ADMINISTERING BLOOD AND BLOOD PRODUCTS

See Haematology Transfusion Medicine Protocols for extra details as required.

INDICATION FOR BLOOD TRANSFUSION

To give an immediate increase in oxygen delivery to the tissues.

Consider Red Blood Cell (RBC) transfusion if:

1. Haemoglobin < 120 g/L in extreme illness or unstable Cyanotic Heart Disease to improve vital organ tissue oxygenation.
2. Acute blood loss (> 10%) causing hypovolemic shock with evidence of cardiovascular compromise not resolved with normal saline resuscitation.
3. Haemoglobin < 85 g/L in a stable newborn infant.
4. Haemoglobin < 90 g/L, low reticulocyte count (< 2%) and assisted ventilation / supplementary oxygen.

There is no clear cut evidence based guidelines for the giving of a RBC transfusion. The triggers used are laboratory values and non-specific findings.[1-5]

REDUCING THE NEED FOR TRANSFUSION

Minimise Iatrogenic Losses

1. Appropriate micro sampling using point of care testing.
2. Returning unused blood used to clear the line of fluid in central lines.
3. Removal of umbilical lines as soon as possible.
4. Using non-invasive monitoring.
5. Blood testing only when absolutely necessary.

WHAT TO ORDER FROM BLOOD BANK

At KEMH

1. Infants born less than 28 weeks gestation and are less than one month old or at consultants specific request: If require a cross-match, order 3 mini-packs on the transfusion request form.
2. All other infants on cross-match will be issued with a single min-pack.

At PMH

All infants are issued with single a unit.

Erythopoietin (rhEPO) - it is not possible at present to recommend the routine use of rhEPO. Cochrane reviews show marginal treatment effect. There is an increased risk of retinopathy of prematurity. Consider rhEPO in individual cases.

TRANSFUSION RISKS

See Transfusion Medicine Protocol Section 1.5: Transfusion Risks.

BLOOD TRANSFUSION VOLUMES (SUPPLIED AS PACKED CELLS WITH HCT 50-70 IN MINIPACKS)

- For acute blood loss: give 20 mLs/kg **or** volume = desired Hct (45%) x 1.6 x Wt (kg).
- Transfusion is to be ordered to run over a three hour period unless otherwise indicated.
- **NOTE:** Administration time should **never exceed 4 hours**.

BEFORE THE TRANSFUSION

1. Be aware of sensitivities relating to multicultural issues.
2. The leaflet **'**Blood Transfusion for Your Baby' is to be given to parents to read when obtaining informed consent.
3. Inform the parents of the need and reason for transfusion prior to the transfusion. Obtain consent and document on the MR417 "Consent to Blood Products (Neonatology)" If the baby has had previous blood products transfused, check that the previous consent is still current.
4. Refusal to permit blood transfusion should be referred to the consultant neonatologist.
5. If receiving blood products 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.
6. The Blood Bank will normally require samples from both the mother and the infant for the first crossmatch. All labels on the samples should be hand written, pre-printed patient labels are NOT acceptable and will be rejected. If no maternal antibodies are detected, further samples are not required up to the age of four months during the current admission. When antibodies are detected, the Blood Bank will advise if and when additional samples are required. If there is a surname change or addition to the name, the labs will require the infant to be re-bled.
7. Blood must never be accepted for transfusion without a patient identification compatibility label. In an extreme emergency where uncrossed O negative blood is required, the Transfusion Medicine / Shift scientist must **always** be notified. The Transfusion Medicine/ Shift scientist will issue the emergency blood through the blood bank computer system. A label will be printed with the patient's details and this will be attached to the O Negative blood bag.
8. Infants post intrauterine transfusion and infants receiving exchange transfusion must have irradiated blood to prevent graft versus host reaction.

9. In infants thought to be at high risk of NEC cease feeds 4 hours prior to giving a blood transfusion. Replacement IV fluids should be commenced and, if applicable, caffeine prescribed intravenously. Feeds are to be recommenced 4 hours post transfusion at the same type and rate as before the transfusion. Infants post 40 weeks corrected age requiring a blood transfusion generally are not required to fast. This decision remains at the discretion of the attending consultant.
10. An intravenous cannula must be in-situ and patent prior to blood being requested from blood bank.
11. The transfusion MUST be commenced within 30 minutes from leaving transfusion medicine. If there is a delay the blood is to be returned to transfusion medicine for storage.
12. On receiving the blood from the blood bank. Check 3 forms of identification on the infant's ID label - number, full name and date of birth against the compatibility label on the unit of blood and the medical records e.g. If recorded as 'Baby Smith' the labels must reflect this also. This checking procedure MUST be done at the bedside by two clinical staff one of whom must be a registered nurse or medical officer. Both staff must sign the blood prescription order/Transfusion Record Form MR735.
13. Next check the infant's blood group on the compatibility label on the pack with the blood group on the bag of blood. Note: The blood group on the bag may not be the same as the patient's blood group. If you need advice contact the Blood Bank scientist.
14. Check the expiry date of the blood product.
15. Check that the blood product pack number on the compatibility label match those on the pack.
16. Blood and blood products must be clearly labelled as CMV negative.
17. The infusion line should be flushed with normal saline to remove **glucose** solutions (including TPN) from the line immediately before commencing the transfusion and again after the transfusion is finished, and before recommencing glucose.
18. Medications must never be put in blood bags.
19. Check the prescribed volume and infusion rate is correct with a second person before starting infusion.

DURING TRANSFUSION

REMEMBER TO DOCUMENT:

Pre:	**HR, RR, Temp, BP and O_2 Sats**
At 15 Mins:	**HR, RR, Temp, BP and O_2 Sats**
Hourly:	**HR, RR, Temp, BP and O_2 Sats**
Post:	**HR, RR, Temp, BP and O_2 Sats**

Observations to be documented on MR489 or 491 and MR735.01

- All blood and blood products (RBC, FFP, Platelets, Cryo, sandoglobulin) should be transfused through a standard blood filter (170-200 microns) designed to remove blood clots and large aggregates formed during storage.
- Sets should be used and primed according to manufacturer's instructions.
- Commercially available Albumin (4% and 20%) does not need to go through a blood filter, it can be withdrawn from the vial with a vial spike.
- Blood should be set up for infusion within 30 minutes of removing from the blood fridge and infusion time should not exceed 4 hours. For advice on administration and associated giving sets see Transfusion Medicine Protocol Section 7.1: Standard Administration Sets and Filters.
- Continuous cardiopulmonary monitoring.
- At 15 minutes recheck heart rate, respiratory rate, axilla temperature, blood pressure and O_2 Sats against baseline.
- If a transfusion reaction is occurring, this set of observations may indicate a reaction to the transfusion and the transfusion may need to be stopped. It is therefore important to document the time of this set of observations precisely.

ADVERSE REACTION TO BLOOD OR BLOOD PRODUCT:

1. Stop the infusion.
2. Recheck the identity of the patient against the compatibility label on the pack.
3. Notify medical officer, and the Blood Bank.
4. The Clinical Haematologist must be notified of all transfusion reactions except where a low-grade fever is the only clinical feature.
5. For further information laboratory investigation of a suspected transfusion reaction see appropriate section of Transfusion Medicine Protocol.

- If diuretic is ordered it is to be administered at the **completion** of the transfusion. If SR or consultant orders diuretic to be administered mid-way through transfusion, the transfusion rate is to be reset to ensure it is completed **within 4 hours** of the commencement time.
- For the rest of the transfusion continue to monitor for signs of transfusion reaction by documenting heart rate, respiratory rate, axilla temperature, blood pressure hourly and O_2 saturation.
- Document a full set of observations including a blood pressure at the completion of the transfusion and document completion time.

POST TRANSFUSION

- Flush the cannula with normal saline and remove if no longer required.
- Remove compatibility label from the blood bag and place it in the infant's records on Transfusion Record Form MR735.
- Ensure the associated signatures and start and stop times are recorded on the form.
- Discard closed blood transfusion system as per guideline.

EQUIPMENT SET-UP

It is usual to use the Syringe pump method but the Infusion pump method can be used for large volumes.

Syringe pump method

- Luer lock syringe.
- Blood filter giving set.
- Dressing tray.

1. Attach blood giving set to blood bag.
2. Attach luer lock syringe to smart site at end of T piece of giving set (this has a one way valve to reduce the risk of blood flowing back towards the blood bag).
3. Open clamp on giving set and slowly withdraw into the syringe the required volume (+1mL).
4. Gently expel any air back into the blood giving set, clamp the blood giving set. Leave the blood bag attached.
5. Prime the long extension and place syringe into syringe pump.
6. Flush cannula with normal saline, if required.
7. Connect blood giving set and commence infusion. Place compatibility label on syringe.

Infusion pump method

An empty minipack weighs 15 grams. Therefore to determine whether there will be a sufficient amount of blood to deliver it via the infusion pump, weigh the mini-pack and subtract 15 grams from the volume (allowing 30 mLs to prime infusion set).

- Blood giving set.
- Dressing tray.

1. Attach blood giving set to blood bag.
2. Prime the giving set.
3. Turn clamp off, swab the connection port on the intravenous line, flush intravenous cannula with normal saline, connect blood giving set and commence infusion.

Delivering a Healthy WA

REFERENCES

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National Standards

Legislation - Nil
Related Policies - Nil
Other related documents - Transfusion Medicine Protocol
Transfusion Medicine Protocol Section 1.5: Transfusion Risks
Transfusion Medicine Protocol Section 7.1: Standard Administration Sets and Filters
Blood Transfusion for Your Baby - Parent Information

RESPONSIBILITY	
Policy Sponsor	**Neonatology Clinical Care Unit - Neonatal Coordinating Group**
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