

Laboratory Best Transfusion Practice for Neonates, Infants and Children

This summary guidance should be used in conjunction with the appropriate 2016¹ and 2012² BSH Guidelines and laboratory SOPs

Compatibility testing

Neonates and infants < 4 months

Obtain neonatal and maternal transfusion history (including any fetal transfusions) for all admissions.

Obtain a maternal sample for initial testing where possible, in addition to the patient sample.

Red cell selection: no maternal antibodies present

Select appropriate group and correct neonatal specification red cells.

Group O D-negative red cells may be issued electronically without serological crossmatch.

If the laboratory does not universally select group O D-negative red cells for this age group, blood group selection should either be controlled by the LIMS or an IAT crossmatch should be performed using maternal or neonatal plasma to serologically confirm ABO compatibility with both mother and neonate.

Red cell selection: where there is maternal antibody

Select appropriate group red cells, compatible with maternal alloantibody/ies.

An IAT crossmatch should be performed using the maternal plasma.

If it is not possible to obtain a maternal sample it is acceptable to crossmatch antigen-negative units against the infant's plasma.

Where paedipacks are being issued from one donor unit it is only necessary to crossmatch the first split pack.

Subsequent split packs from this multi-satellite unit can be automatically issued without further crossmatch until the unit expires or the infant is older than 4 months.

If packs from a different donor are required, an IAT crossmatch should be performed.

Infants and children ≥ 4 months

For infants and children from 4 months of age, pre-transfusion testing and compatibility procedures should be performed as recommended for adults.

¹ Guidelines on transfusion for fetuses, neonates and older children. <http://www.b-s-h.org.uk/guidelines/guidelines/transfusion-for-fetuses-neonates-and-older-children>

² Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories. <http://www.b-s-h.org.uk/guidelines/guidelines/pre-transfusion-compatibility-procedures-in-blood-transfusion-laboratories>

Component specification

It is recommended that recipients under 1 year of age are transfused with components with neonatal/infant specification. These are provided by UK Blood Services.

Red cells

Allocate a set of paedipacks when first neonatal top-up transfusion requested (number allocated depending on local policy). They can be used up to 35 days after donation.

Platelets for neonates, infants and children

Small-volume apheresis packs with neonatal/infant specification are provided for neonates and infants. For older children, apheresis platelets should be provided whenever possible.

FFP and cryoprecipitate for neonates, infants and children

It is recommended that non-UK plasma from countries with a low risk of vCJD is used e.g. MB or SD plasma.

Special situations for neonates/infants¹

Specific components provided by UK Blood Services for:

Neonatal exchange transfusion

- use by end of Day 5, within 24 hr of irradiation.

Neonatal/infant large volume transfusion

- use by end of Day 5 (if irradiated, within 24 hr).

Neonatal alloimmune thrombocytopenia (NAIT)

- when NAIT is suspected and results of diagnostic tests are not available, order platelets negative for HPA-1a/5b antigens until NAIT is confirmed/excluded.

Emergency provision for infants < 1 year of age

In order to avoid delays in blood provision, if specific components are not available in an emergency, use local pre-agreed hierarchies of alternative components and communication pathways. Alternatives are dependent upon the reason for transfusion, availability of components routinely held in stock, timescales for delivery from the Blood Centre and proximity of local blood storage to the clinical area.

Hierarchy for consideration if no local policy in place:

1. ABO compatibility with infant (and mother for neonates and infants < 4 months)
2. Antigen-negative for maternal antibodies for neonates and infants < 4 months
3. Age of unit
4. Irradiation status
5. CMV negativity
6. A component that satisfies the neonatal/infant specification e.g. multi-satellite packs, MB FFP, small volume apheresis platelets

Abbreviations: SOP, standard operating procedure; LIMS, laboratory information management system; IAT, indirect antiglobulin test; vCJD, variant Creutzfeldt-Jakob disease; MB, methylene blue; SD, solvent detergent; HPA, human platelet antigen; CMV, cytomegalovirus.

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