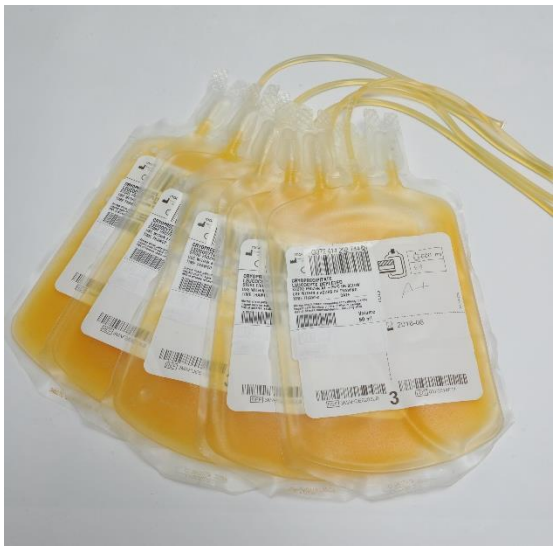
National Comparative Audit
of Blood Transfusion

NHS
Blood and Transplant

2018 Audit of the use of Fresh Frozen Plasma, Cryoprecipitate, and Transfusions for Bleeding in Neonates and other Children



2018 Audit of the use of Fresh Frozen Plasma, Cryoprecipitate and Transfusions for Bleeding in Neonates & Older Children

Background

This audit reviews the practice of the use of prophylactic fresh frozen plasma (FFP) and cryoprecipitate in neonates and older children, and of transfusions to treat bleeding and trauma. It is acknowledged that there is much excellent transfusion practice in this patient group, however this audit has identified many areas where practice may be improved at sites in the NHS. These cover organisational issues as well as transfusion care for individual infants and older children.

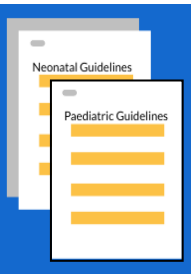
Participation

57 hospitals/trusts enrolled in the organisational audit

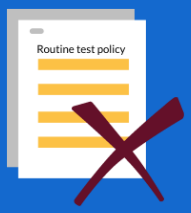
675 transfusion events in **594** children from **64** sites were audited

Key findings of 2018 audit

Organisational Findings



Most but not all sites transfusing the relevant age groups had policies for transfusing FFP and cryoprecipitate to neonates and children.



26% of sites had policies of routinely checking coagulation screens on all preterm neonates, which could increase the risk of unnecessary FFP transfusion.

28% of sites had no major haemorrhage protocol (MHP) for children.

For those sites that had an MHP, tranexamic acid use was not included in MHPs for children at 18% of sites.

40% sites did not have a concessionary release policy for use of acceptable alternatives to ‘paediatric’ blood components in emergencies for major bleeding.

Clinical Findings

76.5% of neonates were transfused prophylactic FFP for ‘abnormal coagulation’, in the absence of surgery/invasive procedure. 23.2% of neonates that had a coagulation test reported within the 24 hours prior to transfusion had an INR/PTR of < 1.5, not significantly abnormal

Prevention of intraventricular haemorrhage (IVH) was an additional reason for transfusion in neonates for around a third of all FFP and cryoprecipitate transfusions given for abnormal coagulation in the absence of invasive procedure or surgery.

The volume (mL/kg) of neonatal prophylactic FFP and cryoprecipitate transfusions was >20 mL/kg in 13.0% of FFP transfusions and > 10mL/kg in 41.5% of cryoprecipitate transfusions where data were available.

Volumes of prophylactic FFP and cryoprecipitate were <10mL/kg for 15.4% FFP and < 5mL/kg for 15.9% cryoprecipitate transfusions where data were available.

59.4% of children undergoing cardiac surgery transfused with prophylactic FFP and 48.8% with cryoprecipitate were stated to have ‘normal coagulation’, and the majority were ≥ 1 month old; of these children transfused with FFP, 61% were stated to have FFP for pump priming/cardiac bypass, and all were > 2 months old.

Tranexamic acid was used for 18.2% of cardiac surgery children transfused prophylactic FFP for ‘abnormal coagulation’ and surgery or invasive procedure, and for 64.3% of those transfused cryoprecipitate

Tranexamic acid was used for 83.3% (10/12) of the cases of trauma within 3 hours of trauma injury, but the numbers were small.

For children with major haemorrhage, the MHP was only activated in 61% of cases.

Standards and Results

Audit Standard	Audit Findings
KPI 1: Trusts have a policy/local guideline for the transfusion of FFP and cryoprecipitate to neonates and children.	96.5% (55/57) of sites had a neonatal unit, and of those 87.3% (48/55) had a policy/local guideline for transfusion to neonates (7/55 did not). 94.7% (54/57) of sites transfuse children who are not in a neonatal unit and of those 83.3% (45/54) had a policy/local guideline for transfusion to children (9/54 did not).
KPI 2: Trusts do not have a policy of routinely checking coagulation screens on all pre-term neonates.	70.2% (40/57) of sites met the audit standard of not having a policy of performing routine coagulation screens on all pre-term neonates. Unknown for 2 sites.
KPI 3: Coagulation tests are performed before giving prophylactic FFP or cryoprecipitate.	*FFP:* 63.1% (263/417) had a least one coagulation test known to be performed/reported within the 24 hours preceding the prophylactic FFP transfusion. 7.0 % (29/417) had at least one coagulation test more than 24 hours before the prophylactic FFP transfusion. 8.6%% (36/417) had at least one coagulation test but the transfusion time and/or test time was missing (Appendix D Table F). *Cryoprecipitate:* 61.7% (87/141) had a least one coagulation test known to be performed within the 24 hours preceding the prophylactic cryoprecipitate transfusion. 4.3% (6/141) had at least one coagulation test more than 24 hours before the prophylactic cryoprecipitate transfusion. 15.6% (22/141) had at least one coagulation test but the transfusion time and/or test time was missing (Appendix D Table J)
KPI 4: Reason for the use of FFP or cryoprecipitate is documented in the patient's notes.	Reason was documented in notes for 77.5% (323/417) of prophylactic FFP transfusion events, not documented in notes for 19% (78/417), and missing for 4% (16/417). Reason was documented in notes for 66.0% (93/141) of prophylactic cryoprecipitate transfusion events, not documented in notes for 31% (43/141), and missing for 4% (5/141).

Recommendations

Organisational Recommendations

Ensure that we have clear guidelines that are available to clinical teams on transfusion thresholds for different paediatric groups.

If we still routinely screen, then discuss with local clinical teams with a view to amending local protocols, and re-educate if required.

Check that our MHP for children is still appropriate, or develop one if we don't have one.

Ensure that our existing MHP for children includes the use of tranexamic acid, or ensure we include it in the MHP we intend to create.

Check that our local policy contains recommended hierarchies of alternative components, or build these into a policy if we don't have one.

Clinical Recommendations

If we use FFP to correct abnormalities of the coagulation screen in non-bleeding neonates, discuss BSH guidelines with local clinical teams with a view to amending local protocols, and re-educate if required.

If we are using FFP for volume replacement or to prevent IVH, discuss BSH guidelines with local clinical teams with a view to amending local protocols, and re-educate if required.

If we prophylactically administer cryoprecipitate to non-bleeding children with decreased fibrinogen, including prior to surgery, discuss BSH guidelines with local clinical teams with a view to amending local protocols, and re-educate if required.

If the audit showed that we lack compliance with transfusion volumes, discuss BSH guidelines with local clinical teams and ensure that any local protocols are in keeping with BSH recommendations. Re-educate if required.

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Re-educate if required.

We should review our audit data and discuss findings with cardiac teams.

We should review our use of tranexamic acid in cardiac surgery and neonatal surgery, taking into consideration BSH recommendations.

We should review our use of tranexamic acid in trauma and major haemorrhage, taking into consideration BSH and RCPCH (2012) recommendations. Re-educate if required.

We should review our MHP activations. For those patients where large volumes of product were given without MHP activation we should discuss those cases with clinicians.