12. 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.

All hospitals in the UK have been encouraged to report "Near Miss" events to the SHOT Scheme for the last reporting year and simple report forms were issued to all hospital blood transfusion laboratories for this purpose. Disappointingly only 121 hospitals from a possible 413 (29%) have supplied data during this reporting year and this is analysed below. These hospitals supplied 452 reports.

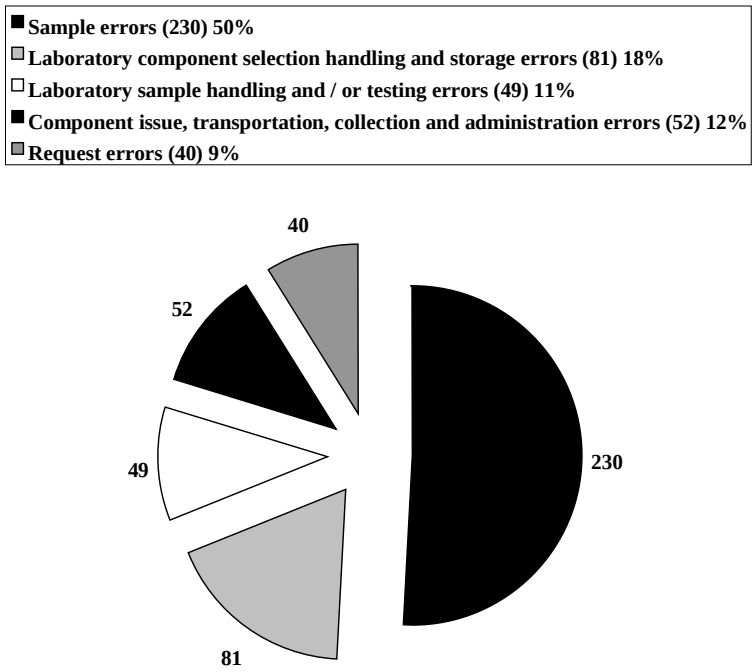
The DoH document "An organisation with a memory",[3] which was the report of an expert group on learning from adverse events in the NHS, recommended that all hospitals should have a system of recording, evaluating and learning from near miss events as these are more frequent than "real" errors, but often have the same root causes.

Whilst error and "Near Miss" reporting are relatively new developments in the NHS, the advantages are now well recognised and all hospitals should have such systems in place as part of an overall risk management strategy. Increased participation of hospitals in this confidential and anonymous "Near Miss" reporting scheme would enable a more comprehensive database to be established to evaluate incidents from a more representative national perspective.

Categories of "Near Miss" events reported (452)

The "Near Miss" reporting process comprises a form for different categories of events, with tick boxes to aid rapid recording of details. In the majority of cases no additional contact or information is necessary. The 5 activity areas covered by the scheme are described in the key to figure 21.

Figure 21
Near Miss Events October 2000 – September 2001 (n= 452)



Sample errors (230)

As in previous "Near Miss" surveys, errors of phlebotomy and/or sample labelling dominated the reports submitted, comprising 50% of total reports.

Poor practices on 113 occasions resulted in samples being labelled with the intended patient's details but which, because of the finding of a different blood group in historical records, subsequently confirmed on repeat samples, showed that the original sample must have been obtained from another patient. It was also reported that in a further 110 instances the correct patient had been bled but the samples labelled with another patient's details. On 7 other occasions the reason for the blood group discrepancy could not be conclusively identified.

Failure to follow phlebotomy protocols where the patient confirms their identity, the wristband is checked and samples are labelled at the bedside is a serious cause for concern. In 197 cases these errors were detected in the laboratory whilst in 26 cases the person who performed the phlebotomy realised later and notified the laboratory of their concerns. On 7 occasions the errors were not realised until the final bedside check.

Incorrect patient addressograph labels on 17 samples were reported, despite Guideline recommendations that addressograph labels should not be used to label samples.[37] The contribution of incorrect addressograph labels being used on request forms, with subsequent transcription of incorrect details to samples, was not possible to determine, although this problem was reported on several occasions. Addressograph labels for incorrect patients were found in case notes on 2 occasions.

Whilst on 133 occasions medical staff were identified as having taken the sample, at least 82 samples were thought to have been obtained by nursing staff, trained phlebotomists or other staff involved in phlebotomy. This may reflect the increasing role of nurse practitioners in clinical areas and the use of "clinical aides" for general ward functions, including phlebotomy.

Fifty-five samples (24%) were bled at times identified as not in routine working hours, and 10% of sample errors were related to blood collected in A/E Departments.

Request errors (40)

This category comprised 9% of total "Near Miss" reports, and contained 18 instances where components were requested for the wrong patient. On 5 occasions incorrect components were requested, whilst for another 8 patients the need for special requirements was not specified, although these omissions were recognised before transfusion occurred.

Incorrect details given by telephone caused 13/40 errors, with 23 instances of incorrect information being specified on request forms. The majority of errors were made by medical staff.

On 5 occasions red cells were requested for transfusion on the basis of erroneous low Hb results:

- a telephoned result of the white cell count was interpreted as the Hb level
- a misheard telephone result
- a result from a sample collected near to drip site and diluted blood obtained
- mistakenly using pre operative Hb as a basis to order blood in post operative situation
- venepuncture performed using a 60 mL syringe and blood dispensed into bottles with inadequate mixing leading to a false low Hb result

In all these instances over transfusion was prevented by the vigilance of the blood bank BMS in reviewing the need for transfusion.

Laboratory sample handling/testing errors (49)

A variety of sample handling and technical errors, comprising 11% of the total, were reported in this category, mostly involving qualified BMS staff. Clerical or transcription errors caused 14/49 problems, whilst 23 were reported to be caused by poor technique and failure to follow protocols. In 4 instances wrong patient samples were selected for testing.

- Incorrect interpretation of the blood group from visual inspection of column technologies occurred on 2 occasions, whilst 3 errors were caused by automated blood grouping equipment problems. These were:
- a report where 6 RhD negative patients were falsely typed as RhD positive by an automated system utilising column technology.

- a barcode read error resulting in transmission of results to an incorrect patient record.
- an erroneous blood group result of AB was interpreted automatically, cause unknown, and the incorrect group interpretation was then transmitted to the laboratory computer record. The incorrect group was not compared with an existing provisional blood group in the computer record, and the error was not recognised until a further sample was received 2 months later.

On 1 occasion a unit of red cells was issued by a Blood Transfusion Centre as irradiated, but the attached irradiation indicator label showed the unit had not been exposed. This was recognised by the hospital laboratory before use.

An unusual problem was reported as occurring twice on blood donations supplied from the same Blood Centre. Apparently during component preparation the red cell pilot tubing had become separated from the main bag and, contrary to protocols, had been reconnected using a sterile connecting device, unfortunately to the wrong bags. Subsequent crossmatching demonstrated incompatible results due to ABO incompatibility when the red cells in the pilot tubes were found to be group A, whilst the label on the bag was group O, as were the red cells in the bag.

Laboratory component selection, handling and storage errors (81)

Eighteen percent of all events were reported in this category, although 44/81 were related to incorrect storage of components in clinical areas with the potential for damage to the component involved. On 3 occasions platelets were stored overnight in a blood bank refrigerator within theatre areas, and would not have been clinically effective if transfused. All these components were consequently wasted.

There were also 18 instances where the laboratory issued components without ensuring that special requirements e.g. irradiated or CMV antibody negative components, were provided. These avoidable lapses were detected by bedside checks before administration of components.

Three relevant serological problems were reported

- red cells were crossmatched with no problems and issued for use, but at the bedside it was realised the patient had a blood group card stating that they had an antibody capable of causing severe intravascular haemolysis. The patient had been transferred from another hospital with no information provided to the laboratory.
- when blood was being checked at the bedside prior to transfusion, a relative notified ward staff of difficulties at another hospital in providing blood for transfusion. Upon examining the case notes a laboratory report of anti-Vel was found and the blood bank notified. Frozen/thawed Vel negative red cells were provided to avoid a potentially serious haemolytic event.
- red cells were crossmatched with no problems for a patient with anti-D + E. A pyrexial reaction with the first unit caused the laboratory to review the serology when it was realised that one of the units which had been issued but not yet transfused was a r''r (cdE/cde). The anti-E was found to be not detectable in the laboratory testing.

Thirty eight percent of problems occurred outside normal laboratory working hours.

Component issue, transportation and patient identification errors (52)

The collection of components for the wrong patient has been a significant concern in previous SHOT reports, and 20 instances of this problem were reported this year. In at least 8 of these cases red cells were collected for a different patient with the same surname, sometimes despite written details with full identification being taken to the laboratory when collecting blood components. Other problems arose because no details were known by the collector except the patient's surname. These errors were detected by the bedside checking procedures before administration of the red cells to patients. In 3 instances intravenous infusion had been commenced but ward staff realised the error and stopped the infusion before the red cells actually reached the patients.

Lack of correct transportation was recognised on 14 occasions, with poor control of stocks in remote blood banks being reported on 4 occasions. On 2 occasions red cells were inadvertently transported in insulated boxes with dry ice from previous FFP storage, but the partially frozen red cells were detected before use.

COMMENTARY

- Phlebotomy problems are again the single largest group of errors reported (50% of all reports), but because of the increasing numbers of patient records stored on laboratory computer systems, many of these "wrong patient" samples are being detected before results or components are issued. Even so, sample errors involving patients not previously tested or with the same blood group will not be detected, with the potential for ABO mismatch upon transfusion. The control of phlebotomy within hospitals is increasingly no longer the responsibility of the laboratories and appropriate training may consequently be minimal.

- Addressograph labels are still being used in a few hospitals to label samples. Manual transcription of patient details onto samples is thought to ensure improved checking procedures. The use of addressograph labels to identify patients on request forms contributed to several sample and request errors and care must be taken to ensure that the correct labels are used.

- Hand held computer technologies, associated with the scanning of bar coded patient wrist bands and bedside production of sample labels, may be of value in reducing patient identification errors during phlebotomy. These systems are currently being introduced into some hospitals.

- Laboratory staff reviewing pre-transfusion Hb levels prevented four instances of unnecessary transfusion of red cells. Clinical Guidelines for appropriate red cell transfusion requirements have been published,[6] and with the increasing recognition of associated hazards and the possible reduction in future blood supplies, all Hospital Trusts must introduce measures to ensure that the unnecessary transfusion of any blood component is avoided. Laboratory BMS staff should be alert to monitor that requests for transfusion appear appropriate, and refer cases to laboratory clinical staff for advice where necessary.

- The use of automated blood grouping equipment is increasing rapidly and it is interesting to note that 3 instances of errors relating to such equipment have been reported. The frequency of such errors is unknown, but laboratory staff must be aware that automated equipment may have deficiencies or intermittent problems, which could produce rogue results. Guidelines for the validation of equipment have been published.[42]

- On 2 occasions potentially serious intravascular haemolytic incidents were only avoided when it was realised at the bedside that antibodies had been found at previous hospitals, but the information had not been passed onto the laboratory when the patient was transferred. Unfortunately laboratories do not often know of patient transfers and patients are not always issued with blood group cards containing antibody information.

- Wastage of blood components by incorrect handling, storage and transport in clinical areas was a major concern and resulted in disposal of the components involved. This lack of awareness by clinical and ward staff increases the risk of damage or bacterial contamination of components, with potential serious consequences for recipients, as well as being wasteful of a valuable and increasingly limited resource.

RECOMMENDATIONS

- **Strict adherence to phlebotomy protocols is essential with verbal confirmation of patient identity at the bedside, checking of patient wristbands, and the labelling of sample tubes at the bedside rather than remote from the patient. Appropriate training is necessary to ensure that this basic function is performed accurately and reliably.**

- **These basic principles of phlebotomy good practice should be applied to the labelling of all types of blood samples. Erroneous results from a mis-labelled FBC sample, for example, may result in inappropriate transfusion.**

- **With the increasing devolvement of phlebotomy control to clinical areas, clear responsibilities for training must be established and maintained.**

- **BMS staff could usefully monitor the appropriateness of some transfusion requests, referring to laboratory medical staff when necessary.**

- **Lack of knowledge of the care and precautions necessary in the handling, storage and transport of blood components is evident among nursing and medical staff. Education and training is necessary to ensure that maximum benefit to patients is maintained, and that components are not damaged by mishandling or inappropriate storage, thereby possibly comprising patient safety.**