

Under or Overtransfusion n=24

11c

A similar number of errors of transfusion volume were reported as in 2016 (n=21). There were 2 deaths where these errors were contributory, and several mistakes were made for transfusions in children. These cases are reported in Chapter 22, Paediatric Summary.

Undertransfusion n=5

Death probably related to undertransfusion n=1

Case 11c.1: Undertransfusion in a patient with GI bleeding probably contributes to death

A man in his 50s presented with postural hypotension. It was not initially recognised to be secondary to GI bleeding as initially he was physiologically well-compensated. On decompensation it came apparent that he had had a significant GI bleed. Two units of red cells were transfused but the patient died and was probably under filled.

Prompt recognition of bleeding is essential but this can sometimes be difficult due to the large volume of blood that can be concealed intra abdominally. Regular clinical monitoring is required when there is a suspicion of GI bleeding. Once confirmed, activation of the MHP with use of adjuncts such as tranexamic acid may help stabilise patients while the underlying cause is detected and treated.

Overtransfusion n=19

Death possibly related to overtransfusion n=1

Case 11c.2: Failure to check response to transfusion led to overtransfusion and possibly contributed to a poor outcome

A man in his 70s had a cardiac arrest, while in a CT scanner, following an endovascular aneurysm repair (EVAR). The arrest was thought to be secondary to major haemorrhage and the MHP was initiated. Four units of red cells and two units of FFP were transfused. The pre-transfusion Hb was 154g/L. No repeat FBC was taken before transfusing a further four units of red cells. The post-transfusion Hb was 269g/L. The patient required venesection but subsequently died.

This was a complex case and it was noted in the procedural review that the patient had to be moved several times during the course of resuscitation. This may have contributed to the failure to reassess transfusion requirements with repeat blood tests. Nonetheless, it is crucial to monitor response and the need for ongoing blood components.

There were several other cases reported including Case 11c.4 below, in which overtransfusion occurred as a result of inadequate clinical evaluation prior to giving further blood components.

Major morbidity n=1

Case 11c.3: Inadequate clinical monitoring leads to overtransfusion and contributes to intensive care admission

A woman in her 70s was admitted with a chest infection and Hb 66g/L due to suspected myelodysplastic syndrome (MDS). She also had a history of chronic obstructive pulmonary disease and ischaemic heart disease. A chest X-ray (CXR) on admission suggested a left lower respiratory infection. Four units of red cells were given over a 9-hour period; unit one was given over 60 minutes, units two and three over 90 minutes and unit four over 120 minutes. There was no recorded clinical

review or repeat Hb between the units. The patient deteriorated and required admission to intensive care for ventilator support. Case review by respiratory and ITU consultants with the post-transfusion CXR concluded this was primarily left lobar pneumonia and not TACO.

Failure to adequately monitor clinical response to transfusion is a recurring issue. Particular care should be taken in patients at high risk of overload including patients with ischaemic heart disease. The TACO checklist is a useful prompt (Chapter 18b, Transfusion-Associated Circulatory Overload (TACO)).

Case 11c.4: Inadequate monitoring and overtransfusion for iron deficiency in a patient with low body weight

A woman in her 40s was admitted with severe iron deficiency and Hb 28g/L. She weighed 33.4kg and was haemodynamically stable. Over the course of 3 days she received nine units of blood. A FBC was not repeated until all units had been given at which point the Hb was 171g/L.

Several errors were made in this case which led to unnecessary inpatient stay and exposure to blood components:

- Failure to check response of Hb level following each unit
- Overtransfusion in respect of underlying cause. Given the severity of anaemia in this case, initial transfusion of one to two units was reasonable but the mainstay of treatment should have been iron supplementation
- Low body weight not taken into account when considering volume requirement

Case 11c.5: Miscommunication and failure to challenge an unusual order leads to massive overtransfusion of cryoprecipitate

A man in his 70s was admitted with a stroke requiring thrombolysis. He later deteriorated with suspected (intracranial?) haemorrhage. The on-call haematology registrar advised cryoprecipitate if the fibrinogen level was less than 1.5g/L. Ten units of cryoprecipitate were requested and transfused.

There was either miscommunication or misunderstanding between the on-call haematologist and the medical middle grade doctor. Two units of cryoprecipitate, each made of five donor pools, is the correct dose. The patient was given five times this. There were missed opportunities for this dose to be questioned, by the BMS particularly, but also the nursing staff.

Over and undertransfusion in paediatric patients n=14/24 (58.3%)

Thirteen of 19 cases of overtransfusion and 1/5 cases of undertransfusion occurred in paediatric patients. These are described in Chapter 22, Paediatric Summary.



Learning point

- Junior staff working in paediatrics require training in blood component prescribing 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 guidelines (BSH New et al. 2016)

Errors related to transfusion pumps n=4

There were 4 errors related to improper transfusion pump setup. Incorrect setting of the rate led to overtransfusion in 3 cases, all of which occurred in paediatric patients. A case of undertransfusion in an adult occurred due to pump failure and was only noticed after 4 hours. 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.

Reference

BSH New HV, Berryman J et al. Guidelines on transfusion for fetuses, neonates and older children. *Br J Haematol* 2016;**175**(5):784-828.