12 Avoidable Transfusions n=170

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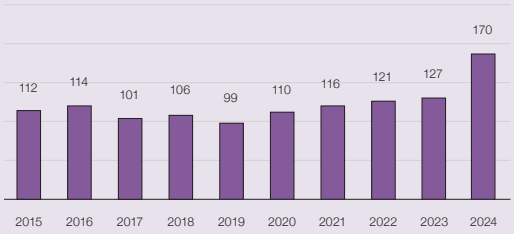
Headline data 2024

Number of reports n=170
Deaths n=0
Major morbidity n=0

Avoidable transfusion reports by year



Demographic data

Male n=76
Female n=93
Unknown n=1
Adults n=158
Paediatric n=12

Blood component data

Red cells n=128
Platelets n=33
Fresh frozen plasma (FFP) n=3
Cryoprecipitate n=1
Multiple components n=5

Key findings:

- Reports of avoidable transfusions increased by 33.9% compared to 2023
- There was an increase in reports related to avoidable platelet transfusions
- There were 124 completely avoidable transfusions and 46 involving avoidable use of emergency group O red cells

Gaps identified:

- Lack of knowledge of transfusion indications
- Failure to question unexpected results
- Inadequate or inaccurate handover, both within and between teams (medical, nursing, laboratory)
- Multiple systems, steps and staff involved in the switch to group-specific blood during major bleeding

Good practice:

- Reports reflect some detailed investigations with good insight into multiple human and systems factors involved
- Incorporation of a prompt for consent built into the prescription chart

Next steps:

- Review local policies and processes to ensure timely switch to group-specific blood components in major bleeding

For all abbreviations and references used, please see the **Glossary** and **Reference list** at the end of the full Annual SHOT Report. Please see the supplementary information on the SHOT website (https://www.shotuk.org/shot-reports/annual-shot-report-2024/).

Definition:

Where the intended transfusion is carried out, and the blood component itself is suitable for transfusion and compatible with the patient, but where the decision leading to the transfusion is flawed. Every unit transfused should be an individual decision, so this might include transfusion of multiple units where not all were appropriate/necessary.

Introduction

The 170 reports of avoidable transfusions in 2024 represents a 33.9% increase compared to the 127 reported in 2023. The most notable increase was in reports related to platelets: 33 compared to 15 in 2023.

There were 124 transfusions that might have been avoided entirely: 82 involved red blood cells, 33 platelets, 3 fresh frozen plasma (FFP), 1 cryoprecipitate and 5 multiple components. In addition, there were 46 reported cases of avoidable use of emergency group O red cells.

Deaths and major morbidity related to transfusion n=0

There were no deaths and major morbidity cases related to avoidable transfusions in 2024.

Classification of avoidable transfusions n=170

Table 12.1: Classification of avoidable transfusions in 2024 (n=170)

Group	Red cells	Platelets	Plasma components	Multiple components	Total reports
Flawed decision	30	13	3	3	**49**
Decision based on inaccurate results	35	12	1	1	**49**
Failure to respond to change in circumstances	7	6	0	0	**13**
Transfusion necessitated by error	2	0	0	1	**3**
Transfusion without decision	8	2	0	0	**10**
Sub total	**82**	**33**	**4**	**5**	**124**
Avoidable use of emergency group O	46	0	0	0	**46**
Grand total	**128**	**33**	**4**	**5**	**170**

Flawed decision n=49

These included 9 avoidable transfusions for haematinic deficiencies (6 iron, 3 B12/folate), 6 unnecessary use of multiple units, 23 transfusions outside guideline thresholds, 8 related to inaccurate estimation of bleeding and 3 related to specific conditions (immune thrombocytopenia and sickle cell disease). In most cases, these related to gaps in knowledge.

Case 12.1: Unnecessary prophylactic platelet transfusion related to miscommunication and knowledge gaps

A patient with myeloma was admitted unwell and one adult therapeutic dose (ATD) of platelets was transfused as the platelet count was 11x10^9/L. The consultant's plan was to transfuse further platelets if the count was less than 20x10^9/L. This was misread as 70x10^9/L by a locum resident doctor, who lacked the knowledge to question the threshold. The patient's platelet count was 45x10^9/L and platelets were given. The consultant, who was covering for the doctors' strikes, was in a rush and did not write clearly, and the patient was on a medical admissions unit rather than the haematology ward, where staff were unfamiliar with use of platelets.

Transfusion decision based on inaccurate results n=49

These included 10 patients transfused based on results from haemodiluted samples, 9 on another patient's results, 9 erroneous results of uncertain aetiology, 6 related to point-of-care results (4 blood gas machines, 1 thromboelastography (TEG) and 1 device used in the community), 5 cases of platelet clumping, 4 old results, 3 clotted samples, 2 transcription errors and 1 verbal handover. A recurring theme was a failure to question results which were unexpected, had changed significantly from historical values or did not fit the clinical picture.

Case 12.2: Wrong blood in tube for full blood count (FBC)

Two patients on a ward required repeat blood samples to be sent for FBC and biochemistry. A nurse took the samples from patient 1 but labelled them as patient 2 and then took patients 2's samples and labelled them as patient 1. Patient 2 was noted to have a haemoglobin (Hb) drop from 90 to 70g/L and was transfused two units of red cells. The following day, the pharmacist was reviewing the blood results for biochemistry and noted that they seemed erroneous. The FBC results were then reviewed, and patient 2 had a post-transfusion Hb of 129g/L. Both patients' results were discarded. Patient 1's repeat Hb was 77g/L and transfusion was not required.

Case 12.3: Transcription error involving triplets

A premature triplet had an incorrect Hb level of 105g/L (the result of his sibling) transcribed into his notes and as a result was transfused 20mL/kg packed red blood cells. A subsequent result (delayed as the initial sample had clotted) demonstrated a pre-transfusion Hb of 136g/L, which was above the threshold for transfusion for his gestation. The post-transfusion Hb was 148g/L.

Failure to respond to change in circumstances n=13

There were 4 cases where a change of management plan was documented but not clearly communicated to nursing staff, and 1 with multiple contradictory plans. In 2 cases, prescriptions were written in advance where current results were not reviewed. One case involved a delayed procedure and in 2 cases, prescriptions for blood components were made 'just in case' that were then given routinely. Additionally, in 2 patients, clinical status had changed but transfusion occurred and in 1 case, the planned transfusion had already been given in theatre but nurses on the ward were unaware as they had no access to the separate anaesthetics chart. The final case highlights a risk when blood transfusion is not recorded in a common single patient record, which can also have implications for investigations of reactions and lookback for infections.

Case 12.4: Platelets transfused based on anticipated need without up-to-date review

A patient had a target platelet count of >50x10^9/L for treatment dose anticoagulation for a new pulmonary embolism. Platelets were ordered based on the predicted rate of fall of their count after the last transfusion. The plan following discussions on the ward round was for these to be given at 06:00 (before the anticoagulation dose was due). The night nurses asked the on-call medic to prescribe these as they had not been written up. The FBC was checked after one ATD of platelets and found the platelet count to be 126x10^9/L, well above the target threshold.

Case 12.5: Platelets in major haemorrhage pack given despite cessation of bleeding

The major haemorrhage protocol was activated for a patient with lower gastrointestinal bleeding with a platelet count >150x10^9/L, and they were on no antiplatelet medication. Four units of red cells and two FFP were issued, and two ATD of platelets were requested on blue light delivery. Upon contacting the ward to inform them they were available; the laboratory was informed they were no longer needed. The patient went on to receive additional platelets more than 12 hours after the major haemorrhage alert with no apparent indication.

Transfusion necessitated by error n=3

One patient suffered significant bleeding in the context of over-anticoagulation. Suboptimal antenatal management of iron deficiency anaemia in another patient meant transfusion was required prior to

caesarean section. A patient with von Willebrand disease suffered significant intraoperative bleeding and needed transfusion support. The patient had been taken to theatre without liaison with haematology or any prophylactic haemostatic treatment pre-operatively.

Transfusion without decision n=10

Ten patients were given a transfusion that had not been prescribed. Often this was the result of errors in verbal handover.

Case 12.6: Red cells transfused in place of intravenous (IV) iron due to erroneous verbal handover

A woman who had been anaemic throughout pregnancy had a post-delivery Hb of 74g/L, having suffered minimal blood loss. A prescription was written for IV iron but the nursing plan, which documented 'IV iron transfusion', became 'blood transfusion' during verbal handover. An agency nurse ordered and administered a unit of red blood cells, and a doctor was asked to prescribe these retrospectively.

Avoidable use of emergency group O red cells n=46

Reports related to avoidable use of emergency group O red cells have increased (33 in 2022, 37 in 2023), likely due to an increased focus on this important issue.

In 5 reports, emergency group O red cells were accessed when the transfusion was not clinically urgent.

In 18 cases, group-specific blood components were available but not collected, either due to errors during collection, difficulty in accessing red cell units from remote refrigerators or a lack of communication with clinical teams about availability. In 10 reports, there was no valid sample, often due to delays in sending or samples being rejected due to mislabelling. In 8 cases, there were laboratory delays processing the sample. Errors with information technology (IT) systems were implicated in 5 cases.

The diversity of errors illustrates the complexity of processes for providing group-specific blood components: involving many systems, steps, and staff groups. SHOT has produced a guide to describe these steps, to assist in reviewing local protocols (see 'Recommended resources').

Following the June 2024 cyberattack that disrupted laboratory information systems, several major London hospitals had to rely exclusively on group O blood for all patients. This approach was necessary due to logistical constraints, the risk of ABO-incompatible transfusions, manual crossmatching demands, staffing pressures, analyser limitations, and available bench space. The reliance on group O continued until IT systems were fully restored in late September 2024. These cases have not been reported individually as avoidable transfusions of group O. However, it is acknowledged that this unplanned use placed considerable strain on national blood supplies, exacerbating existing shortages of group O stock.

Case 12.7: Lack of communication with clinical area results in avoidable use of O D-negative red cells

Emergency O D-negative red cells were collected for a patient as the staff member was unaware that group-specific red cells were available via electronic release. There was no biomedical scientist in the hospital or on call out-of-hours, so the clinical area had not been contacted to tell them that electronic release was available. Only limited stocks of O D-negative red cells were held in the remote refrigerator, so this was depleted overnight unnecessarily, with no ability to replenish until the following day.

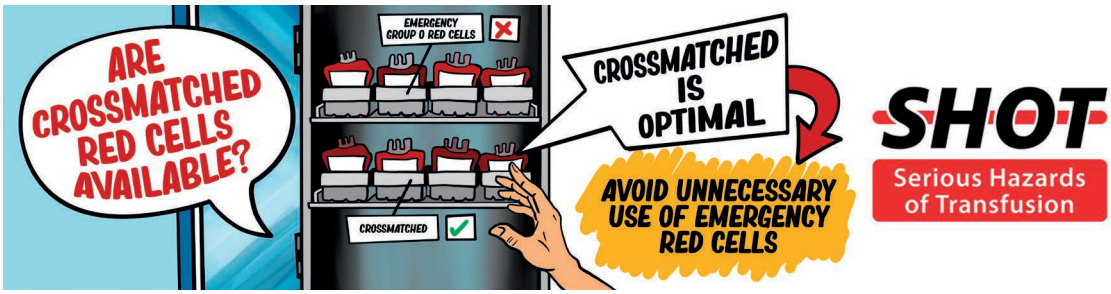
Case 12.8: Configuration of remote refrigerator prompted staff to collect group O red cells unnecessarily

A patient was actively bleeding, and staff went to collect two red cell units from the remote refrigerator via electronic issue (as there was a valid pre-transfusion sample). The refrigerator was configured not to allow multiple collections for a single named patient at the same time, to prevent transposition of labels. Staff successfully removed one unit of group-specific red cells but were unable to remove the second unit at that time. Staff assumed no other group appropriate blood components was available,

so an emergency O D-negative red cell unit was also taken for transfusion. Further O D-negative red cells were collected later in the shift, as the staff member continued to assume that no group-specific blood was available.

Learning points

- Guidance on appropriate transfusion thresholds should be made readily available to clinicians, in concise and convenient formats to support real-time decisions
- Accurate patient identification is essential during any interaction with the patient themselves or any part of their record (e.g., looking up or transcribing results, and writing a prescription)
- Unexpected results, particularly those not consistent with the current clinical picture, should be questioned and tests repeated before using them to make management decisions
- In a non-bleeding patient, the cause of thrombocytopenia should be investigated before considering platelet transfusion
- Verbal handover carries great potential for error and plans should be confirmed in writing wherever time allows
- The switch from emergency group O to group-specific red cells during major bleeding can be a complex process. The steps required should be considered in detail when designing and practising the major haemorrhage protocol



Conclusion

Two major events in 2024 placed a spotlight on avoidable transfusions and may have contributed to the increase in number of reports received this year.

England saw a prolonged amber alert for shortage of group O red cells. An amber alert is declared by the Blood Service when there is reduced availability of blood with impact on clinical activity (NHSBT, 2025b). Ready access to group O red cells may have prevented transfusion delays in many of the cases reported. Every effort should however be made to give group-specific blood components and avoid unnecessary use of emergency group O red cells.

The Infected Blood Inquiry serves as a stark reminder that transfusion is not without risk and should be avoided unless clinically essential. Effective patient blood management is fundamental to transfusion safety.

Recommended resources

National Blood Transfusion Committee Indication codes for transfusion (updated 2024)
https://nationalbloodtransfusion.co.uk/recommendations

Royal College of Physicians Acute care handover toolkit
https://www.rcp.ac.uk/improving-care/resources/acute-care-toolkit-1-handover/

SHOT Bite No. 34: Switching to group-specific red blood cells in major haemorrhage
https://www.shotuk.org/resources/shot-bite-no-34-switching-to-group-specific-blood-components-during-major-haemorrhage/