

National Comparative Audit of Group O RhD Negative Red Cells

In June 2010 the National Comparative Audit of Blood Transfusion re-audited usage of O RhD negative red cells. 214 sites contributed data on 5108 transfusion episodes, and 211 sites contributed organisational data. 215 sites contributed blood stockholding data, and 198 sites contributed to all 3 types of data.

Summary of the Key Findings

Emergency Use

- NHS Hospitals able to provide group specific blood in less than 15 minutes use up to 50% less emergency O RhD negative red cells than those hospitals unable to provide this.
- Emergency O RhD negative units were used in 5.5% of transfusion episodes averaging 2.2 units per episode. In almost 2% of transfusion episodes patients received more than 3 units of O RhD negative red cells as emergency units. For a third of those episodes, transfusion beyond two units could have been avoided.
- The main reason given for transfusing more than 2 units was an inadequately labelled or unavailable patient sample, followed by emergency use and request according to policy.

Policy and Guidelines

- A third of Hospital Transfusion Teams and Committees (30%) 63/211 have never reviewed O RhD negative red blood cell use in their hospital.
- Despite the National guidelines, 26% of hospitals do not have relevant policies or guidance in place to provide O RhD positive red cells to O RhD negative males or females of more than 60 years old with no anti-D who receive massive blood transfusion (i.e. >8 units).
- 68% of patients receiving transfusions involving at least one unit of O RhD negative red cells were aged 60 or over.

Provision of Red Blood Cells by NHS Blood and Transplant

- UK blood services are under pressure to maintain supply of Group O RhD negative red cells to hospitals if issues are more than 10.5%. Constant high demand may lead to shortages in the future.
- Of the 20% of cases where transfusion of O RhD negative blood was given outside of national indications for use, 3% (28/1059) of patients had a Rh type of Ro and received O RhD negative from NHSBT as a replacement component to their original request.
- 12% of the unassigned reasons for use of O RhD negative were that hospital transfusion laboratories were unable to provide group specific blood because insufficient stock was available from NHSBT.
- Of the 86% of O RhD positive recipients with antibodies transfused with O RhD negative, 25% had 90.1-100% compatibility with the general population. Patients with 90.1-100% compatibility could be transfused with group specific blood as their specific phenotypic requirements can be met.
- Of the 84% of non Group O recipient with antibodies only 7.5% had a 90.1-100% compatibility with the general population.

Stock Holding

- Only 16% of participating sites keep less than 10.5% of their red cell stocks as O RhD negative. 38% of sites keep stock levels of less than 12% and 15% of sites keep more than 20% of their stocks as O RhD negative.
- 10% of blood audited was transfused to non O RhD negative patients in order to prevent time expiry. Transfusions to prevent time expiry clearly correlated with stock levels.
- Stock levels correlated with the size of hospitals (very low and very high users tend to keep a higher proportion of their red cell stock as O RhD negative red cells). Hospitals keeping more than 20 units in different satellite fridges tend to keep a higher proportion of their red cell stock as O RhD negative.
- Hospitals located closer to blood centres (emergency delivery time of less than 15 minutes) tend to stock much higher levels of O RhD negative red cells.
- The practice of persistently transfusing O RhD negative red cells to non O RhD negative individuals outside the agreed indications is associated with overstocking of O RhD negative red cells.
- The reason for transfusion of O RhD negative red cells to non O RhD negative patients in 60% of cases where none of the guideline categories applied, was elective transfusion to prevent time expiry of standard or irradiated units.
- The use of O RhD negative is disproportionately high in O RhD positive (x1.7) and B RhD negative (x6.9) compared to their frequency in the general population for the use of antigen negative blood. The only alternative to O RhD positive is O RhD negative. However, O RhD positive stocks are normally reasonably high, therefore there is a higher likelihood of finding antigen negative red cells from stock.
- Hospitals with an onsite Accident & Emergency Department, designated trauma centre and on site maternity unit showed no evidence of correlation with average stockholding levels. Neither is there any apparent effect of routine stocking of irradiated, CMV negative or irradiated CMV negative units.
- The number of satellite fridges in use does not seem to have any effect on levels of O RhD negative red cell stocks.

Recommendations from the National Comparative Audit 2010 Re-audit of the Use of Group O RhD Negative Red Cells

1. Hospitals must regularly review use of O RhD negative red cells for emergencies and investigate incidents where its use is considered inappropriate.
2. In some cases patients are being unnecessarily transfused with more than 3 units of O RhD negative red cells, and hospitals should regularly review practice to ensure that this is kept to a minimum.
3. Hospitals must provide group specific red cells rapidly to avoid unnecessary use of emergency group O RhD negative red cells.
4. For Group O RhD positive recipients all efforts must be made to identify phenotypically matched group specific blood.
5. NHSBT/ Blood Services should provide a sufficient number of extensively phenotyped O RhD positive units of blood in order to enable the appropriate selection of group specific blood.
6. Hospitals must reduce their stock levels of O RhD negative red cells to the recommended level of 10.5% in order to avoid transfusions to non O RhD negative patients and thus avoid wastage due to time expiry.
7. Appropriate policies which guide use of O RhD negative red cells should be introduced in order to reduce unnecessarily high stockholding levels.



The Chief Medical Officer's National Blood Transfusion Committee recommendations for the transfusion of O RhD Negative red blood cells are available at http://www.transfusionsguidelines.org.uk/docs/pdfs/nbtc_bbt_o_neg_red_cells_recs_09_04.pdf

A full report on the findings from the National Comparative Audit of Group O RhD Negative Red Cells can be found at http://hospital.blood.co.uk/safe_use/clinical_audit/National_Comparative/index.asp