# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOSSARY</td>
<td>4</td>
</tr>
<tr>
<td>DECISION TO TRANSFUSE</td>
<td>5</td>
</tr>
<tr>
<td>APPROPRIATENESS</td>
<td>5</td>
</tr>
<tr>
<td>MULTILINGUAL CONSUMER INFORMATION</td>
<td>6</td>
</tr>
<tr>
<td>JEHovah’S WITNESSSES</td>
<td>7</td>
</tr>
<tr>
<td>CHILDREN &amp; NEONATES</td>
<td>9</td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>9</td>
</tr>
<tr>
<td>PRESCRIPTION OF BLOOD COMPONENTS AND BLOOD PRODUCTS</td>
<td>11</td>
</tr>
<tr>
<td>ROUTINE / OUT HOURS BLOOD TRANSFUSION</td>
<td>12</td>
</tr>
<tr>
<td>AUTOLOGOUS BLOOD</td>
<td>13</td>
</tr>
<tr>
<td>AUTOLOGOUS BLOOD</td>
<td>13</td>
</tr>
<tr>
<td>SPECIALISED BLOOD PRODUCTS</td>
<td>13</td>
</tr>
<tr>
<td>IRRADIATED PRODUCTS</td>
<td>13</td>
</tr>
<tr>
<td>REQUESTS FOR BLOOD PRODUCTS &amp; PRE-TRANSFUSION BLOOD SAMPLING</td>
<td>15</td>
</tr>
<tr>
<td>CROSS MATCHING &amp; GROUP &amp; HOLD</td>
<td>16</td>
</tr>
<tr>
<td>STORAGE COLLECTION AND TRANSPORT OF BLOOD PRODUCTS</td>
<td>17</td>
</tr>
<tr>
<td>TRANSFER OF BLOOD PRODUCTS ACCOMPANYING PATIENTS TO ANOTHER HOSPITAL</td>
<td>17</td>
</tr>
<tr>
<td>ADMINISTRATION OF BLOOD PRODUCTS</td>
<td>18</td>
</tr>
<tr>
<td>NAHS &amp; NWAHS-MASSIVE TRANSFUSION GUIDELINES (MTG)</td>
<td>18</td>
</tr>
<tr>
<td>CONCURRENT FLUIDS AND MEDICATIONS</td>
<td>19</td>
</tr>
<tr>
<td>Compatible fluids</td>
<td>19</td>
</tr>
<tr>
<td>Incompatible fluids</td>
<td>19</td>
</tr>
<tr>
<td>Medications</td>
<td>19</td>
</tr>
<tr>
<td>EXCHANGE TRANSFUSION</td>
<td>21</td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td>22</td>
</tr>
<tr>
<td>Blood Component and Blood Product Administration Sets</td>
<td>22</td>
</tr>
<tr>
<td>Infusion Devices</td>
<td>24</td>
</tr>
<tr>
<td>Blood Warmers</td>
<td>25</td>
</tr>
<tr>
<td>Rapid Infusion</td>
<td>26</td>
</tr>
<tr>
<td>MANAGEMENT AND REPORTING OF ADVERSE EVENTS</td>
<td>27</td>
</tr>
<tr>
<td>ADVERSE REACTIONS TO TRANSFUSION</td>
<td>27</td>
</tr>
<tr>
<td>CLINICAL GOVERNANCE</td>
<td>29</td>
</tr>
<tr>
<td>STAFF TRAINING REQUIREMENTS</td>
<td>29</td>
</tr>
<tr>
<td>SPECIFIC RESPONSIBILITIES</td>
<td>30</td>
</tr>
<tr>
<td>FRESH BLOOD COMPONENT</td>
<td>32</td>
</tr>
<tr>
<td>RED CELLS FOR TRANSFUSION</td>
<td>32</td>
</tr>
<tr>
<td>PLATELETS FOR TRANSFUSION</td>
<td>35</td>
</tr>
</tbody>
</table>
GLOSSARY


This procedure manual is to support the Northern Area Health Service and North West Area Health Service Blood Management Policy
DECISION TO TRANSFUSE

Blood components and plasma derived products can save lives and provide clinical benefit to many patients if appropriately used. The decision to transfuse is a Medical Officer’s responsibility.

The Medical Officer should ensure that blood component therapy is given only when necessary and should be administered according to the National Health & Medical Research Council (NHMRC) Clinical Practice Guidelines on the Use of Blood Components

The indication & reason explaining the decision to transfuse should be indicated on the Blood & Blood Product Consent/IV Order Form.

The NHMRC/ASBT Clinical Practice Guidelines on Fresh Blood Components (2001) are under review at the time of production of this procedure manual. These new ‘Patient Blood Management Guidelines’ are due for sequential release from 2011

APPROPRIATENESS

Patient blood management encompasses restrictive approach to blood usage and uses the premise of ‘why transfuse’ rather than ‘why not’

Transfusion avoidance or minimisation stems from a large body of evidence that the use of blood and its components leads to poorer outcomes with the potential for unwanted harmful effects.

Transfusion avoidance by maximisation of haemoglobin pre-operatively, minimisation of blood loss intra and post-operatively and use of alternative agents where these are available and feasible.

Transfusion outcomes Collaborative http://www.torc.org.au have shown that levels of anaemia down to 80g/l are well tolerated in clinically haemo-dynamically stable patients with uncompromised cardiopulmonary function.

Consultation with a Staff Haematologist is recommended in cases of doubt.
CONSENT FOR BLOOD COMPONENTS AND BLOOD PRODUCTS

Obtaining Informed Consent

Informed consent for transfusion means a documented dialogue has occurred between the patient and the prescriber including:

- the reason for the proposed blood component transfusion
- the nature of the proposed blood component transfusion
- the risks and benefits of the blood component as well as the risks or consequences of not receiving the product
- the availability and appropriateness of any treatment alternatives
- an opportunity to ask questions
- use of a competent interpreter when the patient is not fluent in English
- use of written information or diagrams where appropriate

Consent is to be obtained for each episode of transfusion.

Exception Where a transfusion dependant person is receiving transfusions for a chronic condition and indications remain unchanged then the documented consent is valid for 12 months.

Documentation of Consent

Consent must be documented by the prescriber on transfusion specific Blood Transfusion consent/IV Order Form

Documentation of Refusal

Refusal of consent, whether for religious or personal reasons, must be documented in the patient’s medical record in the progress notes AND on a specific refusal form. The Blood Transfusion consent and IV order Form can be used as a refusal form

Inability to give consent

Please refer to the Northern Area Health service Consent Policy and/or North West Area Health service consent Policy.

Multilingual Consumer Information

Consideration of the patient’s language and cognitive ability should influence the written information provided. A range of written information for the Australian and New Zealand context, including in languages other than English, and specific information for parents and children is available. Please see links below.

Jehovah’s Witnesses

Jehovah’s Witnesses comprise 0.5% of the religious beliefs of Australians. For many Witnesses, blood transfusion is forbidden. This includes whole blood or its components. Individual witnesses may or may not agree with the use of albumin, immunoglobulin or clotting factors. Most Witnesses do not allow pre-operative autologous blood deposition. Acute pre-operative normovolaemic haemodilution or dialysis may be acceptable according to personal conscience, if no other person’s blood is used and the extra-corporeal circulation is continuous with body circulation.

There is a group of Witnesses (AJWRB) who believe that the decision to refuse or accept blood transfusions is a personal matter which should be decided individually.

In all circumstances, the wishes of the individual Jehovah’s Witness must not be assumed. Consent must be sought in a thorough and confidential manner and be established with certainty and documented clearly in the patient’s medical record.

Unconscious Adult Jehovah’s Witness patient

- Is there an Enduring Guardianship in place
- Does the Witness carry a Medical Directive / Advance Directive / Alert Card or alternatively, is this available from their relatives? This is a form of living will which states their wishes and alerts medical staff to their treatment preferences. This is usually signed by two other Witnesses.
- If there is an unambiguous written statement from the patient stating they are a Jehovah’s Witness and refuse blood under any circumstances, respect for the patient’s autonomy requires that this wish be respected, just as if it had been expressed orally. A copy should be filed in the medical record.
- In the absence of an advance directive, an unconscious Witness should be given lifesaving treatment, including blood transfusion. However, attempts to seek next of kin for substitute consent should be made prior to any blood transfusion, unless in an emergency.
- The Hospital Liaison Representative for Jehovah’s Witnesses should be contacted. Hospital Liaison Committee for Jehovah’s Witnesses: 24 hour emergency number 0417 833 418
- If disagreement refer to Tasmanian Guardianship Board via Area Health Service Director of Medical services Reference Guardian and Administration Act 1995.

Elective Situations

- The following should be clearly documented in the patient’s medical record:
  - as a member of the religious body of Jehovah's Witnesses, the patient refuses the use of blood components during surgery/ treatment. The specific blood therapies which are or are NOT acceptable to the patient should be listed. A checklist may be helpful in major surgery as this may often involve multiple disciplines (the surgeon, anaesthetist, and haematologist).
  - the patient is aware that the planned procedure/ treatment may entail a higher risk in the event of bleeding complications. In extreme situations, where there are no alternatives to medical transfusion, death may result.

Regardless of the patient's choice in blood therapy, strict confidentiality must be maintained.
Emergency transfusion of Children of Jehovah’s Witnesses

- If disagreement refer to Tasmanian Guardianship Board via Area Health Service Director of Medical services Ref Guardian and Administration Act 1995.

References:

NAHS and NWAHS Consent to Medical & Dental Treatment Policy
Jehovah’s Witnesses Website - Watchtower Society (WTS):  [www.watchtower.org](http://www.watchtower.org)
Associated Jehovah’s Witnesses for Reform on Blood (AJWRB):  [www.ajwrb.org](http://www.ajwrb.org)
Guardian and Administration Act 1995(TAS)
CHILDREN & NEONATES

OBJECTIVE

To ensure best transfusion practice with compliance to the national guidelines for clinical decision making, informed patient consent, blood product administration and follow up.

ADMINISTRATION

Children and neonates require specific consideration of the following:

The volume of blood to be transfused:

- Children less than 30 Kg should have the volume prescribed in mL.
- The volume should be calculated on the child’s weight and the desired haemoglobin to prevent transfusion associated fluid overload.

Special requirements.

- Fresh red cells (less than 5 days old), K negative, CMV seronegative and/ or irradiated products may be indicated.

Consent

- Consent should be gained from a parent/guardian prior to transfusion except in the event of an emergency where a parent/ guardian is not present.

Consumer information

- An information leaflet on Blood Transfusions should be provided for the parent/ guardian to assist with education about transfusions e.g. the paediatric transfusion package . http://www.anzsbt.org.au/publications/index.cfm

Positive identification of children

- Identification bands must be in place and the parents/ carer/ guardian (if present) should positively identify the child prior to commencing the transfusion.
Administration

- For neonates and infants blood components may be administered via a paediatric blood giving set incorporating a 170 - 200 micron filter OR a syringe may be used provided blood is drawn from the bag using a blood line incorporating a 170 - 200 micron filter.
- If a syringe is used the clinical policy must include the importance of aseptic technique, single access to the bag and labelling of the syringe (if detached from the bag) to ensure correct patient/product identification and optimum product viability.

Rate of infusion

- Clinical indication and fluid volumes appropriate for weight must be considered by the medical officer when determining the rate of infusion.
- Infusion time must not exceed four hours.
- The use of syringe drivers and volumetric pumps (approved for blood products) are recommended to ensure accurate rates.

A child’s cognitive ability to report or partake in care

- Infants and neonates will not be able to communicate adverse effects of transfusion and must be closely monitored.

Consideration of children’s activities

- A wider variety of activities (e.g. play) should be considered and the transfusion planned for a time when the child is in a supported clinical area, allowing close observation.
PRESCRIPTION OF BLOOD COMPONENTS AND BLOOD PRODUCTS

The prescription is the written order to administer the blood component/product. It must be available at the patient’s side when the transfusion commences and must be retained within the patient’s medical record when the transfusion is complete.

The prescription of blood component/products is the responsibility of the medical officer. The prescriber is responsible for ensuring the following:

- the blood component/product transfusion is clinically appropriate
- the expected benefits outweigh the potential hazards
- informed patient consent has been obtained and documented.
- clinical staff caring for the patient are informed that the blood product has been prescribed
- that patient risk factors are identified, and special requirements are documented

Requirements for blood product prescription

A Blood Transfusion Consent/ IV Order Form must be used or where available specific administration forms for Plasma Derived Products e.g Rh(D) Immunoglobulin, Intragam, Flebogamma

Prescriptions must be legible and contain:

- patient identification details (family name, given name, gender, date of birth/ unique patient identification number)
- date and time the blood transfusion is to be given.
- appropriate and consistent terminology for the blood component/product to be administered
- any special blood component/product requirements*, e.g. irradiated, CMV seronegative, blood warmer required
- number of units/ dose of blood component/product to be given. Blood component volumes should be stated in mLs for paediatric patients
- the urgency of transfusion
- duration over which the transfusion is to be given
- any special instructions, e.g. any medication required before or after the transfusion
- legible name and signature of the prescriber
- known allergies or history of adverse drug reactions or previous transfusion reactions

Standardised terminology for blood components is not yet agreed nationally but prescribers should be encouraged to avoid acronyms that may be ambiguous or misleading. Prescriptions for plasma derived blood products should include the brand name and the need for recombinant products should be clearly defined on the prescription.
Routine / Out Hours Blood Transfusion

Background:

“Overnight / out-of-hours transfusion should be avoided unless clinically indicated.” (2011 ANZSBT Guidelines for Administration of Blood Components)


ROUTINE/NON URGENT BLOOD TRANSFUSION

Non-urgent blood transfusions must commence during hours 08:00-17:00

In a continuing transfusion episode additional units will be transfused the following day

Please note Laboratory transfusion service are available 24 hours and is accessible either by direct contact with the laboratory during the hours of 08:00 to 22:00 or through the Switchboard operator/Out of Hours coordinator outside these hours.

Urgent and emergency blood transfusion services are available at all times.

ENQUIRIES CAN BE FORWARDED TO ON-CALL CLINICAL HAEMATOLOGIST (Via Launceston General Hospital Switchboard)
Autologous Blood

Autologous blood is now only used in exceptional circumstances.

Refer to a Clinical Haematologist.

References

Australian Red Cross Blood Service Website


SPECIALISED BLOOD PRODUCTS

Special blood product requirements must be communicated to the transfusion service provider as soon as they become known to allow a record to be made in the laboratory information system. The special requirements must also be documented on the prescription each time the product is administered.

IRRADIATED PRODUCTS

Blood components that contain viable lymphocytes may be irradiated to prevent the proliferation of T-lymphocytes, which is the immediate cause of Transfusion-Associated Graft-Versus-Host Disease (TA-GVHD).

Red cells may be irradiated at any time up to 14 days after collection, and thereafter stored for a further 14 days from irradiation.

Irradiate blood components for the prevention of TA-GVHD. The following groups of patients should get irradiated components:

- Allogeneic and autologous haemopoetic stem cell transplantation
- Aplastic anaemia receiving immunosuppressive drugs
- All newborn infants
- Hodgkin lymphoma
- Acute leukaemia
- Congenital cellular immunodeficiency
- Patients receiving nucleoside analogues or alemtuzumab for malignant or non malignant disorders and transplantation.

Side Effects and Hazards

Gamma irradiation of red cells increases the rate of efflux of extracellular potassium. Take into account both the speed and volume of the transfusion, as well as the age of the blood. Blood should be used within 24 hours of irradiation for intrauterine and exchange transfusion and within 48 hours of irradiation for paediatric transfusion.

Protocol

- MUST BE INDICATED AS SPECIAL REQUIREMENT ON TRANSFUSION MEDICINE REQUEST FORM.
ALERT NOTIFICATION form (paper based medical record) is to be completed, which is then to be forwarded to medical records, for entry into Electronic Patient Management System alert page.

Appendix 1

Irradiated stickers are placed on red cell and platelet packs prior to irradiation.

References

O:\RHH Transfusion Nurse\RHH\2011 Forms and Charts\Forms in Progress\22933RHH_TransReq19180.pdf
O:\RHH Transfusion Nurse\RHH\2011 Forms and Charts\COC-24-Alerts%20Notification%20Form-JUNE%202010[1].pdf

REQUESTS FOR BLOOD PRODUCTS & PRE-TRANSFUSION BLOOD SAMPLING

The request constitutes the mechanism of communication with the transfusion service provider(s), asking them to prepare and issue the blood product for administration.

Failure to correctly identify the patient at the time of sample collection, remain a significant risk of patient morbidity and mortality. A ‘wrong blood in tube’ event may compromise safety in two ways: i) as a precursor to incorrect blood component transfused, ii) by leading to inappropriate therapy due to incorrectly allocated results. (Jeffcott et al 2010)

It is essential that patients are positively identified and that labeling of samples occurs at the patient’s side.

Procedure

   a. Check the transfusion request form contains identical information

2. Collect blood and place in EDTA (pink top) 6 ml tube Refer to Venepuncture Policy

3. Label pre transfusion sample after collection of blood and before leaving the patient, with
   a. patient’s surname, given name(s) in full;
   b. Hospital ID number (Pre transfusion samples obtain by GP may not include Hospital ID number)
   c. Date of birth.
   d. Date and time of collection
   e. Signature of the collector.

4. The person who collected the pretransfusion specimen must complete the Collector declaration on the Transfusion Medicine Request Form

5. The person who witnesses the blood sampling must positively identify the patient and check that the tube labeling is correct and sign the witness declaration on the Transfusion Medicine Request Form. It is preferred that the witness be the patient, if they have capacity.

6. At the laboratory any labeling discrepancies will result in the pretransfusion sample being rejected and not processed; Zero tolerance. (ANZSBT Guidelines for pretransfusion Laboratory Practice Guidelines 2007 ANZSBT Administration of Blood components Guidelines 2011). The sample will need to be recollected and accompanied by a new Pretransfusion Medicine request from.

All sample labeling should be hand written; no ‘sticky’ labels will be accepted.
Cross Matching & Group & Hold

Cross-matching of Blood

In alignment with the National Health and Research Council (NHMRC) Australasian Society of Blood Transfusion INC (ASBT), Clinical Practice Guidelines for the use of blood components, 2002, ensures appropriate selection of donor blood for Transfusion and facilitate the safe administration of blood and blood products to patients. This purpose can be achieved by being aware of and promoting the following points;

- crossmatched blood is the safest option even in most emergency situations for patients requiring red cell transfusion.

Cross Matching & Group & Hold

Patients undergoing minor surgery may require no group and antibody screen. Likewise patients undergoing major surgery should have a group and antibody screening performed. Preferably this should be carried out at pre-assessment or in any event well before surgery. Please refer to Maximum Surgical Blood Order Schedule (MSBOS) (2007 ANZSBT Guidelines for Pretransfusion Laboratory Practice)

Samples are held for a period of 1 month and are available for crossmatch use unless the patient has been pregnant or transfused in the last 3 months – in this case the request is valid for 72 hours from collection.

“In a continuing transfusion episode the cross matching laboratory requires a fresh blood specimen 72 hours after drawing of the previous sample. The 72-hour rule will also apply whenever a patient has been transfused or is/has been pregnant within the last 3 months. This internationally-accepted safeguard is used to prevent a transfusion reaction in patients who form antibodies to foreign red cell antigens beyond 72 hours after transfusion”.

Reference: Transfusion Medicine Manual 2003, Blood transfusion practice and clinical use of blood in Australia

It is preferable that patients with atypical antibodies undergoing major surgery are cross-matched early after discussion with the transfusion department. The presence of atypical antibodies is to be included in the patient’s alerts
Storage collection and transport of Blood Products

TRANSFER OF BLOOD PRODUCTS ACCOMPANYING PATIENTS TO ANOTHER HOSPITAL

Purpose

To safely transfer a patient with blood products and eliminate wastage of incorrectly stored blood products

Procedure

All Patients receiving blood products that are to be transferred out to another hospital must be transferred with special preparation. This includes those that have products prepared for them by pathology, but are not yet commenced.

Pathology must be informed of the transfer and given adequate notice prior to the event.

Pathology will package the blood products for transportation in a validated ARCBS shipper; to maintain optimal conditions during transit. This will ensure that the blood products are still suitable to transfuse when required. The blood products will be fully labelled.

The blood products can then be collected from pathology and transferred with the patient to the destination hospital.

Pathology must be notified if blood component are not actually transferred with the patient.

The destination hospital must ensure the received blood products are transport to pathology as soon as practical after arrival at the destination hospital.

Pathology has a Memorandum of Understanding (MOU) for the transportation of blood products between health care sites and will contact the receiving hospital. The Clinician responsible for the care of the patient must document in the progress notes/or transfer form that blood products are accompanying the patient.

Outcome

Maintenance of optimal storage conditions for blood products will be maintained whilst in transit, enabling safe administration to the patient as required. This will facilitate the best patient outcomes and prevents wastage of blood products.
Administration of Blood Products

NAHS & NWAHS-Massive Transfusion Guidelines (MTG)

Please see specific AHS MTP Clinical Guidelines.

Each AHS are to insert their specific Clinical Guideline.
CONCURRENT FLUIDS AND MEDICATIONS

Compatible fluids

- The only IV fluid universally compatible with blood components is 0.9% Sodium Chloride (Normal Saline).

Compatible fluids in Specialised Circumstances

- Red cells are compatible with ABO-compatible plasma and 4% Albumin
- For fluids compatible with plasma derived and recombinant products refer to the individual product information.
- The current formulation of Gelofusine™ contains negligible calcium, and is considered compatible based on common experience and current practice, particularly by anaesthetists, in the absence of data to the contrary and as quoted by the manufacturer.

Incompatible fluids

IV fluids/solutions must not be given with red cells or blood components unless there is sufficient data to ensure compatibility. IV fluids that contain calcium or dextrose must not be used to prime or flush blood administration sets or be infused concurrently with blood components as:

- IV fluids that contain calcium (such as Hartmann's Solution or Haemacel) can interfere with anticoagulants in the blood component
- IV solutions with dextrose affect the red cells - prolonged contact between red cells and dextrose solutions can result in a loss of water from the red cell with subsequent destruction

A **second IV access** should be inserted if a continuous IV infusion or reinfusion of postoperative autologous wound blood is required.

Administering 2 different types of blood components concurrently is not recommended in routine practice as should there be an adverse reaction it is difficult to ascertain which component was responsible. This may be unavoidable in an urgent massive transfusion episode.

Medications

The effect of co-administration of medications on blood components in terms of safety and efficacy is unpredictable. The co-administration may interaction with either anti coagulant or additive solutions in the blood component or the medication and blood component itself. Furthermore, if a reaction occurs, it is difficult to ascertain whether the drug or the blood component was responsible an adverse effect

**No medication must be added** to any blood component or blood administration set/IV line prior to or during its transfusion unless it has been proven to not interfere with the blood component.
In multi-lumen intravenous catheters (either PICC or CVC) separate lumens can be used to simultaneously administer blood components and medications however caution should be exercised if:

- the medication is often associated with adverse effects (such as Amphotericin) or
- if it is the first time a medication has been given then ideally the medication should not be administered at the same time as a blood component. If a reaction occurs determining the cause is can be difficult.

If intermittent medications need to be administered via the same IV line as a transfusion the following procedure must be followed:

- Stop the transfusion
- Via the injection port flush the line using 20 mLs normal saline to clear blood from the IV port and tubing
- Administer the drug
- Flush the line with 20 mLs normal saline before restarting the transfusion.

Note: **This procedure should not result in the transfusion of exceeding 4 hours.**

References

1. NHMRC and ASBT Clinical Practice Guidelines on the use of Blood Components (red blood cells, platelets, fresh frozen plasma, cryoprecipitate). (2001)
Exchange Transfusion
Neonatal exchange transfusion will require the medical officer to contact the Royal Hobart Hospital NNICU/Paediatric. This can be a highly complex area, refer to Consultant and Haematologist for planning management.
Procedure available from NNICU, RHH.
Equipment

Blood Component and Blood Product Administration Sets

Blood components and blood products must be transfused using a new administration set approved for this purpose. This must incorporate a standard filter which removes clots and small clumps of debris that may form during collection and storage. The recommended filter pore size is 170-200 micron.

When blood is being administered by syringe to small infants or neonates, the blood must be drawn into the syringe via a Blood Administration set with a 170-200 micron filter.

Platelets must be transfused through a new blood administration set unless administered in the setting of massive/ rapid transfusion when platelets and plasma may need to be transfused through the same giving set.

Platelets must not be transfused through a blood administration set which has been used for red cells as red cell debris may trap infused platelets.

Red cells may follow platelets through the same blood administration set, but not precede platelets.

Albumin and Intravenous Immunoglobulin formulations that do not require reconstitution must also be administered via a blood administration set with a 170 – 200 micron filter.

Refer to individual product information for other plasma derived blood products.

Priming and connecting blood administration sets

- The blood product should be mixed thoroughly by gentle inversion before use.
- The blood administration set may be primed with normal saline or the blood product.
- Manufacturer’s recommendations should be followed when priming the blood administration set.
- Blood transfusion sets must not be ‘piggy-backed’ into other lines.
- Attachment to extension tubing on an IV cannula is acceptable.
- When administering blood products through a multi-lumen venous access device, other lumens can be used concurrently for medications and infusion of fluids.

Flushing blood administration sets

- Priming or flushing blood administration sets with a small amount of normal saline between red cell packs is not evidence based and may be unnecessary. However, Normal Saline may be used to prime or flush administration sets, or maintain access if the next unit is not readily available.
- Blood products of the same type can be administered sequentially and in critical bleeding this is the usual practice. Platelet products should be administered prior to red cells, or alternatively, will require a new blood administration set. Platelets may become trapped by fibrin in a filter previously used for red cell administration.
- At completion of the transfusion episode, blood administration sets may be flushed with normal saline to ensure that the patient receives the entire blood product. The minimum volume of normal saline required to completely clear the IV line should be used, taking into account the individual circumstances of the patient, for example in neonates/ small paediatric patients or in those at risk of fluid overload or on fluid restrictions.
Changing blood administration sets

- The blood administration set must be changed when transfusion is completed or every 12 hours if the transfusion episode is not yet complete. This is intended to reduce the risk of bacterial growth occurring.

- Any number of red cell units may be transfused during a 12 hour period provided the flow rate remains adequate; however specific manufacturer’s recommendations defining the maximum number of units per blood administration set must not be exceeded.

- A new blood administration set should be used if infusion of another fluid or platelets is to continue after the current transfusion. This is intended to reduce the risk of incompatible fluids or drugs causing haemolysis of residual red cells in the administration set or drip chamber.
**Infusion Devices**

**Volumetric Infusion Devices and External Pressure Bags.**
Infusion pumps and external pressure bags are commonly used when infusion of blood products via gravity is unreliable e.g. via PICC, or small gauge cannula.

Infusion pumps are also used where controlled flow rates are required for specific patients, for example paediatric patients or those at risk of fluid overload.

Volumetric pumps and pressure bags can be used to deliver blood via:
- peripheral lines, central lines, or PICC lines

**External pressure devices should:**
- exert pressure evenly over the entire bag
- have a gauge to measure the pressure
- not exceed 300mm Hg of pressure
- be monitored at all times when in use

**Checklist for volumetric infusion device**
- When infusing blood components through a volumetric infusion device, a new blood administration set incorporating a 170-200 micron filter must be used.
- If a 170-200 micron filter is to be added to the administration set as a separate item, it must be compatible with all other equipment used in the transfusion process.
- Staff using volumetric pumps must demonstrate knowledge and competency in their use according to health service policy.
- The checking procedure prior to spiking and hanging the blood must include a check of the device and device settings as well as the standard blood product/identity checks.
- Both pump settings and volume delivered must be monitored hourly throughout the infusion to ensure that expected volume is delivered.
- Any adverse outcome as a result of using a pump to transfuse blood must be notified to the appropriate authority as per hospital guidelines.
- Volumetric pumps must undergo a regular maintenance program e.g. by the health service biomedical provider.

**Syringe Drivers**
Syringe drivers are devices in which a standard syringe is placed in a housing that depresses the plunger at a controlled rate. They may be useful for continuous infusion of coagulation factors such as Factor VIII or Factor IX or for transfusion in the paediatric setting.

If a syringe driver is used, the configuration must ensure that blood components pass through a 170-200 micron Paediatric blood administration set.
Blood Warmers

A blood warmer is indicated for:

- large volume rapid transfusions of >50 ml/kg/hour in adults or >15 ml/kg/hour in children
- exchange transfusions
- plasma exchange for therapeutic apheresis in adults
- intra-uterine transfusions, at the discretion of the feto-maternal specialist.
- patients with clinically significant cold agglutinins

General Recommendations

- Red cells should only be warmed as they flow through a giving set using a specifically designed, approved commercial device with a visible thermometer and audible warning alarm.
- Blood warming devices must undergo at least a 12 monthly maintenance and validation program (e.g. by the biomedical department).
- The operating temperature of the commercial blood warmer must be recorded on the patient’s infusion record when used to warm red cells.
- Red cells must not be warmed above 41°C.
- Blood warmer giving sets must be primed as for other blood infusion sets prior to use.
- Due to the risk of contamination from infected water baths, it is recommended that these types of devices be replaced with dry heat blood warming equipment.
- The entire bag must not be warmed. Improvisations such as putting the pack in hot water, in a microwave oven or on a radiator must NEVER be used. These methods may damage red cells and cause harm to the patient.

References Material relating to Blood Warmers

- AABB Blood Administration Practices
  http://www.aabb.org/development/education/material/Documents/PBAchpt5.pdf
- BCSH Guidelines on Administration of Blood Components
  www.bcshtags.com/pdf/Admin_blood_components050110.pdf
- BCSH Guidelines on the Management of Massive Blood Loss
- NHS Blood and Transplant Services – A Drop of Knowledge
  http://www.bbts.org.uk/PDFs/education/a%20drop%20of%20knowledge.pdf
Rapid Infusion
When rapid infusion is required, for example during a critical bleeding episode, a large gauge venous access cannula should be used.

Only external pressure bags or rapid infusion devices designed and approved for this purpose must be used. Rapid infusers usually incorporate a blood-warming device and can infuse up to 30 l/hr.

Equipment tested and approved for the infusion of blood components must be used exactly as specified by the manufacturer.
Management and reporting of Adverse Events

Adverse Reactions to Transfusion

Evaluation of Suspected Transfusion Reaction

The time taken between suspicion of a transfusion reaction and the investigation and initiation of appropriate therapy should be as short as possible. Any adverse symptom or physical sign occurring during transfusion of blood should be considered as potentially serious and the following action should be taken:

1. **STOP** the transfusion. (change the giving set)
2. Urgent clinical assessment of patient. Call for medical assistance if needed. (MET call, Code Blue as appropriate)
3. Report the suspected transfusion reaction to treating medical officer and transfusion department personnel immediately.
4. At the patient’s bedside, check all labels, forms, and patient identification to determine if the patient received the intended component.
5. Keep the intravenous line open with Normal Saline.
6. Refer to Blood Product Adverse Reaction Form.
7. Send required blood/urine samples and blood product with giving set attached, as per Blood Product Adverse Reaction Form to the Transfusion Department in Pathology immediately.

**Symptoms from ABO incompatibility, which may be fatal, usually occur within the first 15 mins or 50mls of blood transfused.**

**Reference**

Seek medical and Transfusion Department advice for management and complete a Request for Transfusion Reaction Investigation Request Form

Document the event in the patient medical record and EIMS.
Clinical Governance

Staff Training Requirements

Medical Staff
All Medical staff commencing employment at within the NAHS are required to complete the online Bloodsafe elearning package. www.bloodsafelearning.org.au
Interns and Junior RMOs at are required to complete the online BloodSafe elearning package. www.bloodsafelearning.org.au

Nursing Staff
All nursing staff involved in the administration of blood components/products are required to have completed the transfusion online BloodSafe elearning package on commencement of employment and keep this competency updated biennially. www.bloodsafelearning.org.au

Ward Aides and Attendants/Orderlies
All ward aides and attendants/orderlies are required to complete the Blood Component Collection and Transportation In-service on commencement of employment and keep this competency updated biennially.
Transition to Practice Registered Nurses and Return to work staff are also required to have a bedside episode of Transfusion practice assessed by the CNC Transfusion Practice or Clinical Nurse Educator.
For education contact the CNC Transfusion Practice

It is the responsibility of all staff to ensure that they are working within their scope of practice.
SPECIFIC RESPONSIBILITIES

1. Medical Staff

1.1. Medical Staff are responsible for the ordering of blood products and management of patient’s under their care. They will consult with Clinical Haematologists and Senior Scientists from Haematology Department with regards to appropriateness and availability of requested blood products respectively.

2. Medical Staff in Primary Health Care Setting

2.1. The Medical Officer prescribing the transfusion is responsible for ensuring the transfusion is safe and appropriate for the Primary Health Care setting; that they are available to review the patient during the duration of the transfusion; and that they provide instruction to the nursing staff re administration of the transfusion, and that they are available in the case of a transfusion related adverse event.

2.2. Primary Health sites can only administer blood or blood products where the site meets the NHMRC Guidelines and the specific Medical Officer prescribing the blood or blood product to the patient makes specific arrangements with the site manager to ensure the medical officer will be on site or available within 15-30 minutes of being called for the duration of the blood or blood product administration.

2.3. Primary Health Inpatient Facilities receiving products will maintain documented evidence of receipt and use of products including storage prior to use. Facilities that have a blood storage fridge are responsible for maintaining temperature protocols for storage of blood and tracking documentation. This documentation will be the responsibility of the facility and will be monitored by the pathology laboratories.

2.4. The Primary Health Facilities are required to achieve annual credentialing to allow ongoing blood transfusions or use of blood products at the Facility. If the Primary Health Facility does not meet the requirements for credentialing then the rights to transfuse are removed until they are met. The Primary Health Blood Storage, Transport and Administration Audit is to be completed by the Facility and followed by an external certification audit.

3. Australian Red Cross Blood Service

3.1. The Australian Red Cross Blood Transfusion Service is responsible for ensuring the supply of blood and blood products to maintain stocks at levels agreed between Pathology and the Australian Red Cross Blood Service, as well as additional requirements (fresh red cells, phenotype blood etc) for patients with special needs.

4. Laboratory Scientist

4.1. The Scientist in Charge of Haematology Department is responsible for ensuring that:

- adequate stocks of blood products are available for normal requirements;
- safe procedures are used to crossmatch and issue blood and blood products;
- blood and blood products are returned to stock at an appropriate time to minimise wastage;
- blood and blood products are maintained at the appropriate storage temperatures;
4.2. The Senior Scientist in Charge of Haematology Department is responsible for tracing blood products, with the exception of Albumin, to enable possible future matching of donor and recipient. Albumin (Albumin 4%, 5% and Albumin 20%) is not issued to specific patients so can only be traced through the patient’s medical record. It is the responsibility of administering medical or nursing staff to record the product lot number, of Albumin in the patient’s Blood Component Consent/I.V. Order Form.

5. CNC Transfusion Practice

5.1. The Clinical Nurse Consultant in Transfusion Practice is responsible for ensuring that;

   Compliance is met in regard to administration and transportation of all blood and blood components in accordance with Australian Standards within the relevant hospital/s. This includes the provision of education opportunities to staff in their Area Health Service.

6. Registered Nurse

6.1. Registered Nurses are responsible for the care of the patient before, during and after transfusion and the appropriate handling of blood or blood products after removal from storage in Pathology.

7. Clinical staff

7.1. All Clinical staff involved in transfusion practices must complete the online Blood Safe elearning Competency prior to participating in Blood & Blood Component Transfusion.

7.2. Non-compliance incidents will be entered onto EIMS and addressed at the Blood Management Group meetings.
Fresh Blood Component

Red Cells for Transfusion

**Description and Indication**

In deciding whether to transfuse red cells, the patient’s haemoglobin level, although important, should not be the sole deciding factor. Patient factors, signs and symptoms of hypoxia, ongoing blood loss, the risk to the patient of anaemia and the risk of transfusion should be considered. (Refer to NHMRC/ASBT Clinical Practice Guidelines, Appropriate Use of Red Blood Cells)

Red Cells are resuspended and consists of partly packed red blood cells after removal of most of the plasma. It has a hematocrit of 55-70% and a volume >240mLs (volume is on bag label).

Red cells are indicated for patients for treatment of significant anaemia with symptomatic deficit of oxygen carrying capacity and for replacement of traumatic or surgical blood loss.

*The safest and best time for a patient to receive all non-urgent blood transfusion is during the day. Blood Transfusion will only be administered after 1700hrs in urgent cases. All indications to support after hours transfusion should be clearly documented in medical record.*

**Purpose**

To safely administer Red Cells to patients by;

- Correctly collecting Red Cells issued from Transfusion Department in Pathology and transport to clinical area.
- Correctly identifying patients and products prior to administration
- Safely administering Red Cells, including product description and indications.
- Safely managing transfusion reactions.

**Transportation of Red Cells from Pathology to Clinical Area**

**Procedure**

1. The staff member collecting the product from pathology must have documentation containing the patients’ identification. (I.e. documentation that contains 3 points of patient ID).
2. Only take one unit at a time (unless transferring product to alternative approved blood satellite blood fridge or “blood in motion bags”).
3. Collect the transfusion issue form on collection of the first unit.
4. Check the following details between the blood bag, the label attached to the blood bag and transfusion report form:
   - Patient’s full name, date of birth and UR number
   - Patient’s blood group
   - Donor’s blood group
Donor’s donation number
- Expiry date of Blood (ARCBS label & Allocated patient label on bag)

5. Ensure all necessary details: date, time blood removed from fridge and ward, signature/name and designation of person collecting blood are recorded on the Blood Register Sign Out form which remains in Pathology.

6. Blood is to be transported in the designated transport esky from pathology blood fridge, to the patient

7. Ensure transfusion is commenced within 30 minutes of removal of blood from blood fridge.

**Administration of Red Cells**

*All patients who are admitted must have Identity Bands attached. This includes all patients who are admitted as Day Cases in Outpatient Departments.*

**Equipment Requirements**

- Blood Product Consent/IV Order Form with patient details
- Blood Product
- Transfusion Issue Form (from Pathology)
- Patient with patent IV access
- Correct blood administration set, with 170 - 200 micron filter
- Infusion pump as required
- Blood warmer as required

**Scope**

These guidelines apply to Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood bag detail checks with 1 RN)

*No transfusion is to be administered without documented consent, including indication for transfusion.*

**Procedure**


2. Check I.V site for signs of infection and patency.

3. Collect all equipment required for transfusion.

4. Collect Blood Product

5. Visually inspect the blood for discoloration and consistency. If concerned return to the Transfusion Department in Pathology STAT.

6. Check all identity and blood bag details prior to transfusion of blood at the bedside. Two (2) people (2 RN’s or 1 RN and 1 Medical Officer, 1 RN and 1 EN), at the bedside, must do this prior connecting the bag to the intravenous line. The RN or MO undertaking this check must spike and hang the blood. Identify Patient by checking against blood bag label, transfusion report
issue form, Blood Product IV Order chart and the patient’s identity band. Ask patient where possible to identify themself by stating full name and date of birth.

7. **If the patient is unconscious or a paediatric patient a secondary RN/MO or relative must confirm the 3 points of identity of recipient.**

8. At the bedside, prime blood transfusion administration set with Red Blood Cells or Normal Saline utilising a blood transfusion giving set with a (170-200 micron) filter).

9. Start each pack slowly where possible; increase the rate after the first 15 minutes if no adverse reaction occurs. The transfusion should be completed within four (4) hours of being removed from the blood fridge. **1 Unit of Red Cells must be administered in no less than 2 hours unless it is deemed an emergency.**


11. Closely observe the patient for the first 15 minutes of the transfusion, as this is when transfusion reactions are likely to occur.

12. Monitor and record observations 15 minutes from commencement (blood pressure, pulse, respirations and temperature), then 60 minutely from commencement and hourly thereafter (temperature, pulse, blood pressure and respirations).

13. On completion of transfusion repeat baseline observations and document in the completion section on the Blood Transfusion Observation Form.

**Note**  Observations **may be taken more frequently** according to patient’s condition and/or as requested by the medical officer.

14. At the completion of the transfusion, flush line with normal saline.

15. Disconnect administration set from patient.

16. **NAHS** - Store used blood bags (double bagged with labels facing out) for 24 hours then discard in an appropriate hazard waste bin

    **NWAHS** return used blood bags (double bagged with labels facing out) to specimen fridge in pathology.

17. **Blood that cannot be commenced within 30 minutes of removal from a controlled Blood Fridge must be returned to that fridge within 30 minute and signed, dated and timed into the fridge issue book or register; Consult with the Laboratory staff when returning blood if it cannot be commenced with in 30 minutes.**

**Points to remember**

1. **Blood is not to be stored in ward fridges**

2. Empty or partly emptied bags are to be double bagged with labels facing out and stored in ward fridge for 24 hours, then discard (NAHS) or returned to pathology blood fridge (NWAHS).
Platelets for Transfusion

Description

Platelet standards specify a minimum number of platelets per “dose” (>2.4 × 10¹¹). The processes used by the ARCBS to achieve this standard will vary from time to time, current methods are detailed below.

- **Pooled platelet.** These are equivalent to 4 or 5 random donors per bag/unit and are provided pre-pooled. Volume is recorded on the bag.

- **Apheresis.** Platelets are currently provided in 100% plasma prepared anticoagulated blood from a single donor, and separated into components by an apheresis machine. (Platelets and a portion of plasma are moved to pool platelets and retained in a nutrient additive solution and the remaining elements are returned to the donor). Volume >100ml. 1 unit/bag of apheresis platelets is equal to 1 unit/bag of pre pooled (4 donors) random platelets.

Platelets are stored at 22 – 24°C for up to 5 days, must be continuously agitated on a purpose built device.

Indication

For the prevention and treatment of hemorrhage in patients with thrombocytopenia or platelet function defects. The platelet count is the primary trigger for the use of platelets, with clinical risk factors for bleeding

Cases where anti-D is given for platelet transfusion

Rh (D) Negative patients should receive 250 I.U. prophylactic anti-D Immunoglobulin when receiving Rh (D) Positive platelets if they fall into the following categories:

i) Women of childbearing potential. (<50)

ii) Men <25 years of age.

Rh-D Immunoglobulin (Anti-D) should be given subcutaneous to patients for platelet transfusion in Rh-D negative women if receiving Rh-D positive platelets, with low platelet counts to decrease the risk of haematoma. Anti-D need only be given on a weekly basis at most and is necessary if Anti-D from previous treatments is measurable in the serum.ing and the extent of bleeding also influencing the decision to transfuse. Refer to NHMRC/ASBT guidelines, appropriate use of platelets.

Laboratory Investigations

- FBE prior to ordering and Blood Group (crossmatch sample).

- Tests of platelet increment post-transfusion at discretion of treating specialist.

- HLA typing if HLA matched single donor platelets are required.

- HLA antibody screen is required.

Purpose

To safely administer Platelets to patients by;

- correctly collecting Platelets issued from Transfusion Department in Pathology and document correctly.

- correctly identifying patients and products prior to administration
safely administering Platelets, including product description and indications.

safely managing transfusion reactions.

Transportation of Platelets from Pathology to Clinical Area

Purpose

To safely collect Platelets to patients by;

- correctly collecting Platelets issued from Transfusion Department in Pathology and document correctly.
- correctly identifying patients and product

Procedure

1. The staff member collecting the product from pathology must have documentation containing the patients’ identification. (I.e. documentation that contains 3 points of patient ID).
2. Only take one unit at a time from platelet agitator.
3. Collect the transfusion Issue form on collection of the first unit.
4. Check the following details between the product bag, the label attached to the product bag, transfusion report form and ward documentation:
   - Patient’s full name, date of birth and UR number
   - Patient’s blood group
   - Donor’s blood group
   - Donor’s donation number
   - Expiry Date of Platelets (ARCBS label & Allocated patient label on bag)
5. Ensure all necessary details: date, time blood removed from fridge and ward, signature/name of person collecting blood are recorded on the Blood Register Sign Out form which remains in Pathology.
6. Blood is to be transported in the designated transport esky from Pathology to the patient
7. Ensure transfusion is commenced within 30 minutes of removal of platelets from platelet agitator.

Never Refrigerate Platelets

Administration of Platelets

All patients who are admitted must have Identity Bands attached. This includes all patients who are admitted as Day Cases in Outpatients Departments.

Equipment

- Blood Product Consent/ IV Order Form and Blood Product Observation Form, with patient details
- Blood Product
Blood and Blood Products Transfusion Procedure Manual

- Transfusion Issue Form (from Pathology)
- Patient with patent IV access
- Correct blood transfusion administration set, with 170 - 200 micron filter
- Volumetric infusion pump
- Blood warmer as required

Scope

These guidelines apply to Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood bag detail checks with 1 RN)

No transfusion is to be administered without documented consent, including indication for transfusion.

Procedure

2. Check I.V site for infection and patency.
3. Collect all equipment required for transfusion.
4. Collect Platelets from Pathology on Platelet Agitator.
5. Visually inspect platelets, if there are any concerns, it should be returned to the pathology department. Unusual colour or turbidity can suggest bacterial contamination (Note: Platelets normally produce a ‘swirling appearance’ when shaken.)
6. Check all identity and blood bag details prior to transfusion of blood. This must be done by two (2) people, (2 Registered Nurses or 1 Registered Nurse and Medical Officer, 1 RN and 1 EN), at the bedside before connecting the bag to the intravenous line. The RN or MO undertaking this check must spike and hang the Platelets. Identify Patient by checking against blood bag label, transfusion issue form, Blood Product Consent/IV Order Form and the patient’s identity band. Ask patient to identify themselves, full name and date of birth.
7. If the patient is unconscious or a paediatric patient a secondary RN/MO or relative must confirm the 3 points of identity of recipient.
8. At the bedside prime line with Platelets or Normal saline utilising a Blood Transfusion Administration Set with a (170-200 micron) filter. Platelets may be administered through a volumetric infusion pump or syringe infusion pump using a Blood Transfusion Administration Set with a (170-200 micron) filter.
9. Transfuse over 15-30 minutes for a unit/bag in an adult or as the patient’s fluid status allows. Neonatal and paediatric transfusion rate as per order.
10. Closely observe the patient for the first 15 minutes of the transfusion, as this is when transfusion reactions are likely to occur.
11. Monitor and record observations 15 minutes from commencement (BP, Pulse, resps, Temp) and at completion.

Note Observations may be taken more frequently according to patient’s condition and/or as requested by the medical officer.
12. At the completion of the transfusion, flush line with normal saline.

13. Disconnect administration set from patient.

14. **NAHS** - Store used blood bags (double bagged with labels facing out) for 24 hours then discard in an appropriate hazard waste bin

   **NWAHS** return used blood bags (double bagged with labels facing out) to specimen fridge in pathology.

15. Notify and return unused Platelets to the Haematology Department if it cannot be commenced within 30 minutes.

**Evaluation**

Pathology Transfusion Department should be notified in the event of all reactions. Clear documentation in the patient’s medical history and Blood Product Adverse Reaction investigation form must be completed.

**References**

1. NHMRC and ASBT Clinical Practice Guidelines on the use of Blood Components (red blood cells, platelets, fresh frozen plasma, cryoprecipitate). (2001)

Fresh Frozen Plasma (FFP) For Transfusion

Product Description
Fresh Frozen Plasma (FFP) is plasma separated from whole blood within 6-8 hours of donation and then frozen to -30°C; this allows a storage life of 12 months. FFP contains all coagulation factors. FFP is issued as ABO group compatible. In an emergency when the patient’s blood group unknown, Group AB FFP may be used.

FFP comes in a volume of 300mLs. FFP is thawed by Pathology in a 37°C water bath and this takes 20-30 minutes, once thawed FFP has a 24-hour shelf life for some indications if kept at 2-6°C.

Complete a Transfusion Medicine Request Form and phoning Transfusion Department in Pathology orders FFP.

**ALERT: PATHOLOGY REQUIRES 20 MINUTES TO THAW FFP**

Transportation of FFP from Pathology to Clinical Area

Purpose
To safely collect Fresh Frozen Plasma to patients by;

- correctly collecting FFP issued from Transfusion Department in Pathology and document correctly
- correctly identifying patients and products

Procedure
1. The staff member collecting the product from pathology must have documentation containing the patients’ identification. (I.e. documentation that contains 3 points of patient ID).
2. Only take one unit at a time from Blood Fridge.
3. Collect the transfusion Issue form on collection of the first unit.
4. Check the following details between the product bag, the label attached to the product bag, transfusion report form and ward documentation:
   - Patient’s full name, date of birth and UR number
   - Patient’s blood group
   - Donor’s blood group
   - Donor’s donation number
   - Expiry Date of FFP, including thawed expiry date (ARCBS label & Allocated patient label on bag)
5. Ensure all necessary details: date, time blood removed from fridge and ward, signature/name of person collecting blood are recorded on the Blood Register Sign Out form which remains in Pathology.
6. **Blood is to be transported in the designated transport esky from Pathology to the patient**
7. Ensure transfusion is commenced within **30 minutes** of removal of FFP from blood fridge.
Administration of FFP

All patients who are admitted must have identity bands attached. This includes all patients who are admitted as Day Cases in Outpatient Departments.

Equipment Requirements

- Blood Product Consent/IV Order Form and Blood Product Observation Form with patient details
- Blood Product
- Transfusion Issue Form (from Pathology)
- Patient with patent IV access
- Correct blood administration set, with 170 - 200 micron filter
- Volumetric Infusion pump
- Blood warmer as required

Scope

These guidelines apply to Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood bag detail checks with 1 RN)

No transfusion is to be administered without documented consent, including indication for transfusion.

Procedure

2. Check I.V site for infection and patency.
3. Collect all equipment required for transfusion.
4. Collect FFP from Pathology Blood Fridge.
5. Visually inspect FFP, if there are any concerns, it should be returned to the pathology department. Unusual colour or turbidity can suggest bacterial contamination.
6. Check all identity and blood bag details prior to transfusion of blood. This must be done by two (2) people, (2 Registered Nurses or 1 Registered Nurse and Medical Officer, 1 RN and 1 EN), at the bedside before connecting the bag to the intravenous line. The RN or MO undertaking this check must spike and hang the FFP. Identify Patient by checking against blood bag label, transfusion issue form, Blood Product Consent/IV Order Form and the patient’s identity band. Ask patient to identify themselves, full name and date of birth.
7. If the patient is unconscious or a paediatric patient a secondary RN/MO or relative must confirm the 3 points of identity of recipient.
8. At the bedside prime line with FFP or Normal saline utilising a Blood Transfusion Administration Set with a (170-200 micron) filter.
9. Transfuse over 30 minutes for a unit/bag in an adult or as the patient’s fluid status allows. Neonatal and paediatric transfusion rate as per order.
10. Closely observe the patient for the first 15 minutes of the transfusion, as this is when transfusion
reactions are likely to occur.

11. Monitor and record observations 15 minutes from commencement (BP, Pulse, Resps, Temp) and at completion.

**Note** Observations *may be taken more frequently* according to patient’s condition and/or as requested by the medical officer

12. At the completion of the transfusion, flush line with normal saline.

13. Disconnect administration set from patient.

14. **NAHS** - Store used blood bags (double bagged with labels facing out) for 24 hours then discard in an appropriate hazard waste bin

   **NWAHS** return used blood bags (double bagged with labels facing out) to specimen fridge in pathology.

15. **Notify and return unused FFP to the Haematology Department if it cannot be commenced within 30 minutes.**

**Note**

- For common reactions to FFP include allergic which may range from minor to life threatening.
- Refer to Transfusion Reactions for possible reactions with FFP and Management.

**References**

NHMRC and ASBT Clinical Practice Guidelines on the use of Blood Components (red blood cells, platelets, fresh frozen plasma, cryoprecipitate 2006).

British Committee for Standards in Haematology, Blood Transfusion Taskforce. (2009): The administration of blood and blood components and the management of transfused patients

Australian Red Cross Blood Service – Victoria, Circular of Information –an extension of blood component labels 2006.
Cryoprecipitate for Transfusion

Product Description
Each bag contains Factor VIII, Fibrinogen, Factor XIII, von Willebrand’s Factor and Plasma and is prepared by thawing FFP and recovering the precipitate. This is a single donor per bag. Group O and A cryoprecipitate can be obtained from Transfusion Department in Pathology (Group B or AB should receive group A cryoprecipitate, Group O maybe issued to a Group B patient if group A cryoprecipitate is in short supply)

Cryoprecipitate is approximately a volume of 30mls and is thawed at 37°C; this takes 10 minutes.

Note: Cryoprecipitate is not the same product as cryodepleted plasma cryosupinatant.

Transportation of Cryoprecipitate from Pathology to Clinical Area

Purpose
To safely collect Cryoprecipitate to patients by;

- correctly collecting Cryoprecipitate issued from Transfusion Department in Pathology and document correctly.
- correctly identifying patients and products.

Procedure
1. The staff member collecting the product from pathology must have documentation containing the patients’ identification. (I.e. documentation that contains 3 points of patient ID).
2. Take units that will be utilised STAT.
3. Collect the transfusion Issue form on collection of the units.
4. Check the following details between the product bags, the label attached to the product bags, transfusion report form and ward documentation:
   - Patient’s full name, date of birth and UR number
   - Patient’s blood group
   - Donor’s blood group
   - Donor’s donation number
   - Expiry Date of Cryoprecipitate, including thawed expiry date (ARCBS label & Allocated patient label on bag)
5. Ensure all necessary details: date, time blood removed from Pathology and ward, signature/name of person collecting blood are recorded on the Blood Register Sign Out form which remains in Pathology.
6. **Blood is to be transported in the designated transport esky from Pathology to the patient**
7. Ensure transfusion is commenced within 30 minutes of removal of Cryoprecipitate from Pathology.
Administration of Cryoprecipitate (Cryo-ppt)

All patients who are admitted must have identity bands attached. This includes all patients who are admitted as Day Cases in Outpatient Departments.

Equipment Requirements

- Blood Transfusion IV Order chart with patient details
- Blood Product
- Transfusion Issue form (from Pathology)
- Patient with patent IV access
- Correct blood administration set, with 170 - 200 micron filter
- Volumetric Infusion pump as required
- Blood warmer if required

Scope

This policy and procedure applies to Registered Nurses and Medical Officers.

(Enrolled Nurses can participate with identity and blood bag detail checks with 1 RN)

No transfusion is to be administered without documented consent, including indication for transfusion.

Procedure

2. Check I.V site for infection and patency.
3. Collect all equipment required for transfusion.
4. Collect Cryo-ppt from Pathology.
5. Visually inspect cryo-ppt, if there are any concerns, it should be returned to the pathology department.
6. Check all identity and blood bag details prior to transfusion of blood. This must be done by two (2) people, (2 Registered Nurses or 1 Registered Nurse and Medical Officer, 1 RN and 1 EN), at the bedside before connecting the bag to the intravenous line. The RN or MO undertaking this check must spike and hang the Cryo-ppt. Identify Patient by checking against blood bag label, transfusion issue form, Blood Product Consent/IV Order Form and the patient’s identity band. Ask patient to identify themselves, full name and date of birth.
7. If the patient is unconscious or a paediatric patient a secondary RN/MO or relative must confirm the 3 points of identity of recipient.
8. At the bedside prime line with Cryo-ppt or Normal saline utilising a Blood Transfusion Administration Set with a (170-200 micron) filter.
9. Transfuse over 5-10 minutes for a unit/bag in an adult or as the patient’s fluid status allows. Neonatal and paediatric transfusion rate as per order.
10. Closely observe the patient for the first 15 minutes of the transfusion, as this is when transfusion
reactions are likely to occur.

11. Monitor and record observations 15 minutes from commencement (BP, Pulse, resps, Temp) and at completion.

Note Observations may be taken more frequently according to patient’s condition and/or as requested by the medical officer

12. At the completion of the transfusion, flush line with normal saline.

13. Disconnect administration set from patient.

14. NAHS - Store used blood bags (double bagged with labels facing out) for 24 hours then discard in an appropriate hazard waste bin

   NWAHS return used blood bags (double bagged with labels facing out) to specimen fridge in pathology.

15. Notify and return unused Cryo-ppt to the Haematology Department if it cannot be commenced within 30 minutes.

Note Refer to Transfusion reactions for possible reactions with Cryoprecipitate and Management.

References

NHMRC and ASBT Clinical Practice Guidelines on the use of Blood Components (red blood cells, platelets, fresh frozen plasma, cryoprecipitate 2006)

Australian Red Cross Blood Service – Victoria, Circular of Information – an extension of blood component labels 2006.
**Plasma Derived Fractionated Products**

The following products are available in mix2 vials:

BIOSTATE - Mix2Vial (Factor VIII concentrate)

PROTHROMBINEX-HT (Factor II, IX and X concentrate)

MONOFIX-VF (Purified factor IX)

**Mix2Vial – How to use:**

**Preparation and Administration**

**Preparation**

Ensure that the vials are at room temperature (20 - 30 degrees)

Remove flip top caps from the product and water for injections (WFI) vial

Apply an appropriate antiseptic to both rubber stoppers and allow to dry

Remove lid from the mix2vial packaging

**Step 1**

Place the WFI vial upright on a level surface

Pick up Mix2Vial in its outer packaging and invert it

Holding the WFI vial securely, push clear end of the Mix2Vial vertically down through the product via the stopper

The WFI will be drawn out of its vial and into another vial by vacuum within the product vial.

**Step 2**

Carefully remove the Mix2Vial outer packaging

Ensure the Mix2Vial remains attached to the WFI vial

**Step 3**

Place product vial upright on a level surface

Invert the WFI vial with the Mix2Vial attached

Holding the product vial securely, push clear end of the Mix2Vial vertically down through the product vial stopper

The WFI will be drawn out of its vial and into the product vial by the vacuum within the product vial

**Step 4**

Leaving the system connected, gently swirl to ensure that the product is fully dissolved

Unscrew the Mix2Vial into 2 separate pieces

Discard the WFI vial and blue end of the Mix2Vial
Step 5

Keeping the product vial upright with clear end of the Mix2Vial attached, attach syringe

Invert system and draw reconstituted product into the syringe

When product has been transferred, discard the Mix2Vial and product vial

NOTE:

The Mix2Vial has a built in 170 to 220 micron filter

Mix2 failure

In the event of Mix2Vial failure, please return the Mix2Vial and both product and WFI Vials to the pathology department and product will be replaced.

DO NOT USE if gel or clots form in preparation or there is loss of vacuum when reconstituting.
Biostate

*Product Description*

A human blood concentrate containing factor VIII, prepared from pooled plasma from voluntary donors. Two viral inactivation steps to inactivate viruses HIV and hepatitis B&C, but total safety from viral contamination cannot be absolutely

*Indications*

The treatment and prophylaxis of bleeding associated with factor VIII deficiency due to Haemophilia A and Von Willebrand’s disease.

*Scope*

Guidelines for Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

No blood product is to be administered without documented consent.

Procedure – See Mix2 Vials – How to use

1. This products should be ordered on a Blood Product/IV Order Form

2. Biostate can then be given through a 21G Butterfly or any IV line by slow push approximately over 5 minutes or as Dose – Contact Hematologist (via LGH switchboard) tolerated by patient.

3. All unused portions should be discarded.

4. Record Batch number on Blood Product Consent/IV Order Form.

For further advice

- **Von Willebrand’s Disease**: The usual dose of Factor VIII is 100-units/10 kg body weight, repeated every 24 hours.

- **Haemophilia A**: Dose depends on the clinical indication and is calculated as follows:

  Dose (units) = Desired Increase in Factor VIII level (%) x weight (kg)

  \[ \frac{2}{2} \]

- Doses should be repeated 12 hourly as necessary (24 hourly may suffice for mild bleeds).
  
  Doses may need to be varied according to individual responses as determined by Factor VIII level tests.
Prothrombinex-VF

Product Description

A human blood concentrate containing factors II, IX and X, prepared from pooled plasma from voluntary donors. Heat viral inactivation occurs for HIV, hepatitis B&C. A freeze-dried powder 20ml vial contains approx 500IU of factor IX and 550IU of factor II and 600IU factor X. Contains a small amount of thrombin and Heparin.

Indications

Treatment and peri operative prophylaxis of bleeding in acquired deficiency of prothrombin complex factors. These include deficiency caused by treatment or overdose of vitamin k antagonist such as warfarin - especially where rapid correction of the deficiency is required. Treatment and prophylaxis of bleeding where congenital abnormalities of factors II, IX and X – when specific coagulation factor is not available.

Scope

Guidelines for Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

No blood product is to be administered without documented consent.

Procedure – See Mix2 Vials – How to use

1. This products should be ordered on a Blood Product/ IV Order Form
2. Prothrombinex can be given through a 21G Butterfly or any IV line by show push approximately over 5 minutes or as tolerated by patient
3. The rate should not exceed 10ml/minute. Administration should take place within an hour of reconstitution.
4. All unused portions should be discarded.
5. Record Batch number on Blood Product Consent/IV Order Form.

Dose – Contact Hematologist (via LGH switchboard) for further advice

Complications/Reactions Specific for Prothrombinex-HT

Thrombosis or DIC: contains activated clotting factors and may induce thrombosis in susceptible subjects: Anti thrombin III and Heparin have been added to the products to lessen this possibility but caution should be taken when using this product in patients with liver cell failure.

Heparin induced thrombocytopenia: Prothrombinex HT and MonoFIX-VF both contain small amounts of heparin. This may be sufficient to contribute to Heparin associated thrombocytopenia where a history of this exists.
## Guidelines for the management of an elevated INR in adults

### Guidelines for Elevated INR in Adults WITHOUT Bleeding (1)

<table>
<thead>
<tr>
<th>INR</th>
<th>Bleeding risk</th>
<th>Warfarin</th>
<th>Vitamin K$_1$</th>
<th>FFP</th>
<th>PTX-VF</th>
<th>Measure INR</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;therapeutic range but &lt;5.0</td>
<td>Low</td>
<td>Stop; consider reasons for elevated INR and patient-specific factors</td>
<td>Give 1.0–2.0 mg oral or 0.5–1.0 mg intravenous</td>
<td></td>
<td></td>
<td>Within 24 hours</td>
<td>Resume warfarin at a reduced dose when the INR is in therapeutic range</td>
</tr>
<tr>
<td>5.0–9.0</td>
<td>Low</td>
<td>Stop</td>
<td>Give 2.5–5.0 mg oral or 1.0 mg intravenous</td>
<td></td>
<td></td>
<td>In 6–12 hours</td>
<td>Resume warfarin therapy at a reduced dose once INR is &lt;5.0</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Give 1.0 mg intravenous</td>
<td>Consider 150–300 mL 25–50 IU/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;9.0</td>
<td>Low</td>
<td>Stop</td>
<td>Give vitamin K$_1$ 5.0–10.0 mg intravenous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td></td>
<td>Give 25–50 IU/kg</td>
<td></td>
<td></td>
<td></td>
<td>Assess patient continuously until INR is &lt;5.0, and bleeding stops</td>
</tr>
</tbody>
</table>

Notes: *Dose reduction may not be necessary if the INR is only minimally above therapeutic range (up to 10%); INR = International Normalised Ratio; FFP = fresh frozen plasma; PTX-VF = Prothrombinex=VF

MonoFIX-VF

**Product Description**

- Purified form of factor IX, two-step viral inactivation. Each vial contains a freeze-dried powder with approximately 500IU of factor IX.

**Indication**

Treatment of haemorrhages, for the use in surgery, and as prophylaxis in patients with Haemophilia B.

**Scope**

Guidelines for Registered Nurses and Medical officers. **MONOFIX can be given through a 21G Butterfly or any IV line by slow push approximately over 5 minutes or as tolerated by patient**

(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

No blood product is to be administered without documented consent.

**Procedure – See Mix2 Vials – How to use**

1. This product should be ordered on a Blood Product/IV Order Form
2. MonoFix –VF can be given through a 21G Butterfly or any IV line by show push approximately over 5 minutes or as tolerated by patient
3. The rate should not exceed 10ml/minute. Administration should take place within an hour of reconstitution.
4. All unused portions should be discarded.
5. Record Batch number on Blood Product Consent/IV Order Form.

**Dose – Contact Hematologist (via LGH switchboard) for further advice**

Through the preparation device draw up into large syringes, can then be given through a 21G Butterfly or any IV line by slow push approximately over 5 minutes or as tolerated by patient. All unused portions should be discarded.

Record Batch number on Blood Product Consent/IV Order Form.

**Complications/Reactions**

- **Allergic reactions** are unusual and generally mild and can be prevented or alleviated by hydrocortisone 50 - 100 mg and Phenergan 12.5 - 25 mg IV (adult doses), as ordered by Medical Officer.

- **Transmission of viral infection**, especially Hepatitis C, remains a potential if minor risk despite donor screening and heat inactivation.

**Note**

Patients with Haemophilia B or Haemophilia A with inhibitor are generally under the care of a consultant haematologist or paediatrician, who should be consulted.
References
Circular Information, March 2006, Australian Red Cross Blood Service Victoria.
CSL Bioplasma product information Biostate® – Human Coagulation Factor VIII, August 2002
CSL Bioplasma product information Prothrombinex-HT- August 2002
CSL Bioplasma product information MonoFIX-VF, August 2002
National Warfarin Consensus Guidelines.
Human Rh (D) Immunoglobulin (Anti-D)

**Purpose**

Post natal Anti D

To prevent allo-immunisation in Rh (D) Negative persons by Rh (D) Positive red cells within 48 hrs, and up to 72hrs, of delivery or procedure such as external cephalic version.

Ante natal prophylaxis and management of negative blood group women.

Prophylactic Rh D immunoglobulin (Anti-D) is given to women with Rh D negative blood so that they do not become isoimmunised to Rh D positive red blood cells. Isoimmunisation can occur if foetal red blood cells cross into the maternal circulation during birth or during the pregnancy.

There are two Rh D immunoglobulin products available in Australia: 250 IU Rh D and 625 IU Rh D

**Scope**

Guidelines for Registered Nurses, Midwives and Medical Officers.

(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

**Dosage:**

The recommended of Rh (D) Immunoglobulin to be administered Intramuscularly is:

<table>
<thead>
<tr>
<th>Strength</th>
<th>Product</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 IU</td>
<td>Rh D Immunoglobulin</td>
<td>1st trimester (12 weeks) sensitising events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Singleton pregnancy)</td>
</tr>
<tr>
<td>625 IU</td>
<td>Rh D Immunoglobulin</td>
<td>1st trimester sensitising events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Multiple pregnancy)</td>
</tr>
</tbody>
</table>

2nd & 3rd trimester sensitising events

(>12 weeks gestation)

Routine antenatal prophylaxis at 28 weeks

Routine antenatal prophylaxis at 34 weeks

1ml will protect against immunisation by up to 6 ml of foetal red cells.

- Exact dose will be dependent upon the results of a kleihauer test.
- All Rh D negative women delivering an Rh D positive infant within 72 hours of birth.
All Rh D negative women with an Rh D positive infant should have an estimate of feto-maternal haemorrhage (FMH test) to determine the need for additional doses of anti-D.

Advice regarding administration of additional doses for women with a greater than 6 ml FMH can be obtained from the Haematologist on-call.

Midwifery Guidelines

First Trimester (up to and including Week 12 of gestation)

- A dose of 250 IU (50ug) Rh D immunoglobulin should be offered to every Rh D negative woman with no pre-existing Anti-D to ensure adequate protection against immunisation for the following indications:
  - Miscarriage
  - Termination of pregnancy
  - Ectopic pregnancy
  - Chorionic villus sampling
  - Twin pregnancy usually needs a dose of 625IU
  - A dose of 250 IU (50ug) Rh D immunoglobulin (Mini Dose) is sufficient to prevent immunisation by FMH of 2.5 ml of foetal red cells (5ml whole blood).

Beyond the First Trimester (after Week 12 of gestation)

- A dose of 625 IU (125ug) Rh D immunoglobulin should be offered to every Rh D negative woman with no preformed Anti-D antibodies to ensure adequate protection against immunisation for the following indications:
  - Genetic studies (amniocentesis and cordocentesis).
  - Abdominal trauma considered sufficient to cause FMH.
  - Each occasion of revealed or concealed antepartum haemorrhage (where the patient suffers unexplained uterine pain, the possibility of concealed antepartum haemorrhage should be considered, with the view to immunoprophylaxis).
  - External cephalic version (performed or attempted).
  - Recurrent bleeds.

Antenatal Prophylaxis (at 28 and 34 weeks of gestation)

- At 28 and 34 weeks gestation universal prophylaxis with Rh D immunoglobulins to Rh D negative women with no preformed Anti-D antibodies is generally regarded as best practice. The dose given should be 625 IU (125ug). Antibody status checked prior to prophylactic doses.
A Transfusion Medicine Request form is required that includes indications for use and the number of weeks gestation.

**Equipment**

- Completion of the Human Anti-D Antibody Product Administration Form is required (this includes patient consent & product order)
- Anti-D
- 3ml Syringe
- Interlink Vial access
- 23G needle
- Alco wipe
- Gloves
- Patient’s consent

**Administration Procedure**

1. Collect Anti-D from Pathology. An Issue form is supplied with Anti-D when collecting product from Pathology.
2. Patient ID check 3 points of identity by 2 registered nursing/midwifery staff
3. Checklist
   - Mother’s blood group
   - Baby’s blood group if postpartum
   - Amount of Anti-D
   - Drug Order
   - Human Anti-D Antibody Product Administration Form.
   - Issue Form
   - Check for preformed antibodies prior to 28/40 prophylactic dose
4. Give Anti-D
5. Put on gloves
6. Prepare skin with alcohol wipe
7. **Administer as deep slow intramuscular injection**
8. Observe injection site
10. Record Batch number on Human Anti-D Antibody Product Administration Form
**Note**
- As per package insert – **deep intramuscular injection only**

Except in cases where anti-D is given for platelet transfusion,

Rh (D) Negative patients should receive 250 I.U. prophylactic anti-D Immunoglobulin when receiving Rh (D) Positive platelets if they fall into the following categories:

i) Women of child-bearing age. (<50)

ii) Men <25 years of age.

Anti-D should be given subcutaneously to patients with low platelet counts to decrease the risk of haematoma. Anti-D need only be given on a weekly basis.

**If a dose of more than 5ml is required, it is recommended to administer it in divided doses at different sites**

**Or**

It is recommended to use **WhinRho SDF for Intravenous Administration**

WinRho SDF is recommended for Intravenous use for large doses of Rh (D) Immune Globulin Intravenous (Human) (Rh (D) IGIV)

**WinRho SDF** is available for Intravenous route if larger doses are required and should be administered within 72 hours after exposure for **treatment of incompatible blood transfusions or massive feotal heamorrhage**.

**Procedure for Reconstitution & Intravenous Administration**

1. Aseptically reconstitute the product shortly before use with 2.5mL of Sterile Dilutant for 120 ug (600 IU) and 300 ug (1,500 IU) and 8.5 mL of Sterile Dilutant for 1,000 ug (5, 000 IU) (see the next table). Discard unused portion of dilutant

2. Inject the diluant slowly onto the inside wall of the vial and gently swirl until dissolved. **Do not shake**.

3. Withdraw the diluted fluid and Inspect WinRho for particulate matter and discoloration prior to administration.

4. Infuse the entire dose into a suitable vein over 3 to 5 minutes. WinRho SDF should be administered separately from other drugs.

5. Use the product within 12 hours of reconstitution. Discard any unused portion.

**Procedure for Intramuscular Administration**

1. Aseptically reconstitute the product shortly before use with 1.25mL of Sterile Dilutant for 120 ug (600 IU) and 300 ug (1,500 IU) and 8.5 mL of Sterile Dilutant for 1,000 ug (5, 000 IU) (see the next table). Discard unused portion of dilutant
2. Inject the dilutant slowly onto the inside wall of the vial and gently swirl until dissolved. Do not shake.

3. Withdraw the diluted fluid and Inspect WinRho for particulate matter and discoloration prior to administration.

4. Administer into the deltoid muscle of the upper arm or the anterolateral aspects of the upper thigh. Due to the risk of sciatic nerve injury, the gluteal region should not be used as a routine injection site. If the gluteal region is used, use only the upper, outer quadrant.

5. Use the product within 12 hours of reconstitution. Discard any unused portion.

<table>
<thead>
<tr>
<th>Reconstitution of WinRho® SDF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vial size</strong></td>
</tr>
<tr>
<td>Intravenous Injection</td>
</tr>
<tr>
<td>120 ug (600 IU)</td>
</tr>
<tr>
<td>300 ug (1,500 IU)</td>
</tr>
<tr>
<td>1,000 ug (5,000 IU)</td>
</tr>
<tr>
<td>Intramuscular Injection</td>
</tr>
<tr>
<td>120 ug (600 IU)</td>
</tr>
<tr>
<td>300 ug (1,500 IU)</td>
</tr>
<tr>
<td>1,000 ug (5,000 IU)</td>
</tr>
</tbody>
</table>

* To be administered in several sites

Dose

| Transfusion Indication and Recommended Dose for incompatible blood transfusions or massive foetal haemorrhage only |
| (refer to product information insert for all other indications)                        |
|-------------------------------------------------------------------------------------------------
<table>
<thead>
<tr>
<th>Route of</th>
<th>WinRho® SDF Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>If exposed to Rh (D) Positive</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Intravenous</td>
<td>9 ug (45 IU)/mL blood</td>
</tr>
<tr>
<td>Intramuscular</td>
<td>12 ug (60 IU)/mL blood</td>
</tr>
</tbody>
</table>

**Maximum Total Dose**

**Intravenous Route:** Administer 600ug (3000 IU) every 8 hours, until the total dose, calculated from the table above, is administered.

**Intramuscular Route:** Administer 1,200ug (6000 IU) every 12 hours, until the total dose, calculated from the table above, is administered.

**STORAGE**

Store at 2 to 8°C. Do not freeze. Do not use the product after expiration date.

If the reconstituted product is not used immediately, store it at room temperature for no longer than 12 hours. Do not freeze. Discard the product if not administered within 12 hours.

**References:**

WinRho SDF Baxter Healthcare

WinRho Product Information Baxter Healthcare
Human Albumin 4% & 20%

Description:
Albumin is prepared from pooled human plasma obtained from voluntary donors. Albumin is heated at 60°C for 10 hours and incubated at low pH to inactivate viruses. Albumex 4 and Albumex 20 are both proteins solutions made from human albumin. They are plasma expanders.

Indications:

Albumex 4
- Shock associated with significant hypoalbuminaemia
- Therapeutic plasmapheresis
- Cardiothoracic surgery

Albumex 20
- Extremely low albumin in critically ill patients
- Burns
- Paracentesis of ascites in patients with cirrhosis
- Haemodialysis

The composition of Albumin is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Albumin</td>
<td>40g/Litre, 200g/Litre</td>
</tr>
<tr>
<td>Sodium</td>
<td>140 mmol/Litre</td>
</tr>
<tr>
<td>Chloride</td>
<td>128mmol/Litre</td>
</tr>
<tr>
<td>Octanoate</td>
<td>6.4 mmol/Litre</td>
</tr>
</tbody>
</table>

Contraindications
Albumin 4% must not be used if there is a history of allergy to this product. Albumin is contraindicated in patients with cardiac failure.

No transfusion is to be administered without documented consent, including indication for transfusion.
**Purpose**

To safely administer Albumin 4% & 20% to patients by;

- correctly collecting Albumin issued from Transfusion Department in Pathology and document correctly.
- correctly identifying patients and products prior to administration
- safely administering albumin, including product description and indications.
- safely managing transfusion reactions.

**Scope**

These guidelines apply to Registered Nurses and Medical officers.

(Enrolled Nurses, Ward Aides and Attendants can collect product only as per institutions policy.)

**Equipment Requirements**

- Blood Transfusion Consent/IV Order Form with patient details
- Blood Product (albumin)
- Transfusion Issue Form (from Pathology)
- Patient with patent IV access
- Correct blood administration set, with 170 - 200 micron filter
- Infusion pump as required

**Administration Procedure**


2. Check I.V site for infection and patency.

3. Collect equipment required for transfusion

4. Collect Albumin

5. Re-check all identity and bottle label details prior to transfusion of albumin. This must be done by two (2) people (2 RN’s or 1 RN and 1, Medical Officer, 1RN and 1 EN), at the bedside before connecting the bottle to the intravenous line.

   The product is an almost colourless, yellow or pale green solution that is normally clear or slightly opalescent. The solution should not be used if it appears turbid by transmitted light. Return to the Transfusion Department in Pathology STAT.


   If able ask patient to identify themselves, name and date of birth.

   If the patient is unconscious or a paediatric patient a secondary RN/MO or relative must confirm the 3 points of identity of recipient.

6. **At the bedside** prime line with Albumin utilising a Blood Administration set with a (170-200 micron) filter.
7. Commence infusion STAT. Transfuse as per order prescribed on Blood Product Consent/IV Order form.

9. Closely observe the patient for the first 15 minutes of the transfusion, as this is when transfusion reactions are likely to occur.

- **The patient should have baseline observations temperature, pulse, blood pressure and respirations and then a set of observations at completion.**
- **Note:** Observations *may be taken more frequently* according to patient’s condition and/or as requested by the medical officer.

10. At the completion of the transfusion, flush line with normal saline.

11. Human Albumin products contain no antimicrobial. It must be used within 4 Hours after opening or reconstitution. Any remaining contents must be discarded (inform Haematology Department if this occurs).

12. Disconnect administration set from patient

13. **Record batch number by peeling off second label** containing batch number details from the Albumin bottle and **applying to Batch No. column, on Blood Product Consent/IV Order form.**
HUMAN Intravenous Immunoglobulin Infusions (IVIG)

General IVIG Administration Recommendations

- Always refer to the package product information and IVIG Administration Forms before using any IVIG product.
- Calculate the expected administration time when booking out-patient infusions.
- Avoid starting the infusion overnight in non urgent situations (check urgency with treating doctor).
- Use of a volumetric infusion pump is recommended.
- Before commencing the infusion ensure that:
  - Informed consent has been obtained & a Blood Product Consent/IV Order Form has been completed and Pt info brochure has been given to patient.
  - The patient is adequately hydrated.
  - Adrenaline, oxygen and resuscitation equipment are available and in working order.
  - Premedications, if required, are administered.
  - Allow product to reach room temperature
  - Do not use if product is turbid or cloudy, or contains any sediment or particles. Contact the Hospital Transfusion Service.
  - IVIG must be administered separately from other IV fluids or medications the patient is receiving.
  - If an adverse event occurs, stop the infusion immediately and consult the treating doctor. Report adverse events to Haematology Department. An IVIG reaction form will need to be completed. For minor reactions the infusion can often be restarted cautiously at a slower rate after the patient has improved clinically.
  - Adverse events must be reported to both the ARCBS and the manufacturer of the product. This is usually done through the Haematology Department or accessing the hospital intranet to print off the appropriate reaction form.
  - UN-USED bottles should be returned to the Haematology Department. NEVER store in ward areas/domestic fridges (because of temperature variations & need for strict stock control of a precious product).
  - Any transfusion report or stickers with batch details MUST be permanently filed on the patient’s Blood Product Consent/IV Order Form.
  - IVIG products contain no antimicrobial. They must be used within 4 Hours after opening or reconstitution. Any remaining contents must be discarded (inform Haematology Department if this occurs).
  - Blood glucose determination in diabetic patients: Glucose monitoring systems (test strips) utilising the glucose dehydrogenase pyrroloquinoquinone (GDH-PQQ) or the glucose-dye-oxidoreductase
method will report falsely elevated glucose readings in the presence of maltose. Intragam and Octagam contain maltose.

To reduce the risk of inappropriate administration of insulin due to falsely elevated glucose readings, the following precautions should be taken when patients are receiving maltose-containing products:

- Review the product insert of the glucose monitoring system/test strips or contact the glucose monitoring system manufacturer to determine which glucose determination method is used.
- Only use those systems that use the glucose oxidase or hexokinase or glucose dehydrogenase–NAD (GDH-NAD) method of glucose determination.

**NOTE:** If > 8 weeks since last infusion treat as first infusion.

ONLY USE IVIG for the named patient it was issued for. The treating medical officer prescribes a specific IVIG product based on Criteria for the use of intravenous immunoglobulin in Australia (dated Dec 2007) released in 2007 by the Australian Health Ministers’ Advisory Council (AHMAC).

**PAEDIATRIC patients:** IVIG products suitable are Intragam®P, Octagam® & Flebogamma. Infusion rates are based on body weight and therefore different to the standard rates outlined for adults.

References:

CSL Bioplasma® Intragam® P Product Information, CSL Bioplasma® Sandoglobulin® Product Information and Octagam Administration Guidelines by Octapharma Australia Pty Ltd
Intragam P

**Product Description**

**INTRAGAM P** is produced by Commonwealth Serum Laboratories (CSL) Bioplasma, which contains normal immunoglobulin (human) that has been purified by electrophoresis. At least 98% of the protein is immunoglobulin G. It has a concentration of 6-gm/100 ml and is available in 50 ml (3g), 200 ml (12 g).

**Indications**

To ensure demands can be met from the **limited supply**, IVIG is issued in accordance with guidelines (Criteria for the Clinical Use Of Intravenous Immunoglobulin in Australia), released in 2007 by the Australian Health Ministers’ Advisory Council (AHMAC).

**Purpose**

To deliver safely Human Intravenous Immunoglobulin to patients by;

- correctly identifying patient’s who require Human Intravenous Immunoglobulin product prior to administration
- safely administering Human Intravenous Immunoglobulin, including product description and indications.

**Scope**

Guidelines for Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

**Procedure**

All Human Intravenous Immunoglobulin infusions are available through the **Transfusion Department in Pathology (NAHS)** and **Pharmacy (NWAHS)**, which holds a small stock. Contact the Senior Scientist in Transfusion or Clinical Haematologist to order IVIG.

**Dosage**

Issued and Authorized Dosage may be less due to an ongoing national shortage of this product.

**Administration**

- For complete instructions, refer to Human Intravenous Administration chart for Intragam P.
- Intravenous Immunoglobulin is administered through an IMED or similar infusion pump. It is administered undiluted, directly from the bottle; a blood administration set can be used however is not necessary.

**Rate of Infusion**

Refer to: Intragam P. Human Immunoglobulin Administration Chart

- Commence infusion at 60ml/hr for first 15 mls
- Gradually increase to maximum 120ml/hr for the next 30 mls
- Continue at 240ml/hr until completed (or as tolerated by patient)
Note: Infusion for neonates and paediatrics needs to be reduced refer to HW3

**Observations**

- Baseline Temperature, Pulse, Blood Pressure and Respiratory rate are to be taken prior to the commencement of the infusion.
- Then at 15, 30 and 60 minutes after commencement.
- Every 60 minutes until the infusion is completed.
- Observe closely for the first 15 minutes of blood transfusion. Hypotension and anaphylaxis can occur during this time.

**Adverse Reactions**

Reactions to intravenous immunoglobulin tend to be related to the infusion rate and are most likely to occur during the first hour of the infusion.

Anaphylaxis can occur, but is rare, if occurs this denotes a Medical Emergency – notify Code Blue.

Sometimes a premedication may be ordered prior to commencement of infusion.

<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
<th>Management</th>
<th>Delayed Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>The infusion should be stopped temporarily</td>
<td>Nausea</td>
</tr>
<tr>
<td>Headache</td>
<td><strong>Once the patient improves clinically</strong></td>
<td>Vomiting</td>
</tr>
<tr>
<td>Chest-tightness</td>
<td>Cautiously recommence at a slower rate.</td>
<td>Chest pain</td>
</tr>
<tr>
<td>Facial flushing or pallor</td>
<td>Notify the RMO</td>
<td>Rigor</td>
</tr>
<tr>
<td>Feeling hot</td>
<td></td>
<td>Aching legs</td>
</tr>
<tr>
<td>Dyspnoea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-urticarial skin rash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Itching</td>
<td></td>
<td>These reactions may occur once infusion</td>
</tr>
<tr>
<td>Hypotension</td>
<td></td>
<td>completed and normally within 24 hours –</td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td></td>
<td>Notify RMO</td>
</tr>
</tbody>
</table>

**References**


Criteria for the Clinical use of intravenous immunoglobulin in Australia, Dec 2007
**Flebogamma**

**Product Description**

Flebogamma 5% DIF is produced by Lateral Grifols, which contains normal immunoglobulin (human) that has been purified by electrophoresis.

Flebogamma contains human normal immunoglobulin (Ig) with a broad spectrum of antibodies against infectious agents. Also contains a sugar, maltose (100mg/ml), and may contain low levels of IgA (100 microgram/ml).

**Indications**

To ensure demands can be met from the limited supply, IVIG is issued in accordance with guidelines (Criteria for the Clinical Use Of Intravenous Immunoglobulin in Australia), released in 2007 by the Australian Health Ministers’ Advisory Council (AHMAC).

**Purpose**

To facilitate the safe delivery of Human Intravenous Immunoglobulin (Flebogamma) to patients by:

- correctly identifying patient’s who require Human Intravenous Immunoglobulin (Flebogamma) product prior to administration
- safely administering Human Intravenous Immunoglobulin (Flebogamma), including product description and indications.

**Scope**

Guidelines for Registered Nurses and Medical officers.

(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

**Procedure**

**Issue**

Flebogamma 5% DIF is produced by Lateral Grifols, Victoria. All intravenous Flebogamma infusions are available through the Transfusion Department in Pathology (NAHS) or Pharmacy (NWAHS), which holds a small stock.

Human Intravenous Immunoglobulin (Flebogamma) requires authorization by the duty medical officer of the Australian Red Cross Blood Service (ARCBS). Refer to the Senior Scientist in Transfusion Department or Clinical Haematologist when ordering IVIG.

**Dosage**

Issued and authorized dosage may be less due to an ongoing national shortage of this product.

**Administration**

1. Human Intravenous Immunoglobulin (Flebogamma) is administered through a volumetric infusion pump. It is administered undiluted, directly from the bottle; a Blood Transfusion Administration set should be used.

2. Refer to Human Intravenous Immunoglobulin (Flebogamma) Administration Form for administration and procedure details.

3. For complete instructions, refer to the package insert.
Rate of Infusion

Refer to Human Intravenous Immunoglobulin Administration (Flebogamma) Form.

ADMINISTRATION CHART (see next page)

Flebogamma 5% DIF is recommended to be infused at a rate of **0.5ml/kg/hr for the first 15 minutes**; If tolerated increase to **1mL/kg/hr for the next 30 minutes**; If tolerated after this time the rate can be increased to **2mL/kg/hr for the next 30 minutes**; then increased to **3ml/kg/hr, 4ml/kg/hr and 5ml/kg/hr for 30 minutes**. Thereafter, the infusion can be maintained at a rate up to but not exceeding **6mL/kg/hr or 480mL/hr**. These rates are for the complete dose, NOT per individual bottle.

**Note:** Pump Rate must not exceed 480ml/hr.

If batch numbers change during the patient’s prescribed dose, stay at the same pump rate for an extra 30 minutes to ensure no reaction occurs to the different batch number.
Flebogamma Administration Chart

<table>
<thead>
<tr>
<th>Weight Kg</th>
<th>Pump Rate (ml/hr)</th>
<th>Pump rate (ml/hr)</th>
<th>Pump rate (ml/hr)</th>
<th>Pump rate (ml/hr)</th>
<th>Pump rate (ml/hr)</th>
<th>Pump rate (ml/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>20.0</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>45</td>
<td>22.5</td>
<td>45</td>
<td>90</td>
<td>135</td>
<td>180</td>
<td>225</td>
</tr>
<tr>
<td>50</td>
<td>25.0</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>55</td>
<td>27.5</td>
<td>55</td>
<td>110</td>
<td>165</td>
<td>220</td>
<td>275</td>
</tr>
<tr>
<td>60</td>
<td>30.0</td>
<td>60</td>
<td>120</td>
<td>180</td>
<td>240</td>
<td>300</td>
</tr>
<tr>
<td>65</td>
<td>32.5</td>
<td>65</td>
<td>130</td>
<td>195</td>
<td>260</td>
<td>325</td>
</tr>
<tr>
<td>70</td>
<td>35.0</td>
<td>70</td>
<td>140</td>
<td>210</td>
<td>280</td>
<td>350</td>
</tr>
<tr>
<td>75</td>
<td>37.5</td>
<td>75</td>
<td>150</td>
<td>225</td>
<td>300</td>
<td>375</td>
</tr>
<tr>
<td>80</td>
<td>40.0</td>
<td>80</td>
<td>160</td>
<td>240</td>
<td>320</td>
<td>400</td>
</tr>
<tr>
<td>85</td>
<td>42.5</td>
<td>85</td>
<td>170</td>
<td>255</td>
<td>340</td>
<td>425</td>
</tr>
<tr>
<td>90</td>
<td>45.0</td>
<td>90</td>
<td>180</td>
<td>270</td>
<td>360</td>
<td>450</td>
</tr>
<tr>
<td>95</td>
<td>47.5</td>
<td>95</td>
<td>190</td>
<td>285</td>
<td>380</td>
<td>475</td>
</tr>
<tr>
<td>100</td>
<td>50.0</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>480</td>
</tr>
<tr>
<td>105</td>
<td>52.5</td>
<td>105</td>
<td>210</td>
<td>315</td>
<td>420</td>
<td>480</td>
</tr>
<tr>
<td>110</td>
<td>55.0</td>
<td>110</td>
<td>220</td>
<td>330</td>
<td>440</td>
<td>480</td>
</tr>
<tr>
<td>115</td>
<td>57.5</td>
<td>115</td>
<td>230</td>
<td>345</td>
<td>460</td>
<td>480</td>
</tr>
<tr>
<td>120</td>
<td>60.0</td>
<td>120</td>
<td>240</td>
<td>360</td>
<td>480</td>
<td>480</td>
</tr>
<tr>
<td>125</td>
<td>62.5</td>
<td>125</td>
<td>250</td>
<td>375</td>
<td>480</td>
<td>480</td>
</tr>
<tr>
<td>130</td>
<td>65.0</td>
<td>130</td>
<td>260</td>
<td>390</td>
<td>480</td>
<td>480</td>
</tr>
<tr>
<td>135</td>
<td>67.5</td>
<td>135</td>
<td>270</td>
<td>405</td>
<td>480</td>
<td>480</td>
</tr>
<tr>
<td>140</td>
<td>70.0</td>
<td>140</td>
<td>280</td>
<td>420</td>
<td>480</td>
<td>480</td>
</tr>
</tbody>
</table>

Initial rate 0.5ml/kg/hr for first 15 min. Increase to 1ml/kg/hr for next 30 min. Increase to 2ml/kg/hr for next 30 min. Increase to 3ml/kg/hr for next 30 min. Increase to 4ml/kg/hr for next 30 min. Increase to 5ml/kg/hr for next 30 min. May then increase to a maximum rate of 6ml/kg/hr.
Observations

- Record Pulse, Blood Pressure, Respiratory Rate, and Temperature are to be taken prior to the commencement and then every 30 mins of the infusion and at completion.
- Hypotension and anaphylaxis can occur

Adverse Reactions

Reactions to intravenous immunoglobulin tend to be related to the infusion rate and are most likely to occur during the first hour of the infusion.

<table>
<thead>
<tr>
<th>Signs &amp; Symptoms</th>
<th>Delayed Reactions</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>Chest pain</td>
<td>The infusion should be</td>
</tr>
<tr>
<td>Chills</td>
<td>Nausea</td>
<td>stopped temporarily</td>
</tr>
<tr>
<td>Rigors</td>
<td>Vomiting</td>
<td>Once the patient improves</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Rigor</td>
<td>clinically</td>
</tr>
<tr>
<td>Nausea</td>
<td>Aching legs</td>
<td>Cautiously recommence at</td>
</tr>
<tr>
<td>Vomiting</td>
<td></td>
<td>a slower rate.</td>
</tr>
<tr>
<td>Allergic Reactions</td>
<td></td>
<td>Notify the Medical Officer</td>
</tr>
<tr>
<td>Cutaneous Reactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arthralgia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in BP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest tightness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal or Lower Back Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coughing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tachycardia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These reactions may occur once infusion completed and normally within 24 hours – Notify Medical Officer

Anaphylaxis can occur, but is rare, if occurs this denotes a Medical Emergency – notify Code Blue.

Sometimes premedication may be ordered prior to commencement of infusion.


Criteria for the Clinical use of intravenous immunoglobulin in Australia, Dec 2007
Blood and Blood Products Transfusion Procedure Manual

Octagam

(This component is not currently in use in Australia but is under review)

Product Description
Octagam contains human normal immunoglobulin (Ig) with a broad spectrum of antibodies against infectious agents. Also contains a sugar, maltose (100mg/ml), and may contain low levels of IgA (100 microgram/ml).

Indications
To ensure demands can be met from the limited supply, IVIG is issued in accordance with guidelines (Criteria for the Clinical Use Of Intravenous Immunoglobulin in Australia), released in 2007 by the Australian Health Ministers’ Advisory Council (AHMAC).

Purpose
To facilitate the safe delivery of Human Intravenous Immunoglobulin (Octagam) to patients by;

- correctly identifying patient’s who require Human Intravenous Immunoglobulin (Octagam) product prior to administration
- safely administering Human Intravenous Immunoglobulin (Octagam), including product description and indications.

Scope
Guidelines for Registered Nurses and Medical officers.
(Enrolled Nurses can participate with identity and blood product detail checks with 1 RN)

Procedure
Issue
Octagam is produced by Octapharma, all intravenous Octagam infusions are available through the Transfusion Department in Pathology (NAHS) or Pharmacy (NWAHS), which holds a small stock. Human Intravenous Immunoglobulin (Octagam) requires authorization by the duty medical officer of the Australian Red Cross Blood Service (ARCBS). Refer to the Senior Scientist in Transfusion Department or Clinical Haematologist when ordering IVIG.

Dosage
Issued and authorized dosage may be less due to an ongoing national shortage of this product.

Administration
1. Human Intravenous Immunoglobulin (Octagam) is administered through a volumetric or similar infusion pump. It is administered undiluted, directly from the bottle; a blood transfusion giving set should be used
2. Refer to Human Intravenous Immunoglobulin (Octagam) Administration form for administration and procedure details.
3. For complete instructions, refer to the package insert.
**Rate of Infusion**

Refer to Human Intravenous Immunoglobulin Administration (Octagam) Chart.

**ADMINISTRATION CHART**

Octagam is recommended to be infused at a rate of 1mL/kg/hr for the first 30 minutes; if tolerated increase the rate to 2mL/kg/hr for the next 30 minutes. If it is tolerated after this time the rate can be increased to 3mL/kg/hr and the 4mL/kg/hr, for 30 minutes. Thereafter, the infusion can be maintained at a rate up to but not exceeding 5mL/kg/hr/480mL/hr. These rates are for the complete dose, NOT per individual bottle.

If batch numbers change during the patient’s prescribed dose, stay at the same pump rate for an extra 30 minutes to ensure no reaction occurs to the different batch number.
<table>
<thead>
<tr>
<th>Weight Kg</th>
<th>Initial rate 1ml/kg/hr for first 30 min</th>
<th>Increase to 2ml/kg/hr for next 30 min</th>
<th>Increase to 3ml/kg/hr for next 30 min</th>
<th>Increase to 4ml/kg/hr for next 30 min</th>
<th>May then increase to a maximum rate of 5ml/kg/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>45</td>
<td>45</td>
<td>90</td>
<td>135</td>
<td>180</td>
<td>225</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>55</td>
<td>55</td>
<td>110</td>
<td>165</td>
<td>220</td>
<td>275</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>120</td>
<td>180</td>
<td>240</td>
<td>300</td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td>130</td>
<td>195</td>
<td>260</td>
<td>325</td>
</tr>
<tr>
<td>70</td>
<td>70</td>
<td>140</td>
<td>210</td>
<td>280</td>
<td>350</td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td>150</td>
<td>225</td>
<td>300</td>
<td>375</td>
</tr>
<tr>
<td>80</td>
<td>80</td>
<td>160</td>
<td>240</td>
<td>320</td>
<td>400</td>
</tr>
<tr>
<td>85</td>
<td>85</td>
<td>170</td>
<td>255</td>
<td>340</td>
<td>425</td>
</tr>
<tr>
<td>90</td>
<td>90</td>
<td>180</td>
<td>270</td>
<td>360</td>
<td>450</td>
</tr>
<tr>
<td>95</td>
<td>95</td>
<td>190</td>
<td>285</td>
<td>380</td>
<td>475</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>105</td>
<td>105</td>
<td>210</td>
<td>315</td>
<td>420</td>
<td>525</td>
</tr>
<tr>
<td>110</td>
<td>110</td>
<td>220</td>
<td>330</td>
<td>440</td>
<td>550</td>
</tr>
<tr>
<td>115</td>
<td>115</td>
<td>230</td>
<td>345</td>
<td>460</td>
<td>575</td>
</tr>
<tr>
<td>120</td>
<td>120</td>
<td>240</td>
<td>360</td>
<td>480</td>
<td>600</td>
</tr>
<tr>
<td>125</td>
<td>125</td>
<td>250</td>
<td>375</td>
<td>500</td>
<td>625</td>
</tr>
<tr>
<td>130</td>
<td>130</td>
<td>260</td>
<td>390</td>
<td>520</td>
<td>650</td>
</tr>
<tr>
<td>135</td>
<td>135</td>
<td>270</td>
<td>405</td>
<td>540</td>
<td>675</td>
</tr>
<tr>
<td>140</td>
<td>140</td>
<td>280</td>
<td>420</td>
<td>560</td>
<td>700</td>
</tr>
</tbody>
</table>
**Observations**

- Record Pulse, Blood Pressure, Respiratory Rate, and Temperature are to be taken prior to the commencement and then every 30 mins of the infusion and at completion.
- Hypotension and anaphylaxis can occur

**ADVERSE REACTIONS**

Reactions to intravenous immunoglobulin tend to be related to the infusion rate and are most likely to occur during the first hour of the infusion.

Anaphylaxis can occur, but is rare, if occurs this denotes a Medical Emergency – notify Code Blue.

Sometimes premedication may be ordered prior to commencement of infusion.

<table>
<thead>
<tr>
<th>Delayed Reactions</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest pain</td>
<td>The infusion should be stopped temporarily</td>
</tr>
<tr>
<td>Nausea</td>
<td>Once the patient improves clinically</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Cautiously recommence at a slower rate.</td>
</tr>
<tr>
<td>Rigor</td>
<td>Notify the Medical Officer</td>
</tr>
<tr>
<td>Aching legs</td>
<td></td>
</tr>
</tbody>
</table>

**Delayed Reactions**

These reactions may occur once infusion completed and normally within 24 hours – Notify Medical Officer

Reference: Criteria for the Clinical use of intravenous immunoglobulin in Australia, Dec 2007
Additional Resources/References


Clinical Practice Guidelines on the Use of Blood Components (red blood cells, platelets, fresh frozen plasma, cryoprecipitate), NHMRC ASBT 2001


FVIII and FIX guidelines, Australian Health Ministers Advisory Council (AHMAC) 2006


Guidelines for Pretransfusion Laboratory Practice, ANZSBT 2007


Blood & Blood Products, Tasmanian Memorandum of Understanding, 2010
Appendixes

Appendix 1  Blood and Blood Component Storage, Transport and Administration in Primary Health

Description:  Blood And Blood Component Storage, Transport and Administration In Primary Health

Audience:  All Primary Health nursing and medical staff

Approved By:  Director Primary Health

Custodian:  Primary Health Policy, Planning And Performance Unit, Primary Health

Version:  Draft v 2

Effective Date:  XXXXXX  Review Date:  XXXXXX

Intranet path:  TBD

Overview

This Policy provides a framework for the provision and maintenance of safe blood product administration services within Primary Health. This includes an outline of the national service standards and criteria that must be met to enable safe blood product administration services and the process by which Primary Health services will be annually certified against these national standards.

1. Content

Background

The provision of blood products in rural inpatient facilities is a valuable contribution to the health care for people in rural areas. The transport, storage and administration of blood products to support this service are acknowledged “clinical risks” with the consequence that health services and management must implement systems to ensure risks are minimized. The NHMRC Clinical Practice Guidelines on the Use of Blood Components provides the basis for the safe provision of blood components.

The following points should be considered when administering blood or blood components.
Blood and blood products are gifts from voluntary donors. It is the responsibility of all staff handling these products to ensure that they are used appropriately.

Blood and blood products are potentially hazardous, therefore should be administered only when the likely benefit out-weighs the possible ill-effects.

Risks (both long term and short term) and benefits should be discussed with the patient. Indications for transfusion and the patient’s consent should be clearly documented.

Blood and blood products should be administered only in accordance with hospital policy, as documented in the Blood Product Guide ratified by the Blood Transfusion Committee.

Untoward reactions with a potential to endanger the patient must be reported to Pathology immediately and a clinical incident lodged on the EIMS Incident reporting system.

Pathology and the Red Cross Blood Transfusion Service have a duty of care to ensure that blood products are used appropriately.

Responsibility for the appropriateness of requests, special requirements and patient management lies with the Medical Officer.

Care of the patient before, during and after the transfusion is the responsibility of a Registered Nurse.

Availability of Medical staff on site and an adequate level of Nursing staff are essential for safe blood and/or blood component administration.

It is the responsibility of the Registered Nurse on receiving blood and blood products to check the temperature indicator to ensure that the temperature of the blood has been maintained during transit and remains stored to guidelines until transfused.

Scope

All Primary Health services involved in administering blood or blood components to patients, clients or residents must comply with the requirements of this Policy to ensure safe patient/client/ resident care.

Policy statement

Blood/ blood products and components will only be administered by Primary Health Services: where medical staff, supported by nursing staff are sufficiently available on site in the event of a blood or blood product administration emergency

the service has been formally certified as meeting the requirements of the NHMRC Guidelines On The Use Of Blood Components. This policy outlines the process for annual certification, the audit tools to be used and resource documents available to assist sites/ services to comply with the NHMRC requirements.

Roles and responsibilities
The Director Primary Health is responsible for the development of this policy and formal endorsement of services within Primary Health that meet the requirements of the NHMRC Guidelines.

The Area Managers are responsible for ensuring their services are fully compliant with the requirements of the NHMRC Guidelines and undertake annual certification to verify compliance.

The Primary Health Coordinators are responsible for annually auditing the services seeking certification in their area and providing audit reports and recommendations re certification to their Area Manager for the approval of the Director Primary Health.

Site/Service Managers are responsible for ensuring the requirements of the NHMRC Guidelines are met on a day to day basis through adequate staff training; on site access to national resources (client brochures, staff education packages, posters); site based audits of client records; and provision of adequate clinical supervision to monitor staff practices.

The Medical Officer prescribing the transfusion is responsible for ensuring the transfusion is safe and appropriate for the Primary Health setting; that they are available to review the client during the duration of the transfusion; and that they provide instruction to the nursing staff re administration of the transfusion, and that they are available in the case of a transfusion related adverse event.

The Nurse in Charge is responsible for ensuring adequate staff is available for checking and administration of blood products (a Medical Officer and RN, 2 RNs or an RN and EN) and that the Medical Officer is available to review the client for the duration of the transfusion.

Nursing staff are responsible for working within their scope of practice and undertaking the checking and administration of blood products in accordance with the Transfusion Guidelines provided by the Primary Health site in which they are working.

The Primary Health Safety and Quality Unit is responsible for annually reviewing the Blood Management audit tool and providing audit tool briefings to PHC’s as required.

Annual Certification Process

Step 1 – Ensuring Medical Officer availability

For the safe management of administration of blood and/or blood products, medical officers are required to be available to respond in the event of an adverse reaction or sudden deterioration in the client’s condition. Rural Primary Health inpatient facilities with a Medical officer availability of Tier 1 or 2 are recognised as having sufficient medical officer availability for the administration of blood or blood products. The Tier 1 and 2 sites are listed below.
Other Primary Health sites can only administer blood or blood products where the site meets the NHMRC Guidelines as stated below and the specific medical officer prescribing the blood or blood product to the client makes specific arrangements with the site manager to ensure the medical officer will be on site or available within 15-30 minutes of being called for the duration of the blood or blood product administration.

Step 2 – Ensuring compliance with NHMRC Guidelines

Site Managers will complete a site self assessment audit to ensure all requirements can be met on site. All non compliances to be addressed using the array of resources available.

When self assessed as compliant the site manager will seek a formal audit by the PHC.

The PHC provides the site with a copy of the audit prior to the certification visit and sets a date for a review of actual practices, staff training records, and retrospective client records, using the Audit tool provided.

The PHC must complete the audit tool as outlined and advise the site of any non compliance that must be addressed prior to formal certification.

If the site is fully compliant the site audit report and recommendation re certification must be forwarded to the Area Manager.

The Area Manager then seeks PH Director approval for certification for the site for a period of 12 months.

The Director PH provides a certification letter to the site. Copies of the audit report, recommendations, letter of certification to be kept on file at the site.
Guidelines for Ensuring Safe Practice on Site

Medical Officers prescribing blood products will explain the risks and benefits of transfusion to the client and, where possible obtain written consent from the client/family.

The Medical Officer will document in the client history, the reason for transfusion and provide the required documentation to Primary Health site administering the transfusion.

Medical Officers prescribing blood products will be on call and available to the staff administering the blood product for the duration of blood product transfusion. Blood product transfusions will not occur when there is no Medical Officer available to the site.

Medical Officers will be available to review and assess the client during the duration of the blood product transfusions.

Medical Officers will be available to review the client in the event of a suspected transfusion reaction.

Clients with co-morbidities which increase the risks of adverse transfusion events, exclusive of those clients receiving transfusion in the palliative care setting, are transferred to an acute health setting for blood product transfusion.

Blood product transfusions are to only occur at Primary Health sites when acceptable numbers of registered/enrolled nursing staff, trained and competent in the checking and administration of blood products, are available.

Outcomes

The guidelines outlined in this policy provide a frame work to ensure that

Staff are always working within their scope of practice.

Adequate numbers of Medical and Nursing staff are available to cover all aspects of the transfusion process and any adverse transfusion related events.

Transfusions deemed inappropriate in the primary health setting do not occur, and these clients are treated in an acute care facility.

Attachments

Blood Management Practices Site Self Assessment Tool

Blood Management Practices Certification Audit Tool

Glossary of Terms

Self Assessment: A structured internal process of assessment against a set of standards to identify strengths and opportunities for improvement. Self Assessment is a process of evaluating the site's performance against the NHMRC standards.

Blood Product: A product derived from plasma e.g. Albumex, Intragram
Blood component: A cellular or plasma component of whole blood e.g. red cells, platelets.

NHMRC: National Health and Medical Research Council

2. Metadata - core bibliographic fields

Title
Blood And Blood Component Administration In Primary Health

Audience
Medical and Nursing personnel within Primary Health

Custodian
Manager Policy, Planning and Performance Unit, Primary Health

Approved by
Director Primary Health

Effective Date
TBD

Review Date
12 months from endorsement.

3. References

Acute services DHHS


Australian Red Cross Blood Service www.transfusion.com.au Section for Clinical professionals which contains all guidelines, Q& As and excellent resources.

National Health and Medical Research Council (NHMRC)/Australasian Society of Blood Transfusion (ASBT) *Clinical Practice Guidelines on the Use of Blood Components.*

This document is one in a series of documents developed by the NHMRC/ASBT about the use of blood components. These documents are available from:

**NHMRC Website at:**  [www.nhmrc.gov.au](http://www.nhmrc.gov.au)

**Standard Australia Medical Refrigeration equipment – for storage of blood and blood products.**  

**State Government websites:**

Extensive resources for staff and consumers: publications, audit tools, consumer information (including other languages), learning packages, policies & procedures and e-learning.
