GUIDELINE

Blood Components and Blood Products: Administration

Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

Contents

Aim

This protocol is for medical and nursing staff prescribing, ordering, handling, and administering blood products in the Neonatology Units (KEMH/PCH 3B) and in KEMH theatres.

Risk

The transfusion of any blood component or product carries a risk of an adverse event. Adverse transfusion-related events can be acute (within 24hours of transfusion, sometimes within minutes of starting the transfusion) or delayed (after 24hours of transfusion, sometimes presenting weeks to months after the transfusion).

Blood Products and Components

Fresh blood components:	Fractionated blood products:
• Red Blood Cells • Platelets • Fresh Frozen Plasma • Cryoprecipitate	• Albumin (Alburex® 5/20) • Immunoglobulins • CMV hyperimmunoglobulin • Hepatitis B hyperimmunoglobulin
Refer to: KEMH Transfusion Medicine Protocols for more information on KEMH Transfusion Medicine for infants received blood products at KEMH NICU PCH Transfusion Medicine Protocols for more information on QEII Transfusion Medicine Unit for infants received blood products at PCH 3B NICU	

Pretransfusion Testing

- Pretransfusion testing is performed by the Transfusion Medicine Unit.
- All infants MUST be positively identified, and samples labelled using the mandatory core patient identifiers. The blood sample tube label MUST be handwritten and match the details on the request form EXACTLY.
- As the infants first name is not used routinely in the newborn period, the following details are needed for pretransfusion testing of infants.

INFANT UMRN:	INFANT SURNAME:	INFANT DOB:

- See DAT below for more information on compatibility testing
- MUST use the designated Transfusion Medicine (TM) Request Form

PRACTICE POINT (Refer to Identification of the infant (NICU KEMH))

- Only bleed one infant at a time. **NEVER** pre-label sample collection tubes
- **Sample volume: 0.5mL EDTA**
- Procedure/Patient Match Check prior to sampling: SURNAME, UMRN, DOB on the infant's ID band **is identical** to the details on the TM request form.
- Handwrite the sample tubes immediately after collection and before leaving the infant with the following details:
  - ✓ Infants SURNAME, UMRN and DOB
  - ✓ Maternal UMRN at KEMH
  - ✓ Date and time of collection
  - ✓ Confirm that the blood sample, request form and infant's details all match and initial the blood sample
  - ✓ Sign the declaration on the request form to verify patient identification checked (signature and initial on sample tube **MUST** be identical, the time and date of collection **MUST** match)
  - ✓ 2nd clinician to verify **independently** that all details are correct.

Group and DAT

- For the first neonatal transfusion, compatibility testing includes a group and DAT which consists of an ABO and Rh D type and a **Direct Antiglobulin Test or 'DAT'** (also known as Coombs' test) to identify bound maternal antibodies on the infant's red blood cells.
- Maternal testing: a maternal group and screen (6mL EDTA maternal sample) is required for all neonates requiring transfusion. The maternal group and screen should be collected within 72 hours of the birth or later.
  - If this not possible, a larger EDTA sample (1mL) is required from the infant to perform an antibody screen/identification.
  - If a maternal sample is unavailable OR if a link between mother and infant cannot be established, please contact Transfusion Medicine who will advise further.
- If the mother of the infant has a haemoglobin disorder (e.g., Thalassaemia, Sickle Cell disease) there will be a maternal **Haemoglobinopathy Management Plan** uploaded into the Digital Medical Record (DMR). See WNHS O&G Guideline: Neonatal screening for haemoglobin disorders. If no cord sample is available a peripheral blood sample will be needed to screen the infant for any disorder.
- The development of antibodies in infants is extremely rare in the first 4 months of life. Any antibodies present are usually maternal IgG antibodies that have crossed the placenta before birth.

- Where the neonatal DAT and maternal antibody screen are negative, no further samples for crossmatching are required during the hospital admission up to 4 months of age (see table below).
- Cord blood collected immediately following birth is **NOT** suitable for neonatal compatibility or crossmatch testing as cord samples are often of a poorer quality than peripheral samples AND samples are drawn before the infant has been assigned a UMRN and has no ID band attached.

Compatibility Testing	
If maternal antibody screen is **negative**	• Blood can be issued on demand during the neonatal period without further compatibility testing. • No further samples are required during the hospital admission up to 4 months, provided patient demographics do not change • It will be necessary to repeat transfusion medicine investigations in the event of a change to surname or addition of a first name.
If maternal antibodies are **detected**	• Full compatibility testing is required for each crossmatch. • Contact Transfusion Medicine for advice on sample collection.
If the infant is discharged and readmitted a new Group and DAT sample is required.	

Crossmatch

If there are no maternal antibodies, blood is issued electronically without a serological crossmatch. The computer ensures ABO compatibility.

If maternal antibodies are detected, a serological 37°C Indirect Antiglobulin Test crossmatch is required to ensure donor red cell compatibility.

If blood components or products are given prior to 48 hours of age, ensure Newborn Screening Test (NBST) is obtained **prior to commencing blood transfusion**. Document on back of NBST (Guthrie) card the reason for early testing.

Infants scheduled for surgery at PCH cannot be crossmatched at KEMH. They must be crossmatched at PCH.

Consent for Blood Components and/or Products

- Informed written consent is a requirement for all blood components and/or products prior to administration. Consent is to occur prior to the episode of transfusion and then remains valid for the remainder of the admission unless consent is withdrawn. MR417 Consent to Blood Products (Neonatology). Or

MR840.03 Consent to Treatment and Administration of Anaesthetics (has a section for consent to blood products).

- Parents/guardians shall be fully involved in the discussion and decision making and be fully informed of the risks, benefits, and possible alternatives to the proposed blood product(s) treatment by the prescribing Doctor
- Information shall be provided in a format that is easy to understand. **Non-English-speaking** parents/guardians / shall be provided with an interpreter. See Language Services Policy to arrange an interpreter.
    - Australian Red Cross Lifeblood (Resources)
    - CAHS Blood Transfusion for your baby
- Explain why the transfusion is recommended, the blood and/or products involved, the expected benefits, alternatives, and the implications of not giving a transfusion.
- Ensure a transfusion history is obtained (if relevant) and documented.
- Explain the risk of transfusion-transmissible infection. The Australian Red Cross Lifeblood publishes estimates of the residual risks of transfusion-transmissible infection as a guide for clinicians in transfusion decision-making processes.
- Discuss the likelihood of transfusion-related adverse reactions.
    - Each blood component and/or product transfused carries a small risk of an adverse effect.
    - Fever, chills and urticaria are the most common manifestations of a transfusion reaction.
    - Potentially significant and life-threatening reactions include acute and delayed haemolytic transfusion reactions, transfusion-transmitted bacterial infection (TTBI), anaphylaxis and transfusion-related circulatory overload (TACO) manifesting as pulmonary oedema, usually due to transfusion of large volumes of blood components.
    - For further information see Classification and incidence of adverse events (Australian Red Cross Lifeblood)
- Fractionated blood products from human plasma (e.g., immunoglobulins, albumin) include viral inactivation steps and so risks or viral transmission are lower.
- Always conclude by asking if there is anything they do not understand or if they would like to ask questions. Offer consumer fact sheets, as applicable.

Directed Donation

There is no evidence that blood from Directed Donors is any safer than blood from Anonymous Volunteer Donors attending the Australian Red Cross Lifeblood

(Lifeblood). In fact, there is published evidence to the contrary. Directed donation is not available at KEMH or PCH. CAHS Autologous and Direct Blood Donation – General Information for Clinicians

Emergency Blood Component and/or Product Transfusion

Consent will be sought at the earliest opportunity. In the event of the parent being unable to give consent, local, State or Federal legislation regarding consent for a medical procedure will apply. See WA Health Consent To Treatment Policy MP 0175/22 – 3.7.1 Treatment in an emergency (page 5).

Refusal of Blood Components and/or Products

Refusal may occur for a variety of reasons, including personal or religious beliefs (e.g., Jehovah's Witnesses). Whatever the reason for refusal, a discussion must occur between the parent/guardian and the senior clinician responsible for care.

Early identification of parents/guardians with objections to their infant receiving blood components and/or products allows for a specific care plan to be drawn up in conjunction with the consultant neonatologist and neonatal team.

Health professionals may also refer to the Human Tissue and Transplant Act 1982 (sect 21) for the legal situation that applies regarding medical practitioners performing a blood transfusion on a minor without consent. **Contact the Consultant Haematologist for advice in this situation.**

Collection, Storage, and Transporting Red Cell Units

KEMH & QEII Blood Banks provide a 24-hour service. A Transfusion Scientist is always available.

QEII: Vocera "Transfusion Medicine" Ext 34015

See PCH TM Manual for all **Blood Products Issue, Storage and Transportation** within PCH.

KEMH Transfusion Medicine

KEMH: Ext 82748

Blood stocks are held in monitored temperature-controlled fridges in Transfusion Medicine. Medical/nursing/midwifery or PCA staff may collect blood directly from Transfusion Medicine after a request for blood component and/or bloods have been made. The Pneumatic Vacuum Tube System (PTS) at KEMH is NOT to be used for the transport of blood components and/or products.

The collector should bring a non-refrigerated cool box for transport at room temperature or if necessary, a cool box will be provided from Transfusion Medicine. Ice bricks MUST NOT be used.

It is essential that the collector brings a Blood Collection Slip with the following information:

- Infant surname, “baby of” mother’s first name and UMRN, UMRN and/or DOB (use a patient label)
- Infant Ward/Clinical area and contact phone number of the requesting clinician
- Component/product type and quantity required.
- The Scientist will label the cool box with the requesting location, issue date and time.
- Immediately upon receipt, the staff member must take the blood component and/or product directly to the bedside.
- Infusion must commence within **30 minutes of issue**. Contact Transfusion Medicine if there is any delay (unforeseen or otherwise).
- Only a single (paedi-pack or mini-pack) unit will be issued at a time unless extremely rapid transfusion of large quantities of blood is required e.g., in an emergency situation. Contact Transfusion Medicine prior to collection.
- Blood **MUST NEVER** be stored in a ward or domestic refrigerator.
- The issue and usage of every unit must be fully documented in the patient record. Any wastage of blood products that are issued MUST also be documented and reported to Transfusion Medicine as it will be tabled in the Blood Management Committee (BMC).

KEMH Theatre Recovery Satellite Blood Fridge

- One adult uncrossmatched Group O RhD Negative red cell unit is kept in the KEMH **Theatre Blood Fridge** for emergency resuscitation of infants in theatre.
- Storage date/time of red cell units is logged in the KEMH **Theatre Transfusion Register.**
- The person removing the blood **MUST** log the time in the Register when blood is removed from satellite fridge into theatre.
- As this unit is for life-threatening resuscitation only - the transfusion must commence immediately
- If the unit is removed from the fridge and not used within 30 minutes, the unit must be returned to the theatre blood fridge.
    - Log the time back into the fridge.
    - Transfusion Medicine must be informed of any delays/unknown removal times.
- It is the responsibility of the neonatal team and/or attending midwife to document the outcome of this unit following its removal (i.e., transfused or discarded).

Refer to:

- Resuscitation: Emergency Transfusion of Group O RhD Negative Blood in KEMH Theatre
- Critical Bleeding Protocol: Downtime Procedure in the event of theatre recovery satellite fridge failure
- Critical Bleeding Protocol (Neonatal)

Prescribing Blood Components and Products (Indication, Volume and Rate)

For NICU Ward 3B also see PCH Transfusion Medicine Manual Red Cells (RC) Prescribing, Ordering and Administration

Red Cells

- Red cells are leucodepleted blood with most of the plasma removed.
- Red cells given to infants are **CMV negative**. CMV negative blood products minimise the risk of transfusion-transmitted cytomegalovirus (CMV) which is a common virus carried by leucocytes and are required in all infants less than 4 months of age.
- A single (paedi-pack or mini-pack) is supplied for small volume transfusions. Fresh adult red cell units are supplied for large volume transfusions e.g. exchange transfusion.
- Shelf life up to 35 days at 2-6°C with appropriate additive.
- Prescribe transfusion to run over a three-hour period unless otherwise indicated.

Infants thought to be at high risk of necrotising enterocolitis (NEC):

  - Cease feeds 4 hours prior to giving a blood transfusion and commence replacement IV fluids (at the discretion of the attending consultant).
  - Change any oral medications to IV, if applicable
  - Feeds can be recommenced 4 hours post transfusion at the same type and rate as before the transfusion.
  - Infants >40 weeks corrected age requiring a blood transfusion are generally not required to fast
- For further details on typical unit content and specifications see: Australian Red Cross Lifeblood - Red Cells
- See Special Requirements for information on irradiation of red cells.

Indications for Red Cells / Haemoglobin Thresholds in neonates
• The decision to give a red cell transfusion is based on an assessment of the infant's clinical condition, signs and symptoms, and response to previous transfusions, and is not dictated by Hb concentration alone. • Symptomatic anaemia and/or acute blood loss: give 20 mLs/kg or volume = desired Hct (45%) x 1.6 x Wt (kg). • Contact Consultant Neonatologists for advice. The Haematologist/Transfusion Medicine are also available for additional advice on blood components and/or products. • All infants that require a blood transfusion or exchange transfusion prior to 48 hours of age are to have a Newborn Screening Test (NBST) collected prior to commencement of the transfusion. Document on the back of NBST card the reason for early testing. See neonatology guidelines: Anaemia Guideline Thrombocytopenia

Platelets

- Platelets are prepared from both apheresis and whole blood donations.
- Both apheresis and pooled platelets are leucodepleted during or soon after collection and are also irradiated before release.
- Platelets are not stocked on site at KEMH therefore they are not immediately available and need Consultant Haematologist approval. Platelets will need to be ordered and transported from Lifeblood so please indicate the degree of urgency when contacting Transfusion Medicine to request platelets.
- Can be stored for 7 days after collection at 20 – 24°C with gentle agitation. Platelets MUST NOT be refrigerated.
- Platelets are usually selected on an identical ABO and Rh D compatibility basis. Non identical platelets may be used if identical platelets are not available. Transfusion Medicine will attach a label to the unit stating that the blood group is not identical to the patient but is suitable for use. Transfusion Medicine should be contacted with any concerns prior to transfusion.
- Start transfusion slowly for first 15 minutes. Administer over 30 minutes per pack.
- For further details on typical unit content and specifications see Australian Red Cross Lifeblood – Platelets

Guideline thresholds to trigger platelet transfusion in neonates. See Anaemia Guideline Thrombocytopenia	
Platelet Count: **<30 (x10^9/L)**	• Known or suspected fetal & neonatal alloimmune thrombocytopenia (NAIT) in term infant • Stable term or preterm infants with asymptomatic thrombocytopenia and no bleeding
30 – 50 (x10^9/L)	Preterm infants with thrombocytopenia being treated for sepsis or requiring respiratory support
<50 (x10^9/L)	Known or suspected fetal & neonatal alloimmune thrombocytopenia (NAIT) in preterm infant
<100 (x10^9/L)	Other sites of bleeding (excluding intracranial)
• Dose is 10mL/kg. Contact Neonatologist for advice.	

Fresh Frozen Plasma (FFP)

- Separated from either a collection of whole blood or apheresis plasma and frozen within 18 hours of collection.
- FFP contains all coagulation factors. ABO compatibility is required.
- Can be stored for 12 months at –25º C or below in a monitored freezer. Transfusion Medicine must be contacted as FFP is only thawed immediately prior to transfusion.
- For further details on typical unit content and specifications see Australian Red Cross Lifeblood - Fresh Frozen Plasma

Indications for FFP
• Bleeding or abnormal coagulation in acute DIC, massive transfusion, liver disease or purpura fulminans (e.g., due to homozygous protein C deficiency). • Thrombotic thrombocytopenic purpura (TTP). • Dose is 10-15 mL/kg depending on clinical situation. Contact Haematologist for advice.

Cryoprecipitate

- Cryoprecipitate (cryo) is separated from Fresh Frozen Plasma (FFP) derived from whole blood donations or plasma collected by apheresis.
    - ABO compatibility is usually required.
- Can be stored for 1 year at below –25ºC in Transfusion Medicine in a monitored freezer.

- Transfusion Medicine must be contacted as cryoprecipitate is only thawed immediately prior to transfusion. Allow 5-10 mins for thawing and labelling. DO NOT REFRIGERATE.
- Each bag of cryoprecipitate is normally given “stat” (i.e. infused as fast as the patient and their IV access can tolerate) unless otherwise contraindicated by clinical condition and/or medical history.
- For further details on typical unit content and specifications see Australian Red Cross Lifeblood – Cryoprecipitate.

Indications for Cryoprecipitate
• Congenital hypo- or dysfibrinogenaemia associated with bleeding • Acquired hypofibrinogenaemia (e.g. associated with liver disease, critical bleeding or DIC)

Fractionated blood products

A range of products are manufactured from blood plasma through a process called fractionation, in which different types of proteins found in blood plasma are separated, purified, and concentrated into therapeutic doses. These include:

- Human Albumin Solutions
- Immunoglobulins

For detailed indications and ordering of fractionated products:

KEMH NICU see KEMH TM Protocols.

PCH 3B NICU see PCH TM Protocols

Special Transfusion Requirements and Circumstances

Transfusion-associated graft-versus-host disease (TA-GVHD)

- Transfusion-associated graft-versus-host disease (TA-GVHD) is a rare but usually fatal complication of transfusion. It occurs when enough viable T-lymphocytes are transfused alongside intended red cells and engraft in the recipient.
- Several factors between donor and recipient influence the likelihood of developing TA-GVHD. See Australian Red Cross Lifeblood TA-GVHD.
- Irradiation of cellular blood products can inactivate T-lymphocytes but has no impact on function of other cellular elements.
- Irradiation increases the rate of potassium leak from cells during storage.
- For large volume transfusion, the higher potassium content of the transfused unit/s may be clinically relevant.
- Irradiation reduces the shelf-life of red cells. Carefully check the expiry dates/times. If unsure of expiry date and time, contact Blood Bank.

Indication for Irradiated Red Cells
• Intra-uterine transfusion (IUT) of red cells or platelets • Infants receiving transfusion of red cell or platelets following IUT of red cells or platelets (until 6 months post birth) • Exchange transfusion following IUT • Directed donation (i.e., donation from first or second-degree relative) • Known or suspected T-cell immunodeficiency syndromes (e.g., DiGeorge syndrome, severe combined immunodeficiency)
Irradiation of red cells may be requested outside these scenarios, but essential transfusion should not be delayed whilst obtaining irradiated units.

RADSURE™ system.

- Blood component irradiation is identified using the Radsure™ system.
- A label is applied to the blood pack prior to irradiation.

If the word NOT is visible do not use product and ring Transfusion Medicine if concerned.

Extreme prematurity/low birth weight

Premature infants are considered physiologically immunocompromised. The extent of this depends on gestational age as well as the presence of other co-existing conditions (e.g., sepsis, respiratory disease, and poor nutritional status). Despite this immunocompromised, it has been suggested that infants are partially protected from TA-GVHD by either thymic tolerance or absence of co-stimulatory signals leading to inactivation or partial tolerance of donor cytotoxic lymphocytes.

There are rare reports of TA-GVHD affecting immunocompetent infants. While there has been a suggestion that those weighing <900g or born at <28 weeks gestation are at higher risk, the majority of reported cases occurred following directed donation. Routine irradiation of cellular blood component for premature/low birth weight infants is not currently recommended but available upon clinician request. In this case, use of irradiated components is recommended until 6 months after the estimated delivery date.

Cardiac surgery

There have been rare reports of TA-GVHD in infants undergoing cardio-pulmonary bypass surgery. A high level of suspicion should be maintained concerning co-existing cardiac defects and immunodeficiency. Routine irradiation of red cells or platelets for infants having cardiac surgery is not required in the absence of clinical/laboratory features suggesting co-existing T-cell immunodeficiency. If in doubt, irradiated blood components should be requested until a definite diagnosis is made.

Human immunodeficiency virus (HIV)

While HIV infection and acquired immunodeficiency syndrome (AIDS) result in T-cell immunodeficiency, TA-GVHD has not been described in children or adults with HIV/AIDS. In the absence of other indication, irradiated blood components are not recommended in this scenario.

Administration of Blood Components and/or Products

All blood components and/or products should commence infusing within 30 minutes of leaving controlled storage and be completed within the next 4 hours.

NICU 3B also refer to PCH Transfusion Medicine Manual Blood and Blood Products Checking and Administration

Follow standard precautions when handling blood components and/or products.

Infection Control Policy: CAHS Aseptic Technique.

For further guidance on administration of blood products see:

Neonatal Blood Product Administration (Quick Reference Guide)

Guidelines for the administration of blood products, 3rd Edition, 2019. Australian and New Zealand Society of Blood Transfusion/Australian College of Nursing.

Blood Administration Set and Equipment

- Fresh blood components (red cells, platelets, fresh frozen plasma, and cryoprecipitate) **MUST** be administered via the ‘neonatal closed blood giving set’ with a 170-200-micron filter to remove small clots and debris.
- Administer via syringe driver.
- Platelets MUST be transfused through a dedicated fresh (unused) blood administration set, as red cell debris may trap the platelets.
- Albumin and Intravenous Immunoglobulin can be administered through a standard IV line or a blood ‘giving set.’

- Blood Transfusion sets **MUST NOT be 'piggy backed'** into other lines.
- Flushing with 0.9% Sodium Chloride solution between red cell packs is not evidence based and may be unnecessary. However, it may be used to maintain IV access between red cell packs.
- The administration set can be used for 2-4 packs of red cells providing the flow rate remains adequate. In an emergency or theatre setting a maximum of 8-10 packs may be infused provided flow is adequate.
- Change blood administration set at least every 12 hours if continuing to transfuse, OR with new IV fluids, platelets or on completion of transfusion whichever comes first.

Incompatible Fluids / Acceptable Fluids and Blood Products

INCOMPATIBLE FLUIDS

DO NOT administered the following concurrently with blood components as they may cause clotting in the infusion line:

- Electrolytes/colloids containing calcium e.g., Haemaccel, Hartman's or Lactated Ringer's
- 5% glucose in water
- Alburex® 5%
- Alburex® 20%
- Hypotonic sodium solutions

ACCEPTABLE FLUIDS

- 0.9% Sodium Chloride.
- Plasma protein fractions or ABO compatible plasma.

Medication and Blood Products

- 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 in the bag.
- The only exception is the co-administration of morphine which does not adversely affect red cells if diluted in 0.9% Sodium Chloride and ONLY for analgesia via a continuous side arm infusion which has a non-reflux valve.
- Physical breaks in infusion lines may increase the risk of bacterial contamination of the component. If medication needs to be given use another lumen of a multi-lumen central venous access device if available. It is recommended that the blood

giving set line is not physically disconnected and reconnected mid transfusion. If medications MUST be administered intermittently:

- Stop the transfusion and flush the line with normal saline using the port closest to the patient. Ensure the line is clamped above the injection port.
- Administer the medication.
- Flush the line again with normal saline, unclamp the line. Restart transfusion. Ensure that this manoeuvre does not result in the transfusion exceeding four hours.

Blood warming devices

A specifically designed commercial device must be used with a visible thermometer and audible alarm that ensures that the blood is not warmed above 41ºC. A blood warmer is only indicated for exchange transfusions. Blood components and/or products **MUST NOT** be warmed by any other method.

- If the temperature exceeds 41ºC, discontinue the infusion and inform Transfusion Medicine.
- Record the operating temperature of the blood warmer in the medical record.

Prior to collecting a blood product check the following:

Also see Blood Administration Quick Reference Guide

Consent?	Completed and sighted (**MR417 Consent to Blood**)	**Yes / No**
Prescription?	• Blood component and/or product type is prescribed on **MR828.03 Blood Product Administration Record** and includes the indication, volume, duration of transfusion and special requirements if relevant.	**Yes / No**
High risk of NEC?	Withheld feeds for 4 hours prior to transfusion and start replacement IV fluids for infants at high risk of NEC.	**Yes / No**
Venous access is established and suitable?	IV access should be sufficient to maintain an adequate rate for the transfusion without risk of haemolysis. 24G is recommended for infants (26G for ELBW). Always check that any concurrent fluids are either via a separate line or can be ceased until the transfusion is completed.	**Yes / No**
NBST taken?	All infants that require a blood transfusion or exchange transfusion prior to 48 hours of age are to have a Newborn Screening Test (NBST) collected prior to commencement of the transfusion. Document on the back of NBST (Guthrie) card the reason for early testing	**Yes / No** **N/A**
Equipment ready at the bedside?	Syringe driver, neonatal blood administration set, luerlock syringe and infusion line	**Yes / No**

Infant has ID band x 2 in place?	As per Identification of the Infant Policy. Blood component and/or products must **NOT** be infused in the absence of two identity bands attached to the infant.	**Yes / No**
Pre-transfusion observations?	Document baseline observations: Temp, Pulse, Respirations, Blood Pressure	**Yes / No**
Staff availability?	Appropriately trained and competent staff available for the duration of the transfusion, including two staff to perform the blood product and infant identity checks at the infant's side.	**Yes / No**
If Yes to all send for the blood product. Remember 30-minute rule.		

Patient, Prescription and Pack Checking at the Bedside

When the blood component and/or product arrives from Transfusion Medicine check that the **Patient, Prescription and Pack** (3 Ps) identically match. Both persons checking should each confirm all details are correct independently of each other. This **'Double Independent Checking' process** may minimise the risk of error at the final checks before transfusion of blood components and/or products by conducting and confirming the checks independently of each other.

See BloodSafe eLearning. Clinical Transfusion Practice Video: Principles of Double Independent Checking.

INFANT IDENTIFICATION? • ID band x 2 in place, Check SURNAME, URMN and DOB.	**Yes / No**
PRESCRIPTION? • Blood component and/or product received matches blood component and/or product prescribed?	**Yes / No**
PACK CHECK? • Blood component and/or product label matches infant ID and prescription? • Inspect for leaks or splits, clots, discolouration, cloudiness? • Check expiry date and time? ABO Compatibility label? Blood Donation Number?	**Yes / No**
• If YES to all start the transfusion within 30 min of receipt. • Transfusion MUST be completed within 4 hours of leaving routine storage.	If NO and/or any discrepancies are found - do not proceed and contact: • KEMH Transfusion Medicine on x82748. • QEII x34015 or vocera "Transfusion Medicine"

Observations

Document infant's observations on Blood Transfusion Record MR735.1 as follows:

BASELINE (before collection of blood product)	• Temperature • Pulse • Respirations • Blood Pressure
15 MIN AFTER commencing blood product (each product)	
HOURLY during transfusion of product (each product)	
COMPLETION of blood product (each product)	

Transfusion completion - Medical Record Forms Documentation

Ensure all medical records forms have the necessary information documented at the completion of the transfusion episode.

- Consent to blood products (neonatology) MR417. Include indication for blood component and/or product administration and products to be administered.
- Blood product prescription, indication and administration on MR828.03
- Place the product (bag or vial) sticker on the MR828.03. Important for product/recipient tracing if needed.
- Date, start and stop times
- Checking signatures
- Patient's observations – baseline, during, post transfusion.
- Final volume administered on observation chart
- Do not return used bags to Transfusion Medicine unless a transfusion reaction has occurred. Empty bags should be discarded as per:
    - Waste Management Guidelines (KEMH NICU).
    - Waste Management CAHS (PCH 3B)

Management of Transfusion Reactions

Every transfusion of blood component and/or products carries a small risk of reaction and/or adverse event. Events can occur after a few millilitres and within minutes of starting an infusion and can be fatal. Patients MUST be closely observed during this period and incidents recognised promptly and escalated appropriately.

Reactions may be delayed and can occur days or even weeks following the transfusion. All reactions and adverse events MUST be reported immediately to the Transfusion Medicine and the Consultant Haematologist for advice on immediate management and investigation. Refer to:

Adverse Transfusion-Related Events (KEMH NICU)

Transfusion Reactions and Adverse Events (CAHS PCH 3B)

- 3B PCH - Complete the MR120.01 CAHS/PCH Transfusion Reaction and Adverse Incident Reporting Form.
- KEMH NICU – Complete the MR735.2 Transfusion Reaction and Adverse Incident Reporting Form.

Related CAHS internal policies, procedures, and guidelines

- Adverse Transfusion-Related Events (KEMH NICU)
- Alburex® 20 (Human Albumin 200g/L)
- Alburex® 5 (Human Albumin 50g/L)
- Anaemia
- Blood Products Issue, Storage and Transportation 3B
- CAHS Aseptic Technique
- CAHS Autologous and Direct Blood Donation – General Information for Clinicians
- Critical Bleeding Protocol
- Critical Bleeding Protocol: Downtime Procedure in the event of theatre recovery satellite fridge failure
- Exchange Transfusion
- Identification of the Infant Policy.
- Language Services Policy
- Newborn Screening Test
- Resuscitation: Emergency Transfusion of Group O RhD Negative Blood in KEMH Theatre (CAHS Neonatology Clinical Guideline)
- Thrombocytopenia
- Transfusion Medicine Protocols (PCH 3B)
- Transfusion Medicine Protocols KEMH NICU
- Transfusion Reactions and Adverse Events (CAHS PCH 3B)
- Waste Management CAHS (PCH 3B)
- Waste Management Guidelines (KEMH NICU).

References and related external legislation, policies, and guidelines

- Australian Red Cross Lifeblood (Resources)
- Blood Management Standard. Australian Commission on Safety and Quality in Healthcare. (2017)
- Guidelines for the Administration of Blood Products (3rd Edition 2019). ANZSBT
- Guidelines for Transfusion and Immunohaematology Laboratory Practice (1st Edition 2016). Australia and New Zealand Society of Blood Transfusion (ANZSBT)
- Patient Blood Management Guidelines. National Blood Authority
- Requirements for Transfusion Laboratory Practice (4th Edition 2019). NPAAC
- WA Health Consent To Treatment Policy MP 0175/22

- Minimum requirements - clinical samples and request forms (PathWest Laboratory Medicine WA)

Useful resources (including related forms)

MR828.03 Blood Product Administration Record

MR417 Consent to Blood Products (Neonatology).

MR840.03 Consent to Treatment and Administration of Anaesthetics

MR735.2 Transfusion Reaction and Adverse Event Incident Reporting Form

MR120.01 CAHS/PCH Transfusion Reaction and Adverse Incident Reporting Form.

BloodSafe eLearning. Clinical Transfusion Practice Video: Principles of Double Independent Checking.

CAHS Blood Transfusion for your baby (Parent Information)

This document can be made available in alternative formats on request.

Document Owner:	Neonatology		
Reviewer / Team:	Neonatology Coordinating Group and Chair of KEMH Blood Management Committee		
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Amendment Dates:	Revised and transferred to CAHS Neonatology Guideline set. Dec 2024 added dose of platelets.	Next Review Date:	Jan 2027
Approved by:	Neonatal Coordinating Group	Date:	25th Jan 2027
Endorsed by:	Neonatal Coordinating Group		
Standards Applicable:	NSQHS Standards: Child Safe Standards: 1,10		

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Appendix 1: Downtime Procedure in the event of KEMH Theatre Satellite Blood Fridge Failure

RESPONSIBILITIES OF KEMH TRANSFUSION MEDICINE UNIT

- Transfusion Medicine staff will return all blood including the neonatal emergency Group O RhD neg red cell unit back to the Transfusion Medicine laboratory
- An **Out of Order** sign will be placed on the fridge

In Hours Notification

- The TM Scientist will notify the Scientist-in-Charge TM.
- The Scientist-in-Charge TM or delegate shall notify the following:
    - The Neonatologist On Service and Duty Anaesthetists via Switchboard
    - Email hospital staff including HOD Neonatology, HOD Anaesthesia and Pain Management and EMH.AnaesthetistsConsultant@health.wa.gov.au
    - Email laboratory staff including Consultant Haematologists

Out of Hours Notification

- The TM Scientist shall notify the following:
    - The On Call Neonatologist and Duty Anaesthetist via Switchboard
    - Email the Scientist-in-Charge TM who will notify others as per the In Hours Notification.

RESPONSIBILITIES OF KEMH THEATRES

- Where transfusion is required, Neonatal staff or the attending midwife in Theatre should call TMU x82748 as soon as possible.
- Emergency Group O RhD Negative red cells for neonatal resuscitation will be issued on demand by TMU. One adult unit will be issued, paediatric minipacks will not be offered.
- Theatre staff are required to organise an orderly to collect blood urgently from TMU.
- Theatre will call TMU x82748 if emergency Group O RhD negative red cells are required for neonatal resuscitation. TMU scientist will only issue the designated **adult** Group O RhD negative red cell units. Minipacks will **NOT** be offered/supplied.
- Neonatal staff or the attending midwife in Theatre should call TMU for blood as soon as possible.

RESPONSIBILITIES OF NEONATAL UNIT (KEMH)

- When neonatologist on service receives notification of Theatre Satellite Blood Fridge failure they will:
- Notify NICU medical staff (SCN 2 Registrar pager 3249) and NICU neonatal nurse (Code and float nurse pager 2099)
- Medical and nursing pager holders will also ensure SCN 3 Nurse Coordinator is notified.

Appendix 2: Blood Administration Quick Reference Guide

Checking	Product	Indication	Administration Times	Observations
Prior to requesting Blood Components and products ensure staff and equipment are available. **Documentation:** • MR417 Blood Product Consent • MR840.03 Consent To Treatment and Administration of Anaesthetics • MR828.03 Blood Product Administration Record • MR489/491 Observation charts **Equipment:** • 170 – 200-micron filter administration set • Braun IV syringe driver **Double independent checking:** • PATIENT IDENTIFICATION • PRESCRIPTION • PACK **Fluid Compatibility:** • 0.9% sodium chloride. **Adverse reactions:** • Stop the transfusion • Call for assistance, consider "Calling 55" • Complete: MR735.2 (KEMH) MR120.01 (3B)	Red Cells (RBC) – **Must** be ABO and Rh compatible 	Clinically assess the patients need for transfusion • Acute blood loss • Symptomatic Anaemia • Exchange transfusion	• Stable patients 3hrs • Critically bleeding, "stat" or 30min • Must be completed within 4hrs of release from TM	• Baseline • 15 min after starting • Hourly • On completion
	Platelets – **Must** be ABO compatible 	• Major haemorrhage • High bleeding risk • Acquired or congenital platelet disorders **Platelets are not stored onsite at KEMH – Contact Haematologist for approval.**	15 - 30 minutes per Unit	• Baseline • 15 min after starting • On completion
	Fresh Frozen Plasma (FFP) - **Should** be ABO compatible 	• Abnormal coagulation due to major haemorrhage • Rare inherited bleeding disorders **Stored frozen. Transfusion Medicine will thaw on demand (<30min)**	30 minutes per Unit	• Baseline • 15 min after starting • On completion
	Cryoprecipitate (Cryo) – **Should** be ABO compatible 	Major Haemorrhage leading to fibrinogen deficiency **Stored frozen. Transfusion Medicine will thaw on demand (<10min)**	Given "stat" unless otherwise contraindicated by clinical history	• Baseline • 15 min after starting • On completion