Guideline

Preparation and administration of blood and blood products for transfusion during an acute neonatal transfer

1. Scope

For use within the Paediatric and Neonatal Decision Support and Retrieval Service (PaNDR) for the East of England.

2. Purpose

To ensure the safe administration of blood and blood products to a neonatal patient during transfer by the PaNDR team.

3. Definitions and abbreviations

Blood refers to packed red cells.

Blood components refers to; Packed red cells, FFP, Cryoprecipitate and/or Platelets

FFP Fresh Frozen Plasma

IV Intravenous

CMV Cytomegalovirus

ICH Intracranial haemorrhage

4. Introduction

Key messages

- Neonates should only be transferred whilst being transfused with blood and blood products where the therapeutic benefits outweigh the associated risks of potential complications.
- Bedside checking procedures to administer blood are not standardised across healthcare organisations, therefore blood products should be checked by staff at the referring hospital in line with their Trust's policy.
- Transfusion reactions may manifest at any time and require early recognition and prompt management.

5. Main Body

Responsibilities

5.1 Training and ongoing education

All staff members involved in the administration of blood/ blood products are responsible for complying with this policy.

The member of staff administering the product must:

- Completed and remain up to date with IV policies and procedures relative to the PaNDR service.
- Have completed and remain up to date with the Trust e-learning " Administration of blood and blood components"

Have completed the Trust face to face competency (B3) "Safe checking and administration of blood

5.2 Preparing to transfer the neonate/child

- Blood transfusion should be seen as a critical intervention during neonatal or paediatric transfer and thus should only be considered if there is strong clinical indication.
- The transfusion of blood and blood products is associated with risks of extravasation injury and transfusion reactions.
- If a transfusion is deemed necessary, it should be commenced prior to the transfer to enable recognition of any immediate complications.
- Blood and blood products should not be administered during the elective transfer.

5.3 Process of transfusion prior and during transfer

5.3.1 Clinical staff at the referring hospital are responsible for:

- Ensuring that the indication for transfusion and appropriate consent issues have been discussed with the family and documented where appropriate and time permitting.
- Collecting the blood from the blood collection point e.g. blood bank.
- Checking that the component meets all the requirements for safe administration.
- Commencing the transfusion using suitable approved devices e.g. approved giving sets and pumps. Blood components should be transfused through a 200-micron

filter. Routes of administration include peripheral venous lines, Hickman/femoral central lines, umbilical venous catheters or umbilical arterial catheters (not peripheral arterial lines).

- Handing over to the PaNDR team the indication for transfusion, the start date and time and any special requirements e.g. CMV negative, Irradiated.
- Handing over to the PaNDR team if there are any specific issues related to the provision of blood once transferred e.g. maternal antibodies.
- Ensuring that relevant blood component traceability procedures have been completed.
- Returning any unused/no longer needed blood components to the referring hospital's transfusion laboratory or other agreed local storage facility.

5.3.2 PaNDR team are responsible for:

- Wherever possible giving the parents information why a transfusion is required.
- Supporting the referring hospital clinical teams regarding decisions in relation to special requirements for the transfusion.
- Supporting the referring hospital clinical teams in relation to the best method of administration e.g. appropriate intravenous access.
- Ensure that a clinical history has been taken related to transfusion including any previous transfusions (including intrauterine), suspected or confirmed adverse reactions or events and special requirements including any maternal antibodies.
- Ensuring that where available maternal samples are transferred with the neonate (see section 5.3.5)
- Ensuring the pre transfusion blood spot (Guthrie) has been taken prior to commencing the transfusion and is taken to the receiving hospital.
- Confirming that they are satisfied that the blood is being administered correctly and safely. Always ensure that identity bands are present. In the presence of the patient, two practitioners (PaNDR nurse and Local nurse) must identify the infant against:
  - Prescription chart
  - Compatibility form
  - Blood bag label

ID Labels must be checked for:

- Full name
- Hospital Number
- Date of birth
- Gender
- Twin/ multiple birth ranking (I/II/III)

NB: Twins/ multiple births are at increased risk of receiving the wrong blood product - therefore all of the above checks must be completed at the bedside.

The two practitioners should then check the unit of blood to be given against:

- Prescription chart
- Compatibility form
- Previous transfusion history from the notes (if available)

It is necessary to confirm:

- Patient's name
- Date of birth
- Blood group
- Expiry date of the blood
- The number of the unit of blood
- Group of previous transfusions (where appropriate)
- CMV negative
- Leucocyte-depleted
- HbS negative
- Check the notes for any previous transfusion-related reaction
- Check the compatibility form for any additional instructions

Special requirements

Neonates always require CMV negative blood.

Neonates will require irradiated blood products if they have received in-utero transfusions of blood products, if they require exchange transfusion or if they are immuno-suppressed e.g. Di-George Syndrome See Appendix 2.

NB: Irradiated red cells must be used within 24 hours of irradiation.

5.3.4 Administration of Blood products during transfer

- Once satisfied that the blood product to be given is intended for that patient, both practitioners should sign the prescription chart recording the unit number.
- A copy of the blood unit number must accompany the infant in case there is a transfusion reaction. NB: It is NOT necessary to transfer any used empty blood packs with the patient. Any used packs should remain at the referring hospital and be retained in line with local policy. If there are any issues or suspected transfusion reactions the referring hospitals, blood bank will need these to perform relevant investigations.
- The accountable practitioner should sign the compatibility form, signing against the unit given (the accountable practitioner is the registered nurse connecting the blood transfusion to the patient).
- Record a baseline set of observations of temperature, pulse, respiratory rate and blood pressure prior to commencing the transfusion to compare with those taken during and on completion of the transfusion.
- Check prescription charts to see if a diuretic has been prescribed to be given with the transfusion and administer if prescribed, at the appropriate time (usually half-way through transfusion of blood product).

5.3.5 Maternal samples in neonatal transfer

- Wherever possible when a baby is being transferred a maternal sample should be obtained and transferred with the baby. This will ensure that further blood can be cross matched should this be required. The following criteria MUST be met to enable the sample to be accepted by the transfusion lab:
- The sample must be supported by a request form which includes the mother's FULL name, DOB and NHS number.
- The sample must be labelled by hand and include the mother's FULL name, DOB NHS number, date sample taken and signature of the person taking the sample.
- The sample details MUST match the request form in full with no discrepancies, crossings out or other alterations.
- The sample MUST have been taken and labelled at the mother's side.
- Wherever possible the request form should make it clear that the sample is "mother of the baby being transferred. If the mother is known to have any antibodies this information should be clearly indicated on the request form.

Appendix 1

Indication for Platelet transfusion

< 25 Neonates with no bleeding (including neonates with NAIT if no bleeding and no family history of ICH).

< 50 Neonates with bleeding, current coagulopathy, before surgery, or infants with NAIT if previously affected sibling with ICH

< 100 Neonates with major bleeding or requiring major surgery (e.g. neurosurgery)

Suggested Pack Red Cell transfusion thresholds for Preterm Neonates

Postnatal age	Ventilated	On oxygen/NIPPV	Off oxygen
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 15 onwards)	<100	<85	<75

FFP transfusion

- Should not be used routinely to try to correct abnormalities of the coagulation screen alone in non-bleeding neonates.
- Should not be used for simple volume replacement or routinely to prevent IVH.
- It may be of benefit in neonates with clinically significant bleeding or prior to invasive procedures with risk of significant bleeding and who have abnormal coagulation.

Cryoprecipitate

- Should not be used routinely for non-bleeding neonates with decreased fibrinogen.
- It may be considered for fibrinogen <1 g/l for surgery at risk of significant bleeding or to critical sites.

*Routine coagulation screening of babies admitted to NICU may lead to increased transfusion and it is unclear whether mild/moderate abnormalities are predictive of bleeding. Coagulation screeening should

only be undertaken in selective neonates with evidence of or at high risk of bleeding, such as those with necotising enterocolitis or severe sepsis.

The above guidance in *Appendix 1* follows the British Society for Haematology (BCSH) Guidelines on transfusion for neonates and older children. These can also be accessed using the 'Blood Component' app.

Appendix 2

Suspected reaction to blood product transfusion

If there is a suspected transfusion reaction at any point in time during a transfusion, the transfusion must be **stopped** immediately. Inform medical team immediately to assess the patient.

Symptoms of suspected mild reactions may include:

- Increase in temperature
- Urticarial rash
- Increased blood pressure

Symptoms of suspected mild reactions may include:

- Increase in temperature 1.5°C above baseline
- Hypotension
- Tachycardia
- Respiratory distress
- Flushing

The following actions should be taken:

- Record a full set of observations
- Check identity of recipient with details on blood product unit
- Follow trust guidance on management of transfusion reactions (CUH - Management of transfusions reactions)
- Will need post transfusion blood sample once in receiving unit and inform on-call haematologist at referring unit & receiving unit
- Ensure incident reported in notes & complete Datix form

6. Reference

British Society for Haematology: Transfusions for foetuses, Neonates and older children https://b-s-h.org.uk/guidelines/guidelines/transfusion-for-fetuses-neonates-and-older-children

7. Associated documents

CUH - Management of transfusion reactions
http://merlin/DMSDocumentsPDF/18575.pdf

CUH - Blood and blood products administration by transfusion – Neonatal unit
http://merlin/DMSDocumentsPDF/605.pdf

8. Monitoring compliance with and the effectiveness of this document

Audit standards
The PaNDR team will monitor compliance with this document by undertaking regular audits which will be reported back to the consultants and lead nurse.

The effectiveness of the document will be monitored by review of any reported incidents by the lead consultant and nurse for risk

9. Equality and diversity statement

This document complies with the Cambridge University Hospitals NHS Foundation Trust service equality and diversity statement.

10. Document management

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