

Policy
 Compliance
 Procedure



Blood and Blood Products: Administration and Management for Neonatal and Paediatric Patients

Sites where PCP applies	All Hunter New England Local Health District (HNELHD)
This PCP applies to:	
1. Adults	No
2. Children up to 16 years	Yes
3. Neonates – less than 29 days	Yes
Target audience	All HNELHD Health staff notably all clinicians in Emergency Department (ED), Operating Theatre, Intensive Care, Paediatrics
Description	Best clinical practice in patient blood management and the administration of blood components and blood products to infants, children and adolescents.
Hyperlink to Procedure	
NSQHS standards this PCP relates to	1, 2, 7 & 8 Patient Blood Management, Blood Products, Blood Components, transfusion, paediatrics, neonates, administration
Keywords	
This PCP relates to NSW Ministry of Health Policy Directive	NSW Health PD2012_016 Blood - Management of Fresh Blood Components and PD2005_406 Consent to Medical Treatment - Patient Information
PCP number	PD2018_042:PCP 2 and PD2005_406:PCP 2
Replaces existing PCP?	Yes
Document number, name and dates of superseded document/s	Patient Blood Management and Transfusion of Blood and Blood Products for Neonatal and Paediatric Patients PD2012_016:PCP 2 and PD2005_406:PCP 2 Version One from 17 March 2015
Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:	
<ul style="list-style-type: none"> - National Blood Authority (NBA) Patient Blood Management Guidelines: Module 6 Neonatal and Paediatrics - NSQHS Standards 2nd edition: Standard 7 Blood and Blood Products - ANZSBT/Royal College of Nursing “Guidelines for the Administration of Blood Components”, 3rd Edition, January, 2018 - Department of Health South Australia/Australian Red Cross Blood Service “Flippin Blood” 2nd Edition, June 2012 - NPAAC STANDARDS Requirements for Transfusion Laboratory Practice (Third Edition 2017). 	
Tier 2 Director responsible for Policy	Karen Kelly, Director Acute Operations
PCP Contact Position and Network or Service etc. responsible for the PCP	Dr Bryony Ross, Staff Specialist Paediatric Haematology
Contact Details	Bryony.Ross@hnehealth.nsw.gov.au
Authorised by	Karen Kelly, Director Acute Operations
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This PCP contains advice on therapeutics	No
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Note: Over time links in this document may cease working. Where this occurs please source the document in the PPG Directory at: <http://ppg.hne.health.nsw.gov.au/>.

Risk statement

Emerging evidence of harm caused by blood transfusion and a lack of evidence for benefit of transfusion (except in acute haemorrhage, bone marrow disease or suppression) requires a precautionary approach. Fatal and severe transfusion reactions and long term morbidity can occur if appropriate decisions and procedures are not followed.

Risk Category: Clinical Care and Patient Safety

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Summary

This policy compliance procedure (PCP) has been developed for use by all clinicians, health service managers and staff and defines the mandatory requirements for patient blood management and the transfusion process including:

- Screening and appropriate treatment of anaemia
- Transfusion of neonates and paediatric patients
- Utilizing cell salvage to avoid transfusion
- Single unit transfusion
- Patient identification
- Prescription and consent
- Administration procedures
- Collection of blood/blood products from the laboratory/storage facility for delivery to a ward or treatment area
- Documentation of observations and adverse reactions.

This PCP provides guidance in areas central to the provision of patient blood management and covers identification and treatment of anaemia, utilization of cell salvage and single unit transfusion. Patient Blood Management (PBM) incorporates 3 Pillars:

Pillar 1: Management of correctible causes of anaemia with targeted therapies to avoid transfusion

Pillar 2: Minimizing blood loss

Pillar 3: Optimization of the patient's physiological ability to tolerate anaemia

PBM and resulting transfusion therapy is an integral part of health care throughout NSW.

The NBA PBM Guidelines have been produced after review of the available evidence and provide recommendations and practice points to guide clinical decisions and practice.

The policy compliance procedure supports the use of the clinical tool Paediatric/Neonatal Blood and Blood Component and Product Administration form (HNEMR-17C), which assists HNE Health clinicians in decisions about transfusion practices, and supports:

- John Hunter Children's Hospital Neonatal guideline: Blood administration and Blood products in NICU
- NBA Patient Blood Management Guidelines: Module 6 Neonatal and Paediatrics
- NHQHS Standard 7 2nd edition: Blood and Blood Products
- ANZSBT Guidelines
- NPAAC Standards
- NSW Health PD 2018_042 Blood – Management of Fresh Blood Components
- Consent provisions of PD 2005_406 relating to Transfusion Management
- Paediatric MTP: JHCH, JHH
- Babies receiving a blood transfusion: A parent's guide.

Abbreviations:

PCP	Policy Compliance Procedure
PD	Policy Directive
PPG	Policy Procedure and Guideline
PBM	Patient Blood Management
ANZSBT	Australian & New Zealand Society of Blood Transfusion
ARCBS	Australian Red Cross Blood Service (The Blood Service)
CMV	Cytomegalovirus
DMR	Digital Medical Record
HETI	Health Education & Training Institute
HNEMR-17C	Form number for paediatric blood and blood product
IIMS	Incident Information Management System
MRN	Medical Record Number
NBA	National Blood Authority
NPAAC	National Pathology Accreditation Advisory Council
NSQHSS	National Safety & Quality Health Service Standards
SPOC	Standard Paediatric Observation Chart

Obligations of Clinical Staff

A clinician (medical practitioner or nurse) must ensure they are aware of the requirements for PBM according to the three pillars of PBM described in the NBA Guidelines. If transfusion is unavoidable, clinicians must be aware of the requirements for safe and appropriate use of blood components and blood products.

HNE Health requires clinicians who are responsible for either ordering or administering blood components and blood products to neonates or paediatric patients to use the Paediatric/Neonatal Blood Components and Blood Product Administration form, HNEMR-17C.

The HNE Health staff member responsible for starting the transfusion is responsible for verifying that:

- The transfusion complies with NBA PBM guidelines, and the reason for the transfusion is documented
- Written consent is obtained, and treatment options for avoiding transfusion have been discussed
- A valid order for blood is documented before requesting blood from the Hospital Blood Bank or before release through the eBlood remote release system.

Commencement of the transfusion may not proceed without all verification details being met.

General Considerations

1. The Neonate (up to 4 months post birth)

- Rarely will a neonate require an exchange transfusion
- The on-call neonatologist at a tertiary centre (John Hunter Children's Hospital) **MUST** be contacted if considering an exchange transfusion (NSW Health GL2007_001)
- If transfer of the baby is contemplated, that discussion should occur via the NSW Newborn and paediatric Emergency Transport Service (NETS) Clinical Coordination Centre: 1300 362500
- All blood transfusion to neonates should be with blood that is <7 days old, CMV negative and irradiated. If there are any concerns please contact the on-call neonatologist at a tertiary centre (John Hunter Children's Hospital).

When blood transfusion is unavoidable, and appropriate according to the NBA PBM Guidelines, a conservative minimum volume should be prescribed according to the formula for paediatric transfusion: either 15ml per kg – or packed cells (mls) = wt (kg) x Hb rise required (g/L) x 0.4.

Patients with anaemia, (for example iron deficiency anaemia) are at higher risk of complications, and inappropriate transfusion. Identification and targeted treatment of the anaemia reduces unnecessary transfusion.

Emergency Transfusions - Consent

Where emergency transfusion is required to prevent death or serious harm and the patient or responsible person is not able to consent, the most senior medical officer is authorised to approve and document the need for transfusion. Once a patient or their responsible person is able to provide or refuse consent this should be documented.

Parents and responsible persons of minors do not have the right to refuse emergency transfusion. This is covered under "special medical treatment" provisions section 28 PD2005_406. They do have the right to refuse consent for transfusion if death or serious harm is not likely to occur as a result of the refusal.

Paediatric Massive Transfusion Protocol

This procedure sets out the steps to be followed when activating massive transfusions in paediatric and neonatal patients at the JHH and JHCH sites. The procedural components are considered mandatory. This local procedure has been developed to provide direction to staff and ensure that the risks to patients and staff associated with activation of massive transfusion protocol are identified and managed. Intended outcomes are to achieve haemostasis in paediatric/neonatal patients with critical bleeding and reduce post injury

morbidity such as acute respiratory distress syndrome, multiple organ failure and death. Paediatric Massive Transfusion Protocol link is in Appendix of this document and available on the HNE intranet <http://ppg.hne.health.nsw.gov.au/>.

Consent

NSW Health Policy PD2005_406, section 29 states that written consent is required prior to the administration of blood products. The patient or their responsible person should be given information sheets in English or other relevant language to assist informed consent. The CEC brochure "A General Guide to Blood Transfusion. Information for Patients & Families" and/or specific information provided for children should be used. For Babies "Babies receiving a blood transfusion: A guide for parents", should be used. A link to this is in the appendix of this document.

Blood components include red cells, platelets, fresh frozen plasma, cryoprecipitate and cryo-depleted plasma. Blood products include Albumin (Albumex 4 and 20), Anti-D Rh Immunoglobulin, Intravenous Immunoglobulins, specific immunoglobulins (eg.CMV, Zoster, Normal Ig) and clotting factors. All products derived from or containing plasma are included.

The HNEMR17-C form is to be used for documenting consent to transfusion of all blood components and blood products. Refusal to consent must be documented on the HNEMR 17C form and in the medical record.

Patients or their responsible person may give consent for multiple transfusions in circumstances where it is likely that transfusion will be required on multiple occasions during an episode of care or on a chronic basis. Consent must be documented on the first HNEMR-17C form for any 12 month period and this HNEMR17-C will be used for the first transfusion episode. For subsequent transfusion episodes:

- the patient or person responsible does not have to provide written consent each time
- the staff member performing the transfusion must visually sight and verify the original written consent (hard copy or DMR) and document the date of this consent on the HNEMR17-C used for each transfusion episode.

If 12 months has elapsed since the original consent was documented or the original consent cannot be visually verified a new written consent must be obtained.

Prescription Requirements

The prescription must be written on the HNEMR17-C form, give a clear, legible instruction, and be checked at the patient's side before the transfusion takes place. The prescription must clearly state the date and time, blood component or product, dose and rate of infusion, and prescribers name and must be retained in the patient medical record.

Transfusion Verification Procedure

The verification procedure:

1. There is a prescription and valid consent for transfusion
2. **In the presence of the patient**, two staff members, a medical officer or registered nurse and another member of the clinical team (for example, an enrolled nurse or medical officer) must independently confirm the patient's identity by asking the patient/person responsible "what is your/the patient's name and date of birth?" checking that this is identical to the patient's identification band, issued units or products and blood product administration form.
3. For fresh blood components check the following are identical:
 - a. The unit number on the blood component label
 - b. The unit number on the laboratory compatibility form
 - c. The laboratory compatibility label.
4. For blood products check the following are identical:

- a. The product batch number
 - b. The batch number on the laboratory blood product issue form
 - c. The batch number on the blood product issue label.
5. Check the expiry date on the blood component or product. Do not proceed if the product has expired.
 6. Check that any special requirements such as CMV Negative, or Irradiated are met.
 7. Check the blood product for integrity – discolouration of blood product, consistency of product, intact seals.
 8. Advise the patient, or the responsible person to report any new or changed symptoms.

The transfusion verification procedure must be carried out for all transfusions in HNE Health. Completion of the checklist on page 2 of the HNEMR17-C form is required. The administering clinician should initial each step as it is completed.

Transfusion Administration Procedure

Administration of blood components must comply with ANZSBT/College of Nursing “Guidelines for the Administration of Blood Components” 3rd edition, January 2018. In HNE Health the record of administration, will be recorded on page 2 of the HNEMR17-C form.

All observations should be recorded on the appropriate age specific observation chart, ICU flow chart or electronic monitoring system.

Observations must include a baseline set of observations (ANSBT Guidelines state that temperature, pulse, respiration and blood pressure are a minimum observations required for all blood and blood products), a set of observations 15 minutes after the commencement of the blood and then hourly until completion for red cells and 30 minutes post completion. For blood products refer to the product guidelines and local guidelines.

If the patient has a temperature >38°C, check with the MO as to whether the transfusion should be delayed.

All blood products for neonatal and paediatric patients must be transfused via a giving set containing a 170-200 micron filter and infusion pump with the exception of Stem Cells used for Autologous Transplantation which is unfiltered. Most standard giving sets contain appropriate filters. The FNC1119 Baxter® Continuous – Flo Blood/Solution set currently in use has a 200 micron filter. The ME-B8050 REM® Neonatal Blood Set contains a 180 micron filter. Note neonates are given all blood products via a syringe driver.

Blood products **must** be transfused via a new infusion set primed with 0.9% normal saline, **NOT** an infusion set that has had drugs or other solutions infused through it.

Infusion sets suitable for the administration of blood or blood products should be changed after every 2nd unit of blood, or if more than 4 hours elapses between units, and on the completion of the therapy.

The use of interlink connectors are suitable for blood product infusions.

Prime the giving set with 0.9% Normal Saline.

Commence the transfusion within 30 minutes of the blood product leaving the monitored blood fridge.

The rate of infusion may vary according to the patient’s medical condition, age and the medical orders, but must not be longer than four (4) hours per unit of packed cells in paediatric patients and 4.5 hours in neonates. This time commences when the blood left the laboratory or blood fridge.

Any part of a unit of packed cells that has not been transfused within four (4) hours or 4.5 hours in neonates must be discarded because of the high risk of bacterial contamination in blood that has been un-refrigerated for longer than 4 hours.

If both packed cells and platelets are required, where possible give the platelets first.

The volume of a unit of packed red cells is written on the unit label – record this on patient fluid balance.

Other blood components and blood products should be transfused in accordance with specific clinical guidance and according to package inserts.

Neonatal and Paediatric Infusion Rates

- 1.1 Will be calculated and ordered by the medical officer and documented as the time to be infused.
- 1.2 Volumes and rates are weight based for neonatal and paediatric patients.
- 1.3 For overweight paediatric patients, consider using ideal body weight.

The patient must be assessed for their response to the transfusion, and this response documented on the HNEMR17-C form.

The empty bag/bottle is discarded according to HNE Health Policy for disposal of clinical waste.

Adverse Event During or Immediately after Transfusion

The staff member responsible for completing the transfusion must verify with a signature whether an adverse event occurred, and ensure this is documented and reported to the IIMS system. Any adverse reaction to transfusion caused by the blood component must be reported to the laboratory and The Blood Service. Documentation is on page 4 of the HNEMR-17C form.

The staff member administering the transfusion is responsible for notifying the responsible medical officer of an adverse event. During the transfusion episode, all calling criteria for Clinical Review and Rapid Response as per the age appropriate observation chart must be followed.

Obligations of the Hospital Transfusion Laboratory Service/Pathology Service/Designated Staff Responsible for the Storage and Dispensing of Blood and Blood Products

The hospital Transfusion Service is responsible for having in place the appropriate procedures for the storage and transportation of blood components and products according to the ANZSBT Guidelines, NPAAC Standards and NSQHS Standard 7.

Pre-transfusion testing of samples is to comply with the NPAAC Standards and ANZSBT Guidelines for Pre-Transfusion Testing. The laboratory is responsible for maintaining adequate blood and blood products stock to meet demand.

Collecting and Labeling of Samples

The sample must be labeled immediately it is collected, at the patient's side.

Sample labeling and the identity of the patient should occur at the time of collection using the verification procedure involving either one staff member and the patient, if appropriate, or two staff members.

Checks of sample labeling must include:

- Confirmation of the patient's name and date of birth. If a neonate, "Baby of" can be written as B/O and the mother's full name. If a twin please write "Twin 1" or "Twin 2" (NOT i or ii)
- Confirmation that the information matches the patient's identification band, and blood request form
- In the absence of an identification band the patient or responsible person must clearly state and spell the patient's full name and date of birth

If the patient or their responsible person is unable to provide details of name and date of birth, an UNIDENTIFIED number should be allocated according to the local Emergency Transfusion protocol

- **After blood collection the sample tube must be labeled at the patient's side with handwritten full name, MRN and date of birth, date and time of collection and the initials of the collector**
- **Addressograph labels must NOT be used to label pre-transfusion testing samples**
- Incorrectly labeled samples received in the Laboratory will not be used for pre-transfusion testing. In an emergency, group O non cross-matched packed cells will be supplied.

Request for Blood Components or Products to be Collected from the Laboratory or from a Storage Location for Delivery to a Patient

The request to the laboratory for collection of blood and blood products must be in writing on every occasion and contain patient identification including MRN and identify the product required.

The person collecting blood from a storage location must have written patient identification and document the removal of the product.

Minimum Requirements

The staff member who removes a blood component or product from storage or from a transport device, or who collects the blood from the Laboratory, must have written documentation containing the following patient identification and information.

- Surname and First name
- Medical Record number
- Date of Birth
- Product name, concentration and/or dose required

In an emergency the Patient Unidentified or Emergency Identification system should be provided in writing.

Blood components (red cells, fresh frozen plasma, platelets, cryoprecipitate) must NOT be delivered by Lamson tube.

Blood transfer between facilities remote from a Blood Bank refrigerator will occur via a packaging system that has been approved by the HNE Health Patient Blood Management Committee.

The Laboratory is responsible for undertaking regular quality control of the transport system and packaging equipment.

Obligations for Credentialing, Training and Education and Audit

Each health care facility providing transfusion therapy must establish a process for the review of transfusion issues. This is coordinated through the HNE Health PBM Committee. A hospital transfusion/PBM committee may be formed but is required to report to the HNE Health PBM Committee in relation to audit activities. Local processes responsible for education (including training for the transfusion verification procedure), monitoring and quality improvement must be in place.

The HNE Health intranet contains links to reference material including the Clinical Governance Policy, Procedure and Guideline Directory and websites provided by the NBA, ARCBS, CEC and BloodSafe eLearning Australia programs.

Credentialing Staff

Credentialing is mandated for all staff who participate in the blood transfusion process. Credentialing is defined as satisfactory completion of the BloodSafe eLearning Australia "Clinical Transfusion Practice" course. All new staff should complete this training within four weeks of commencing employment within a HNE facility and/or furnish evidence of previous completion.

Medical officers, nursing and midwifery staff should be encouraged to complete the Patient Blood Management module. Other courses - iron deficiency, postpartum haemorrhage, critical bleeding and perioperative modules are recommended as appropriate for the specific clinical area.

The BloodSafe e-learning Australia package is found on the HNE Health Intranet through Other Useful Links, "B" and via the HETI home page.

Staff members who are involved only in transport of blood, or patient phlebotomy/ venepuncture for collection of the sample for pre-transfusion testing may do the "Transporting Blood" module, or "Collecting Blood Specimens" module, as appropriate to their responsibilities.

All Nurse Unit Managers/Managers are required to keep a record of credentialed staff. The record will be in the My Health Learning portal of the Intranet, according to the documentation requirements for registering completion of this course. Credentialing will be valid for two (2) years after which the BloodSafe eLearning Australia "Clinical Transfusion Practice" must be repeated.

Availability of Resources, Policy Compliance Procedure and Administration Guidelines

Clinical, unit managers are responsible for ensuring the most current copies of the following documents are readily available to staff in hard copy or electronically via the HNE PPG directory:

- HNE Health Policy Compliance Procedures on Patient Blood Management and Administration of Blood and Blood Products
- The NBA Patient Blood Management Guidelines
- NSQHS 2nd edition: Standard 7 Blood and Blood Products
- Department of Health South Australia/Australian Red Cross Blood Service 'flippin blood' 2nd Edition, June 2012
- ANZSBT/Royal College of Nursing 'Guidelines for the Administration of Blood Components'
- The NPAAC Standards "Requirements for Transfusion Laboratory Practice"
- Access to the BloodSafe e-Learning Australia "Clinical Transfusion Practice" program
- The ANZSBT Guidelines for Pre Transfusion Testing.

These documents and links can be accessed on the HNE Health Intranet.

Auditing Requirements at the Service/Facility Level

Information from audits on transfusion practice is reported on a regular basis to the HNE Health PBM Committee and the HNE Health Clinical Quality and Patient Care Committee on QARS, and to NSW Ministry of Health and Clinical Excellence Commission as required.

Compliance, Implementation and Monitoring of this Policy Compliance Procedure

The HNE Health Patient Blood Management Committee will implement this PCP and provide notice of the revision, education about the changes and monitor compliance. Periodic audits relating to documentation on the NHEMR17C form will be used to assess compliance with the revised PCP.

Feedback

Any feedback on this document should be sent to the Contact Officer listed on the title page.

Appendix:

- 1) Paediatric Massive Transfusion Protocol

http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0010/187570/JHH_JHCH_0130_Paediatric_massive_transfusion_protocol.pdf

- 2) Babies receiving a blood transfusion: A guide for parents

http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/0006/189168/Babies_receiving_a_blood_transfusion_v2.0.pdf