



RhD O negative blood group

An audit -the utilization of O RhD negative blood group



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Background

- **Current problem:** Stocks of Universal Donor Blood Group, O RhD Negative (O NEG) red blood cells (RBC) have continued to be in short supply despite the overall reduction on the usage of red cells.
- The demand (12% O Neg issues) is greater than supply (7% O Neg donors). On average each O Negative blood donor donates 20% more blood than other donor groups (source: NHSBT).
- The development of Massive Transfusion Protocols (MTPs) has led to the increase demand in O Neg RBCs.
- The growing gap between blood demand and blood donation could have implications for future medical care.
- It is vital to conserve the O Neg stocks for those patients for whom there is no alternative.
- Performing audit on usages of O Neg RBCs against NBTC guidelines at our major trauma led transfusion laboratory could provide valuable information and seek out ways to improve the usage of this limited resource.

Data on group O Neg RBC usage

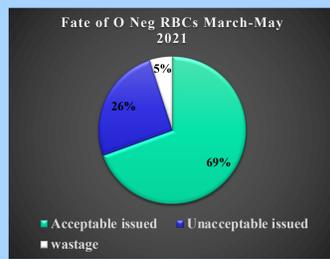


Figure 1. The Pie chart for the fate of total 386 O Neg RBCs units. 268 units (69%) were transfused in line with national guidelines. Surprisingly, 99 units (26%) were not consistent with NBTC recommendations. The remaining 5% (19 units) of O Neg RBCs were wasted.

NBTC indications for appropriate use of O Neg	Fate of O Neg consistent with guidelines
1. Mandatory indications	
1.1 O Neg patients with immune anti-D	1
1.2 O Neg females with child bearing potential (<50 years)	6
1.3 Children (<18 years) of unknown blood group in an emergency	8
1.4 Females patients of unknown blood group during emergency	32
2. Recommended indication	
2.1 O Neg patients who received repeated transfusions	15
3. Acceptable indications	
3.1 O Neg males where less/equal to 8 units are transfused	66
3.2 O Neg females (>60 years) where less/equal to 8 units transfused	32
3.3 Patients with ABO incompatible bone marrow transplantation	53
3.4 Non-O Neg requiring special phenotype	55
Total	268

Table 1: explains the fate of O Neg consistent with NBTC guidelines for the appropriate use of O Neg RBCs over the period (March to May 2021) at St. Mary's Transfusion laboratory.

Key Findings of this Audit:

- Interestingly, our data collated between March to May 2021 shows 69% of O Neg RBCs are transfused in accordance with the recommended guidelines.
- Almost 11% were used as "emergency" units. It is worth noting that our lab do not have a policy to provide O Pos red cells in an emergency to unknown females aged over 50 years.
- 14.2% of O Neg RBCs were used as a substitution to meet phenotype requirements. Approximately half of those needs could have been met by suitable O Pos red cells.
- NHS survey (2018) recommended that O Neg red cell wastage should be less than 4%. This audit also found that 5% of O Neg RBCs were wasted.
- 10.6 % of O Neg RBCs were transfused to non-O Neg patients to avoid wastage due to time expiry and 7.5 % of units were transfused to manage K+ stocks which could be correlated with stock levels.
- The number of O Neg stockholding is greater than 12.5% (NHS survey 2018) during the audit period. Major trauma led centre, maternity unit or the provision of emergency vascular surgery may increase the use of O Neg RBCs in our hospital, ultimately O Neg stock level.
- Stocks of other groups need to be maintained by our laboratory to avoid the use of group O Neg blood for patients of other groups.

Unacceptable & Wastage of O Neg RBCs

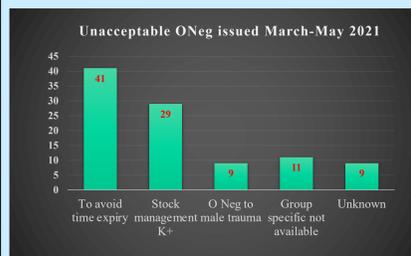


Figure 2: shows the possible reasons for unacceptable of O Neg RBCs units.

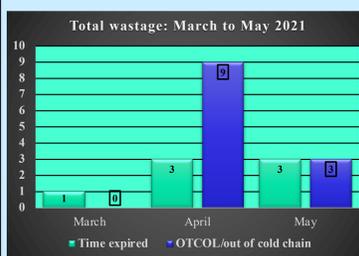


Figure 3: The Graph shows the total Wastages of O Neg RBCs units during audit period. It reveals that the blood wastage mainly occurs time expiry and out of cold chain.

Stock Management of O Neg RBCs

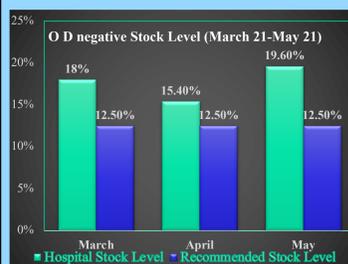


Figure 4: reveals that the average O Neg stockholding as percentage of all units. The blue column means monthly average stock level whereas the orange column indicates recommended stock level (NHS survey 2018).

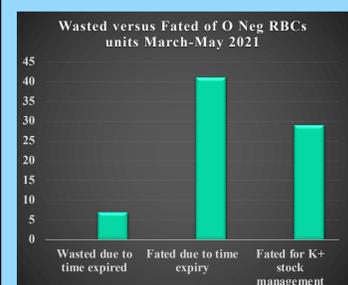


Figure 5: shows the number wasted versus fated of O Neg RBCs units from March to May 2021. Hospitals transfuse O Neg RBCs to non- O Neg patients to avoid wastage due to time expiry and K+ stock management.

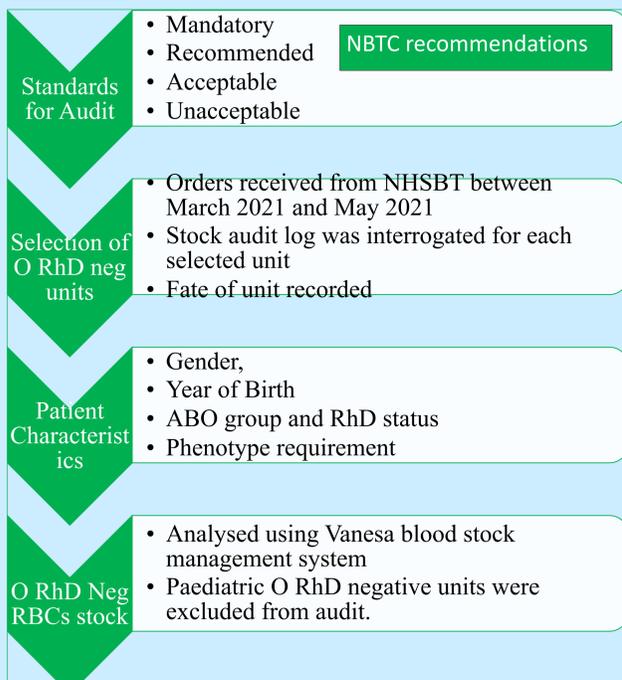
Aim:

To examine whether our laboratory practices for using of O Neg red cells are consistent with the national guidelines.

Objectives:

1. To compare the fate of O Neg red cells against the National Blood Transfusion Committee Guidelines (NBTC, 2010).
2. To determine the proportion of O Neg RBCs that are transfused to non-O Neg patients and the reasons for these transfusions.
3. To investigate how efficient we maintain stock level and wastages of O Neg RBCs in our laboratory.

Methodology



How can we improve our practices?

- In an emergency, move to group specific RBCs as soon as a second group & save for ABO compatibility has been performed. Therefore, there is a need to be more vigilant to process the trauma samples to ensure timely release of group specific RBC.
- Retrieve unused Group O Neg RBCs from the clinical area following release of group specific blood.
- Investigate incidents when O Neg use was inappropriate.
- To raise staff awareness for issuing K+ units to male and female (>50 years) instead of K Neg.
- To raise awareness among the Clinical Team, not to issue O Neg RBCs for the male patient from satellite fridges during emergency.
- Efforts must be made to consider reducing Group O Neg RBCs stock.
- To perform audit of the usage O Neg RBCs on a regular basis.

References

- National Blood Transfusion Committee: appropriate use of O D negative red cells 2010.
- NHS undated, National survey on the use of O RhD negative blood 2018.