### Document Control

<table>
<thead>
<tr>
<th>Title</th>
<th>Red Blood Cell Transfusion for Neonates – Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author</strong></td>
<td><strong>Author’s job title</strong></td>
</tr>
<tr>
<td></td>
<td>Lead Nurse Neonatal and Paediatric Services</td>
</tr>
<tr>
<td><strong>Directorate</strong></td>
<td><strong>Department</strong></td>
</tr>
<tr>
<td>Un-scheduled Care</td>
<td>Special Care Unit</td>
</tr>
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<table>
<thead>
<tr>
<th>Version</th>
<th>Date Issued</th>
<th>Status</th>
<th>Comment / Changes / Approval</th>
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<td>2008</td>
<td>Draft</td>
<td>Draft created to include Peninsula Neonatal Network Consensus guidelines</td>
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<tr>
<td>0.2</td>
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<td>0.5</td>
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<td>Revised with input from Hospital Transfusion Team</td>
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<td>Final</td>
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<tr>
<td>1.1</td>
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<td>Revision</td>
<td>Minor amendments by Corporate Affairs to document control report, filename, header and footer, formatting for document map viewing.</td>
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<td>2.0</td>
<td>Feb 2013</td>
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<td>Minor amendments by author to document control report. Updated reporting units for Hb. Approved at Hospital Transfusion Committee 5th March 2013.</td>
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<td>Revision</td>
<td>Amendments by Corporate Governance to document control report and formatting for document map navigation and semi-automatic table of contents. Update to Equality Impact Assessment.</td>
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<td>3.0</td>
<td>May 2016</td>
<td>Final</td>
<td>Approved by Transfusion Team 12/5/16</td>
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**Main Contact**
Special Care Unit  
North Devon District Hospital  
Raleigh Park,  
Barnstaple, EX31 4JB  

**Lead Director**  
Un-scheduled Care  

**Superseded Documents**
Red Blood Cell Transfusion guidelines for Neonates V2.2  

**Issue Date**
May 2016  

**Review Date**
May 2019  

**Review Cycle**
Three years  

**Consulted with the following stakeholders:** (list all)
- Hospital Transfusion Team (HTT)  
- Paediatric Medical Team  
- Clinical Staff SCU  

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Paediatric Team  
Red Blood Cell Transfusion for Neonates - Guidelines v3.0 MAY16  
Page 1 of 18
Approval and Review Process
- Hospital Transfusion Committee (HTC)

Local Archive Reference
G:\Paediatric Resources\Neonates\Neonatal guidelines\previous versions of guidelines

Local Path
G:\Paediatric Resources\Neonates\Neonatal guidelines

Filename
Red blood cell transfusion for neonates guidelines v3.doc

Policy categories for Trust’s internal website (Bob)
SCBU, Paediatrics, Neonatal

Tags for Trust’s internal website (Bob)
1. **Introduction**

This document sets out Northern Devon Healthcare NHS Trust’s best practice guidelines for red blood cell transfusion for neonates.

In recent years clinical indications for red blood cell (RBC) transfusions given to neonates have become more restrictive due to the growing awareness of the risks involved and parental apprehension.

Common causes of neonatal anaemia are:

- Preterm delivery before establishment of normal red cell and iron stores in the last trimester
- Blood loss for laboratory testing
- Expansion of blood volume with growth
• Bone marrow depression
• Increased red cell destruction e.g. infection, haemolytic disease

These factors often combine to result in the expected fall in haemoglobin that occurs in the first six to nine weeks after birth. This is accompanied by improved oxygen unloading capacity as 2,3 DPG levels rise so that tissue oxygen delivery may improve despite reduced oxygen carrying capacity.

These guidelines aim to:

• Reduce the incidence of anaemia in term and preterm infants
• Identify strategies to decrease the need for RBC transfusion
• Limit donor exposure

(Fetus and Newborn Committee, (FNC), 2002)

2. **Purpose**

The following general principles can be applied in order to ensure standardised, safe and competent practice for all staff requesting, prescribing, cross-matching and administering red blood cells to neonates.

Implementation of this guideline will ensure that:

• Risks associated with the transfusion of red blood cells are minimised.
• Staff involved in the transfusion process have clear guidance to follow and are aware of their responsibilities.

This guideline applies to Paediatric and SCBU Clinical Teams and must be adhered to. Non compliance with this guideline may be for valid clinical reasons only. The reason for non-compliance must be documented clearly in the patient’s notes.

3. **Definitions / Abbreviations**

a. 2, 3 DPG - 2, 3-diphosphoglycerate
b. DCT Direct Coombs Test
c. Hb - Haemoglobin
d. HbA - Adult haemoglobin
e. HbF - Fetal haemoglobin
f. Hct - Haematocrit
g. RBC - Red blood cell
4. Contact Numbers

For further information and advice please contact any member of the Hospital Transfusion Team:

<table>
<thead>
<tr>
<th>Position</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant Haematologist</td>
<td>Ext 3198 or bleep via switchboard</td>
</tr>
<tr>
<td>(Blood bank manager)</td>
<td>Ext 2327</td>
</tr>
<tr>
<td>Clinical Nurse Specialist Intravascular Fluid Management</td>
<td>Ext 2440 or bleep 280</td>
</tr>
</tbody>
</table>

5. Responsibilities

5.1 The Role of all clinical staff

- To ensure that they have received the appropriate training and are competent in their role in the transfusion process.
- To ensure that all documentation required is fully completed. All adverse events must be reported using the Trust’s clinical incident reporting scheme. The Hospital Transfusion Team will be responsible for reporting adverse reactions and events to MHRA and SHOT as appropriate.
- To ensure blood samples are taken in accordance with NDHCT Policy

5.2 The Role of Medical Staff

- To gain written informed consent wherever possible, (however this is not compulsory according to BAPM guidelines)
- To prescribe and order the appropriate volume of red cells required having taken into account any special requirements for example irradiated products/split packs.

5.3 The Role of Nursing Staff

- To ensure the correct checking procedures are carried out when collecting red blood cells from storage and during transfusion.
- To be aware of the risks/complications of red cell transfusion and act accordingly.
- To provide support and information to the family and infant throughout the process.

The general principles of this guideline are to provide an evidence-based document with the aim of guiding practice and decision-making when a baby requires a red blood cell transfusion. It should enable the staff to adopt safe and effective working practice to achieve high standards and ensure accuracy and consistency.

Before commencing the procedures involved in red blood cell transfusion all staff should be aware of the risks.

6.1 Risks/complications of Red Blood Cell Transfusion

Risks of transfusion can be acute or delayed:
- Transfusion of the incorrect blood product (SHOT 2015)
- Acute/delayed transfusion reaction
- Transfusion associated graft versus host disease, (Murray and Roberts, 2004), is a rare but often fatal condition that is prevented by the gamma irradiation of blood products.
- Immune and non-immune haemolysis, (Murray and Roberts, 2004)
- Metabolic derangements, (hyperkalaemia, hypocalcaemia) and acid base instability
- Transfusion related acute lung injury or TRALI, whereby the patient develops acute respiratory problems
- Post transfusion purpura, where there is a catastrophic fall in the platelet count 5-9 days post transfusion
- Allergic reactions, (Galel & Fontaine 2006), rare in neonates
- Volume overload
- Apnoea
- Cardiac arrhythmias
- Convulsions
- Embolism (air/thrombus)
- Haemodynamic instability
- Infection
- Temperature instability
- Thrombocytopenia
- Intraventricular haemorrhage
- Further studies have included association with;
  - Chronic lung disease
  - Retinopathy of prematurity, (Wardle et al 2002).
  - Iron toxicity, (Ng et al 2000).
  - Necrotizing enterocolitis.

6.2 Methods to minimise risks or to avoid RBC transfusion

- Balance the advantages of transfusion against the potential risks for each baby.
- Minimise the volume of blood drawn for laboratory testing, (FNC, 2002). Miniaturized analysis in the laboratory, (Blanchette et al, 2005)
- Delayed clamping of the umbilical cord if the infant does not require resuscitation, (BCSH 2016, Rabe et al, 2004)
- Use of erythropoietin to stimulate erythropoiesis, but this is not recommended in pre-term infants (BCSH 2016)
- Use of iron and vitamin supplements to minimize severity of anaemia, (FNC, 2002)
- Reduce donor exposure by using satellite packs for multiple transfusions, (NETS, 2005)
- Use of Gamma irradiated RBC’s (if the neonate has received an Intra Uterine Transfusion or if the donor is a first or second degree relative).
- Ensure hospital policy and neonatal guidelines for collecting, checking and administering blood products are adhered to.

6.3 Indications for red blood cell transfusion

RBC transfusions are used to treat;

- Anaemia of prematurity, secondary to:
  - delayed and reduced RBC formation
  - shortened RBC survival
  - rapid postnatal growth
  - iatrogenic loss from frequent blood sampling for laboratory monitoring
- Acute blood loss and shock secondary to hypovolaemia

Check Hct after first transfusion.

Repeat:
  - If still bleeding
  - If still requiring fluid resuscitation
  - If Hb still less than 100g/L but not a) and b) (give Furosemide cover), (RCH 2005)
- Hyperbilirubinaemia (requiring exchange transfusion).
- Exchange Transfusion. Infants with clinically significant anaemia or toxicity with or without hyperbilirubinaemia due to Haemolytic Disease of the Newborn, parvovirus infection, drug toxicity etc. (Royal Cornwall Hospital, (RCH), 2005).
- Ventilated infants less than 1.5Kg with an Hb less than 120g/L or who have had more than 8mls/kg blood taken, or babies below 1000gm who have had 10% of circulatory blood volume taken in blood sampling.
6.4 Blood Tests for the anaemic infant

- Determine Haematocrit – Capillary Hb can be up to 10g/L greater than central sample. In an asymptomatic neonate check central Hct if Hb equal or less than 80g/L.
- Check reticulocyte count weekly for ‘well’ growing preterm infants to judge their haematological response to low Hb levels, (RCH 2005).
- The treatment of anaemia does not depend exclusively on Hb, particularly with the later complications of anaemia of prematurity. (10g of HbF has much lower O2 release than HbA). Usually present aged 4-8 weeks. Where there is a low or falling Hb, the concept of available oxygen can be used to assess the need for transfusion together with clinical signs such as tachycardia, tachypnoea, pallor. Usually an available oxygen of below 7% is used as a guide for the need for transfusion.

Concept of available oxygen: \((0.05 \times \text{PCV}) + \text{Hb} \times 0.54\) = more than 7

6.5 Blood type required

- Cytomegalovirus (CMV), negative.
- For neonatal ‘top up’ transfusions: O Rh negative, Kell negative, CMV Negative, packed red blood cells (Irradiated RBC’s if the neonate has received an Intra Uterine Transfusion or if the donor is a first or second degree relative).
- For neonatal transfusions where the mother has irregular antibodies, blood must be selected which is negative for the corresponding antigen.
- For emergency treatment of acute blood loss; O negative blood.
- For Exchange Transfusion irradiated CMV negative Red Blood Cells, Hct .50-.60, (24hour expiry) is required. [These have to be delivered from the Transfusion Centre in Bristol. Therefore order blood at the first sign of requirement to avoid delay]

(RCH 2005)

6.6 Threshold recommendations for transfusions (see Appendix One)

6.7 Preparation for transfusion

- **All infants** should have neonatal blood spot screening performed on admission – prior to any transfusion.
- Discuss with parents/carers the need for transfusion – Gain consent (verbal or written) and document in notes. Where appropriate patients should be advised of the available alternatives to transfusion. Keep parents/carers informed of progress and **infants** condition throughout and at completion of procedure whenever possible if they are not present.
  - (BAPM guidelines, (2004), require explicit consent from parents for exchange transfusion only).
In the event that the transfusion is refused e.g. Jehovah’s Witness, then follow the Patients Refusing a Blood Transfusion Policy.

Ensure that the infant has patent vascular access device in situ or arrange for one to be sited. Never transfuse blood through the same line as other I.V. fluids or with any drugs.

Ascertain from medical staff:
- If baby is to be nil by mouth during procedure.
- If a diuretic is required

6.8 Ordering the blood

For each transfusion episode (not for emergencies) complete a decision to transfuse label and attach to the patient notes, (kept in blood transfusion box file).

Contact the blood transfusions (EXT 2327). Inform the laboratory of indications for blood transfusion to enable correct type of blood to be issued, (see section 6.5 Blood type required).

Request split packs if the infant is likely to need multiple transfusions (usually less than 32 weeks/less than 1.5kgs). (These should be requested for infants less than 32 weeks gestation, see Appendix One.) This minimises multiple donor exposure.

The laboratory will require the baby and mother’s hospital number and may need further blood samples from them. (Check with transfusion team if unsure)

These may be;

- First blood transfusion, obtain ;-  
  - Maternal blood sample for:  
  - ABO and RhD group  
  - Antibody screen  
  - Infant blood sample for:  
  - ABO and RhD group  
  - Direct Coombs Test, (DCT)

- Subsequent blood transfusions, obtain Infant blood sample for:  
  - DCT  
  - Group (if transfused in another hospital)

- Label samples according to hospital policy. Please note:

- Complete blood request using a Blood Bank Transfusion form.

- Complete all sections and the need for a split pack and indicate the exact volume of blood required for the transfusion, (see Appendix One).

- Include as much relevant history as possible including date and location of previous transfusions.
• Prescribe amount and duration of transfusion on IV fluid prescription chart, (see Appendix One).
  o Restrictive transfusion volumes 15ml/kg are recommended for non-bleeding neonates (BCSH 2016).
  o Volumes of around 5mls/kg/hour are regarded as safe; a higher rate will be needed in the presence of active haemorrhage, and a lower rate where there is a significant risk of cardiac failure. (However the duration should be prescribed over 3 hours.) Very small pre-term infants may need rate of existing IV fluids reduced while having a transfusion.

• Complete medical notes and record reason for transfusion in the medical notes and the calculation used for the volume prescribed

6.9 Equipment

<table>
<thead>
<tr>
<th>Steps</th>
<th>Prepare equipment</th>
</tr>
</thead>
</table>
| 1     | • Gloves
|       | • Baxter colleague IV pump
|       | • 0.9% sodium chloride flush
|       | • Blood giving set (neonatal) with appropriate 170-200 micron filter
|       | • BP, respiratory and cardiac monitoring equipment
|       | • Temperature monitoring equipment
|       | • Blood prescription chart with type of blood, volume and length of infusion time
|       | • Prescription chart with diuretic cover, if prescribed
|       | • Baby’s notes
|       | • Fluid chart
|       | • Blood Transfusion Checklist, Observation and Fluid Chart (see Appendix Two)
|       | • Unit of blood and blood request form

6.10 Procedure for Administration of Transfusion

<table>
<thead>
<tr>
<th>Steps</th>
<th>Prior to transfusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure venous cannula is patent</td>
</tr>
<tr>
<td>2</td>
<td>Attach infant to monitoring equipment, (cardiac, respiratory, [oxygen saturation] and temperature), setting appropriate alarm levels.</td>
</tr>
<tr>
<td>3</td>
<td>Document baseline full set of vital signs.</td>
</tr>
</tbody>
</table>
**Collection of Blood from the Blood Fridge (Delivery Suite)**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blood must not be collected from the bank until immediately before it is used (the cannula or IV access device must be in situ and ready for use). Due to possible fluctuations in temperature blood must never be stored in the ward refrigerator.</td>
</tr>
<tr>
<td>2</td>
<td>Once ready to commence transfusion collect blood according to hospital guidance using Trust blood tracking system.</td>
</tr>
<tr>
<td>3</td>
<td>The person collecting the blood should bring with them the compatibility statement attached to the transfusion mount card from the patient's notes. The patient ID should be checked against the details on the fridge loading record which can be found on the top of the blood bank.</td>
</tr>
<tr>
<td>4</td>
<td>In the event that the blood cannot be used, then it must be immediately returned to the fridge through Trust blood tracking system.</td>
</tr>
<tr>
<td>5</td>
<td>Red cell transfusion must be commenced within 30 minutes of removing the unit from the blood bank and must be completed within 4 hours.</td>
</tr>
<tr>
<td>6</td>
<td>Volume should be prescribed over 3 hours maximum, (blood should not be out of the fridge unused for more than 4 hours), and should only be administered during the night in emergency situations.</td>
</tr>
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</table>

**Steps On Commencement of transfusion**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wash hands and put on gloves. (Gloves should be worn at all times when handling blood products and associated equipment.)</td>
</tr>
<tr>
<td>2</td>
<td>Use blood transfusion checklist, observation chart and fluid chart  <em>(see Appendix Two)</em></td>
</tr>
<tr>
<td>3</td>
<td>Two trained staff must check the identity of the baby, the prescription, registration number, blood unit number, compatibility label and report, blood group and type of blood all match the compatibility form and the expiry date.</td>
</tr>
<tr>
<td>4</td>
<td>Close all clamps on the blood giving set.</td>
</tr>
<tr>
<td>5</td>
<td>Attach blood bag to the giving set and open the clamp, fill the chamber to the fill line by squeezing the chamber. Slowly open the lower clamp and purge with blood to the end of the line then clamp. Attach the tubing to the Baxter pump (as manufacturer’s instructions).</td>
</tr>
<tr>
<td>6</td>
<td>Set the pump to minimum pressure, the prescribed volume to be infused and the prescribed rate per hour over a period of 3 hours. This should be checked at the pump by two trained staff.</td>
</tr>
<tr>
<td>7</td>
<td>Flush IV cannula with sodium chloride 0.9%, attach blood, open the clamp and start the transfusion.</td>
</tr>
<tr>
<td>8</td>
<td>Record the start time on IV prescription chart, nursing documentation and both parts of the compatibility form.</td>
</tr>
</tbody>
</table>
### On Completion of transfusion

<table>
<thead>
<tr>
<th>Steps</th>
<th>On Completion of transfusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On completion of the transfusion, flush the IV cannula with sodium chloride 0.9%. Check medical instructions regarding the removal of the IV cannula.</td>
</tr>
<tr>
<td>2</td>
<td>Flushing through the remainder of the blood in the line with 0.9% sodium Chloride is unnecessary and is not recommended because it may result in particles being flushed</td>
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</tbody>
</table>
through the filter. If another IV infusion is to take place after the blood transfusion, a
new administration set must be used to reduce the risk of incompatible fluids or
drugs causing haemolysis of any residual red cells which may be left in the
administration set.

3 Diuretics should be given where prescribed. Use 0.9% sodium chloride to flush before
and after administration of IV furosemide. (Drugs must not be added to any blood
pack)

4 The component/product unit/administration set must be sealed to prevent leakage
and disposed of as clinical waste.

5 If a number of different components/products have been transfused or transfusions
were administered rapidly, the empty units may be retained in a clear plastic bag,
with the patient’s addressograph label attached, until the end of that transfusion
episode and then disposed of if no adverse reaction has occurred in the Trust clinical
waste. Detach tag from transfusion bag and place in confidential waste.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Documentation</th>
</tr>
</thead>
</table>
| 1     | Document completion of transfusion and any untoward reactions in medical and
nursing records including evaluation of procedure |
| 2     | Record the stop time on both sections of the compatibility statement and on the
nursing documentation. |
| 3     | To comply with blood traceability requirements (Blood Safety & Quality Regulations
2005) return the appropriate section of the compatibility form to the Transfusion
Laboratory and file the other section in the patient case notes |
| 4     | To comply with the Product Liability Act (1987) and the Blood Safety and Quality
Regulations (2005), records must be kept of the batch number of any blood product
administered to a patient. |

To Note

<table>
<thead>
<tr>
<th>In Emergency Situations</th>
</tr>
</thead>
</table>
| 1 If blood is to be given to a baby in an emergency situation (e.g. in Delivery Suite) it
may be filtered by connecting the neonatal transfusion giving set to the blood bag
and then withdrawing blood into a syringe using the 3-way tap connected to the
giving set. |

7. Education and Training

All staff who are required to undertake blood transfusion training will be identified
through the Trust’s training matrix. All staff involved in any aspect of the transfusion
process require training and observational competency assessment relevant to their
role.
Booking for all blood transfusion training will be undertaken through Workforce Development via the Electronic Staff Record. Signed records must be kept of all training undertaken in the Trust. These records will be held centrally and reported Trust wide through ESR records.

A blood transfusion champion oversees training and manages training records on the ward. Individual staff competencies are logged locally in the ward competency folder. Staff are encouraged to keep a copy of this in their portfolio.

8. **Consultation, Approval, Review and Archiving Process**

The author consulted with all relevant stakeholders. Please refer to the Document Control Report.

Final approval was given by the Hospital Transfusion Team Committee on 12/5/16

The guidelines will be reviewed every 3 years. The author will be responsible for ensuring the guidelines are reviewed and revisions approved by the Hospital Transfusion Committee in accordance with the Document Control Report.

All versions of these guidelines will be archived in electronic format by the author within the SCU Team policy archive.

Any revisions to the final document will be recorded on the Document Control Report.

To obtain a copy of the archived guidelines, contact should be made with the main contact Staff Nurse in Special Care Unit Team.

9. **Monitoring Compliance and Effectiveness**

Staff are informed of new documentation. There is an expectation that staff are responsible to keep updated on any revisions/improvements to practice and deliver care accordingly.

Monitoring of implementation, effectiveness and compliance with these guidelines will be the responsibility of the Hospital Transfusion Team. Where non-compliance is found, it must have been documented in the patient’s medical notes and Trust incident reporting policies adhered to.

Where non-compliance is identified, a member of the Transfusion Team (if appropriate) will provide support and advice to improve practice. All transfusion incidents and non-adherence is reviewed and action plans made if required. This will be discussed and monitored during SCU Governance meetings, ward meetings and Paediatric Specialty Team meetings.
Learning and action plans are cascaded at these meetings and improvements implemented. Key findings and learning points will be disseminated across Neonatal Network where applicable and to relevant staff.

10. References

- Fetus and Newborn Committee, (FNC), (2002). Red blood cell transfusions in newborn infants: revised guidelines. Paediatrics and Child Health. 7 (8) p553-558
• Royal Cornwall Hospital (RCH), (2005). Royal Cornwall Hospital Protocol for Neonatal Blood Transfusion.
• Serious Hazards of Transfusion (SHOT) (2015) www.shotuk.org
• Warwick R and Modi N, (1995). Guidelines for the administration of blood products – a critique; Archives of Diseases Associated Documentation

11. Associated Documentation

• Antenatal and Newborn Screening Guidelines
• Blood Transfusion Clinical Guidelines
• Blood Transfusion Policy
• Exchange Transfusion Guideline for Neonates
• Medicines Policy
• Pathology Specimen Acceptance Policy
• Patients refusing a blood transfusion policy
Appendix One – Transfusion threshold recommendations

Restrictive transfusion volumes 15ml/kg are recommended for non-bleeding neonates (BCSH 2016).

**BCSH 2016 recommendations for transfusion thresholds for infants <32 weeks.**

<table>
<thead>
<tr>
<th>Postnatal age</th>
<th>Suggested transfusion threshold Hb (g/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ventilated</td>
</tr>
<tr>
<td>1st 24 hours</td>
<td>&lt; 120</td>
</tr>
<tr>
<td>≤ week 1 (day 1-7)</td>
<td>&lt; 120</td>
</tr>
<tr>
<td>week 2 (day 8 -14)</td>
<td>&lt; 100</td>
</tr>
<tr>
<td>≥ week 3 (day 15 onwards)</td>
<td>&lt; 100</td>
</tr>
</tbody>
</table>

* Standard definition of preterm is <37 weeks gestational age at birth but table applies to very preterm neonates (≤ 32 weeks).
** It is accepted that clinicians may use up to 85 g/L depending on clinical situation
† NIPPV, non-invasive positive pressure ventilation

**Peninsula Network recommendations for Transfusion Thresholds.**

<table>
<thead>
<tr>
<th>Criteria and Comments</th>
<th>Peninsula Network Consensus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Blood sampling needs to be from a free flowing sample</td>
<td><strong>Severe Cardiorespiratory disease</strong></td>
</tr>
<tr>
<td>2. Split packs should be requested for infants who are expected to need more than one</td>
<td><strong>Mechanical respiratory support</strong></td>
</tr>
<tr>
<td>transfusion</td>
<td>Ventilated/CPAP – FIO2 more than 50%</td>
</tr>
<tr>
<td>3. Figures should be rounded up to reduce the need for frequent transfusions</td>
<td><strong>Threshold Hb less than 120g/L</strong></td>
</tr>
<tr>
<td>4. No routine post transfusion Hb.</td>
<td><strong>Target 140-160g/L</strong></td>
</tr>
<tr>
<td>5. No routine post transfusion Hb.</td>
<td><strong>Mild -Moderate Cardiorespiratory Disease</strong></td>
</tr>
<tr>
<td></td>
<td>Ventilated/CPAP/ambient O2 - FIO2 between 22-50%</td>
</tr>
<tr>
<td></td>
<td><strong>Threshold Hb less than 100g/L</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Symptomatic, in air</strong></td>
</tr>
<tr>
<td></td>
<td>Poor weight gain/apnoeas or bradycardias,</td>
</tr>
<tr>
<td></td>
<td><strong>Retics  less than 2%</strong></td>
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<tr>
<td></td>
<td><strong>Threshold Hb less than 80g/L</strong></td>
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<tr>
<td></td>
<td><strong>Consultant discussion</strong></td>
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<td><strong>Asymptomatic</strong></td>
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<td>In air</td>
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<td></td>
<td><strong>Threshold Hb less than 70g/L</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Consultant discussion</strong></td>
</tr>
<tr>
<td>Diuretics</td>
<td>Diuretics not administered routinely but consider in cases of significant chronic lung disease or very large transfusions</td>
</tr>
<tr>
<td>Duration</td>
<td>3 (less than 4 hours)</td>
</tr>
<tr>
<td>Peri-transfusion feeding</td>
<td>No evidence upon which to base guidance. Individual units have local policies. Close observation warranted</td>
</tr>
<tr>
<td>Consent</td>
<td>Verbal, documented in notes</td>
</tr>
</tbody>
</table>
## Appendix Two – Transfusion Checklist, Observation and Fluid Chart

<table>
<thead>
<tr>
<th>PAS Label</th>
<th>Rate mls/hr:</th>
<th>Checklist</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
<td>Decision to transfuse label complete and in notes</td>
<td></td>
</tr>
<tr>
<td>DOB</td>
<td></td>
<td>Consent</td>
<td></td>
</tr>
<tr>
<td>ND no.</td>
<td></td>
<td>Transfusion information given</td>
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</tr>
<tr>
<td>NHS no.</td>
<td></td>
<td>Irradiated blood</td>
<td></td>
</tr>
<tr>
<td>Volume infused</td>
<td></td>
<td>First blood spot taken</td>
<td></td>
</tr>
<tr>
<td>Any reaction?</td>
<td></td>
<td>Check with Dr - continue feeds?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are diuretics required &amp; prescribed?</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Consider monitoring BM</td>
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<td></td>
<td>Compatibility form returned</td>
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<table>
<thead>
<tr>
<th>Time</th>
<th>Date: Time:</th>
<th>Heart Rate</th>
<th>Resp Rate</th>
<th>Temp</th>
<th>O2 Sats</th>
<th>BP &amp; mean</th>
<th>VIP score</th>
<th>IV Line Pressure</th>
<th>Amount mls/hr</th>
<th>Total mls infused</th>
<th>Comments</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base line Obs</td>
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<tr>
<td>1 hour 30 mins</td>
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<tr>
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Paediatric Team
Red Blood Cell Transfusion for Neonates - Guidelines v3.0 MAY16