Annual SHOT Report 2018 – Supplementary information

Chapter 10: Avoidable, Delayed or Under/overtransfusion (ADU)

Table 10.1: Cases transferred from ADU to other categories n=22

SHOT category	Number of reports
Handling and storage errors	15
Near miss	3
Incorrect blood component transfused – wrong component transfused	1
Incorrect blood component transfused – specific requirements not met	1
Febrile, allergic or hypotensive reactions	1
Transfusion-associated circulatory overload	1
Total	**22**

Table 10.2: Cases transferred to ADU from other categories n=15

SHOT category	Number of reports
Near miss	6
Incorrect blood component transfused – wrong component transfused	3
Unclassified complications of transfusion (all PCC-related)	3
Handling and storage errors	1
Total	**15**

PCC=prothrombin complex concentrate

Eight cases were withdrawn, 5 because the decision to transfuse was appropriate for the clinical circumstances.

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Chapter 10c: Over or Undertransfusion

Additional case studies not included in the main 2018 Annual SHOT Report.

Case 10c.5: Miscalculation and misunderstanding of volume of red cells for a preterm baby

A preterm baby was transfused 33mL/kg when they should have received 20mL/kg. This occurred due to complete transfusion of the 2nd paedipack which should have been stopped after 44mL. The baby received treatment with a diuretic and oxygen and no harm resulted. The dose prescribed was 60mL which included the volume of 16mL for the giving set; the nurse understood this to be the total volume to be given.

Case 10c.6: Miscalculation and misunderstanding of volume of red cells for a preterm baby

A preterm baby received 37mL when the dose should have been 17mL. This was a miscalculation as the prescriber included the line volume. This was not noted at the bedside check.

Case 10c.7: Overtransfusion of an infant using an inappropriate electronic prescribing system

An infant requiring transfusion of red cells, weight 6.2kg, Hb 110g/L aiming at 140g/L, was prescribed a unit over 3 hours. The post-transfusion Hb was 190g/L. The error in prescription was noted the next day resulting in venesection of 50mL and replacement with fluid. The electronic prescribing programme used in this paediatric intensive care unit defaults to units and the prescriber has to go to a second page, which was not done in this case. The review noted this system is not fit for purpose in paediatrics and will be entered onto the risk register.

Case 10c.8: Excessive transfusion of an infant

One infant a few days old needing transfusion following cardiac surgery was prescribed and given too much blood and had to be venesected of 7mL to Hb 162g/L. The dose given was 54mL intending to raise Hb to 160g/L but the actual rise was to 197g/L. The pre-transfusion Hb on the gas machine was 120g/L (the weight was not provided).

Case 10c.9: Overtransfusion of platelets to an infant

A child less than 6 months of age with pancytopenia was prescribed 80mL of platelets but received 200mL. The platelet count rose from 15 to 200x10^9/L but the child suffered no harm. The review noted that the ward was very busy with many high dependency patients at that time.

Case 10c.10: Overtransfusion due to poor monitoring and inadequate handover

A man in his 60s with multiple trauma following a road traffic collision received six units of red cells over 8 hours resulting in Hb 174g/L. The case review noted poor fluid management related to poor handover.

Case 10c.11: Inappropriate overtransfusion of a man with iron deficiency

A young man with known glucose-6-phosphate dehydrogenase (G6PD) deficiency had Hb 77g/L subsequently falling to 68g/L with microcytic hypochromic picture was transfused four units inappropriately for iron deficiency; (G6PD deficiency does not usually cause chronic anaemia). He was stable and not bleeding.

Transfusion of a single unit with Hb check would have been appropriate. After this case was reviewed the reporter noted that all requests for red cells in stable non-bleeding patients must be verified and the requestor challenged, or the case escalated to the consultant haematologist if transfusion is considered inappropriate.

Case 10c.12: Conflicting Hb results should have triggered confirmation before transfusion

A patient was transfused in the ED on the basis of a probable wrong blood in tube sample. The patient was admitted with chest pain, dizziness and cough with brown sputum, but had a history of gastritis and was suspected to have a GI bleed although there was no other clinical evidence of this. A sample from the blood gas analyser gave Hb 154g/L but from the laboratory 71g/L. The patient received two units of red cells with a resulting Hb of 156g/L. The conflicting results should have triggered a repeat Hb.

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Chapter 10d: Prothrombin Complex Concentrates (PCC)

Additional case studies not included in the main 2018 Annual SHOT Report.

Case 10d.5: A patient with a haemorrhagic stroke

Delay in establishing INR result led to delay in treatment with PCC. The result could not be seen by ward staff on the electronic system. The user had not entered the request correctly. The report cited staffing issues in both clinical and laboratory areas which also led to delay in administration of the first dose. The guidelines for reversal of warfarin were updated to clarify the essential time frames.

Case 10d.6: Delay in treating subdural bleeding due to lack of knowledge

There was a delay in prescription of PCC for a patient with a subdural haemorrhage. Vitamin K alone was given. This was a failure to follow the correct procedures. The patient came to no additional harm, and the outcome was to increase awareness among medical and nursing staff of procedures related to PCC in the emergency department.

Case 10d.7: Failure to give PCC for intracranial bleeding

A woman in her 90s had confirmed intracranial haemorrhage after a head injury. Her INR was 1.81 and she received IV vitamin K. A consultant prescribed PCC, the laboratory issued it but it was not collected. The next morning it was requested again; four vials were supplied but only one given. By the following morning the INR was 1.19 so was corrected and the rest of the dose was not required.

Case 10d.8: Religious beliefs and lack of medical knowledge

PCC was prescribed inappropriately for a patient with objections on religious grounds to blood products who was not on warfarin with an INR of 1.32. The patient had fallen and required surgery for subarachnoid haemorrhage. Later discussion with the patient established that PCC was acceptable to this patient, although the clinical team had not realised that PCC was a blood product. This case resulted in dissemination of information about informed consent across the hospital and training for the clinical teams in the local area.

There was also a near miss case where Octaplas® was about to be given for plasma exchange to a person with religious objection again because the doctors did not realise this was a blood product. This was only detected at the bedside after the plasma had been thawed.

IT-related ADU cases n=18

There were 12 blood delays, 5 avoidable transfusions, which included 2 inappropriate uses of emergency O D-negative blood, 1 wrong result accessed and 1 error in the electronic prescribing system. Finally, there was 1 report involving overtransfusion. These reports can be linked to IT or other equipment problems.

Errors related to electronic blood management systems n=3

There were 2 delays, and 1 avoidable transfusion.

Case 10a.16: Satellite blood refrigerator would not release paediatric emergency O D-negative blood

A mother with a massive third-trimester antepartum haemorrhage, was transfused all the adult emergency blood from a tracked satellite refrigerator. When her baby was born by emergency caesarian section and also needed urgent transfusion, the paediatric emergency blood in the same refrigerator could not be accessed. A problem with the system meant that it was not registering ***any*** *emergency units (adult or paediatric) and would not release the locked door. A solution has been found and implemented to avoid this situation occurring again and further review is ongoing.*

In another case there were problems with bedside-tracking because the patient had 'unknown' gender instead of 'male' on the wristband. This prevented blood being administered with the bedside PDA and resulted in a blood delay. In a further case, an MLA put the blood in the wrong satellite refrigerator. The hospital did not have blood-tracking in place and there was delay to transfusion although the blood was eventually located.

Failure of equipment n=4

There were 2 blood delays due to the porter's bleep failing in the context of a bleeding emergency. When a satellite refrigerator was out of use the message did not get through to all staff in theatre and there was delay to an emergency transfusion as a result of this. A glitch with the transfusion LIMS was known to result in frequent duplicate printed copies of the compatibility paperwork. Unfortunately blood was provided to a trauma patient without the necessary paperwork because it was still sitting on the printer as an assumed duplicate.

Errors related to LIMS downtime n=4

There were 4 episodes of IT downtime that caused blood delays. Although 2 of these were planned, emergency blood was used unnecessarily when the patients could have waited or had crossmatched blood. In another 2 episodes of unplanned downtime delays to routine transfusions were reported.

Errors related to interoperable systems n=2

There was a reported blood delay because of incorrectly merged/linked records when upgrading the LIMS and in another situation, failure to have interoperable systems resulted in 2 different patients ID which caused clinically significant delay.

Blood delays due to LIMS configuration n=2

These 2 errors occurred with a LIMS that had been configured to default to the current sample as soon as it had been booked in rather than when the group and screen result was available. On both occasions the current sample had been rejected – one because it was an unnecessary group check sample and the other because it had probably been misidentified. On both occasions, patients who were otherwise eligible for EI had to have a serological crossmatch whilst the prevention of EI by the system was investigated.