

**Case 22 from SHOT 2005 Annual Report:** Anti-D was detected at booking but assumed by the laboratory to be due to prophylactic anti-D Ig given to cover amniocentesis. No quantification or follow-up was carried out. In fact the patient had been found to have immune anti-D in 1994, but the laboratory computer records prior to 1995 were not accessible and the clinical staff had not looked up the notes of the previous pregnancy. No quantitation was done during pregnancy - at delivery the infant had severe haemolytic disease of the newborn (HDN) and required exchange transfusion.

**SHOT Recommendations on anti-D Ig**

One of the 8 main recommendations from the 2005 SHOT Report calls to 'increase the safety of antenatal anti-D prophylaxis' by:

- Implementation of routine antenatal anti-D prophylaxis must be supported by education of primary care clinicians and hospital laboratory staff
- Current legislation surrounding the issue and prescription of anti-D Ig requires clarification and is a potential source of system error
- National guidelines on antenatal testing must be incorporated into agreed local policies and subject to clinical audit

The Royal College of Midwives, General Practitioners, Obstetricians and Gynaecologists, Consultant Haematologists, Hospital Transfusion Committees and Hospital Transfusion Teams must work together and take action to achieve this.



**Patient Information Leaflets**

A patient information leaflet is available free from NHS Blood and Transplant. 'Blood group and red cell antibodies in pregnancy' aims to give information about the significance of blood groups and 'red cell antibodies' in pregnancy. The leaflet also contains information about the treatment that prevents the formation of antibodies that can cause rhesus disease of babies.

The National Institute for Health and Clinical Excellence also provides information leaflets for patients, as do most manufacturers of anti-D Ig.

Reporting of serious adverse reactions and serious adverse events as defined by the Blood Safety and Quality Regulations 2005 became mandatory on 8th November 2005. For more information contact your Hospital Transfusion Practitioner or Transfusion Laboratory.

If you would like more information on SHOT please contact:  
 SHOT Office, Manchester Blood Centre, Plymouth Grove, Manchester M13 9LL  
 Tel: **0161 251 4208** Fax: **0161 251 4395**  
 Email: [shot@nbs.nhs.uk](mailto:shot@nbs.nhs.uk) Website: <http://www.shotuk.org>

**References and further reading:**

- Right patient, right blood SPN No. 14 <http://www.npsa.nhs.uk/health/display?contentId=5298>
- Standardising wristbands improves patient safety SPN No. 24 [http://www.npsa.nhs.uk/site/media/documents/2832\\_0507\\_Wristbands\\_SPN\\_Port\\_09.pdf](http://www.npsa.nhs.uk/site/media/documents/2832_0507_Wristbands_SPN_Port_09.pdf)
- SHOT Annual Report 2005 <http://www.shotuk.org/SHOT%20report%202005.pdf>
- BCSH (2006) Guidelines for the use of anti-D immunoglobulin [http://www.bcsghguidelines.org/pdf/Anti-D\\_070606.pdf](http://www.bcsghguidelines.org/pdf/Anti-D_070606.pdf)
- NICE (2002) Guidance on the use of routine antenatal anti-D prophylaxis for Rh-D negative women <http://guidance.nice.org.uk/TA41/guidance/pdf/English>

**Serious Hazards of Transfusion in Obstetrics**

Obstetric conditions associated with the need for the transfusion of red cells and other blood products may lead to morbidity and mortality of mother and/or baby if not managed correctly. There is a significant amount of evidence that shows there is room for improvement on current transfusion practice in the obstetric setting.

**The role of SHOT**

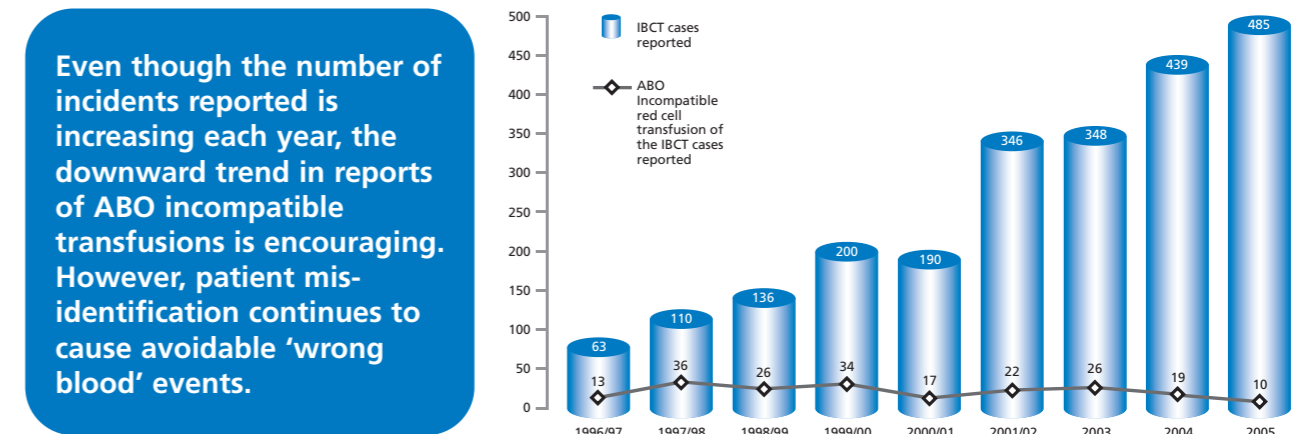
The Serious Hazards of Transfusion Scheme (SHOT) provides an analysis of serious transfusion complications in the UK. It is a voluntary, confidential, anonymised scheme that collects reports of adverse events of transfusion of blood and blood components (red cells, platelets, fresh frozen plasma (FFP), cryoprecipitate and anti-D immunoglobulin).

SHOT findings are used to:

- Inform policy within blood transfusion services
- Improve standards of hospital transfusion practice
- Aid the production of clinical guidelines for the use of blood
- Educate users on the hazards of transfusion and their prevention

**The number of transfusion incidents reported to SHOT**

Over 9 years, from 1996 to the end of 2005, 30 million components have been issued from the four UK Blood Services. There have been 2,630 incidents reported to SHOT and over 4,800 'near miss' events analysed.



Even though the number of incidents reported is increasing each year, the downward trend in reports of ABO incompatible transfusions is encouraging. However, patient mis-identification continues to cause avoidable 'wrong blood' events.

It is likely that the appointment of Transfusion Practitioners and establishment of Hospital Transfusion Teams is responsible for the increased awareness of errors and improved reporting.

**Incorrect blood component transfused (IBCT)**

The largest category of incidents reported to SHOT continues to be 'incorrect blood component transfused' or 'wrong blood events' making up 71% of all incidents analysed.

IBCT is defined as 'an episode where a patient was transfused with a blood component or plasma product which did not meet the appropriate requirements, or which was intended for another patient'.

485 IBCTs were reported in the 2005 SHOT Report, a 9.3% increase from 2004.

**All IBCT incidents are entirely preventable**

**IBCT reports analysed in 2005 included:**

- 87 (18%) 'wrong blood events' where a patient received a blood component intended for a different patient or of an incorrect group (of these, 8 D negative patients inadvertently received D positive cellular components)
- 22 (4.5%) Other pre-transfusion testing errors (including incorrect D groups)
- 141 (29%) Failure to provide blood of appropriate specification or that did not meet the patient's special requirements
- 67 (14%) Inappropriate or unnecessary transfusions
- 79 (16%) 'Unsafe' transfusions where there were handling or storage errors
- 87 (18%) Events relating to administration of anti-D immunoglobulin.

## Wrong blood events

Patients that receive a blood component intended for a different patient or of an incorrect group, could potentially be at risk of life-threatening haemolytic transfusion reactions. Errors occur at all critical points in the transfusion chain, i.e. patient sampling, laboratory pre-transfusion testing, collection of blood from storage site and administration at the bedside. The most common scenario is that the wrong unit of blood is delivered to the clinical area and staff carrying out the pre-transfusion checking procedure fail to detect the error.

### Learning Points

- Local procedures must be in place for collection of blood from refrigerators and must include the requirement to check against the patient's minimum identification dataset
- A final patient identification check must always be carried out at the patient's bedside before transfusion, using the identity band or a formally risk-assessed alternative attached to the patient



**The final bedside check is the last barrier to mis-transfusion and appears to fail in 20 - 40% of cases reported to SHOT**

## Inappropriate or unnecessary transfusion

Inappropriate transfusion is a potential cause of death and serious morbidity and in many of the cases reported there was inadequate clinical assessment of the patient prior to commencing a transfusion. Reports of these cases, in which patients received unnecessary blood components, have increased from 56 in 2004 to 67 in 2005. Seven patients were grossly over-transfused contributing to the death of one patient and major morbidity in another.

The most frequent underlying cause in this sub-category was erroneous blood sampling. In 4 cases, a decision to transfuse was based on a laboratory report that was either misunderstood or wrongly transcribed. In one of these incidents, a mother's full blood count result was written in her infant's notes.

### Learning Points

- All staff undertaking phlebotomy must understand the importance of correct patient identification and correct sampling technique, and must be assessed as competent
- Blood should only be prescribed by a doctor who has undergone training in blood transfusion and has been assessed as competent
- Near patient testing must be subject to the same standards of validation and quality assurance as the diagnostic laboratory

## Near miss reports from SHOT

Sample errors were the most frequently reported 'near miss' events, comprising 59.3% of all incidents. There were 328 /1358 (24.1%) errors where the sample was taken from the intended patient but labelled with another patient's details. In 245/1358 (18.0%) cases the sample was taken from the wrong patient but labelled with the intended patient's details.

### Learning Points

- All staff groups undertaking venepuncture for pre-transfusion testing should receive education and training and their competency should be regularly assessed.



**Of 806 sample errors reported in 2005 57% involved medical staff and 10% involved midwives**

The recent National Patient Safety Agency Safer Practice Notices (No. 14 and 24) on 'Right patient – right blood' and 'Standardising wristbands improves patient safety' are welcome initiatives.

## Anti-D Immunoglobulin

Reports of errors to SHOT relating to anti-D immunoglobulin (Ig) administration increased from 24 in 2003 to 87 in 2005. In the 2005 SHOT report, infant mortality and morbidity due to haemolytic disease of the newborn as a result of misinterpretation of antenatal serology was reported to be 'a major concern'.

Errors in cases involving anti-D Ig administration in the 2005 SHOT Report are summarised in the table below, highlighting the type of event and the area where the primary error occurred.

Type of event	Area where error occurred			Number
	Clinical error		Laboratory error	
	Hospital	Community		
Omission or late administration of anti-D Ig	13	7	7	27
Anti-D Ig given to D positive patient	16	7		23
Anti-D Ig given to patient with immune anti-D	2	2	3	7
Anti-D Ig given to patient with weak D antigen			6	6
Anti-D Ig given to mother of D negative infant	3		4	7
Anti-D Ig given to wrong patient	6			6
Expired anti-D Ig given	1	8		9
Other	1		1	2
<b>Total cases</b>				<b>87</b>

## Haemolytic Disease

2 cases were reported in 2005 in which misinterpretation of the antibody investigation at antenatal booking resulted in severe haemolytic disease of the fetus. This resulted in an intrauterine death in one case and severe morbidity requiring exchange transfusion in another.

**There is evidence of a lack of understanding by both midwives and laboratory staff of the significance of immune anti-D**

### Learning Points

- There is an urgent need for education of primary care staff in the basic principles of antenatal serology and current relevant guidelines
- Improved training of midwives in relation to anti-D administration is necessary
- More secure and explicit communication of antenatal and postnatal results is required
- Training and competency assessment of biomedical scientists in antenatal serology testing and the indications for issue of anti-D must be comprehensive

## Case Histories to highlight the consequences of errors with anti-D Ig:

**Case 21 from SHOT 2005 Annual Report:** Anti-D was detected at booking and a repeat sample requested by the laboratory. This was not sent; the GP interpreted the results as normal, and entered the patient on the routine antenatal anti-D prophylaxis (RAADP) programme. The reference laboratory did quantitation on the 28 week sample and found the anti-D level to be 141iu/mL. They alerted the Fetal Medicine Unit who attempted to contact the GP, but in the meantime the woman was admitted with an intrauterine death.