

Risk of death and serious harm related to transfusions in the UK in 2024

The risk estimation is based on all incidents reported to SHOT including the process-based error reports received. This covers deaths with possible, probable and definite imputability.



Note: This is a representative image and not accurate to scale The estimated risks include risks of harm from errors in the transfusion pathway

Paediatric SHOT summary for 2024



(x+y)² =?

Paediatric reports account for 8.5% (340/3998) of all reports to SHOT. A large proportion of paediatric reports were in infants <1 year. There were 2 transfusion-related deaths reported in children or neonates in 2024, 1 related to delayed transfusion and another due to TACO.

Transfusion delays in children continue to be significant and occur at all stages. Most delays were due to lack of availability of appropriate blood component/s and knowledge gaps about the component specification or patient requirement.

Paediatric reports were over-represented in febrile, allergic and hypotensive reactions, incorrect blood component transfused (in both specific requirements not met and wrong component transfused), delayed and under or overtransfusion, uncommon complications of transfusion and this year in haemolytic transfusion reactions.

The paediatric transfusion formula remains the best way to calculate the volume of red cells for transfusing an infant or child (i.e. >28 days of age). Hospitals should ensure the correct use of the paediatric red cell transfusion formula, with the Hb units in g/L. Small volume top-up red cell transfusions for neonates are typically 15ml/kg over 4 hours(10-20ml/kg).

| TACO RISK A | ssessment | | | | YES | |
|---|--|--|---|--|---|-------|
| <u>k</u> | Does the patient have any of the following?: diagnosis of 'heart failure', congestive cardiac failure (CCF), left ventricular dysfunction, aortic stenosis, or any other heart valve disease | | | | | |
| | Is the patient on a regular diuretic? | | | | | |
| | Does the patient have severe anaemia? | | | | | |
| | Is the patient known to have pulmonary oedema? | | | | | |
| | Does the patient have respiratory symptoms of undiagnosed cause? | | | | | |
| \bigcirc | Is the fluid balance clinically significantly positive? | | | | | |
| | Is the patient receiving intravenous fluids (or received them in the previous 24 hours)? | | | | | |
| | Is there any peripheral oedema? | | | | | |
| | Does the patient have a low serum albumin level? | | | | | |
| | Does the patient have significant renal impairment? | | | | | |
| If risks identified | | | | | YES | |
| Review the need for transfusion (do the benefits outweigh the risks)? | | | | | | |
| Can the transfusion be safely deferred until the issue is investigated, treated or resolved? | | | | | | |
| If proceeding w | vith red cell transfusio | n: ensure appropria | ate indication and v | olume is pres | scribed (ad | ult |
| Indication code for transfusion | | Target Hb Dosing advice | | | | |
| Acute anaemia (R2) | | Post-transfusion target Hb 70 - 90g/L | | Body weight dosing (max 2 units) | | |
| Acute anaemia (R3: with acute MI/ACS) | | Post-transfusion target Hb 80 - 100g/L Body weig | | | | |
| Acute anaemia (R3: | with acute MI/ACS) | Post-transfusion targe | et Hb 80 - 100g/L | Body weight d | osing (max 2 u | nits |
| | with acute MI/ACS) c chronic anaemia (R7) | Post-transfusion targe No target Hb - minimu | | Body weight d Usually single | | nits |
| | c chronic anaemia (R7) | | um transfusion | | unit only | |
| Severe symptomati | c chronic anaemia (R7) | No target Hb - minimu Individualised target I | um transfusion Hb | Usually single Body weight d | unit only | nits |
| Severe symptomati Regular transfusion Other measu | c chronic anaemia (R7) programme (R4) | No target Hb - minimu Individualised target I D: ASSIGN ACTIO | um transfusion Hb N AS APPROPRIA | Usually single Body weight d | unit only | nits |
| Severe symptomati Regular transfusion Other measu | c chronic anaemia (R7) programme (R4) res to mitigate TACC r each unit (red cells) and revie | No target Hb - minimu Individualised target I D: ASSIGN ACTIO | um transfusion Hb N AS APPROPRIA | Usually single Body weight d | unit only | nits |
| Severe symptomatic Regular transfusion Other measu Review patient after Measure the fluid ba | c chronic anaemia (R7) programme (R4) res to mitigate TACC r each unit (red cells) and revie | No target Hb - minimu Individualised target I D: ASSIGN ACTIO ew symptoms of anaemia | um transfusion Hb N AS APPROPRIA a. Is further transfusion ne | Usually single Body weight d | unit only | nits |
| Severe symptomatic Regular transfusion Other measu Review patient after Measure the fluid ba Consider a prophyla | c chronic anaemia (R7) programme (R4) res to mitigate TACC r each unit (red cells) and revia alance | No target Hb - minimu Individualised target I D: ASSIGN ACTIO ew symptoms of anaemia ate/not contraindicated) | um transfusion Hb N AS APPROPRIA a. Is further transfusion ne | Usually single Body weight d | unit only | nits |
| Severe symptomatic Regular transfusion Other measu Review patient after Measure the fluid ba Consider a prophyla | c chronic anaemia (R7) programme (R4) res to mitigate TACC r each unit (red cells) and revia alance actic diuretic (where appropria gns closely, including oxygen s | No target Hb - minimu Individualised target I D: ASSIGN ACTIO ew symptoms of anaemia ate/not contraindicated) | um transfusion Hb N AS APPROPRIA a. Is further transfusion ne | Usually single Body weight d TE eccessary? | unit only osing (max 2 u | nits |
| Severe symptomatic Regular transfusion Other measu Review patient after Measure the fluid ba Consider a prophyla Monitor the vital sig | c chronic anaemia (R7) programme (R4) res to mitigate TACC r each unit (red cells) and revia alance actic diuretic (where appropria gns closely, including oxygen s | No target Hb - minimu Individualised target I D: ASSIGN ACTIO ew symptoms of anaemia ate/not contraindicated) | um transfusion Hb N AS APPROPRIA a. Is further transfusion ne Due to the dif physiology, babies | Usually single Body weight d TE eccessary? ferences in adu may have a dif | unit only osing (max 2 u lt and neona | nits |
| Severe symptomatic Regular transfusion Other measu Review patient after Measure the fluid ba Consider a prophyla Monitor the vital sig Name (PRINT): | c chronic anaemia (R7) programme (R4) res to mitigate TACC r each unit (red cells) and revia alance actic diuretic (where appropria gns closely, including oxygen s | No target Hb - minimu Individualised target I D: ASSIGN ACTIO ew symptoms of anaemia ate/not contraindicated) aturation | um transfusion Hb N AS APPROPRIA a. Is further transfusion ne Due to the dif physiology, babies Calculate the | Usually single Body weight d TE eccessary? ferences in adu | unit only osing (max 2 u lt and neona iferent risk fo t and obser | nits) |

Introduction of the transfusion safety standards in 2025

- A set of transfusion safety standards have been produced by SHOT to promote safe clinical and laboratory transfusion practices. These standards cover the key themes evident from serial Annual SHOT Reports and are aligned with the recommendations from these reports. The standards can be accessed on the SHOT website
- The standards provide a framework for self-assessment and compliance check by regulatory organisations with national oversight. A baseline assessment tool and FAQ document is provided with the new standards



Key recommendation

• The key recommendation in this and future Annual SHOT Reports will be to ensure compliance with the transfusion safety standards. Organisations can work on a roadmap to implement improvement actions to ensure compliance based on the baseline assessment

• Routine yearly recommendations will no longer be issued



Suggested actions

- Local analysis to identify gaps in existing processes and practices against these standards to optimise compliance
- Drafting tangible action plans and prioritise actions based on risks to address gaps

· Monitor progress and benchmark locally to drive improvements







CONTACT DETAILS

SHOT Office, Manchester Blood Centre, Plymouth Grove, Manchester, M13 9LL Tel: +44 (0) 161 423 4208 Enquiries: shot@nhsbt.nhs.uk www.shotuk.org



Denominators shown vary according to the number of responses received to each question





ABO-incompatible red cell transfusions 2016-2024: few events (n=32) but many near misses (n=2593)

32 ABO-incompatible red cell transfusions

2593 ABO-incompatible near miss events

ANNUAL SHOT REPORT 2024 SUMMARY

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Serious Hazards of Transfusion

TACO pre-transfusion risk assessment





Summary data for 2024, all categories (includes RBRP and NM) (n=3998)

Insufficient training of staff

contributing to lack of knowledge



4 (5.5%

Issues with IT systems, laboratory testing and equipment



Deaths related to transfusion with imputability reported 2010-2024 (n=379)





Cumulative data for SHOT categories 1996-2024 (n=33343)



Please note that data on alloimmunisation is no longer collected by SHOT since 2015.

Optimising safety for patients in shared care



Addressing transfusion delays



In 2024, the number of delayed transfusions have increased by 1/3 and the number of deaths due to delays have doubled. Most deaths were associated with delays in urgent or emergency transfusions.





Ensuring safety for patients in shared care (where care is delivered by multiple providers across settings) requires clear communication, coordination and systems that are patient centred. SHOT continues to receive reports related to patients receiving shared care, such as transplant recipients, those with sickle cell anaemia and thalassaemia.

Error reports have been received in several categories such as incorrect blood component transfused, anti-D lg errors and transfusion delays. Contributory factors include suboptimal transfer of information between treating teams, insufficient IT and gaps in staff knowledge.

Tools to optimise patient safety in shared care include timely, clear communication using structured frameworks, staff and patient education, standardised care pathways and embedding a culture of collaboration.

The increase in transfusion delays including deaths following delays reported to SHOT led to the release of a UK-wide patient safety alert in 2022, with recommendations to address underlying issues and improve safety.

The number of transfusion delays reported due to laboratory errors more than doubled in 2024. Miscommunication between teams was the most common cause identified. Most errors led to delays in availability of blood components.

Due to the increase in delays and deaths, SHOT and key stakeholders have developed resources to help clinical and laboratory staff in the decisionmaking process to ensure timely provision of blood components. These are available on the SHOT website and cover various key issues such as effective communication, concessionary release and simulation training.

Framework to transfer IDEAS of excellence into practice



Debrief

or team review following excellent events to identify themes and transferrable learning



Engage with all staff members. patients/blood donors to share learning



Apply transferrable learning to other processes in clinical and laboratory areas



Surveillance by monitoring trends. improvements and recognising further excellent events