# 11. NEAR MISS EVENTS

**Definition:**
Any error, which if undetected, could result in the determination of a wrong blood group, or issue, collection, or administration of an incorrect, inappropriate or unsuitable component but which was recognised before transfusion took place.

## The concept of "near miss"

The concept of "near miss" events has been borrowed from air traffic control to denote an accident which came close to happening but did not, whether through luck or judgement. "Near miss" is a useful concept. In air traffic control a "near miss" usually describes an incident where two aircraft fly within a defined distance of each other which is close enough to cause alarm and concern but no accident or loss of life takes place. It can be applied to various clinical situations, but there is some confusion defining what constitutes a "near miss" in clinical practice. In the definition above for blood transfusion a "near miss" is an error that could have led to the wrong blood being given but did not.

Nashef[14] recently suggested a useful classification of "near miss" events in a letter to the Lancet. In the first type of situation described by Nashef an adverse event occurs, but a system is in place to detect and correct it which works as planned and so no harm is done. It is this type of "near miss" which we are describing in this chapter, and Nashef suggests that the majority of such events, though important, go unrecorded. In the second type of "near miss" an adverse event occurs and one or more of the systems in place fail to detect and correct the error, however, no harm is done, perhaps for unconnected reasons. This is analogous to IBCT reports in which the wrong blood is given but fortuitously is ABO compatible. The third type of "near miss" is that in which an adverse event occurs and one or more of the systems in place fail to detect or correct it and harm is sustained, but falls short of the worst possible outcome. If this scheme were to be adopted then many of the events currently recorded by SHOT as IBCT would be considered as 'near-misses', however there are no plans to change the current classification, as 'wrong blood' errors are no less serious when ABO compatibility saves the recipient from a potentially life-threatening outcome.

In order to obtain a full picture of errors and the causes of errors in blood transfusion, it is important to gather all "near miss" information, so that corrective action can be taken to prevent recurrence[15]. High quality data on "near misses" is needed to strengthen preventative efforts and to reduce the burden of transfusion related incidents on individuals and on the National Health Service. Lessons from the aviation industry have shown that improving collection of "near miss" data will at first increase the number of such events reported, but at the same time will lead to a reduction in the number of actual serious events, in this case air crashes with catastrophic consequences. To extrapolate to blood transfusion it may be that once effective systems are in place in all hospitals to detect and document "near miss" events in blood transfusion we might see a reduction in or perhaps a complete prevention of fatal occurrences of wrong blood to patient.

## Participation rate

Participation in the SHOT "near miss" scheme is recommended in the Health Service Circular HSC 2002/009[2] but not yet mandated for Clinical Pathology Accrediation or CNST, and is essential within Trusts as part of their risk management and clinical governance strategies. Most hospitals now participate in SHOT reporting of actual adverse events, including instances where wrong or inappropriate blood components were transfused, regardless of whether the patient suffered any harm as a result. This year hospitals have been actively encouraged to submit "near miss" data as well.

This year 146 hospitals out of a total of 405 have reported "near misses" (36%), whilst 50% of participating hospitals state that they have experienced "near miss". Reporting is skewed as some hospitals are sending a large number of "near miss" reports whilst others are not sending any. This is likely to be an indication of differences in systems for identifying and documenting such events in different hospitals rather than a true difference in incidence. Therefore the data available are likely to be the 'tip of the iceberg' and may well reflect those "near misses" that were easy for the haematologists or BMSs to identify and deal with. This may explain

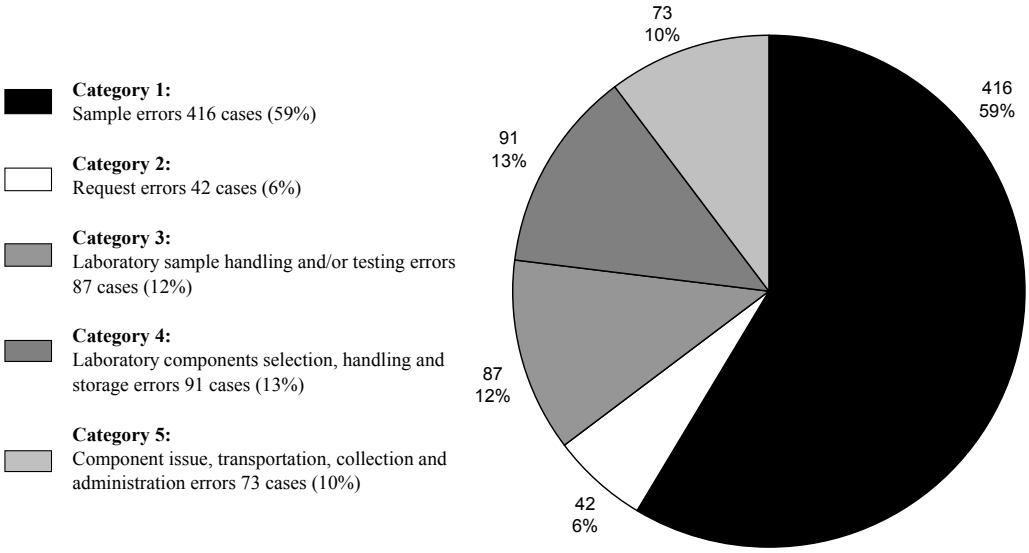
the preponderance of phlebotomy errors which are generally detected in the laboratory and reported internally. Laboratory "near misses" e.g. grouping errors are also well reported as these too are detected in the laboratory. Ward based and portering "near misses" are less likely to be captured by the current systems in most hospitals as these errors are corrected at the time of the event and the incident may not even be reported, or may not come to the attention of the person responsible for SHOT reporting in that hospital.

## Categories of "near miss"

SHOT identifies five categories of "near miss" with a different form to be filled in depending on the category of each event. The chart below (figure 24) lists the five categories and the proportions of "near miss" events and actual numbers for the year 2001-2002.

**Figure 24**
**Categories and proportions of "near miss" events**

**Total number of reports 709**




## Category 1: Sample errors - 416 cases

The proportion of sample errors has increased from 50% in 2000-2001 to 59% in the current reporting year. This may represent increased reporting of "near miss" events in the category in which it is easiest to gather data i.e. those which are picked up by BMSs working in the laboratory. This year 201 sample errors resulted from samples being labelled with the intended patient's details but which were subsequently found to contain blood from a different patient. Another 193 reports related to incidents in which the correct patient had been bled but the sample was labelled with another patient's details. In most of these cases (245) the error was identified by finding a different historical blood group in the blood bank records. In cases where the patient had not previously been grouped such errors would not be detected. In 48 instances the person who performed the phlebotomy realised later that they had made a mistake in identification of the patient and informed the laboratory. On 2 occasions the error was discovered at the final bedside check before administering the blood component.

All of these events occurred because of failure to follow local protocols and national guidelines for patient phlebotomy. If a patient positively confirms their name and date of birth, or if the hospital number and other

details are copied from the patient's wristband at the bedside immediately following the phlebotomy, such errors cannot not take place.

In 12 cases addressograph labels were used to label samples. This has been previously identified as a dangerous practice, as it is too easy to put the wrong label on a tube and there is a tendency to pre-label. National guidelines[6] state that addressograph labels should not be used for this purpose and a study of implementation of the guidelines has shown a favourable effect on patient safety[16].

Of these sample errors 248 were attributed to medical staff, 84 to nursing staff and 32 to phlebotomists. Another 2 samples were taken by medical students. This raises important questions as to what training and documentation of training should be in place for hospital personnel before they are permitted to take blood transfusion samples from patients.

125 samples were taken at times identified as outside routine working hours and 15% of sample errors were related to blood collected in A&E departments However lack of denominator data makes interpretation difficult.

It is interesting to note that at least 4 samples were wrongly labelled when a computer pick list for patient identification and generation of computerised request forms was used. Sample labelling was then copied from the computerised forms.

## Category 2: Request errors - 42 cases

This category comprised 6% of the "near miss" reports. Nine cases were reported in which components were requested for the wrong patient and in 12 cases unsuitable components were requested for patients. In a further 9 cases the special requirements were not specified at the time of requesting. Nine of these errors involved telephoned requests. A recurring theme is that components are requested on the basis of erroneous laboratory results. There were 8 reports of inappropriate requests for red cells based on erroneous haemoglobin values, one of which might have resulted in disastrous over transfusion of a neonate. The erroneous results invariably arose from poor practice e.g. drip arm sampling, settling of blood in syringe, use of blood gas machine to determine haemoglobin level etc. Overall 34 of these request errors involved medical staff, 5 involved registered nursing staff and 3 other categories of staff.

## Category 3: Laboratory sample handling/ testing errors - 87 cases

These comprised 12% of the total reported and involved qualified BMS staff in 72 cases, trainee BMSs in 8 cases, MLA in 2 cases, and a doctor in 1 case. Clerical and transcription errors accounted for 23 cases and 43 cases were caused by technical errors and failure to follow laboratory protocols.

There were 5 "near misses" relating to blood service errors. These were: supply of non irradiated blood (no Radsure™ label) when irradiated was requested: supply of K positive blood when K negative was requested twice (detected on cross match): missing of anti $Jk^a$ antibody: incorrect anti-D quantification.

## Category 4: Laboratory component selection, handling and storage errors - 91 cases

These accounted for 13% of all events reported, although most (27) were related to incorrect storage of components, mostly by non laboratory staff on the wards or during transportation, and subsequent wastage of the components involved.

A further 17 cases were instances where the laboratory issued components without ensuring that special requirements were fulfilled. By far the most commonly reported problem was a failure to issue irradiated components where these were necessary. These errors were identified at bedside checking. In this category 24 cases (26%) of problems occurred outside normal laboratory working hours.

## Category 5: Component issue, transportation and patient identification errors - 73 cases

Collection of a component intended for the wrong patient has been identified in previous SHOT reports as the first error, which, if not detected at the final bedside check, results in a 'wrong blood to patient' episode. Local

protocols if based on national guidelines should state that when collecting a blood component from the issue area in blood bank, appropriate documentation should be brought bearing three unique identifiers for the intended recipient, i.e. the patient's name, date of birth and hospital number. If these three items of ID are properly checked it is impossible for the wrong component to be collected. Electronic systems for controlling release of blood from storage sites may also reduce these errors. This type of error accounted for 37 cases with the error being detected at the bedside in 30 cases.

The use of an electronic bar code reader on a ward prevented an error in one case reported this year. (Case 4)

## *Cases*

***Case 1***
*Two patients attending a gynaecology outpatients clinic had very similar surnames and the same first name. Patient 1 was admitted for bleeding problems and a group and screen sample was taken. The notes were requested from out-patients, but when a nurse went to collect them she picked up patient 2's notes by mistake. These notes were then used to label the samples which had been taken from the first patient. Fortunately patient 2 had a historical blood group on the blood bank computer which enabled the error to be detected.*

This is a classic example of the danger of using hospital notes to label a blood sample and failing to follow the protocol which would involve asking the patient to state her name and date of birth, which would have then been put directly onto the sample tube. This kind of error is the most common reported "near miss".

***Case 2***
*A patient's sample was sent to the laboratory with an incorrect date of birth and no hospital number. Because the date of birth was incorrect, the patient's computer record of irregular red cell allo-antibodies was not accessed. A doctor subsequently requested a cross-match on this sample for this patient. At this stage the error was detected. The doctor was asked to amend the sample and request accordingly. However the laboratory failed to re-register the patient and once again the antibody data was not accessed. The antibody screen was carried out manually and also on an automated instrument. Both gave a weak positive reaction that was regarded as negative. The cassette was discarded prior to the independent check, which was a breach of the SOP for manual antibody screening. The allo-antibodies were thus not detected and incompatible blood was selected. Shortly before the blood was issued, a further sample and cross-match request with all the correct details, including the correct date of birth and hospital number was fortuitously sent down from the ward and enabled the error to be detected.*

This case shows how vital it is that all three unique identifiers are required before a sample can be accepted in the laboratory for grouping, screening and cross-match. Although the name was correct, the absence of a hospital number meant that the incorrect date of birth was not picked up. There was a subsequent breach of protocol in the antibody screening and these two errors compounded to produce a potential delayed haemolytic transfusion reaction.

***Case 3***

*At a surgical pre-admission clinic patient 1, a young woman, was grouped as A RhD positive though her historical record showed her to be O RhD negative. On admission another sample was taken which, this time, grouped as O RhD negative and agreed with the historical record. Another female patient, patient 2, was admitted at the same time though we have no information about her blood group at that time. The post-operative sample labelled with patient 1's details was grouped as A RhD positive. The conclusion which was drawn from this was that patient 1 and patient 2 exchanged identities in order that patient 2 could have her surgery first.*

***Case 4***
*Blood was correctly grouped and screened but the wrong transfusion forms were put in with the wrong units so the form for ward A went with the unit for a patient on ward B. When ward A scanned the unit using an electronic hand held barcode reader it was detected that it was the wrong unit for the patient on the form. Both units were recalled and reissued correctly. An ABO incompatible transfusion was thus prevented by the use of an electronic barcode reader.*

## COMMENTARY

1. Special requirements are frequently missed especially when a patient's care is shared between different hospitals or hospital departments. Clear communication between doctors, nurses and blood bank staff is vital in these circumstances. In particular there is a frequent finding that irradiated blood components are not being provided for patients who require them. It would be advantageous if patients too were aware of special issues e.g. the presence of atypical antibodies or the need for irradiated or CMV negative blood components. In addition procedures should be in place to notify the laboratory of special requirements.

2. It is increasingly reported that erroneous laboratory results, in particular haemoglobin values, have contributed to incorrect and inappropriate requests for blood components.

3. Some hospitals do not require wristbands to be worn by children in intensive care units and special care baby units. This is an entirely unacceptable practice and is in breach of national guidelines. Neonates often share the same date of birth, may have no first name and may be siblings, hence some reliable means of identification such as a wrist/ankle bank or suitable adhesive label is essential.

4. Failure to follow protocols for patient identification at phlebotomy is a major problem This may reflect inadequate training of staff involved, particularly doctors who were involved in the vast majority of cases reported. It is possible that training has taken place but protocols are not being followed owing to a lack of understanding of the serious consequences of errors.

## RECOMMENDATIONS

- **Patients should wherever possible be educated about their own special transfusion requirements e.g. irradiated components or special phenotype selection. The provision of patient held cards and suitable information will facilitate this.**

- **Hospital protocols must state that there must be no exceptions to the requirement for identity wristbands to be worn by all patients. This has implications for other aspects of clinical care and should be regularly audited.**

- **As recommended last year, all hospitals must have a training programme in place for phlebotomy which must include medical staff.**