEX** – internal proficiency exchange scheme (NHSBT).

  The results of our performance in specific internal and external quality monitoring schemes can be made available to users if required.

4.2 Accreditation
The SNBTS Aberdeen clinical laboratory is accredited through **UKAS** (www.ukas.com) to the internationally recognised **standard ISO 15189:2012** (Laboratory No 9060) and by the Medicines and Healthcare products Regulatory Agency (MHRA) as a Blood Establishment.
5  **CUSTOMER COMPLAINTS**

5.1 SNBTS operates a formal complaints procedure. If you are dissatisfied with either the service or “products” provided by the laboratories or personnel we would like to hear from you so that we can try to understand the nature of the problem and take appropriate action to address it. A Customer Communications Form (NATF 1022) - Appendix 1 is available to document your concerns. Please return forms to the Aberdeen Blood Bank.

6  **PROTECTION OF PERSONAL INFORMATION**

6.1 In line with National Services Scotland (NSS) information security policies the laboratory has in place information technological and organisational safeguards to ensure that the confidentiality, integrity and availability of all forms of information held on patients, donors, NHS Scotland staff and family and health contractors, is not lost or compromised.

7  **SAMPLE REQUIREMENTS AND LABELLING**

7.1 **Samples for red cell investigations (RCI)**

7.1.1 Unless otherwise stated all RCI require the use of EDTA samples.

7.1.2

- Adult and paediatric samples are 4.5-7ml EDTA.
- Neonatal samples (up to 1 year or up to 10kg) are 1.2ml.

7.1.3 All blood samples are treated as potentially infectious and must all be handled with caution.

7.1.4 Samples must be accurately labelled **by hand** at the patient’s side from the wristband (if available) or request form in outpatients. Reference appendix 2 - Positive Patient Identification for Blood Transfusion Sampling.

7.1.5 **Addressograph labels must not** be used on sample tubes.

7.1.6 Label the form (either ERF or hard copy) and sample with:-

- Patient's full name (first name and surname).
- Date of Birth.
- Community Hospital Index (CHI) or A&E Number (TN).
- Gender, Ward, Hospital.
- Date & Time sample was taken and signature of person taking sample on sample and form.

7.1.7 To ensure the patient is correctly identified, the sample must be dated, timed and signed by the person taking the sample. As per SNBTS Sample Acceptance Policy (appendix 3).

7.2 **Test Requests**

7.2.1 A blood transfusion request form or Antenatal ‘Request for Blood Group Serology’ form with all test requests must accompany all samples.. The form must be completed accurately and in full.
On the request form include:

- Clinical condition.
- Time and date any blood is needed.
- Requesting doctor’s name, bleep number, signature.

We don't currently offer electronic ordering for blood transfusion in our laboratory.

7.2.2 If the request form does not have exactly the same details as the sample tube, the sample will be rejected.

Read our Sample Acceptance Policy Appendix 3

7.2.3 If the patient’s name and / or Date of Birth are not known (e.g. unconscious), the request form and sample MUST carry a unique hospital TN number, gender and the location of the patient. This is also applicable in the event of a Major Accident.

7.3 Two sample rule: Group check

7.3.1 Before issuing blood and blood components to a named patient we will compare the blood group on the current sample with the results of any previous tests held on file against the exact patient details. The majority of patients will have a historical sample. If there is no historical sample or if the blood groups are not the same, a second sample will be requested. Group-specific or cross-matched blood is only provided after two independent samples taken from the patient have been provided.

7.3.2 The second sample should be taken at a different time - you should re-identify the patient using positive patient ID where possible (“what is your name and what is your date of birth?”).
- Never take two samples at the same time because the patient will only have been identified once.
- If you are unsure whether a prior sample has been taken, please consult SCI store or contact Blood Bank.
## SAMPLE REQUIREMENTS AND TURNAROUND TIMES

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Laboratory</th>
<th>Sample type / volume</th>
<th>Request Form</th>
<th>Turnaround Times</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BLOOD BANK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group &amp; Screen and / or crossmatch</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td>6 hours</td>
</tr>
<tr>
<td>Neonatal Group and DAT</td>
<td>Blood Bank</td>
<td>1.2ml EDTA</td>
<td>Blood / Blood component</td>
<td>6 hours</td>
</tr>
<tr>
<td>Serological Transfusion Reactions</td>
<td>Blood Bank</td>
<td>7ml EDTA 7ml Clotted</td>
<td>Blood / Blood component</td>
<td></td>
</tr>
<tr>
<td><strong>Immunohaematology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended Blood Group Phenotyping</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood Group / Serology</td>
<td></td>
</tr>
<tr>
<td>Red Cell antibody investigation</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood Group / Serology</td>
<td></td>
</tr>
<tr>
<td>Auto-Immune Haemolytic anaemia (AIHA) investigation</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td></td>
</tr>
<tr>
<td>Direct Antiglobulin Test (adult)</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td>6 hours</td>
</tr>
<tr>
<td>Cold agglutinin Screen</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td></td>
</tr>
<tr>
<td>Donath-Landsteiner Test</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td></td>
</tr>
<tr>
<td>Molecular blood Group genotyping</td>
<td>Referred</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td>7 days</td>
</tr>
<tr>
<td><strong>ANTENATAL / OBSTETRIC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booking and 28 week sample for Group &amp; Screen</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood Group / Serology</td>
<td>72 hours</td>
</tr>
<tr>
<td>Antibody Monitoring</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood Group / Serology</td>
<td>72 hours</td>
</tr>
<tr>
<td>Kleihauer</td>
<td>Blood Bank</td>
<td>7ml EDTA</td>
<td>Blood / Blood component</td>
<td>72 hours</td>
</tr>
<tr>
<td>FMH by Flow</td>
<td>Referred</td>
<td>7ml EDTA</td>
<td>Lab form</td>
<td>2 days</td>
</tr>
<tr>
<td>Quantitation</td>
<td>Referred</td>
<td>7ml EDTA</td>
<td>Lab form</td>
<td>7 days</td>
</tr>
<tr>
<td>Cord Blood</td>
<td>Blood Bank</td>
<td>2x4.5ml EDTA</td>
<td>Delivery – Orange form</td>
<td>6 hours</td>
</tr>
<tr>
<td>Maternal Delivery sample</td>
<td>Blood Bank</td>
<td>4.5ml EDTA</td>
<td>Delivery – Orange form</td>
<td>6 hours</td>
</tr>
<tr>
<td><strong>MI</strong></td>
<td>MI</td>
<td>2x4.5ml EDTA</td>
<td>NATF 094</td>
<td>Donor dependent</td>
</tr>
<tr>
<td>Transfusion Related Acute Lung Injury (TRALI)</td>
<td>MI</td>
<td>2x4.5ml EDTA</td>
<td>NATF 094</td>
<td>Donor dependent</td>
</tr>
<tr>
<td>Consult with BTC Duty Medical Officer</td>
<td>MI</td>
<td>2x4.5ml EDTA</td>
<td>NATF 094</td>
<td>Donor dependent</td>
</tr>
<tr>
<td>Platelet alloantibody antibody investigation (NAIT)</td>
<td>Referred</td>
<td>Mother: 4.5ml EDTA, 2x7ml clotted. Baby: paediatric EDTA, Father: 4.5ml EDTA</td>
<td>NATF 544</td>
<td>3 days initial screen 15 days confirmatory</td>
</tr>
<tr>
<td>PTP/ITP:</td>
<td>Referred</td>
<td>2x7ml clotted, 2x4.5ml EDTA</td>
<td>Blood / Blood component</td>
<td>3 days initial screen 15 days confirmatory</td>
</tr>
<tr>
<td>Platelet autoantibody investigation (Refractory)</td>
<td>Referred</td>
<td>2x4.5ml EDTA, 2x7ml clotted</td>
<td>Blood / Blood component</td>
<td>3 days initial screen 15 days confirmatory</td>
</tr>
<tr>
<td>Granulocyte Alloantibody Investigation</td>
<td>MI</td>
<td>7ml Clotted + 4.5ml EDTA (&lt; 48hrs old)</td>
<td>Blood / Blood component</td>
<td>2 days DAT 15 Days IAT</td>
</tr>
<tr>
<td>Granulocyte Autoantibody Investigation</td>
<td>MI</td>
<td>7ml clotted + 4.5ml EDTA (&lt; 48hrs old)</td>
<td>Blood / Blood component</td>
<td>2 days DAT 15 Days IAT</td>
</tr>
<tr>
<td>Non-Invasive Prenatal Diagnostics (NIPD) – Fetal typing</td>
<td>MI</td>
<td>Mother 2x7ml EDTA, Father 2x7ml EDTA</td>
<td>MIHO2</td>
<td>7 days</td>
</tr>
<tr>
<td>HLA Disease Association</td>
<td>Referred</td>
<td>1 x 7ml EDTA</td>
<td>Blood / Blood component</td>
<td>14 days</td>
</tr>
<tr>
<td>Transplant Recipients HLA typing</td>
<td>Referred</td>
<td>5 ml EDTA 5ml clotted</td>
<td>Blood / Blood component</td>
<td>7 days</td>
</tr>
<tr>
<td>HLA antibodies</td>
<td>Referred</td>
<td>5ml clotted</td>
<td>Blood / Blood component</td>
<td>14 days</td>
</tr>
<tr>
<td>Organ Donors HLA typing</td>
<td>Referred</td>
<td>3 x 7ml EDTA 2x5ml clotted</td>
<td>Blood / Blood component</td>
<td>7 days</td>
</tr>
</tbody>
</table>

Haemolysed, lipaemic (excess lipids or fats) and icteric (excess bilirubin-bright yellow) samples will not usually be accepted for testing as these factors may interfere with the laboratory test.
8.1.1 Uncertainty of Measurement
SNBTS Laboratories shall consider the uncertainty of measurement for all critical points of any assay. Kleihauer tests give results as a numerical value. Within this reported value there is an inherent uncertainty, or variability, in the data generated. Data obtained from these tests enable an assessment of this uncertainty of measurement (UoM). Please contact the laboratory for discussion or advice on results if necessary.

9 PRE-TRANSFUSION TESTING
Pre-transfusion testing establishes the ABO and RhD blood group of the patient and determines if there are red cell antibodies that could result in an incompatible blood transfusion.

9.1 Group and screen
- Group and Save" request samples are ABO and Rh (D)-grouped and screened for atypical antibodies.
- Samples are valid for blood component issue for up to seven days depending on the patient's transfusion history.

9.2 Crossmatch requests
- ABO and Rh (D) compatible donor units are selected and crossmatched for named patients and held for that patient for 24 hours after the date the request was made.
- If your patient has been transfused, a fresh sample for further crossmatching will be required after 72 hours. You should allow as much time as possible to complete grouping, both antibody screening and cross-matching, in case atypical antibodies are found.
- If your patient has atypical antibodies, compatible blood must be serologically crossmatched. This can mean a delay as further complex investigations are required to identify and source appropriate units for cross-matching if we don't hold them in our stock.
- We operate a maximum surgical blood ordering schedule (MSBOS). Normally we will crossmatch according to the MSBOS unless the clinician's request gives clear reasons for doing otherwise.

10 RED CELL REFERENCE TESTS AND AVAILABILITY
Some red cell investigations are available at our laboratory and other more complex cases will be referred to specialist laboratories.

10.1 Antibody identification
When an antibody screen is positive further identification tests will be carried out to determine the antibody specificity and significance, and to detect atypical red cell antibodies that may cause transfusion reactions. Antenatal patients with clinically significant red cell antibodies require regular monitoring of their antibody titre.

10.2 Antibody quantitation – Referred to SNBTS West of Scotland
Quantitation is carried out on antenatal samples with antibody specificities of anti-D or anti-c. When these antibodies are detected they will be reported first as an antibody titration value then subsequently quantified in international units. These antibodies and anti-K are considered the most likely to cause haemolytic disease of the foetus and newborn (HDFN). The quantitation value correlates with the risk of intravascular haemolysis.
10.3 **Anomalous ABO / D group investigation**
The accurate determination of the ABO / RhD blood group is essential to safe blood transfusion practice.

10.4 **Transfusion reaction**
In the event of a suspected transfusion reaction, the transfusion should be stopped and the relevant clinicians and Blood Bank informed.
- A 7ml EDTA sample (post reaction), 7ml clotted post transfusion sample and any RCC (used or unused) to be sent to the Blood Bank In any suspected case of Haemolytic transfusion reaction (see 14)

10.5 **Transfusion reactions - things to consider**
- All hospitals will have a local transfusion reaction policy that you should refer to.
- All patients receiving a blood transfusion should be monitored for adverse reactions.
- Observations of blood pressure, pulse, temperature and respiratory rate should be measured at baseline and at 15 minutes after the start of the transfusion.
- Observations should continue periodically based on the local transfusion policy.
- If a patient becomes unwell during or after the transfusion the transfusion should be stopped, the patient assessed and medical advice sought immediately.
- The Blood Bank and / or local haematology team should be contacted for advice on management and investigations.
- All hospitals will have a local transfusion reaction form.
- You should use the local transfusion reaction form to document the details of the reaction. A summary of events should be included in the patient’s hospital record.
- Report the transfusion reaction to the local Blood Bank.

10.6 **Red cell phenotyping Foetal typing from maternal blood – Contact MI laboratory prior to sampling**
Patients demonstrating previously undetected clinically significant antibodies will be typed for the corresponding antigens. Rh/K or extended phenotyping can also be performed on paternal, AIHA, bone marrow transplantation, thalassaemia and sickle cell patients.
- A 7ml EDTA sample is required.

10.7 **Red cell genotyping - Referred to SNBTS West Of Scotland**
Determination of extended red cell genotype for patients unable to be typed using traditional red cell serology - for example, patients with positive DAT or recently transfused.
- A 7ml EDTA sample is required, with results reported within seven days.

10.8 **Cold agglutinin**
Cold agglutinins are cold reactive autoantibodies that can cause haemolytic anaemia in cold agglutinin disease.
Testing determines a temperature range and concentration of cold agglutinins.
Tests require a warm sample so must be placed in a flask at 37 degrees Celsius immediately after collection.
- A 7ml EDTA sample and 7ml Clotted sample are required by special arrangement only.

10.9 **Auto Immune Haemolytic Anaemia (AIHA)**
In cases of warm type AIHA the presence of broad undefined free auto-antibody may mask the presence of underlying allo-antibodies.
- 2 x 7ml EDTA samples are required.
10.10 **Direct Antiglobulin Test (DAT)**
Used to determine whether patient’s red cells are coated in vivo with immunoglobulin, complement or both.
Positive DAT may be associated with shortened red cell survival and auto immune haemolytic anaemia (AIHA).
- A 7ml EDTA sample is required.

10.11 **Paternal investigation**
Paternal phenotype should be determined in cases where a woman has an antibody in pregnancy capable of causing HDFN (particularly anti-D, anti-c or anti-K).
Determination of the father’s phenotype helps predict the probability of the foetus carrying the relevant red cell antigen.
- 7ml EDTA sample is required.

10.12 **Elution studies**
Elution is a procedure for the recovery of antibody bound to red blood cells.
This can be used in cases of suspected delayed haemolytic transfusion reactions, where the causative antibody may be absent from the plasma having been taken up by the transfused red cells.
- A 7ml EDTA sample is required, by special arrangement only.

10.13 **Foetal typing from maternal blood – Contact MI laboratory prior to sampling**
Fetal typing may be required when a pregnant woman has a clinically significant antibody of high concentration, the woman has a history of HDFN and the father is heterozygous for the relevant antigen.
Testing will determine fetal blood group from fetal DNA in maternal plasma using PCR assay.
Assays available for RhD, Rhc, RhE, K (Kell), RhC.
- 2 x 7ml maternal and paternal samples are required.

### 11 BLOOD AND BLOOD COMPONENTS
Our maximum blood ordering schedules (MSBOS) are designed to provide guidance primarily for pre-planned surgical procedures.
They have been prepared in order to allow the most efficient use of blood stocks and laboratory facilities.

11.1 **Red cells**
- Stored at: +2 to +6 degrees Celsius
- Volume (range): Volume 220 to 340ml for red cells in additive solution, leucodepleted.
- ABO and Rh D compatible.

11.1.1 **Special requirements**
Some patients require specialised blood components – this could be related to the patient’s characteristics or the underlying disease for which they are being treated.
In an emergency, these special requirements are still important. However, in a life-threatening situation giving emergency blood to save the patient’s life is the priority.

11.1.2
- Phenotyped (antigen-specific).
- Irradiated.
- Cytomegalovirus (CMV) negative.
- Washed.
- Immunoglobulin A (IgA) deficient.

11.1.3 **Special components**
- Neonatal red cells
- Red cells for neonatal exchange transfusion
11.2 **Platelets**
- Stored at: +20 to +24 degrees Celsius.
- Volume (range): 160 to 380ml for platelets pooled, leucocyte depleted or platelets pooled, in additive and plasma, leucocyte depleted.
- ABO and Rh D compatible.

11.2.1 **Special requirements**
- Apheresis.
- Irradiated.
- High titre (HT) negative.
- (CMV) negative.
- Washed.
- HLA matched.

11.2.2 **Special components**
- Neonatal platelets.
- IgA deficient.

11.3 **Fresh frozen plasma (FFP)**
- Stored at: -25 degrees Celsius.
- Volume (range): 200 to 340ml FFP or filtered FFP.
- ABO compatible.

11.4 **OCTAPLAS**
- Stored at: ≤ -18 degrees Celsius.
- Volume: 200 ml.
- ABO compatible.

11.5 **Cryoprecipitate**
- Stored at: -25 degrees Celsius.
- Volume (range): 100 to 250ml for cryoprecipitate pooled, leucocyte depleted and 200 to 340ml for cryoprecipitate depleted plasma, leucocyte depleted.
- ABO compatible.

11.6 **Special requirements**
- HT negative.
- Pathogen inactivated.
- Solvent-detergent (SD) treated: Octaplas.
- Methylene Blue (MB) treated: MB FFP.

11.7 **Blood products**
These blood products are derived from plasma donations outside the UK. They are provided commercially.

11.8 **Available from Aberdeen Blood Bank**

11.8.1 **Prothrombin complex concentrate**
Prothrombin complex e.g. Beriplex concentrate is used to reverse anticoagulation with warfarin in life threatening and bleeding emergencies.

11.9 **Supplied via ARI pharmacy**

11.9.1 **Anti-D immunoglobulin**
Anti-D immunoglobulin is used to prevent sensitisation to the D-antigen in RhD negative women during pregnancy or after delivery.
11.9.2 **Albumin**
- 20% and 4.5% human albumin solution (HAS)

11.9.3 **Intravenous immunoglobulin**
- E.g. Vigam

12 **EMERGENCY BLOOD**
There are certain things you should consider when blood is needed in an emergency, before full compatibility testing can be completed on the current sample.

12.1 **Blood tests**
In an emergency you should establish the blood group as soon as possible.
Blood tests for full blood count, coagulation screen and biochemistry should be taken at baseline and periodically to guide the need for blood and blood components.

12.2 **Haematology advice**
You should seek advice from the local haematology team about additional blood product support if bleeding is ongoing.
You should seek early haematology advice for patients on anticoagulants or with known bleeding disorders.

12.3 **Emergency red cells**
Group O RhD negative red cells can be given in an emergency when the blood group is unknown.

12.4 **Emergency fresh frozen plasma**
Group AB plasma or group A plasma that is high-titre negative can be given in an emergency when the blood group is unknown. Group AB plasma is universal but in short supply.
If giving Octaplas or Methylene Blue Treated FFP to patients of unknown group, use group AB.
Group A fresh frozen plasma (FFP) that is labelled high-titre negative can be given to any patient until the group is known.

12.5 **Emergency platelets**
Platelets of any group can be given to bleeding patients of unknown group.
If RhD positive platelets are given to RhD negative women under the age of 50 years, anti-D Ig may be required within 72 hours of the transfusion.
- Group A negative (or O negative platelets) that are labelled HT negative can be given to any blood group.
- In men and women aged over 50 years the RhD group doesn’t matter.

12.6 **Major haemorrhage protocol**
Local activation policies apply for major haemorrhage protocol (MHP):
- You should activate the MHP to obtain blood and blood components in an emergency where significant blood loss needs a rapid response without authorisation by a blood transfusion service (BTS) medic.

12.7 **Major surgical bleeding, major obstetric haemorrhage and Code Red traumatic major haemorrhage**
You should refer to local policies to find out what steps to take.

12.8 **FOR MASSIVE HAEMORRHAGE PROTOCOL or CODE RED (A & E only) Ext: 2222, POST ACTIVATION PROTOCOL 50522**
13  **PROCEDURE FOR REQUESTING BLOOD COMPONENTS**

Clinicians need to allow for the time it takes for blood components to be collected from hospital Blood Bank to reach clinical areas.

13.1 **URGENT**: Red cells required immediately:
- Send a patient crossmatch sample before any transfusion.
- Advise Blood Bank.
- Use emergency O RhD negative red cells from designated fridge.
- Inform Blood Bank immediately if emergency blood is used so that it can be replaced.
- Inform Blood Bank immediately if anticipating uncontrollable bleeding.
- To activate “NHS Grampian Protocol for Massive Bleeding Ext: 2222

13.1.1 **NOTE**: O RhD-negative, K-negative blood should be used for all female patients of childbearing potential, until group-specific is available or for anyone whose plasma is known to contain anti-D.

13.1.2 O RhD-positive blood may be given in an emergency to male patients and women of post-childbearing age or known to be RhD-positive.

13.1.3 Emergency Group O negative blood available from blood storage fridges in:
- ARI, Green Zone Levels 0 (A&E) and 4 (Ward 106)
- ARI, Pink Zone Level 1, Main theatres
- ARI, Orange zone Ward 309
- AMH Labour Ward
- WE Mail Room

13.2 Red cells required in 20 minutes:
- Send a patient EDTA crossmatch sample and second sample if necessary.
- Advise Blood Bank.
- ABO / RhD group-specific red cells available from Blood Bank within 20 minutes of receipt of sample.

13.3 Red cell required in 60 minutes:
- Send a patient EDTA crossmatch sample and second sample if necessary.
- ABO / RhD group, antibody screen and crossmatch will be carried out.
- Red cells available for collection within 60 minutes of receipt of sample.

13.4 Provision of blood components (Platelets, Fresh Frozen Plasma, Cryoprecipitate)

13.4.1 **FFP**
- Order via Blood Bank as per protocol.
- Normally available 25-30 minutes after request to allow time for thawing

13.4.2 **Platelets**
- Order via Blood Bank as per protocol.
- Normally available in 10 minutes.

13.4.3 **Cryoprecipitate**
- Order via Blood Bank if fibrinogen is less than 1.5 g/l.
- Normally available in 25-30 minutes.

13.5 **Products**

13.5.1 **Beriplex** (PCC- prothrombin complex concentrate is available from the Blood Bank).

13.5.2 For provision of other blood products contact NHS Grampian Pharmacy at (5)53223 (Mon to Fri 9am-5pm); all other times contact on-call pharmacist via ARI switchboard (0845 456 6000).
ADVERSE TRANSFUSION REACTIONS

Things to consider in the event of an adverse transfusion reaction

14.1 Transfusion Reaction Policy: you should follow the hospital transfusion policy for management of transfusion reactions.
- You should monitor all patients receiving a blood transfusion for adverse reactions.
- Observations of blood pressure, pulse, temperature and respiratory rate should be measured at baseline and at 15 minutes after the start of the transfusion. Observations should continue based on local transfusion policy advice.
- If your patient becomes unwell during or after the transfusion you should stop the transfusion, assess the patient and seek medical advice immediately.
- The Blood Bank and / or local haematology team can be contacted for advice on management and investigations: you should refer to the hospital transfusion policy for contact details.

14.2 Transfusion Reaction Form: you should use the local hospital forms for the management of transfusion reactions.
- Use the local transfusion reaction form to document the details of the reaction. A summary of events should be included in the patient’s hospital record.
- You should report the transfusion reaction to the local Blood Bank.

You can see a flowchart on dealing with acute reactions on the Joint United Kingdom (UK) Blood Transfusion and Tissue Transplantation Services Professional Advisory Committee (JPAC) website.

14.3 Transfusion reaction investigations
Allergic or febrile transfusion reactions don't require lab investigations if they are mild and resolve quickly.

When laboratory investigations are carried out the results can be used to manage the patient and guide any future blood transfusions.
- You should not discard blood component bags in the event of moderate or severe transfusion reactions.
- You should return any blood bags implicated in the transfusion to the Blood Bank with a full explanation of the reaction.
- The Blood Bank and the haematology team will let you know what samples to take depending on the clinical situation and the nature of the suspected reaction.

14.3.1 Acute transfusion reactions – during or within 24 hours of the transfusion

14.3.1.1 ABO incompatibility (red cells) – acute haemolytic transfusion reaction (HTR)
Acute HTR typically occurs during or within 24 hours of the transfusion and is predominantly associated with intravascular haemolysis. This type of reaction can be seen following ABO incompatible transfusion.

14.3.1.2 Severe allergy / anaphylaxis
- Mast cell tryptase at baseline, 4 hours and 24 hours to establish anaphylaxis.
- Pre-transfusion IgA level and if low / absent, anti-IgA antibodies.

14.3.1.3 Suspected bacterial contamination
- Blood cultures on the patient.
- Return the implicated blood bag(s).

14.3.1.4 Transfusion-associated circulatory overload
- No specific laboratory tests but establish fluid balance and examine a CXR in the first instance.
14.3.1.5 Transfusion-related acute lung injury (TRALI)

- Exclude TACO and, if TRALI supported by clinical findings female donors will be tested for HLA / HNA antibodies.
- Patient will be tested for HLA / HNA type if antibodies are identified in the donor.

14.3.2 Delayed transfusion reactions – more than 24 hours after the transfusion

14.3.2.1 Red cell antibody incompatibility – delayed haemolytic transfusion reaction (HTR)

Delayed HTR typically occurs within 5 to 7 days of the transfusion and is predominantly associated with extravascular haemolysis.

Antibodies commonly involved in this type of reaction are Rh, Jk, Fy and K related.

14.3.2.2 Post transfusion purpura

- Send samples for HPA antibodies and HPA genotype.

14.3.2.3 Suspected viral transfusion transmitted infection

- Any suspected viral infection should be reported through the clinical service team.
- A full clinical history plus a transfusion history (with donation numbers for each unit) will be required.

15 ANTENATAL TESTING

We use antenatal testing to determine the ABO and RhD group of the mother and to check for atypical red cell antibodies.

Tests are initially required at booking and at 28 weeks and further tests maybe required for antibody investigation.

15.1 Group and screen

- Group and screen is used to determine the ABO and RhD group.
- RhD negative women will be advised anti-D prophylaxis unless they are already sensitised to the RhD-antigen.

15.2 Antibody identification

- To identify if the antibody (or antibodies) that could cause haemolytic disease of the foetus and newborn (HDFN).

15.3 Antibody titration or quantitation

- Anti-D and anti-c are quantified, all other antibodies are titrated.

15.4 Maternal test for foetomaternal haemorrhage (FMH)

- Kleihauer (acid elution) or flow cytometry.

15.5 Cord blood group

- To ascertain the requirement for anti-D immunoglobulin prophylaxis in RhD negative women.
- For red cell antigen testing and direct antiglobulin test (DAT where maternal plasma contains atypical red cell antibodies.

15.6 DNA genotyping of foetus

- For women who have an antibody which may cause serious haemolytic disease of the foetus and newborn and the father is predicted to be heterozygote or unknown.
PROCEDURE FOR ANTE NATAL LABORATORY REQUESTS

16.1 Additional Information required on Antenatal Request Forms
- Record if antenatal booking sample request.
- Indicate whether the patient is prim / multigravidae.
- History of transfusion(s).
- Does plasma contains any clinically significant antibody(ies) which are associated with HDFN.
- Indicate if patient has been administered prophylactic anti-D Ig and if so when.
- If submitting a paternal sample for phenotype please give details of the pregnant partner. This form may also be used for investigations related to immunohaematological disease.

16.2 Delivery Samples
At delivery, samples from the mother and baby, accompanied by an anti-D Ig form (orange form) should be sent to Blood bank from the following cases:-

1. All RhD-negative women.
2. All women with atypical red cell antibody
3. All women whose blood group is unknown (e.g. concealed pregnancy).

Dr Gray's and outlying hospitals - samples should be sent to BTC by either taxi or hospital van.
Home Deliveries - the attending midwife should arrange delivery of samples to BTC or the AMH blood sample refrigerator.

16.3 Blood Ordering Schedules for Neonates

Paediatric Transfusion
Exchange Transfusion
Special arrangements apply. Please contact the Blood Bank in advance to make arrangements. For exchange transfusions, maternal and baby samples are required, only semi-packed red cells (with known haematocrit) are suitable for exchange transfusions.

16.4 Top-ups for Neonates and Infants
CMV seronegative cellular components will be provided for all infants up to one year old. Paedipacks will be provided for all infants, who require top-up transfusions.
Blood Requirements for Surgical Procedures on Neonates / Infants.
Use RCC / RCCS, dependant on clinical need, follow the same criteria as top-ups (see above).

16.5 Fresh Frozen Plasma and Cryoprecipitate
Neonates and children born on or after 1 January 1996, should be treated with Fresh Frozen Plasma (FFP) and Cryoprecipitate that has been virally inactivated with Methylene Blue Treatment (MBT) and imported from outside the UK alternatively Octaplas may be issued / used.

All blood for transfusion of infants less than one year is:
- CMV seronegative.
- From accredited donors, i.e. from donors who have given blood at least twice within the last 2 years.

Note: Where neonate has received intrauterine transfusion(s), blood for exchange transfusions and top-up transfusions must be irradiated. For all other exchange transfusions, the blood should be irradiated, provided this does not lead to an unacceptable delay in the provision of blood.
16.6 Antenatal guidelines
- Read our guidance for pregnant women with red cell antibodies, Appendix 4.
- More information on routine antenatal anti-D prophylaxis for women who are RhD negative is available on [https://www.nice.org.uk/guidance](https://www.nice.org.uk/guidance).

17 DELIVERY & DISTRIBUTION OF MATCHED BLOOD TO GRAMPIAN HOSPITALS

17.1 Aberdeen Royal Infirmary (ARI)
Deliveries by the BTC porter is made to ARI blood storage refrigerators Monday to Friday. The Request Form for routine deliveries must be completed and be at the collection point by 0700 hours. At all other times arrangements must be made for matched blood to be collected from the BLOOD BANK by portering services.

The person collecting the blood must bring a completed Blood Porter Collection Slip, (or the patient's notes or patient's addressograph label) as a form of the patient's ID. Provision of inaccurate patient data on this slip may result in unnecessary delay in provision of blood.

17.2 Aberdeen Maternity Hospital (AMH)
Matched blood must be collected from the Blood Bank by the AMH porter.

17.3 Royal Aberdeen Children's Hospital (RACH)
A RACH porter will deliver blood to the blood storage refrigerator as required. RACH staff will make arrangements for delivery of matched blood.

17.4 Woodend Hospital (WE)
The BTC driver visits Woodend at 0700, Monday to Saturday. Matched blood is delivered to the blood storage refrigerator, where blood samples for grouping and crossmatching are picked up. Arrangements for delivery of matched blood outwith the stated times are made by the Blood Bank.

17.5 Blood Deliveries to Community Hospitals
Delivery by BTC driver, in SNBTS supplied insulated box(es). These boxes are specially designed and can be used to store blood for up to 8 hours as detailed on Blood Fridge Register (BFR).
Maximum 3 units per delivery. Unit(s) must remain in box (with special cool-packs) until removed individually for transfusion. Any units that have not been removed from insulated box by time recorded on BFR must not be transfused. Unwanted units must not be returned to BTC and are to be disposed of via NHSG waste disposal routes.

Inform BTC of any unused units that have been discarded. If units are discarded, ensure the compatibility labels state that the unit was not transferred and return the compatibility labels to BTC.

Note: Document on the blood fridge register when the units were removed from controlled storage. Once the patient has receive the transfusion, the two practitioners who positively identified the patient, sign the pink sticker and affix to the prescription and recording form. The blood fridge register and the completed blue section of the compatibility label are returned to BTC in the transport box.
BLOOD STORAGE AND LOCATIONS IN GRAMPIAN HOSPITALS

Blood left for 24 hours only from the time / date required. Contact Blood Bank for advice. Blood for transfusion within Aberdeen hospitals must always be stored in designated blood storage refrigerators (see 13 for Blood Fridge Locations) and transported in insulated boxes prior to use. Blood must not be kept more than 30 minutes in these boxes.

18.1 Blood Fridge Register (BFR)
Blood must be booked into and out of the blood storage refrigerators as per local procedures. If the blood has been removed from the blood storage refrigerator for more than 30 minutes and NOT transfused, it may NO LONGER BE SAFE. Such blood MUST NOT be returned to the blood storage refrigerator, but must be clearly labelled as having been OUTWITH STORAGE CONDITIONS and returned to the Blood Bank laboratory as soon as possible.

The overwrap bag of the units must not be opened until immediately prior to transfusion as this may result in the unit(s) having to be discarded.

18.2 Collection of Matched Blood
All staff member removing blood from the hospital's blood storage refrigerator must have completed TAAP training.

18.3 Traceability
In addition to the obligations under adverse event reporting, the BSQR also require blood establishments and hospital Blood Banks to maintain records to ensure full traceability for no less than 30 years.

All blood components issued for patients have a ‘bag and tag’ label attached. It is the responsibility of clinical staff to complete and return this label for all transfused components. Completed labels are to be returned daily from each ward and collated against issues. Any component that has a missing label will be followed up by the transfusion laboratory. A reminder will be sent to the ward manager at 3 and 7 days following issue of the implicated component if the label has not been returned.

19 MOLECULAR IMMUNOHAEMATOLOGY (MI)

Aberdeen SNBTS MI laboratory provides platelet and granulocyte reference testing and Non-Invasive Prenatal Diagnostic (NIPD) testing. Any requirement for HLA typing, HLA antibody screening and Disease association is referred to Edinburgh H&I laboratory via Aberdeen SNBTS.

19.1 NIPD
Where a woman has an antibody (e.g. anti-D, c or K) which may cause serious HDFN (representing a risk of IUD), and the father is predicted to be heterozygous for the relevant antigen, or is unknown, the genotype of the baby may be determined by DNA typing of the fetus using the maternal plasma. This will identify whether or not the baby is at risk of HDFN by determining the corresponding antigen. This procedure is known as NIPD (non invasive prenatal diagnosis).

Please contact MI department to discuss any requests for this service and complete form MIH 02 Appendix 4.
19.2 **HLA and HPA matched platelets for platelet refractoriness**

Platelet transfusion refractoriness may result from immune or non-immune platelet destruction.

Targets for clinically relevant platelet alloantibodies that can cause immune platelet refractoriness include:
- Human leukocyte antigens (HLA) class I.
- Human platelet antigens (HPA) or in some cases high titre ABO blood group antibodies.

Edinburgh H&I investigates the presence of alloantibodies against HLA class I or HPA. You should be aware that HPA antibodies in the absence of HLA class I antibodies are a rare cause of platelet refractoriness.

19.3 **Making an initial request**

For an initial request for HLA or HPA matched platelets you must complete our initial request form and discuss it with the Blood Transfusion Service (BTS) or haematology registrar.

NATF 249 – Appendix 5

19.4 **Sample requirements**

For initial testing:
- 5ml EDTA for HLA typing.
- 5ml clotted for HLA antibody screening.

For patients already receiving support:
- 5ml clotted for HLA / HPA antibody screening.

19.5 **Platelet provision**

Depending on the antibody and typing results, both HLA class I and HPA compatible platelets can be provided.

Provision of HLA or HPA matched platelets depends on:

1. Exclusion of non-immune causes of platelet refractoriness.
2. Platelet refractoriness to ABO compatible single donor platelets on two or more occasions.
3. Positivity for HLA class I and HPA antibodies.

A search is performed on all blood donors suitable to donate apheresis platelets who have been HLA class I and HPA typed. If compatible HLA or HPA platelets are required, you should inform Edinburgh H&I and the BTS or haematology registrar as soon as possible — it can take time to call in specific donors and perform mandatory donor testing before platelets can be released.

19.6 **Post infusion of HLA compatible platelets**

In order to monitor the effectiveness of selected donations it is important to receive a platelet count after the transfusion.

NATF 1004 Appendix 6.

19.7 **Testing for FNAIT, PTP and TRALI investigation**

Edinburgh H&I carries out human platelet antigen (HPA) and human neutrophil antigen (HNA) genotyping and antibody screening.

19.8 **Fetal / neonatal alloimmune thrombocytopenia (FNAIT)**

HPA antibody and genotype testing is used in suspected cases of FNAIT. The initial request of FNAIT investigation should be completed with SNBTS clinical staff.

NATF 544 Appendix 7.
19.9 Post-transfusion purpura (PTP)
HPA antibody and genotype testing is used in suspected cases of PTP.

19.10 Transfusion-related acute lung injury (TRALI)
Human leucocyte antigen (HLA) and human neutrophil antigen (HNA) antibody screening are used in suspected cases of TRALI. The form for TRALI investigation should be completed with SNBTS clinical staff.

NATF 094 Appendix 8.
You should note that all samples for HNA testing and confirmatory HPA antibody testing by monoclonal antibody-specific immobilization of platelet antigen (MAIPA) will be sent to the NHS Blood and Transplant (NHSBT) Platelet and Granulocyte Reference Lab in Filton, Bristol.

19.11 Sample requirements
All sample requirements and turnaround times are listed in section 8.

20 ADDITIONAL RESOURCES FOR TRANSFUSION
For more information please refer to the website
www.scotblood.uk
https://nhsnss.org/services/blood-tissues-and-cells/clinical-services/information-and-manuals-for-clinicians/

20.1 Guidelines and information on transfusion lab practice
The 'Red Book' has guidelines for all materials and is produced by the UK's Blood Transfusion Services for both therapeutic and diagnostic use. The 'Red Book' is composed by experts from the Joint United Kingdom (UK) Blood Transfusion and Tissue Transplantation Services Professional Advisory Committee (JPAC).
You can explore the ‘Red Book’ on the JPAC website.
- More information on Blood Safety and Quality Regulations (BQSR) is available on the JPAC website
- More information on the Medicines and Healthcare products Regulatory Agency (MHRA) regulation of blood is available on the gov.uk website
- More information on the MHRA electronic issue of blood components is available on the gov.uk website
- More information on the UK Accreditation Service (UKAS) accreditation of medical laboratories is available on the UKAS website.

20.2 Blood Transfusion and Transfusion Management

20.3 General
- Download the Transfusion Handbook from the JPAC website.
- British Society of Haematology (BSH) guidelines are available from the BSH website.
- A range of blood transfusion guidelines are available from the National Institute for Health and Care Excellence (NICE) website.

20.4 Antenatal guidelines
- Read our guidance for pregnant women with red cell antibodies (PDF, 1.2MB)
- More information on routine antenatal anti-D prophylaxis for women who are RhD negative is available on the NICE website.

20.5 Surgery
The Association of Anaesthetists of Great Britain & Ireland (AAGBI) offers advice on the transfusion of blood components and their alternatives. Read the guidelines on the AAGBI website.

20.6 Adverse events of transfusion
You can find out more about the Serious Hazards of Transfusion (SHOT) on the SHOT website.
### Customer Communication Form

**Dept:** | **Report No.** | **C** | **C** |
---|---|---|---|

**Completed by:** | **Date:** | **Time:** |

**Date of Initial Contact:** | **Time of Initial Contact:**

### Section 1

**Details of Communication:**

**Customer Contact:**

**Hospital / GP:**

**Initial Response:**

**Signature:** | **Date:** | **Time:**

### Section 2

**NATF 1022 01**
Customer Communication Form

Investigation & Follow-up Response (if applicable)

Signature:          Date:          Time:

Event/Incident Number: (if applicable)

Corrective / Preventative Action/s (as appropriate)

Signature:          Date:          Time:

Comments:

QA Signature:      Date:          Time:

NATF 1022 01
POSITIVE PATIENT IDENTIFICATION FOR BLOOD TRANSFUSION SAMPLING

STEP 1
USE AN OPEN QUESTION TO POSITIVELY IDENTIFY PATIENT
- WHAT IS YOUR NAME?
- WHAT IS YOUR DATE OF BIRTH?

CHECK THESE DETAILS AGAINST PATIENT'S ID BAND

STEP 2
CHECK THAT THE DETAILS ON ID BAND MATCH REQUEST FORM
- CHECK
- FORENAME
- SURNAME
- DATE OF BIRTH
- CHI
- GENDER

STEP 3
TAKE BLOOD AND PUT INTO EDTA VACUTAINER

DO NOT USE PRE-LABELLED TUBES

STEP 4
LABEL BLOOD SAMPLE BY HAND AT THE BEDSIDE
- SURNAME
- FORENAME
- DATE OF BIRTH
- CHI
- GENDER
- PATIENT LOCATION
- DATE & TIME SAMPLE TAKEN
- SIGNATURE OF PERSON TAKING SAMPLE

STEP 5
ENSURE PATIENT DETAILS ON BLOOD TUBE AND REQUEST FORM ARE IDENTICAL

STEP 6
WRITE THE TIME & DATE OF TAKING THE SAMPLE ON THE REQUEST FORM
SIGN THE REQUEST FORM TO INDICATE WHO TOOK SAMPLE
Appendix 3

Title:

SNBTS POLICY ON THE ACCEPTANCE CRITERIA FOR PATIENT BLOOD SAMPLES WITHIN CLINICAL LABORATORIES

Statement:

It has been agreed that SNBTS Clinical Laboratories will operate a “Zero Tolerance” approach in relation to patient blood sample acceptance criteria. This policy document defines how this policy will be operated and the detail that will be required for acceptance of samples. Each clinical laboratory will implement the national SOP (NATS CLS 041) which makes these requirements clear to local SNBTS staff.

Note: This policy does not apply to samples relating to blood, tissue or cell donors

Key Change From Previous Revision:

Patients Gender missing is no longer a reason to discard samples but can be checked with wards.

Unsigned samples are acceptable so long as the request form is completed.

Date and time of sampling can be clarified by ward.

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<th>SMG: N/A</th>
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<td>NATP CLIN 037 01</td>
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<td>Date Of Implementation:</td>
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Background

1. Errors occurring during the sampling process (mis-labelled samples or wrong blood in tube incidents (WBIT)) can increase the risk of transfusion-associated morbidity and mortality for all patients at risk of receiving a blood transfusion\(^1\,2\,3\). Lumadue et al demonstrated that inappropriately or mis-labelled sample tubes were forty times more likely to contain blood from the wrong patient\(^4\). A strictly enforced sample acceptance policy can significantly reduce the number of WBIT incidents and mis-labelled samples\(^5\).

2. The British Committee for Standards in Haematology (BCSH) Transfusion Taskforce has published guidance aimed at mitigating such risks\(^6\,7\). The guidance state that hospitals should have a policy in place that clearly defines the minimum patient identifiers for sample tubes and request forms and the actions required by the hospital transfusion laboratory, should the phlebotomist fail to meet the agreed criteria.

3. Following the publication of the NHS Quality Improvement Scotland (QIS) Clinical Standards for Blood Transfusion in 2006\(^7\), QIS recommended that every NHSS Board should introduce a ‘Zero Tolerance’ policy for pre-transfusion samples\(^8\). BCSH also strongly recommended zero tolerance in their updated Guidelines on the Administration of Blood Components in 2009:

Organisations should have local policies or guidelines detailing the requirements for requests for transfusion in both routine and urgent situations, and the action to be taken by the transfusion laboratory if minimum requirements are not met. Transfusion laboratories should not allow the core patient identifiers on the request form to be amended or added to.(section 11.2)

Organisations should have a clear policy on the rejection of pre-transfusion blood samples which do not meet minimum labelling requirements. There should be no changes or amendment of patient core identifiers once samples have been sent to the laboratory. It is suggested that organisations should adopt a “zero tolerance” policy. (section 12.3)\(^9\)

4. BSI Standards for Medical Laboratories – Requirements for quality and competence (ISO 15189:2012) set out standards the content of request forms and instructions for collection activities, including sample labelling that ‘provides an unequivocal link with the patients from whom they are collected’. The standards also require ‘laboratory-developed and documented criteria for sample acceptance or rejection of samples’\(^9\).

5. Where samples fail to meet the criteria for acceptance for processing, a ‘zero tolerance’ policy requires that such samples are rejected. A new sample that meets the required criteria must be requested for testing to proceed.
6. With the exception of ISO 15189:2012, the aforementioned guidance documents pertain to pre-transfusion samples, and are driven primarily by mitigation of the risk of an incompatible transfusion as the result of a ‘wrong blood in tube’ incident. The documents vary in their recommendations as to the exact criteria to which a zero tolerance policy be applied. Furthermore, the wording in BCSH guidance suggests that laboratories may extend the criteria to which ‘zero tolerance’ (i.e. sample rejection) are applied. This had led to local variation in the acceptance criteria applied to samples and confusion when samples acceptable in one location are referred to another where they are rejected.

7. To harmonise practice while maintaining vigilance in regard to patient safety, and compliance with relevant laboratory standards, the acceptance criteria for samples received by SNBTS laboratories have been reviewed. A risk based approach has been adopted to take account of the variety of tests that are performed and the clinical consequences of both sample rejection and the potential for errant results to result in harm to patients.

8. The risk of adverse clinical consequences is greatest where there is a need to issue blood components for transfusion. Correct patient identification throughout the transfusion process mitigates the risk of testing a sample from, and issuing blood for, the wrong patient. Therefore the strictest criteria will be enforced (zero tolerance) for core patient identifiers on pre-transfusion samples.

**STATEMENT:**

9. Pre-transfusion samples and request forms must be labelled with the following four points of patient identifying data as set out in BCSH guidelines:

- Last Name (correctly spelt)*
- First Name (correctly spelt)*
- Date of Birth
- Unique Identification Number (CHI or Hospital Number where no CHI number is available)

*For patients who change forename, surname or both please refer to national SOP NATS CLS 041.

10. There must be no discrepancy between the patient identifying information on the sample tube and request form. If names are in different order on sample or form, and the CHI number is identical, after contacting the clinical area to confirm the correct order, the sample can be accepted.

11. It must be clear to Laboratory staff that there has been no attempt made to replace a different patient’s details on the sample tube, therefore any sample tube where any patient core identifier has been obliterated either by correction fluid or by pen will be discarded.
12. Sample tubes must be handwritten unless secure bedside electronic labelling systems are in place.

13. In exceptional circumstances a BTS Consultant, Associate Specialist or the Laboratory Manager may agree to process a sample that fails to meet the standards set out above. All such incidents must be reported through the SNBTS Incident Reporting System.

Otherwise, samples that do not meet the above criteria will be rejected and a new sample will be required.

14. In urgent cases, Emergency Blood should be issued, in order to avoid unnecessary delays whilst a correctly labelled sample is awaited.

15. Where patients are unidentified at the time of sampling, the minimum acceptance criteria for pre-transfusion samples are:
   - A&E Number/Organ Donor Transplantation Number
   - Gender

   Wherever possible it is best practice to use an additional non-sequential numerical identifier (e.g. Typenex)

16. Pre transfusion samples and/or request forms for pre-transfusion testing are also expected to have:
   - The gender of the patient
   - The date and time on which the sample was taken
   - The signature or initials of the person taking the sample

   Where this information is not given, a sample may be tested, by contacting the ward to clarify the patient's gender and the date and time the sample was taken. Unsigned samples may be tested so long as the requesting doctor and phlebotomist have signed the request form.

   Under no circumstances can the sample or request form be altered by the clinical area after receipt.
17. Pre-transfusion request forms should also give *legibly*:

- the name of the person authorising the test / transfusion
- the location of the patient
- relevant clinical details regarding the diagnosis, the reason for transfusion and the rationale for any special requirements for components ordered

**NB:** Although this information is desirable, its absence will not impact patient testing.

18. **Samples that are not for pre-transfusion testing.** Samples and request forms **must** comply with the same patient identifying requirements set out in section 9. However, addressograph labels are acceptable on request forms eg Antenatal clinic booking forms.
Appendix 3

References:


# Aberdeen BTC Blood Transfusion Manual

## Appendix 4

### Patient Details

<table>
<thead>
<tr>
<th>Surname</th>
<th>Maternal Antibodies (✓)</th>
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<tbody>
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<td></td>
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<td>Traceline ID Number</td>
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### Tests Requested (✓)

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<th>Sample Type(s) enclosed (✓)</th>
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<tbody>
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<td>Typing from maternal blood</td>
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<td></td>
<td>2 x 7mL EDTA blood from patient</td>
</tr>
<tr>
<td></td>
<td>2 x 7mL EDTA blood from partner</td>
</tr>
</tbody>
</table>

### Partner details

<table>
<thead>
<tr>
<th>Surname</th>
<th>Sample Type(s) enclosed (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Typing from maternal blood</td>
</tr>
<tr>
<td></td>
<td>2 x 7mL EDTA blood from partner</td>
</tr>
</tbody>
</table>

### Reason for Request / Relevant Clinical History:

(please complete thoroughly and attach copies of any relevant reports)

### Name & Address of Requestor: [PLEASE PRINT]

<table>
<thead>
<tr>
<th>Name:</th>
<th>Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Report Destination:

<table>
<thead>
<tr>
<th>COPY REPORT DESTINATION(S):</th>
</tr>
</thead>
</table>

### Please inform the Aberdeen MI department prior to sending samples [01224 812461 / 812472 / 812414]. Ship at room temperature. DO NOT SEND SAMPLES ON FRIDAYS. Sample must arrive at the Aberdeen laboratory within 48 hours of being taken (1st Class post preferred).

### NEBTS Laboratory USE ONLY

<table>
<thead>
<tr>
<th>Patient Traceline</th>
<th>Partner Traceline</th>
<th>Date and Time Received</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Form: MIH02.05
Appendix 5

Part 1: Pre-antibody testing discussion to be completed by SNBTS medical staff

<table>
<thead>
<tr>
<th>Patient surname</th>
<th>Patient forename</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>Hospital/CHI Number</td>
</tr>
<tr>
<td>Gender</td>
<td>Weight (approx)</td>
</tr>
<tr>
<td>Blood group</td>
<td>CMV status</td>
</tr>
<tr>
<td>Hospital</td>
<td>Consultant</td>
</tr>
<tr>
<td>Ward</td>
<td>Contact details</td>
</tr>
<tr>
<td>Disease and remission status</td>
<td></td>
</tr>
<tr>
<td>Current therapy</td>
<td>Current platelet count</td>
</tr>
</tbody>
</table>

Information on previous platelet transfusions and increments

<table>
<thead>
<tr>
<th>Splenomegaly</th>
<th>Y / N / NA</th>
<th>Fever/infection</th>
<th>Y / N / NA</th>
<th>Antimicrobials</th>
<th>Y / N – if yes please specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coagulopathy</td>
<td>Y / N / NA</td>
<td>Haemorrhage</td>
<td>Y / N / NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requesting doctor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNBTS CD doctor taking request</td>
<td>Signature</td>
</tr>
</tbody>
</table>

Sample Requires To Be Transported By Urgent Courier For Same Day Testing? Y / N / NA

Part 2: Platelet requirements to be completed once HLA/HPA antibody results available

<table>
<thead>
<tr>
<th>HLA selected</th>
<th>HPA selected</th>
<th>CMV-neg</th>
<th>Rh(D)-neg</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Rh(D) negative components specified, would clinician accept Rh(D) positive?</td>
<td>Y / N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If &quot;Yes&quot;, would they administer anti-D immunoglobulin?</td>
<td>Y / N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Estimated platelet requirements

Initial week only; number of units and date(s) required

Authorising SNBTS CD doctor/CCS | Date

Signature

Please ensure the requesting team is aware of the need to both monitor post-transfusion platelet increments at 1 hour or 24 hours and the need to forward this information to the SNBTS using NATF1004. Requesting teams also need to communicate all requests to their own Blood Bank.

Edinburgh SNBTS H&I Dept
Tel: 0131-242-7528
Fax: 0131-242-7530

NATF 249 04 PAGE 1 OF 1
## HLA Selected Platelets – Follow Up

**PART 1: TO BE COMPLETED BY THE H&I LABORATORY AND SENT TO P&T DEPARTMENT**

<table>
<thead>
<tr>
<th>PATIENT DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>DOB:</td>
</tr>
<tr>
<td>ABO/Rh:</td>
</tr>
<tr>
<td>Hospital:</td>
</tr>
<tr>
<td>CHI Number:</td>
</tr>
<tr>
<td>Hospital Number:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DONATION DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donation Number:</td>
</tr>
<tr>
<td>Expiry Date:</td>
</tr>
<tr>
<td>Planned Transfusion Date:</td>
</tr>
</tbody>
</table>

**PART 2: TO BE COMPLETED BY THE HOSPITAL**

<table>
<thead>
<tr>
<th>TRANSFUSION DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Transfusion:</td>
</tr>
<tr>
<td>Time of Transfusion:</td>
</tr>
<tr>
<td>Pre Transfusion Count: $\times 10^9/l$ Date: <strong><strong>/</strong></strong>/____ Time: <strong><strong>:</strong></strong></td>
</tr>
<tr>
<td>Post Transfusion Count: $\times 10^9/l$ Date: <strong><strong>/</strong></strong>/____ Time: <strong><strong>:</strong></strong></td>
</tr>
</tbody>
</table>

*The platelet count should be measured 10 minutes - 1 hour after completion of the transfusion.*

Details of Clinical Response / Symptoms:

**SIGNATURE:**

**DATE:**

COMPLETED FORMS TO BE RETURNED TO THE EDINBURGH H&I LABORATORY VIA THE FOLLOWING ROUTES:

Using the pre-addressed envelope provided with this form.

By E-mail: NSS.handi@nhs.net

By FAX: 0131 242 7530

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**NATF 1004 01**

Page 1 of 1
Appendix 7

**NATF 544 03**
(REFERS TO NATP CLIN 027)

**Initial Request for Fetal/Neonatal Alloimmune Thrombocytopenia (FNAIT) Investigation**

The purpose of this form is to support the investigation of FNAIT by recording the family/demographic details as well as the clinical information.

The form should be completed by the SNBTS medic in consultation with the referring medical team.
- Monday to Friday 9-5, discuss with the local SNBTS medic (BTS registrar or consultant)
- Out of hours discuss with national on call SNBTS consultant

Send a copy of this form to the Edinburgh H&I laboratory and keep a copy locally to support ongoing management of the case.

<table>
<thead>
<tr>
<th>Samples required</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>5 mL EDTA and 5 mL clotted</td>
</tr>
<tr>
<td>Baby</td>
<td>1 mL EDTA</td>
</tr>
<tr>
<td>Father</td>
<td>5 mL EDTA</td>
</tr>
</tbody>
</table>

Initial tests are done in the Histocompatibility & Immunogenetics Dept, SNBTS, Royal Infirmary of Edinburgh (see below). Samples should be accompanied by the standard H&I request form.

<table>
<thead>
<tr>
<th>Mother's Surname</th>
<th>Mother's Forename</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>CHI Number</td>
<td></td>
</tr>
<tr>
<td>Consultant</td>
<td>Hospital</td>
<td></td>
</tr>
</tbody>
</table>

**Relevant history of any current and any previous pregnancy:**

<table>
<thead>
<tr>
<th>Date of delivery or EDD</th>
<th>Gestation at delivery</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal platelet count(s)</td>
<td>Date/Time</td>
<td>x10^9/L</td>
</tr>
<tr>
<td>List counts if falling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Father's Surname</th>
<th>Father's Forename</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>CHI Number</td>
<td></td>
</tr>
</tbody>
</table>

**NATF 544 03**

PAGE 1 OF 2
Appendix 7

INitial Request for Fetal/Neonatal Alloimmune Thrombocytopenia (FNAIT) Investigation

<table>
<thead>
<tr>
<th>Baby's Surname</th>
<th>Baby's Forename</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of birth</td>
<td>CHI Number (or Hospital number)</td>
</tr>
<tr>
<td>Gender</td>
<td>Gestation at birth</td>
</tr>
</tbody>
</table>

**Relevant history relating to the baby**

<table>
<thead>
<tr>
<th>Neonatal platelet count(s)</th>
<th>(At birth) x10⁹/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>List follow up counts with date and time</td>
<td></td>
</tr>
<tr>
<td>Is the baby haemorrhagic (e.g. ICH/mucosal bleeding)</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Provide details if YES</td>
<td>Result of US head:</td>
</tr>
<tr>
<td>Are there alternative causes for thrombocytopenia?</td>
<td>Infection: Yes/No  IUGR: Yes/No  Prematurity: Yes/No  F/H of low platelets: Yes/No  Other:</td>
</tr>
<tr>
<td>Have platelets been transfused</td>
<td>Yes/No</td>
</tr>
<tr>
<td>If Yes provide details and increment</td>
<td></td>
</tr>
</tbody>
</table>

**Date/time of initial contact**

**Referring doctor's name and contact details:**

**SNBTS Registrar or consultant contact details**

**SNBTS centre**

Samples and sample request forms to be sent to H&I laboratory, SNBTS, RIE, 51 Little France Crescent, Edinburgh, EH16 4SA, Tel: 0131-242-7528

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NATF 544 03  PAGE 2 OF 2
## Appendix 8

### NATF 094 03

**INVESTIGATION FORM FOR SUSPECTED TRALI**
*(Relates to NATS CLS 027)*

**A. PATIENT DETAILS**

<table>
<thead>
<tr>
<th>First Name</th>
<th>Surname</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital No.</td>
<td>CHI No.</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>Ward</td>
</tr>
<tr>
<td>Consultant</td>
<td>Hospital</td>
</tr>
<tr>
<td>Reported By</td>
<td>Date</td>
</tr>
</tbody>
</table>

**B. CLINICAL**

**Summary of Episode**

- Underlying Diagnosis
- Reason for Transfusion
- Time of onset of Tx
- Time of onset of ALI

<table>
<thead>
<tr>
<th>Observations</th>
<th>HR</th>
<th>Resps</th>
<th>SaO₂</th>
<th>Temp</th>
<th>BP(MAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Transfusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Confirmation of TRALI features**

- Yes
- No

- Acute onset respiratory distress with dyspnoea
- Hypoxemia
  1. PaO₂/F102<300mm Hg or
  2. Oxygen saturation is <90% on room air
- New, bilateral, diffuse, patchy or homogeneous pulmonary infiltrates on chest radiograph
- No clinical evidence of heart failure, fluid overload or chronic lung disease (PAOP<18mm Hg)

**Risk Factors for ALI:**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sepsis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burn injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung contusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple trauma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug-overdose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiopulmonary bypass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute pancreatitis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- CxR changes (attach copy if possible) ...........................................
- PAO2 (if taken) .................................................................
- Therapy: O₂ by mask Y / N CPAP Y / N Ventilation Y / N
- Other ......................................................................................
- Patient transferred to HDU / HU Y / N Date ____ Time ____

**NATF 094 03**

*PAGE 1 OF 2*
## Recruitment Form for Suspected TRALI

(Relates to NATS CLS 027)

### C. Components Transfused within 6 Hours of ALI Onset

<table>
<thead>
<tr>
<th>Donation No.</th>
<th>Type of Component Product</th>
<th>Date/time Transfused</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### D. Sampling Data

<table>
<thead>
<tr>
<th>Samples from Patient</th>
<th>Taken</th>
<th>Time:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Details Completed By:

SIGN: ___________________________  DATE: __________

Send completed form NATF 094 and 2 x EDTA samples to:

**TRALI Reference Laboratory**
Aberdeen & North East Scotland Blood Transfusion Centre
Foresterhill Road, Foresterhill, Aberdeen, AB25 2ZZ

TRALI Co-ordinator informed by: [ ]

(Contact Details: 01224 812409 or 01224 812461)

Date: __________

Date suspected TRALI reviewed by TRALI group:

(circle as appropriate)  Perform TRALI investigation  Do not perform TRALI investigation

Signature TRALI coordinator: ___________________  Date: __________