Incorrect Blood Component Transfused (IBCT) n=359

9

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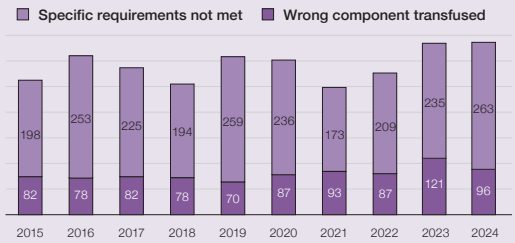
Headline data 2024

Number of reports n=359
Deaths n=0
Major morbidity n=2

IBCT reports by year



Demographic data

Male n=170
Female n=186
Unknown n=3

Adults n=309
Paediatric n=48
Unknown n=2

Blood component data

Red cells n=290
Platelets n=42
Fresh frozen plasma (FFP) n=8
Solvent-detergent FFP n=4
Cryoprecipitate=2
Multiple components n=13

Key findings:

- Clinical errors at the request step have led to an increased number of missed specific requirements
- ABO-incompatible (ABOi) plasma component transfusions continue to be reported
- ABOi red cell transfusions have reduced
- Errors where transfusions are administered to the wrong patient persist
- Laboratories issuing D-positive blood components to D-negative patients in error, and not meeting transplant grouping requirements, continue to be of concern

Gaps identified:

- Transfusion request, collection and administration steps in the clinical area
- Testing and component selection steps in transfusion laboratories
- Issues with communication, staffing, skills, training, recruitment, lone working
- Overriding information technology (IT) alerts inappropriately and lack of IT functionality
- Deficiencies in and lack of effective use of checklists

Good practice:

- Pre-administration checklists, when used appropriately, have prevented many transfusion errors and potential patient harm
- Implementation of a laboratory exit check is increasing

Next steps:

- Review IT system alerts – they must be current, clear and actionable
- Ensure staffing numbers and skill mix are accurately reflected in capacity plans to allow safe completion of tasks
- Include the consequences of not meeting specific requirements in staff training
- Review and improve communication processes between teams to enhance safety

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:

Wrong component transfused (WCT)

Where a patient was transfused with a blood component of an incorrect blood group, or which was intended for another patient and was incompatible with the recipient, which was intended for another recipient but happened to be compatible with the recipient, or which was other than that prescribed e.g., platelets instead of red cells.

Specific requirements not met (SRNM)

Where a patient was transfused with a blood component that did not meet their specific requirements, for example irradiated components, human leucocyte antigen (HLA)-matched platelets when indicated, antigen-negative red cell units for a patient with known antibodies, red cells of extended phenotype for a patient with a specific clinical condition (e.g., haemoglobinopathy), or a component with a neonatal specification where indicated. (This does not include cases where a clinical decision was taken to knowingly transfuse components not meeting the specification in view of clinical urgency).

Introduction

IBCT events have the potential to lead to serious patient harm including major morbidity and death, as seen in serial Annual SHOT Reports. These errors accounted for 359/3998 (9.0%) reports in 2024, which is similar to the previous year's data. The total number of IBCT-WCT reports has decreased in 2024 to 96/359 (26.7%) from 121/356 (34.0%) in 2023, with a continued increase in the number of IBCT-SRNM reports to 263/359 (73.3%) from 235/356 (66.0%) in 2023. Figure 9.1 provides an overview of reports submitted to SHOT in 2024 where an incorrect blood component was transfused, and Figure 9.2 outlines the step in the transfusion process where the error occurred.

Figure 9.1: Overview of reports where an incorrect blood component was transfused in 2024 (n=359)

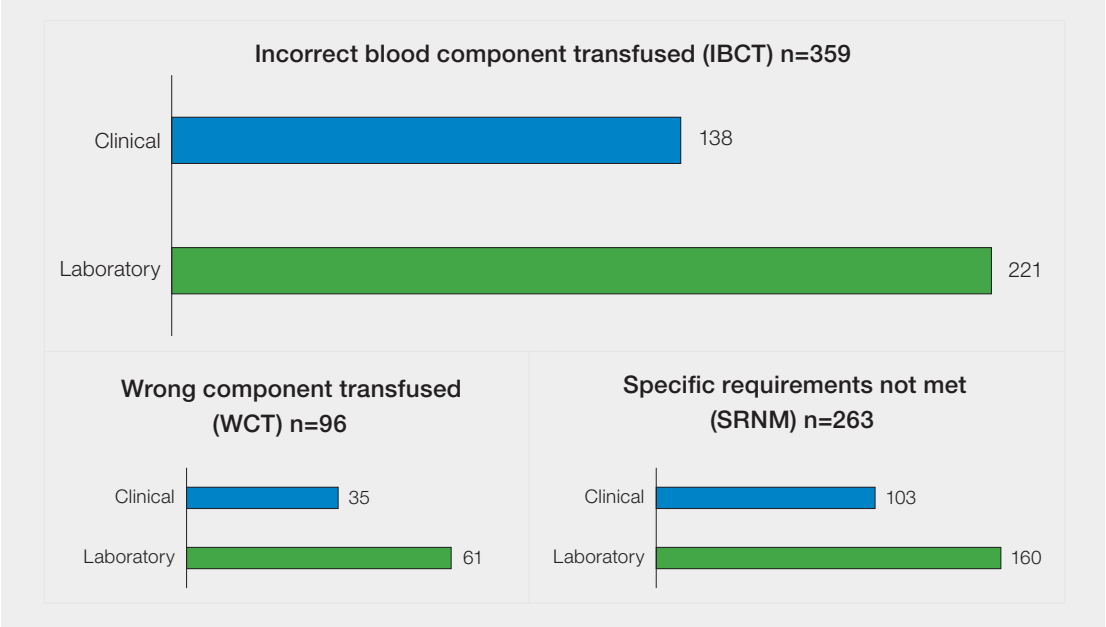
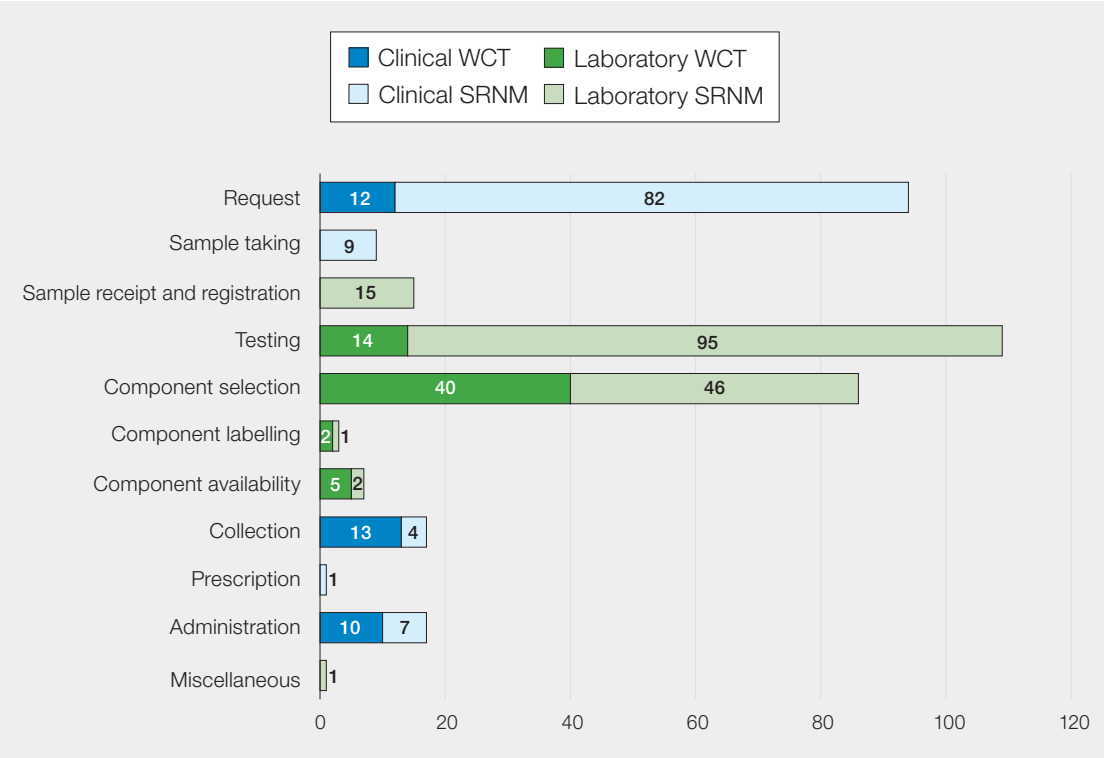


Figure 9.2: Total IBCT errors in 2024 categorised by the step in the transfusion process where the primary error occurred (n=359)



WCT=wrong component transfused; SRNM=specific requirements not met

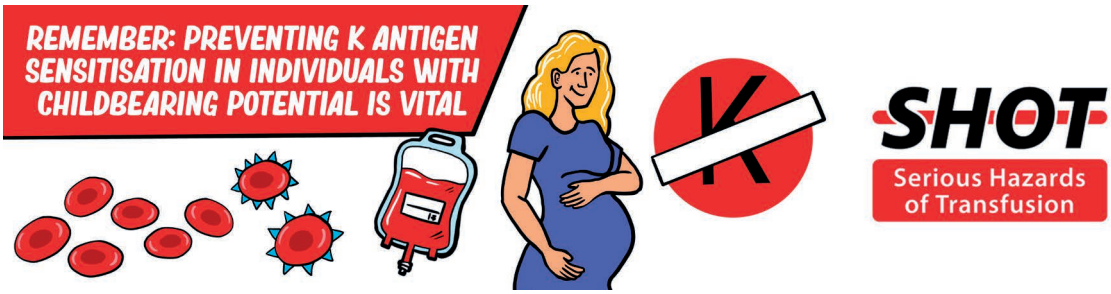
Deaths related to transfusion n=0

There were no deaths related to transfusion in the IBCT category.

Major morbidity n=2

There was 1 case of major morbidity due to a clinical administration error which resulted in a D-negative female receiving two units of D-positive red cells as an emergency in theatre. The patient required an exchange transfusion and intensive care monitoring post transfusion.

The 2nd case of major morbidity occurred following a laboratory component selection error which resulted in sensitisation to the K antigen in a patient of childbearing potential.



ABO-incompatible (ABOi) transfusions n=4

There was 1 red cell and 3 plasma (2 FFP and 1 solvent detergent FFP) ABOi transfusions in 2024. The red cell ABOi transfusion was due to a clinical administration error with the unit being connected to the wrong patient. The plasma ABOi transfusions were due to component selection errors in the laboratory resulting in group O plasma being issued to non-group O patients. All these cases were related to adult patients. Key points of these cases are covered in Table 9.1.

Table 9.1: ABOi transfusions reported in 2024 (n=4)

Case number	Case 1	Case 2
Component transfused	Red cells 	FFP 
Patient group	O D-positive	A D-positive
Unit group	A D-negative	O
Volume transfused	0mL*	2 units
Primary error	Administration (Clinical)	Component selection (Laboratory)
Error detection	Administration, using checklist	When laboratory staff realised error
Patient impact	No reaction	No reaction
Urgency	Routine	Emergency
MHP	No	Yes
Department	Ward	Emergency department
Administration checklist used	Yes - electronic	Yes - electronic
How many check	2-person check not completed	2-person check
Laboratory exit check in place	Not applicable	Yes
ID band in place	Yes	Yes
Did IT contribute?	Yes - nurse 1 had scanned unit using electronic system, and nurse 2 did not recheck unit	Yes - LIMS alert overridden
Details	Nurse helping out over break, attached a unit to the wrong patient. Trainee nurse was observing. Occurred at handover for staff break time	BMS 2 offered to get FFP out of freezer to help during MHP activation, but was told the wrong ABO group by BMS 1

Case number	Case 3	Case 4
Component transfused	FFP 	Octaplas (SD-FFP) 
Patient group	A D-positive	B D-positive
Unit group	O	O
Volume transfused	8 units	1 unit
Primary error	Component selection (Laboratory)	Component selection (Laboratory)
Error detection	When laboratory staff realised error	Administration
Patient impact	No reaction	No reaction
Urgency	Emergency	Routine
MHP	Yes	No
Department	Emergency department	Intensive care unit
Administration checklist used	Yes - paper	Yes - paper
How many check	1-person check	Not stated
Laboratory exit check in place	Yes	No

ID band in place	Yes	Yes
Did IT contribute?	Yes - LIMS notes not actioned. Lack of functionality within LIMS to stop O FFP to undetermined group. LIMS required an authorised group to issue blood components	Yes - there were no LIMS ABO-compatibility tables available for Octaplas
Details	Undetermined ABO/D group due to emergency stock use. Distractions in the laboratory due to issue refrigerator out of action. BMS had worked overtime due to staff sickness	Plasma exchange requiring large volumes of Octaplas with three units of incorrect ABO Octaplas thawed and issued

**The red cell unit was attached to the patient, but administration not started. Case included here as per SHOT definitions*

The data indicates that the weak points in the transfusion pathway leading to ABOi transfusions are administration in the clinical area and component selection in the transfusion laboratory. Appropriate compatibility rules in the laboratory information management system (LIMS) could have prevented all the laboratory ABOi events. There should be clear IT compatibility rules within the LIMS for plasma issue which includes patients with unknown and undetermined ABO/D blood groups. Accurate patient identification is essential at every step of the transfusion pathway. Safety critical steps in the transfusion pathway identified in SHOT data has been outlined by Swarbrick, et al. (2024), and included sample taking, component collection, and administration in the clinical area, and component selection in the transfusion laboratory.

Clinical IBCT errors n=138

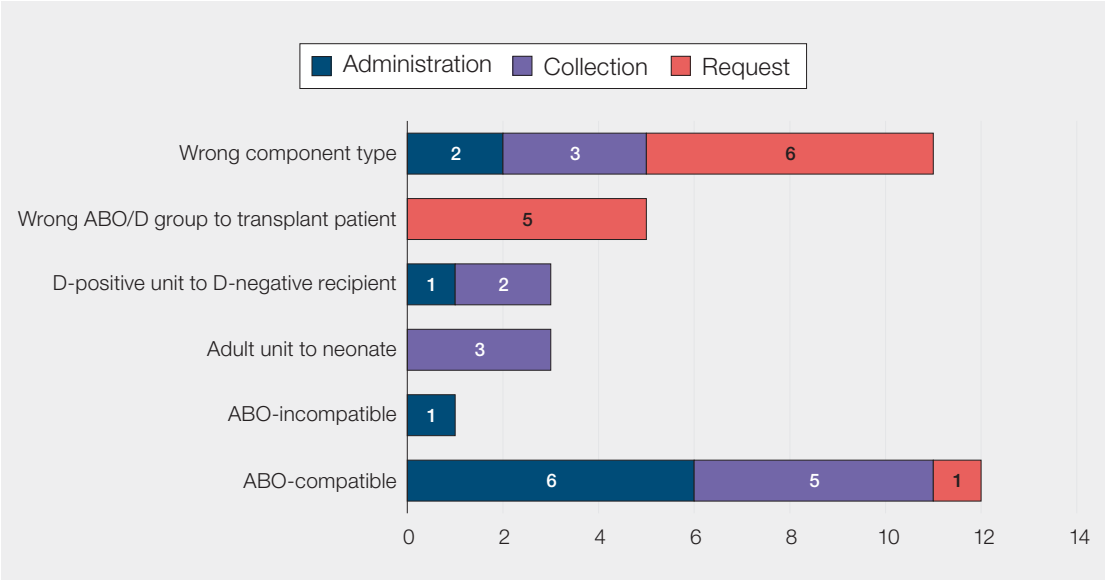
Of the 359 IBCT cases reported to SHOT in 2024, 138 were due to errors in the clinical area (38.4%), which is an increase from 129/356 (36.2%) in 2023.

Clinical IBCT-WCT errors n=35

There has been a decrease in clinical errors reported from 50 in 2023 to 35 in 2024. Of these, 14/35 (40.0%) were transfusions to the wrong patient, 14/35 (40.0%) were the wrong component type and 7/35 (20.0%) were the wrong blood group.

When considering the transfusion pathway, certain steps stand out as more prone to errors, necessitating greater attention due to their safety-critical nature. Clinical steps in the transfusion process that were most prone to IBCT-WCT errors were collection, 13/35 (37.1%), transfusion request, 12/35 (34.3%) and administration, 10/35 (28.6%) (Figure 9.3). One administration error led to an ABOi transfusion and 1 to major morbidity requiring an exchange transfusion.

Figure 9.3: Clinical IBCT-WCT errors and transfusion step where the error occurred in 2024 (n=35)



Of the clinical IBCT-WCT errors, 17/35 (48.6%) were routine transfusions and 17/35 (48.6%) either urgent or emergency transfusions. In 1 case, the urgency of transfusion was not specified. Most transfusions, 26/35 (74.3%) occurred between 08:00 and 20:00.

Pre-administration checklists were used in 19 events yet failed to detect the error. This was mainly due to the checklist not requiring staff to check the prescription, therefore prescribing errors were not identified.

Case 9.1: Multiple errors during major haemorrhage led to a wrong blood transfusion

A major haemorrhage protocol was activated for patient A in the emergency department (ED) with a suspected ruptured abdominal aortic aneurysm. Two units of emergency O D-negative red cell units were administered appropriately. A further six red cell units were issued under the name 'unknown, unknown' and placed in the ED blood refrigerator. A group and screen sample was sent to the transfusion laboratory but rejected due to an incorrect hospital number. The electronic blood management system (EBMS) alerted laboratory staff that the ED blood refrigerator had been accessed using the emergency function. It was evident that none of the blood components allocated for patient A were removed. This prompted laboratory staff to contact the ED where they identified that two units for patient B had been removed without being scanned and administered to patient A. Both patients were group O D-positive. The patient's death was not related to transfusion.

Multiple factors were identified as having contributed to this event. It became apparent that one unit of red cells had burst whilst using the rapid infusion set, causing the team to panic, which contributed to staff not following the pre-administration checklist appropriately. The local investigation identified that staff had not received sufficient training to use the rapid infusers. The patient deteriorated quickly and there was a lack of leadership to delegate tasks and manage the situation effectively. There had been lapses in local e-learning transfusion training, which may have impacted on the awareness of the importance of accurate patient identification. The local policy was to issue blood components to unknown patients with the name 'unknown, unknown'. As no collection slip had been issued during this emergency, blood components could not be collected from the ED blood refrigerator using the EBMS. This resulted in staff using the emergency function to access the units. The ED staff member collecting the emergency red cell units was also holding the department's bleep and was distracted at the collection step by an additional bleep. Patient B's red cells were no longer required and should have been returned to the laboratory the previous day, but there were insufficient laboratory staff numbers to complete this due to a bank holiday.

In 2018, NHS England issued the Patient Safety Alert: Safer temporary identification criteria for unknown or unidentified patients, using a randomly generated combination of first and second names from an edited phonetic alphabet, to improve patient safety (NHS Improvement, 2018).

Learning points

- Training must be provided to complete transfusion-related tasks safely and competently. Staff will need appropriate refresher training
- Appropriate policies and processes must be in place for managing unknown patients
- Pre-transfusion safety checks are the last chance to pick up any upstream errors. For these to be effective, staff should carry out the appropriate checks even in emergencies

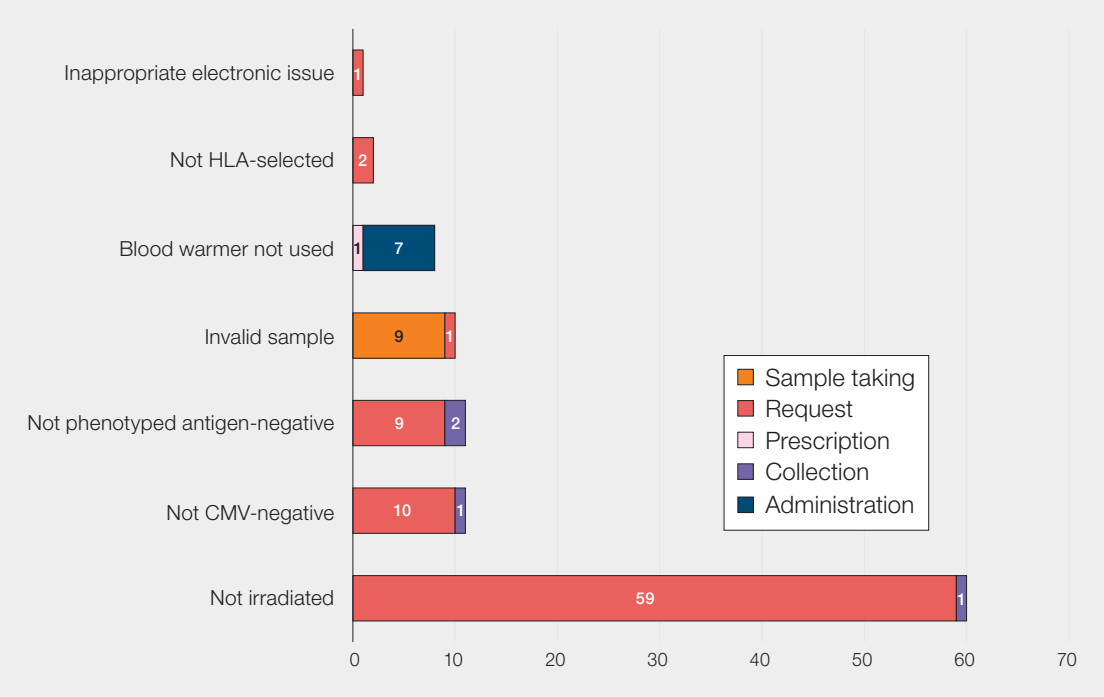
Clinical IBCT-SRNM errors n=103

There has been an increase in the number of clinical errors to 103 in 2024, from 79 in 2023. Of these 60/103 (58.3%) resulted in non-irradiated blood components being transfused, of which 21/60 (35.0%) were to patients with a diagnosis of Hodgkin lymphoma. Clinical errors also resulted in patients not receiving phenotyped units, 11/103 (10.7%); cytomegalovirus (CMV)-negative blood components not issued when required, 11/103 (10.7%); using an invalid sample, 10/103 (9.7%), of which 7 were expired sample tubes; and not using a blood warmer when required, 8/103 (7.8%) (Figure 9.4). Common reasons for these errors included communication issues between clinical and laboratory teams, and shared-care teams. This was compounded by knowledge gaps among staff about the importance of specific transfusion requirements.

Most errors occurred at the request stage of the transfusion pathway, 82/103 (79.6%), where the request to the laboratory did not state the specific requirement.

Pre-administration checklists were used in 76/103 (73.8%) events yet failed to detect the error. Checklists used either did not include the need to check for specific transfusion requirements, or the safety checks were not carried out effectively due to difficulty in accessing the specific requirements for individual patients.

Figure 9.4: Clinical IBCT-SRNM errors and transfusion step where the error occurred in 2024 (n=103)



HLA-human laecocyte antigen; CMV=cytomegalovirus

Case 9.2: Delayed transplant due to communication issues regarding specific transfusion requirements

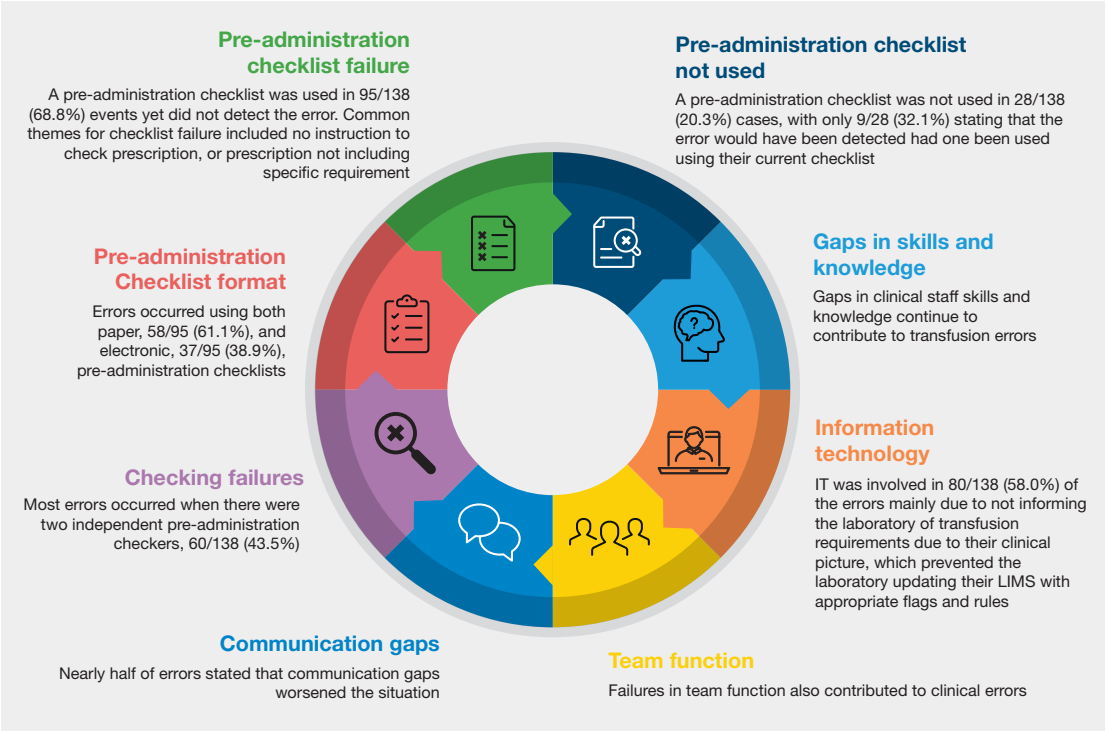
An autologous haemopoietic stem cell transplant (HSCT) harvest was scheduled for a patient with lymphoma, but the clinical area had not informed the transfusion laboratory of the planned harvest. A request was received in the laboratory for one unit of irradiated red cells. The laboratory queried this with the clinical area as this requirement was not previously recorded, but the ward staff stated that the patient did not require irradiated components, and a standard red cell unit was issued. The HSCT harvest was commenced. During the procedure, a nurse completing a blood request order for the patient for the following day queried if the patient now needed irradiated components. The apheresis nurse then realised that a non-irradiated red cell unit had been transfused. The procedure was stopped, and the collected cells were discarded. The harvest was deferred for 3-4 weeks, following which the patient was very upset. The treating team deemed that the delay would be unlikely to change the clinical course in the patient.

Learning points

- Clear communication to all teams involved in the patient's care is essential
- Staff training and competency assessments should include the importance of specific transfusion requirements and the potential clinical impact if these are not met

Causal and contributory factors for IBCT clinical errors

Figure 9.5: Causal and contributory factors for IBCT clinical errors in 2024



Case 9.5: Skill mix gaps and organisational pressures led to wrong blood being transfused

Patient 1 (group B) and patient 2 (group O) both required two red cell unit transfusions postoperatively, with both receiving their first units as required. The day shift had not had sufficient staff numbers to complete required tasks, which resulted in these transfusions being completed during the evening. Due to challenges across the organisation the patient flow co-ordinator arrived on the ward during the night shift to explore whether any staff could be redeployed to other areas. The high workload and acuity of the patients meant that a decision was made to keep all remaining staff on the ward. Although the staffing levels met establishment, there was only one transfusion trained registered nurse, a substantive band 5 nurse and a bank band 5 nurse.

A second unit of red cells arrived on the ward for patient 2. The patient flow co-ordinator who was a registered nurse, offered to help with the transfusion administration as no other trained staff were available on the ward, but their transfusion administration competency had expired. The nurses entered the room of patient 1 in error. Transfusion of one unit of red cells had already been completed, and staff took this unit down and placed it on a tray next to the full red cell unit ready to be administered. Erroneously using the label from the completed red cell unit, the two staff members checked patient identification verbally with the patient, and the patient's identification band. The full red cell unit was transfused but fortuitously, there was no ABO-incompatibility, and no adverse reaction was reported in the patient. The error was only identified when the nurse came to document the unit as transfused. In addition, an initial delay in seeking medical review was evident as staff waited for the patient flow co-ordinator to respond before contacting resident medical staff. This incident was investigated, and improvement actions were undertaken. Learning from the incident was shared across various teams.

Laboratory IBCT errors n=221

The number of laboratory IBCT errors in 2024 was very similar to 2023. 2023 data had shown a marked increase in laboratory IBCT errors, and this remains unchanged. There has been a slight reduction in IBCT-WCT errors from 71 in 2023 to 61 in 2024, which has been offset by a marginal increase in IBCT-SRNM errors from 156 in 2023 to 160 in 2024.

Laboratory IBCT-WCT errors n=61

There were 61 laboratory IBCT-WCT errors, the most common errors occurred at the component selection step, 40/61 (65.6%) and testing step, 14/61 (23.0%) (Figure 9.6).

Figure 9.6: Laboratory IBCT-WCT errors by transfusion step in 2024 (n=61)

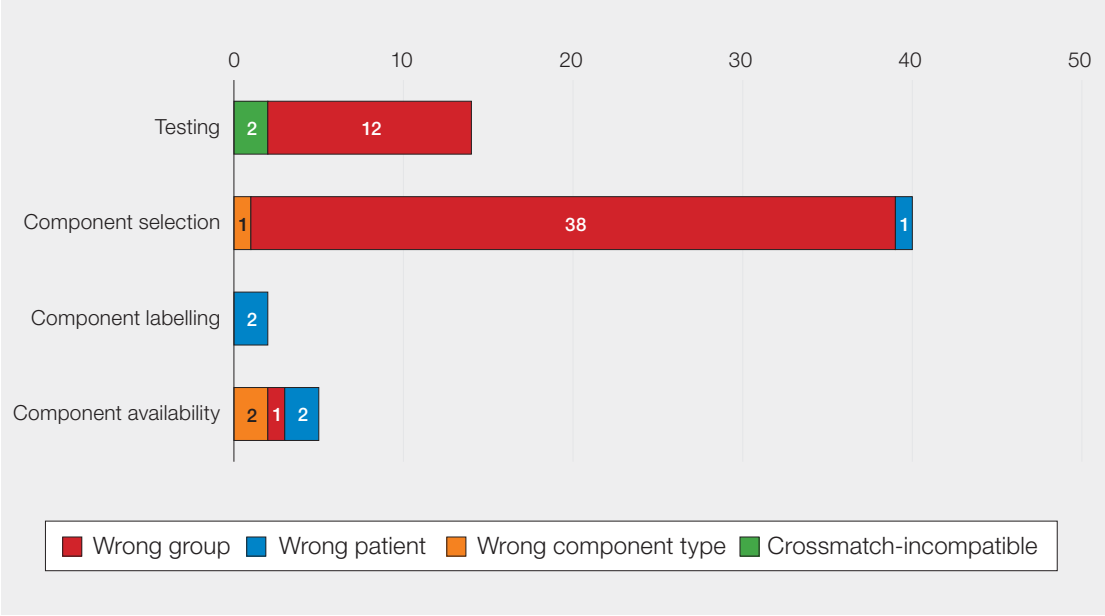
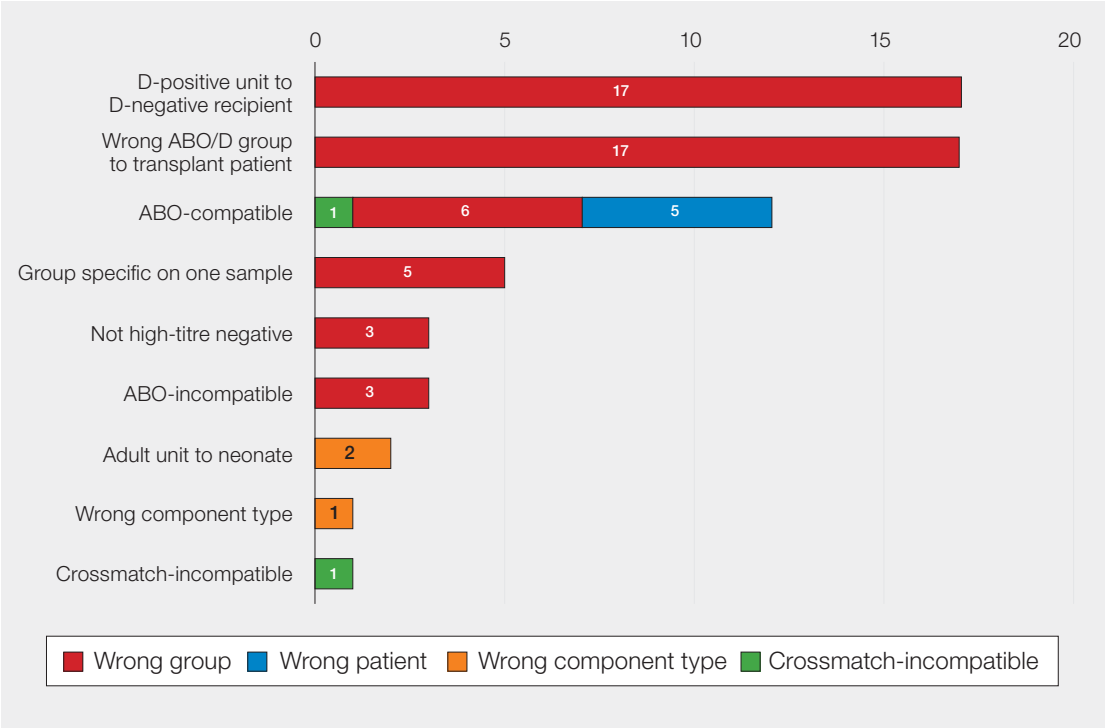


Figure 9.7: Laboratory IBCT-WCT error by category in 2024 (n=61)



Wrong group n=51

Most IBCT-WCT laboratory errors involved wrong group components being issued, 51/61 (83.6%). Of these, 17/51 (33.3%) were D-positive components to D-negative patients, 6/51 (11.8%) involved ABO-compatible transfusions and 3/51 (5.9%) ABOi transfusions. In addition, 17/51 (33.3%) involved incorrect ABO/D components to transplant patients (Figure 9.7). Where the wrong group was issued, 38/51 (74.5%) were due to component selection errors, 12/51 (23.5%) testing errors and 1/51 (2.0%)

availability error. Of the wrong group errors at the component selection step, 33/38 (86.8%) involved IT, of which 13/33 (39.4%) had a LIMS warning flag in place which was not heeded, and 6/33 (18.2%) were due to a lack of LIMS functionality to support safe practice.

Of the 17 cases where a D-positive component was issued to a D-negative patient in error, 11 were due to component selection errors and 6 due to testing errors. Red cells were involved in 13, and platelets in 4 cases. IT was a contributory factor in 13 cases, with 6 involving overriding of LIMS alerts.

Case 9.3: Knowledge gaps in inexperienced staff working alone and overriding IT alerts led to wrong D-group issue

A recently qualified biomedical scientist (BMS) was lone working in the transfusion laboratory over a lunch period when they received a request for one unit of red cells from the ED. The request was for a female patient, less than 50 years old, with chronic haemolytic anaemia and a haemoglobin of 66g/L. The patient was A D-negative with known red cell antibodies (anti-C, -E and -Jk^{a}). An electronic search of red cell stock inventory indicated that there were no suitable units on site. Due to the perceived urgency of the request, the BMS selected partially phenotype-matched D+ C+ E- Jk(a-) red cell units without meeting the C and D requirements. Advice from the haematology consultant was not sought nor was a concessionary release chosen. Two LIMS alerts about issuing D-positive to D-negative and not meeting the patient's phenotype requirement were not heeded. The discrepancy was not detected by the clinical area. There was no reaction reported in the patient.

Several contributory factors were evident in this case: the staff member involved was inexperienced and working alone, the complexity of the case, the clinical area repeatedly telephoned the BMS asking for the red cell units leading to distraction and additional pressure. The report stated that having several new starter BMS staff at the same time had placed an additional training burden on the department but could not be avoided due to previous capacity issues.

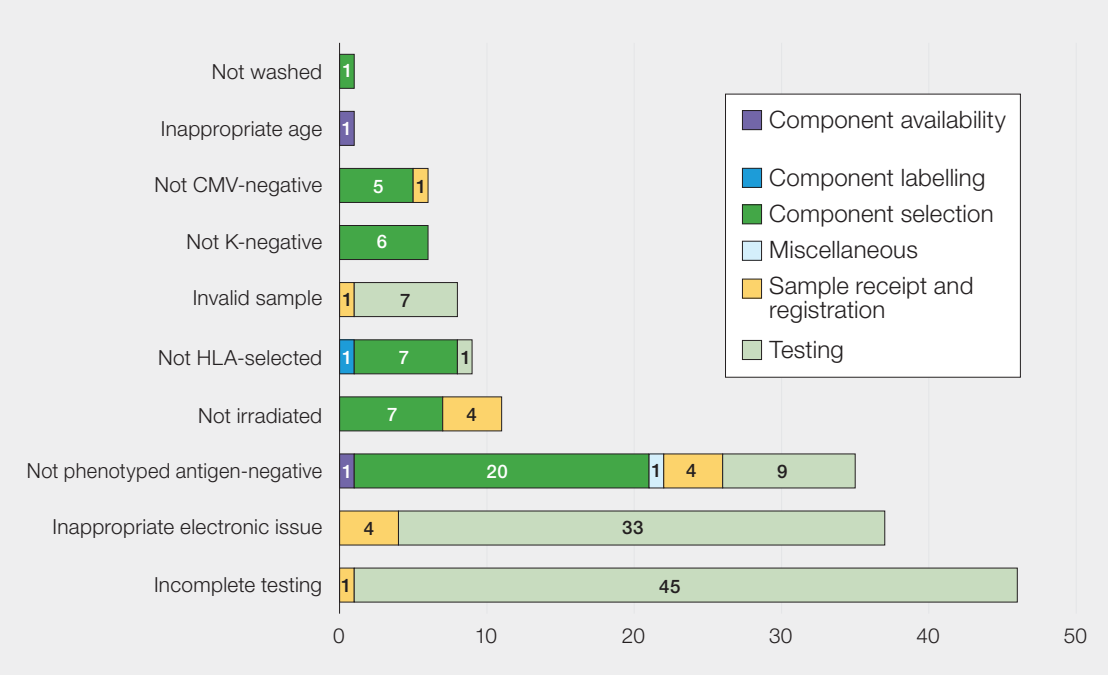
Learning points

- When planning staff rota allocations, it is important to account for the training time required for new starters to ensure adequate support and maintain overall team performance
- Laboratory staff should understand the impact of overriding alerts on LIMS and appropriate justification needs to be recorded
- The laboratory capacity plan should be reviewed regularly for any changes to workload and escalated when necessary for it to be effective
- A laboratory exit checklist can help ensure the correct blood components meeting the patients' requirements are issued. The checklist must be used correctly, reviewed regularly and assessed for effectiveness

Laboratory IBCT-SRNM errors n=160

There were 160 laboratory errors which led to patients receiving blood components that did not meet their specific requirements. Most were due to testing errors, 95/160 (59.4%) and component selection errors, 46/160 (28.8%).

Figure 9.8: Laboratory IBCT-SRNM errors by transfusion step in 2024 (n=160)



HLA-human laecocyte antigen; CMV=cytomegalovirus

Testing errors n=95

Testing errors mainly included issuing blood components when testing was incomplete, 45/95 (47.4%) and inappropriate electronic issue, 33/95 (34.7%). There were 9 testing errors which led to the wrong phenotype being issued. Of the incomplete testing, 21/45 (46.7%) were related to antibody investigations. Other cases included incomplete validation, use of the wrong antigram and failing to crossmatch units.

Case 9.4: BMS expedited to working alone inappropriately due to staffing issues

A BMS 1 who was lone working in blood transfusion over a weekend shift issued two M-negative red cell units to a patient with anti-M. The BMS had not completed testing to exclude anti-S from the antibody identification panels at this point but did not issue S-negative units as per local policy. Further investigation carried out on the following day indicated that anti-S could have been excluded using additional extended panel cells that were available in the laboratory. A fully competent and transfusion trained BMS 2 was available in another department when the event occurred to answer any queries. However, the advice was not sought because it was not deemed necessary. During the event review, the BMS 1's competencies showed gaps in antibody identification, including the relevance of heterozygous and homozygous panel cells, and selection of red cells when a red cell antibody is present. This training need had been identified 6 months previously, but no action had been undertaken to rectify. The responsibility for training junior staff members had recently rotated and may have contributed to this.

From the investigation summary that was submitted with the incident report, it was noted that BMS 1 stated that they had not been signed off as able to perform the task unsupervised. The transfusion laboratory manager had taken responsibility for these training gaps so that they could be expedited on to the shift rota. BMS 1 also said that the red cell units were serologically crossmatch-compatible which, from previous knowledge and experience at another organisation, was deemed to be acceptable practice. It further became evident that other haematology staff were only being trained in transfusion emergency procedures, such as management of major haemorrhage activations, before being allowed on shift. Due to extreme staffing pressures, which had been raised on the local risk register, a corrective action was implemented regarding out-of-hours working. This stipulated that staff will be allowed on the 24/7 shift rota with selected competencies completed, with support of a fully trained staff member being available for queries (who may be working in another department).

Whilst staffing pressures persist, actions undertaken to provide cover for shifts must also include the impact on patient safety. Such a solution may leave vulnerabilities for staff members whose decision-making may be incomplete due to unfinished training. In these circumstances, staff members may not think to seek help as they may not be aware of the full impact of decisions made. Further review of this case showed signals of blame culture prevalent within the team, as the local investigation assigned responsibility of the event to BMS 1. It stated they should not have undertaken tasks they were not signed off on, even though they had been required to participate in lone working without a full competency assessment.

The MHRA Good Practice Guide outlines the requirements of a transfusion laboratory quality system, which includes ensuring that there are adequate number of personnel, with the necessary qualifications and experience, and the importance of maintaining business continuity through an adequate capacity plan (MHRA and Department of Health and Social Care, 2014). The United Kingdom Transfusion Laboratory Collaborative produce minimum standards for transfusion laboratories in the UK, covering staffing levels including capacity planning, qualifications, knowledge and skills required to ensure service provision. Both guidance should be considered when determining capacity requirements for laboratories and quality management systems (SHOT, 2025a).

Component selection errors n=46

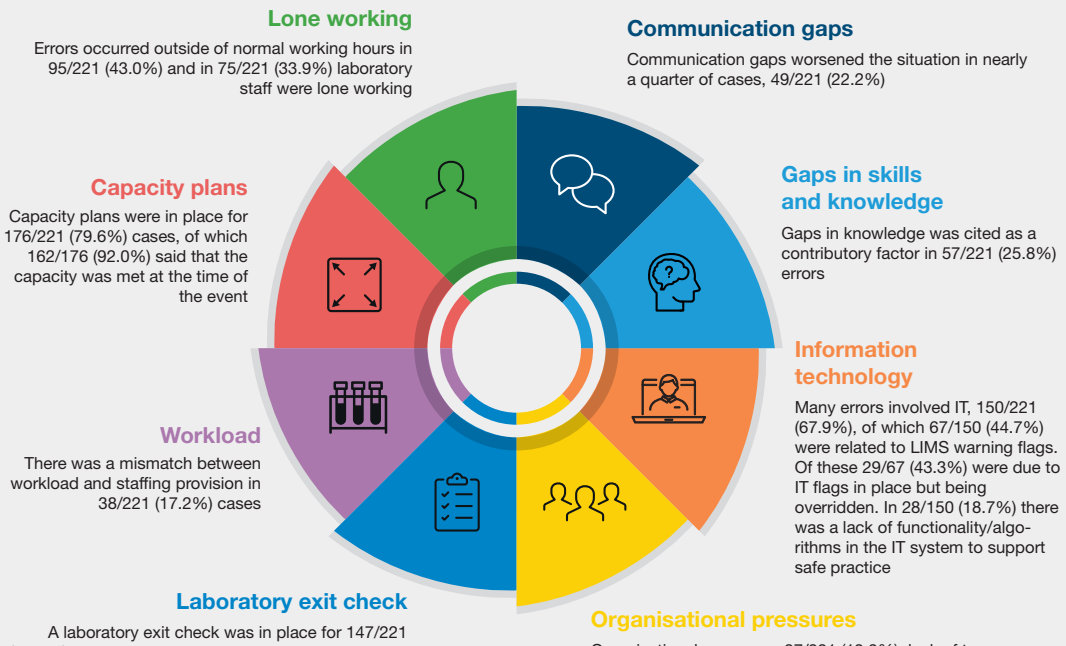
Component selection errors included not meeting the required phenotype, 20/46 (43.5%), not irradiated, 7/46 (15.2%), not HLA-selected, 7/46 (15.2%) and K-positive units to patients of childbearing potential, 6/46 (13.0%).

Learning points

- Laboratory staff working alone must be competency assessed and deemed competent to carry out all required tasks prior to working alone
- Competency should include aspects of theoretical practical assessments, including antibody identification and subsequent component selection and testing

Causal and contributory factors for IBCT laboratory errors

Figure 9.9: Causal and contributory factors to IBCT laboratory errors in 2024



Near miss (NM) IBCT errors n=196

In 2024, there were 196 NM IBCT events due to 93 clinical and 103 laboratory errors.

Near miss IBCT-WCT n=135 (76 clinical and 59 laboratory)

Clinical errors mainly occurred at the collection, 50/76 (65.8%), administration, 13/76 (17.1%) and request, 12/76 (15.8%) steps. Of these, 60/76 (78.9%) involved potential transfusion to the wrong patient.

Laboratory errors mainly occurred at component labelling, 22/59 (37.3%) and component selection, 17/59 (28.8%) steps. Of these, 29/59 (49.2%) involved potential transfusion to the wrong patient and 25/59 (42.4%) potential transfusions of the wrong group.

Most errors were detected at the pre-administration stage, 89/135 (65.9%) with 68/89 (76.4%) detected using a pre-administration checklist.

Near miss IBCT-SRNM n=61 (17 clinical and 44 laboratory)

Clinical errors mainly occurred at the request step, 15/17 (88.2%), and 13/17 (76.5%) involved potential transfusion of non-irradiated blood components.

Laboratory errors mainly occurred at the component selection step, 32/44 (72.7%). Error types included potential transfusion of non-irradiated blood components, 26/44 (59.1%) and 7/44 (15.9%) of which were not CMV-negative.

Most errors were detected at the pre-administration stage, 43/61 (70.5%) with 36/43 (83.7%) detected using a pre-administration checklist.

Conclusion

Effective patient safety checks are shown to detect discrepancies and prevent transfusion errors (CMO Messaging, 2017). In 2024, pre-administration checks prevented 62 transfusions to the wrong patient, 15 transfusions of the wrong group and 11 transfusions of the wrong component. Included in these numbers were 12 ABOi and 50 ABO-compatible transfusions. Additionally, transfusions of 31 standard components when irradiated units were required were prevented due to pre-administration checks. Conversely, nearly 70% of IBCT errors in the clinical area occurred even though a pre-administration checklist was in place but not used effectively. A laboratory exit check was used in nearly 70% of laboratory errors yet failed to detect the error. This stresses the need for pre-administration checklists to be thorough and used effectively. They should be reviewed regularly for gaps especially after an error or near miss event. These safety checks should not be a tick-box exercise, with their importance and impact on patient safety included in competency assessments. Checklists ensure consistency, efficiency, accountability and give guidance for training and competency, which in turn improves transfusion safety.

Gaps in communication between clinical areas and the laboratory in relation to patient clinical diagnoses or treatments requiring specific blood requirements continue to put patients at risk. Human factors such as multitasking, insufficient staff numbers or skill mix, poor communication, and lack of clear escalation processes also impact on communication. Non-technical skills training should include communication techniques such as the probe, alert, challenge and escalate (PACE) model to improve patient safety (Narayan, et al., 2023)

Laboratory IBCT errors have remained high after their dramatic increase in numbers in 2023. Component selection and testing errors, in particular, the blood components being issued when testing was not complete or inappropriate electronic issue continue to be areas of concern. Basic errors such as issuing of D-positive red cells to D-negative patients have increased, highlighting warning signs that suboptimal staff knowledge or overreliance on IT alerts to identify discrepancies is leading to errors.

All laboratories should have a capacity plan in place (SHOT, 2025a). Most (~80%) laboratories reported that they have a capacity plan in place and stated their staffing levels met this plan at the time of error. However, 20% of these reporters identified that there was a mismatch between workload and staffing provision. This highlights the importance of regularly reviewing the capacity plan, identifying, and raising awareness of gaps in staffing to meet requirements. Staff working out-of-hours or lone working should

be sufficiently trained and there must be protective measures in place for lone-working staff including risk assessments of tasks, regular reviews with feedback loops, availability of out-of-hours advice or support, clearly defined standard operating policies and sufficient training and competency to equip staff to work alone. Recruitment and retention issues and staff being expedited onto shifts prior to completion of necessary competency are also mentioned in reports.

Gaps in knowledge and skills within both clinical and laboratory staff groups continue to contribute to IBCT errors and patient harm. Training and competency should be reviewed for gaps and updated accordingly. The National Blood Transfusion Committee (NBTC) Transfusion Training Hub (see 'Recommended resources') has been created to support education and training for all healthcare professionals working within blood transfusion, covering a wide variety of transfusion related topics, at a variety of knowledge levels, and should be utilised to bridge these gaps. Most reports stated that staff were deemed competent for the task they were undertaking, yet errors continue to occur highlighting the need for continued refresher training and review content of competency assessments to check if they are fit for purpose.

Suboptimal use of safety features in transfusion IT systems continue to contribute to errors. In addition, errors occur when staff inappropriately override the safety feature/s. Lack of interoperability between IT systems continues to impact on transfusion safety. Teams should review existing IT systems, liaising with suppliers to maximise the potential of incumbent systems to improve transfusion safety and transfusion processes.

Recommended resources

Good practice guidance document for managing indeterminate ABO blood groups to support safe decision-making
https://www.shotuk.org/resources/good-practice-guidance-document-for-managing-indeterminate-abo-blood-groups-to-support-safe-decision-making/

NBTC Transfusion Training Hub
https://nationalbloodtransfusion.co.uk/transfusion-training-hub