Near Miss Reporting (NM) n=1359

12

Authors: Alison Watt and Katy Cowan

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 recognised before the transfusion took place.

An increase in near miss reports is noted, n=1359 in 2017, compared to n=1283 in 2016. Continued reporting is important to support learning from near miss cases, which do not cause patient harm. The long-term aim of an incident reporting system, such as SHOT, is to help reduce incidents that result in harm while moving towards increased reporting of near miss events for future learning.

Key SHOT messages

- Near miss errors often result from underlying poor practices, many of which are triggered by inadequate systems. Root cause analyses of near miss events should be designed to highlight and resolve these system failures, i.e. the human factors and ergonomics aspects
- In addition, all staff should have personal accountability for their own actions, fully completing their specific role in the transfusion process. Staff should also be empowered to refuse requests from colleagues which may be outside the standards of safe practice
- Constant vigilance and education are needed to encourage sample-takers to understand the importance of a group-check sample and to discourage poor practice, including attempts to circumvent the process
- Group-check policies should consider the criteria for a valid historical record in that institution, taking account of the addendum to the British Society for Haematology (BSH) guidelines (BSH addendum 2015) for pre-transfusion compatibility procedures in blood transfusion laboratories

Discussion of near miss errors in other categories

Near miss cases are detailed in each relevant chapter and Table 12.1 shows the chapters that include near miss incidents according to SHOT definitions.

Categorisation of all near misses according to SHOT definitions		Discussed in chapter	Number of cases	Percentage of cases
Incorrect blood component transfused (IBCT)	Wrong component transfused (WCT)	Chapter 10	899	66.1%
	Specific requirements not met (SRNM)	Chapter 10	121	8.9%
Handling and storage errors (HSE)		Chapter 9	154	11.3%
Right blood right patient (RBRP)		Chapter 8	138	10.2%
Adverse events related to anti-D immunoglobulin (Anti-D Ig)		Chapter 14	35	2.6%
Avoidable, delayed or undertransfusion (ADU)		Chapter 11	12	0.9%
Total			**1359**	**100%**

Table 12.1: Possible outcomes from near miss incidents if not detected

Near miss wrong blood in tube (WBIT) n=789

WBIT errors continue to make up a disproportionately large proportion of the total near miss incidents 789/1359 (58.1%). Further discussion of these errors can be found in Chapter 10, Incorrect Blood Component Transfused (IBCT). It appears the efforts to reduce this potentially dangerous error are not proving successful. Alternatively, the ongoing increase may be due to improved reporting and/or a higher rate of detection, e.g. because of the group-check sample. Approximately 220 organisations are registered to report to SHOT, so the rate of reported near miss WBIT is 3-4 per organisation per year (789/220). The actual rate may be higher as a regional study showed WBIT errors may be underreported (Varey et al. 2013). These are serious errors and further efforts are required to reduce the problem.

Group-check samples

The recommended group-check policy prior to a first-time transfusion should prevent potentially lethal errors. In reports of WBIT incidents 611/789 (77.4%) indicated that their institution required two separate samples before issuing group-specific blood and 215/789 (27.2%) reported that the error was detected as a result of their group-check policy (Cases 12.3 and 12.4 below).

Case 12.1: Routine non-application of an identification band contributes to a WBIT incident

Patient 1 was due to attend for an outpatient assessment, but nursing staff had used Patient 2's details to admit Patient 1 to the hospital system, because Patient 2 had the same last name, forename and year of birth, although a different day and month of birth. There was then failure to check that the patient identity and records matched on admission, because day case attenders are not issued with an identification band. The blood request form was generated with Patient 2 details and the doctor took a group and save sample from the intended Patient 1 having verbally confirmed the name only, without checking the date of birth. Ward staff realised the identification error when other pathology results were not available for the expected patient. A contributory factor was that the ward clerk was on long-term sick leave and had not been replaced, so there was no one to check if correct documentation had been supplied for the patient. An additional factor was the lack of procedure to check if new doctors have completed a phlebotomy assessment on appointment.

Case 12.2: WBIT incident after failure to put correct equipment in place

A sample and form were both correctly labelled with Patient 2 demographics, but the sample-taker later realised the sample was actually taken from Patient 1. A doctor, who was already under extreme pressure due to workload, was called to an outpatient area to take a transfusion sample and a nurse provided verbal details of Patient 1 identity. The doctor could not print the request form due to the lack of an enabled printer and there were no paper forms available. Therefore, the doctor took the unlabelled sample back to the ward and mistakenly printed a form for Patient 2, then used Patient 2 demographics to label the sample. This task is undertaken infrequently in the outpatient department and the process for obtaining transfusion samples is different from other pathology samples because transfusion is not part of the electronic requesting system. The department manager was aware of a previous incident caused by having no printer for transfusion requests, but the correct equipment had not been installed due to lack of space. An interim supply of paper request forms has been provided.

Cases 12.1 and 12.2 clearly describe system failures that contributed to poor practices. One means of reducing WBIT incidents would be to review the human factors that make it difficult to follow standard procedures. Further information can be found in Chapter 6, Human Factors in SHOT Error Incidents.

Learning point

- Wrong blood in tube (WBIT) errors often result from underlying poor practices, many of which are triggered by inadequate systems. Root-cause analyses of WBIT events should be designed to highlight and resolve these system failures, i.e. the human factors and ergonomics aspects

ABO-incompatibility prevented by detection of near miss incidents n=342

A total of 899 near miss errors were reported that could have resulted in IBCT and 342/899 (38.0%) could have resulted in an ABO-incompatible red cell transfusion. Most, 226/342 (66.1%), would have resulted in transfusions of group A, B or AB units to patients of group O which is particularly dangerous because group O individuals have three ABO antibodies, anti-A, -B and -A,B which may react more strongly than anti-A and anti-B produced by individuals who are group A or group B (Klein and Anstee 2005). This is an unacceptable risk and these errors should be investigated as fully as those that actually led to transfusion of ABO-incompatible red cells, n=1 (Chapter 10, Incorrect Blood Component Transfused (IBCT)). Most potential ABO-incompatible transfusions, 317/342 (92.7%) resulted from WBIT errors, which means 317/789 (40.2%) of all WBIT could have resulted in an ABO-incompatible transfusion. In a further 38/789 (4.8%) the groups were unknown, so may also have been ABO-incompatible risks. There are excellent procedures in transfusion laboratories designed to detect WBIT, including comparing patient history, supplemented by a group-check policy in many organisations (BSH Milkins et al. 2013). Therefore, it is uncommon for WBIT errors to result in a wrong component transfused. However, sample-takers and those involved in designing the processes for safe phlebotomy must not underestimate the potential danger of these errors and staff cannot assume these errors will always be detected in the laboratory. All except 9 of the total 342 ABO-incompatible near misses resulted from clinical errors.

Cause of potential ABO-incompatible transfusions	Number of cases	Percentage of cases	
Wrong blood in tube (WBIT)	317	92.7%	Clinical error n=333
Component collection/administration error	16	4.7%	
Sample receipt error, wrong patient's record	2	0.6%	Laboratory error n=9
Wrong group component selected	3	0.9%	
Grouping/testing error	4	1.1%	
Total	**342**	**100%**	

Table 12.2: Cause of potential ABO-incompatible transfusions

Quality management systems (QMS)

Good quality processes in both the laboratory and clinical areas often detect errors in near miss incidents and are therefore shown to prevent unsafe transfusions. However, 312/1359 (23.0%) near misses were detected accidentally and 658/1359 (48.4%) were only detected by a level of good fortune, because the ABO/D or other laboratory test result differed.

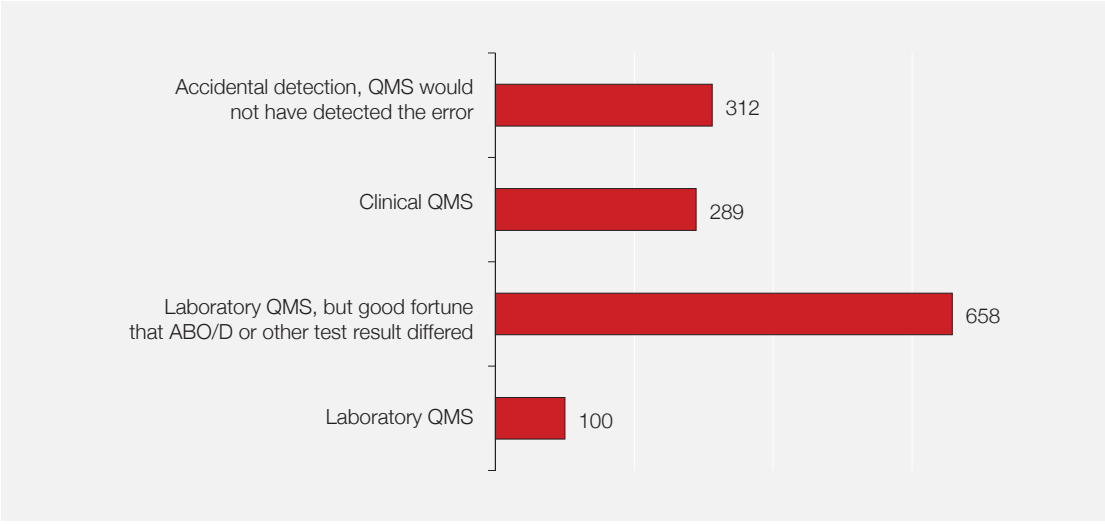

Figure 12.1: Near miss detected by quality management system or good fortune

QMS=quality management system

Case 12.3: Group-check policy detects WBIT incident

A patient was bled twice prior to surgery. One sample was taken by a phlebotomist in the early morning and the other sample was taken by a member of the ward staff approximately 2 hours later. One of the samples grouped as A D-negative and the other was group A D-positive. The group of a further sample showed the original sample taken by the phlebotomist contained the wrong patient's blood.

Case 12.4: WBIT incident uncovers department-wide circumvention of group-check policy

Two WBIT samples were detected from the same department. The investigation identified that a member of staff took two samples at the same time for two different patients. The second samples of each were given to another member of staff to label and these were mislabelled. These two patients required two samples under the group-check policy for patients who do not have a historical blood group on the system. On further investigation it was established that this practice was common within a selected group of staff from this department. The staff were taking two samples at the same time and asking another member of staff to complete the details on the second sample. Although the staff had been trained they felt that this process was kinder to the patient as they did not have to be bled twice and did not need to stay for the second sample to be taken. All staff involved were prevented from taking samples until retrained with further emphasis on the reason for the group-check rule included in the training.

Case 12.3 demonstrates the value of a group-check policy to prevent a potentially dangerous error, whereas Case 12.4 shows that processes can become distorted over time, often with good intentions, because staff either forget or do not understand the importance of such checks. A culture of sidestepping a standard process can become prevalent, but this incident shows individuals placing unwarranted trust in the actions of their colleagues.

Learning points

- All staff should take personal responsibility for their own actions, fully completing their specific role in the transfusion process and should be empowered to refuse requests from colleagues which may be outside the standards of safe practice
- Constant vigilance and education is needed to encourage sample-takers to understand the importance of a group-check sample and to discourage poor practice, including attempts to circumvent the process

Value of historical samples

The WBIT incidents include 68/789 (8.6%) reports of historical errors, some of which date from as far back as the 1990s, although many occur within the same patient episode.

Case 12.5: Results from neonatal samples may not provide a valid historical group

A sample received from the antenatal clinic correctly grouped as AB D-negative, but the historical group was recorded as B D-negative. However, this historical sample was taken many years ago, when the patient would have been a neonate. It was not possible to determine whether the historically incorrect group was due to a clinical sampling error or a laboratory processing error. The criteria for acceptance of a historical group as the first sample are being reviewed.

A WBIT at birth is the most likely explanation in Case 12.5, including that it may have been maternal instead of cord blood, because a common reason for this patient to have been grouped at birth would be a cord blood taken for the anti-D immunisation prevention scheme. In 2017 there were 36 'near miss' incidents associated with maternal and cord/baby samples of which 35 were WBIT. Testing of fetal/neonatal and cord blood samples can be difficult because ABO red cell antigens may be poorly expressed at birth (BSH New et al. 2016); in the case above the sample could group as B if the A antigen was poorly expressed. Depending upon technique it is possible that maternal blood rather than baby

blood is sampled from the placenta. The placenta contains maternal blood in the intervillous spaces and fetal blood in the placental villi and umbilical cord. To ensure that the newborn blood sample is not contaminated with maternal blood it is best to sample only from the umbilical cord (Duerbeck et al. 1992).

Learning point

- Group-check policies should consider the criteria for a valid historical record in that institution, taking account of the addendum to the British Society for Haematology (BSH) guidelines (BSH addendum 2015) for pre-transfusion compatibility procedures in blood transfusion laboratories

Commentary

Near miss incidents provide an excellent opportunity to learn valuable lessons before a patient is harmed. Incident investigations should focus on how to ensure the implicated processes are safe and that the systems are designed to reduce the likelihood of error. Incident investigators are encouraged to use the questions in the SHOT human factors investigation tool (HFIT) to understand failures in the transfusion process that have been identified by these incidents with no patient harm. Further information can be found in Chapter 6, Human Factors in SHOT Error Incidents.

References

BSH Addendum to guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories 2015. http://www.b-s-h.org.uk/media/5149/pre-transfusion-historical-samples-scenarios-version-_-final290115.doc [accessed 28 February 2018].

BSH Milkins C, Berryman J et al. Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories. *Transfus Med* 2013;**23**:3-35 http://onlinelibrary.wiley.com/doi/10.1111/j.1365-3148.2012.01199.x/pdf [accessed 28 February 2018].

BSH New HV, Berryman J et al. Guidelines on transfusion for fetuses, neonates and older children. *Br J Haematol* 2016; **175**:784-828 http://onlinelibrary.wiley.com/doi/10.1111/bjh.14233/full [accessed 28 February 2018].

Duerbeck NB, Chaffin DG, Seeds JW. A practical approach to umbilical artery pH and blood gas determination. *Obstet Gynaecol* 1992;**79**:959-962.

Fisher B and Hackney JH. Modifications in the alkali denaturation test for fetal hemoglobin. *Am J Clin Path* 1957;**27(1)**:48-51.

Flanagan CJ and Mitoma TF. Clumping (false agglutination) of blood from the umbilical cord. *Am J Clin Path* 1958;**29(4)**:337-339.

Klein HG and Anstee DJ. Mollison's blood transfusion in clinical medicine; 11th edition. Blackwell publishing 2005:122

Varey A, Tinegate H et al. Factors predisposing to wrong blood in tube incidents: a year's experience in the North East of England. *Transfus Med* 2013;**23(5)**:321-325.