25.

Near Miss (NM) Reporting

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Definition

A near miss event refers to any error which if undetected could result in the determination of a wrong blood group or transfusion of an incorrect component, but was recognized before the transfusion took place.

Near misses were fully analysed for the first time in 2010 and the 2011 data have been analysed using the same categories to allow comparisons to be made. Some comparisons with historical data are also able to be drawn, because similar categories have been used for previous analyses of near miss events in pilot studies and audits. Some sub-classifications used in 2010 have been removed from the tables below, because no incidents meeting those criteria were reported in 2011.

The SABRE User Guide[94] definition of a Serious Adverse Event (SAE) is:

'Any untoward occurrence associated with the collection, testing, processing, storage and distribution, of blood or blood components that might lead to death or life-threatening, disabling or incapacitating conditions for patients or which results in, or prolongs, hospitalisation or morbidity.'

Therefore, many of the near miss events reported to SHOT are categorised as SAEs by MHRA. Further information on SABRE SAEs collected by the Medicines and Healthcare products Regulatory Agency (MHRA) is contained in Chapter 24.

Near misses n=1080

A total of 1080 near miss events have been analysed. Errors detected at sample booking are not included in the Annual SHOT Report, because they have been detected by the quality management system at the first opportunity. However, they should not be regarded as trivial and local audits on sample labelling might be beneficial to improve performance in this area.

Table 25.1 Numbers of near misses according to category

Category of incidents	Number of cases	Percentage of cases
Sample errors	508	47%
Request errors	70	6.5%
Laboratory procedural or testing errors	173	16%
Laboratory component selection errors	103	9.5%
Component collection/administration errors	55	5.1%
Expired components available	70	6.5%
Cold chain events	100	9.3%
Other (Electronic failure, no blood available)	1	0.1%
TOTAL	**1080**	**100%**

The category of 'expired components available' includes units not removed from the refrigerator at the appropriate time according to the sample validation guidelines[37].

Sample errors n=508

Sample errors again accounted for approximately half of all near miss events, a proportion that has been seen consistently throughout SHOT's previous studies of near misses. Of the 508 sample errors, 469 were incidents of wrong blood in tube (WBIT). The International Haemovigilance Network (IHN) refers to this error as wrong name on tube (WNOT) and defines it as "a sample labelled with the identification details of a different patient"[15] (http://www.ihn-org.com/). Another definition by Dzik et al is "the blood in the tube is different from that of the patient whose name is on the label"[95].

Therefore, the SHOT category of WBIT includes incidents where:

- blood is taken from the wrong patient and is labelled with the intended patient's details
- blood is taken from the intended patient, but labelled with another patient's details.

Either error could result in a transfusion of a component of the wrong blood group to a patient.

The other 39 of 508 sample errors were labelling errors, where the right blood was in the tube and the labelling contained mostly the intended patient's details, but there was a mismatch e.g. of the patient's name, date of birth, identification number etc. Most of these labelling errors will be noticed during the sample booking-in process and the samples will be rejected. However, if these mislabelled samples are tested and the mistakes discovered it becomes a SHOT-reportable incident. Such labelling errors might be indicative of incorrect procedures or lack of concentration when sampling, and such lack of attention to labelling could lead to an incident where the sample is taken from the wrong patient or labelled with another patient's details and therefore becomes wrong blood in tube as case 1 shows.

Case 1

Earlier rejected sample indicated lack of correct patient identification

A crossmatch sample received in the laboratory was rejected due to insufficient identification data, i.e. this would have been classified as a sample labelling error. A repeat sample was accepted and processed, because all information on the sample and form matched. At the pre-transfusion bedside check the patient's details did not match those on the compatibility label. On investigation, it was found that on both occasions the doctor had labelled the samples away from the bedside with another patient's details hence both samples were wrong blood in tube.

Wrong blood in tube n=469

469 cases of WBIT have been reported in 2011 out of a total of 1080 near misses. This gives an incidence of 43% compared to an incidence of 45% in 2010 when 386 WBIT cases were reported out of a total of 863 near misses.

Table 25.2 Staff responsible for wrong blood in tube incidents

Staff responsible for taking sample	Number of cases	Percentage of cases
Doctor	176	37.5%
Nurse	88	18.8%
Midwife	78	16.7%
Healthcare assistant	25	5.3%
Phlebotomist	32	6.8%
Medical student	1	0.2%
Unknown/not stated	69	14.7%
Total	**469**	**100%**

Doctors are once again the staff group most often responsible for WBIT. Accurate denominator data is not available, but it is generally acknowledged that many more samples are taken by other staff groups such as phlebotomists, nurses and midwives, and that doctors continue to make a disproportionately high number of sample labelling errors.

Case 2

A repeat sample is also WBIT

As a result of a WBIT incident a further sample was taken from a patient in neonatal intensive care, which again proved to be a wrong blood in tube, discovered by comparison with the historical grouping record. A locum doctor had taken the repeat sample without checking the patient identification correctly.

Learning point

- Unfamiliarity with the process of sampling patients appears to lead to more errors being made, with a consequent higher incidence of wrong blood in tube events. Those who do not sample patients routinely should take particular care to follow procedures correctly.

Table 25.3 Practices leading to wrong blood in tube

Practices leading to WBIT	Number of cases	Percentage of cases
Patient not identified correctly	174	37.1%
Sample not labelled at bedside	174	37.1%
Sample not labelled by person taking blood	23	4.9%
Pre-labelled sample used	10	2.1%
Other/unknown	88	18.8%
Total	**469**	**100.0%**

There are a large number of cases (88/469) where the practice leading to WBIT has been reported as 'Other', but it is apparent from the description of the event that some are essentially related to poor identification of the patient, such as using details from an incorrect patient in the Patient Administration System (PAS) or using addressograph labels from a different patient. Although most organisations do not accept samples labelled with addressographs, an incorrect label on the request form can lead to a mislabelling of the sample if patient identification procedures are not followed correctly.

Case 3

Patient not identified correctly and sample labelled from details on request form

The doctor put patient A's blood test form in her file and escorted patient A to phlebotomy. She gave what she thought was patient A's form to the phlebotomist, but later found patient A's form still in her file, though patient B's form was not. She phoned phlebotomy and was told not to worry as all patients are identified verbally. However, the doctor then found results on the IT system for patient B. Therefore, patient A had not been identified by phlebotomy as per Standard Operating Procedure (SOP) and patient A's samples were processed as though they were from patient B. The laboratory was alerted to discard the sample and remove the results from patient B's record.

Transposed labelling in maternity situations have been reported as WBIT incidents, including transposition of labelling on cord samples from twins, which would often not be discovered. However, the more common transposed labelling of maternal and cord samples could be identified with the routine use of a simple alkali denaturation test to indicate resistant cord red blood cells.

Learning point

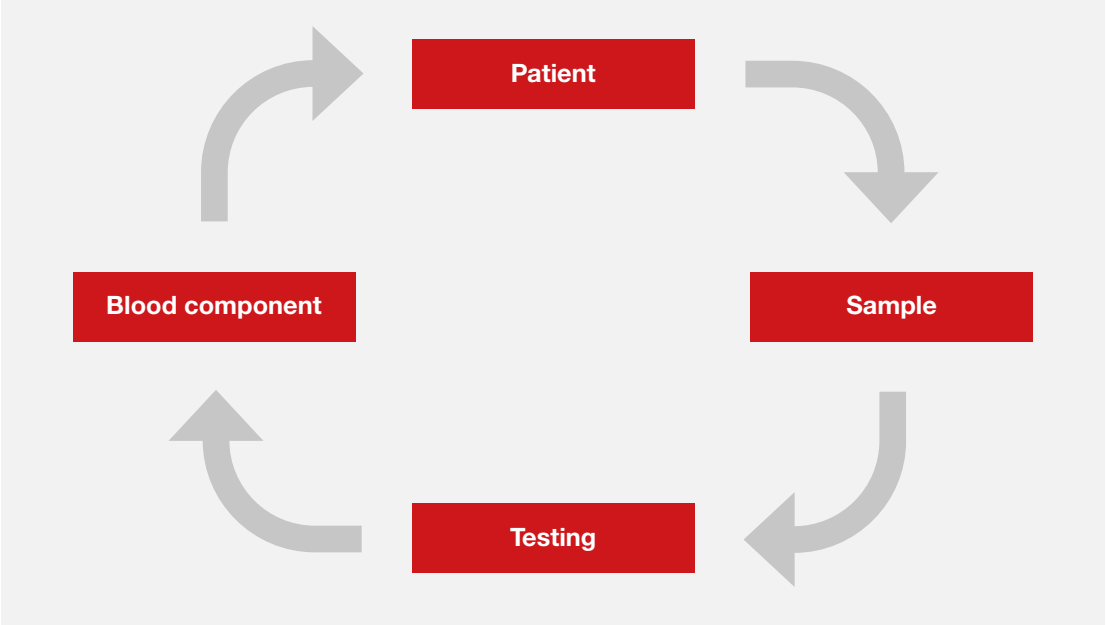
- An alkali denaturation test is a simple way to distinguish adult and cord haemoglobin and should be used routinely whenever there is a possibility that maternal and cord samples could have been mislabelled, e.g. if both give the same group or if the maternal sample does not match historical records.

Table 25.4 Circumstances leading to the detection of WBIT

How WBIT error was detected	Number of cases	Percentage of cases
At authorisation	161	34.3%
During testing	151	32.2%
Prior to testing	32	6.8%
Further sample differed	18	3.9%
Pre-administration checks	16	3.4%
Results from non-transfusion samples (e.g. FBC)	16	3.4%
Sample taker realised their error and informed laboratory	5	1.1%
Other/unknown	70	14.9%
Total	**469**	**100%**

In the incorrect blood component transfused section (Chapter 6) a total of 5 incidents are reported where an incorrect component was transfused due to WBIT. If that number is compared to the 469 near misses it raises the question of how many more incidents of WBIT are going undetected. The circumstances leading to detection are mostly not secure, relying on random chances such as a historical group being different or staff realisation of an error. Without fortunate circumstances as listed above, most WBITs would not be detected and 18 (3.9%) of these 469 errors were only detected by differing results from a further sample, which indicates the original WBIT samples were processed without detection at the time. Therefore, it must be assumed a number of WBITs remain completely undetected, and have resulted in transfusion of fortuitously group-compatible components.

Figure 25.1 The transfusion cycle shows the vital importance of a correct sample and can be summarised as:



If the sample is incorrect, then the cycle is broken and no amount of testing to prepare a blood component can guarantee a safe transfusion to the patient.

Request errors n=70

Table 25.5 Categories of request errors

Category	Number of cases	Percentage of cases
Special requirements not requested	45	64.3%
Request based on erroneous haematology tests	13	18.6%
Inappropriate request for clinical situation	9	12.8%
Request for incorrect patient	3	4.3%
TOTAL	**70**	**100.0%**

Special requirements not requested n=45

The classification of 'special requirements not requested' includes two cases of special requirements being requested when they were not needed, which is not in itself a serious hazard to the patient, but these have been included as near misses because such lack of attention to patient needs could equally result in the opposite outcome of special requirements not being requested when they *were* needed.

Table 25.6 Mode of detection that special requirements had not been requested n=45

Mode of detection	Number of cases	Percentage of cases
At the bedside pre-administration check	29	64.4%
In laboratory, based upon the clinical details provided	16	35.6%
TOTAL	**45**	**100.0%**

Request based on erroneous haematology tests n=13

The 13 of 70 request errors based on erroneous haematology tests include 12 cases related to full blood count (FBC) results and one case of an erroneous coagulation screen result that led to thawing of fresh frozen plasma (FFP) before the error was realised and the components were not transfused.

The failure to request special requirements is often detected in the laboratory by comparison with historical records or hazard flags, clinical details or other information provided on the request, but more commonly these errors are not detected until the pre-administration checks at the bedside when it is realised that components of the appropriate specification have not been provided. This can lead to a delay while the correct components are ordered and prepared.

Inappropriate request for clinical situation n=9

Of the 9 inappropriate requests, 8 related to obstetrics cases. Seven were mistakes made when requesting provision of anti-D Ig prophylaxis and the eighth was a patient with antibodies who delivered twins, but only one cord blood was taken for investigation of haemolytic disease of the fetus and newborn (HDFN). No request was made to investigate the other twin. Case 4 describes the 9th of these inappropriate requests, which related to a general practitioner (GP) request to transfuse on a probable incorrect Hb result without rechecking:

Case 4

Patient referred from GP for transfusion due to incorrect Hb

A specimen was received from a GP and the FBC was processed. A low Hb (6.8 g/dL) was noted, so the GP sent the patient to hospital for a 3 unit transfusion. The first unit of blood was collected, but the ward then rang the laboratory to say the blood was not needed as there had been an error with the Hb result. The hospital doctor reviewing the patient had already repeated the FBC, because the previous results did not match the patient's clinical picture and the new sample showed the patient's Hb to be 11.4 g/dL.

Requests for the incorrect patient n=3

All 3 requests made for an incorrect patient were related to requests for platelets for the wrong patient.

Case 5

Incorrect patient seen and prescribed platelets on the basis of another patient's platelet count

A haematology specialist registrar (SpR) went to the ward to see a new patient. He asked the nurses for the patient by name and was taken to the room of a patient with a similar first name. The doctor did not fully identify the patient and there was a language barrier. After seeing the patient he requested a pool of platelets to be given to the patient, because her platelet count was low and she had a swelling on her head from a fall that morning. The doctor had already called the hospital transfusion laboratory to order the platelets, using the correct name of the patient seen. A nurse later printed a blood collection form while she checked the patient's platelet level to confirm, but realised that her platelet count was within normal range. She rechecked the SpR's documentation and the drug chart with another staff nurse to confirm this. She bleeped the medical officer on call and after speaking to the haematology SpR they realised that another patient, next door to the patient who had the unnecessary prescription for platelets, was the patient with a low platelet level. Therefore the haematology SpR had seen the wrong patient and incorrectly prescribed and documented platelets based on a different patient's platelet count.

Laboratory procedural or testing errors n=173

Table 25.7 Categories of laboratory procedural or testing errors

Category	Number of cases	Percentage of cases
Component mislabelled	89	51.5%
Incomplete testing prior to issue	16	9.2%
Transcription errors*	13	7.5%
Incorrect patient identifiers entered into LIMS	12	6.9%
Manual grouping errors	8	4.6%
Incorrect patient mergers on LIMS (or PAS)	7	4.0%
Incorrect sample used for crossmatching	5	2.9%
Inappropriate editing of results from analyser	5	2.9%
Invalid sample used in crossmatching for a frequently transfused patient	4	2.3%
Sample booked in under incorrect record	2	1.2%
Barcode reader errors	1	0.6%
Incorrect sample used for grouping	1	0.6%
Other/unknown	10	5.8%
Total	**173**	**100.0%**

**A category for transcription errors has been added to this table (25.7) as a separate category for 2011, because transcription errors account for several laboratory procedural or testing errors.*

Component labelling errors n=89

By far the most common laboratory procedural or testing error is component labelling, which accounted for over 50% of such laboratory errors. This is a large increase on last year when 34 of 119 (29%) laboratory procedural or testing errors involved component labelling. The most common cause of mislabelling was transposition of the compatibility labels, which occurred in 48 of the 89 mislabelling cases. Mostly this error is made with units for the same patient and the labels are transposed between two or more units after matching. At worst that error would lead to an incident of 'right blood to right patient' (RBRP), but occasionally a mistake is made with labels transposed between patients, leading to the potential risk of a component being transfused to the incorrect patient. A potential risk for transposed labels occurs when there are excess labels printed as detailed in both cases 6 and 7.

Case 6

Transposition due to excess labels being printed

A biomedical scientist (BMS) crossmatched 2 units of red cells for a patient, but the request was for 3 units. The 2 units had to be unauthorised in the laboratory information management system (LIMS) in order to crossmatch the extra unit and assign all 3 to that patient. This meant there were now 5 compatibility labels on the printer. The BMS took 3 of the 5 printed compatibility labels, but did not realise two were duplicate labels, so one unit was labelled with the correct patient details, but an incorrect component number. On checking at the bedside the nurses detected the error and returned the unit to the laboratory for the BMS to replace the compatibility label with the correct compatibility label.

Case 7

Printing of a test label leads to incorrect labelling

Whilst validating a new version of the LIMS, a blood transfusion compatibility label was generated for the test patient 'Iggle Piggle'. At the same time, another member of staff was issuing prophylactic Anti-D Ig for an antenatal patient. The label generated for 'Iggle Piggle' was attached to this vial of Anti-D Ig in error, and dispatched to the antenatal clinic (ANC). On realising the error, the laboratory staff telephoned ANC immediately and changed the label on the Anti-D immunoglobulin.

A few cases occurred where the component included an extra incorrect patient label on the unit, such as a previous compatibility label not removed from a unit when returning it to stock. A few cases related to components issued with no labels at all.

Learning point

- Careful control when printing compatibility labels could help to reduce the potential for errors. Any excess labels printed for whatever reason should be destroyed immediately (see Case 8 in Chapter 6 Incorrect Blood Component Transfused (IBCT)).

Incomplete testing prior to issue n=16

Some of these cases were not directly related to blood issue at the time, but insufficient testing was performed prior to a report being issued and could have led to an erroneous issue of blood. Alongside this, some incidents related to insufficient testing prior to electronic issue (EI) or where EI was used in circumstances where a full crossmatch should have been performed. On occasions testing was incomplete because a known history of antibodies was missed, the antibody was now sub-detectable, and so antibody identification tests were not performed.

Transcription errors n=13

Mistakes in transcription contributed to 13 laboratory procedural or testing errors and there were a further 2 transcription errors, which are classified under manual grouping. Common mistakes are transcribing results incorrectly onto laboratory worksheets or from worksheets into the LIMS. It is worth noting that transcription can also be a problem in the clinical area e.g. when writing results into patient notes, particularly for antenatal patients.

Incorrect patient identifiers entered into LIMS n=12

Errors when entering patient details into the LIMS are often detected only at the pre-administration bedside checks and this can lead to delays in providing correctly labelled components. Errors can also lead to creation of a new record for a known patient meaning the previous transfusion history is unavailable. Duplication of records is a particular problem for patients with haemoglobinopathy and this is discussed in Chapter 23.

Manual grouping errors n=8

The manual grouping errors included 2 cases where the error was due to transcription and 6 where erroneous results were reported due to incorrect manual testing or interpretation of results.

Incorrect patient mergers on LIMS n=7

As well as traditional incorrect mergers of patients within a LIMS this classification also includes occasions where the incorrect patient record has been selected on the LIMS prior to issue of components that are being prepared without a crossmatch, such as electronic issue of red cells or preparation of FFP or platelets. It appears that some LIMS merger errors are related to mergers that have been made in the hospital patient administration system (PAS) and transferred into the LIMS as described in Case 8. Further examination of such IT issues can be found in Chapter 8.

Case 8

Twins merged on PAS

A sample from a patient grouped as A RhD positive, but the historical group showed as O RhD positive. It was discovered this patient has a twin and records had been erroneously merged for this patient and their twin on the hospital PAS and linked into the LIMS.

Incorrect sample used for crossmatching n=5

Errors involved selecting the wrong group and save samples from storage or in one case taking the wrong sample out of a centrifuge. Correct procedures to check the patient identification details during the crossmatching process were not followed and in one case this led to delays in the clinical area during which a unit of blood was left out of storage beyond acceptable limits, because an old sample with incorrect spelling of a surname was used instead of the newer replacement sample. Case 9 shows the added complication of staff unfamiliar with local procedures:

Case 9

Selection of incorrect sample compounded by staff member unfamiliar with local procedures

A request was received for 1 unit of red cells to be matched against a previous group and save sample. A member of reception staff retrieved the wrong patient's sample from storage. The error was not noticed by the qualified BMS. The result from an automated analyser indicated that the unit of blood was incompatible (patient's known group A RhD positive, sample group O RhD positive). The BMS failed to notice this result on the printout from machine, but the results were electronically uploaded from the analyser to the LIMS. However the error was further compounded because the BMS entered manually the negative results for the crossmatch into the LIMS; this being the standard protocol in BMS's previous workplace. Again the sample patient identification (PID) was not checked prior to labelling and issue of the blood unit to reception. The error was detected by a BMS on the next shift who was countersigning previous shift forms. This member of staff noticed the positive crossmatch result on the printed result sheet and took corrective action.

Inappropriate editing n=5

Automation enhances safety but this can be compromised by inappropriate editing of results or patient identification details.

Invalid sample used in crossmatching for a frequently transfused patient n=4

The British Committee for Standards in Haematology (BCSH) guidelines for compatibility procedures in blood transfusion laboratories[37] list appropriate timings for requirement of a fresh sample for crossmatching a transfused patient. There were four reports of near misses when the sample validation was not appropriate according to these guidelines.

Sample booked in under incorrect record n=2

There were only two cases of samples booked in under the incorrect record, but one led to a report being issued with an incorrect group on it:

Case 10

Report from rejected sample issued with another patient's group on it

An initial request was received from the pre-assessment clinic, but the sample was rejected due to a delay in reaching the laboratory. The patient was booked in to the LIMS system to generate a report of the rejected sample and was matched to a record with the same name and date of birth that had been copied across from the legacy system (previous LIMS). The report indicating rejection of the sample was sent out from the laboratory to the clinic showing the history group to be A RhD positive. A repeat sample was received later and grouped as O RhD positive. Investigation showed that there were two patients with the same name and date of birth and the rejected sample had been booked in against a different patient's record. Normally, any error brought across from the legacy system would be detected on grouping the sample, because the current group and history would not match. In this case, because the sample was rejected and not tested, the historical group from a different patient on the legacy system was incorrectly issued on the report.

Barcode reader errors n=1

There was only one case directly attributed to a barcode reading error, when an incorrect expiry date for a unit was read into the LIMS. However, there were several other cases which have been reported in the component labelling errors (see above) where incorrect donation details in the LIMS have been transferred to the compatibility label. It is not known whether the reason for these details being incorrect in the LIMS is human error or whether they might have been due to barcode errors.

Incorrect sample used for grouping n=1

Only one sample was used incorrectly for grouping, but the errors involved would be similar to those for incorrect samples used for crossmatching.

Laboratory component selection errors n=103

Table 25.8 Categories of laboratory component selection errors

Category	Number of cases	Percentage of cases
Special requirements or specification not met	59	57.3%
Incorrect component selected	23	22.3%
Anti-D Ig errors	20	19.4%
Component selected for a non-urgent transfusion with a reservation period beyond the expiry date	1	1.0%
TOTAL	**103**	**100.0%**

Special requirements or specification not met by laboratory n=59

This remains the most common component selection error.

Table 25.9 Failure to issue components with special requirements or specification

Special requirement or specification missed	Number of cases	Percentage of cases
Irradiated	22	37.3%
Red cell phenotyped	16	27.1%
Cytomegalovirus (CMV) negative	11	18.6%
Cytomegalovirus (CMV) negative and irradiated	6	10.2%
Human leucocyte antigen (HLA) typed	1	1.7%
Incorrect specification selected for "emergency O RhD negative"	1	1.7%
Platelets in platelet suspension medium (PSM)	1	1.7%
Other (LIMS corruption of record)	1	1.7%
TOTAL	**59**	**100.0%**

Case 11

Patient might have required transfusion before antibody was identified

A patient known to have a positive antibody screen required four units of red cells urgently to cover a surgical procedure before the Blood Service could identify the antibody. Four units of red cells were crossmatched, found to be compatible and issued. Subsequently a verbal report was received from the Blood Service stating anti-Fy^a had been identified. The fate of the four units issued was established, and found not yet transfused. The four units were withdrawn and four phenotyped units urgently requested, crossmatched and issued. Three of the four non-phenotyped units originally issued were found to be Fy^a positive.

In case 11 the laboratory staff acted correctly under the circumstances in an emergency situation, but there are some potential areas of concern, especially when risk assessing provision of networked laboratory services. Reasons were not given as to why referral to a Blood Service laboratory was needed to identify the antibody, although it can be assumed to have been a weak antibody if three antigen positive units gave a negative crossmatch. It is routine in some laboratories to refer all positive antibody screens at whatever strength, without attempting to identify the antibody. Although most laboratories serving a facility where emergency surgery takes place might be expected to have the resources to identify an anti-Fy^a and arrange for supply of appropriately phenotyped blood, increasingly such resources are not available at a local level. In those instances robust systems are needed to ensure blood cover is well planned for elective surgery and in the event of an emergency, a true picture of clinical urgency is required. In this case the units had not been transfused before the antibody was identified, so possibly the level of urgency had been mistaken.

Learning point

- This case underlines the fact that crossmatch-compatible units are not always suitable. Every attempt should be made to identify an antibody before issuing blood unless the clinical urgency prevents this. The nature of the emergency and the need to supply blood urgently should be carefully risk-assessed against the option of delaying until phenotyped blood is available.

Incorrect component selected n=23

Six of the 23 component selection errors were made due to complications related to haemopoietic stem cell transplants (HSCT) and could have resulted in blood of the incorrect ABO or RhD type being given.

Case 12

A complicated cord transplant leads to selection of incorrect component

A double cord transplant patient (donors O RhD positive and A RhD positive) required a 3 unit red cell transfusion. The patient's historical blood group was AB RhD negative. The LIMS stated that group O RhD negative, high titre (HT) negative, irradiated units were required for this patient. The A RhD positive cord donor had appeared to be engrafting, which was subsequently confirmed by blood grouping results at a later date. The BMS issuing the blood supplied irradiated units, but selected group A RhD negative, HT negative instead of the O RhD negative, HT negative as instructed by the LIMS.

Anti D Ig errors n=20

Errors related to incorrect selection of Anti-D Ig have been separated out from the list of component selection errors and further categorised in Table 25.10. Further discussion on anti-D errors can be found in Chapter 12.

Table 25.10 Categories of Anti-D Ig selection errors

Anti D Ig selection errors	Number of cases	Percentage of cases
Anti-D Ig issued for an RhD positive woman	7	35%
Wrong dose Anti-D Ig	6	30%
Anti-D Ig issued after delivery of RhD negative baby	4	20%
Anti-D Ig issued for a woman with immune anti-D	3	15%
TOTAL	**20**	**100%**

Component collection/administration errors n=55

Table 25.11 Categories of collection/ administration errors

Collection/administration errors	Number of cases	Percentage of cases
Incorrect units collected by ward staff/porters	30	54.6%
Wrong details on collection slip	12	21.8%
Attempted administration to incorrect patient	5	9.1%
Other/unknown (including multiple errors)	8	14.5%
TOTAL	**55**	**100.0%**

Case 13

Multiple errors made in the collection and administration procedure

A transfusion practitioner was carrying out a bedside audit and saw two qualified nurses checking a unit of blood at the nurses' station and not at the patient's bedside. They had signed the fating ticket, which states the patient has received the blood and the peel off label, which indicates two independent bedside checks have been carried out. No pre-transfusion observations were performed, no equipment had been made ready in preparation for the transfusion, blood had been out of the refrigerator 30 minutes before transfusion commenced, so blood charted for transfusion over 4 hours would have been out of refrigerator >4 hours. The transfusion practitioner was informed by 5 qualified nurses on duty that checking the blood in this manner was what they were told by their manager to do.

Actions taken: The transfusion practitioner raised concerns about these events to the Hospital Transfusion Committee (HTC), Patient Safety & Quality Committee, Risk Management Team and Head of Service. The transfusion practitioner held a meeting with qualified nurses and the Ward Manager regarding correct procedure, handouts were given out to reinforce the information. All staff are to redo collection and administration competency relevant to their clinical status.

Expired components still available n=70

Reports were made of 70 near miss incidents where expired components were available, which is an increase from 29 cases in 2010. Most of these, 59 of 70 (84.3%), were time expired, i.e. units available past their expiry date and time. A further 8 of 70 were erroneously held beyond their normal reservation period and another 3 of 70 were available past the time at which the sample was no longer suitable for compatibility testing according to the BCSH guidelines for compatibility procedures in blood transfusion laboratories[37]

Table 25.12 Categories of errors related to expired components being available

Reasons for expired components being available	Number of cases	Percentage of cases
Time expired component available	59	84.3%
Available past dereservation date/time	8	11.4%
Outside sample suitability	3	4.3%
TOTAL	**70**	**100.0%**

Errors related to management of the cold chain n=100

Table 25.13 Categories of errors related to management of the cold chain

Cold chain error	Number of cases	Percentage of cases
Units kept in transport container for longer than the recommended period, including 3 cases where units were delivered to the incorrect location	23	23%
Attempts to return units to stock, which had been out of a temperature controlled environment >30 minutes	21	21%
Red cells stored in a non-designated refrigerator	12	12%
Platelets stored in a refrigerator	8	8%
Incomplete audit trails	8	8%
Refrigerator alarms unheeded/muted (of which only 1 was not a satellite refrigerator)	7	7%
Failure to follow procedure for transfer of units with the patient	6	6%
Incorrect packaging of transport containers	5	5%
Satellite refrigerator failures	3	3%
Red cells placed in a satellite refrigerator known to be malfunctioning (alarming/awaiting engineer)	1	1%
Other	6	6%
Total	**100**	**100.0%**

The category 'Incomplete audit trail' includes failure to change temperature charts on refrigerators or not following procedure when signing units into satellite refrigerators.

Several of the cases classified as out of temperature control for >30 minutes were actually incidents where units were 'found' a significant amount of time after issue, often having remained unnoticed within a clinical area for a long time, sometimes stretching to days.

Case 14

Unused unit supposedly wasted was left on the ward for another day

A patient was issued 4 units of blood at 15:00 after admission to Accident and Emergency (A&E) for an acute gastrointestinal bleed. The patient was taken to endoscopy and transfused 3 units en route and during investigation. Then the patient was transferred to the gastroenterology ward, where a staff nurse found 1 unit left 6½ hours later, so called the laboratory. The nurse was told to dispose of the unit and the laboratory updated the status of the unit as wasted. At 17.00 the following day a staff nurse called the laboratory saying a doctor had handed her a unit of blood to transfuse to the patient, who was in peri-arrest, but it had no paperwork, so she was reluctant to give it, in spite of the doctor's insistence. The laboratory checked the number and found it was the unit that had been 'wasted' the previous day, but had instead been left on the ward for a further 19½ hours, 26 hours in total after the blood had originally been issued.

Near misses related to haemopoietic stem cell transplants

A number of the near misses, 17/1080, related to patients who were undergoing a haemopoietic stem cell transplant (HSCT). Although this is not a large percentage overall, it is worth highlighting that this is a growing area leading to confusion and can be compounded by the lack of communication between healthcare professionals, especially where patients are post allogeneic transplant which has changed their blood group.

These cases are included in the relevant classifications above, but are summarised here to highlight the errors made:

- 5 components were selected with an unsuitable ABO type.
- 1 component was selected with an unsuitable RhD type.
- 1 was a compound error starting with a WBIT, which then led to discovery that the correct patient was post HSCT, so their historical grouping record would also not have matched a recently taken sample, meaning the discovery of a WBIT was especially fortuitous.
- 10 were potential special requirements not met.

Learning point

- Special attention should be paid to patients undergoing haemopoietic stem cell transplants (HSCT) because this can cause confusion when requesting or selecting components. A transplant timetable with clear instructions about blood groups and transfusion should be part of the routine transplant protocol.

Blood service adverse events n=10

These 10 near misses that originated from the Blood Services have been included in the relevant classifications above, but are listed here for information.

- No ‘Rad-Sure’ irradiation indicator attached to a supposedly irradiated unit
- 2 cases of incomplete phenotype
- Wrong phenotype
- Heat seal damage
- Haemolysed unit
- K negative units not selected
- Wrong ABO group for an HLA matched platelet
- Incorrect typing on a unit sent to the frozen blood bank
- Platelet issued for the wrong patient

Categorisation of near misses according to SHOT definitions

The near miss events have been categorised in table 25.14 according to the category they would probably have been placed in had the error not been identified.

Classifications have been restricted to near misses of adverse events, but the end result of some of the errors made could have led to clinical pathological reactions such as haemolytic transfusion reactions (e.g. where inappropriate components were selected, including ABO incompatible) or transfusion-associated circulatory overload (e.g. where inaccurate results were used to request components). Other pathological sequelae could have resulted including antibody production; most notably immune anti-D if not protected by prophylactic anti-D immunoglobulin and, although very rare, transfusion-associated graft versus host disease (TA-GvHD) remains a potential risk for patients not receiving irradiated components.

Table 25.14 Near misses classified by probable SHOT category

SHOT category	Number of cases	Percentage of cases
IBCT-WBIT	469	43.4%
IBCT-WCT	195	18.1%
HSE	174	16.1%
IBCT-SRNM	90	8.3%
I&U	71	6.6%
RBRP	61	5.6%
Anti-D	20	1.9%
Total	**1080**	**100.0%**

COMMENTARY

The root causes of these near misses are similar to those found in actual transfusion errors as discussed in other chapters. Common causes are lack of knowledge or not following SOPs correctly and these issues are sometimes compounded by staff following practices common in a previous employment, but not part of the SOPs in their current establishment. A recurring theme is the effect of distraction leading to a loss of concentration.

Sixteen of the near miss reports indicate there was a delay to treatment of the patient and in one case a unit of O RhD negative emergency blood was given as a result of the delay. There is insufficient information to know whether a small number of such cases might have more appropriately been reported in the category of Inappropriate, Unnecessary, Under and Delayed (I&U) Transfusion. Although the errors reported in this chapter were spotted before transfusing, hence categorised as a near miss, some patients may have been adversely affected by the consequent delay to getting the correct components ready for transfusion.

Recommendations

No new recommendations

Recommendations active from last year:

- All Trusts must ensure that medical staff are trained and competency assessed for taking blood samples in accordance with the requirements of National Patient Safety Agency (NPSA) safer practice notice (SPN) 14[21].

  Action: Deaneries, clinical risk managers, Hospital Transfusion Teams (HTTs)

- Education for staff involved in the transfusion process should include knowledge of the correct storage conditions for all blood components.

  Action: HTTs

- Each Trust should possess a policy and procedure for the transfer of blood components with a patient which reflects the guidance given by the National Blood Transfusion Committee (NBTC) and the NHSBT Appropriate Use of Blood Group[96]. There is also guidance on transfer of stocks between hospitals that Medicines and Healthcare products Regulatory Agency (MHRA) have provided with clarification and guidance regarding Blood Safety and Quality Regulations (BSQR) requirements and compliance which is available as follows: http://www.transfusionguidelines.org.uk/index.aspx?pageid=7722&section=23&publication=REGS&Highlight=transfer

  Action: Hospital Transfusion Committees (HTCs)