SHOT Reportable Laboratory Incidents – Setting the Scene

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Aims of SHOT

- Improve patient safety through the improvement of standards of hospital transfusion practice
- Aid in the production of clinical guidelines for the use of blood components
- Educate users on transfusion hazards and their prevention
- Identify new trends or patterns in adverse incidents

2011 Summary of laboratory related errors n = 217

Type of error	Number of cases in 2010	Number of cases in 2011
Wrong blood	**21**	**33**
Wrong sample selected	2	1
ABO grouping error	2	7
D grouping error	4	8
Incorrect component selected	11	15
Incorrect labelling	2	2
Wrong group selected for SCT Patient	**15**	**9**
Wrong ABO group selected	9	5
Wrong D group selected	2	2
Procedural errors	4	2
Other Pre-transfusion testing errors	**34**	**42**
Testing errors	8	8
Procedural errors	26	34
Special requirements not met (SRNM)	**37**	**51**
Due to failure to consult patient records thoroughly	18	28
Due to poor serological knowledge/ failure to recognise the special needs of a specific patient group	19	23
TOTAL	**107**	**135**
Anti-D related laboratory errors	**45**	**20**
Handling and storage laboratory errors	**53**	**60**
I&U laboratory errors		**2**
GRAND TOTAL LABORATORY ERRORS	**205**	**217**

Unacceptable pre-transfusion testing leads to ABO incompatible transfusion

Patient had frank haematemesis and required 4 units of blood urgently. The ward was advised to send a new sample in order to provide group specific blood. There were records in the laboratory for this patient who had been transfused one week previously.

The doctor sent down the sample and request, giving the blood group as A RhD positive on the request form.

The BMS felt rushed as there was a delay in this sample reaching the laboratory. A group A RhD negative unit was 'crossmatched' by 'immediate spin', the result seen as 'compatible' and the unit issued manually using an emergency compatibility tag.

Following issue of the blood a group and antibody screen were set up and the patient's blood group was found to be O RhD positive, not A RhD positive as written by the doctor on the request form. The blood bank rang the ward immediately and the transfusion was stopped.

Patient had been transfused approximately 30mL of red cells and was reported to have experienced rigors.

Learning points:

Highlights the need to adhere to some very important principles, when providing blood in emergency situations. These are made clear in the BCSH Guidelines for pre-transfusion testing:

- The ABO and D group must, wherever possible, be verified against previous results for the patient.
- Emergency groups performed in these circumstances MUST include a test against anti-A, anti-B and anti-D with appropriate controls or a reverse group
- If there is insufficient time to complete this level of testing group O red cells MUST be issued.

Female of child bearing potential develops anti-D as a result of a D grouping error

2 x 2ml samples were received into the transfusion laboratory for group and crossmatch of one unit of red cells for an 11 year old girl (one 5ml sample should have been sent).

The sample was placed on the automated analyser but was too small to allow complete testing. (The partial grouping results obtained from the analyser gave the D type as D negative but these results were not taken into consideration by the BMS.)

The sample was then tested manually. D typing results of +1 and +2 were obtained which, according to the laboratory SOP, should have instigated further testing but this was not done. No explanation was given in the report as to how/why these 'false' positive results were obtained.

One unit of RhD positive red cells were transfused. The error was noticed when a second unit was requested. The patient was immediately treated with high dose IV anti-D but has since produced immune anti-D.

Learning points:

- Acceptance and testing of ‘small’ samples increases risk as staff revert to manual methods which are more prone to error.
- When weak D typing results are obtained correct follow on tests must be carried out to confirm the D status. Until this is completed RhD negative components should be issued.
- Before issuing components all results obtained must be reviewed and explained.

Errors in providing blood components to patients undergoing Haemopoietic Stem Cell Transplants (HSCT)

- Blood components of the wrong ABO group issued
- Blood components of the wrong D group issued
- Blood issued by electronic issue when IAT crossmatch should have been used
- Failure to meet special requirements

Due to either:

- Warning flags entered incorrectly/not kept up to date
- Warning flags not heeded

Other pre-transfusion errors

Errors have been divided into:

- *Testing errors*, i.e. the correct tests were performed but the incorrect results were obtained due to: wrong patient sample being tested, poor performance of the test, a transcription error or incorrect interpretation of the results.
- *Procedural errors*, e.g. testing unsuitable samples, failure to find historic records, missing vital information on request forms, failure to maintain correct warnings, failure to heed warnings, incorrect test selection, failure to follow procedure, failure to select a component of the correct specification.

Testing errors

It is disturbing to note 7 cases where the laboratory assumed a positive antibody screen to be due to prophylactic anti-D Ig when in 6 cases there was no record of any prophylactic anti-D Ig being issued, and in 1 case there was a report from a reference laboratory that the woman had immune anti-D.

Due to this erroneous reporting there was a lack of clinical follow-up. Six babies were born suffering varying degrees of HDFN, the severity of which may have been mitigated by close monitoring and early intervention.

Procedural errors - slips

- Heavy workload and distractions cited as mitigating circumstances
- Warnings/flags/alerts on the LIMS are helpful but:
  - Keep them clear, accurate and unambiguous
  - Avoid unnecessary messages that lead to ‘warning overload’
  - Need to positively confirm the requirement highlighted in the warning

Procedural errors – lack of knowledge

- Requirement for identification panels following positive antibody screens when there was a known antibody ie failure to appreciate that a second antibody may have developed
- Need for antigen negative red cells when there were historic antibodies on file but none detectable in the current sample ie failure to realise the risks of a delayed haemolytic transfusion reaction from a possible anamnestic response

Learning points:

- Competency assessment must include understanding and knowledge as well as simply the ability to perform a SOP. A SOP cannot cover every scenario and the ability to apply knowledge and recognise personal limitations are essential requirements of a qualified BMS