An audit -the utilization of O RhD negative blood group

Ayesha Shakhawat, Viviene Ballon, Maria Angeles, Heather Dawson and David Johnson.
Haematology and Blood Transfusion, St. Mary’s Hospital, Praed Street, London, W2 1NY, UK.

Background

- **Current problem:** Stocks of Universal Donor Blood Group, O RhD Negative (O NEG) red 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: NHTSB).
- The development of Massive Transfusion Protocols (MTPs) has led to the increase demand in O RhD 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.

**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 rate 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**

- **Standards for Audit**
  - Mandatory
  - Recommended
  - Acceptable
  - Unacceptable

- **Selection of O RhD neg units**
  - Orders received from NHSBT between March 2021 and May 2021
  - Stock audit log was interrogated for each selected unit
  - Fate of unit recorded

- **Patient Characteristics**
  - Gender
  - Year of Birth
  - ABO group and RhD status
  - Phenotype requirement

- **O RhD Neg RBCs stock**
  - Analysed using Vanesa blood stock management system
  - Paediatric O RhD negative units were excluded from audit.

**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.

**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.

**Unacceptable & Wastage of O Neg RBCs**

**Figure 2:** shows the possible reasons for unacceptable of O Neg RBC 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.

**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 does 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.

**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.