

TEN SIMPLE RULES FOR PROPER USE OF O RHD NEGATIVE RED CELLS

Samantha Bonney¹, Patrick Nee²

¹ Blood Transfusion Department, Mersey and West Lancashire Teaching Hospitals NHS Trust

² Faculty of Health, Liverpool John Moores University

- Transfusion of uncrossmatched emergency group O Rhesus D Negative red blood cells (RBCs) is frequently undertaken in the emergency department. Commonly referred to as O Neg it is described as the universal donor because there is no risk of major ABO or Rhesus D group incompatibility reactions.
- O Neg RBCs are a scarce resource. In October 2022 the UK saw its first RBC amber alert when stock levels in England fell to near critical levels. O Neg stock levels were the most vulnerable and continue to be a cause for concern¹.
- There are hazards associated with emergency O Neg transfusions and many adverse events are reported each year².
- The use and wastage of all O Neg blood is continually audited by the Hospital Transfusion Team at Mersey and West Lancashire Teaching Hospitals NHS Trust.
- All adverse events, near misses and wastage relating to its use are investigated. By examining audit data and incident reports key areas for education were identified and the 'Ten Pearls and Pitfalls' were developed as an aide memoire.

O NEG EMERGENCY RED CELLS: TEN PEARLS AND PITFALLS



1. IS THE EMERGENCY TRANSFUSION INDICATED?

Where the clinical situation permits, even in a bleeding patient, it is preferable to wait for cross-matched blood. Each transfusion is an independent clinical decision. Over transfusion is harmful and wasteful. Transfusion Indication codes can be found in this QR code³.

2. CAN YOUR PATIENT RECEIVE O RHD POSITIVE EMERGENCY BLOOD INSTEAD?

To protect national O Neg red cell stocks the National Transfusion Laboratory Managers Group recommend using emergency O D Positive red cells for:

- Adults assigned male at birth
- Patients assigned female at birth and >51 years of age.

3. O NEG IS NOT ALWAYS UNIVERSALLY COMPATIBLE

There is a risk of non-ABO transfusion reactions when un-crossmatched group O blood is transfused. One in fifteen patients will develop an antibody to donated blood⁴. High titres of antibodies may cause complement fixation and intravascular haemolysis.



4. DON'T WASTE IT!

Demand for O Neg red cells increased by 2.7% last year whilst overall red cell demand decreased by 5.8%. Approximately 7% of the UK donor population is O Rh D negative, but this type accounts for 14.5% of units issued to hospitals⁵. O Neg is wasted most frequently due to incorrect storage. Put it back into the blood fridge immediately if the transfusion is cancelled.



5. CALL THE LAB IMMEDIATELY IF YOU USE THE O NEG IN A SATELLITE FRIDGE

This is so that:

- The units can be replaced without delay.
- Plasma products can be defrosted if necessary for the bleeding patient in a timely manner.
- The lab is informed as to the need to activate the major haemorrhage protocol.



6. USE A BLOOD WARMER

Rapid infusion of cold red cells may lower the body core temperature. Hypothermia decreases platelet function, impairs coagulation and thrombin generation and exacerbates bleeding. Red cell warming is recommended for adults who receive blood more rapidly than 50 mL/kg/h or if receiving more than 500mL of intravenous fluid⁶.



7. TAKE THE GROUP AND SCREEN SAMPLE BEFORE THE TRANSFUSION

Once red cells have been administered the lab will detect the donor blood in the sample. This can cause grouping discrepancies which in turn leads to delays in providing further cross-matched blood. This will also render the patient unsuitable for electronic issue.



8. COMPLETE A TACO CHECKLIST

Transfusion-associated circulatory overload (TACO) is a major cause of mortality and morbidity. It is defined as acute or worsening respiratory compromise and/or acute or worsening clinical or radiological evidence of pulmonary oedema during or within 12 hours of transfusion. A formal pre-transfusion risk assessment for TACO should be undertaken in all patients receiving blood⁷.



9. BLOOD SHOULD ONLY BE TRANSFERRED FOR 'EN ROUTE' RESUSCITATION PURPOSES

Blood must be packed in the correct transport box by laboratory staff who will provide the necessary transport paperwork. If not used, sealed boxes can be handed to the transfusion laboratory at the receiving hospital. Blood can then be returned and used for another patient.



10. TRACEABILITY IS A LEGAL REQUIREMENT

Regulations require "unambiguous traceability" of all blood and blood components from donor to patient and vice versa, or final fate if not transfused⁸. Ensure the administration of emergency blood is documented just as clearly as cross matched blood.

REFERENCES:

1. NHS England - NHS Blood and Transplant amber alert for O type blood
2. SHOT Annual Reports and Summaries - Serious Hazards of Transfusion (shotuk.org)
3. Home 1. NHS Blood Components
4. Alves VM, Martins PR, Soares S, et al. Alloimmunization screening after transfusion of red blood cells in a prospective study. Rev Bras Hematol Hemoter. 2012;34(3):206-11.
5. Updated O D Negative red cells guidance published - Hospitals and Science - NHSBT (blood.co.uk)
6. National Institute for Clinical Excellence (NICE) Hypothermia: prevention and management in adults having surgery Clinical guideline Published: 23 April 2008, last updated December 2016
7. TACO National Patient Safety Alert issued - Serious Hazards of Transfusion (shotuk.org)
8. https://assets.publishing.service.gov.uk/media/5a7ba2bbe5274a7202e18713/0117033715.pdf