BCSH Appropriate Use of O Neg

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Good Practice Paper

Used to recommend good practice in areas where there is less robust evidence base but for which a degree of consensus or uniformity is likely to be beneficial to patient care.
What are we doing?

Audit and Benchmarking

What do they say?

Existing Guidelines
NBTC, BSMS, BCSH

What are we doing?

New Clinical and Laboratory Good Practice Guidance

Could we do better?
Existing Guidelines

What do they say?
1. Who should get O RhD negative blood?
   - Mandatory
   - Recommended
   - Acceptable

2. How should we manage O RhD negative stocks?
   - Set an appropriate stock level
   - Minimise wastage

Who decides whether a patient gets O RhD negative red cells?

Does the clinician ask for O negative red cells or does the BMS provide O RhD negative red cells?

M Rowley & H Doughty for NBTC 2009
WHAT ARE THE RISKS?

1. Of non-O RBCs?
   - Patient mis-identification can lead to acute HTR
   - How secure is the blood sampling/patient ID?
   - How secure/timely is your blood group analysis?

2. Of non-RhD negative RBCs?
   - A RhD negative woman could be sensitised to the D-antigen
   - A patient could develop a delayed HTR due to anti-D

3. To the blood supply?
   - We could run out of O RhD negative red cells
   - How much of your O RhD negative blood is given in an emergency?
   - How much is given to non-group O negative patients?
“Only transfuse O Rh D negative red cells to O Rh D negative patients and in emergencies for females of childbearing potential with unknown blood group.”
BSMS guidance (workshops)

- Is it time to reconsider when to restock O negative blood?
- Is it better to transfuse or time expire O negative blood?
- What should the specification of adult emergency RBCs be?
- When should emergency red cells be replaced or rotated?
- Does the location of emergency red cells matter?
- When should O RhD positive red cells be used as emergency red cells?
“one theme was common to all delegates; that laboratories should be able to provide safe and timely blood for patients in emergencies without compromising overall blood stocks.”

### Red Cells for Adult Emergency Use: In Six Easy Steps

1. Red cells for ADULT Emergency use should be a standard specification of O RhD Negative, C-, E-, K-
   Other specifications are unnecessary in genuine emergencies and reduce the supply of typed blood for those who may need it.

2. Emergency red cells should be returned to general stock allowing time to transfuse appropriately. This will be dependant on hospital size. For medium and low usage category hospitals at least seven days will be required.

3. Best practice in returning emergency red cells is usually the result of good SOP’s, good training and good visual aids, with clear indication about date of restock (not expiry).

4. If units are restocked in time, they can be transfused to patients who require O RhD Negative red cells. But if they aren’t used, consider transfusing them to other group patients before they expire, in a time-frame determined by your hospital size.

5. Audit locations of blood fridges regularly and review through your Hospital Transfusion Committee. Removal of the emergency red cells can reduce both use and wastage.

6. Group O RhD Positive blood could be issued as part of a Massive Haemorrhage pack, dependant on age, sex and clinical condition of the patient.
Group-check
“Unless secure electronic patient identification systems are in place, a second sample should be requested for confirmation of the ABO group of a first time patient prior to transfusion, where this does not impede the delivery of urgent red cells or other components”

Emergency blood
“Following an emergency rapid group, a second test to detect ABO incompatibility should be undertaken prior to release of group specific red cells”

**Emergency Blood**

“Hospitals must have a strategy to ensure that RBCs are readily available for life-threatening bleeding, either emergency Group O red cells or rapid provision of group-specific red cells by the transfusion laboratory”

Patients must have correctly labelled samples taken before administration of emergency Group O blood

“In large NHS organisations using blood storage refrigerators in relevant remote clinical areas may facilitate rapid availability of emergency blood “

The local major haemorrhage protocol must identify the location of the nearest emergency Group O red cell units

There is more group O emergency blood made available in the event of a major haemorrhage than is used to treat major haemorrhage

The logistics and laboratory management of major haemorrhage

**Group O blood**

• Group O red cells should be used until the ABO group is known
• The satellite refrigerators near clinical areas where major haemorrhage can occur should have a stock of group O red cells
• The exact specification of red cells will depend on the clinical specialties likely to use the emergency supply

**Group-specific red cells**

• Determination of the ABO/D group is the main priority.
• Emergency grouping is often manual and the procedure must be risk assessed and additional safeguards put in place
• The result must be confirmed as soon as possible with routine methods if these differ from emergency procedures

Audit and Benchmarking

What are we doing?
• O negative stockholding 8% or less = 2.7%
  – 23.2% stocked 12% or less
  – Average stockholding NHS 15.5%, Independent sites 28.7%, specialist centres 24.2%

• Mandatory, recommended or acceptable reasons covered 77.6% of all O negative transfusions
  – 27.3% of patients who received O negative blood were not O negative
  – 10.1% of transfusions of O negative to non-O negative patients were to avoid time expiry

Emergency transfusion
  females <60 years = 1.9%, unknown group = 5.7%
• O negative stockholding 10.5% or less = 16%
  – 38% stocked 12% or less
  – Average stockholding NHS sites 12.9%, Independent sites 33.5%
• Emergency units were used in 5.5% of all transfusion episodes averaging 2.2 units per episode
• Mandatory, recommended or acceptable reasons covered 79.3% of all O negative transfusions
  – 30% of patients who received O negative blood were not O negative
  – Again this was correlated with excess stockholding of O negative blood
Percentage of Group ORhd negative RBC issued

**NHSBT ~ 11.5%**
Pathology networking, remote issues fridges and increased use of massive haemorrhage protocols all contribute to the increase in % of O RhD neg red cells issued.

**WBS ~ 10%**
A small increase in % of O RhD Neg RBC issues over the period. The last quarter had 10% of issues which is significantly lower than NHSBT issues.

**SNBTS ~ 17%**
The SNBTS hospitals indicate a slight increase in O RhD Neg demand, risen from less than 16% to around 17% of issues.

**NIBTS ~ 13.5%**
<13% for first two quarters 2012-13, increasing to 13.5% in early 2013-14. The demand is no longer increasing.

**IBTS ~ 14.0%**
At 14% this percentage has increased only slightly during 2013-14. This does not reflect the upward trend seen in NHSBT and SNBTS.

O RhD Negative red cell demand varies, but remains higher, with the use of remote fridges and number of ‘hub and spoke’ sites increasing.
Moving annual total of red blood cell issues (total and O neg)
<table>
<thead>
<tr>
<th>Guideline Writing Group</th>
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<tbody>
<tr>
<td>Megan Rowley</td>
</tr>
<tr>
<td>Tara Cooper</td>
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<tr>
<td>Suzy Morton</td>
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<tr>
<td>Elaine MacRate</td>
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<tr>
<td>Kieran Morris</td>
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<td>Aman Dhesi</td>
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Clinical
Mandatory Use of O Negative RBCs

- Group O D negative patients with anti-D*
- Group O D negative women of childbearing potential**
- In an emergency, to pre-menopausal women of unknown group***

*With full pre-transfusion testing

*Age of childbearing potential 50 or younger

***Male and female children
Recommended Use of O Negative RBCs

• O negative* patients who will require repeated transfusion or are likely to become transfusion dependent**
• For example: myelodysplasia, aplastic anaemia, haemoglobinopathies and non-haematology patients on a chronic transfusion programme

* Same applies to all D negative patients

**Who decides? Do you have enough clinical information in the transfusion laboratory?
Use of O D Negative RBCs is Acceptable

In the following situations:

- Blood for neonatal use, where group specific RBCs are unavailable*
- If RBCs of a specific phenotype are O D negative* 
- ABO mismatched haemopoietic stem cell transplants**

* Blood services working with transfusion laboratories

** protocols agreed between clinicians and laboratory

Overall O negative usage may be determined by the specialist services in that hospital
Emergency Use of O D Negative RBCs

In an emergency situation a maximum of 2 units of O D negative RBCs can be transfused immediately = Emergency/flying squad/BOB

• Principle that group specific blood is provided as soon as it is safe and timely to do so

Initial decision made by clinician

Group of the patient may be known or unknown

Joint laboratory and clinical responsibility to establish group ASAP
Use of O D Positive RBCs in Unknown Patients

- If significant use of emergency blood (trauma centres) then have a policy for using O positive blood in adult males
- If major haemorrhage in unknown patients is a rare event then have a policy for using O positive blood in males and females over 50

Sensitisation to D (and other Rh) antigens will/may occur but is not an adverse event

More O positive blood available
Use of O D Positive RBCs in known RhD Negative patients

In adult males with no detectable anti-D and females aged over 50 years **with no detectable anti-D**

- In uncontrolled major haemorrhage when group is known but O negative stocks are low or at risk of running out
- In controlled blood loss – planned major surgery

**Pre-agreed clinical policy**

Again, sensitisation is not an adverse event
Summary - Clinical

- Agree clinical policies including the location of emergency blood in advance!
- Responsibility for correct patient identification and legible and accurate sample labelling rests with clinical team
- Guidance will give justification for (and permission to) sensitising recipients without seeing this as an adverse clinical event
Stockholding

• Good stock management prevents unnecessary wastage and improves homologous transfusion rates

• Stock levels need to reflect local usage for O negative patients
  – Look at your total RBC usage /year and proportion of O negative patients in your population.
  – How many O negative needed per week?

• If you restock more frequently than weekly you can reduce the number of O negative red cells stocked
Stockholding

• O negative red cell wastage is higher than any other RBC group, often due to expiry of ‘emergency’ blood

• Have a local policy on when to transfuse to any blood group to prevent wastage to prevent time expiry? Base on overall usage.
  – Very high/high Transfuse on day of expiry
  – Moderate Within 48 hours of expiry
  – Low/very low Within 72 hours of expiry
## Specification of Emergency Blood

Blood for emergency use is often over-specified ‘just in case’
Need a sufficient supply rather than aiming to cover every eventuality

<table>
<thead>
<tr>
<th>Specification required</th>
<th>Specification not required</th>
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<tbody>
<tr>
<td>RhD negative</td>
<td>HEV negative</td>
</tr>
<tr>
<td>K negative</td>
<td>HT negative</td>
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<tr>
<td>C and E negative</td>
<td>Irradiated</td>
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<td></td>
<td>CMV negative</td>
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*Depends on local casemix*
- Neonatal /maternity unit (CMV – HEV-) for babies
- Major trauma centre (O pos and O neg)
Pre-Hospital Transfusion

- Controlled and validated supply of O negative red cells
- Frequent rotation of unused blood back into stock
- Sample pre-transfusion linked to patient ID so that group can be used to supply group specific blood
- Case review to determine appropriate use
- Laboratory review for sample and traceability
Blood Samples

• Pre-transfusion to avoid mixed field which can often result in committing to ongoing supply of group O
• Blood sample has to be done safely/securely but quickly
  – Analyser or analyser software limitations
  – LIMS limitations

AAGBI guidelines – Group specific in 15-20 minutes of receipt of a suitably labelled sample
• Work with clinicians to set up policies that work!
• Early samples – quicker testing
• Emergency blood – what works for you locally is best but monitor it and be prepared to negotiate change
• The laboratory is in the driving seat....
Thank you

Any Questions?

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