22 Paediatric Summary

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Definition:

Paediatric cases comprise all reports for patients under 18 years of age, including all paediatric cases from the other chapters in this report. Paediatric reports have been subdivided by recipient age group: neonates ≤28 days; infants >28 days and <1 year; children ≥1 year to <16 years and young people aged 16 to <18 years.

Key SHOT messages

- Over and undertransfusion, largely due to mistakes in prescribing on a weight-basis, was a significant problem, with 13/19 (68.4%) of overtransfusion cases in paediatrics; this reflects the complexity of paediatric prescribing
- In 6 cases adult emergency O D-negative units were given to neonates, an area for hospital focus in developing strategies to help staff correctly identify the age-specific emergency units
- Most handling and storage errors (HSE) resulted from technical administration problems (12/16), including using incorrect pump settings; vigilance is required in the paediatric setting where pumps are so often used
- There were 2 confirmed paediatric reports of transfusion-related acute lung injury (TRALI) and 1 of transfusion-associated circulatory overload (TACO); it is important for these pulmonary complications to be considered in neonates and paediatrics as in older patients

Recommendation

- Clinical staff who prescribe blood for paediatric patients should not do so unless they have been given training in weight-based prescribing of blood components. Additional resources that can support best practice include the 'Bookmarks' and 'Blood Component App' with key information from the British Society for Haematology (BSH) paediatric transfusion guidelines (New et al, 2016; see SHOT website https://www.shotuk.org/resources/current-resources/)

Action: Hospital Transfusion Teams, Hospital Paediatricians, Royal College of Paediatrics and Child Health

Introduction and commentary

The paediatric chapter brings together the cases related to the <18-year age group in a 'mini-SHOT Report' in order to identify areas that have particularly relevant findings for professionals involved in the care of neonates and older children.

The number of paediatric cases in 2017 was similar to 2016 at 139/1671 (8.3%) total reports, 255/3230 (7.9%) if near miss (NM) and right blood right patient (RBRP) are included. As can be seen from Figure 22.1, paediatric cases are disproportionately represented in three of the error categories:

- 18/82 (22.0%) incorrect blood component transfused-wrong component transfused (IBCT-WCT)

- 23/225 (10.2%) IBCT-specific requirements not met (IBCT-SRNM)
- 31/225 (13.8%) avoidable, delayed or undertransfusion (ADU)

This pattern is similar to previous years and reflects the complexity of paediatric transfusion. As before, neonatal and infant reports were almost all in the error categories, (Figure 22.2), where they constituted a particularly high proportion of IBCT-WCT reports (Figure 22.4). Overall, paediatric error reports (IBCT, HSE, ADU, and anti-D immunoglobulin (Ig)) were 95/139 (68.3%) of total paediatric reports, similar to 2016, 101/136 (74.3%).

Errors categorised as primarily from the laboratory were 34/95 (35.4%) paediatric error reports (9 IBCT-WCT, 16 IBCT-SRNM, 2 HSE, 6 ADU, 1 anti-D Ig), compared to 409/1201 (34.1%) for total error reports. It is notable that reports of missed methylene-blue or solvent detergent-treated fresh frozen plasma (FFP) have decreased in 2017, Figure 22.3b. However, there continue to be reports of laboratory errors related to neonatal grouping and inadequate pre-transfusion testing despite these being the focus of the 2016 Annual SHOT Report (published 2017).

Clinical errors related to prescribing and administration are an ongoing concern, and this year there were 12 technical administration error reports. It is perhaps surprising that errors in weight-based prescribing for children are reported so regularly, given that most prescribing of drugs for children is done in this way.

The number of febrile, allergic and hypotensive reaction (FAHR, previously known as acute transfusion reactions (ATR)) reports has fluctuated over the last 10 years (Figure 22.3c). However, the proportion of FAHR to platelets is always high for paediatrics (primarily allergic) and the number of paediatric reports of reactions to platelets is 21/90 (23.3%) of the total reported to SHOT in 2017. This is similar to findings in the past (for example the 2008 Annual SHOT Report, published 2009), and suggests that there are a disproportionate number of platelet reactions in children. However, we do not have current denominator data about the number of platelet units transfused to the paediatric age group.

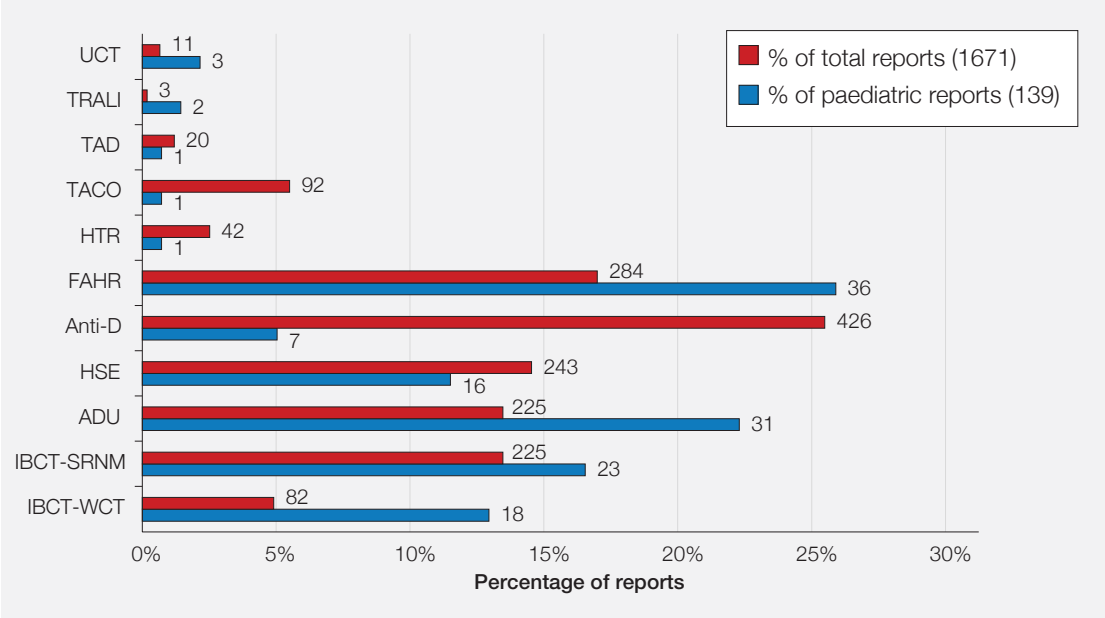


Figure 22.1: Percentages of paediatric and total reports in each category

UCT=unclassifiable complications of transfusion; TRALI=transfusion-related acute lung injury; TAD=transfusion-associated dyspnoea; TACO=transfusion-associated circulatory overload; HTR=haemolytic transfusion reactions; FAHR=febrile, allergic and hypotensive reactions; HSE=handling and storage errors; ADU=avoidable, delayed or undertransfusion; IBCT-SRNM=incorrect blood component transfused-specific requirements not met; IBCT-WCT=IBCT-wrong component transfusion

Figure 22.2: Summary of paediatric reports by category and age for 2017

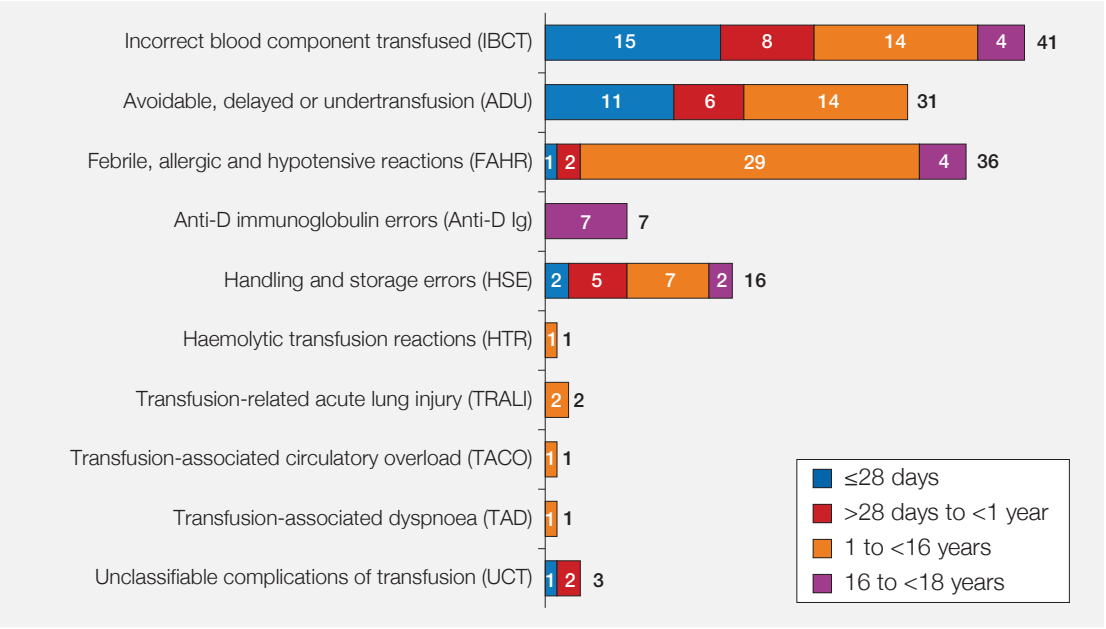
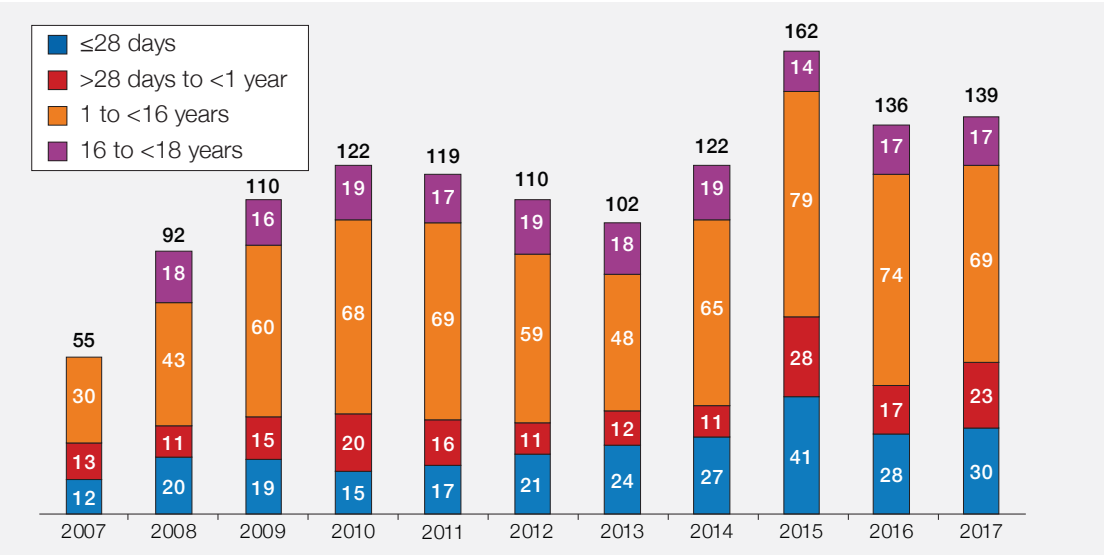


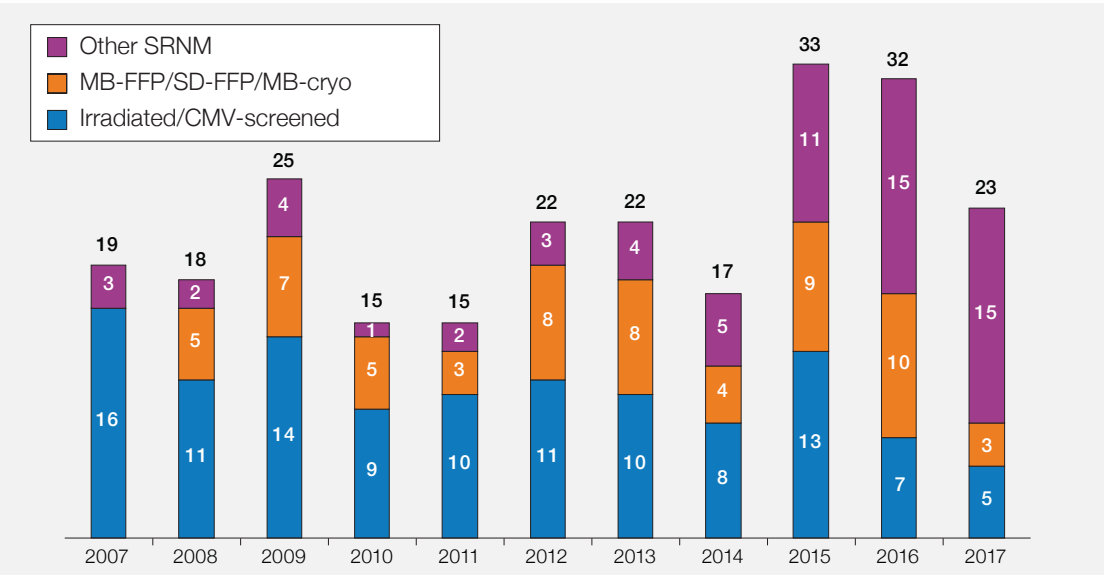
Figure 22.3: Trends in paediatric reports 2007-2017

a. Total paediatric reports subdivided by age



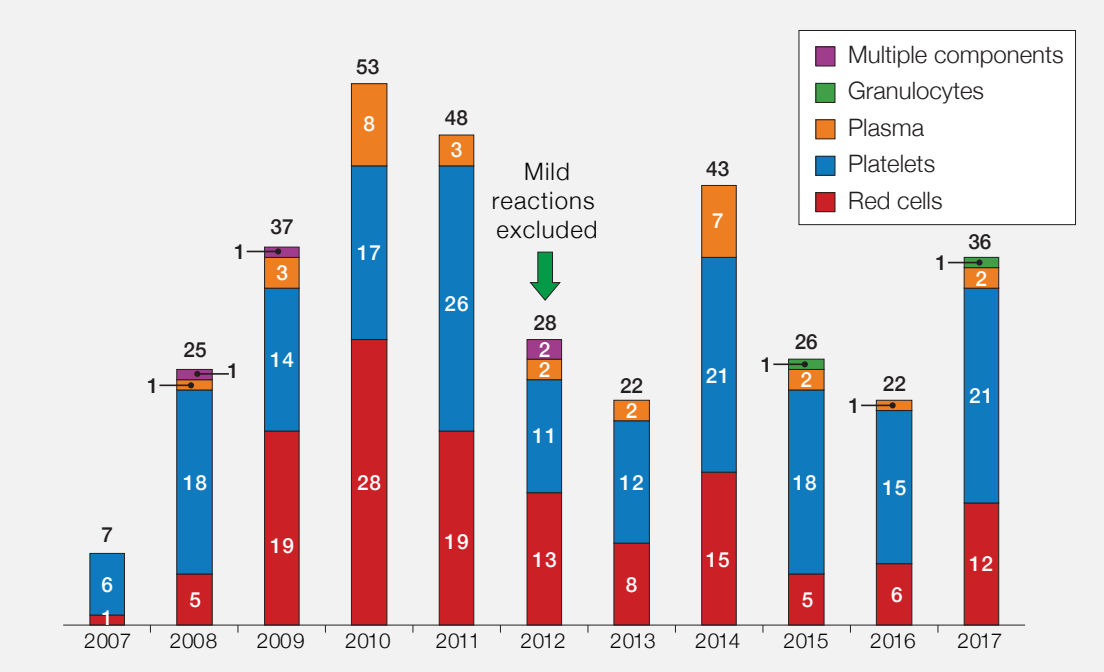
In 2007 only cases <16 years were included

b. Paediatric reports where specific requirements were not met (SRNM)



MB-FFP=methylene-blue treated fresh frozen plasma; SD-FFP=solvent detergent-treated FFP; cryo=cryoprecipitate; CMV=cytomegalovirus

c. Paediatric febrile, allergic and hypotensive reactions by component type



Deaths due to transfusion n=0

There were 9 deaths in the 139 cases, all except 1 in neonates and young infants, a highly vulnerable group of transfused patients. None of these were related to the transfusions.

Major morbidity n=15

See the individual chapters for further information: 11 FAHR; 1 IBCT-WCT laboratory; 1 UCT; 1 TACO and 1 TRALI.

Error-related reports n=95

Incorrect blood component transfused (IBCT) n=41

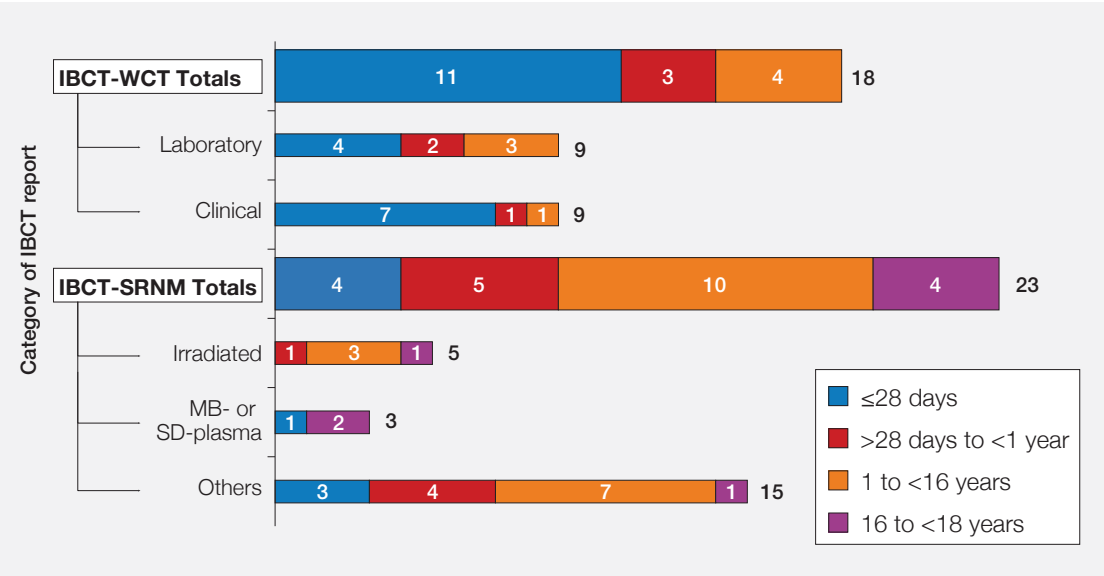


Figure 22.4: Breakdown of incorrect blood transfusion reports

IBCT-WCT=incorrect blood component transfused-wrong component transfused; IBCT-SRNM=IBCT-specific requirements not met; MB=methylene blue-treated; SD=solvent-detergent treated

IBCT-wrong component transfused (WCT) n=18

IBCT-WCT clinical errors n=9

Adult emergency red cell units were used instead of neonatal red cells for 6 infants of different ages. Two occurred immediately following delivery of the babies. One was due to a change in the software of a blood refrigerator so the kiosk did not require the age of patient when accessing emergency blood. One was an infant, who should still have received neonatal/infant specification blood despite being outside the neonatal period.

Learning point

- Neonatal/infant specification blood has additional safety features in view of the particular vulnerability of the recipients. Therefore, it is not appropriate to resuscitate neonates with adult red cells unless there is no available paedipack. Mitigations put in place by hospitals to reduce the chance of selecting the incorrect component by clinical staff include having neonatal and adult red cell units placed in containers with visual identifiers to help staff distinguish between them (for example Fig 22.5)

Figure 22.5 Example of neonatal emergency paedipack identification

With permission from Rachel Moss

There were 3 cases of incorrect procedure related to blood collection, sampling or administration. A wrong hospital number was used to collect blood for a neonate. The wrong sample was sent for another which grouped as B D-positive, whereas the correct group was O D-positive on the subsequent sample. (The baby was given O D-negative neonatal red cells in any case). Finally, a small volume of group O D-positive blood intended for another child was transfused to a group A D-positive child on the same day unit due to failure to follow the correct pre-administration bedside check.

IBCT-WCT laboratory errors n=9

Neonatal grouping procedural errors n=4

Two newborn babies were given group O fresh frozen plasma (FFP) issued after only a single grouping test (group O); in that situation they should have been given group AB. There were 2 cases of misinterpretation of neonatal grouping: a weak group A was misinterpreted as group O on two occasions (the second used only a rapid technique) and the baby was erroneously transfused with group O, incompatible FFP. In the other case, the group of a young infant for cardiac surgery was interpreted as A D-positive on one occasion and B D-positive on the other, and they were transfused (with group O red cells) before the error was noted.

D-mismatch errors n=3

Two D-negative babies were incorrectly given D-positive blood. One was delivered several weeks preterm due to severe fetal anaemia and was transfused with O D-positive red cells which the laboratory had already crossmatched against maternal plasma. The neonatal group was subsequently found to be A D-negative. Anti-D Ig was not given as it was felt unlikely that the baby would mount an immune response. The second D-negative infant was given O D-positive blood in an emergency due

to a transcription error by the biomedical scientist (BMS) when manually editing the blood group. On this occasion, it was decided to undertake an exchange transfusion and give anti-D Ig to remove the D-positive red cells (Case 10.1 in Chapter 10, Incorrect Blood Component Transfused (IBCT)). The baby died of their underlying condition. An older child with a D-variant was given 17 D-positive components as the requirement for D-negative blood was not flagged on the record.

Transplant-related blood group selection n=2

Blood was given that was ABO-compatible with a child recipient of a liver transplant but not D-compatible with the donor organ (Case 7.7 in Chapter 7, Laboratory Errors). An older child (group A) undergoing haemopoetic stem cell transplant (HSCT) was given group A red cells despite the protocol specifying group O, an error that was not preventable with the version of the laboratory information management system (LIMS) at the time.

IBCT-specific requirements not met (SRNM) n=23

Non-irradiated n=5

Four cases of missed irradiated components were due primarily to clinical error. A 1-month old baby who had received shared care in three hospitals and had received in-utero transfusions for haemolytic disease of the fetus and newborn did not receive irradiated blood. Non-irradiated cells were given for a young child in priming for a stem cell collection: the laboratory had been misinformed that irradiation was not required, and the error was not detected at the bedside check. Irradiated blood was not requested for a teenager who had received a purine analogue. An older teenager with DiGeorge syndrome was given non-irradiated red cells as the clinical staff did not request irradiated and the historical record was not checked in the laboratory. There was no adverse outcome. One child received non-irradiated platelets despite the requirement being stated on the LIMS.

Non-methylene blue/solvent-detergent plasma (MB/SD) n=3

A neonate was given standard cryoprecipitate having required resuscitation after birth following placental abruption. Local policy would have been to give fibrinogen concentrate in an emergency situation (although it is not licensed for this indication), as the laboratory did not stock MB cryoprecipitate due to infrequency of use. However, there was no alert in place for an age-related component choice for cryoprecipitate. Two teenagers were given standard FFP rather than MB/SD FFP in an emergency; in one the LIMS flag was ignored. It should be noted that some trauma centres where extended thawed standard FFP is held on standby choose to use pre-thawed standard FFP rather than MB/SD FFP in an emergency for paediatric patients as the fastest way of ensuring the child receives FFP.

Learning point

- There should be pre-agreed local policies in place for alternatives that may be used if specific components are not available in emergency situations

Others n=15

Inadequate pre-transfusion testing n=4

Three cases were reported related to neonates. Red cells were issued to a bleeding neonate where the maternal antibody status was unknown in an urgent situation. Later a retrospective crossmatch was not considered. For 2 cases, red cells were issued without serological crossmatch against the maternal sample, despite difficulties in neonatal grouping which should have precluded electronic issue. For an older child, a sample in an expired sample bottle was used for crossmatching.

Failure to use phenotyped blood n=9

A neonate was transfused with O D-negative paedipacks without checking the maternal sample. However, the mother had anti-f antibodies and antigen-negative units crossmatched against the maternal sample should have been used. Blood was issued without crossmatch for 2 infants where

there was evidence of maternal anti-D. The requirement for K-negative red cells for a female infant was overlooked, but if she had been given the appropriate neonatal/infant component this would have been included in any case (New et al. 2016).

Three children with sickle cell disease received Rh-unselected units. In 1 case the laboratory was not informed of the sickle status of the child; another was due to a Blood Service error, and the child subsequently developed an allo anti-C; the 3rd child was transfused a unit of red cells that were not Rh- or K-matched. Another child with sickle cell disease on regular transfusion who required Fy^a-negative units was given units positive for Fy^a at a time when the historical records were unavailable due to a cyber-attack. A child with thalassaemia on regular transfusions developed anti-E following transfusion of an E-positive unit.

Missed HEV-screened components n=2

Two children who required hepatitis E-screened components due to their immunological status did not receive them as the laboratory had not been informed.

The underlying causes for many of the laboratory errors are discussed in more detail in Chapter 7, Laboratory Errors, including some paediatric cases illustrating principles of the laboratory errors.

Avoidable, delayed or undertransfusion (ADU) n=31

Over and undertransfusion in paediatric patients contributed 14/24 (54.2%) of all cases of over and undertransfusion.

Avoidable n=9

Transfusion based on the incorrect pre-transfusion result n=5

- A preterm neonate with a pre-transfusion haemoglobin (Hb) of 214g/L was given blood based on the Hb of another baby in the unit
- An infant with acute leukaemia was given a platelet transfusion despite the platelet count waiting confirmation on review of the blood film, which subsequently showed platelet clumps
- A young child was transfused red cells and platelets following an erroneous full blood count (FBC) result taken from a drip arm. Although the error was noted prior to transfusion, the prescription was not amended so the transfusions were given despite the true pre-transfusion results being Hb 101g/L, platelets $46x10^9$/L
- A child with renal failure was transfused on the basis of an older pre-transfusion result (Hb 74g/L), rather than the more recent level of 103g/L, the error being detected by a relative
- A child in oncology received an unnecessary platelet transfusion. This was requested by the oncology centre due to thrombocytopenia, but when the child came to the shared care hospital for transfusion, the latest results were not checked

These cases illustrate the need for vigilance in checking pre-transfusion results and good communication, particularly with the additional complexity of shared care.

Avoidable use of O D-negative red cells n=4

O D-negative emergency units were used for transfusion in emergency neonatal surgery when the crossmatched units had been left out of temperature control in theatre for more than 30 minutes. O D-negative units were also used for a young child undergoing urgent replacement of an extracorporeal membrane oxygenation circuit. Although crossmatched blood was available (according to local policy, less than 4 days old to reduce the risk of hyperkalaemia), a 14-day-old O D-negative emergency unit was used. The other 2 cases were for neonates needing urgent provision of blood but where there would have been time to provide crossmatched units.

Delays to transfusion n=8

Most of the delays to transfusion in the paediatric age group were in neonates (7 cases). Difficulties with laboratory systems contributed to 3 cases: an urgent FFP transfusion for a neonate with pulmonary haemorrhage was delayed because MB-FFP had not been added to the LIMS so could not be issued electronically; a red cell transfusion was delayed due to the absence of a unique identifying number on the pack compatibility label following a printing error; an urgent red cell transfusion was delayed following problems with printing from the LIMS and subsequent transcription errors on the manual transfusion paperwork.

Case 22.1: Emergency units in the satellite blood refrigerator became unavailable due to 'misuse' of the blood refrigerator

A neonate born with Hb 41g/L following a fetomaternal haemorrhage required emergency transfusion. A single unit of neonatal emergency blood was taken from the satellite blood refrigerator but the drawer and refrigerator doors were not closed by the staff member who went immediately to the neonate. The refrigerator process was therefore not completed and the remaining member of staff repeatedly selected the only option available to them: 'press if tray empty' until the refrigerator stated there was no emergency blood available. Approximately 15 minutes later the neonate required more blood so other units had to be obtained from the blood transfusion laboratory. The baby died 2 days later (it is not clear if the delay contributed).

The design of blood refrigerators needs to be such that in an emergency situation it is easy to access the units required.

Two neonatal exchange transfusions were delayed, one due to various factors including inadequate communication resulting in a delay in provision of K-negative blood by the Blood Service; the other to a delay in the request for and subsequent provision of blood suitable in the context of maternal C, D, E, K and Jk^a antibodies where there had been no antenatal monitoring. Finally, blood for a neonate was delayed due to investigations into an apparent antibody to a low frequency blood group, complicated by mislabelling of the initial maternal sample.

Overtransfusion n=13

Thirteen of 19 cases of overtransfusion occurred in paediatric patients.

Case 22.2: Unnecessary overtransfusion of a child with red cells following trauma required venesection

A child was punched in the abdomen and the next day seen in the emergency department with haemodynamic instability presumed due to intra-abdominal bleeding. As there was delayed access to the paediatric surgical team due to difficulties with telephone reception and although the Hb was 176g/L, the child was 'resuscitated' with two units of red cells. The Hb rose to 208g/L and the child was venesected.

Inadequate clinical assessment resulted in the patient being unnecessarily transfused.

Case 22.3: Lack of understanding causes overtransfusion of an infant

A young child with sepsis, skin necrosis and renal failure weighing 12kg was transfused with two adult units of red cells (approximately 560mL) for postoperative anaemia. The Hb rose from 70g/L before the transfusion to 177g/L after the transfusion. There were no serious sequelae.

This was a volume of 46.7mL per kg. The error in this case was due to the junior doctor's lack of knowledge of how to prescribe blood components in paediatrics, it was noted in the procedural review that it was their first blood prescription outside adult medicine.

Case 22.4: Overtransfusion of red cells in a child during major haemorrhage

An infant with acute lymphoblastic leukaemia (ALL), weight 9kg, on enoxaparin, suffered major gastrointestinal bleeding with an unrecordable blood pressure and tachycardia of 190 beats per minute triggering activation of the major haemorrhage protocol. The child received 400mL of red cells

(44mL/kg). The pre-transfusion Hb was 111g/L and post was 194g/L. In addition, the child received FFP, platelets and cryoprecipitate. The child was endoscoped, intubated and ventilated related to the major haemorrhage and not the overtransfusion of red cells.

Review of the case noted that it would have been appropriate to monitor the Hb at intervals on the blood gas analyser.

Case 22.5: Transcription error in the weight results in excessive red cell transfusion

A child weighing 33kg with sickle cell disease was overtransfused due to a transcription error with the wrong weight. The amount was challenged by nursing staff but they were advised to carry on as a haematology registrar had written the prescription. Nobody noticed the wrongly transcribed weight.

Lack of knowledge or mistakes in calculation of the prescription by weight was a common error, occurring in 8/13 cases. The errors included failure to prescribe in mL, and misunderstanding the way to calculate transfusion volume for children. The prescribing clinicians included surgeons and haematologists as well as paediatricians.

Undertransfusion n=1

One of 5 cases of undertransfusion occurred in a paediatric patient.

Case 22.6: A junior doctor's order inappropriately overruled by registrar resulting in undertransfusion

A child weighing 22.5kg was oozing from a gastrostomy site and had Hb 77g/L. The junior doctor ordered one adult unit but the surgical registrar insisted on changing this to two paedipacks, despite advice from the BMS that the original request was more appropriate. The post-transfusion Hb was 71g/L and the child required a second transfusion of an adult unit resulting in an increase to 117g/L.

Learning point

- Clinical staff working in paediatrics need to have training in blood component prescribing in relation to patient weight to avoid potentially dangerous errors. Components should be prescribed in mL. This is particularly important for trainees who rotate from adult medicine. These errors are reported every year. Paediatric guidelines for transfusion should be readily available in all paediatric areas as recommended in recent British Society for Haematology (BSH) guidelines (New et al. 2016)

Paediatric errors related to transfusion pumps n=6 (including 3 from the handling and storage errors section)

There were 3 paediatric overtransfusion errors related to improper transfusion pump setup. Moreover, in the paediatric HSE section there were an additional 3 cases where the incorrect rate was set. Vigilance is needed, particularly in respect to checking rates and volumes administered to paediatric patients where inaccuracies can have significant consequences due to small circulating volumes.

Handling and storage errors (HSE) n=16

Cold chain errors n=2

Platelets were transfused to a neonate having been put in a refrigerator in error, not then queried by the neonatal staff. Red cells were transfused that had been in a refrigerator where the temperature rose to 6.5°C on several occasions without the alarm going off.

Excessive transfusion time n=2

Transfusions to two young infants took more than 5 hours, due to delays in re-cannulation. It is likely that other cases like this on neonatal units may be under-reported and lead to undertransfusions.

Technical administration errors n=12

In 4 cases, an incorrect giving set was used to transfuse red cells to an infant, with standard intravenous

(IV) sets being erroneously used. The filter in a blood giving set has a pore size of 170 to 200 microns, quite different to the filter in a standard IV set which is much smaller. The correct filter will remove any aggregates prior to transfusion into the patient. In 1 case for transfusion to a young child acutely bleeding with a head injury, no set was used at all; the pack was punctured with needle and syringe and the blood was given directly by peripheral venous access.

Incorrect pump settings were reported for 3 cases. In 2 of these, the pump rate was set using the figure for the volume to transfuse. Platelets were transfused using an infusion device for a young child, against local policy stating that they should only be given by free flow.

Case 22.7: Blood from two packs mixed in a syringe for an infant transfusion

An infant was prescribed 58mL red cells. Two paedipacks from the same donor were ordered from the laboratory. The nurse administering the blood mixed both bags into a 50mL syringe and started the transfusion. The remaining 8mL were left in the medication tray out of a temperature-controlled environment and without a label ready to be administered after completion of the first 50mL. Once the error was noted, the 8mL were discarded.

Blood from more than one pack should never be mixed in a syringe, or left unlabelled and separated from the original donation pack. This case illustrates the need for competency assessment in the blood administration process.

Case 22.8: A teenager on haemodialysis received rapid red cell infusion as line not clamped

Prior to haemodialysis for a teenager, the dialysis lines were primed with blood. However, the line was not clamped before starting dialysis, so the patient received one unit of red cells in the first 5 minutes. The staff member giving the transfusion had never given blood before and the unit was extremely busy with a high patient to staff ratio.

Flow rates on dialysis and apheresis machines can be rapid and small children may require red cell priming of apheresis machines, it is essential that staff operating such machines are fully trained.

Anti-D Ig n=7

All were errors in giving anti-D Ig to older teenagers related to pregnancy (see Chapter 14, Adverse Events Related to Anti-D Immunoglobulin (Anti-D Ig)).

Transfusion reactions n=44

Febrile, allergic and hypotensive reactions (FAHR) n=36

The number of cases in this category (previously 'Acute transfusion reactions') increased in 2017 (Figure 22.3c). As has usually been the case for paediatrics, in contrast to adults, platelet reactions are the largest group (Figure 22.6a).

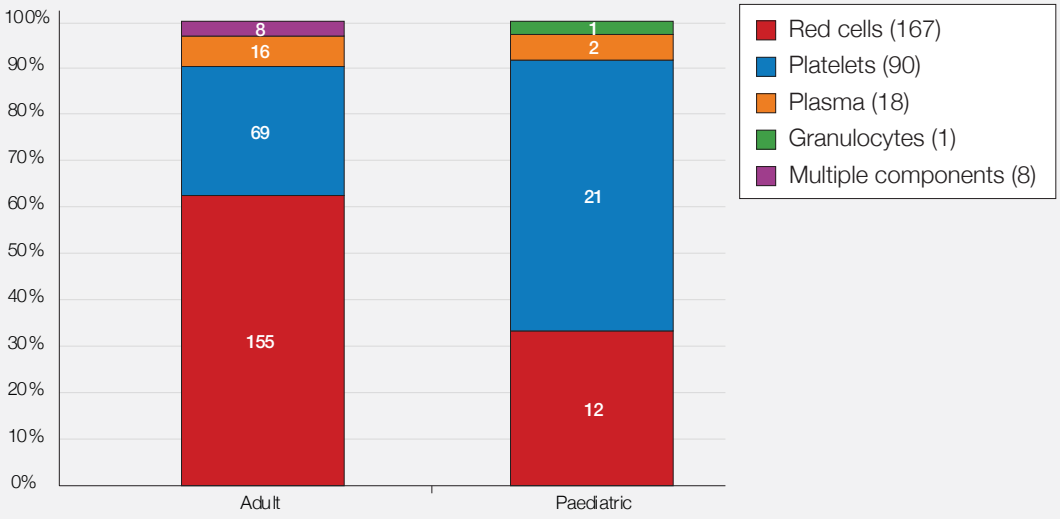
- **Red cells**: 12/36 (33.3%) reports. One child with a febrile reaction required admission and there were 2 severe allergic reactions
- **Platelets**: 21/36 (58.3%) reports. The majority of reactions (17/21) were allergic, of which 8 were severe (Figure 22.6b) including 2 from patients transfused with platelets pooled in platelet additive solution (PAS). There was a single moderate hypotensive reaction in a young child who had sepsis and pneumonia. Overall, there were 18 reports associated with apheresis platelets and 3 with pools in PAS. This is in line with the recommendation that paediatric patients should be transfused with apheresis platelets where possible. One of the apheresis platelet reports was associated with washed platelets in PAS, requested as the patient had previously had anaphylaxis following human leucocyte antigen (HLA)-matched platelets. One patient had also received contrast agent in association with a scan, a possible alternative precipitant of the reaction. In 20 patients where the underlying diagnosis was given, all were haematology/oncology/HSCT patients except 1 with

pneumonia. For recommendations related to FAHR in association with platelets see Chapter 16, Febrile, Allergic and Hypotensive Reactions (FAHR)

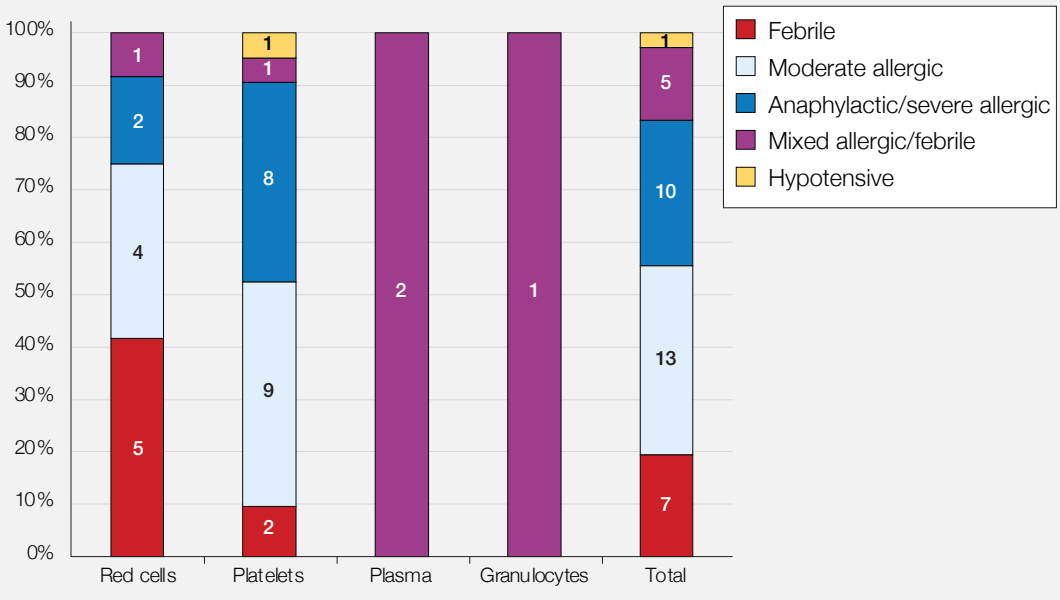
- **Plasma components/products**: 2/36 (5.6%) reports. Both were moderate mixed allergic/febrile reactions to Octaplas®, one occurring during a plasma exchange. There were no reports of reactions to MB plasma in 2017
- **Granulocytes**: 1/36 (2.8%) reports. There was a moderate mixed/febrile reaction to granulocytes transfused to a neutropenic teenager with leukaemia and sepsis

Figure 22.6: Paediatric febrile, allergic and hypotensive reaction (FAHR) reports

a. Comparison of proportions of adult and paediatric FAHR related to different components



b. Percentages of reaction types for each component for paediatric reports



Haemolytic transfusion reactions (HTR) n=1

A child <10 years old with multiple comorbidities including postoperative bleeding was noted to have anti-Jk^{a} in a pre-transfusion sample following two transfusions in the previous 2 weeks. She had evidence of a delayed transfusion reaction on blood tests and this may have contributed to her low Hb (see Chapter 19, Haemolytic Transfusion Reactions (HTR)).

Transfusion-associated circulatory overload (TACO) n=1

Case 22.9: Probable TACO in a child with newly-diagnosed leukaemia

A young child with probable newly diagnosed ALL was admitted with bleeding and coagulopathy. Prior to diagnostic procedures and line insertion the child was given platelets and cryoprecipitate, and platelets rose to >100x10^{9}/L. The child also required hyperhydration to reduce the risk of tumour lysis syndrome. As the line was oozing overnight further platelets were transfused as the instructions in the notes had said to transfuse platelets if bleeding (and had omitted to say 'if platelets <50'). This was despite the child being in significant positive fluid balance at the time. Subsequently the child became acutely unwell, requiring oxygen and admission to the paediatric intensive care unit (PICU) for non-invasive ventilation. The child responded to diuretics and was diagnosed with TACO.

The case illustrates the vulnerability of children at the time of leukaemia diagnosis and the need for careful consideration of TACO particularly while receiving hyperhydration as well as transfusion. However, reports of TACO in children are uncommon, with only 1/92 total SHOT reports in 2017 of TACO in the paediatric age group, possibly due to under-recognition or uncertainty in diagnosis (De Cloedt et al. 2018).

Transfusion-associated dyspnoea (TAD) n=1

This was a reaction following a granulocyte transfusion in a teenager with fever and sepsis on treatment for acute myeloid leukaemia. Following transfusion, the patient reported chest tightening, and the oxygen saturations dropped (see Chapter 18c, Transfusion-Associated Dyspnoea (TAD) for full details). The same patient had a FAHR after the previous transfusion.

Transfusion-related acute lung injury (TRALI) n=2

There were 2 reports. A child <10 years of age with acute leukaemia had acute respiratory deterioration and hypotension requiring ventilation, which occurred within 30 minutes of a platelet transfusion. The clinical condition improved following adrenaline and furosemide. A teenager on PICU following a liver transplant was transfused red cells for a Hb of 61g/L and 4 hours later had respiratory deterioration with non-specific chest X-ray changes. Both cases are reported in detail in Chapter 18a, Transfusion-Related Acute Lung Injury (TRALI), and the overall conclusion was that they can be considered as confirmed cases of TRALI.

New or unclassifiable complications of transfusion (UCT) n=3

There were 3 cases of transfusion-associated necrotising enterocolitis (TANEC) reported in preterm babies (see Chapter 20, New or Unclassifiable Complications of Transfusion (UCT) for details). For one, symptoms of NEC developed shortly after transfusion, whereas the other two were 12-24 hours later.

Near miss (NM) n=72 and right blood right patient (RBRP) n=13

See Chapter 12, Near Miss Reporting (NM) and Chapter 8, Right Blood Right Patient (RBRP) for full details, including 44 cases of incorrect identification between mother and baby (n=36) or between neonatal twins (n=8). Overall 43/44 were wrong blood in tube errors.

References

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