Incorrect Plasma Components Transfused: When It Comes To ABO Compatibility Do We Need To Stop Only Ever 'Seeing Red'?

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Introduction

Unintentional ABO-incompatible (ABOi) blood transfusions are regarded as Never Events by NHS England, NHS Wales and in Northern Ireland (serious incidents that are wholly preventable), or as Red Events by NHS Scotland (significant adverse events)

ABOi transfusions demonstrate a preventable breakdown in transfusion protocols and standard operating procedures. They can have severe consequences, with significant morbidity and mortality

Although the risk of haemolysis and serious harm is more likely with red cells, ABO incompatibility for plasma components still carries significant risk, particularly in infants

Methods

ABOi reports made to SHOT from 2012 to 2019* were analysed to determine what proportion of these errors were related to plasma components (standard and pathogen reduced fresh frozen plasma, and cryoprecipitate), and to identify the key steps where improvements could be made to reduce these errors

Results

Plasma components accounted for 2,993,896/20,402,549 **(14.7%)** of all blood components issued in the UK from 2012-2019*, but were involved in 24/71 **(33.8%)** ABOi errors during this time (Fig. 1). A total of 8/24 (33.3%) events occurred in paediatric patients and no ABOi plasma events directly contributed to major morbidity or fatality

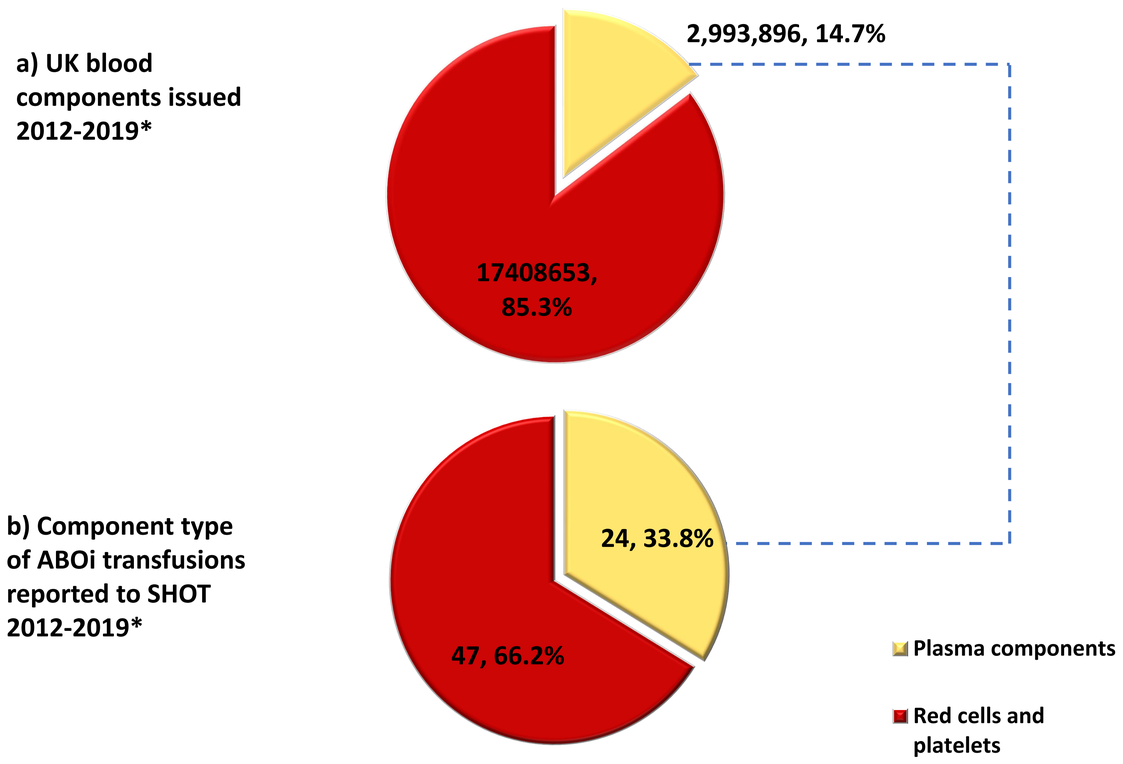
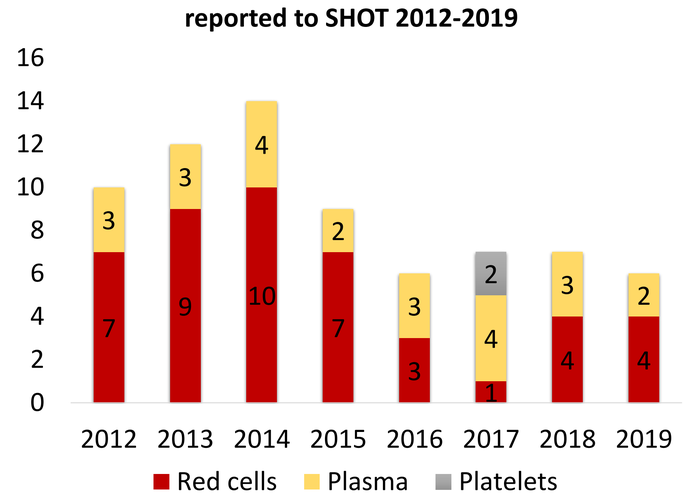


Fig. 1: A disproportionately high percentage of ABOi transfusions are due to plasma components, when compared to the percentage of all components issued

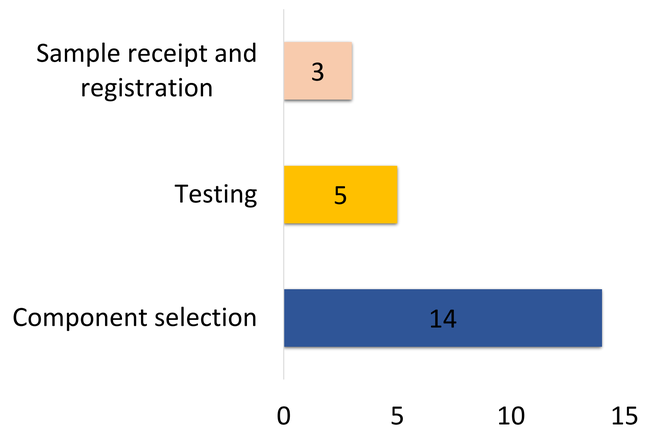
The number of ABOi transfusions involving plasma components has remained consistent over time, whereas the number of red cell ABOi has reduced (Fig. 2)

Fig 2. Trends in the ABOi transfusions in UK as reported to SHOT 2012-2019



Most plasma related ABOi errors originated in the laboratory, 22/24 (91.6%). The errors mostly occurred during component selection 14/22 (63.6%) (Fig. 3)

Fig 3. Step in the laboratory where ABOi errors occur



Discussion

The following SHOT recommendations remain pertinent to prevent ABOi plasma transfusion

2017 • Training in ABO and D blood group principles is essential for all laboratory and clinical staff with any responsibility for the transfusion process. This should form part of competency assessments

2018 • It is important to ensure stock that may possibly be issued in ABO-mismatched scenarios is of the correct specification and the standard operating procedure (SOP) is clear about replacement group issues

2019 • Laboratory information management systems (LIMS) should prevent ABO-incompatible blood components being issued, especially in an emergency when the patient's blood group is unknown

Whilst there is heavy emphasis on the ABO compatibility of packed red blood cells in transfusion education, awareness and understanding regarding compatibility of plasma components and platelets is often lacking, contributing to errors. Systems in place to prevent ABOi transfusions must consider plasma compatibility, to prevent patient harm.

*Original data submitted for 2012-2018. The 2019 Annual SHOT Report has now been published and data updated

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