

Explanations of Case Studies & Scenarios

Scenario 1

- Transfusion sample received by lab for a neonate.
- Tested and reported by lab staff.
- Staff nurse on unit realised when blood results were reported that the named baby had not had a transfusion sample taken.

- What went wrong?
Wrong patient details on sample

- Why?
Human error
Most likely protocol of labelling at the bedside did not occur
1 in 2000 blood samples are labelled wrongly!

- What should have happened?
Sample should be taken and labelled at the bedside
Staff should be training and competency assessed

- Consequences to the patient/clinician?
Could have lead to life-threatening transfusion reaction
Re-training and potential disciplinary action for clinician

- What SHOT category should this be reported as – if applicable?
Wrong blood in tube

Scenario 2

- A 2 month old baby on the neonatal intensive care unit (NICU) required platelets prior to surgery and the order for platelets was made twice.
- Following the first transfusion blood bank staff noticed the next day that platelets were still available but due to expire at midnight so informed the ward.
- This triggered staff to get the platelets to the ward on the assumption that they were required.
- On arrival the junior doctor was asked to authorise the platelets
- The infusion was discontinued when a senior doctor subsequently noticed that the baby was receiving platelets that were not required

- What went wrong?
Baby given unnecessary transfusion

- Why?
Likely communication error
Failure of staff to take ownership of patient care, failure of Junior Doctor to investigate reason for platelet transfusion (essential when authorising a transfusion)

- What should have happened?
Order should have been questioned in laboratory, by nursing and medical staff
Improved handover

- Consequences to the patient/clinician?
Baby given unnecessary transfusion and exposed to unnecessary risks
Team need to improve communication

- What SHOT category should this be reported as – if applicable?
Inappropriate and Unnecessary transfusion

Scenario 3

- A clinically stable non-ventilated 6 week old preterm infant, born at 26 weeks gestation, was given a red cell transfusion for symptomatic anaemia of prematurity (Hb 93 g/L).
 - There were no adverse events during the transfusion, and the post Hb was 167 g/L.
 - 4.5 hrs post transfusion the baby developed tachycardia, and over the next 12 hours deteriorated and developed a distended abdomen.
 - An X-ray was consistent with NEC, the baby continued to deteriorate and died at approximately 36 hours post transfusion.
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- What went wrong?
Potentially patient was transfused unnecessarily – more clinical information would be needed
There is an association with NEC although as yet no causal link has been proven.
 - Why?
Staff authorising transfusion unaware of the recommended Hb triggers.
All transfusions carry with them a risk and those risks are not always clear
 - What should have happened?
Needed further investigation to see whether transfusion was needed.
Patient/Parents should be consented and have the risks of blood transfusion explained, particularly that we are not aware of all risks and there may be problems in the future not currently apparent.
 - Consequences to the patient/clinician?
Death of baby although cannot conclusively be linked to transfusion.
 - What SHOT category should this be reported as – if applicable?
Previously uncategorised complication of transfusion (it is not certain that this was due to the transfusion but it may be that reporting cases such as this is the only way to identify if it is a risk)

Scenario 4

- A 15 day old neonate on PICU was erroneously transfused with 53 mL red cells over 15 minutes rather than 4 hours due to setting the infusion pump at an incorrect rate following an incorrect prescription.
- The baby required furosemide.
 - What went wrong?
Baby developed fluid overload because of incorrect administration of transfusion.
 - Why?
Transfusion given too fast
 - What should have happened?
Pump should be checked by two members of staff who are adequately trained. Patients receiving blood should be easily observed at all times (this may have prevented the problem).
 - Consequences to the patient/clinician?
Injury to patient
Re-training and potential disciplinary action for staff involved.
 - What SHOT category should this be reported as – if applicable?
Transfusion Associated Circulatory Overload (TACO)

Case Study 1

- A preterm baby with hydrops fetalis required emergency transfusion following delivery.
 - The baby was given adult emergency O RhD negative blood despite crossmatched blood being available within the maternity unit refrigerator following prior request by the obstetricians.
 - The staff member who removed the emergency O RhD negative unit did this despite being told by a midwife that crossmatched blood was available.
 - The baby died, unrelated to the transfusion.
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- What went wrong?
Inappropriate blood was given to the baby that did not meet the necessary special requirements (there are many requirements for neonates to ensure they are kept as safe as possible).
If patient had received as IUT is should be irradiated.
 - Why?
Most likely this occurred because of the stressful nature of such an emergency and staff wanting to act quickly.
There may have been a misconception that O RhD negative blood is 'safe' for everyone. It is only to be used in an emergency when it is not possible to give cross-matched blood. It is not cross-matched against the babies blood and does not meet special requirements.
 - What should have happened?
The crossmatched blood available in the laboratory should have been used.
 - Consequences to the patient/clinician?
Baby would have been at risk of a haemolytic transfusion reaction, potentially TA-GVHD and infection.
Clinician would need re-training as they may not fully understand transfusion compatibility.
 - What SHOT category should this be reported as – if applicable?
Incorrect blood component transfused – special requirements not met

Case Study 2

- Two hours after commencing a transfusion for a baby it was noted that only 2mL had been administered via the pump instead of the expected 14mL.
- The pump was replaced and the transfusion was recommenced.
- The transfusion finally finished after a total of 6.25 hrs.
- Later it was discovered that the pump malfunction was caused by using the wrong administration set.

- What went wrong?
Transfusion was not administered correctly. The blood was given over too long a period that could have allowed for bacterial growth and causes sepsis in the patient.
- Why?
Lack of observation of the patient
Equipment malfunction
Lack of knowledge regarding not using blood once it has been out of the fridge for 4 hours.
- What should have happened?
Patient should have observed and the problem with the pump noticed.
The transfusion should have been stopped at 4 hours regardless of was left.
- Consequences to the patient/clinician?
Patient at risk of infection and may need further transfusion anyway.
Need to re-train staff.
- What SHOT category should this be reported as – if applicable?
Handling and storage error

Case Study 3

- A 1 month old preterm female infant was transferred urgently with suspected bowel perforation. Only one valid patient sample was received and tested by the laboratory (mislabelling of the second).
- The infant grouped as O RhD negative was given group O SD-FFP on the basis of clinical urgency. Subsequent testing of a new sample gave a mixed field.
- The patient had received multiple group O red cell units at another hospital and her true group was AB RhD positive.
- Local policy when a single sample has been received was to use the laboratory information management system to permit the issue of group O red cells and group AB plasma only and this was not followed.

- What went wrong?
History of previous transfusion not given to laboratory
Inappropriate FFP given (please see presentation: Basics of Blood Transfusion). FFP is a plasma containing product it therefore contains antibodies. Group O FFP contains anti-A and anti-B.
- Why?
Lack of communication with the laboratory
Failure to follow hospital protocol.
- What should have happened?
If the laboratory were aware that the patient had received group O blood then they would have been more cautious in assigning the patients group.
As they only had one sample they should have continued with group O red cells and group AB FFP until the patients true group was established.
- Consequences to the patient/clinician?
Patient at risk of a haemolytic transfusion reaction
- What SHOT category should this be reported as – if applicable?
Incorrect blood component transfused (as we are not aware of any reaction that may have happened)

Case Study 4

- A 22 day old boy receiving extracorporeal membrane oxygenation therapy (ECMO) whose own group was A RhD positive was transfused with group O RhD positive platelets (the only group available at the time). He was bleeding and the transfusion was urgent.
- The child developed a positive direct antiglobulin test, and anti-A was found in the eluate when referred to the Blood Service reference laboratory. There were no adverse clinical sequelae related to this.
 - What went wrong?
Patient given transfusion of platelets that were incompatible.
 - Why?
It is an emergency and in this situation the decision was the correct one. Platelets are far less likely to cause an immediate life threatening ABO haemolysis than red cells. He may have died without the platelets. This is something that should be discussed with haematology medical staff.
 - What should have happened?
Discussion with haematology medical staff.
 - Consequences to the patient/clinician?
Potentially the patient could have had a haemolytic transfusion reaction.
 - What SHOT category should this be reported as – if applicable?
Alloimmunisation. I would not put this down as a haemolytic transfusion reaction without further information. The formation of anti-A and a positive DAT is not sufficient to make the diagnosis of haemolysis.

Case Study 5

- A 17 day old preterm twin, who was already jaundiced, had a neonatal blood transfusion through a 24 gauge peripheral cannula.
- The baby had a lower than expected rise in Hb, an unexpected rise in bilirubin from 69 micromol/L two days pre transfusion to 222 micromol/L within 24 hours of transfusion, and evidence of schistocytes, red cell fragments and polychromasia on the film.
- The baby also developed transient signs of increased work of breathing a few hours post transfusion.
- The reporters considered that this might have been mechanical haemolysis related to the small bore cannula as they could not identify another cause for the probable haemolysis, but this size cannula is routinely used for neonates including for transfusion so this is less likely than an underlying haemolysis causing the anaemia requiring transfusion.

- What went wrong?
Evidence of haemolysis ?related to cannula
Breathlessness related to transfusion
- Why?
There is evidence of haemolysis but it is not clear why. The text does not mention the formation of a new allo-antibody. It would be unusually for a cannula of that size to cause mechanical haemolysis.
- What should have happened?
A full investigation to look for an allo-antibody or another cause for the haemolysis.
- Consequences to the patient/clinician?
Haemolysis and breathlessness
- What SHOT category should this be reported as – if applicable?
I would report this as a haemolytic transfusion reaction so it can be properly investigated further.

Case Study 6

- A 1 day old neonate diagnosed with haemolytic disease of the newborn due to ABO incompatibility (mother group O RhD negative, baby group A RhD positive) required an exchange transfusion for rising bilirubin levels.
- The BMS ordered 2 units of group A RhD positive CMV negative, irradiated standard red cells without realising either that exchange transfusion units should have been requested or that group A was not compatible with the maternal group.
- Following the exchange, the bilirubin level had improved although was still high.
 - What went wrong?
Incorrect blood supplied by the laboratory
 - Why?
Laboratory error – they should have ensured correct component was given and that it was correctly cross-matched.
May have also been an error in communication from the clinical team.
 - What should have happened?
Correct component ordered and administered.
 - Consequences to the patient/clinician?
Received less benefit than would be expected from the exchange transfusion.
At risk of a possible transfusion reaction.
Need to re-train laboratory staff.
 - What SHOT category should this be reported as – if applicable?
Incorrect blood component transfused – special requirements not met.