

Summary of ANNUAL REPORT 2000 – 2001

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Writing Group

(in alphabetical order)

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on behalf of the SHOT Steering Group

Key Observations and Recommendations

➤ In 2000 – 2001, 379/413 (92%) hospitals participated in the SHOT scheme compared with 72% the previous year. There were increases in both the number of hospitals submitting reports (199/413 hospitals eligible to participate; 11.6% increase since the previous year and 25.9% since the scheme began), and the overall number of reports (315 initial reports; 7.5% increase since the previous year). See Table 1. From 315 initial report forms data analysis is based on 283 completed questionnaires (Figure 1). See page 6 for explanation of reporting system.

Incorrect blood component transfused ("wrong blood") incidents (figure 2)

➤ Once again the largest category, showing a 6% increase in number since the previous year (213/315 reports), remains transfusion of the wrong blood. Cumulative data over 5 years show that the largest category of reports is blood transfusion errors with the wrong blood transfused to patients accounting for 61% (699/1148) of cases. The outcome of these was death in 11 patients (5 definitely related to transfusion, 1 probably, and 5 possibly related) and major morbidity, for example conditions necessitating intensive care unit admission (ICU), in 60 as a result of ABO and/or other red cell incompatibility.

➤ This year, of 190 completed questionnaires (cases), hospital blood transfusion laboratories were the sites of the largest category of originating errors (36% of all cases). Thirty six percent of all laboratory errors (100 errors in 80 reports) occurred out of hours. As in previous years multiple errors were implicated in many "wrong blood" incidents. There were 103 cases (54.2%) with multiple errors and 344 errors in total indicating that problems still occur at all stages of the transfusion process and that the final bedside check may fail to detect mistakes made earlier in the transfusion chain. When all errors (344) rather than all cases (190) were analysed, 29% occurred in hospital transfusion laboratories, 35% during bedside administration, 8% during the collection of blood components from the hospital storage site, 7% from other administrative errors, 15% during the prescription, sampling and request of blood for transfusion, 2% at the supplying blood centre and 4% where the origin of the error could not be detected. Thirty-three percent of laboratory errors were in the categories "failure to consult/heed the historical record" and "selection/issue of inappropriate component".

➤ Twenty six cases (14% of all "wrong blood" incidents) of ABO incompatibility resulted in 1 death which may have been related to the transfusion and 3 cases of major morbidity as a result of intravascular haemolysis. Three sampling errors resulted in two cases of major ABO incompatibility resulting in intravascular haemolysis in both and renal failure in one. Although only a small proportion of errors, these are critical as they will not be detectable subsequently if the patient has not been previously grouped or the historical record not consulted.

➤ Seventeen reports of Rhesus D (RhD) incompatible transfusions resulted in 1 case of RhD sensitisation in a female of child-bearing potential. This cause has contributed 17 cases of risk of major morbidity over 5 years. As in previous years these figures mask a larger proportion of ABO compatible and Rh incompatible transfusions, given in error, that did not result in any ill effects. There were 17 errors involving the administration of anti-D.

➤ There were 37 cases of failure to irradiate cellular blood components for patients known to be at risk of transfusion-associated graft-versus-host disease (TA-GVHD). Thirty of these originated at the point of prescription and a further 7 as a result of laboratory errors. Fortunately there were no reports of TA-GVHD in this group of patients.

➤ A small number (9) of wrong haemoglobin results, following suspected sampling errors or poor communication, resulted in unnecessary blood transfusions and two deaths possibly attributable to over-transfusion.

"Near Miss" events (figure 3)

➤ All hospitals in the UK have been encouraged to report "Near Miss" events to the SHOT Scheme for the last reporting year. Disappointingly only 121(29%) of hospitals from a possible 413 supplied data comprising 452 reports. Of these, 50% (230/452) were sampling errors indicating that phlebotomy errors remain the major cause of "near miss" events. Selection of blood components by the laboratory, handling and storage errors accounted for 81 cases (18%) with 44/81 related to the incorrect storage of components in clinical areas and 18 where the laboratory issued components without ensuring that special requirements (e.g. irradiated or cytomegalovirus (CMV) antibody negative components) were provided. Cumulative

data from 812 reports since 1997 shows that the relative proportions of causes of “Near Misses” are fairly constant. Increased participation by hospitals in this “Near Miss” reporting scheme would enable a more comprehensive evaluation of incidents from a representative national perspective.

- “Near Miss” events are likely to be more numerous than those which ultimately lead to mis-transfusion and analysis of these should be used to learn where systems are flawed so that they can be re-designed to minimise the possibility of human error.

Immune complications of transfusion

- Seventeen out of 31 cases of acute transfusion reaction (ATR) were related to platelets or fresh frozen plasma (FFP), with patients noted to be receiving FFP inappropriately. Incomplete investigation of acute adverse events was common and led to difficulty in ascribing a precise cause. The frequency of patient monitoring during transfusion, especially of platelets and FFP, was variable. Delayed haemolytic transfusion reactions (DHTR) occurred in 39 patients with 19/39 (49%) due to Kidd antibodies. In 5 cases it is likely that the antibodies could have been detected pre-transfusion but were missed. There is little evidence of inadequate performance of the laboratory technology but some techniques appear to be ineffective in detecting all the weak Kidd antibodies that will lead to a haemolytic transfusion reaction.

- Among the 13 cases of transfusion-related acute lung injury (TRALI) analysed this year there were 3 deaths and 6 cases of major morbidity. Certain categories of patients continue to feature in TRALI reports, particularly those with haematological malignancies. Seventy cases of TRALI over 5 years have resulted in 18 deaths (6 definitely, 2 probably and 10 possibly attributable to the transfusion) and 49 cases of major morbidity. It is important to note that red cells as well as FFP and platelets have been the sole implicated component in some of these cases. The diagnosis of TRALI is a difficult one, particularly in patients with pre-existing cardiopulmonary problems, even in the presence of donor leucocyte antibodies. During the last 2 years we have attempted to assess the likelihood of each case reported actually being TRALI. This has resulted in 5/31 cases considered not to be due to TRALI although they are included in the figures above. Despite the uncertainty surrounding the diagnosis of TRALI, it appears to be the second largest cause of transfusion-related morbidity and mortality after ABO incompatibility.

- The reduction in cases of post-transfusion purpura (PTP) and TA-GVHD during the past 2 years compared to the previous 3 years may reflect the benefit of universal leucodepletion (LD) of blood components (see table 1). However one fatal case of TA-GVHD this year demonstrates that current levels of leucodepletion cannot always prevent TA-GVHD. Of the 13 cases (all fatal) of TA-GVHD reported to SHOT over 5 years, 6, including this year’s case, have occurred in patients with a variety of B-cell malignancies. These patients now appear to be the most susceptible group not recommended for irradiated components under current British Committee for Standards in Haematology (BCSH) guidelines. Each year SHOT receives a number of reports of cases of failure to provide irradiated components where guidelines recommend their use. No definite cases of TA-GVHD have resulted from these errors although in one case (last year) this diagnosis could not be excluded.

- In general, immunological reactions were not investigated with the same rigour as were transfusion-transmitted infections (TTI). There was no consistency in the way that these cases were investigated and classified locally. The BCSH is producing a guideline on this although it is still at an early stage.

Transfusion-transmitted infections (TTI)

- Of 43 cases of possible TTI reported during this 12 month period, there were 6 confirmed cases. As in previous years, the largest category was bacterial contamination (4 cases). One case was due to hepatitis B virus (HBV) and one to human T-cell leukaemia virus-I (HTLV-I). It must be noted, however, that SHOT is not well suited to ascertainment of the chronic effects of viral transmission that might only become apparent after several years. All 4 bacterial contamination incidents, including a fatal *Bacillus cereus* infection, were caused by contaminated platelet transfusions.

- Cumulative data over 6 years (infectious hazard reporting predates that of non-infectious hazards by 1 year) shows that TTIs account for less than 3% of total hazards reported. Bacterial contamination is by far the most common cause in this category (21/35 reports). Of these 21 cases, 6 proved fatal; 17/21 were due to platelet contamination resulting in 5 fatalities with the remaining cases attributed to contaminated red cells (1 fatality). In 38% (8/21), the donor’s skin was the probable source of the contamination and in a number of other cases incomplete investigation precluded this conclusion although the nature of the organism was suggestive of skin contamination.

- The second commonest cause of reported TTI has been hepatitis B virus infection (HBV) with 8 cases reported over 6 years, 7 of which have been due to donations collected during the early infectious “window period”, from donors without serological markers of HBV. This is a change in pattern from earlier observations on transfusion-transmitted HBV in the UK when the majority of transmissions were due to donations from donors with chronic HBV infection who had undetectable hepatitis B surface antigen at the time of testing but were shown retrospectively to have other markers of HBV infection. This may have implications for the choice of strategies to further reduce the risk of transfusion-transmitted HBV as the effectiveness of additional tests (e.g. testing for anti-Hepatitis B core (HBc) and/or HBV DNA) depends on the prevalence of these markers.

MAIN RECOMMENDATIONS BASED ON FINDINGS

GENERAL RECOMMENDATIONS

- **All Trusts where blood is transfused should participate in SHOT.**

Participation in SHOT is an essential prerequisite for informed recommendations to improve transfusion safety. In line with HSC 1998/224 ‘Better Blood Transfusion’ which states that all hospitals where blood is transfused should participate in the SHOT scheme, Clinical Governance within Trusts should ensure a commitment to SHOT reporting and to change in practice resulting from SHOT observations and recommendations. Participation in SHOT should be implemented as a standard by Clinical Pathology Accreditation (CPA) for clinical blood transfusion laboratories.

- **Trusts should develop a “no fault” ethos for error reporting.**

In line with “An Organisation with a Memory” and the new National Patient Safety Agency (NPSA), error reporting should be encouraged, without fear of disciplinary action. It is only by highlighting errors that we can learn from them and change unsafe practices. Trusts should develop ‘Near Miss’ reporting as a basis for ongoing internal review.

- **Training, with ongoing review, of all staff involved in blood transfusion, in the systems and procedures for blood handling and administration should be implemented in all Hospital Trusts.**

Approximately 52% of ‘wrong blood transfused’ cases occurred because the wrong blood was collected from the hospital blood bank or satellite refrigerator or because of failures in bedside checking procedures.

- Trusts should put into place the BCSH guidelines on blood handling and administration, and, develop a commitment to the training of all staff handling blood. This will form part of the essential requirements for the Clinical Negligence Scheme for Trusts (CNST) which comes into effect in April 2002.
- Specific education/training in blood transfusion safety should be incorporated in the undergraduate medical curriculum and in induction programmes for junior medical staff.

➤ **Hospital Trusts should employ appropriate numbers of trained nurses, biomedical scientists (BMS) and doctors to enable safe and effective blood transfusion practice.**

• **Transfusion practitioners should be appointed in all hospital Trusts.**

Transfusion practitioners play a key role in staff training and implementation of safe transfusion practice, as well as in appropriate blood component usage. Currently the majority of those in post are nurses but other clinical staff with appropriate background are not precluded from this role. A structured training programme and professional accreditation should be considered to make the role of transfusion practitioner a more attractive career option. The recently developed Specialist Practitioners of Transfusion (SPOT) group and the Effective Use of Blood (EUB) group in the Scottish National Blood Transfusion Service (SNBTS) provide peer support and the opportunity for shared learning.

• **More transfusion medical consultant time is needed in hospital Trusts.**

This will provide a driving force for blood safety improvements and the parallel initiative of appropriate blood usage. This is likely to have training and manpower implications.

• **Hospital Trusts should ensure that they employ adequate numbers of appropriately trained BMSs.**

This year hospital blood transfusion laboratories were the sites of the largest category of originating errors (36% of all cases). Errors occurred out of hours in 40.5% (77/190). Hospitals should ensure that they employ sufficient numbers of appropriately skilled BMSs to maintain adequate staffing at all times. The blood transfusion laboratory setting remains one where considerable technical and interpretative skills are essential for patient safety. SHOT data have demonstrated that such skills are not always optimal.

➤ **Existing procedures should be re-examined for flaws which could lead to systems errors. Hospital Transfusion Committees (HTC) should be managerially empowered to play a key role in this process to ensure the safety of transfusion practice and appropriate blood component usage.**

➤ **Use of information technology will reduce the opportunities for human error: a proactive and co-ordinated approach to the development/assessment of new technologies is needed. This should be structured, organised and led at national level.**

Despite best efforts, human error is inevitable and cannot be entirely avoided. Thus, new technologies merit vigorous development and assessment to determine whether their implementation could achieve reductions in transfusion error.

• **Electronic blood/patient identification** would provide positive patient identification. This technology also has the potential to reduce drug errors, as well as to ensure pathology results and special dietary requirements are attributed to the right patient.

• **Remote issue**, a means of electronically controlling the release of blood for patients, could ensure the audit trail, reduce collection errors and may be particularly applicable in the many Trusts that have centralised blood banks serving several hospital sites.

• **Modernisation of hospital blood banks** with automated grouping and electronic compatibility testing could reduce laboratory errors and enable better use of BMSs. These technologies should complement and not replace BMSs.

➤ **A national unified system with relevant expertise should be developed, to prioritise strategies most effective for blood safety.**

A consistent recommendation of SHOT reports is that the UK needs an overarching organisational and intellectual framework for assessing transfusion hazards and prioritising blood safety initiatives side-by-side. While a single overarching blood safety body for the UK is not yet in place, discussions have begun regarding a broader remit for the Department of Health's Microbiological Safety of Blood and Tissues (MSBT) Committee. In addition, a number of separate initiatives have been taken which should help to promote general and specific SHOT recommendations.

These include:-

• establishment of a National Blood Transfusion Committee (NBTC) for England, reporting directly to the Chief Medical Officer, with a Regional Blood Transfusion Committee (RBTC) structure linked to the NBTC.

• creation of a Blood and Tissue Safety Assurance Group within the English National Blood Service (NBS), with a number of subgroups covering all areas of work. This includes the creation of 2 posts within the Department of Health's Economic and Operational Research division to work on blood safety issues.

➤ **Appropriate blood usage should be implemented and alternative strategies to blood transfusion explored.**

BCSH guidelines on red cell transfusion should be implemented. BCSH revised guidelines on FFP and platelet transfusion, as well as on autologous transfusion and alternatives to red cell transfusion are in preparation. The new English NBTC and RBTC structure provides a potentially powerful framework for improving all aspects of blood safety and supporting the work of HTCs to promote safe and effective use of blood.

SPECIFIC RECOMMENDATIONS

Incorrect component transfused

“ Wrong blood” transfusions are without exception avoidable errors

The bedside check is the final opportunity to prevent a mis-transfusion

➤ **Every hospital must have a formal policy for the collection of blood components from storage sites and these must incorporate formal identification procedures.**

➤ **Every hospital must have a formal policy for the bedside check which must be rigidly enforced at all times.**

This must ensure that blood components are correctly allocated and identified and be capable of detecting preceding compatibility labelling discrepancies and relevant transfusion information such as previous group and antibody screening reports. The dangers of staff becoming distracted, even after correct checking, must be borne in mind

➤ **Every patient should be uniquely and positively identified using a wristband or equivalent and there should be no exceptions.**

A single, unique identifying number should be used.

Prevention of errors at earlier steps in the transfusion chain

Whether or not new information technology developments are used at the bedside and when collecting blood components from their storage sites, the importance of earlier, vital steps in the transfusion chain must not be ignored as not all errors will be detectable by the bedside check.

➤ **Individuals responsible for the prescription and request of blood components must be familiar with the special needs of their patients.**

Special requirements should conform with BCSH and other guidelines and should be flagged on the clinical and laboratory records. Guidelines published on the clinical use of red cell transfusions should be disseminated more widely to prescribing medical staff. Every hospital must also have a robust policy for the prescription and issue of anti-D immunoglobulin which must be based upon Joint BBTS/RCOG recommendations and must include a requirement for printed confirmation of the RhD status of the patient.

➤ **Personnel responsible for taking samples for any laboratory test must at all times follow strict procedures to avoid confusion between patients.**

This means that samples should be taken one at a time and labelled at the bedside after positively identifying the patient. Sound phlebotomy procedures must also be followed in order to obtain a true sample, for example, avoiding dilution of samples taken for Hb measurement.

➤ **Blood banks must continue to be vigilant in reviewing procedures and systems to ensure that they all meet current guidelines.**

Ongoing staff training is essential to prevent errors in the laboratory.

➤ **Telephoned requests for blood components must be formally recorded and incorporate all relevant information including special requirements.**

Great care must be exercised when acting on verbal results. Local written standard operating procedures (SOP) must be in place for dealing with telephone requests.

Setting “wrong blood” incidents in context

➤ **Baseline data on the timing and location of transfusions in the hospital setting are needed.**

The confidential and anonymised nature of the SHOT scheme makes it difficult to place errors in the overall context of transfusion activity in the UK, apart from very broad estimates of the incidence of hazards as a proportion of total blood components issued. The lack of denominator data makes meaningful interpretation of, for example, out-of-hours errors impossible. With the increasing sophistication of blood bank information technology, it is now possible to collect such data and this could be of value in designing improved systems to increase the safety of the blood transfusion process.

“Near Miss” events

➤ **Strict adherence to phlebotomy protocols is essential.**

This includes 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.

➤ **Basic principles of phlebotomy good practice should be applied to labelling of all samples.**

Erroneous results from a mis-labelled FBC sample, for example, can result in inappropriate transfusion

➤ **Clear responsibilities for training of all staff who take blood samples must be established and maintained.**

Immune complications of transfusion

➤ **Patients receiving any blood component must be monitored or observed in such a way that an acute reaction can be detected early.**

In addition to baseline observations before commencing each transfusion, each patient should be checked after 15 minutes infusion of each new unit or pool, in accordance with BCSH guidelines.

➤ **To help minimise exposure to FFP, national guidelines on anticoagulation which include the management of excessive warfarinisation, should be circulated more widely.**

Guidelines should be presented in a form which is accessible to surgeons and clinicians of all grades. It is rarely appropriate to give FFP for this purpose.

➤ **Group O platelet pools should undergo testing of the "plasma donor" for the presence of high-titre haemolysins, similar to that performed for apheresis units.**

Clinicians should avoid giving Group O platelets to Group A or B recipients unless this will result in a clinically significant delay.

➤ **More detailed investigation of patients experiencing serious immune reactions to components would clarify the nature of these reactions and should be considered particularly in cases with anaphylaxis or pulmonary manifestations.**

The United Kingdom Blood Transfusion Services (UKBTS) are able to provide such reference services.

➤ **Attention to timely pre-transfusion testing of surgical patients is essential, especially if there is a history of previous transfusion or pregnancy.**

Where possible, investigations should be performed within normal working hours in order to make best use of available expertise. Laboratory staff should be given adequate notice of impending surgery and the potential role of pre-admission clinics in facilitating timely pre-transfusion testing should be assessed in each hospital.

➤ **There is a need for improved technologies to identify very weak Kidd antibodies.**

➤ **Hospital laboratories must take care to avoid missing antibodies which may be masked by other allo- or auto-antibody(ies).**

Deficiencies in this area were highlighted in a recent "paper" exercise run by the National External Quality Assurance Scheme for Blood Transfusion Laboratory Practice.

➤ **Confirmation of the diagnosis of TRALI by demonstrating a positive cross-match between donor serum and the patient's leucocytes should be attempted in all cases where recovery samples can be obtained from the patient.**

Samples should be referred to the relevant Transfusion Centre.

➤ **To assess the significance of the high numbers of haematology patients represented in TRALI reports to SHOT, better epidemiological data are required to understand patterns of usage of blood components in different specialties.**

Exclusion of female donors should be considered from plasma to be used for FFP and to suspend platelet concentrates.

➤ **Hospitals should continue to report PTP cases to help confirm whether the incidence of this complication is reduced by universal leucodepletion.**

➤ **BCSH guidelines for irradiation of blood components should be reviewed to assess whether all patients with B cell malignancies should receive irradiated components.**

In addition, as the current BCSH guideline recommends, each new chemo- or immuno- therapeutic regime should be assessed for the possibility of it causing TA-GVHD.

➤ **Hospitals should implement systems to ensure that patients who need irradiated components always receive them.**

Mechanisms for achieving this include flagging such patients on the hospital computer, and the use of the BCSH/NBS card and leaflet 'Information for patients needing irradiated blood'.

It may be possible for hospital pharmacies to play a role in this area.

Transfusion-transmitted infections

➤ Strategies should be developed to prevent the transfusion of bacterially contaminated donations, in particular platelets.

The cumulative and continuing predominance of bacteria as a cause of clinically apparent TTIs and infection-related deaths is of concern. Improved methods of arm cleansing and diversion of the first few mL of the donation (most likely to contain skin flora) away from the primary pack sent for component production are two measures which have been shown to reduce contamination risk. Additional measures such as bacterial screening of platelets and pathogen inactivation of platelets should also be evaluated. Recommendations in BCSH guidelines, regarding the visual inspection of units for any irregular appearance immediately prior to transfusion (particularly platelets), should be followed.

➤ Hospitals should consult guidelines and the blood service about the investigation of transfusion reactions suspected to be due to bacteria.

This should include sampling and storage of implicated units. Cases that are inconclusive due to discard of the implicated pack before sampling continue to be reported. (National guidelines on the investigation of these cases are available at all NBS centres.)

➤ It would be appropriate for blood services to review the residual risk of transfusion-transmitted HBV infection and assess whether additional donor screening for HBV would bring benefits in terms of blood safety.

What is SHOT?

The Serious Hazards of Transfusion (SHOT) Scheme was launched in November 1996, and aims to collect data on serious sequelae of transfusion of blood components, as listed below. Through the participating bodies, the information will contribute to:

- improving the safety of the transfusion process
- informing policy within Transfusion Services
- improving standards of hospital transfusion practice
- aiding production of clinical guidelines for the use of blood components.

Cases included - The scheme aims to capture data on major complications of transfusion:

Non-infectious

- Incorrect blood component transfused (*even if no harm arises*)
- Acute or delayed transfusion reactions
- Transfusion-associated graft-versus-host-disease
- Transfusion-related acute lung injury
- Post-transfusion purpura
- Autologous pre-deposit incidents

Infectious

- Bacterial contamination
- Post transfusion viral infection
- Other post-transfusion infection e.g. malaria

System for Reporting

Cases are reported in the first instance to the hospital haematologist responsible for transfusion. Non-infectious hazards are then reported confidentially to the National Co-ordinator on a simple report form. This is followed up with a detailed questionnaire. Meaningful data depend on questionnaires being fully completed. Staff may write to the SHOT office under separate cover.

Suspected cases of transfusion-transmitted infection are reported by haematologists through supplying Blood Centres to the Public Health Laboratory Communicable Disease Surveillance Centre. Local Blood Centre involvement is **ESSENTIAL** to ensure rapid withdrawal of other potentially infected components.

Confidentiality

Data are stored in a password-protected database in a secure location. Once all the information has been gathered about an event and entered onto the database without patient, staff or hospital identifiers, all reporting forms and other paper records which contain any identifiers are shredded. The questionnaires (which have any possible identifiers removed) are kept in a secure container until data analysis for the report is complete after which they are shredded.

SHOT does not provide details of individual cases, or any form of summarised data to any outside person or organisation, other than that provided in the report.

Limitations of the SHOT system

Reporting to the SHOT scheme is voluntary. We acknowledge that many incidents may go unrecognised or unreported, and that the reports analysed cannot provide a full picture of transfusion hazards.

Organisation

SHOT is affiliated to the Royal College of Pathologists. The operational aspects of the scheme are the responsibility of a Standing Working Group, which is accountable to the Steering Group. Two National Co-ordinators (E M Love and K Soldan) together with an assistant (H Jones) are responsible for receiving and collating reports.

Standing Working Group

Dr E M Love (Chair), H Jones, D Asher, C Atterbury, Dr H Cohen, Dr D Norfolk, J Revill, K Soldan, Dr A Todd, Dr L M Williamson, Dr C Beatty, Dr S Knowles, Dr C Taylor

Steering Group

Ownership of the scheme and data generated from it resides with the Steering Group, which has representation from the following Royal Colleges and professional bodies:

British Blood Transfusion Society
British Society for Haematology

Institute of Biomedical Science

Institute of Health Care Management
and

NHS Confederation
Public Health Laboratory Service/Communicable

Disease Surveillance Centre

Royal College of Anaesthetists

Royal College of Nursing

Royal College of Nursing Midwifery Society

Royal College of Obstetricians and Gynaecologists

Royal College of Pathologists

Royal College of Paediatrics and Child Health

Royal College of Physicians

Royal College of Surgeons

UK Transfusion Services

Dr JAJ Barbara

Dr H Cohen (Chair)

Dr P Kelsey

Mr W Chaffè

Mr JA Revill (Secretary)

Mr I R Cumming

Dr M Ramsay

Dr AJ Mortimer

Ms C Atterbury

Mrs. S Scott

Ms. P. Edkins

Dr T Johnstone

Prof M Contreras

Dr B Gibson

Dr CG Taylor

Prof JSP Lumley

Dr DBL McClelland

Overview of results for this report

The numbers of initial reports in each category received since the first SHOT annual report are shown below.

Table 1: Adverse events reported during the five reporting years 1996/97 to 2000/01

	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001
IBCT	81	110	144	201	213
ATR	27	28	34	34	37
DTR	27	24	31	28	40
PTP	11	11	10	5	3
TA-GVHD	4	4	4	0	1
TRALI	11	16	16	19	15
TTI	8	3	9	6	6
Unclassified			7	0	0
TOTAL	169	196	255	293	315

IBCT:	Incorrect blood component transfused	ATR:	Acute transfusion reaction
DTR:	Delayed transfusion reaction	PTP:	Post-transfusion purpura
TA-GVHD:	Transfusion associated graft-versus-host-disease	TRALI:	Transfusion-related acute lung injury
TTI:	Transfusion transmitted infection		

Figure 1: Overview of 283 cases for which fully completed questionnaires were received

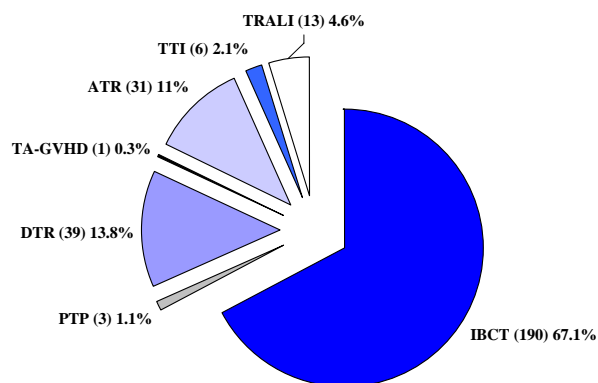


Table 2: Transfusion related mortality/morbidity according to the type of hazard reported in 283 completed questionnaires (not referenced in text)

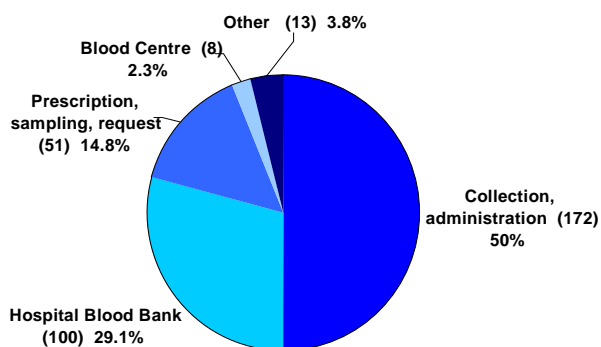
	Total	IBCT	ATR	DTR	PTP	TA-GVHD	TRALI	TTI
Death definitely attributed to transfusion	4	0	1	0	0	1	1	1
Death probably attributed to transfusion	2	0	0	0	0	0	2	0
Death possibly attributed to transfusion	6	3	2	1	0	0	0	0
Death due to underlying condition	30	19	3	5	0	0	3	0
Major morbidity	20	6	0	0	3	0	6	5
Minor or no morbidity	217	160	25	32	0	0	0	0
Outcome unstated	4	2	0	1	0	0	1	0
Totals	283	190	31	39	3	1	13	6

Major morbidity was defined as the presence of one or more of the following:

- Intensive care admission and/or ventilation
- Dialysis and/or renal dysfunction
- Major haemorrhage from transfusion-induced coagulopathy
- Intravascular haemolysis
- Potential RhD sensitisation in a female of child-bearing potential
- Persistent viral infection
- Acute symptomatic confirmed infection (viral, bacterial or protozoal)

Incorrect Blood Component Transfused

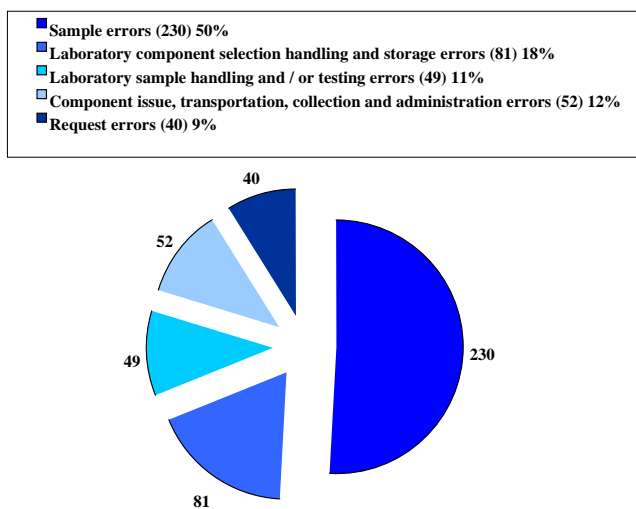
Figure 2: Distribution of total errors according to the main reporting categories (n=344)



Near Miss Events

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 analysed below. These hospitals supplied 452 reports.

Figure 3: Near Miss Events October 2000 – September 2001 (n=452)



Cumulative data from 5 years of SHOT reporting 1996/97 to 2000/01

The accumulated data from 5 years of SHOT reporting now provides a powerful body of evidence on serious transfusion complications in the UK. Chapter 10 of the main report summarises that data and should prove to be a useful reference tool for data on overall mortality/morbidity figures as well as more detailed extracts from the full chapters on Incorrect Blood Component Transfused, Acute Transfusion Reaction, Delayed Transfusion Reactions and Near Miss Events. We began collecting non-infectious hazard data in 1996 but that on TTI began one year earlier. For consistency therefore, TTI cases reported in that first year have been excluded from cumulative data. However it is included in Chapter 18 of the main report.

Figure 4: Questionnaires by incident 1996/97 – 2000/01 (n=1148)

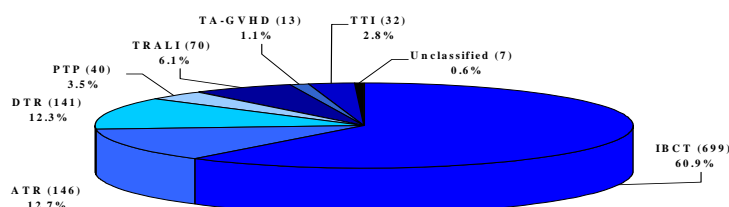
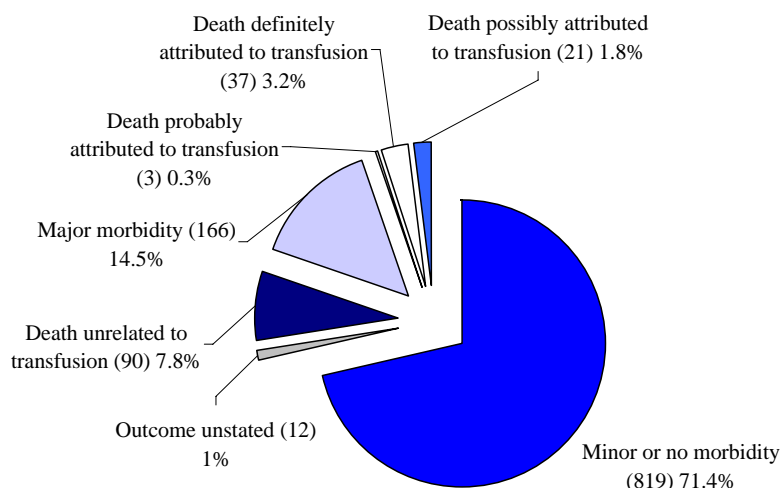


Figure 5: Overall mortality/morbidity figures 1996/97 – 2000/01 (n=1148)



IBCT cases 1996/97 - 2000/01

Figure 6
Multiple errors in IBCT cases (n=699 cases, 1200 errors)

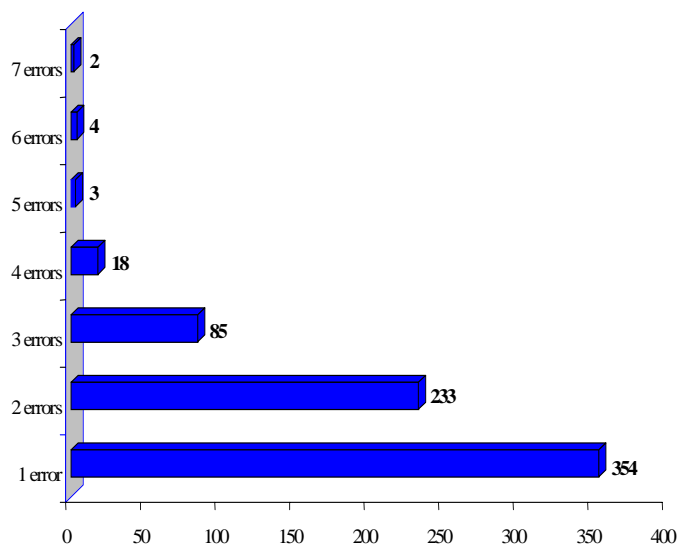
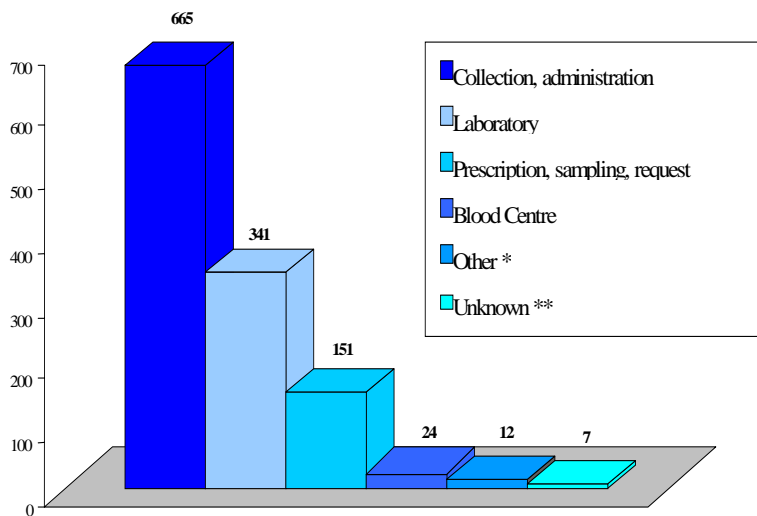


Figure 7
Distribution of errors in IBCT (n=699 cases, 1200 errors)



This summary has been sent to hospital haematologists, blood bank managers, and NHS Trust Chief Executives. Copies of the full report (price £25) are available from the SHOT office. Please make cheques payable to NBS Northern Zone - SHOT. National Health Service employees are invited to apply to the SHOT office for a free copy of the report.

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