Transfusing Blood Components during Neonatal Transfer.

Trust ref: C3/2025

1. Introduction and Who the Guideline Applies to

The need to transfuse any baby during transfer is likely to be a rare event as most neonatal transfusions are packed red blood cells given to prevent the adverse effects of anaemia, occurring as a planned/elective event whilst resident on a neonatal unit.

Emergency blood component transfusion is given to support the circulation in acute situations that include, but not limited to:

- Intrauterine or fetomaternal haemorrhage
- Pulmonary haemorrhage
- Neonatal alloimmune thrombocytopenia (NAIT)
- Disseminated Intravascular Coagulopathy (DIC)

Clinicians should always discuss blood component transfusion with parents and seek parental **assent** as soon as practically possible.

This guideline is aimed at all health care professionals involved in the care and transfer of infants within the CenTre neonatal transfer service.

For the purpose of this guideline, the term 'Blood Components' refers to adult/paediatric units, or pooled units of:

- Red Cells
- Platelets
- Fresh Frozen Plasma
- Cryoprecipitate

Aim of the guideline

This guideline aims to provide information about indications for continuing or commencing transfusion of blood components during neonatal transfer.

Key points

- Elective transfusions of any blood component should NOT be done during repatriation or 'step-down' transfers.
- All transfusion decisions must be discussed with the transport consultant.
- Ensure pre-transfusion samples from both the mother and infant have been obtained for initial ABO and RhD group determination along with the 'one-spot' screening sample.
- Try to complete transfusions before transfer or discuss delaying the transfusion following completion of the transfer.
- All transfusions must be completed within 4 hours of laboratory release – red cell transfusions should therefore last 3 hours.

- Report any adverse transfusion reactions and events to transfusion laboratory as soon as possible and complete a Datix incident form. Preserve all blood, blood components and transfusion equipment to help the investigation.
- NEC occurring within 48 hours of a baby receiving a blood transfusion may need to be reported via the Serious Adverse Blood Reactions and Events electronic reporting system (SABRE), check with local guidelines.

Related UHL documents;

Title	Document No.
Blood Transfusion UHL Policy.pdf	B16/2003
Red Cell Transfusion UHL Neonatal Guideline.pdf	C165/2008
Alloimmune Thrombocytopenia UHL Neonatal Guideline.pdf	C3/2014
Exchange Transfusion and Dilution Transfusion UHL Neonatal Guideline.pdf	C21/2010
Platelet Transfusion UHL Childrens Hospital Guideline.pdf	C42/2009

2. Standards and Procedures

Transfusion Decision Making

The decision to transfer a baby with an existing or potential transfusion **MUST** be discussed with the transport consultant. It is unclear what the risks of transfusing a baby during a transfer are and whether they are more significant than the known risks of transfusion, therefore the balance of risk, benefit, and clinical condition must be discussed and agreed by the full transport team.

If a transfusion is felt to be required during the initial referral process, it is recommended that the local (referring) team arrange, request, and administer the transfusion according to their local policies. The transport team can then make a decision to continue the transfusion during transfer or wait until completion following their arrival and assessment.
If there is less of an urgent requirement for transfusion it is preferable to allow the receiving unit to initiate blood component transfusions as this will help to minimize exposure of infants to multiple donors as recommended by the British Committee for Standards in Haematology (BCSH) in the guideline on transfusion in neonates and older children[1].

Red Cell Transfusion (10-20ml/kg)

If there is concern about acute loss of circulating blood volume:

- Examine baby for poor circulation (pulse, blood pressure, peripheral perfusion, urine output).
- Examine baby for sites of blood loss (external, gut, brain, tissues, lungs).
- Review blood gas and lactate.
- Review any iatrogenic losses (repeated large volume phlebotomy, accidental line bleeding).

Discuss with consultant if the assessment suggests that the baby is unstable or likely to become unstable.
Neonatal guidelines on transfusion thresholds of haemoglobin vary from unit to unit, and so referring to the levels suggested by the British Committee for Standards in Haematology (BCSH) may be of benefit (see table 1.).

Table 1. Suggested transfusion thresholds for preterm neonates

	Suggested transfusion threshold Hb (g/l)		
Postnatal age	**Ventilated**	**CPAP/BiPAP/Oxygen**	**In Air**
First 24 hours	<120	<120	<100
≤ week 1 (Day 1–7)	<120	<100	<100
week 2 (Day 8–14)	<100	<95	<75
≥ week 3 (>Day 14)		<85	

Wherever possible, samples from both the mother and infant should be obtained for initial ABO and RhD group determination. A routine pre-transfusion 'one-spot' is required for national Newborn Blood Spot (NBBS) screening.

No more than 20ml/kg should be administered in a single transfusion because of the risk of transfusion- associated circulatory overload (TACO); a volume of 10ml/kg may be of benefit in emergency situations.

All red cell transfusions MUST be completed within 4 hours of the blood being removed from the fridge, it is advisable therefore to transfuse over 3 hours in order to reach this target.

Exchange Transfusion

Large volume exchange transfusion is used for the management of rapidly rising serum bilirubin that is not responding to phototherapy and IVIg to prevent bilirubin encephalopathy.

Babies must **never** be transferred that are receiving an exchange transfusion.

Platelet Transfusion (10-20ml/kg)

All babies with suspected neonatal alloimmune thrombocytopenia (NAIT) should be discussed with a haematologist at the local/referring hospital.

A summary of recommended platelet count thresholds and transfusion indications are given in table 2. The transport consultant must be involved for the on-going management of thrombocytopenia as ambulance transfer may be considered an increased risk for the currently asymptomatic baby.

The transport consultant will ultimately decide whether to transfer the baby during a platelet transfusion, however, this is unlikely to occur as the duration for platelet transfusion is 30 minutes maximum.

Table 2. Suggested thresholds of platelet count for neonatal platelet transfusion.

Platelet Count (x109/l)	**Indication for platelet transfusion**
<25	Neonates with no bleeding (including neonates with NAIT if no bleeding and no family history of intracranial haemorrhage)
<50	Neonates with signs of bleeding (bruising/petechiae), current coagulopathy, before surgery, or infants with NAIT if previously affected sibling with intracranial haemorrhage
<100	Neonates with major bleeding or requiring major surgery

Adapted from BSCH (New, et al. 2016 p.790)

The usual volume of [platelets for transfusion is 10-20ml/kg

Fresh Frozen Plasma (15ml/kg) / Cryoprecipitate (5-10ml/kg) Transfusion

Please also refer to the CenTre Coagulopathy guideline.Fresh frozen plasma (FFP) and cryoprecipitate should not be administered on the basis of laboratory tests alone but should be restricted to those with signs of bleeding or where invasive procedures are planned.

Transport consultant involvement is indicated for initiating FFP and/or cryo by the transport team. Sick neonates in intensive care are commonly transfused with FFP, which carries a significant risk of serious acute transfusion reactions.

BCSH guidelines (2016) recommend that FFP should be used for:

- Vitamin K deficiency with bleeding.
- DIC with bleeding.
- Congenital coagulation factor deficiencies where no factor concentrate is available (Factor V deficiency).

The dose of FFP is usually 15 mL/kg.

Cryoprecipitate is used as a more concentrated source of fibrinogen than FFP and is primarily indicated when the fibrinogen level is <1.0 g/l

The usual dose of cryoprecipitate is 5 – 10 ml/kg

Monitoring

All blood component transfusions must be completed (or stopped) within 4 hours from release by the transfusion laboratory.

Pre-transfusion physiological observations of heart rate, respiration rate, blood pressure, oxygen saturation, and temperature must be recorded in the transport notes.

Continuation of these observations will be performed every 15 minutes throughout the duration of the transfusion regardless of whether baby is being transferred or still residing in the referral unit.

If there is any evidence of adverse transfusion reaction the transfusion **MUST** be stopped immediately:

- All adverse transfusion reactions and events must be reported to the issuing transfusion laboratory as soon as possible.
- Complete a Datix incident report.
- Retain all remaining blood components and transfusion equipment for investigation
- Necrotizing Enterocolitis occurring within 48 hours of a baby receiving a blood transfusion needs to be reported via the Serious Adverse Blood Reactions and Events electronic reporting system (SABRE).

Blood Transfusion Paperwork and Products

If a transfusion will be in progress during the ambulance transfer the following items must accompany the baby for handover at the receiving hospital:

- Paperwork pertaining to the crossmatch and release of the blood component by the local laboratory
- CenTre Blood Transfusion Document
- Copies of request form and administration form
- Original blood component bag with ‘spiking’ set attached (if available)

The receiving unit are responsible for sending all the relevant paperwork and product bags to their blood transfusion laboratory.

3. Education and Training

None

4. Monitoring Compliance

None

5. Supporting References

1. New, H.V., Berryman, J., Bolton-Maggs, P.H.B., Cantwell, C., Chalmers, E.A., Davies, T., Gottstein, R., Kelleher, A., Kumar, S., Morley, S.L., Stanworth, S.J. and (2016), Guidelines on transfusion for fetuses, neonates and older children. Br J Haematol, 175:5 784-828. https://doi.org/10.1111/bjh.14233

6. Key Words

Adverse reactions, Alloimmune thrombocytopenia, Cryoprecipitate, Fresh Frozen Plasma, Platelets, Red Cells

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The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Guideline Lead (Name and Title) Author: T Styche			**Executive Lead** Chief medical officer
Details of Changes made during review:			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
December 2024	**1**	CenTre Transport Guidelines Group and CenTre Governance Group	**New document**