1.0 Title
Blood Products – Administration

2.0 Purpose
MISIDENTIFICATION IN TRANSFUSION MEDICINE CAN BE FATAL
To ensure patients receiving blood product transfusion will be properly identified, prepared, and monitored for signs and symptoms of transfusion complications, so that swift and efficient action can be instigated in the event of adverse reaction.

Compliance with National Safety and Quality Health Service Standard 7: Blood and Blood Products 7.1, 7.3, 7.5 and 7.6.

For the purpose of this procedure, blood products are defined as:
- Fresh and frozen **blood components** such as red blood cells, platelets, fresh frozen plasma, cryoprecipitate, whole blood or granulocytes\(^1\).
- **Plasma-based derivatives** that are fractionated from large pools of human plasma under pharmacological conditions e.g. coagulation factors, albumen and immunoglobulins\(^1\).

3.0 Procedure
3.1 Key Principles
3.1.1 **RIGHT BLOOD to RIGHT PATIENT**
If there are any discrepancies in identification **DO NOT PROCEED** with transfusion.

3.1.2 Documented informed consent must be obtained for all blood product administrations, as per NNSW LHD Clinical Procedure Blood Products-Patient Consent.

3.1.3 All patients receiving blood product transfusions shall be positively identified and shall wear an identification bracelet\(^1\). For outpatients a verbal check of full name and DOB with photo identification to clarify identity shall be performed.

3.1.4 Staff shall be vigilant in pre transfusion checking procedures\(^3\).

3.1.5 Patients shall be monitored for signs of potential complications. Suspected problems shall be dealt with promptly\(^3\).

3.1.6 All **ADVERSE EVENTS** relating to blood or blood product transfusion shall be reported through IIMS for haemovigilance reasons\(^2,3\).

3.1.7 Transfusions, except in emergency, should be planned during business hours for patient safety.

3.1.8 Blood and blood product transfusion shall be performed by appropriately trained personnel that have completed the BloodSAFE e learning module Clinical Transfusion Practice\(^2\).
3.1.9 Renal and Haematology patients may have special circumstances for transfusion, particularly if pre or post-transplant. Treating Specialists must be informed prior to transfusion, and appropriate protocols must be followed.

3.2 Venous Access and Equipment

3.2.1 Intravenous (IV) access should be established as per NSW Health GL2013_013: Peripheral Intravenous Cannula (PIVC) Insertion and Post Insertion Care in Adult Patients and should be sufficient to maintain an adequate flow rate.

3.2.2 IV access cannula must be large enough to maintain adequate flow rate for transfusion:
- 18-20G is recommended for adults;
- 22-24G or larger is recommended for paediatric patients.

3.2.3 Blood components may be safely administered through most central venous catheters (CVC), implanted venous ports or peripherally inserted central catheter (PICC) lines.

3.2.4 The standard single spike IV giving set used by NNSW LHD facilities is suitable for transfusing all blood components. Open the side air vent when administering from glass bottles.

3.2.5 A volumetric infusion pump should be used for administration of blood products via peripheral and CVC access, for controlled flow rates.

3.2.6 The IV line may be primed with the blood product or 0.9% Sodium Chloride.

3.2.7 Blood transfusion sets must not be ‘piggy-backed’ into other lines.

3.2.8 Double spike IV giving sets must not be used for blood product administration, except during a massive transfusion protocol activated for critical bleeding.

3.2.9 A new IV giving set must be used for platelets if following a red cell transfusion: red cell debris may trap infused platelets. Red cells may follow platelets through the same IV giving set.

3.2.10 Blood warmers may be used if clinically indicated, must be validated for administration of blood products and operated according to manufacturer’s instructions.

3.3 Pre-transfusion Procedure

3.3.1 Check prescription, informed consent and indication for transfusion are documented in medical record.

3.3.2 Consider commencing transfusion when appropriately resourced: transfusion should NOT be considered between 2000 and 0600 unless deemed an emergency.

3.3.3 IV access must be appropriate and patent prior to requesting blood products.

3.3.4 Check any premedication prescribed has been administered.

3.3.5 Check resuscitation equipment is readily available and in working order.

3.3.6 Ensure baseline observations are recorded. (If the patient is febrile, discuss with the treating consultant before proceeding with the transfusion).

3.3.7 An explanation of the procedure should be given to the patient, including symptoms of possible reactions – encourage the patient to notify a Nurse or Doctor immediately if they become aware of any reactions such as shivering, flushing, pain, shortness of breath or begin to feel anxious.

3.3.8 Request blood product collection using the DELIVERY OF BLOOD/BLOOD PRODUCT FORM, as per NNSW LHD Clinical Procedure Blood Products-Collection from Storage Areas.
3.4 Identification
3.4.1 Two appropriately trained staff members, one of whom must be a registered nurse (RN) or medical officer (MO), must independently undertake identity check of the patient and blood product AT THE PATIENT’S SIDE prior to administration.

3.4.2 RIGHT PATIENT:
- Ask the patient (if conscious and rational) to state and spell their family name and given name in full, and date of birth.
- If the patient is unable to state and spell their name, ask a parent, guardian or carer (if present and able to do so), to verify the patient’s identity.
- Ensure that ALL details on the ID band (full name, date of birth, medical record number) are:
  - identical to those on the prescription.
  - identical to those provided on the patient compatibility label attached to the pack.

3.4.3 RIGHT BLOOD PRODUCT
- Blood product type is the same on the prescription, on the product and the patient compatibility label.
- Check compliance with any special requirements on the prescription are met (e.g. irradiated, CMV negative).

3.4.4 RIGHT PACK
- Blood group and donation number on the patient compatibility label are identical to that on the pack label. See Appendix 1 & 3.
- Blood group on the red cell pack is compatible with the blood group of the patient as indicated on the patient compatibility label attached to the pack; if not identical, the transfusion service provider MUST make a specific comment to indicate it is compatible or most suitable available.
- Check pack has not passed its cross match expiry or pack expiry date.
- Check pack has no signs of leakage or damaged packaging, clumping of the contents, evidence of haemolysis, unusual discolouration or turbidity.
- For red cells there should be no significant colour difference between tube segments and red cell pack.
- Platelets and cryoprecipitate are usually a cloudy yellow colour.
- FFP is usually a clear yellow colour when thawed.
For any discrepancies found during checking procedures not covered by a comment from transfusion service provider, the blood product MUST NOT be transfused until the discrepancy is resolved with the service provider.

3.5 Transfusion Procedure
3.5.1 Perform hand hygiene according to the ‘5 Moments of Hand Hygiene’.
3.5.2 Mix components thoroughly by inversion before transfusion.
3.5.3 Two staff, one of whom is a RN or MO, must sign the blood release form confirming patient and product check has occurred and is correct and compatible.
3.5.4 One of the two persons who performed the checking procedure MUST spike the bag immediately after checks are completed.
3.5.5 Volumetric infusion pump settings must be checked by two staff, one of whom is a RN or MO, at the commencement of each blood product.  

3.5.6 Always refer to the supplied product information for further information about administration of specific blood products particularly plasma-derivatives such as immunoglobulins.

SPECIAL CONSIDERATIONS

- Red cell transfusions should commence within 30 minutes of the blood being released from blood bank.
- DO NOT refrigerate platelets, use immediately when received on the ward to prevent damage and clumping.
- Once frozen products are thawed they should be used immediately, never refrozen, and be completed within 4 hours of thawing. Thawed product may be kept in an accredited blood storage refrigerator ONLY, for 24 hours at 4°C. Return to pathology as soon as possible if thawed product is not to be transfused.

3.6 Observations

3.6.1 The patient undergoing a blood transfusion shall be carefully observed for the first 15 minutes after the start of each unit of blood component – continuous visual observations is preferable but if not possible consider attending the patient for the first 30 minutes of the transfusion.

3.6.2 Patients undergoing platelet transfusion shall be carefully observed during the duration of the infusion – visual observation is preferable.

3.6.3 Closer observation is required for patients who are unable to verbalise symptoms e.g. Infants, unaccompanied children, patients with psychological or physical impairment, unconscious or anaesthetised patients.

3.6.4 Blood Observations are to include as a minimum:

- Respirations.
- Oxygen saturations.
- Heart rate.
- Blood Pressure.
- Temperature.

Skin assessment for presence or absence of rash should be observed, which assists recognition of transfusion related allergic reactions.

3.6.5 The minimum Schedule of observations for Blood Products shall be:

- Prior to the commencement.
- 15 minutes after the commencement of transfusion.
- With each rate increase.
- At least hourly during the transfusion.
- At the completion of transfusion.
- 4 hours after the transfusion.
- At any time, if the patient experiences new or increased symptoms.

NOTE:
If the patient is already being monitored more frequently due to clinical indications, the frequency of monitoring remains unchanged.
Patients being discharged before the 4-hour post-transfusion observation will need to be provided with information relating to transfusion reactions and advised to return to hospital if they have any concerns.

3.7 **Infusion Rates**

3.7.1 Proceed with transfusion of blood components no faster than 5mL/min for the first 15 minutes, unless otherwise indicated by the patient’s clinical condition.<sup>3</sup>

3.7.2 Fresh blood components must be completed within 4 hours of removal from controlled temperature storage.<sup>4</sup> Albumex infusion must be completed within 4 hours of commencement.<sup>4</sup>

3.7.3 The infusion rate for blood products may depend on the clinical context, age and cardiac status of the patient. However, in stable, non-bleeding adult patients, typical administration durations are<sup>1</sup>:

<table>
<thead>
<tr>
<th>Product</th>
<th>Infusion time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red cells</td>
<td>60-180 minutes per unit&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Platelets</td>
<td>15-30 minutes per standard adult equivalent dose&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fresh frozen plasma</td>
<td>30 minutes per unit (i.e. 10-20mL/kg/hr)&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>30-60 minutes per standard adult dose (i.e. 10-20mL/kg/hr)&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Granulocytes</td>
<td>Infusion rates should follow local protocols</td>
</tr>
<tr>
<td>Albumex</td>
<td>Infusion rate/time as ordered by medical officer&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Immunoglobulin**

*Always follow specific manufacturer’s instructions*

Product should be allowed to reach room temperature prior to administration.

Slower rates may be required for high risk patients:
(e.g. > 65 years, cardiac disease, renal failure)

| Intragam 10 (10%) (CSL) Adults | 60mL per hour (1 mL/minute) for 15 minutes then; 120mL per hour (2 mL/minute) for 15 minutes then; 240mL per hour (4 mL/minute) until complete *Consider reducing infusion rate for patients: naïve to Intragam 10, switching from alternative IVIg, not receiving IVIg for a long time, or the elderly. See Appendix 5: Introduction to Intragam 10 from CSL Behring. |
| Intragam 10 (10%) (CSL) Paediatrics | 0.5mL/kg/hr for 15 minutes (Maximum of 30mL/hr) 1.0mL/kg/hr for 15 minutes (Maximum of 60mL/hr) 2.0mL/kg/hr for 15 minutes (Maximum of 120mL/hr) 3.0mL/kg/hr thereafter (Maximum of 240mL/hr) |
| Privigen 10% | 0.3mL/kg/hour for 30 minutes then: 0.6mL/kg/hour for 30 – 60 minutes, if well tolerated then: 1.2mL/kg/hour for 60 – 90 minutes, if well tolerated then: 2.4mL/kg/hour for remainder of infusion. For infusion 4 onwards in Primary Immunodeficiency the maximum infusion rate is 4.8mL/kg/hour.<sup>7</sup> |
### 3.8 Adverse Reaction

#### 3.8.1 Early recognition of a transfusion reaction, prompt cessation of the transfusion and clinical intervention is essential for a successful patient outcome. The following table, available at: [Adverse Events Card](#), guides management and investigation in the event of an adverse transfusion reaction.

#### 3.8.2 The NNSW LHD Notification of Adverse Transfusion Reaction Form should be filled out and forwarded to the transfusion service provider in the event of a transfusion reaction. See Appendix 4.

#### 3.8.3 Adverse events are to be entered in the IIMS. Record the IIMS number in the patient’s medical record.

<table>
<thead>
<tr>
<th>Signs and symptoms</th>
<th>Possible etiology</th>
<th>Action</th>
<th>Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever (≥38°C or rise ≥1°C) and/or chills, rigors</td>
<td>Febrile non-haemolytic Transfusion reaction</td>
<td>HOLD transfusion, exclude serious adverse events</td>
<td>Reaction form to Transfusion lab</td>
</tr>
<tr>
<td>38°C to &lt;39°C (no other symptoms)</td>
<td></td>
<td>Anti-pyretics</td>
<td></td>
</tr>
<tr>
<td>&lt;39°C and other symptoms (hypotension, tachycardia) or ≥39°C</td>
<td>Bacterial contamination or acute haemolytic transfusion reaction (may become medical emergency)</td>
<td>STOP transfusion</td>
<td>Cultures on patient &amp; product, reaction form, G&amp;S. If haemolysis suspected order FBE, LDH, Bilirubin, haptoglobin, Coags, electrolytes, urinalysis</td>
</tr>
<tr>
<td>Rash or Urticaria (hives)</td>
<td>Minor allergic</td>
<td>STOP transfusion</td>
<td>None</td>
</tr>
<tr>
<td>&lt;½ body (no other symptoms)</td>
<td></td>
<td>Antihistamine.</td>
<td>Reaction form and G&amp;S</td>
</tr>
<tr>
<td>&gt;½ body (no other symptoms)</td>
<td>Severe allergic</td>
<td>STOP transfusion</td>
<td></td>
</tr>
<tr>
<td>With Dyspnoea, airway obstruction, hypotension (this is a medical emergency)</td>
<td>Anaphylaxis (consider IgA deficiency)</td>
<td>STOP transfusion</td>
<td>Reaction form and G&amp;S Perform Haptoglobin &amp; IgA test</td>
</tr>
<tr>
<td>Dyspnoea SO2, ↓O2 saturation With/without hypotension, tachycardia</td>
<td>Transfusion associated circulatory overload</td>
<td>STOP transfusion duretics, O2</td>
<td>Reaction form and G&amp;S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sit patient upright.</td>
<td></td>
</tr>
</tbody>
</table>

Flebogamma 10%  
0.01mL/kg/minute for 30 minutes then:
0.02mL/kg/minute for 30 minutes then:
0.04mL/kg/minute for 30 minutes then:
If tolerated well additional increments of 0.02mL/kg/minute may be made at 30 minute intervals to a maximum of 0.08mL/kg/minute.

Flebogamma 5%  
0.01 – 0.02mL/kg/minute for 30 minutes then:
If well tolerated the rate of administration may gradually be increased every 30 minutes to a maximum of 0.1mL/kg/minute.

Other plasma-derived products  
Infused in a timeframe in accordance with product-specific instructions.

Flebogamma 10%  
0.01mL/kg/minute for 30 minutes then:
0.02mL/kg/minute for 30 minutes then:
0.04mL/kg/minute for 30 minutes then:
If tolerated well additional increments of 0.02mL/kg/minute may be made at 30 minute intervals to a maximum of 0.08mL/kg/minute.

Flebogamma 5%  
0.01 – 0.02mL/kg/minute for 30 minutes then:
If well tolerated the rate of administration may gradually be increased every 30 minutes to a maximum of 0.1mL/kg/minute.

Other plasma-derived products  
Infused in a timeframe in accordance with product-specific instructions.
### 3.9 Concurrent Administration of Other Fluids and Medications

#### 3.9.1 Medications must NOT be added to the blood pack or blood administration set prior to, or during the transfusion as they may interact with the anticoagulant, additive solutions, or the blood component contained in the bag. 

#### 3.9.2 Caution should be exercised if the medication is associated with adverse effects or it is the first time it has been given – if a reaction occurs, it is difficult to ascertain whether the medication or the blood component was responsible for the adverse effect.

#### 3.9.3 Administering two different types of blood products concurrently via separate IV access lines is not recommended in routine practice, since in the event of an adverse reaction it is difficult to ascertain which component is responsible.

#### 3.9.4 It is always preferable to administer other medications or fluids using a separate cannula or separate lumen of a central venous access device.

#### 3.9.5 If medication must be given through the blood product line and there is no other alternative available:

- Stop the transfusion.
- Flush the line with 0.9% Sodium Chloride solution (Normal Saline) using the injection port closest to the patient (to clear blood from IV port and tubing).
- Ensure the line is clamped above injection port.
- Administer the medication.
- Flush the line again with 0.9% Sodium Chloride solution (Normal Saline).
- Unclamp the line and restart the transfusion.
- Ensure that this manoeuvre does not result in the transfusion exceeding the ‘four-hour rule’.

### 3.10 Completing the Transfusion

#### 3.10.1 On completion of transfusion blood administration sets should be flushed with normal saline to ensure that the patient receives all of the blood. The minimum volume required to clear the line should be used, taking into account the individual circumstances of the patient. (Paediatrics, risk of fluid overload or patients on fluid restrictions).

#### 3.10.2 Blood of the same component type can be administered sequentially without flushing between packs. Flushing normal saline between packs may improve...
venous access flow rate or keep access open until next the pack is readily available.

3.10.3 Change IV administration set when transfusion completed or every 12 hours if the transfusion episode is not yet complete. (Reduce risk of bacterial growth)

3.10.4 Use a new IV administration set if infusion of another fluid, medication or platelets is to follow after red cells. (Reduce incompatible fluids or drugs causing haemolysis of residual red cells in the IV set or drip chamber)

3.10.5 Adverse effects may manifest after the transfusion has been completed. The patient must be advised to report any adverse effects experienced after the transfusion has been completed.

3.10.6 For patients undertaking transfusion at a day treatment centre, a period of continued observation at the completion of the transfusion may be appropriate, in case of delayed transfusion adverse event.

3.10.7 An additional information brochure may be given on discharge providing advice to patients on delayed reaction and how to obtain appropriate clinical advice. See Appendix 2.

3.10.8 If there is any suspicion of a transfusion reaction the transfusion service provider must be informed of the clinical details and the pack should be returned.

3.10.9 If the transfusion is completed uneventfully, discard the empty pack according to health service policy for disposal of clinical waste.

3.11 Documentation

3.11.1 All vital signs shall be recorded on the age appropriate standard observation chart.

3.11.2 The commencement time, finishing time, unit or batch number of each blood product and volume transfused shall be clearly indicated on the IV Fluids Order Chart.

3.11.3 Document transfusion episodes in the patient medical record.

3.11.4 The electronic blood release form or compatibility form must be retained in the patient’s medical/clinical record.

3.11.5 Document outcome of transfusion in terms of desired effect.

3.11.6 Occurrence and management of any adverse reactions. (See 3.8)

4.0 Required Knowledge and Assessment to Perform this Procedure

All staff administering blood product transfusions must have completed the mandatory BloodSAFE e learning module: Clinical Transfusion Practice, every 5 years as per Health Education & Training Institute (HETI). Available through HETI or online at: BloodSAFE: Clinical Transfusion Practice.

Pack Check: an extra learning resource for checking a blood component pack before transfusion is also available from the ARCBS at: http://resources.transfusion.com.au/cdm/ref/collection/p16691coll1/id/221

5.0 Monitoring and Evaluation

Facility Managers are responsible for regular random auditing of compliance to this procedure.
The annual NNSW LHD Blood and Blood Products audit monitors all aspects of transfusion practice: the results of which are monitored by local transfusion committees with appropriate action planning to address gaps in practice. IIMS reporting for deviation from this procedure is appropriate. Managers shall maintain and provide records on compliance with BloodSAFE mandatory training.

6.0 Definitions
Standards Australia and virtually all national standards bodies around the world including the American Association of Blood Banks are following the rules set down by the international standards body International Organisation for Standardisation (ISO) for the use of the terms ‘shall’, and ‘should’.

- The term ‘shall’ indicates a mandatory requirement; however, this does not imply a mandatory legal requirement in an Australian standard.
- The term ‘should’ implies a recommendation where guidance is intended and does not preclude other acceptable practices.
- The term ‘may’ is used to indicate an acceptable alternative or addition to the prescribed practice.

7.0 References
3. Australian Red Cross Blood Service (AU). Administration of blood components [Internet]. Australia; 2016 August [cited 2016 August 15].
5. Australian Commission on Safety and Quality in Health Care (AU). National Safety and Quality Health Service Standard 7: Blood and Blood Products [Internet]. Sydney, NSW; 2012 September [cited 2016 August 7].
7. MIMS Online (AU). [Internet]. Australia; 2016 [cited 2016 August 15].

8.0 Appendices
Appendix 1: ABO and RhD Compatibility.
Appendix 2: Blood Transfusion Delayed Reaction Brochure.
Appendix 3: ARBCS, iTransfuse Factsheet ‘I Need to Know about ABO’.
Appendix 4: Notification of Adverse Transfusion Reaction Form.
Appendix 5: Introduction to Intragram 10
ABO and Rh (D) Compatibility

**RED CELLS**

**ABO:** Red cells must be ABO compatible. For red cells, compatibility is as follows:

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Compatible Donor Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>A</td>
<td>A, O</td>
</tr>
<tr>
<td>B</td>
<td>B, O</td>
</tr>
<tr>
<td>AB</td>
<td>AB, B, A, O</td>
</tr>
</tbody>
</table>

**Rh(D)**

- Red cells should be Rh(D) compatible.
- Rh(D) negative red cells can be given to Rh(D) positive patients.

**PLASMA**

**ABO**

- Plasma should be ABO compatible.
- Plasma compatibility is as follows:

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Compatible Donor Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O, A, B, AB</td>
</tr>
<tr>
<td>A</td>
<td>A, AB</td>
</tr>
<tr>
<td>B</td>
<td>B, AB</td>
</tr>
<tr>
<td>AB</td>
<td>AB</td>
</tr>
</tbody>
</table>

**Rh(D)**

- Plasma may be transfused without regard to Rh(D) type.

**PLATELETS**

**PLATELET COMPATIBILITY**

- The transfusion service provider issues platelets based on a blood group record.
- If the blood group of the platelet pack and the patient are not identical, the transfusion service provider MUST make a specific comment to indicate that it is compatible (or the most suitable available).

**ABO**

- ABO identical platelets are preferred.
- ABO non-identical platelets may be issued to patients by the transfusion service provider when ABO identical platelets are unavailable.
- In some circumstances the need for special requirements such as HLA matching may be more important than providing the same ABO group.

**Rh(D)**

- Matching for Rh(D) type is desirable (as platelet products contain small or minimal number of red cells) but may be less important than ABO matching. Platelets do not carry Rh antigens.
- Rh(D) negative platelets can be given to Rh(D) positive patients.
- Rh(D) negative patients, especially women of child-bearing potential, should receive, where possible, Rh(D) negative platelets.
- If Rh(D) positive platelets are given to Rh(D) negative patients, the use of Rh(D) immunoglobulin (Anti-D) may be required – consult treating medical officer/ haematologist/transfusion service provider.

**CRYOPRECIPITATE**

**ABO**

- Cryoprecipitate should preferably be ABO compatible.
- In adults ABO incompatible cryoprecipitate can be used with caution (particularly with large volumes).
- Cryoprecipitate compatibility is as follows:

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Compatible Donor Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O, A, B, AB</td>
</tr>
<tr>
<td>A</td>
<td>A, AB</td>
</tr>
<tr>
<td>B</td>
<td>B, AB</td>
</tr>
<tr>
<td>AB</td>
<td>AB</td>
</tr>
</tbody>
</table>

**Rh(D)**

- Cryoprecipitate may be transfused without regard to Rh(D) type.

NC-NNSW-PRO-6975-13

THIS NNSW LHD DOCUMENT REMAINS VALID FOR 24 HOURS ONLY WHEN PRINTED OR DOWNLOADED – REFER TO THE DOCUMENT LIBRARY FOR CURRENT POLICIES, PROCEDURES AND GUIDELINES.
Future Management
If your doctor suspects that you have had a delayed reaction to a blood or blood product transfusion, it is important that the pathology service that provided the transfusion is notified.
This allows for prompt investigation and further screening of your blood to ensure that additional problems are avoided if another transfusion ever becomes necessary.

What you can do:
Discuss the management of any future blood or blood product transfusions with your doctor.
Always give complete health information to health care providers.
You may need to carry an ID card with current health information.
Discuss with your doctor if an ID bracelet or pendant is necessary for you.

Resources
Patients receiving blood or blood product transfusions can access further information from the following resources...

Australian Red Cross Blood Service
www.mytransfusion.com.au
Various factsheets about transfusion can be found under the ‘Resources’ tab.

National Blood Authority
www.blood.gov.au
Click on ‘For Patients’ box. Look for ‘Quick links to the latest information for patients’ heading. Click on ‘Making Patient Blood Management Decisions’

Clinical Excellence Commission
www.ccc.health.nsw.gov.au
Click on ‘Resources’ tab to find Blood Transfusion – Patient Information leaflets, available in 13 languages.
Delayed Reactions
During a blood or blood product transfusion you are carefully monitored by staff, educated to identify any sudden reaction during the transfusion.
Reactions are rare; however a delayed reaction is possible which can develop 24 hours later, or even up to 4 weeks after a transfusion.
Most patients will not experience any negative effects; however some could experience a delayed reaction, which may often be unrecognised. The most likely cause of a delayed reaction is that your body has developed antibodies that were too low to be detected in pre transfusion testing, but have intensified as a result of the current transfusion. These antibodies can develop as a result of pregnancy or previous transfusion.
(Antibodies: cells of the immune system that attack foreign substances).

Signs and Symptoms of a Delayed Reaction
Jaundice
(Yellowing of skin or white of the eye)
Hives, rash or itching
Fever and/or chills and shaking
Nausea and vomiting
Low blood pressure
Dizziness or fainting
Headaches, seizures
Tiredness and weakness
Decrease in urine output
Dark coloured urine
Unexplained bleeding or bruising
(Nose bleeds, blood in urine)

What you should do
If you experience any of the delayed symptoms listed in the days following a blood or blood product transfusion, which cannot be explained by your medical condition, it is strongly recommended that you notify either your:

- Doctor (GP)
- Aboriginal Medical Service
- Treating Specialist
- Unit or Outpatient clinic where you received the transfusion

Alternatively:

- Present to your nearest Emergency Department
**ABO Blood Groups**

Our red blood cells, like all cells, are covered in protein and sugar (carbohydrate) antigens. A and B are different sugars on the surface of the red cells. O cells don’t have either sugar.

If A and B antigens are sugars, can I change blood type with my diet?

No. The type of sugar on your red cells is genetically determined and you cannot change it.

Can I be more than one type?

If you have the A sugar, you have ‘Group A red cells. It is possible to have both A and B sugars – then your group is AB.

Why does this matter?

Everyone has antibodies against any missing antigen. If you have B antigens, you will have antibodies which will attack and destroy A red cells. If you give a bag of A blood to a B patient, the patient’s anti-A antibodies will attack these cells and the patient could have a severe, or even fatal, reaction. Getting the blood type correct is really important!

What are antigens?

They are proteins or carbohydrates which our immune system can recognise. Any antigen that is ‘foreign’ to our immune system is destroyed by an antibody.

What are antibodies?

These are attack molecules our system makes to protect ourselves against foreign things such as bacteria and viruses.

How can an O negative donor be a ‘universal donor’?

Good pick up. People who are group O have antibodies to A and B called Anti-A and Anti-B. These antibodies are in the plasma, the water and protein part of our blood. We can give O negative Red Cells to anyone, but we cannot give O negative plasma to everyone (due to the antibodies). When we refer to ‘universal donor’ we really mean ‘universal red cell donor’ – the red cells are safe to give to everyone. The plasma from group O donors has both anti-A and anti-B and should only be given to group O patients.

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**BLOOD FACT**

The anti-A and B antibodies are said to be ‘naturally occurring’. They actually form after birth in response to bacteria in the gut.
**NOTIFICATION OF ADVERSE TRANSFUSION REACTION**

**Please complete form and forward copy to transfusion service (fax numbers are below). Retain original in patient notes.**

Copy sent to: ____________________________________________________________ Date: / /

<table>
<thead>
<tr>
<th>Product type and donation/batch number</th>
<th>Transfusion details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red cells</td>
<td>Date of transfusion / /</td>
</tr>
<tr>
<td>Platelets</td>
<td>Time product commenced (24 hrs) :</td>
</tr>
<tr>
<td>Fresh frozen plasma</td>
<td>Time reaction started :</td>
</tr>
<tr>
<td>Albumin</td>
<td>Amount transfused  ¼ ½ &gt; ½</td>
</tr>
<tr>
<td>Immunoglobulin</td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
</tr>
</tbody>
</table>

**TRANSFUSION REACTION DETAILS**

<table>
<thead>
<tr>
<th>Baseline vital signs</th>
<th>Peak/throgh vital signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp</td>
<td>BP</td>
</tr>
<tr>
<td>Resp. rate</td>
<td>Heart rate</td>
</tr>
<tr>
<td></td>
<td>mmHg</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>BP</td>
</tr>
<tr>
<td>Resp. rate</td>
<td>Heart rate</td>
</tr>
<tr>
<td></td>
<td>mmHg</td>
</tr>
</tbody>
</table>

**OTHER SIGNS AND SYMPTOMS**

- Respiratory: □ wheeze □ tachypnoea □ dyspnoea □ stridor □ pulmonary oedema
- Skin: □ urticaria: isolated □ extensive □ rash: macular □ other
- Systemic: □ facial oedema □ other oedema □ anaphylaxis
- CNS: □ LOC □ anxiety □ confusion □
- Pain: □ VAD site □ infusion arm □ back/loin pain □ other
- Bleeding: □ VAD site □ skin (purpura) □ haematuria □ other

Comments and further description: ____________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

Management and interventions: ________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________
________________________________________________________________________________________

☐ All bags and giving set returned ☐ 9 mL EDTA sample and request form to Transfusion service
Please ensure form and specimen meets labelling requirements, complete collector declaration

☐ Check label and pt ID ☐ FBC ☐ Coags ☐ Biochem ☐ Blood gas ☐ Urine ☐ Blood cultures ☐ IIMs
☐ Other

Name: __________________________________________ Position: __________________________ Date: / /
Signature: __________________________________________ Contact number: __________________________

Appendix 4
Introduction to Intragam 10

Introduction of Intragam® 10

*Human Normal Immunoglobulin* 10% (10g/100 mL), solution for intravenous infusion.

From 1st March 2017 INTRAGAM 10 will be introduced and will eventually replace the current product INTRAGAM P (Human Normal Immunoglobulin 6% (6g/100mL), solution for intravenous infusion). The INTRAGAM 10 is manufactured using the same core plasma fractionation process as its parent product INTRAGAM P. The three main differences between INTRAGAM 10 and INTRAGAM P are as below:

<table>
<thead>
<tr>
<th>Concentration of Normal Human Immunoglobulin</th>
<th>INTRAGAM 10</th>
<th>INTRAGAM P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabiliser</td>
<td>10% – 10g/100mL</td>
<td>6% – 6g/100mL</td>
</tr>
<tr>
<td>Dedicated pathogen removal steps</td>
<td>Includes nanofiltration</td>
<td>Does not include nanofiltration</td>
</tr>
</tbody>
</table>

Things to consider when patients transition from one IV Ig product to another

When transitioning patients from one IV Ig product to another, including transitioning from INTRAGAM P (6%) to INTRAGAM 10 (10%), starting new patients on IV Ig, or starting patients who have not received IV Ig for a long time, there are a number of clinical considerations to be mindful of, including patient risk factors, adverse effects and infusion rates etc.

Patient Risk Factors and Adverse Events

Infusion rates should be individualised to the patient’s clinical state and IV Ig tolerability. Consideration should be given to reducing the rate of infusion in patients who have not received INTRAGAM 10 before, in those switching from an alternative IV Ig, those who have not received IV Ig for a long time and in elderly and paediatric patients.

In patients at risk of aseptic meningitis syndrome, renal failure, or thromboembolic adverse reactions, IV Ig products should be administered at the minimum rate of infusion and dose practicable.

For patients with a history of Aseptic Meningitis Syndrome, migraine or frequent headaches the following precautions should be taken:

- ensuring adequate hydration prior to commencement of infusion
- administration of a pre-medication if needed prior to each infusion
- administration of the minimum dose at the minimum rate practicable

**Important: Please read the next page for more information about adverse effects and transition infusion rates**
Carefully monitor patients for any symptoms throughout the infusion period.

In the case of an adverse event, the rate of administration should be reduced, or the infusion stopped to alleviate symptoms. Once a reaction has resolved, based on clinical judgement, the infusion may cautiously be recommenced at a slower rate.

Reporting adverse events is important and it allows continued monitoring of the benefit/risk balance of the product. Healthcare professionals are asked to report any suspected adverse reactions.

IVlg Infusion Rates\textsuperscript{2,3}

\textbf{INTRAGAM 10 (10\%)} is 40\% more concentrated than \textit{INTRAGAM P} (6\%). This means that if INTRAGAM 10 is administered at the same infusion rate as \textit{INTRAGAM P} the patient will receive their total dose 67\% faster.

Infusion rates should be individualised to patient risk factors, comorbidities and tolerability.

A hypothetical patient example is provided below - it is important each patient is assessed and assigned appropriate infusion rates.

There are a number of infusion options for transitioning a patient to INTRAGAM 10. One option, for at least the first initial infusions, could be to infuse INTRAGAM 10 using an infusion rate step up where the patient is administered the same IgG dosage per hour as they were receiving with their previous IVlg product. This means the overall infusion time would be the same. The infusion rates used should not exceed the recommended infusion rates in the INTRAGAM 10 Product Information.

The table below provides the recommended infusion rate steps for \textit{INTRAGAM P} and the corresponding infusion rates required for INTRAGAM 10 to deliver the same IgG dosage per hour.

<table>
<thead>
<tr>
<th>INTRAGAM P (6%)</th>
<th></th>
<th>INTRAGAM 10 (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended infusion rate steps for INTRAGAM P</strong></td>
<td><strong>Infusion rate conversion to deliver the same IgG dosage per hour as INTRAGAM P</strong></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>Dosage per hour</td>
<td>Rate</td>
</tr>
<tr>
<td>60 mL/hr</td>
<td>3.6g/hr</td>
<td>36 mL/hr</td>
</tr>
<tr>
<td>120 mL/hr</td>
<td>7.2g/hr</td>
<td>72 mL/hr</td>
</tr>
<tr>
<td>180 mL/hr</td>
<td>10.8g/hr</td>
<td>108 mL/hr</td>
</tr>
<tr>
<td>240 mL/hr</td>
<td>14.4g/hr</td>
<td>144 mL/hr</td>
</tr>
</tbody>
</table>
## 9.0 NNSW LHD Clinical Procedure Cover Sheet

<table>
<thead>
<tr>
<th>COVER SHEET</th>
<th>NNSW Local Health District CLINICAL Policy Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name Of Document</td>
<td>Blood Products – Administration</td>
</tr>
<tr>
<td>Type of Document</td>
<td>Procedure</td>
</tr>
<tr>
<td>Document Number</td>
<td>NC-NNSW-PRO-6975-13</td>
</tr>
<tr>
<td>Superseded Document</td>
<td>NC-AREA-PRO-3301-08</td>
</tr>
</tbody>
</table>

**Sites/Services where compliance with this procedure is mandatory.**

- All NNSW LHD

**Related Ministry of Health PDs, LHD Documents or Australian Standards:**

- PD2013_049 [Recognition and Management of Patients who are Clinically Deteriorating](#)
- NSW Health Risk Matrix
- NSW Health PD2012_016 [Blood - Management of Fresh Blood Components](#)
- [National Safety and Quality Health Service Standard 7: Blood and Blood Products](#)
- ANZSBT Administration of Blood Products Guidelines

**Risk Management**

Failure to correctly identify, prepare and monitor the patient during administration of blood products remain significant causes of patient morbidity and mortality.

**Current Risk Rating**

I – Major / Unlikely

**Targeted Risk Rating**

L – Major / Rare

**Date Created**

August 2007

**Date of Publication**

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**Next Review Date**

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**Aboriginal Health Advisory Committee Registration Number**

CG/2013/55

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| Clinical Authority | NNSW LHD Health Care Quality Committee |
| Management Authority | NNSW LHD Health Care Quality Committee |
| Executive Sponsor | Executive Director Clinical Governance |

| Key Words | Blood products, transfusion, infusion rate, observations, adverse reaction, storage, identification, compatibility, intravenous, and misidentification. |

| Summary | Procedure on safe administration of blood and blood products to ensure patient safety. |

| Date Approved for Electronic Distribution by NNSW LHD Chief Executive | 15 September 2016 |

| Signature NNSW LHD Chief Executive | Wayne Jones |

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**NC-NNSW-PRO-6975-13**

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