

# New or Unclassifiable Complications of Transfusion (UCT) n=14

# 15

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## Definition:

**Occurrence of an adverse effect or reaction temporally related to transfusion, which cannot be classified according to an already defined transfusion event and with no risk factor other than the transfusion, and no other explanation.**

**Serious reactions in this category are reportable to the European Union (EU) as 'uncategorised unintended responses'.**

## Deaths n=3

In total 5 deaths were reported, including 3 cases of necrotising enterocolitis (NEC) where the transfusion was contributory (imputability 1) and 2 other cases where transfusion did not play a role.

## Major morbidity n=3

Three cases resulting in major morbidity are described below, Cases 15.3, 15.6 and 15.7.

## Transfusion-associated necrotising enterocolitis

Six infants with NEC were reported in 2015, 4 died and in 3 the transfusion was considered contributory.

### Case 15.1: NEC resulting in death, transfusion contributory

*A male 24 day old twin born at 27 weeks weighing 1090g developed NEC within 24 hours of top-up transfusion for symptomatic anaemia of prematurity. The baby had no symptoms prior to transfusion. The baby died within 48 hours and the transfusion was considered contributory.*

### Case 15.2: NEC resulting in death, transfusion not contributory

*A 1 month old baby (28.4 days preterm) had additional risk factors for NEC (surfactant lung disease and growth retardation). The baby developed NEC after transfusion, but had signs prior to transfusion and had received paedipacks from the same donation prior to this. The baby died but transfusion was not thought to contribute.*

### Case 15.3: NEC and intraventricular haemorrhage (IVH)

*A 1 month old baby (26.6 days preterm) with surfactant lung disease and bilateral intraventricular haemorrhage developed NEC within 3 hours of transfusion. The consultant could not assess whether the transfusion had played a role; the baby recovered.*

### Case 15.4: NEC where transfusion contributed to death

*A 1 month old baby (born at 28 weeks, 830g) developed an episode of suspected NEC on day 4 and recovered with conservative management. On day 37, now established on enteral feeds, she developed confirmed NEC again 2 hours post transfusion. The child died 2 days later and the transfusion was considered to be contributory.*

**Case 15.5: NEC where transfusion contributed to death**

*A 1 month old baby (preterm 23 weeks) had a confirmed episode of NEC at about 2 weeks, then while stable and ventilated, developed another episode 3 weeks later on the same day as transfusion and died within 24 hours with fulminant NEC. The transfusion was considered to be contributory.*

**Case 15.6: NEC post transfusion and recovered**

*A 1 month old baby (27 week twin) received a transfusion on day 32. The baby had respiratory distress prior to transfusion but deteriorated during transfusion requiring cardiopulmonary resuscitation. Noted to have distended abdomen and was transferred to tertiary care with suspected NEC. The baby survived.*

**Comment:** This association requires further investigation. However, a large Canadian study identified 927 cases of NEC and confirmed that transfusion in the previous 2 days was significantly higher than in controls (15.5% vs 7.7%) and is an independent risk factor (Stritzke et al. 2013). It has been thought to be related to feeding practice. The evidence is reviewed by Keir and Wilkinson (2013) who conclude that there is some support for this association. They suggest that feeding should be withheld during transfusion 'pending further evidence'. A retrospective multicentre audit in the UK using strict criteria for the definition concluded that 15 (22%) of 68 very low birth weight infants with NEC were transfusion-associated (Hamad et al. 2015) and the authors recommend that a large surveillance study be undertaken.

## Pain in relation to transfusion

This interesting complication is a recognised association in patients with thalassaemia (Haines et al. 2013, Green et al. 2014), and a severe case was noted in the Annual SHOT Report for events in 2012. Four similar cases were reported in 2015, two with thalassaemia.

## Miscellaneous

**Case 15.7: Reaction to intravenous immunoglobulin (IVIg)**

*A reminder that IVIg can be associated with serious life-threatening events: a 56 year old woman with serious autoimmune disease and multiorgan dysfunction suffered respiratory arrest necessitating admission to the intensive therapy unit.*

**Case 15.8: Reaction to administration of granulocytes**

*A 35 year old with relapsed chronic myeloid leukaemia and fungal infection received granulocytes prepared 'in house' which had not been crossmatched, and developed a rigor with a temperature increase from 36.8 to 39.6°C and tachycardia. This was a procedural failure associated with a serious adverse reaction. Granulocytes should undergo the same compatibility testing as red cells, and be ABO-, D- and crossmatch-compatible with any red cell antibodies in the recipient.*

**Case 15.9: Unexplained death during transfusion**

*A 6 year old girl with scoliosis and a complex medical history arrested and died during a postoperative transfusion. Although a potassium level done on a point-of-care machine was elevated, the unit of blood was tested for potassium content and was not implicated. The cause of death was not thought to be related to the transfusion.*

**Case 15.10: A reminder to de-activate access to the blood refrigerator when a member of staff is on sick leave long term**

*A 57 year old staff member reported to the community psychiatric nurse that she had taken a unit of blood from the laboratory and infused it into herself as part of self-harm. Her swipe card access to the system at midnight during her admission was confirmed and a unit of blood (group A D-positive) was found to be missing. The patient's group is O D-positive. It was not confirmed whether this unit had been self-infused but no reaction was reported. The security policy was reviewed and changed as a result of this incident.*

## References

- Green ST, Martin MB et al. (2014) **Variance of pain prevalence and associated severity during the transfusion cycle of adult thalassaemia patients.** Br J Haematol 166(5), 797-800
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- Hamad S, Jones K et al. (2015) **UK Transfusion-associated necrotising enterocolitis cases identified through a multicentre audit.** Arch Dis Child 100; Suppl 3 A 55
- Keir AK, Wilkinson D. (2013) **Towards evidence based medicine for paediatricians Question 1 Do feeding practices during transfusion influence the risk of developing necrotising enterocolitis in preterm infants?** Arch Dis Child 98, 386-388
- Stritzke AI, Smyth J et al. (2013) **Transfusion-associated necrotising enterocolitis in neonates.** Arch Dis Child Fetal Neonatal Ed 98, F10-F14