

**National Blood Transfusion Committee**

**Audit of the Usage of Group O RhD Negative Red Cells**

**Summary for St. John's Hospital, Livingston (NHS  
Lothian)**

**National Blood Transfusion Committee Usage of Group O  
RhD Negative Audit Group**

**March 2009**

## **Acknowledgements**

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## Introduction

In December 2008, the National Blood Transfusion Committee Usage of Group O RhD Negative Audit Sub-Group published an audit report based on the circumstances of over 3500 transfusion episodes of group O RhD negative red cells through England, Scotland and Wales. In addition to assessing individual transfusion episodes, the audit also looked at stockholding practice, particularly in relation to O RhD negative red cells.

The audit highlighted scope for improvement in both stockholding of O RhD negative red cells and in the transfusion of O RhD negative to patients of other groups. It also contained a number of recommendations for hospitals, NHS Blood and Transplant, the National Blood Transfusion Committee and Regional Transfusion Committees / Regional Blood Services.

This report for St. John's Hospital, Livingston (NHS Lothian) should be read in conjunction with the December 2008 report and the associated regional summary published in March 2009 – these are intended to provide more in depth information to enable hospitals to identify local areas for action.

## Aim & Objectives

The objectives of the audit are to:-

- determine the proportion of transfusions involving at least one unit of group O RhD negative red cells that can be deemed appropriate
- determine the reasons behind any inappropriate usage
- determine the proportion of O RhD negative red cells that are transfused to non-O RhD negative patients and the reasons for these transfusions
- to identify hospital practices associated with high usage / stockholding of group O RhD negative blood and understand why these may occur
- to identify examples of good practice that may be shared widely

## Standards

The following standards have been developed from the Guidelines for the use of Group O RhD negative red cells (Stainsby & Murphy, 2003) and are split in to 4 groups – mandatory, recommended, acceptable, and unacceptable.

### Indications for use

#### Mandatory indications

- O RhD negative patients with Anti-D
- O RhD negative females aged 60 or under
- Emergency use for females aged 60 or under where the blood group is unknown

#### Recommended indications

- O RhD negative patients who receive / are likely to receive repeated transfusions (e.g. thalassaemia, myelodysplastic syndrome)

#### Acceptable indications

- O RhD negative males with no anti-D where less than 8 units are transfused
- O RhD negative females over the age of 60 years old with no anti-D where less than 8 units are transfused
- Non-O RhD negative infants under the age of 1 year old where group specific units are unavailable
- Emergency patients where the blood group is unknown at the point of transfusion
- Non-O RhD negative patients requiring special phenotype where group specific units are unavailable

#### Unacceptable indications

- O RhD negative females over the age of 60 years old with no anti-D where 8 units or more are required
- O RhD negative males with no anti-D where 8 units or more are required

For the two indications described above concerning emergency use where the blood group is unknown at the time of transfusion a maximum of 2 units of O RhD negative red cells should be used before the patient is switched to group specific blood.

The guidelines also provide three 'general principles' applicable to stock management within hospitals. These are:-

- It should not be necessary for larger hospitals to routinely stock or use significantly more than 8% red cells as group O RhD negative (this is slightly higher than the proportion of the population that is group O RhD negative)
- Adequate stock management policies should be in place to minimise wastage of O RhD negative red cells arising from time expiry and avoid the need to electively transfuse to non-O RhD negative recipients to prevent time expiry
- Adequate stocks of other groups should be maintained by hospital blood banks to avoid the unnecessary use of group O RhD negative blood for patients of other groups

## Method

An in depth description of the methodology is available in the December 2008 report.

This audit consisted of three strands:-

- transfusion data was collected on the first 40 transfusion episodes involving at least one unit of group O RhD negative red cells from each site starting on 1<sup>st</sup> June 2008. Transfusion episodes involving the use of paedipacks were excluded from this audit and hospitals were asked not to include the same patient twice. This part of the audit ended when data on 40 transfusion episodes had been collected or on 30<sup>th</sup> June, whichever came sooner.
- Data on stock levels of all groups were collected for every day in June 2008
- organisational data were collected surrounding details about specialist services in the participating hospitals (e.g. were they a trauma centre) and their internal policies (e.g. did they routinely stock irradiated O RhD negative units).

## Results for St. John's Hospital, Livingston (NHS Lothian)

### **Part 1 – Transfusion Episode Data**

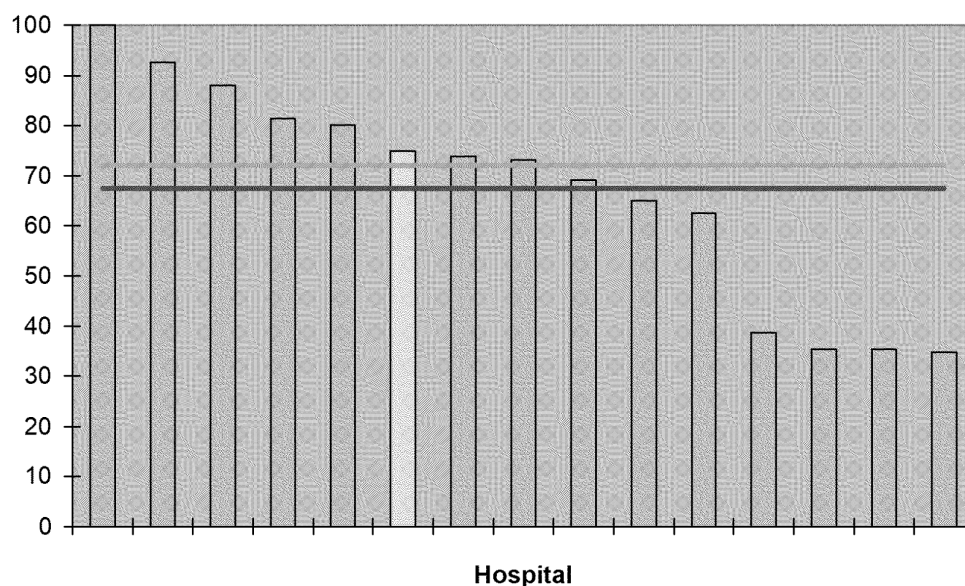
*Note:- In all of the following charts, the results for St. John's Hospital, Livingston (NHS Lothian) are highlighted by the use of yellow columns. Independent hospitals are highlighted by the use of pink columns.*

#### Demographics

|  |                            | Number    |
|--|----------------------------|-----------|
| Number of eligible transfusions audited  |                            | 12        |
| Mean age of patients                     |                            | 60        |
| Age range of patients                    |                            | 32 - 86   |
| Number of patients aged 60 years or over |                            | 6 (50.0%) |
| Recipient blood group                    | - O negative               | 9 (75.0%) |
|  | - O positive               | 0 (0.0%)  |
|  | - non O blood group        | 3 (25.0%) |
|  | - blood group not recorded | 0 (0.0%)  |

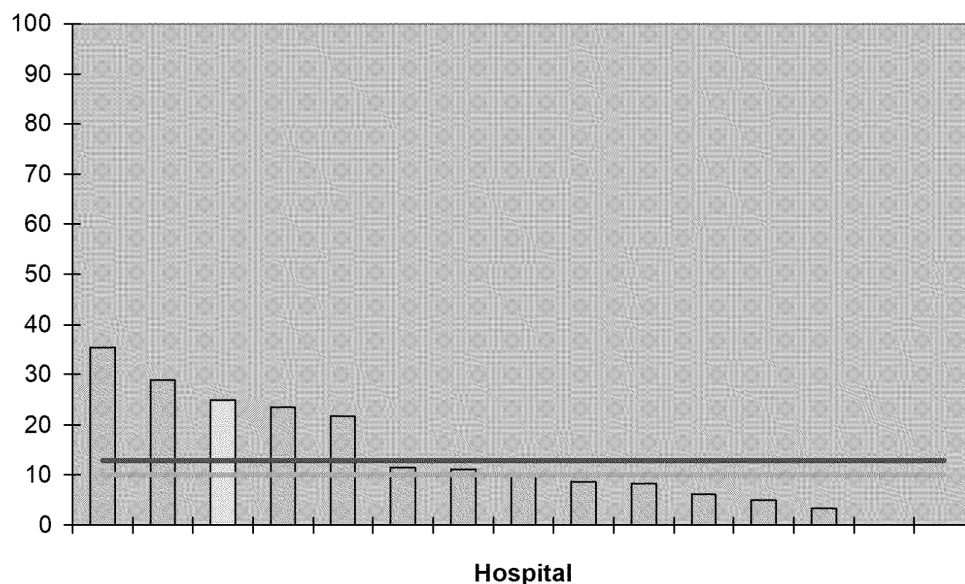


Figure 1a – Hospital breakdown of cases where recipient blood group was O RhD negative (Scottish National Blood Transfusion Service region)



N.B. – the red line signifies the regional average of 67.5% whilst the yellow line signifies the overall average of 72.0%.

Figure 1b – Hospital breakdown of cases where recipient was a non-O blood group (Scottish National Blood Transfusion Service region)



N.B. – the red line signifies the regional average of 12.9% whilst the yellow line signifies the overall average of 10.1%.

#### Indications for Use

Table 1 highlights the number of indications that can be evaluated against each aspect of the four categories of indication; mandatory, recommended, acceptable and unacceptable. In some instances, a transfusion could be assigned to more than one indication – for example, a 56 year old O RhD negative female with thalassaemia could be assigned to both a mandatory and a recommended indication.

Table 1 - Indications for Group O RhD Negative Red Cell Usage (St. John's Hospital, Livingston (NHS Lothian))

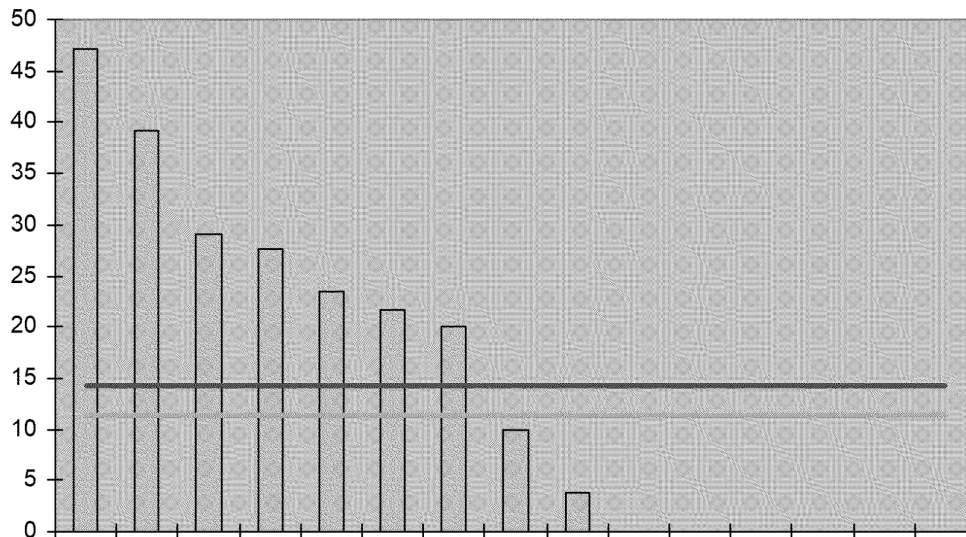
| Indication  |   | No. of transfusions for this indication | As % of all transfusion episodes |
|---|---|---|----------------------------------|
| Mandatory   | - O RhD negative patients with anti-D   | 2                                       | 16.7%                            |
|   | - O RhD negative females aged 60 or under   | 5                                       | 41.7%                            |
|   | - Emergency use for females aged 60 or under where the blood group is unknown   | 1                                       | 8.3%                             |
| Total number of transfusions for at least one mandatory indication                              |   | 8                                       | 66.7%                            |
| Recommended   | - O RhD negative patients who receive / are likely to receive repeated transfusions (e.g. thalassaemia, myelodysplastic syndrome)                                 | 2                                       | 16.7%                            |
| Total number of transfusions for at least one recommended indication                            |   | 2                                       | 16.7%                            |
| Acceptable  | - O RhD negative males with no anti-D where less than 8 units are transfused  | 1                                       | 8.3%                             |
|   | - O RhD negative females over the age of 60 years old with no anti-D where less than 8 units are transfused   | 1                                       | 8.3%                             |
|   | - Non-O RhD negative infants under the age of 1 year old where group specific units are unavailable   | 0                                       | 0.0%                             |
|   | - Emergency patients where the blood group is unknown at the point of transfusion   | 1                                       | 8.3%                             |
|   | - Non-O RhD negative patients requiring special phenotype where group specific units are unavailable (this includes a large number of mismatches supplied by NBS) | 0                                       | 0.0%                             |
|   | Total number of transfusions for at least one acceptable indication   | 3                                       | 25.0%                            |
| Unacceptable  | - O RhD negative females over the age of 60 years old with no anti-D where 8 or more units are required   | 0                                       | 0.0%                             |
|   | - O RhD negative males with no anti-D where 8 or more units are required  | 0                                       | 0.0%                             |
| Total number of transfusions for at least one unacceptable indication                           |   | 0                                       | 0.0%                             |
| Total number of transfusions for mandatory, recommended, acceptable or unacceptable indications |   | 10                                      | 83.3%                            |
| Total number of transfusions which could not be assigned to any of the above indications        |   | 2                                       | 16.7%                            |

10 / 12 (83.3%) transfusions were given for mandatory, recommended or acceptable indications. 0 (0.0%) were given for unacceptable indications, leaving 2 (16.7%) which could not be assigned to any of the indications listed in Table 1. Of these 2, both were of a non-O RhD negative blood group.

The transfusion of O RhD negative units to non-O RhD negative patients for the prevention of wastage due to time expiry (either standard or irradiated units) did not occur (accounting for 0.0% of all transfusion episodes).



Figure 2 – Hospital breakdown O RhD negative to non-O RhD negative patients which do not meet any of the audit standards and for which the avoidance of time expiry of the units was a reason for transfusion (Scottish National Blood Transfusion Service)



N.B. – the red line signifies the regional average of 14.3% whilst the yellow line signifies the overall average of 11.3%. The figure for St. John's Hospital in this chart is 0.0%

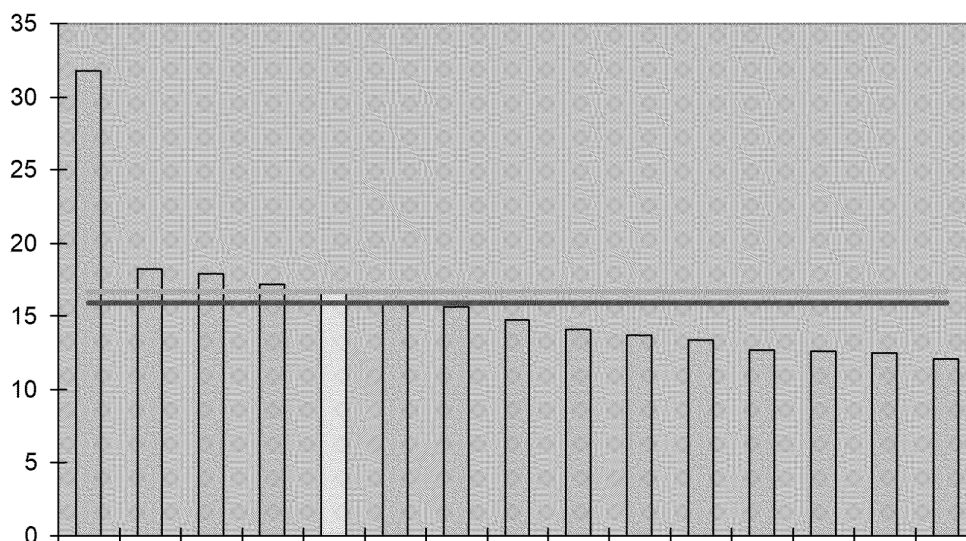
### Emergency Use

Emergency units were used in 1 (8.3%) transfusion episode. The number of emergency units used was given for this transfusions. In total, 2 emergency O RhD negative units were used.

### Part 2 – Stockholding of O RhD negative units

The average O RhD negative stockholding level reported for St. John's Hospital, Livingston (NHS Lothian) was 16.6%.

Figure 3 – Average O RhD negative stockholding levels by hospital (Scottish National Blood Transfusion Service)



N.B. – the red line signifies the regional average of 15.9% whilst the yellow line signifies the overall average of 16.7%.