

P001

Addressing Emerging and Re- Emerging Threats to the Blood Supply

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In Australia, the safety, quality and efficacy of blood-derived therapeutics is overseen by the Therapeutic Goods Administration (TGA) through the *Therapeutic Goods Act 1989*. These measures have ensured that the classical blood borne pathogens, particularly HIV, HCV and HBV pose only little risk to patients. Through donor selection, testing and, when possible pathogen reduction, fresh blood components and fractionated plasma derivatives the transmission of these pathogens have become a hypothetical reality rather than a real risk, where estimation relies on mathematical modelling rather than actual observation of prevalence/incidence. As these risks have abated, often other infectious have attracted attention. These risks are linked to the effects of globalisation, travel, environmental changes and commerce delivering potential infections occurring rapidly ahead of an understanding of their epidemiology which might allow a better application of donor selection measures. In addition some pathogenic entities such as prions are not captured by mass screening as test are present not available.

The example of plasma derivatives shows that pathogen elimination renders blood therapeutics safe in the absence of effective selection and testing methodology. While new selection measures such as donor deferral and new tests like bacterial release testing continue to be introduced, an applied technology to eliminate pathogens from fresh components will do much to approach the nirvana of a 'zero-risk' blood supply.

No conflict of interest to disclose

P002**Transfusion Risks: a UK Perspective****Dal Johal***Queensland Blood Management Program, Queensland Health***Background**

The purpose of this presentation is to showcase initiatives which have been adopted within the UK to address Transfusion Risks. This perspective is based on personal experience working within the field of transfusion for over 21 years. By identifying the risks and controls governing the UK and comparing them to findings within Australia may establish common learning opportunities.

Situation

Serious Hazards of Transfusion (SHOT) within the UK has consistently identified Incorrect Blood Transfusion as the major error within the transfusion process. This is consistent with experience at a local level within the UK. Initial studies within Australia have also identified a similar scenario.

Action

Several local and regional initiatives have been adopted in the UK to help not only identify gaps and high risk areas but also adoptable measures to reduce the practical risks associated with transfusions. Initiatives include baseline knowledge assessment of key nursing and support staff. This has led to the development of education strategies to: (i) address different learning styles, (ii) to accommodate day and night shift workers and (iii) a training target of more than 75per cent of nursing and support staff be trained in transfusion practice. Other initiatives featured in this presentation include exploring the pros and cons of IT technology and highlighting experiences learnt within a regional hospital setting. This presentation endeavours to explore the role audits and patient involvement play in transfusion practice and how they can be effectively harnessed in the management of transfusion practice.

Learning

The focus of the presentation is to impart real information based on personal experience and knowledge into the practical applications adopted to reduce the risk of transfusion in the UK. It endeavours to present a balanced view of the issues, experiences and learning of transfusion practice in the UK as learning opportunity for transfusion practice in Australia.

No conflict of interest to declare

P003

HIS and LIS Application for Improving the Safety of Blood Transfusion in Blood Bank at Shin-Kong Wu Ho-Su Memorial Hospital in Taiwan

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Aim

The purpose of this research is analysis reasons of transfusion error then application new technology lie: HIS, LIS, barcode system and automated blood bank analyser for eliminating such risks improving transfusion safety.

Method

We collected and analysed the causes of transfusion errors and the incidence of error in the transfusion process from 2001 to 2007. Our information department developed computerized system monitoring and reporting during the process of blood transfusion, which could check history blood typing of patient and audit blood bag information automatically. In addition, we adding an automated blood bank analyzer system for ABO/Rh testing to ensure that there is no manual step or technologist input into the process from the entry of the sample for testing into the laboratory system, until the final report is obtained and downloaded into the laboratory computer record.

Result

The incidence of error in the transfusion service was 0.11% from 2001 to 2007 of data collection. Of these events 46.09% occurred within the blood bank, the majority of classified are key in wrong data or error transcription were 13.91% ; the error rate happened outside the blood bank was 53.91%, of these classified as major events like doctor order error was 21.74%; mislabeling events was 19.13% most of mismatched specimen/ request form etc. Since 2004, we set up the LIS and barcode system computerized the procedures of transfusion, and increased automated analyzer at blood bank. The incidence of error in the transfusion service was decreased from 0.14% to 0.08%. The key in wrong data and error transcription were by human error was decreased to 0.01%, the error rate including doctor nurse order error and mislabeling events was largely decreased to 0.01%. Exceptional human error intercepted rate up to 91.8% by the system.

Conclusion

The small number of studies integrating new technology for the transfusion process in laboratory and hospital had obvious preventing human errors. Further we expect to increasing computerize procedures to help identification during transfusion for ensuring transfusion safety, reducing the medical errors.

No conflict of interest to disclose

P004

Informing Emergency Blood Supply Contingency Planning: Bloodhound on the Trail

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Background

Ensuring adequate availability of blood components during times of greatly reduced supply or increased demand, such as pandemic influenza or natural disasters, requires an understanding of blood usage and careful emergency supply contingency planning.

Aims

To collect Australian data to identify clinical indication of red cell use, assess the urgency of clinical need for transfusion and determine the proportion of usage that would potentially be deferrable in an emergency.

Study design and materials

A random sampling approach was developed and piloted. Red cells (RBCs) were tagged with a case report form (CRF) during production, and distributed to Victorian transfusion laboratories. At the time of unit issue for transfusion, the CRF was completed by laboratory scientists with recipient demographics, clinical indication, and urgency of need. Machine readable forms were returned to ARCBS for collation and analysis.

Results

Of 5132 RBCs tagged, 5052 CRFs were returned (response rate 98.4%), of which 4829 units (95.6%) were transfused.

Clinical indications for transfusion were haematology/oncology (1623 units, 33.6% of transfused units); surgery and trauma (1442, 29.9%); other medical/miscellaneous indications (834, 17.3%); unspecified anaemia (616, 12.7%) and unknown (314, 6.5%).

Clinical urgency of transfusion was acute (timeframe of requirement: within 1 hour) in 605 cases (12.6%); urgent (1-24 hours) in 2516 (52.1%); semi-urgent (24 hours-1 week) in 1431 (29.6%) and non-urgent (>1 week) in 169 (3.5%). In 108 cases (2.2%) the urgency was unknown.

Transfusions for elective surgery and non-urgent conditions together accounted for 472 units (9.8% of transfused units).

Conclusions

Bloodhound provides comprehensive and current Australian data regarding indications and urgency of red cell usage to inform emergency supply contingency planning. These data suggest that cancellation of elective surgery and deferral of non-urgent transfusions would have only a short-term and moderate impact on usage. Consideration of alternative strategies to ensure blood availability is required.

No conflict of interest to disclose

A226

P005

Queensland Rural and Remote Emergency Blood Supply

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Aim

The project's aim was to review the blood service (including emergency donor panels) in rural and remote Queensland to ensure the provision of a high quality, cost effective blood service in a clinical emergency.

Method

Data were collected through surveys, site visits, workshops and literature searches. Surveys examined the usage and preferences of blood supply options. ARCBS and QH provided information re emergency donor panel (EDP) donor testing frequency and EDP activations. Literature searches examined international equivalents.

Result

Survey results showed a division in opinion with respect to the preference of O Rh(D) Negative red cells (57%) to EDP (17%) with 20% having a preference for both and 6% for retrieval services. A strong view amongst rural doctors was that fresh whole blood (via EDP) was able to replace all blood components, which were not available as individual fresh blood components. In 2007, there were 22 active EDPs in Queensland and their average donor continuity (percentage of a year with a screened donor panel) was 82%. The average number of O Rh(D) Negative donors was 8/site with 8 sites having <6 O Rh(D) Negative donors. From 1999 to 2007, the average number of EDP activations was 12/year. The main indications for activation were gastro-intestinal, obstetric and trauma related haemorrhage. Legal opinion indicated jurisdictions (eg QH) would hold the majority of the operational liabilities with EDPs.

Conclusion

A significant focus of the review was on EDPs and their place in the rural and remote blood supply. The risk versus benefit is considered to be in favour of EDPs with an emphasis on improving the quality and safety of EDPs.

No conflict of interest to disclose

P006**Haemovigilance in Queensland: Completion of the Pilot Program of Queensland Incidents in Transfusion (QiiT)**

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Aim

To report on the progress made towards implementing a haemovigilance system in Queensland.

Method

A six month pilot program of the proposed haemovigilance system for Queensland (QiiT) was completed by December 2007. This pilot program was a collaborative project involving stakeholders from Queensland Health, public and private pathology services, ARCBS and private and public hospitals. The four pilot hospital sites have continued reporting to QiiT since completion of the pilot program. The public hospitals via an electronic link from the Queensland Health incident reporting system (PRIME).

Result

During the six month, pilot program 14 reports were received, with reports from all four pilot sites. The system allowed identification of duplicate reporting, despite the use of de-identified data reporting. Only one follow up analysis could not be completed. Of the remaining 12 individual reports, six were validated against the haemovigilance data set. The remaining six reports did not meet the data set definition for the reported condition. Since completion of the pilot program the data set has been adapted to the proposed national haemovigilance data set, and to date a total of 33 reports have been received from the four sites. Data received from PRIME has allowed quantification of the number of validated and non-validated reports received against the complete haemovigilance data set for a 12 month period.

Conclusion

The pilot program demonstrated that QiiT can effectively collect, analyse and validate incidents and adverse events relating to transfusion practice. The system will now be implemented in Queensland. QiiT will form an integral part of the strategies to ensure quality transfusion practices in Queensland, and will allow Queensland to contribute data to the national haemovigilance system.

No conflict of interest to disclose

A228

P007

Serious Transfusion Incident Reporting: A Growing Process

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Introduction

Blood Matters, an initiative of the Department of Human Services, Victoria and the Australian Red Cross Blood Service, aims to improve patient outcomes by enhancing safety and appropriateness of blood use. A haemovigilance framework was developed in 2005 and piloted in Victoria in 2006, providing a central system for reporting events related to administration and handling of fresh blood components and pre-transfusion samples. This event data should direct future initiatives for practice change.

Method

The STIR (Serious Transfusion Incident Reporting system) database captures de-identified notifications from health services, with an initial generic electronic questionnaire and subsequent submission of detailed information on defined transfusion-related events. All reports are reviewed by an expert group to validate clinical features, and determine causality and severity of the incident. An annual aggregated report is provided to the participating hospitals, including any recommendations for practice change.

Results

Following promotion and refinement of the system, participation has grown from 14 pilot hospitals to 48 public and private hospitals, and now extends across three jurisdictions (VIC, TAS and ACT). In 2006-2007 STIR was notified of 155 transfusion adverse events. Acute reactions have been the most frequent (49% of all reports, most of which were allergic or febrile non-haemolytic), followed closely by combined procedural adverse events (45% of all reports, incorporating incorrect blood component, wrong blood in tube and near miss events). No deaths related to transfusion were reported.

Conclusion

The first two years of the STIR system have captured some inherent risks with blood products, and real and potential risks in the processes used in clinical transfusion practice. STIR has proved successful in its capacity to educate and recruit participation from health services. Several challenges remain, including improvements to data validation and minimising the burden of data collection.

No conflict of interest to disclose

P008**Transfusion Reactions Manifesting Predominantly with Pain**LA Schonegevel, EJ McDonald, **KG Badami***New Zealand Blood Service, Christchurch, New Zealand*

Two patients with similar transfusion reactions of an under-recognised type were detected in 2007 through the New Zealand Blood Service haemovigilance reporting system. **Case 1:** An 86 year old man with MDS, β -thalassaemia trait, Parkinson's disease and TIA twice had similar reactions to RBC transfusions. These consisted of lower back pain, dyspnoea and agitation. On both occasions his observations remained stable and the pain settled without specific treatment within an hour of stopping the transfusion. He was known to have anti-knops alloantibody and a pan-reactive autoantibody. No obvious cause for his symptoms was found. Despite symptomatic anaemia he declined further transfusions and was treated with rhuEPO. **Case 2:** A 56 year old man post-total knee replacement received 3 units of RBC. Shortly after starting the 3rd unit he developed severe joint, abdomen, chest and loin pain. There were no other symptoms but his blood pressure rose from 185/102 to 217/125 mm Hg. Observations and investigations post-reaction were unremarkable. There was no obvious explanation for his symptoms and the pain settled within a couple of hours of stopping the transfusion without specific treatment.

Discussion and Conclusions

Post-RBC transfusion two patients had similar reactions with severe pain as the major component. They resemble cases described as acute pain transfusion reactions (APTR) [1] in a lone report in the literature. APTR was described in patients with diverse conditions receiving RBC and platelet transfusions. In addition to the acute, severe axial and proximal limb pain, hypertension, dyspnoea or tachypnea, tachycardia and restlessness may also occur. Symptoms subside quickly after stopping the transfusion and symptomatic treatment. The pathogenesis is unknown. In our cases, on clinical grounds, infective or neurological causes seem unlikely and metabolic, immunological or cytokine-mediated mechanisms seem possible. In conclusion, APTR are poorly-recognised, significant but short-lived reactions of unknown aetiology, we suspect they occur more frequently than are reported.

Reference

1 Orton MD, Andres T, Bielski M, et al. Acute pain transfusion reactions: An under recognized adverse transfusion event associated with leukoreduced components. Blood 2001; 98 (suppl): 57a

*No conflict of interest to disclose***A230**

P009

Apheresis FFP: Double Trouble?

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Aim

Investigation of anaphylactic reactions in two patients within 15 hours, receiving clinical FFP from one apheresis donation divided into two units.

Method

Patient histories, patient transfusion reaction investigations and product culture for bacterial contamination were performed at RPH. Donor history and laboratory investigations were organised by ARCBS-Enterprise

Results

Case 1: 74 year old female had a right hemihepatectomy and bile duct reconstruction and received 1 unit RBC, 2 units FFP during operation. Post-operative INR 1.9, 2 units FFP requested. 100ml transfused when patient had symptoms of hypotension 75/53mmHg (BP pre-op: 181/87), O₂ saturation 89%, tachycardia 140bpm, urticaria, wheeze. The transfusion was ceased, adrenaline administered. Initial laboratory investigation included a blood group check.

Case 2: 12 year old female with scoliosis, elective admission for posterior spinal fusion and fixation correction (T3-L5). During the procedure she received 250ml of cell salvaged blood, 2 units RBCs. 100ml FFP was transfused when patient had symptoms of severe hypotension, tachycardia 150bpm. Adrenaline and gelofusine were administered. Peripheries shut down and the patient was resuscitated for 40 minutes, no trace on arterial line for 20mins. Patient transferred to ICU, chest Xray clear. Laboratory investigations: blood group check= compatible; mast cell tryptase= mildly elevated, serum IgA level= normal; Anti-IgA1, IgA2 antibody titres= no antibodies detected, no granulocyte antibodies detected. FFP: 2 units from the same apheresis donation. Bacterial culture of FFP bags: negative. Donor: male, multiple platelet and plasma donations. Laboratory investigations: negative for antibodies to HLA class I and II, granulocytes, IgA1 and IgA2; IgE level: normal.

Conclusion

Investigations for ABO incompatibility, Anti-IgA antibodies, TRALI, circulatory overload, and bacterial contamination, failed to identify cause. This may be the first reported case in Australia of one FFP donation associated with anaphylactic reactions in 2 patients. It highlights one of several important aspects of reporting transfusion reactions. Quarantine of associated blood products, whilst not current practice, could be considered in light of our experience.

No conflict of interest to disclose

P010**Pneumatic Tube Delivery System: Validation and Use to Transport Blood Components****Barbara Parker**^{1,2}, Emanuel Raniolo³, Helen Stathopoulos³, Olivia Yacoub³, Uwe Hahn³¹*BloodSafe Program, Adelaide, South Australia, Australia;* ²*The Queen Elizabeth Hospital, Adelaide, South Australia, Australia;* ³*SA Pathology, The Queen Elizabeth Hospital, Adelaide, South Australia, Australia***Aim**

To validate the Pneumatic Tube System for the transportation of blood components, to ensure that proper temperature, tracking and integrity of the product is maintained.

Method

Sixteen red cell concentrates and eleven platelet concentrates were transported through the pneumatic tube system from Central Pathology to the destination and back. The elapsed time and temperature was measured before dispatch, on arrival, and on return. Samples were collected from each pack prior to sending and after arriving at the destination. Red cell concentrates were tested for potassium levels, LDH, red blood cell count, haemoglobin and blood film analysis. Platelet concentrates were tested for platelet count and platelet activation using flow cytometry with Annexin V and CD62P as markers of activation.

Results

The average time taken to send a unit of red cell concentrate outward via the longest route was 2 minutes. The average temperature increase of all outward trips was 1.5 °C and of all round trips was 3°C. There was an average of 0.2% change in the red cell count and a 0.1 % change in the haemoglobin. The potassium level increased on average by 4%, while the LDH results were inconclusive. Morphological review did not reveal significant differences in the specimens post transport.

The average outward trip for platelet concentrates was 2 minutes and the temperature increase for a round trip was 0.2 °C. There was an average change in platelet count of 1.2%. The mean percentage of platelets positive for Annexin V pre dispatch was 45 and 48 post trip and for CD62P was 25 and 25 respectively.

Conclusion

Results indicate that we can safely transport cellular blood products from the transfusion service to distant patient care areas in the hospital as our testing indicates that components are not adversely affected by pneumatic tube transport. Of interest may be the relatively high level of activation in the platelet concentrates prior to transportation of 45 and 25% using Annexin V and CD62P, respectively.

No conflict of interest to disclose

A232

P011

Saving the Platelet: St Vincent's Hospital Initiative to Reduce Platelet Expiry Rates

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Background

Platelets have had historically high expiry rates due to short lifespan and shorter regulated approved transfusion times St Vincent's hospital historically has had usual expiry rates of 15-20% for platelets. This is a problem of a wasted finite resource that has been donated for altruistic reasons. Additionally there is a cost consideration since the NSW government has devolved its share (37%) of the cost for blood products; wastage has become an increased concern.

Aim

To reduce platelet expiry levels to fewer than 10%

Method

Interventions to reduce wastage included restrictive ordering to one bag (four units) of platelets per time unless exceptional circumstances use of Group O when possible, education for prescribing doctors. The use of taxis to order additional units as needed has enabled reduced stock ordering of platelets therefore reduced wastage. Blood bank staff initiating discussion with doctors re need of products. This allows the redirection of products not needed by the initial order that may be utilized by another patient.

Results

The results of this project have been very pleasing with a reduction in expired platelets from 17% baseline to approximately 7.4 % per month as average for last financial year with some months demonstrating less than 5% expired platelets.

Conclusions

St Vincent's Hospital has developed and maintained benchmark figures for platelet expiry. This has been a concerted effort from Transfusion Medicine staff in conjunction with ordering doctors. It will be seen if this intervention is sustainable over time, particularly with the commencement of bacterial testing of platelets, which could change the distribution, and supply of platelets.

No conflict of interest to disclose

P012

DiaMed Assays for Anti-IgA Antibodies and IgA Deficiency: Comparison with a Reference Method

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Aim

Anti-IgA antibodies are rare but can cause transfusion-associated anaphylaxis. The detection of anti-IgA antibodies has traditionally been performed in a limited number of reference laboratories. In this study our aim was to compare the performance of a simple DiaMed gel assay with a reference method.

Methods

Two simple gel card assays are now available which can be used to screen for anti-IgA antibodies and IgA deficiency. A total of 24 sera which had previously been assayed for anti-IgA antibodies over a 3 year period were used to assess the DiaMed anti-IgA and IgA deficiency assays.

Results

The DiaMed assays correctly identified patients (n=6) who had significant IgA deficiency and anti-IgA antibodies. All patients with an abnormal anti-IgA titre by hemagglutination assay and who were also IgA deficient had anti-IgA antibodies detected using the DiaMed screening test. One patient, previously shown to have an IgA level of <0.067g/L failed to be detected as IgA deficient in the DiaMed IgA deficiency test, however anti-IgA antibodies were not present. Samples with slightly increased anti-IgA titres tended to have normal IgA levels.

Conclusions

The DiaMed gel card assays simplify screening for anti-IgA antibodies and are an appropriate tool for the investigation of transfusion related anaphylactic reactions in any routine Blood Bank laboratory.

No conflict of interest to disclose

P014

Referral Human Immunodeficiency Virus (HIV) Screening for Blood Donors in Indonesia Years 2005-2007

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Background

In 2001, global approximately 14,000 new cases of HIV were found every day, 95% in developing countries. In Indonesia the first HIV/AIDS case was found in April 1987 and until March 2008 there were 17,998 people with HIV/AIDS, of whom 2,486 have died.* HIV infection could be transmitted through blood transfusion, therefore all donor's blood should be screened for HIV before transfusion. Central Blood Transfusion (CBTS) Indonesian Red Cross is a referral centre of HIV blood screening and helps the Ministry of Health (MOH) to run surveillance of HIV infection among blood donors.

Aim

To see the repeated reactive of anti HIV blood screening result on donors blood that will reported as a surveillance data of HIV positive among blood donors.

Method

The Initial Reactive samples from the Branch Blood Transfusion Units in Indonesia was sent to the CBTS for re-testing using similar reagent that was used by the Branch BTUs and another Elisa reagent. If one or both the test showed reactive results, samples were identified as Repeated Reactive samples.

Result

In the period of 2005-2007, there were 1,797, 1,683 and 1,418 Initial reactive samples consecutively sent to the CBTS. 24% of these samples was tested using Rapid test, 70% using ELISA, 1,5% using both Rapid test and ELISA and 4,5% using Chemiluminescence. The repeated non reactive result was found in 32% of the samples, while 41% gave repeated reactive result. The remaining 23% of the samples were indeterminate, and 4% were not able to be tested due to poor quality samples.

Conclusion

32% non reactive results showed that false reactive rate in the Branch BTUs is very high that will impact to cost inefficiency of blood service. The false reactive results was suspected caused by high percentage of rapid test being used. Centralizing the Transfusion Transmissible Infection (TTI) blood screening by using the standardized ELISA is believed could increase the safety of blood. Meanwhile, the 41% repeated reactive results showed that donor selection criteria and method need to be improved in order to defer high risk blood donors.

*Data from Ministry of Health until March 2008

No conflict of interest to disclose

P015

Phlebotomy Patterns in Haemochromatosis Patients and Their Contribution to the Blood Supply

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Background and Aim

Regular phlebotomy is the treatment for haemochromatosis (HC) and some patients may be eligible to be blood donors. We examined (a) how many whole blood donations (WBD) HC patients contribute and (b) phlebotomy patterns with the different genotypes associated with HC.

Methods

Chart review of HC patients at NZBS Christchurch between 01/02/2007 to 31/07/ 2007. Generally, patients had phlebotomies to maintain serum ferritin < 50 mcg/L and transferrin saturation < 50%. They were eligible to donate if otherwise suitable and serum ferritin was < 500 mcg/L and LFT normal. Information on WBD was derived from NZBS computer records.

Results

Of the 410 HC patients 247 (60.2 %) were male and 163 (39.8%) female. 244 (59.5%) were C282Y homozygotes, 15 (3.6%), C282Y heterozygotes, 6 (1.4%), H63D homozygotes and 48 (11.7%), C282Y/H63D compound heterozygotes. In 97 (23.6%), genetic test results were unavailable. 228 / 410 (55.6%) were considered eligible to donate for at least a period during the 6 months. 387/730 (53%) phlebotomies were therapeutic (0.15 units/patient/month) and 343/730 (46.9%), WBD (0.25 WBD/patient eligible to donate/month). A total of 10927 WBD were collected from 9095 donors during the study period of which 343 (3.1%) units came from 228 eligible HC patients and 10584 from 8867 non-HC donors (0.19 WBD/non-HC donor/month). Phlebotomies/patient/month ranged from 0 - 2.6. Mean phlebotomies/patient/month in C282Y homozygotes, C282Y heterozygotes, H63D homozygotes, C282Y/H63D compound heterozygotes, those without genetic test results and overall were 0.30, 0.16, 0.11, 0.33, 0.28 and 0.29 respectively.

Discussion and Conclusion

HC patients contribute small but significant numbers of WBD but the proportion eligible to donate and the number of WBD/patient eligible to donate/month are less than reported in other studies.¹ C282Y heterozygotes and H63D homozygotes had fewer phlebotomies than C282Y homozygotes while C282Y/H63D compound heterozygotes had as many.

Reference

Leitman SF, Browning JN, Yau YY, et al. Hemochromatosis subjects as allogeneic blood donors: a prospective study. *Transfusion* 2003; 43: 1538-1544

No conflict of interest

P016

Improving the Yield of Factor FVIII Recovery in Whole Blood Donations

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Aim

Factor VIII (FVIII) is a coagulation protein required for the control of blood clotting and the prevention of severe bleeding in haemophilic patients. FVIII levels within Anti-Haemophilic Factor (AHF) plasma must, on average, be greater than 0.7 IU/ml. Process control data for FVIII levels in Fresh Frozen Plasma (FFP) for some sites indicated a gradual decrease in the reported level of FVIII. The aim of this study was to identify possible causes for the apparent decrease in FVIII levels and determine potential process improvements.

Method

Investigation of FVIII loss focused on component manufacture. This required sampling and workflow analysis including donor sample collection, whole blood (WB) unit sampling post-donation, pre-filtration, post-centrifugation, plasma freezing analysis and time and motion studies.

Results

A comparison of total protein and FVIII from both plasma units and test segments showed an 11% decrease ($p=0.0008$) in segments, attributed to dilution resulting from residual red cell preservative remaining in segment tubing. When comparing units tested prior to freezing, those separated within 8 hours displayed a 7% loss in FVIII ($p=0.007$) with no additional loss after 16 hours ($p>0.05$). Mixing of units post phlebotomy and stripping of attached tubing were identified as possible areas of improvement. The 24h holding study indicated that the time taken to WB separation had significantly impacted on FVIII levels with decreases of 2% ($p=0.0008$) per hour within the first 6 hours followed by a 1% loss per hour ($p=0.004$).

Conclusions

Significant factors impacting on FVIII levels in the processing of plasma from WB collection bags were identified. They include FVIII loss during the hold prior to separation and freezing, freezing process and test segment preparation. Minimising the time WB is held prior to checking, consignment and processing is expected to have a positive impact on FVIII levels.

No conflict of interest to disclose

P017

Evaluation of a Spectrophotometric Method for Determining the Extent of Red Blood Cell Contamination in Clinical Fresh Frozen Plasma

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Aim

The Council of Europe Guidelines 13th (CoE v13) edition states that the residual red blood cells (RBC) in clinical Fresh Frozen Plasma (FFP) must be at a concentration of $< 6 \times 10^9$ RBC/L. This study aimed to compare the current Flow Cytometric method with the Harboe spectrophotometric method (Harboe Method) for the detection of residual RBC in plasma.

Method

Serial dilutions of whole blood were performed in triplicate using Phosphate Buffered Saline ($0.05 - 25 \times 10^9$ RBC/L). The accuracy, linearity and reproducibility of samples were then tested. The Harboe Method measures the optical density of oxyhaemoglobin at 415nm, with background correction for impurities. Through using known standards, the concentration of residual RBC in plasma can be determined. The Flow Cytometer method uses fresh plasma mixed with a known number of fluorescent beads and the antibody glycophorin A to detect RBC. Non-lipaemic and lipaemic plasma was tested for absorbance interference by spiking with RBC of known concentrations.

Results

The Harboe method displayed linearity in the range of $1 - 25 \times 10^9$ cells/L with a correlation coefficient of 0.99 and %CV < 0.3 . In the range of $1 - 10 \times 10^9$ cells/L, the Harboe method displayed mean differences of 0.08×10^9 RBC/L and a standard deviation of $\pm 0.38 \times 10^9$ RBC/L, comparable to the flow cytometric method. The underlying haemoglobin content within lipaemic plasma was found to obscure the resolution of red cell contamination.

Conclusion

The Harboe method appears cost effective and requires less labour than the Flow Cytometer method. Tested across the range of $1 - 25 \times 10^9$ cells/L, the Harboe method was found to be linear, reproducible and accurate for the analysis of RBC contamination in FFP. These results have shown that the method should be suitable to assess plasma against the CoE v13 criterion of $<6 \times 10^9$ RBC/L.

No conflict of interest to disclose

P018

Evaluation of Leuco-depleted Fresh Un-refrigerated Whole Blood Using the Terumo WB-SP Blood Bag with In-line Filter

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Aim

ARCBS provides fresh un-refrigerated whole blood in special circumstances e.g. neonatal exchange transfusion. Due to implementation of 100% leuco-depletion of red blood cell units, the evaluation of platelet saving in-line filter bags was required to produce whole blood containing viable platelets.

Method

Whole blood units (n=19) were collected into Terumo WB-SP bags. Units were filtered at 4 (n=9) or 20 hours (n=10) post collection and held to a maximum of 24hrs at 20-24°C. Samples were collected and tested for red cell, platelet and plasma markers, contact activation markers and cytokines to assess component quality. Testing was performed pre and post filtration at 8, 20 and 24 hours (if applicable).

Results

Acceptable results were obtained at both filtration times after the maximum 24 hour hold. Whole blood red cell parameters such as 2,3-DPG, ATP, Haemolysis, pH and Potassium levels were within defined acceptance limits. Platelet recovery was 76±10 %, Hypotonic Shock Response was 57±8% and CD62P (P Selectin) expression was low indicating acceptable platelet quality. Plasma met acceptance criteria with FVIII levels of 86±20IU/L, Factor V at 87±15IU/L and Fibrinogen at 2.81±0.5g/L. Contact activation marker levels of Factor XIIa and C3a were 11.66±1.5U/L and 564±177ng/mL respectively with no increase post filtration. sC5b-9 levels increased post filtration but remained stable. Prothrombin F 1 & 2 decreased on filtration and reduced further at 24 hours. Cytokine levels TNF α , IL-8, RANTES and sCD40L were within normal plasma levels. TGF beta1 was above normal plasma levels at 7.27±8.24ng/ml but below levels in platelet concentrates and those reported to cause adverse events.

Conclusion

The Terumo WB-SP bag is suitable for preparation of leuco-depleted fresh un-refrigerated whole blood. All units showed minimal platelet activation. Other quality indicators were within acceptable ranges at expiry (24 hours post collection), including: cytokines, contact activation markers, red cell content and plasma factors.

No conflict of interest to disclose

P019

Prenatal Fetal *RhD* Typing for RhD Negative Pregnancies: Comparing Two Methods of Maternal Genomic DNA Extraction to Control for the Absence of the Maternal D Gene**G Millard**, G Gardener², J Hyett³, M Ahvenainen¹, H Davies¹, R Flower¹, C Hyland¹*1 Australian Red Cross Blood Service. 2 Mater Health Services. 3 Royal Prince Alfred Hospital***Background**

Although the majority of phenotypically RhD negative mothers are genotypically RHD negative, a small proportion have a non-functional rather than absent RHD gene. This could lead to a false positive result in prenatal free fetal *RHD* gene testing from maternal blood. A non-functional maternal RHD gene could be excluded by testing maternal genomic DNA (mgDNA).

Aim

To determine levels of ffDNA contamination resulting from two different methods of mgDNA extraction from the blood of pregnant women.

Methods

The comparison of techniques involved maternal blood samples from RhD negative women known to have an RHD positive fetus. DNA was extracted from whole blood (n=10) or white cells (n=8) using the automated QIAGEN EZI DNA extraction method. *RHD* testing of mgDNA involved amplification of three regions of the D gene and testing in replicates of four. Testing for the fetal associated hyper methylated RASSF1A gene was performed in triplicate.

Results

The whole blood method showed evidence of fetal contamination, with a positive RHD result, in 4/10 patients (5 of 120 replicates) and positive RASSF1A result in 1 of 30 replicates. One sample, collected at 37 weeks gestation, had a positive signal for Exons 5, 10 and RASSF1A. None of the mgDNA samples extracted from white cells showed any evidence of contamination. (Odds Ratio 9.190, p value 0.0673 {Fisher's Exact Test})

Conclusions

mgDNA extraction from whole blood is prone to contamination with free fetal DNA and cannot therefore be used to determine whether the mother has a non-functional RHD gene. The risk of contamination may be greater at later gestations, where ffDNA levels are known to be higher. In this small series, there was no evidence of fetal contamination with mgDNA extraction from white cells.

No conflict of interest to disclose

A240

P020
DAR-E on the Red Cells of a Sudanese Child

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Aim

To determine the RhD status of a Sudanese boy whose red cells showed discrepant reactions with different monoclonal anti-D reagents.

Method

Weak RhD typing of red cells from a 9 year old Sudanese boy was initially identified by testing his red cells with CSL Epiclone 2 IgM anti-D by a tube immediate spin method. Subsequent testing was performed using several commercial monoclonal anti-D by tube immediate spin and Diamed gels (Table 1). The RhD specificity was confirmed using a panel of monoclonal anti-D reagents (Alba Bioscience, Scotland).

Result

Initial testing of the child's red cells by tube immediate spin against CSL Epiclone 2 IgM anti-D containing RUM-1 showed very weak agglutination (grading +/-). The HM10 clone in Diagast IgM II anti-D reacted, by tube immediate spin, more strongly than RUM-1. The ESD-1M clone used by Diamed to detect DVI was strongly positive; non DVI detecting anti-D clones were very weak or negative. Table 1 summarises the reactivity pattern of monoclonal anti-D reagents used in the initial determination of RhD status. DAR-E was identified using a selection of 12 monoclonal anti-D reagents from Alba Bioscience (Scotland).

Anti-D Brand	Clone	Method	Grading
CSL Epiclone 2 IgM	RUM-1	Tube Immediate spin	+/-
Diagast IgM I	P3X61		0
Diagast IgM II	HM10		2
Diamed ABO/D (VI-) + reverse grouping	LHM 59/20 (LDM3) / 175-2	Diamed gel (I/S)	0
Diamed ABD(VI-)	TH-28, RUM-1, LDM1		+/-
Diamed ABO/Rh (VI+)	ESD-1M + 175-2		4
CSL Epiclone 2 IgM/IgG	RUM-1, MCAD6	Diamed gel (15' 37°C)	4

Table 1. Reactivity patterns of monoclonal anti-D reagents used for initial determination of the RhD status (Grading 0-4).

Conclusion

This case highlights the different reaction strengths of commercial monoclonal anti-D reagents and the value of using different clones to elucidate RhD status. DAR-E was described in 2005 as a partial D found in Ethiopians. As DAR-E is part of the Weak D type 4 cluster this child may form immune anti-D if transfused with RhD positive red cells and therefore should be considered RhD negative.

No conflict of interest to disclose

P021

Flow Cytometric Determination of Feto-Maternal Haemorrhage in a Rhesus D Positive Patient with an Increased Level of Adult F Cells

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Aim

To determine the size of feto-maternal haemorrhage (FMH) by flow cytometry in a 33 week gestational Rhesus D Positive patient presenting with abdominal trauma and suspected abruption.

Method

FMH was initially quantitated by flow cytometry (BD FACS Canto, USA) using single colour FITC conjugated Hb F (Silenus, Australia). As a consequence of increased adult F cells dual colour flow cytometric analysis was performed (IQP, Netherlands). Briefly, red cells were fixed with formaldehyde, permeabilised with sodium dodecyl sulphate and stained with FITC conjugated carbonic anhydrase (CA) and PE conjugated Hb F. Samples were then analysed on a Becton-Dickinson FACS Canto. Controls were analysed in parallel, including a negative, 0.2%, and 1% fetal cells.

Results

	Method	% fetal cells	% adult F cells	Volume FMH
Patient	Single colour	0.40	30	8.8 mL
	Dual colour	0	22	< 1.0 mL
Negative	Single colour	0		
	Dual colour	0		
0.2% control	Single colour	0.19		
	Dual colour	0.20		
1% control	Single colour	1.14		
	Dual	1.10		

Conclusion

The advantages of flow cytometry for the quantitation of FMH in antenatal patients have been well documented. Flow cytometric analysis using anti-D FITC or PE can be used routinely for FMH quantitation of Rhesus D negative women who have delivered a Rhesus D positive infant. However, in this case the woman was Rhesus D positive necessitating the quantitation of FMH by a flow cytometric Hb F based method. Using single colour Hb F flow cytometry the patient was found to have increased levels (30%) of adult F cells, making it difficult to quantitate the number of fetal cells present. The dual colour flow cytometric method utilizes Hb F and carbonic anhydrase, which is an enzyme present only in adult red cells, allowing the differentiation between true fetal cells and adult F cells. Although this dual colour methodology is expensive, it is a useful tool for FMH quantitation in Rhesus D positive women with increased levels of adult F cells as highlighted by the case described.

No conflict of interest to disclose

A242

P022

Improving Transfusion Practice through Education

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3. *Blood, Organ and Tissue Programs, SA Department of Health*

Aim

Improvement in the safety and quality of clinical transfusion practice in Australia and to assist hospitals with accreditation requirements for transfusion training and credentialing.

Method

Development of an on-line (e-learning) tool based on established educational principles and utilising a range of media and activities designed to engage the learner emotionally, psychologically and physically.

Result

This resource was made available at www.bloodsafelearning.org.au in late 2007. It has been widely accepted with significant uptake across Australia. To date approximately 6,000 users from medical, nursing, laboratory and other professions have registered and used the tool on-line. Feedback on the instructional design and media delivery has been very positive. This has resulted from input by a wide range of transfusion experts across medical, nursing and laboratory disciplines, involvement of qualified and experienced educators and the use of professionals for graphic design, photography, video production, computer programming, acting and production.

Conclusion and Future Directions

Funding has been received from the National Blood Authority (NBA) via the Jurisdictional Blood Committee (JBC) to further develop this as a national resource. This will be used to determine long term sustainability including financial and governance models. Development of additional learning modules is also underway.

Initial development of this tool was funded by SA Health as a component of the BloodSafe program. All authors are affiliated with the BloodSafe program which is a collaborative transfusion safety and quality improvement program between SA Health entities and the Australian Red Cross Blood Service.

P023

The Role of Cell Salvage and Iron Therapy in Patients Undergoing Elective Orthopaedic Surgery

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Background

In view of the ongoing shortage of blood supply and to minimize risk factors associated with anaemia in elective surgery with subsequent blood transfusion requirements and its complications/hazards, we have prospectively offered cell salvage and iron therapy to patients with elective orthopaedic surgery.

Patients and Methods

At a single institution, the Launceston General Hospital, we report on 16 patients who underwent elective hip- (7), knee-(6) replacement and spinal surgery (3). The median age was 69 years (range 46-82) with a median body weight of 80 kg (range 61-90). The OrthoPAT (Medtel, Australia) is an Orthopaedic Perioperative Autotransfusion System which is a fully automated, compact, portable, cell salvage machine that can be used during both the intra-operative and post-operative periods.

Results

The median pre-admission Hb level was 114 g/L with a median post-op Hb of 96 g/L (range 66-104). The average amount of blood loss during the operation is 700 ml (range 590-2010 ml). The average amount of reinfused blood was 330 ml (range 200-440). Five patients received allogeneic blood transfusion, 3 of whom received 2 units, 1 patient required 3 units and other patient 4 units, while the rest did not receive any blood transfusion. The median stay in hospital was 9 days with a range between 2-28 days. Factors that may affect the outcome of procedure such as pre-operative Hb level, iron status, amount of blood loss, blood transfusion, infection and length of stay in hospital as well as quality of life were studied.

Conclusion

Preliminary data suggest that cell salvage that employs modern technology is easy to apply and monitor in the context of elective surgery. Furthermore, cell salvage in combination with haematinics therapy (iron) may improve the outcome of elective surgery and decrease the necessity for blood transfusion. Further studies to confirm these preliminary findings are warranted.

The authors confirm that there is no conflict of interest in relation to this research

A244

P024

Tranfusion and Elective Joint Replacement in South Australia

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2. *Australian Red Cross Blood Service, Adelaide, South Australia, Australia*

Aim

To establish transfusion practice in elective joint replacement patients in SA.

Method

Retrospective case note audit of consecutive elective joint replacement patients was conducted in 4 SA teaching hospitals in 2005. Data was collected by hospital transfusion nurse consultants and reviewed by a haematologist.

Results

118 patients (62% female) were reviewed. Average age was 69 years (range 33-89 years). 38% underwent primary THR, 54% primary TKR. 12% donated autologous blood.

44% of primary THR and 36% of primary TKR received a transfusion. 18% of patients had pre-operative anaemia (transfusion rate 76%).

98% of transfusion episodes in stable patients were within NHMRC guidelines (compared to 96% in 2003 and 82% in 2002 audits). 11% of patients had a post transfusion Hb>115g/L (compared to 14% in 2003 and 22% in 2002 audits).

Conclusion

Transfusions within the NHMRC guidelines and rates of over-transfusion have improved significantly since 2002. Pre-operative anaemia if addressed in advance of elective surgery could lead to further reductions in transfusion rates.

No conflict of interest to disclose

P025**Factors Affecting Platelet Increment After Transfusion of Whole-Blood Derived vs Apheresis Platelets in an Oncology Set-up**

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Background

The therapeutic efficacy of platelet preparations depends on various factors related to the product and patient.

Aim

To analyze factors affecting platelet increment after transfusion of whole-blood derived (RDP) vs Apheresis Platelets (SDP) in cancer patients.

Methods:

All platelet units were evaluated for Platelet count, WBC content and volume prior to issue. The CCI was evaluated at 1 hour and 18 or 24 hours. Type of platelet product issued for transfusions was decided as per their availability. Multiple linear regression analysis of CCI with variables related to the patient and platelet product was performed.

Results

279 transfusion episodes in 69 patients were studied. SDP's had higher ($p=0.003$) platelet content. 62% of platelet transfusions were ABO compatible. 5.7% transfusions were therapeutic and bleeding was controlled in all patients irrespective of the platelet preparation used. CCI at 1 hour and 24 hours was equal with RDP and SDP transfusion. Leucocyte content of RDP's was greater than SDP's. 29% of the platelet products were leucodepleted. Transfusion reactions occurred in 17% patients and were associated more ($p = 0.001$) with RDP transfusions. 5.8% patients had refractoriness to platelet transfusion. The mean interval between two platelet transfusions showed no correlation with the platelet type and dose transfused. Multiple linear regression analysis revealed platelet dose, leucodepletion, shelf life of product, fever, infection, splenomegaly, bleeding, and number of transfusions received in the past as key factors affecting the CCI.

Conclusion

The factors affecting CCI are independent of the type of platelet preparation used. Patient related factors are probably more important than the type of platelet product; and these factors should therefore be considered for planning an appropriate platelet transfusion support strategy in cancer patients.

No conflict of interest declared

A246

P026

The Victorian Experience of Special Platelet Support - It's a Team Effort!

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On behalf of the Australian Red Cross Blood Service (ARCBS) – Bass Transfusion Medicine Services team (Melbourne, Victoria).

Background

ARCBS issues both pooled and apheresis platelets, with blood group A and O apheresis platelets usually in stock. Special platelet support refers to individual patient support, with targeted collection of compatible, single donor apheresis platelets to support platelet refractoriness or in special clinical circumstances e.g. fetomaternal (neonatal) alloimmune thrombocytopenia (FMAIT). In order to provide this special platelet support ARCBS relies on a group of committed volunteer donors who donate as required for specific patients.

Description

Human leucocyte antigen (HLA) typed platelets may be required by patients who are refractory to pooled and ABO-matched apheresis platelets due to the presence of HLA alloantibodies. Human platelet antigen (HPA) typed platelets are required for intrauterine or neonatal transfusion in FMAIT or for the management of post-transfusion purpura. Some patients require B group platelets (not routinely collected) to support ABO-mismatched stem cell transplants. The provision of timely and appropriate components requires the involvement of the treating clinician, hospital blood bank and ARCBS. Within ARCBS, compatible platelet collection involves a number of teams to perform clinical assessment, patient and donor immunogenetic testing (HLA/HPA typing, antibody screening etc), donor search and selection, apheresis collection, testing, labelling, packaging and transport and clinical follow up. The number of requests for special platelet support has steadily increased since 1999. From July 2007 to June 2008 the Victorian ARCBS collected 936 platelets specifically for 51 Victorian patients. Support ranged from 1 to 101 units of platelets per patient (mean 18). The majority were to support platelet refractory haematology/oncology patients. An additional 86 platelets were sent to 23 interstate patients.

Conclusion

The demand for special platelet support is increasing in response to clinical needs. The provision of special platelet support requires the coordination of many personnel and activities within ARCBS and at the transfusing hospital.

No conflict of interest to disclose

P027

Platelet Refractoriness Post-Allogeneic Bone Marrow Transplantation Due to Recipient-Derived Anti-HPA-5a

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Human platelet antigen (HPA) antibodies are a well-established cause of both neonatal alloimmune thrombocytopenia and post-transfusion purpura, but have infrequently been implicated in platelet refractoriness in patients with haematologic malignancies. We report a case of platelet refractoriness potentially attributable to recipient-derived HPA antibodies in a multiparous female who received an allogeneic bone marrow transplant for acute myeloid leukaemia from an HLA identical brother. The conditioning regimen was fludarabine (25mg/m²) / melphalan (140mg/m²) with cyclosporine and methotrexate as graft-versus-host disease (GVHD) prophylaxis.

Following transplantation her platelets remained <5-10x10⁹/L despite megakaryocyte engraftment on marrow biopsy and recovery of neutrophil count. Platelet transfusions from the donor and from unrelated HLA matched (by HLA matchmaker) donors failed to produce significant incremental rises in platelet count. DNA-based platelet genotyping performed on a pre-transplant sample of the recipient and donor revealed HPA-5bb and HPA-5aa respectively. Anti-HPA-5a of IgG subclass was demonstrated in the recipient's pre-transplant serum using a platelet glycoprotein ELISA. As the patient was highly HLA-immunised (lymphocytotoxicity testing – 88%-100% reactivity) platelets that were both HLA- and HPA-matched could not be sourced.

We hypothesise that the failure to obtain both platelet increments following HLA-matched transfusions and platelet count recovery despite adequate donor marrow engraftment was due to immunocompetent lymphocytes of recipient origin producing anti-HPA-5a, despite aggressive conditioning and GVHD prophylaxis and with molecular studies (day 30, 60 and 100 post transplant) demonstrating 100% CD3 donor chimerism. Anti-HPA antibodies are a rare cause of platelet refractoriness and should be considered in allograft recipients who fail to obtain either satisfactory increments after transfusion of HLA-matched platelets or platelet count recovery after engraftment.

No conflict of interest to disclose

A248

P028

Supporting a Patient Refractory to Platelet Transfusion Through High-Dose Consolidation Chemotherapy for Acute Myeloid Leukaemia with Autologous Cryopreserved Platelets

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This 50-year-old woman, diagnosed with Acute Myeloid Leukaemia, became platelet-refractory during induction chemotherapy. She had no prior transfusions and 2 pregnancies. The patient presented with constitutional symptoms, haemoglobin 72g/L, white cell count $73.9 \times 10^9/L$ (blasts 93%) and platelets $132 \times 10^9/L$. Bone marrow biopsy confirmed Acute Monocytic Leukaemia.

During induction chemotherapy (cytarabine/idarubicin), the first platelet transfusion was given on Day 8 with increment but was complicated by fever/chills. Until marrow recovery, multiple platelet transfusions were administered without significant increment. Single-donor, apheresis platelets were used for all but 3 of total 21 transfusions.

Owing to poor incrementation (possible HLA-sensitisation), autologous platelets were harvested to support consolidation chemotherapy.

Platelets were collected by apheresis and cryopreserved in a rate-controlled freezer with additive Dimethyl Sulphoxide (DMSO) to a final concentration of $1772 \times 10^9/L$, divided into 80mL bags. In an effort to preserve platelets, minimal centrifugation was used and DMSO was used in low concentrations, so washing was not required prior to re-infusion. Sample analysis confirmed a relatively platelet-pure product.

Two courses of high-dose cytarabine-based consolidation therapy were completed with autologous platelet support. During first consolidation, platelets (2 bags) were thawed ($37^\circ C$) at the bedside and administered without manipulation on days 11, 12 and 14 with demonstrable increment. During second consolidation, platelets (2-3 bags) were infused on days 10, 12, 14, 15 and 16, again with increment. Platelet increments were smaller in second consolidation, possibly due to sepsis, differing antibiotic regimens, or inter-bag variability. The patient received HLA-matched platelets on days 21 and 25 of final consolidation. There was no significant bleeding.

This case demonstrates that patients refractory to platelet transfusion can be supported through high-dose chemotherapy with autologous products. The cryopreservation process is simple, does not require a large amount of freezer space and resulted in clinically useful increments, indicating a high yield.

No conflict of interest to disclose

P029**Combination Use of Apheresis Granulocyte and Buffy Coat Components for the Treatment of Neutropenic Sepsis****Melisa Darby**¹, Eve Eaton¹, James Badman¹, Annette Favaloro¹, Marija Borosak², Simon J Harrison¹*1. Peter MacCallum Cancer Centre, 2. Australian Red Cross Blood Service*

Whilst the issues surrounding the use of granulocyte transfusions remains varied, complex and controversial, in many organisations it remains current practice for the treatment of severe neutropenic sepsis. Management of granulocyte donors is an integral factor in providing a quality granulocyte component. With rigorous screening and donor availability it is difficult, and at times impossible, to provide apheresis granulocyte component for all patients in a timely fashion.

Two patients aged 65 and 76 were diagnosed with transformed AML from MDS in 2008, and were both treated with FLAG induction. Both patients developed neutropenic sepsis, for which they were treated with intravenous antibiotics. Subsequently, invasive fungal infections of the frontal sinus were identified, requiring surgical debridement.

As a result of the post-induction neutropenia and ongoing sepsis, it was decided to maximise supportive treatment with granulocyte and BC components.

Due to the urgency of the supportive treatment, BC components were used initially to bypass the wait for granulocyte donor screening and product collection. A target of 10 BC components formed a 'dose', providing a good result for the patients particularly in the peri and post operative phase of surgical debridement. An added advantage of this method was that BC contain platelets and this led to a significant improvement in platelet count on each occasion as the patients had previously been relatively refractory to platelet transfusion. BC therapy however, is not without potential adverse effects, including alloimmunisation, due to the level of donor exposure.

The outcome of this combination of supportive therapies proved to be beneficial with prompt availability of BC components, whilst apheresis granulocytes were being arranged. This is a potential option for acute management of these seriously ill patients.

No conflict of interest to disclose

A250

P030

Implementation of the National Intravenous Immunoglobulin (IVIg) Criteria: The IVIg and Transfusion Nurse Role

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Background

Intravenous immunoglobulin (IVIg) is a precious resource and Australia's use continues to increase. A dedicated IVIg Nurse role was created in 2005 by SA Health. Since 2006 Transfusion Nurses (TNs) at ARCBS have contributed to the management of IVIg. ARCBS plays an important role in clinical review of IVIg requests and distribution. The 'Criteria for the clinical use of intravenous immunoglobulin in Australia' were approved for implementation in March 2008, with a six month transition period.

Aim

To support optimal patient care, assist clinicians, and improve reporting around IVIg, through design and implementation of a national process and specific tools for Criteria implementation.

Method and Results

Establishment of a multidisciplinary national working group to develop the process and supporting materials, including modifications of the national ARCBS STARS (Supply Tracking and Reporting System) database, for additional data collection. STARS contains national data on patients receiving IVIg (5170 active patients March-April 2008). Extensive communication is underway with clinicians regarding existing patient diagnoses, doses and treatment response in the context of requirements of the Criteria. ARCBS has developed and implemented:

- National education templates and clinical information packages
- National review letters (1) to clarify diagnosis & compliance with Criteria and (2) to document response
- 3 national request forms (haematological, neurological & immunological/general) and a weekly institutional infusion schedule.

IVIg/TNs and ARCBS medical specialists have provided extensive support, including educational presentations and clinical liaison (advice on indications, dosage & administration) that will continue beyond the transition period. ARCBS TN hours (initially 4 FTE nationally) increased in March 08 reflecting the additional workload. Hundreds of patient letters have been sent to treating clinicians, with interim response rates of 20-80%, reconfirming diagnoses.

Conclusion

The IVIg/TNs play a vital role in IVIg management for customers (patients & clinicians) and within the ARCBS TMS team.

No conflict of interest to disclose

P031

Is a Clinical Working Group Necessary for Implementation of the New Criteria for Clinical Use of IVIg in Australia?

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Aim

To review the referrals and outcomes of requests for IVIg made to the QH IVIg Working Group prior to the introduction of the New Criteria for IVIg use in Australia.

Method

All referrals to the IVIg committee since April 2006 were reviewed. Referrals were assessed against the AHMAC 2000 and new criteria released in 2008.

Result

Between April 2006 and March 2008, 135 requests for IVIg were referred to the committee. In 12 cases the clinician was advised to access IVIg via a Jurisdictional direct order, while in 8 cases a request for further information elicited no response from the clinician. Of the remainder, 36 requests were for further doses of IVIg in patients who had previously been approved access. These 36 requests related to 21 individual patients. 79 new referrals were reviewed by the committee; 17 cases were category 1 (IVIg indicated), 21 cases were category 2 (inconclusive evidence for IVIg use) and 1 was category 3 (IVIg not indicated) according to the AHMAC 2000 criteria. Of the remaining cases, 34 had conditions not listed in the AHMAC 2000 criteria and in 6 cases the diagnosis remained uncertain despite extensive investigations by the referring clinician. Of the 34 cases not listed in the AHMAC 2000 criteria, 25 (74%) would be eligible under the new criteria.

Conclusion

The clinical committee is only referred a small fraction of the requests for IVIg and so cannot make a significant impact on overall IVIg use in the state. However, the committee has allowed assessment of referrals against emerging indications for IVIg use in a real time manner and allowed a review of cases where the diagnosis is uncertain. This data highlights that criteria/guidelines soon become outdated, and that clinical involvement in approval processes can mitigate this problem.

No conflict of interest to disclose

A252

P032

The Use of Intravenous Immunoglobulin (IVIg) in Dermatological Conditions in Australia

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Background

A range of serious dermatological conditions including dermatomyositis and Kawasaki's disease is effectively treated with IVIg. Some (bullous pemphigoid, BP, pemphigus foliaceus, PF, and pemphigus vulgaris, PV) have a known autoimmune basis, whilst for others (cicatricial pemphigoid, CP) a specific autoantibody is yet to be identified. IVIg has been shown to be effective in life-threatening toxic epidermal necrolysis (TEN) and Stevens-Johnson syndrome (SJS).

Aim

To analyse IVIg usage in dermatological conditions.

Methods

Review of IVIg usage in dermatological conditions reported to ARCBS from July 1 2006 to June 30 2008. Classification of conditions was according to recently implemented *Criteria for the Clinical Use of Intravenous Immunoglobulin* (NBA, 2008). Predicted demand for these conditions based on published epidemiological incidence rates was also calculated.

Results

Dermatomyositis was the most commonly supported dermatological indication (66 patients, 470 treatment episodes, ~25,000g IVIg). 46/66 received induction doses of 2g/kg; 50/66 commenced/or continued maintenance therapy reflecting a therapeutic response.

Kawasaki's disease was the second most common, with 297 patients (average age just over 4 years) and 362 treatment episodes using ~ 11,700g.

12 BP patients (~4500g), 2 CP patients (~330g) and 2 PV patients (~350g) were also supported with IVIg, estimated to account for 13.6% of patients with pemphigoid syndromes. 16 patients received IVIg for TEN or SJS (~2000g).

Conclusion

Demand for IVIg in Australia for dermatological conditions as immunomodulatory therapy is increasing as more conditions are identified as responsive, dermatologists become aware of the availability of IVIg and because of the better side-effect profile of IVIg compared with immunosuppressive treatments. Only a small proportion of patients with BP, CP and PV are currently treated with IVIg. It is important for clinicians to be aware of the inclusion criteria for use of IVIg, especially the role of a dermatologist in diagnosis.

No conflict of interest to disclose

