

The Use of O D Positive Red Cells in Adult Males in Trauma/Major Haemorrhage (MH)

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Introduction

National Objective:

To promote the use of O D positive red cells in adult males* in emergency situations - trauma/ major haemorrhage (MH)

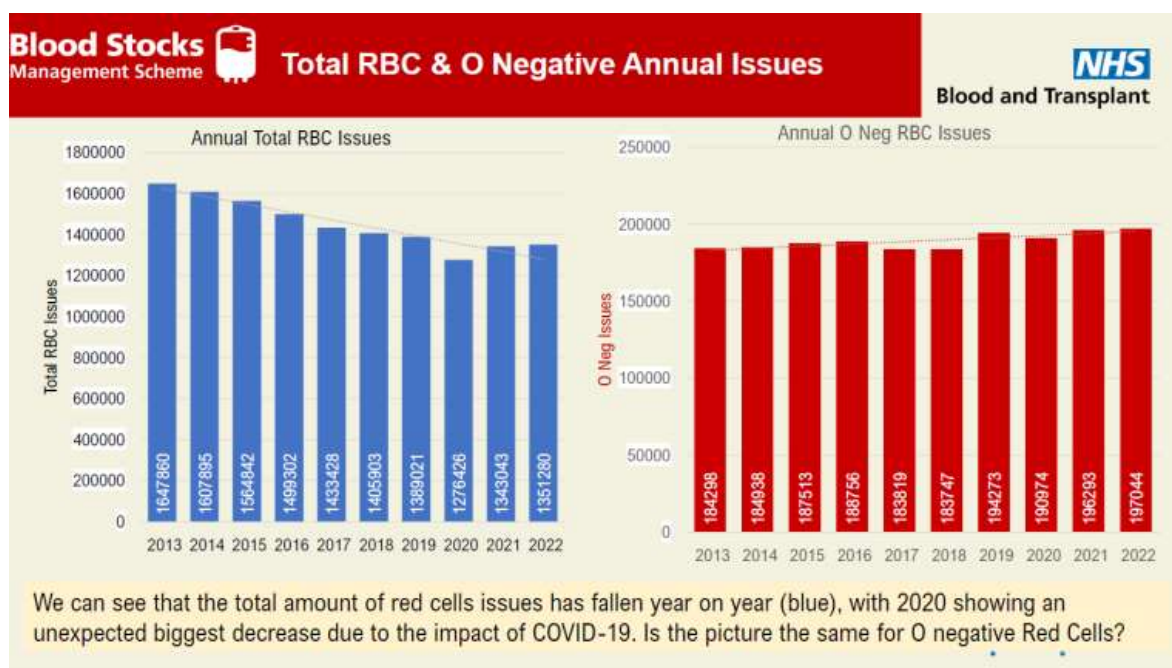
Background:

Overall 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 on O D negative red cells has been observed and demand for O D negative red cells 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.

Blood Stocks Management Scheme (BSMS) data 2013-2023



Current guidance recommends 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 may receive O D negative red cells until their blood group is determined. As approximately 85% of these individuals are D positive⁵, this could be considered as inappropriate use of O D negative red cells contributing to shortages of this group.

*Definition of adult male = Adult (18yrs and over) patient assigned as male at birth

The risk of an adverse outcome when giving O D positive red cells to unknown males in this emergency setting, is likely to be low⁶ and helps conserve O D negative red cell 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.

The National Blood Transfusion Committee (NBTC) O D negative Working Group has undertaken a project to promote the use of O D positive red cells in adult males in emergency situations (trauma/ MH) and to encourage trusts to formalise implementation of this initiative.

Executive Summary

The O D positive red cells in males in trauma/MH project started in January 2021. After the formation of the national steering group, the first action involved the design and distribution of a national survey to assess current position with implementation of the O D positive red cells to males in trauma/MH initiative in England (Survey Report Appendix 1) The survey took place between April and May 2021 inclusive.

72% of the respondents already had a policy in place to give O D positive red cells to adult males in trauma/MH. However, the response rate was low due to the COVID-19 pandemic (Table 1. and Table 2.) Although not truly representative of the scale of implementation, the responses gave a good indication of which areas the project team needed to target with respect to resources and support for organisations experiencing challenges.

The next steps involved designing a toolkit of resources to support trusts who were facing challenges with the implementation of the initiative.

To access the toolkit follow the link below:

<https://hospital.blood.co.uk/patient-services/patient-blood-management/o-d-positive-toolkit-for-males-in-trauma-or-major-haemorrhage/>

The toolkit of resources went live in February 2022, and the project was cascaded through the Regional Transfusion Committee (RTC) regions via the regional Patient Blood Management Practitioner (PBMP). The NBTC directed that this initiative was added to all regional workplans for the coming year.

Note: During the project timeframe the 10 RTC regions were reduced to 7 to align with NHS England regions. This resulted in some trusts moving RTC region.

Note: Women's and children's hospitals were excluded from the project due to their inappropriate patient demographics. i.e. majority of patients having child-bearing potential or non-adult patients, respectively.

Each RTC region was asked to take the project forward by looking at their regional survey results and assessing which trusts needed support with implementation.

The toolkit of resources was widely shared and included examples of shared practice from trusts who had already implemented the initiative, risk assessments to support implementation, current guidance supporting the initiative and freely available teaching/training resources. Support from the regional PBMP was always available if needed. Some regions set up smaller project groups to move the initiative forward.

The original project timeframe was 12-18 months. This, however, did not take into consideration a worldwide COVID-19 pandemic followed by the 2022 NHS Blood and Transplant (NHSBT) Amber Alert for red cells and platelets. During the pandemic, all projects were put on hold and during the Amber Alert period (Oct 2022 to March 2023) it was considered inappropriate by the National Steering Group, to promote the project due to the shortage of O D positive red cells.

The project was resumed in March 2023. The original survey was re-sent in six of the seven RTC regions and the results analysed. The response rate was much improved, with many regions achieving 100%, therefore giving a very representative picture of implementation in England.

Note: The East of England RTC will be moving forward with this project later in 2023/2024

Due to variation in the response rates between 2021 (COVID pandemic) and 2023, a direct comparison cannot be made for the overall national percentage increase in implementation of O D positive red cells in adult males in trauma/MH. However, it can be seen from the regional results that this initiative is moving significantly towards standard practice with a large percentage of trusts having implemented the initiative or planning to do so when time and resources allow (see results below).

Methods

April 2021: An online survey was developed using commercial software (SNAP surveys ©). Hospitals entered information regarding O D positive red cell usage in trauma and indicated 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.

April 2023: The original survey was repeated in 6 of the 7 RTC regions via MS Forms.

Results

Table 1: Response rate 2021 (10 RTC Regions)

RTC	No. Replies/region	No. Trusts/region	% Reply
North East	5	6	83
Yorkshire & Humber	12	14	86
North West	15	24	63
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 (9 NHS)	11	82
Av. response rate:			68

Table 2: Response rate 2023 (7 RTC Regions)

RTC	No. Replies/region	No. Trusts/region*	% Reply
North East & Yorkshire	21	21	100
North West	18	24	75
Midlands	22	22	100
East of England**	N/A	N/A	N/A
London	18	25	82
South West	13	13	100
South East	17	17	100
Av. Response rate:			93

* **Note:** Specialist Women’s and Children’s hospitals were excluded as their patient demographics were inappropriate for this project

* * **Note:** East of England RTC Region – project to be completed 2024

Due to variation in response rates between 2021 (COVID pandemic) and 2023, a direct comparison cannot be made for the overall national percentage increase in implementation of O D positive red cells in adult males in trauma/MH.

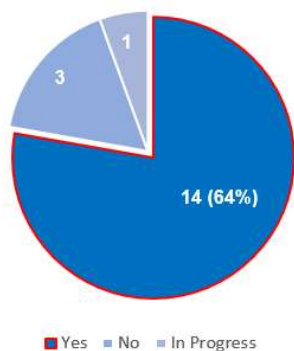
The 2021 survey results gave a good indicator of the extent to which O D positive red cells in adult males in trauma/MH had already been rolled out, but due to the low response rate it was not possible to get an accurate percentage of trusts in England who had implemented the initiative at that point. However, the 2023 survey results, with significantly improved response rates, show the project’s success in individual RTC regions.

Results - 2023 survey:

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

Data to show the number of regional trusts who have implemented O D positive red cells to adult males in trauma/MH, those who currently have not and those in the process of implementation.

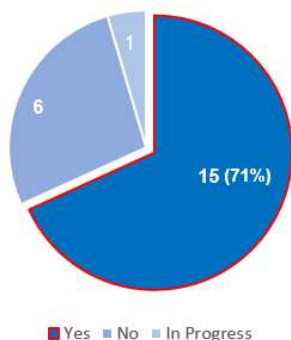
London RTC Region



Of the three trusts that responded “no,” one stated that they will implement O D positive red cells to adult males in trauma/MH when time and resources allow and one stated that it was a new clinic and may consider it in the future.

*One trust in process of implementation
82% response rate*

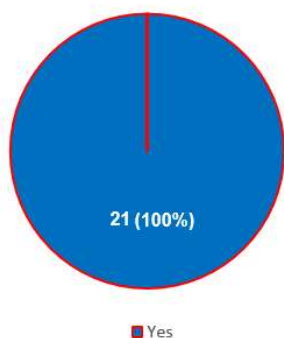
Midlands RTC Region



Of the six trusts that responded “no,” four stated that they will implement O D positive red cells to adult males in trauma/MH when time and resources allow.

*One trust in process of implementation
100% response rate*

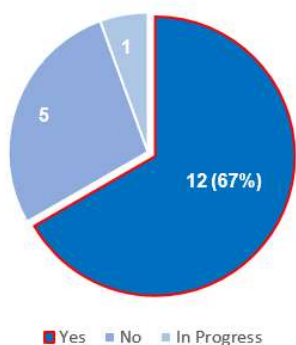
North East and Yorkshire RTC Region



All 21 trusts have implemented the O D positive red cells to adult males in trauma/MH initiative.

100% response rate

North West RTC Region

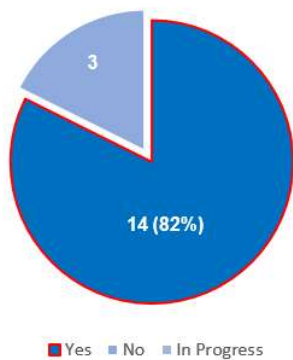


Of the five trusts that responded “no,” two stated that they will implement O D positive red cells to adult males in trauma/MH when they have installed their new LIMS.

One trust in process of implementation

75% response rate

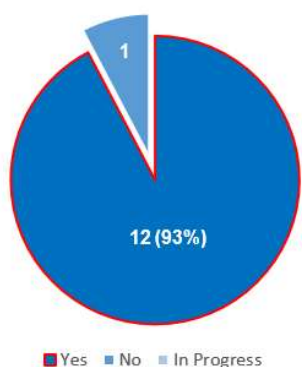
South East RTC Region



Of the three trusts that responded “no,” one stated that due to their geographic isolation, they have concerns in potential delay of back up O D negative red cells.

100% response rate

South West RTC Region



One trust in process of implementation.

100% response rate

East of England RTC Region – project to be completed 2024.

Other data from 2023 survey

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

The 2023 survey showed that in the majority of trusts who responded, the laboratory is issuing the O D positive red cells in the emergency situation. This was similar in 2021. The London RTC region is the exception to this with many trusts releasing emergency O D positive red cells from satellite/remote fridges.

Q. 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 both 2021 and 2023 surveys the most common method of differentiation is assorted colour bags (blue for O D positive and red/pink for O D negative)

The 2023 survey results show a significant increase in the number of automated remote fridges within clinical areas.

Discussion

Patients admitted to hospital in emergency situations where urgent transfusion is necessary, may receive O D negative red cells until their blood group is determined. As approximately 85% of these individuals are Rh D positive, this possible 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 low⁵ and helps conserve O D negative red cell supply.

The need to conserve O D negative red cell supply came into sharp focus in October 2022 when NHSBT moved into Amber Alert status for red cell stocks. This unprecedented situation highlighted the need to use all blood components appropriately and take active steps to avoid wastage of this finite resource.

During the Amber Alert the project team temporarily paused activity, as it was considered inappropriate to promote the project due to the shortage of O D positive red cells. However, many trusts pushed forward with implementation of the initiative.

The project resumed in March 2023 when NHSBT moved back to pre-amber status for red cell stocks.

As previously mentioned, a direct overall comparison of implementation between 2021 and 2023 cannot be made due to the variation in response rates but the 2023 regional results show the significant extent of implementation of the O D positive red cells in adult males in trauma initiative in England.

The aim of this project was to promote the use of O D positive red cells in adult males in emergency situations (trauma and MH)

The results above show that within each RTC region a high percentage of trusts have implemented the initiative or are in the process of implementation (Women's and Children's Trusts were excluded from the data).

The North East and Yorkshire RTC region has achieved 100% implementation, London region 64% (82% response rate) The Midlands 71%, North West 67% (75% response rate) South East 82% and South West 93% implementation.

Of those trusts that responded that they do not currently have a policy in place to use O D positive red cells for adult males in trauma/MH, 8 out of 14, were planning to implement when time and resources allow.

The remaining Trusts cited the following barriers to moving forward with this initiative.

- Lack of clinical area knowledge and support
- Resistance from biomedical scientist staff and the Haematology consultant for blood transfusion.
- Critically low staff numbers mean any project is hard to get off the ground.
- Concerns around fridge locations for collection and the burden of responsibility on staff collecting the blood.
- Geographical issues (islands, remote blood service)
- Other projects are currently taking priority.
- Staff shortages in all areas.
- Current O D negative red cell usage and wastage is minimal. Not wanting to add further processes and cause confusion/ complications.

Without 100% response rate from all regions, it is difficult to assess the full extent of implementation of the project. From the data that is currently available, it appears that the use of O D positive red cells in adult males in trauma/MH is becoming standard practice for a high percentage of trusts in England with many planning to implement when resources allow.

As this initiative is national guidance rather than a mandatory requirement, we, as a national steering group, feel that the project has been successful in promoting the use of O D positive red cells in adult males in trauma/MH and will help with conservation of O D negative red cell stocks for patients for whom there is no alternative.

References

1. NBTC Appropriate Specification for Emergency Red Cells 2020
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<https://www.transfusionguidelines.org/uk-transfusion-committees/national-blood-transfusion-committee/responses-and-recommendations>
3. Recommendations from NCA 2018 Survey of Group O D Negative Red Cell Use
<https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/17159/o-neg-survey-2018-final2.pdf>
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<https://b-s-h.org.uk/guidelines/guidelines/haematological-management-of-major-haemorrhage-2022>
5. Selleng, K. et al. Emergency transfusion of patients with unknown blood type with blood group O Rhesus D positive red blood cell concentrates: a prospective, single-centre (2017) Observational study
Lancet Haematol 2017 May;4(5):e218-e224.
6. Flommersfeld, S. et al. Unmatched Type O RhD+ Red Blood Cells in Multiple Injured Patients (2018)
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Appendix 1

2021 national survey report

<https://nhsbt.dbe.blob.core.windows.net/umbraco-assets-corp/26544/national-survey-report-use-of-o-positive-in-adult-males-in-trauma-dec-2021.pdf>

Acknowledgements:

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Debs Booth: NHS Blood and Transplant, RTC Administrator

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