# 12 Near Miss Reporting (NM) n=1451

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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 recognised before the transfusion took place.**

Near miss events continue to account for a large proportion of the incidents reported to SHOT 1451/3326, (43.6%) and have increased again this year, n=1451 in 2018, compared to n=1359 in 2017.

Essentially a near miss is an event which hasn't caused any adverse impact but had the potential to do so. Identifying and investigating near misses is a key element to finding and controlling risks before actual harm results. The information gathered through near-miss reporting must be evaluated to determine root causes and plan hazard mitigation strategies. The 'lessons learnt' must be shared so that everyone can benefit from the findings. Near miss reporting is vitally important in preventing serious incidents that are less frequent but could otherwise result in patient harm. Many safety activities are reactive, that is, they occur after an injury incident. By reporting near-miss incidents we can promote proactive safety i.e. raising awareness of potential hazards and mitigation strategies BEFORE an injury occurs. Recognising and reporting near miss incidents can improve transfusion safety and enhance the safety culture in healthcare.

Continued reporting is important to support learning from near miss cases. 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.

## Analysis of near miss errors in other categories

Near miss cases have been reviewed and discussed in each relevant chapter of this Annual SHOT Report, and Table 12.1 shows the chapters that include near miss events according to SHOT reporting categories.

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

| 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 8 | 932 | 64.2% |
| | Specific requirements not met (SRNM) | Chapter 8 | 117 | 8.1% |
| Handling and storage errors (HSE) | | Chapter 9 | 157 | 10.8% |
| Right blood right patient (RBRP) | | Chapter 13 | 202 | 13.9% |
| Adverse events related to anti-D immunoglobulin (Anti-D Ig) | | Chapter 7 | 31 | 2.2% |
| Avoidable delayed or under or overtransfusion (ADU) | | Chapter 10 | 12 | 0.8% |
| **Total** | | | **1451** | **100%** |

Wrong blood in tube (WBIT) incidents make up 792/932 (85.0%) of all WCT near miss events and have been analysed and reported separately in this chapter.

# Near Miss – Wrong Blood in Tube (WBIT) n=792

# 12a

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As in previous years, WBIT continues to be the most common type of 'near miss' error reported 792/1451 (54.6%), and 792/2905 (27.3%) of total errors reported.

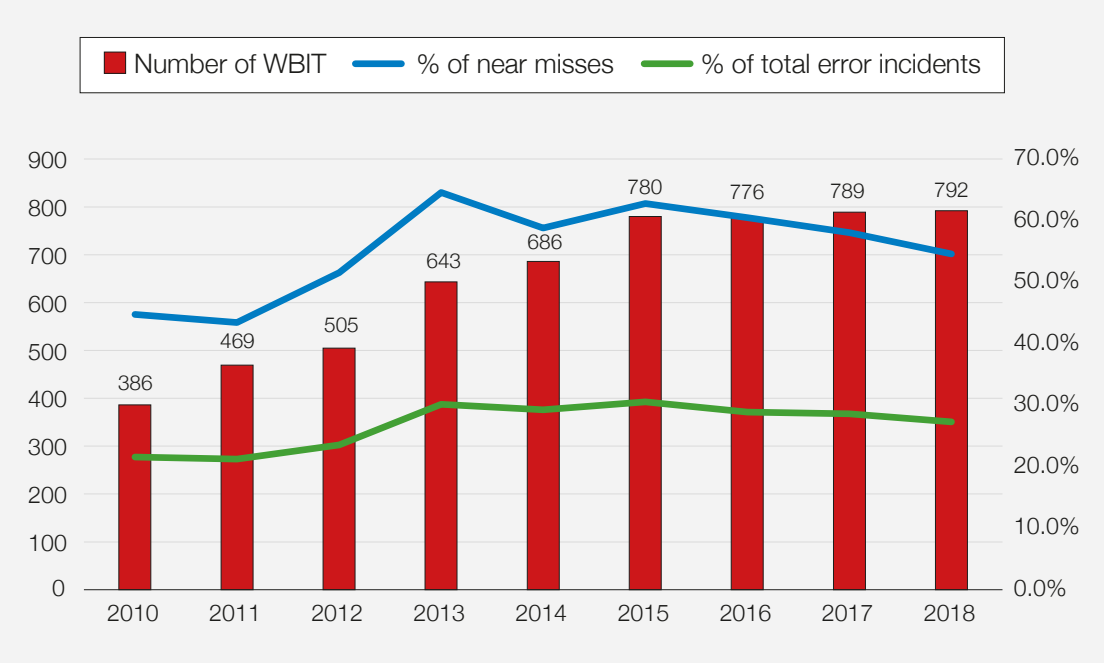


**Figure 12a.1: Reports of WBIT 2010 to 2018**

WBIT are most commonly identified by laboratory staff, 645/792 (81.4%) compared with 82/792 (10.4%) by clinical staff. The remaining cases were discovered by phlebotomists (1) or transfusion practitioners (2) and in 62 cases the information was not given.

Discrepant or spurious laboratory results provide tangible evidence that something has gone awry.

For other categories of incidents, such as over or undertransfusion, the decision as to whether an error has occurred may be more subjective or may differ depending on clinical opinion.

There is a strong laboratory culture of externally reporting incidents as they are governed by the Medicines and Healthcare products Regulatory Agency (MHRA). It is a legal requirement to report serious adverse events (SAE) and serious adverse reactions (SAR) via the MHRA's online reporting system, serious adverse blood reactions and events (SABRE). Hospital transfusion laboratories (HTL) are therefore very much aware of SHOT and SABRE, but despite education by transfusion practitioners, other SHOT categories are not as clear cut as WBIT and may not be brought to the hospital transfusion team's attention by the clinical area.

## Learning points

- Positive patient identification (PPID) using a pre-prepared transfusion request form, checked against the patient's wristband (worn) would identify discrepancies in patient demographics prior to venepuncture. All clinical details would match information provided to the hospital transfusion laboratory thus preventing error and delay at administration of blood components
- If cord and maternal groups are the same, further testing such as the alkali denaturation test should be carried out to ensure that the samples have not been misidentified - ideally before further samples are requested from the infant to prevent unnecessary phlebotomy that may contribute to iatrogenic anaemia
- Standardised labelling of infant's samples should be agreed and adhered to in particular to reduce confusion between cord and maternal samples
- The use of bedside sampling technology has the potential to reduce errors but only if the correct procedures are followed. The use of technology can lead to a false sense of security. Contingency plans should be in place in the event of technology failure
- Staff involved in patient registration should be aware of the potential consequences of patient mis-identification

## Location of WBIT errors

The majority of WBIT errors occurred on general wards, 300/792 (37.9%), with the next largest location being obstetrics, 139/792 (17.6%) and the emergency department (ED), 108/792 (13.6%).

## Staff members involved in WBIT

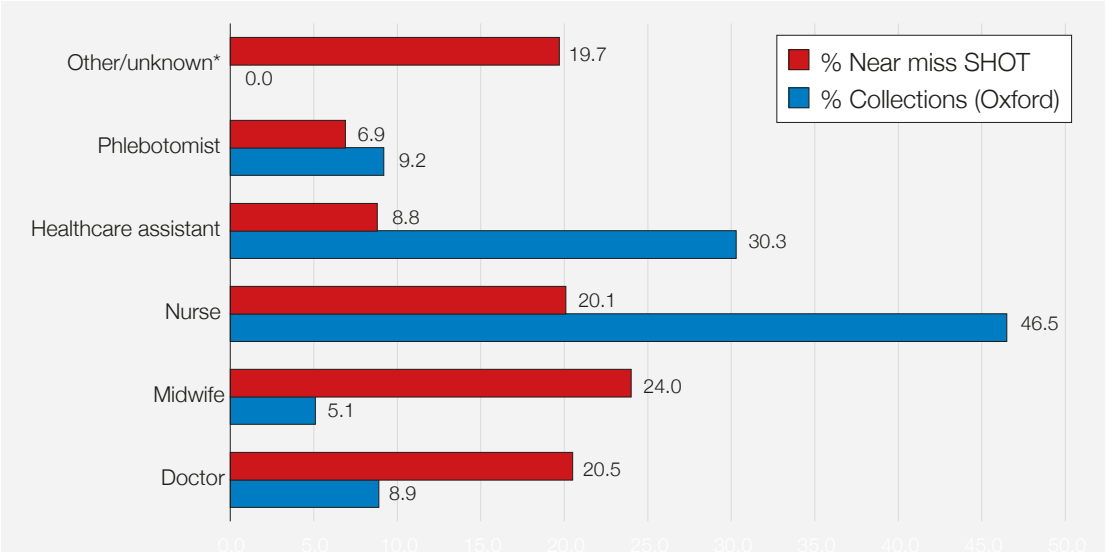


**Figure 12a.2 Staff groups responsible for taking the WBIT samples reported to SHOT (n=792) compared with staff groups who take transfusion samples in Oxford Hospitals January to March 2019 (n=15619)**

Denominator data have been supplied by the Oxford University Hospitals NHS Foundation Trust.

Midwives and doctors and healthcare assistants are over-represented whereas phlebotomists, nurses and healthcare assistants are under-represented following comparison against the percentage of transfusion samples taken by the equivalent staff group in Oxford hospitals.

This year midwives were the largest staff group responsible for WBIT 190/792 (24.0%), compared to doctors 162/792 (20.5%) who were previously the largest staff group responsible for WBIT. In the remaining WBIT cases, nurses 159/792 (20.1%), phlebotomists 55/792 (6.9%) and healthcare assistants 70/792 (8.8%) were responsible. In 156/792 (19.7%) the sample takers were either not stated or unknown.

Staffing shortages (RCM 2018) often result in midwives dealing with two (or more) patients in emergency situations where one or both patients may be urgently transferred to another area leading to samples being labelled retrospectively away from the patient. This coupled with mis-sampling of cord vessels, the unavailability of infant record numbers and non-standardised infant labelling increase the possibility of identification and sampling errors.

## ABO-incompatibility

There were 542/792 (68.4%) reports that included the known group of the patient and the discrepant group because of a WBIT. The breakdown of these groups are shown in Table 12a.1.

| | Group attributed to patient if not detected as a WBIT | | | | | |
|---|---|---|---|---|---|---|
| **Patient group** | **Group A** | **Group B** | **Group AB** | **Group O** | **Compatible** | **Incompatible** |
| Group A | 43 | 44 | 9 | 113 | 156 | 53 |
| Group B | 36 | 3 | 8 | 29 | 32 | 44 |
| Group AB | 4 | 3 | 0 | 14 | 21 | 0 |
| Group O | 132 | 49 | 12 | 43 | 43 | 193 |
| **Totals** | **215** | **99** | **29** | **199** | **252** | **290** |

**Table 12a.1: Blood groups and red cell compatibility of WBIT reports**

If blood had been required and the error gone undetected, in 252/542 (46.5%) cases, the red cell transfusions would have been compatible, however, 290/542 (53.5%) could have resulted in an ABO-incompatible red cell transfusion with potentially life threatening complications.

## Other WBIT with potential to cause patient harm

### Inadequate or inappropriate anti-D immunoglobulin (Ig) prophylaxis

It is fortunate that several grouping samples are usually taken from a prospective mother during the course of her pregnancy, aiding detection of WBIT errors, but these errors may occur in early pregnancy where group-check samples may not be considered necessary as blood components are not requested. British Society for Haematology (BSH) guidelines state that a second sample should be requested for confirmation of the ABO group of a first time patient prior to transfusion (BSH Milkins et al. 2013).

There is a risk that WBIT may result in anti-D Ig being given unnecessarily (a D-positive woman misgrouped as D-negative) or, that an unidentified D-negative patient may not receive prophylactic anti-D Ig and be at risk of immunisation, affecting future pregnancies.

Of the WBIT reports, 265/792 (33.5%) were samples taken from pregnant women. Of these, 195/265 (73.6%) were WBIT where groups were identified, 114/265 (43.0%) there was no difference in D status. However, 39/265 (14.7%) would have resulted in the patient incorrectly identified as D-negative, and 42/265 (15.8%) would have been wrongly grouped as D-positive.

### Iatrogenic anaemia in infants

There were 46/265 (17.4%) WBIT errors reported involving maternal and cord samples. Use of cord blood samples for initial blood tests, particularly infants of low birth weight, has been advised to reduce the risk of iatrogenic anaemia (Baer et al. 2013) but errors in sampling of the cord vessels can result in WBIT errors.

Repeat samples obtained from infants to ascertain their correct blood group may contribute to iatrogenic anaemia (Lin et al. 2000).

**Case 12a.1: Historic WBIT may have led to anti-D immunisation**

*A patient had booking bloods taken at antenatal clinic and was grouped as O D-positive. This did not match the result of a sample taken in 2015 following a termination of pregnancy (TOP) which grouped as A D-negative. A repeat sample confirmed the group as O D-positive. The sample taken in 2015 was incorrect. It is not known if the patient was given anti-D Ig prophylaxis in 2015. The patient whose blood was in the sample tube may not have been identified and would have been at risk of anti-D immunisation.*

**Case 12a.2: Detection of WBIT prevents potentially inappropriate anti-D Ig prophylaxis**

*A Kleihauer request was received in the hospital transfusion laboratory. The patient had a historical group on file of O D-positive and would not require a Kleihauer test. The sample, however, grouped as A D-negative with a positive antibody screen consistent with prophylactic anti-D Ig. The midwife who saw this patient stated that they had not presented with per vaginal (PV) bleeding and did not require a Kleihauer test. The patient who was bled but incorrectly identified was contacted to attend the clinic the next day when a Kleihauer test was taken and prophylactic anti-D Ig given within 72 hours.*

**Case 12a.3: Mislabelled cord requires repeat baby sample for group confirmation**

*Mother and baby samples received in transfusion and both grouped as AB D-negative which was the previous group recorded for the mother. The cell-free fetal deoxyribonucleic acid (cffDNA) test had predicted D-positive. An initial test failed to identify the baby's blood group. The baby was re-bled and grouped as B D-positive. Anti-D Ig was issued for the mother and given within 72 hours.*

## Misunderstanding of the group-check policy may lead to an increase in incorrect blood component transfused (IBCT) due to WBIT

Although the introduction of group-check samples as outlined in the BSH guidelines for pre-transfusion compatibility procedures (BSH Milkins et al. 2013) has undoubtedly reduced WBIT errors and the potential for IBCT, it is disappointing and worrying that 25/792 (3.2%) reports of two samples being taken at the same time but labelled with different times have been reported. There are also examples of two samples taken despite the fact that there are several historical groups on record showing that there is a lack of understanding of the rationale behind the group-check policy.

**Case 12a.4: Near miss ABO-incompatible transfusion due to circumventing the group-check policy**

*Two group and save samples were received from the ED on a patient with a suspected hip fracture. The samples were timed as being taken ten minutes apart. On grouping, both samples were found to be B D-positive. The historical group on file was A D-negative. A further sample was obtained and confirmed this historical group. The samples had been taken by an ED consultant and passed to a foundation year one (FY1) doctor to label as being taken at different times. The FY1 had not felt confident to question the consultant on practice they knew to be unsafe. ED policy requires two group and save samples to be taken on admission. The samples met the criteria of the group-check policy. If there had been no historical group, the patient could have received incompatible blood.*

DO NOT take two samples at the same time and send one of the samples to the laboratory a few minutes later as it will result in the same error. If the wrong patient has been bled, or the sample labelled from the correct patient with someone else's details, both samples will group identically but WRONG. The patient could receive an ABO-incompatible transfusion, which may be lethal. The two sampling episodes must be separated and ideally each taken by a different person, with two completely separate requests to the laboratory (https://www.shotuk.org/resources/current-resources/ SHOT Bite No 10. Why 2 Samples?)

## Bedside sampling technology

In 51/792 (6.4%) cases, reporters believed that the introduction of bedside sampling technology for phlebotomy could have prevented recurrence of the incident. However, this can be costly to implement, may give users a false sense of security and, if not used as intended, can lead to errors. This is illustrated by Case 12a.5.

**Case 12a.5: WBIT due to electronic scanning of an unworn wristband for label generation**

*Two group and save samples were received for a patient. The first sample taken at 12:54 grouped as A D-negative and matched the patient's historical record. The second sample taken at 14:57 grouped as AB D-positive. Both samples were labelled using BloodTrack® personal digital assistant (PDA). Trauma patients at this hospital are given consecutive hospital numbers and are issued blood components on a single group sample. The nurse had labelled a sample taken by somebody else. The sample label had been generated by scanning a wristband that was not attached to the patient. The sample had actually been taken from the patient in the next bay.*

## WBIT due to incorrect patient registration

Registration of a patient resulting in the production of patient addressographs/demographic labels and wristbands is not considered part of the transfusion process in the way that sampling, collection or administration are. Staff members undertaking this task may not fully understand the potential consequences that an error at this stage may have. WBIT errors attributed to sample receipt and registration errors occurred in 19/792 (2.4%) cases. These included 1 case where the incorrect merging of two similarly named patient records led to the incorrect group being held on the patient's record in the laboratory information management system (LIMS) for one of the patients (see Case 12a.6), and 18 cases where a patient was registered under the incorrect patient record due to similarities in name.

Failure to update patient details or creating a new record when the patient already exists in the system may lead to missed transfusion history and/or special interest flags and possibly result in an incompatible or specific requirements not met (SRNM) error or anti-D immunisation.

With increased use of bedside sampling technology with barcode identification from the wristband, correct patient identification at this step is crucial (Callum et al. 2011).

**Case 12a.6: WBIT due to incorrect merging of patient records**

*A group and save sample was received for a patient and the resulting group of B D-negative was found to be discrepant from the many historical groups of O D-positive. The member of staff taking blood for grouping, correctly positively identified the patient checking all the required identifiers with the patient - first name, last name, date of birth and first line of address, which were all confirmed as correct. The hospital number however belonged to the other patient which generally patients do not know and are not asked at phlebotomy. A member of clerical staff had merged two patients on the organisation-wide patient administration system (PAS) based on the same first name, last name and date of birth even though the National Health Service (NHS) number and address were different.*

**Case 12a.7: Patient incorrectly registered leads to many incorrect results in patient's record**

*A phlebotomist went to take bloods from a patient and asked them to confirm their details. These did not match the request form or the patient's wristband. When this was investigated it was found that the patient had been wrongly identified and registered as a different patient with the same name. This had gone undetected over a 2-day period. All bloods sent during this time were labelled with the incorrect patient's details.*

## Commentary

Analysis of the data identifies that midwives as a staff group are most likely to take a WBIT sample. This is due to a combination of factors which makes the environment in which samples are taken more prone to error: dealing with more than one patient in a short space of time (mother and infant/s); having to correctly label and sample cord blood and the possible sudden transfer of patients to other areas

in emergency situations. The potential for harm from inadequate or inappropriate anti-D Ig prophylaxis is high. Non-cord repeat samples required for confirmation of infant's blood groups may contribute to iatrogenic anaemia in infants especially those with low birth weights.

Misunderstanding of the group-check policy leading to WBIT errors of initial and confirmatory groups may lead to an increase in IBCT errors (https://www.shotuk.org/resources/current-resources/ SHOT Bite No 10. Why 2 Samples?).

Improved technology and bedside sampling systems offer a solution to increasing WBIT errors but only if used as intended. Contingency plans should always be in place to counteract the potential for error due to technological failure and in order to optimise the safety of such systems it is vital that patients are identified correctly at admission, registration through to administration, see Chapter 13, Right Blood Right Patient (RBRP) for more errors related to patient identification.

## References

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