

Survey Report: Use of O D Positive Red Cells in Adult Males in Trauma/MH (2021)

A National Blood Transfusion Committee (NBTC) O D Negative Working Group Survey via National Steering Group Project Team - "O Pos to Males in trauma/MH"

Definition of adult male = Adult patient assigned as male at birth

Introduction

National Objective:

To promote the use of O D Positive red cells to adult males in emergency situations (trauma/ MH)

Background:

Total red cell usage is falling due to improved surgical techniques and the implementation of Patient Blood Management (PBM) initiatives including the use of alternatives.

O D negative red cells are considered to be a 'universal' blood component. They can be used in emergencies where the patient's blood group is unknown and in instances where group specific stock is unavailable.

Over the last few years an increasing reliance to O D negative red cells has been observed. Demand for O D negative is increasing. Stability of the supply chain for universal components such as O D negative red cells remains a challenge for most blood services around the world and we need to work together to ensure adequate supplies are available when required.

Current guidance promotes the use of O D positive red cells for adult males in emergency situations to conserve O D negative red cells for patients for whom there is no alternative ^{1 2 3 4}

Patients admitted to hospital in emergency situations where urgent blood transfusion is required can receive O D negative red cells until their blood group is determined. As approximately 85% of these individuals are RhD positive, this possibly inappropriate use of O D negative red cells can contribute to shortages of this blood component. The risk of an adverse outcome when giving O D positive red cells to unknown males in this emergency setting, is likely to be low ⁵ and helps conserve O D negative supply. Hospitals are encouraged to formalise this approach by implementing policies on the use of O D positive red cells in adult men in trauma/MH.

To determine progress with this approach, The National Blood Transfusion Committee (NBTC) O D Negative Working Group has undertaken a survey of hospitals covering the current 10 Regional Transfusion Committee (RTC) areas. The findings of this survey are indicated below.

Methods

An online survey was constructed using commercial online survey software (SNAP surveys ©). This allowed hospital to enter information regarding O D positive red cell usage in trauma, online and to indicate if policies were in place. A copy of the survey questions is

included as appendix 1. The survey ran for approximately two months between April and May 2021.

Results

93 replies were received from all 10 RTCs. Not all hospitals in each RTC responded although not all hospitals may provide emergency blood transfusions or treat adult patients (Table 1)

Table 1:

| RTC | No. Replies from Trusts | Total no. Trusts* | % Reply |
|--------------------|-------------------------|-------------------|---------|
| North East | 5 | 6 | 83 |
| Yorkshire & Humber | 12 | 14 | 86 |
| North West | 15 | 26 | 58 |
| East Midlands | 6 | 8 | 75 |
| West Midlands | 8 | 15 | 53 |
| East of England | 8 | 15 | 53 |
| London | 14 | 23 | 52 |
| South West | 6 | 15 | 40 |
| South Central | 8 | 9 | 89 |
| South East Coast | 11(9NHS) | 11 | 82 |

*Total number of Trusts in each RTC region

This table shows the 2021 survey response rates in the 10 RTC regions: The number of replies/region, the number of Trusts /region and the percentage response rate:

North East RTC region: 5 replies, 6 regional Trusts – 83% response rate

Yorkshire and Humber RTC region: 12 replies, 14 regional Trusts - 86% response rate

North West RTC region: 15 replies, 24 regional Trusts – 63% response rate

East Midlands RTC region: 6 replies, 8 regional Trusts – 75% response rate

West Midlands RTC region: 8 replies, 15 regional Trusts – 53% response rate

East of England RTC region: 8 replies, 15 regional Trusts – 53% response rate

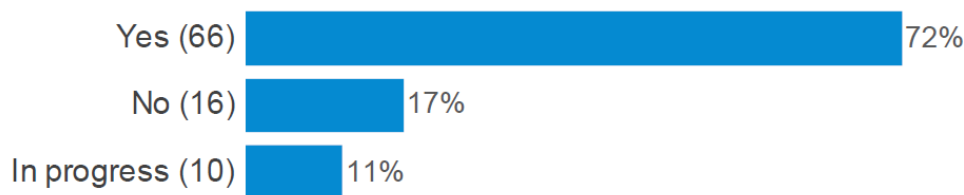
London RTC region – 14 replies from 23 regional Trusts – 52 % response rate

South West RTC region: 6 replies, 15 regional Trusts – 40% response rate

South Central RTC region: 8 replies, 9 regional Trusts – 89% response rate

South East Coast RTC region: 11 replies (9NHS), 11 regional Trusts- 82% response rate

Does your hospital have a policy in place to give emergency O D positive RBC to unknown adult males in trauma/MH?

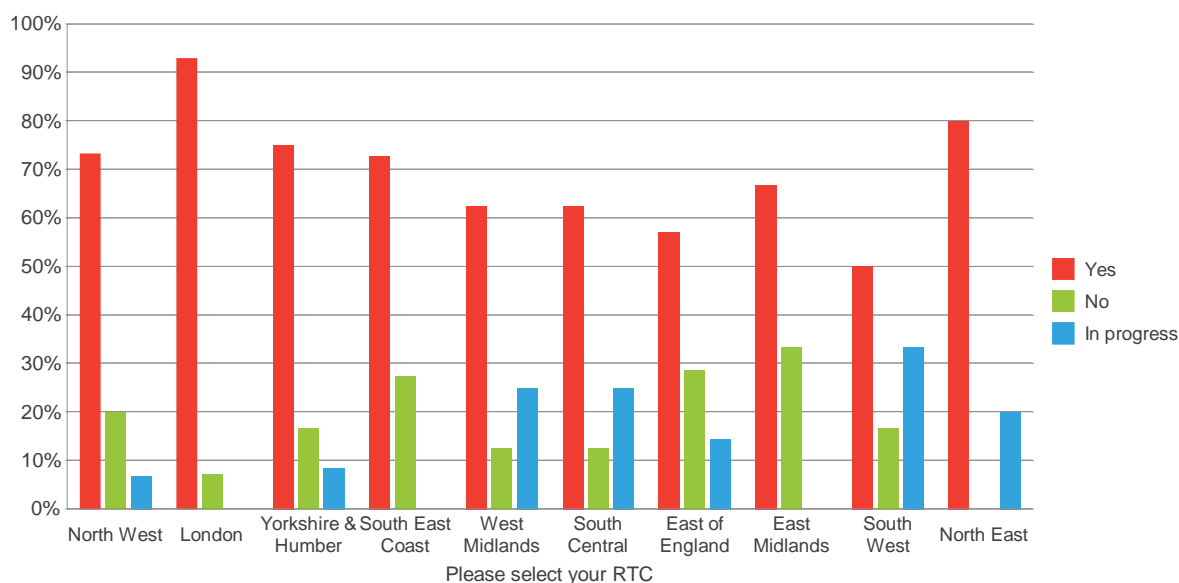


The results above show the percentage of hospitals who replied to the survey, who either have a policy of giving O D positive red cells to adult males (72%), have one in the process of development (11%) or do not have a policy (17%)

Figure 1 below indicates the percentage of hospitals by RTC Region who replied to the survey, who either have a policy of giving O D positive red cells to adult males, have one in the process of development or do not have a policy.

Figure 1:

Percentage with a Policy in Place by RTC



North West RTC – Policy in place = 72% Policy in progress = 8% No policy in place = 20%

London RTC – Policy in place = 93% Policy in progress = 0% No policy in place = 7%

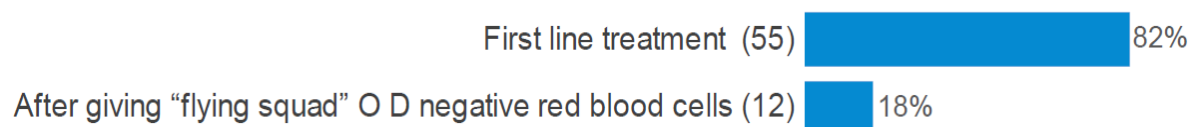
Yorkshire RTC – Policy in place = 74% Policy in progress = 8% No policy in place = 16%

South East RTC – Policy in place = 71% Policy in progress = 0% No policy in place = 19%

W Midlands RTC – Policy in place = 61% Policy in progress = 28% No policy in place = 11%

S Central RTC – Policy in place = 61% Policy in progress = 26% No policy in place = 13%
 E of Eng RTC – Policy in place = 58% Policy in progress = 14% No policy in place = 18%
 E Midlands RTC – Policy in place = 68% Policy in progress = 0% No policy in place = 32%
 South West RTC – Policy in place = 50% Policy in progress = 32% No policy in place = 18%
 North East RTC – Policy in place = 80% Policy in progress = 20% No policy in place = 0%

If yes, when does your policy say to give emergency O D positive RBC to unknown males in trauma/MH?



The results above show that 82% of respondents have a policy to say to give emergency O D positive red cells to unknown males in trauma as first line treatment. 18% of respondents have a policy to say to give emergency O D positive red cells to unknown males in trauma after giving "flying squad" O D negative red cells.

There were some narrative variations, for example:

- "The first pack is pre-prepared with 4xO neg for immediate release all subsequent packs are 4xO Pos"
- "O positive cells used if the patient is likely to require more than 8 units"
- "Both depending on location of the patient"

If no, what are the challenges/barriers to implementing this initiative?

Some barriers were cited to implementing a O D Positive red cell use policy. These included a lack of communication in emergency departments who also had concerns about stocking both O D negative and O D positive blood groups in stressful situations. A full list of comments is given as Appendix 2

Would support from the PBM Team help you to implement this initiative?

If yes, what support would be useful?

Only 25 replies were submitted for Q.4. This asked if support from the NHSBT Patient Blood Management team would help implement policies. Of these, 6 (24%) said they would like help 10 of these respondents suggested additional educational resources would be the best means of support with 2 suggesting a meeting with the relevant PBM practitioner would be useful. No respondents thought "buddying up" would be useful.

If your hospital gives emergency O D positive to unknown adult males in trauma/MH, where are the RBCs issued/collected from?

Figure 2:

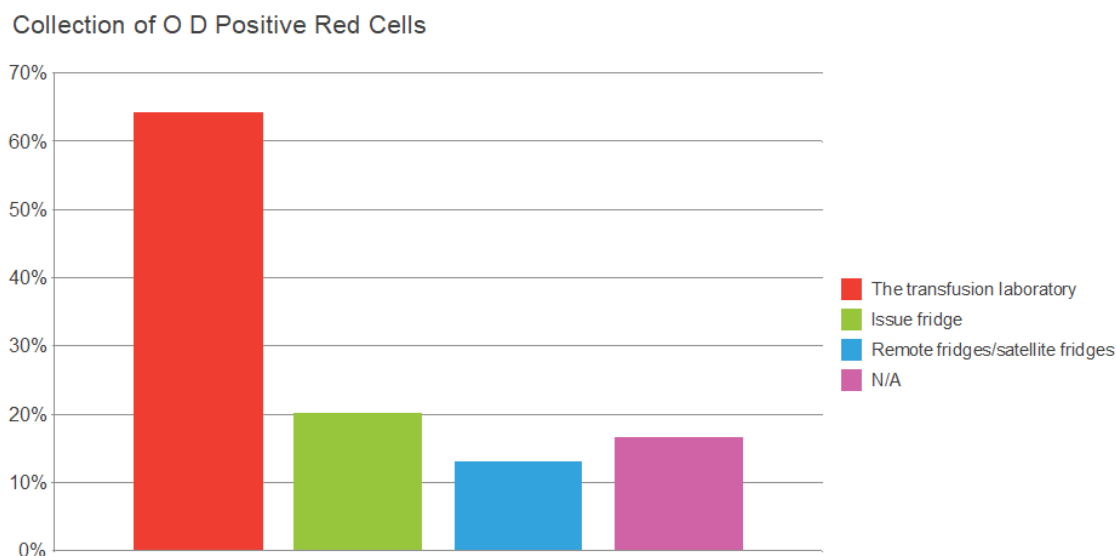
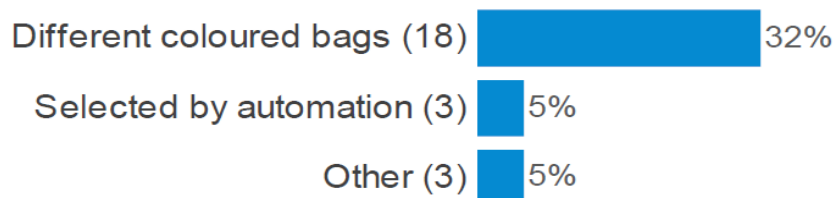


Figure 2 shows that in 63% of replies the emergency O D positive red cells were collected from the transfusion laboratory, 20% from the issue fridge and 13% from remote fridges/satellite fridges

If emergency O D positive RBC are issued/collected from remote fridges/satellite fridges, where are these fridges located?

If emergency O D Positive Red Cells were collected from remote/satellite fridges, most of these were in theatre or emergency departments. In other cases, fridges were in adult intensive care units. Interestingly, one respondent indicated they kept these fridges at a specific site based on patient demographics, Appendix 3.

If emergency O D positive RBC are issued/collected from remote fridges/satellite fridges, how do you differentiate between the O D positive and O D negative emergency RBC to ensure correct D type is issued/collected?



From the bar chart above 32% of respondents used different coloured bags to differentiate between emergency O D positive and O D negative red cells. 5% used automation and 5% used other methods.

Comments.

- “Units are numbered 1-4 with clear instructions to collect in numerical order via the tracking system- the O Pos are unit numbers 3 and 4”.
- “There is no O neg here to confuse it with”.
- “Blue bags for O Pos, Red bags for O neg”
- “Additional labelling in the remote fridges”

Does your hospital have a policy in place to give emergency O D positive RBC to females of non-childbearing age?



The bar chart above shows that 59% of respondents have a policy in place to give emergency O D positive red cells to females of non-childbearing age. 36% do not have a policy in place and 4% are in the process of implementing a policy.

Discussion

The aim of this survey was to establish progress, of hospitals in England, with the implementation of the “O D Positive to Males in Trauma/MH” Patient Blood Management initiative. Nine questions were asked around policies in place, challenges/barriers to implementation, possible support needed to take the initiative forward and if already in place, where the emergency O D Positive red cells are issued from and how they are identified.

The survey results will be used to determine what help/support can be given at a national and RTC level to enable more hospitals to implement this initiative. It is hoped that via a national toolkit of educational resources and shared experiences from regional hospitals who have been successful in setting up this project, the implementation rate can be increased.

This survey was conducted during the Covid 19 pandemic. This, we acknowledge, may have reduced the response rate across RTC regions.

From the 93 responses received, a very encouraging 72% of hospitals have a policy in place to give O D Positive to males in trauma/MH. 11% have policies in progress. 82% (55) of respondents use O D Positive as the first line treatment for unknown males in an emergency with 11% (12) respondents giving O D Positive after the emergency O D Negative red cells.

The remaining questions were designed to provide information to help inform what support can be given to hospitals who wish to implement the “O D Positive to males in an emergency” initiative but are facing barriers/challenges.

Some barriers were cited to implementing an O D Positive red cell to males in trauma/MH policy. These included a lack of communication and possible confusion in emergency departments, who had concerns about stocking both O D negative and O D positive blood groups in stressful situations. Several respondents felt they had no time for implementation of this initiative due to workload and/or COVID-19. Other challenges focussed on the experience and levels of current staff. A further barrier was blood tracking systems that don't allow the release of two types of emergency red cells. A full list of comments is given as Appendix 2

The project group aim to take these comments around the challenges/barriers and develop or provide resources which will aid implementation. The educational resources toolkit is currently in development.

Q.4. asked if support from the NHSBT Patient Blood Management team would help implement policies - Only 25 replies were submitted. Of these, 6 (24%) said they would like help from the PBM Team. These hospitals have been identified and the information will be passed to the relevant PBMP to follow up.

10 of these respondents suggested additional educational resources would be the best means of support with 2 suggesting a meeting with the relevant PBM practitioner would be useful. No respondents thought "buddying up" would be helpful

64% of O D Positive Red cells were collected from the transfusion laboratory, 20% from issue fridges and 17% from remote/satellite fridges. Most of these remote/satellite fridges were in theatre or emergency departments. In other cases, fridges were in adult intensive care units. The majority of hospitals who have emergency O D positive in their remote/satellite fridges differentiate between the emergency O D negative and O D positive red cells using different colour bags or clear labelling. This information will be shared via the toolkit as a tip to help reduce confusion over the choice of emergency red cells.

The final question around how many hospitals have policies in place to give emergency O D positive red cells to women of non-childbearing potential, was outside the scope of this project but a useful indication for the possible extension of this project in the future.

59% of hospitals who responded already have this policy in place with 4% in progress. 36% currently had no policy in place.

References:

- NBTC Appropriate Specification for Emergency Red Cells 2024
- NBTC Appropriate use of O D negative red cells 2024
- Recommendations from NCA 2018 Survey of Group O D Negative Red Cell Use
- BSH - Haematological Management of Major Haemorrhage (2022)
- Flommersfeld, S. et al. Unmatched Type O RhD+ Red Blood Cells in Multiple Injured Patients (2018) *Transfus Med Hemother* 2018;45:158–161

Appendix 2

Challenges to implementing an O D Positive Red Blood Cell use policy

to be implemented as part of the Haemobank installation for O RhD positive units to be stocked as emergency units for males. Switching to O RhD positive does happen when patients continue to bleed but is not our first response.

Reluctance in A&E to store O Neg & O Pos and concerns over confusion in stressful situations

Paediatric trauma only

We have a policy for O+ blood in pre-hospital transfusion, but not yet within our hospital. Main barrier around training/communication in ED with blood collectors knowing who their patient is, and whether O neg or O+ is needed.

Time to implement, attendance and agreement with staff on our HTT, extra staff time to prepare these extra units with paperwork required every few weeks, different units so more training of both lab and collecting staff.

having two lots of red cells sat in the fridge waiting to be used. Majority of emergency RC units go to birthing unit and therefore to females. If O neg is in short supply or the patient is >50 or male, then our policy states that switching to O pos is acceptable.

Too few trauma cases to have a two-tier system.

Concern about the risk of introducing a new option as one satellite fridge services ITU, A&E, theatres, and the main part of the hospital so a mix of staffing levels will access the blood

We do not routinely receive adult trauma patients to this trust

The pandemic meant our TP team was asked to work in ITU. This has prevented go-live of this project.

Experience level of current group of staff, Education of users.

Mainly two-fold. Still working a multi-disciplinary on-call team to cover out of hours. In recent years education of this team has greatly increased, therefore able to begin write policy.

Clinical team at BMI will not agree to this

Some less experienced staff are nervous about doing this especially out of hours with no immediate backup from more senior staff.

We are due to go live on the 4th May 2021

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Time

Work in progress, has gone through clinical divisions. Now needs to be passed by patient safety group and put into practice. Aiming to go live alongside implementation of new blood release system.

Discussed at HTC - staffing and porter collection is a hurdle

Requires the National HTC to discuss and accept this policy, but this has not happened yet

Concerns over the collection of blood products using the Blood 360 tracking system as this will not allow more than one type of emergency patient.

Waiting for national guidance

It has only recently been mentioned so we have not really looked into it in too much detail at the moment, though some of the challenges we can envision are individuals being scared to make a mistake and selecting the wrong units.

Situation occurs very rarely. Risk of causing confusion among ward staff. Current policy is to give uncrossmatched O D pos to known males if time allows

Appendix 3

Remote Fridge/Satellite Locations

we are a centralised transfusion lab - 3 of our base sites have blood banks (in a central area) with 4 units of emergency group O stock - the first 2 are O Neg, second 2 are O Pos - the O Pos would only be used if the first 2 units had been transfused.

Issue fridge next to the Transfusion laboratory

In the Transfusion laboratory

Adult Intensive Care Unit (AICU) and Paediatric Intensive Care Unit (PICU) and Blood Transfusion Laboratory as required.

We have 4 O pos emergency units at Barlborough Treatment Centre and 10 O pos emergency units at Newark because the patient demographic in these areas is >50.

Nearby private hospital

Neonatal

Adult Intensive Care (AICU) and Paediatric Intensive Care (PICU)

Room just off main corridor between Theatres and ED

Appendix 4

Any further comments?

These questions are a bit ambiguous. We have a Major haemorrhage protocol that stipulate O Pos as first line for males and females of non-childbearing potential. However, we stock Emergency O Neg units in the issue fridge.

What is used is dependent on whether the major haemorrhage protocol is activated or not

Policy to give O Pos as first line treatment in adult males (at our acute site only) should be live from 1st May 2021 so questions have been answered on this basis.

Our usage of emergency units is so low that if we were to hold O Pos units as well as O Neg our wastage would go up by 100%

We also give O Pos red cells to a female of childbearing age if we have 2 previous confirmed groups that are D pos on the LIMS for the patient.

The choice to set up the fridge algorithm to dispense O Pos to females of non-child-bearing age has been debated by HTC but we chose to make it simpler for the users such that they are not troubled by the age decision in an unknown date of birth emergency.

We would like to move to using O pos for male patients sooner in the trauma episode, but we need expert help convincing some clinical colleagues that this is acceptable policy.

Females >50 year are provided with O pos (Blue Bag units) we implemented this at both Royal Brompton & Harefield Hospital sites on 16th March 2021.

The trust has a policy to give O pos units to males over 18 years and females over 50 years old but as this hospital deals with mainly obstetric and transfusion dependent patients and does not have an A/E unit we only have O neg units available for urgent use in our blood fridge

Above Q- if they request emergency units then all patients have O-; which is always available in the issue fridge. However, if we can get some patient information and a request and we have a few extra minutes then we have a policy to prepare O+ units for females non-childbearing age or males requiring un-crossmatched units.

this initiative is planned to be implemented this year

it's policy to give O neg first but can switch to O pos if needed.

We are discussing implementing this and plan to use different coloured bags. Will be discussed at next HTC We will not implement at Wycombe hospital (in the same Trust) as the need for ONeg on this site is very low.

We're looking into allowing our remote issue fridges to offer O Positive or O Negative emergency blood as appropriate based on gender/age of patient. This is a work in progress.

have discussed having O Rh (Positive) flying squads but feel at present we didn't want to do this as a trust. May improve policy in future to make clearer and include women on non-childbearing age.

Only once sample has been received.

HTC members seem reluctant to give O D positive RBCs as first line treatment for adult males, more promotion of this and knowledge of the hospitals that are currently doing this would be very useful.

Apologies for Q1 and Q3, I couldn't select our hospital as Noble's hospital (Isle of Man) isn't in there and as we have our own donor service on island our BSMS are highly skewed. I have written a policy for the use of O Pos in male trauma, it needs passing through the local HTC before implementing but Educational resources would be very much welcome!

We think there is a risk associated with Q12 as many elderly ladies may have had babies before anti-D prophylaxis became widely available and consequently be sensitized to the D antigen. This risk will clearly reduce over the next few years and our policy will probably change.

Blood Track v4.11.4 supports remote emergency blood issue of O Rh(D) Pos / Neg units during massive blood loss events (MBL).

Aiming to request a group and save sample 3 months post O Pos transfusion to gather data for allo immunisation.

After the first O negative emergency units and negative antibody screen result.

Current policy is to give uncrossmatched O D pos to known females of non-childbearing age if time allows