Life Blood Issue 27

The latest news and information from the Western Province Blood Transfusion Service

9 March 2017

Dear Life Blood Reader,

We trust that you have had a good start to 2017. This promises to be an eventful year as we seek to continuously provide a safe and sustainable blood supply to the communities that we serve.

Please feel free to contact us should you have any queries at all.

Regards,

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Proposed 36th Blood Group

A case study of haemolytic disease of the foetus and newborn (HDFN) has confirmed the inheritance of the rare At(a-) type by genotyping. The detection of the rs45458701 polymorphism in this case provides further supporting evidence for Ata to be recognized as an antigen (AUG2) in the Augustine system, proposed by the International Society of Blood Transfusion as the 36th blood group system.

Ata is a high-frequency red blood cell (RBC) antigen found in over 99% of individuals. The negative phenotype At(a2) is rare worldwide and has only been identified in individuals of West African or West Indian ancestry. Anti-Ata has only been implicated in one case of HDFN and a severe haemolytic transfusion reaction. It is important to ensure that compatible blood is available should the mother require transfusion post-delivery.

Click on the link below to view the full article:
http://www.onlinelibrary.wiley.com/doi/10.1002/cjp2.33/pdf

BSH Guidelines for the Use of Platelet Transfusions (2016)

The United Kingdom, the United States of America and Australia have been experiencing an increase in platelet usage in the last few years. In 2014/2015 data from England indicated a 25% increase in platelet usage that was ascribed to an ageing population, and was expected to increase. The recent British Society for Haematology (BSH) Guidelines for platelet transfusions aim to promote appropriate usage of this blood product.

Click on the link below to view the guidelines:
http://onlinelibrary.wiley.com/doi/10.1111/bjh.14423/full

Laboratory Series – WPBTS Apheresis Donation Unit

The WPBTS Apheresis Donation Unit serves to provide apheresis platelets that are collected from the WPBTS apheresis platelet donor panel, HLA-matched platelets from the South African Bone Marrow Registry (SABMR) donor panel, gamma-irradiated apheresis platelets/HLA-matched apheresis platelets, infant apheresis platelets and adult apheresis platelets for patients in the Western Cape and greater South Africa. The total number of apheresis platelets

that were issued from the 1st of April 2015 until the 31st of March 2016 is as follows: Adult apheresis platelets X 3 595 and infant apheresis platelets x 1 284.

Adult single donor apheresis platelet
Platelet Count: ≥ 2.4 x 10^{11} /unit
Volume: ≥ 200 ml per unit

Infant single donor apheresis platelet
Platelet Count: ≥ 0.5 x 10^{11} /l
Volume: 40 to 60 ml per unit

Platelets are generally indicated for the prevention of bleeding (prophylactic transfusion) or to stop bleeding (therapeutic transfusion) as the result of a reduced platelet count or platelet function defects. Apheresis platelets are primarily indicated for patients who are on long-term platelet therapy (eg. leukaemia, aplastic anaemia, pre- and post-bone marrow transplant) and in need of regular platelet transfusions to correct their platelet count. Spontaneous bleeding may occur in patients with low platelet counts (<50 x 10^9/l) or dysfunctional platelets. Spontaneous haemorrhage is more likely to occur where there is a rapid fall in platelet count as opposed to a gradual decline. Each case should be assessed and treated accordingly. On the rare occasion when pooled random donor platelets are not available apheresis platelets will be used as the replacement i.e. in surgical, obstetrical or trauma cases where there is an indication of thrombocytopenic bleeding.

Due to the relatively short platelet product expiry of five days, high collection costs (collection kits imported) and to prevent wastage it is not feasible to keep large platelet stocks. We collect platelets per clinicians request and aim to keep a daily emergency supply that include blood groups of patients receiving platelets at the time. The WPBTS apheresis platelet donor panel consists of < 1000 donors. Given the urgency of platelet requests platelet donors make themselves readily available and may even be required to donate more than once per month, (the minimum interval for whole blood donations is 56 days) and sometimes after a 48 hour period for special requests.

As with whole blood donors, platelet donors must meet the general blood donor acceptance criteria and are required to complete the self-exclusion questionnaire at every donation. In addition, platelet donors must have made five whole blood donations without adverse effects and have good veins to withstand the maximum donation time of 100 minutes. During recruitment, a full blood count is performed on the prospective platelet donor one month after their last donation. If the full blood count passes i.e. platelet count > 200 x 10^9/l, Hb > 12,5 g/dl for females and 13,5 g/dl for males, the donor is accepted onto the apheresis platelet panel. Donors with a low haemoglobin level are advised to take iron supplementation. The following checks/tests are performed on platelet donors: (1) Pre-donation physical check, (2) pre- and post-donation full blood count to check the platelet count and haemoglobin level, (3) post-donation blood pressure check (4) mandatory blood donation testing.

The platelets are harvested on the Cobe Trima Accel® and Haemonetics MCS®+ 9000 by apheresis technique. The Haemonetics MCS®+ 9000 performs an integrated leucocyte filtration process during the collection of the platelets. The apheresis procedure is a continuous process that involves the removal of whole blood, component separation by centrifugation, harvesting the platelets and returning the remaining blood to the donor. For quality control purposes, the platelet count and pH is performed on every unit. The pH should be >6.4 at 20 ºC to 24 ºC.

Generally, platelet units do not contain significant quantities of red cells to necessitate cross-match testing. Platelets are thus issued on an ABO-specific basis, or ABO-compatible basis. High titre ABO group platelet units are strictly issued on a group-specific basis. In the event that a platelet unit may contain significant quantities of residual red cells, the Blood Bank will perform a cross-match prior to issuing the platelet product. As far as possible dependent on product availability, rhesus-specific platelets are issued. When this is not possible and RhD positive platelets are administered to RhD negative patients the clinician is advised to administer anti-D immunoglobulin (500 IU per product) especially when RhD positive products are transfused to RhD negative women of premenopausal age. The administration of anti-D is not recommended for neonates or oncology patients, due to the developing RhD phenotype in neonates and potential shifts in the RhD phenotype in oncology patients.

Clinicians should request apheresis platelets from the Blood Bank by 12h00 weekdays to ensure the fully tested platelet unit is available at the hospital the same day. The following particulars should be provided with the platelet request: Quantity required, date required, whether a normal apheresis platelet or HLA-matched apheresis platelet is required, whether the platelet should be gamma-irradiated, whether an adult or infant platelet is required, whether the platelet is to be from a specified donor if the patient has attained a good platelet increment from a previous transfusion, hospital, ward, patient's full name and surname, clinician's name and where possible the telephone number (preferably cellphone number), patient's diagnosis and platelet count.

The advantages of apheresis platelets compared to pooled random donor platelets are as follows:

- Reduced donor exposure for the patient.
- Reduced risk of alloimmunisation to HLA antigens.
- Reduced risk of transmitting infectious diseases.

- Reduced likelihood of bacterial contamination.
- Product undergoes integrated leucocyte filtration (Haemonetics MCS®+ 9000).
- Reduced product processing.

HLA-matched platelets are collected for patients who have become HLA sensitized and require platelets from a single donor whose HLA type matches theirs. Patients who develop platelet-refractoriness to normal apheresis platelets may require HLA-matched apheresis platelets. The Blood Service may experience delays due to the logistical challenges for sourcing HLA-matched platelets from donors outside the Western Cape.

The procedure to order HLA-matched apheresis platelets is as follows:

1. The clinician contacts the National Health Laboratory Service (NHLS) Tissue Immunology Laboratory for the patient to be tested.
   The NHLS laboratory tests and sample requirements are as follows.

	Tests Performed	Sample Required
1	A and B Tissue Typing	1 x 10 ml EDTA sample
2	Single Antibody Identification	1 x 7 ml clotted sample

   NHLS contacts the clinician with the test results.
2. The clinician contacts the Harvest Coordinator for the SABMR to HLA-type the patient.
   The following documents are required by the SABMR.
   - A and B Tissue Tying, Single Antibody Identification Test Results
   - SABMR Request Document for Platelet Search

   The SABMR performs the platelet search and supplies the WPBTS Apheresis Donation Unit with the list of potential donors.
3. The WPBTS Apheresis Donation Unit contacts the donor, harvests the platelets and provides the fully tested HLA-matched Single Donor Apheresis Platelet to the Blood Bank for issuing to the hospital.

Contact Particulars:

- **NHLS Tissue Immunology Laboratory**
  T 021 404 4502 | NHLS Tissue Immunology Laboratory (C17), Groote Schuur Hospital, Main Road, Observatory, 7935
- **SA Bone Marrow Registry**
  T 021 447 8638 | F 021 404 6395 | E ernette.dutoit@sabmr.co.za | Groote Schuur Hospital, Main Road, Observatory, Cape Town, 7935
- **WPBTS Apheresis Donation Unit**
  T 021 507 6395/6 or 021 507 6300 | After-hour Call Number 083 265 3056 | Old Mill Road, Pinelands, Cape Town, 7405

2015 SANBS & WPBTS Haemovigilance Report

The South African National Blood Transfusion Service (SANBS) & WPBTS Haemovigilance Report (2015) has been released to the public domain. The report indicates a total of 34 reported cases of incorrect blood components transfused (IBCT) and 15 near miss cases in 2015. In light of these potentially life-threatening errors it is imperative that ward staff should please continuously educate themselves with regard to the ordering and administration of blood. This topic is covered in the *Clinical Guidelines for the Use of Blood Products in South Africa, 5th Edition, Chapter 2* and the educational video that is based on the Guidelines. The Blood Services also provide educational talks and support to hospitals. For more information please feel free to contact the WPBTS Marketing Officer i.e. T 021 507 6326 | C 083 454 3455 | E marketing@wpbts.org.za | F 086 756 7888.

Click on the link below to view the report:
http://www.wpblood.org.za/?q=clinical/haemovigilance-reports

Click on the link below to view the video:
http://www.wpblood.org.za/?q=clinical/complete-video

Clinical Support and Advice

Clinicians who have transfusion-related enquiries should please feel free to contact the WPBTS medical staff for clinical support and advice. Their contact particulars are as follows.

- Dr Caroline Hilton, WPBTS Transfusion Medical Specialist
  T 021 507 6329 | **C** 083 282 1612 | **E** caroline@wpbts.org.za | **F** 021 531 3335
- Dr Greg Bellairs, WPBTS CEO/Medical Director
  T 021 507 6319 | **C** 083 259 2119 | **E** greg@wpbts.org.za | **F** 021 531 4884

Click on the link below to view the Clinical guidelines for the use of blood products in South Africa, 5th Edition:
http://www.wpblood.org.za/?q=clinical/clinical-guidelines

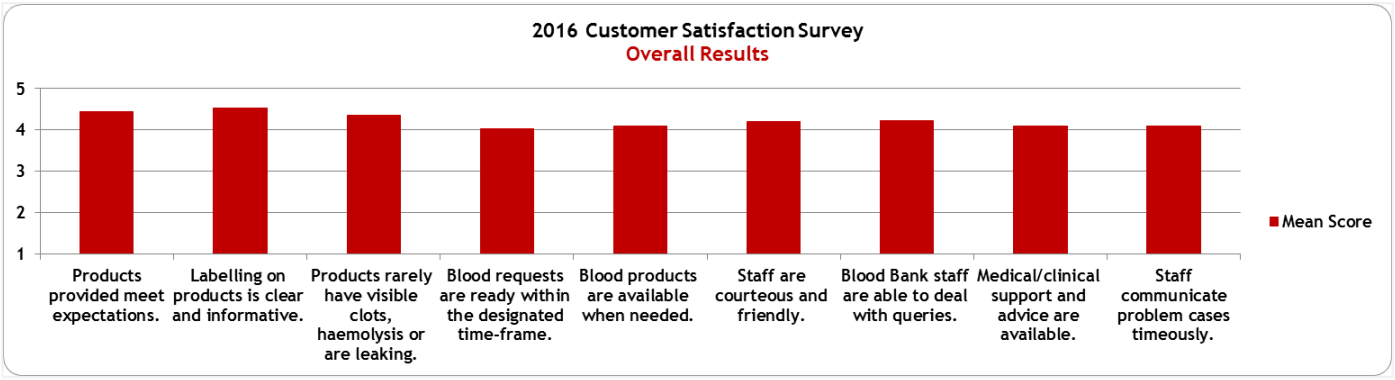
2016 Customer Satisfaction Survey

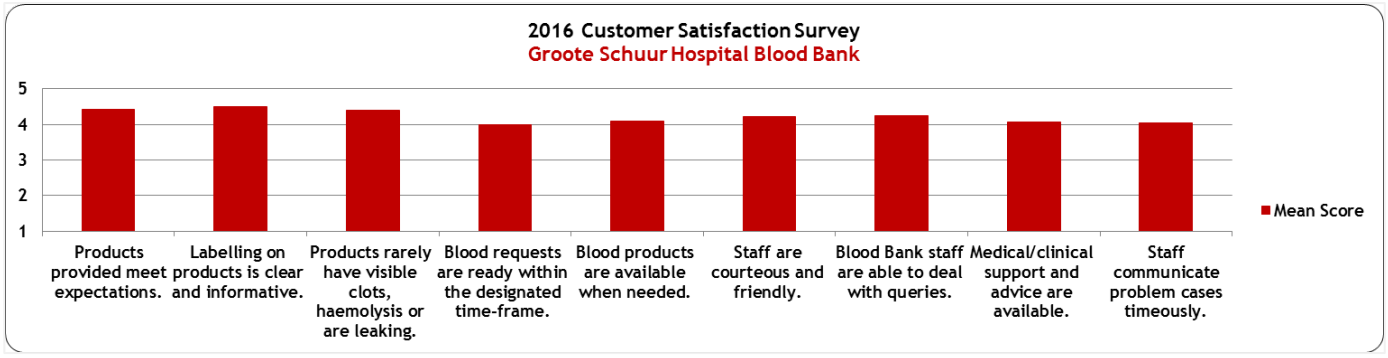
A record number of participants partook in the WPBTS 2016 customer satisfaction survey that was distributed to state and private hospitals in the Western Cape. Though the survey has identified a few areas for improvement, the results indicate that overall blood users remain satisfied with the quality of service provided. We wish to extend our heartfelt thanks to everybody who participated in the survey for their invaluable feedback, and to everybody who assisted with its distribution. Your efforts are greatly appreciated.

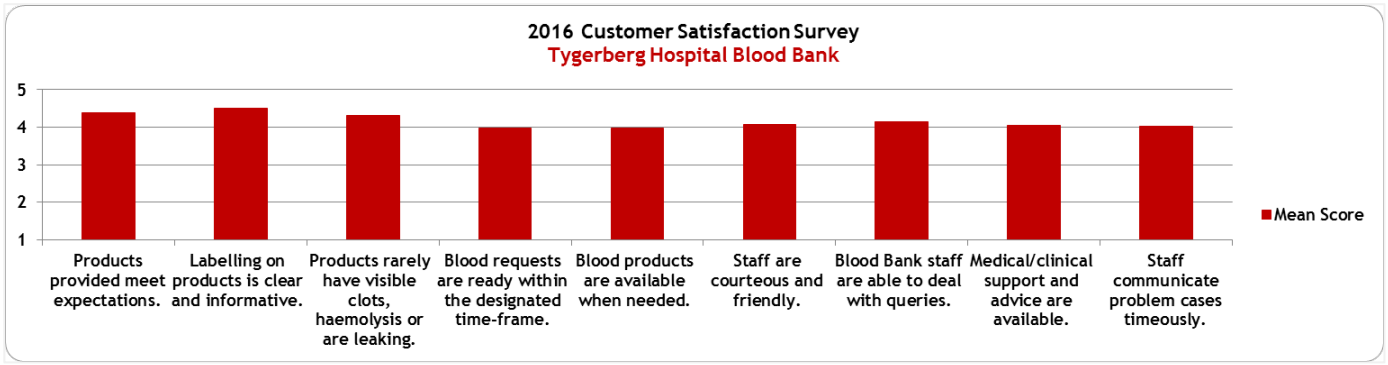
Background
The WPBTS conducts its annual blood user customer satisfaction survey as part of its on-going process to monitor the quality of service provided. The outcomes are analysed to identify areas for improvement in product quality and service delivery.

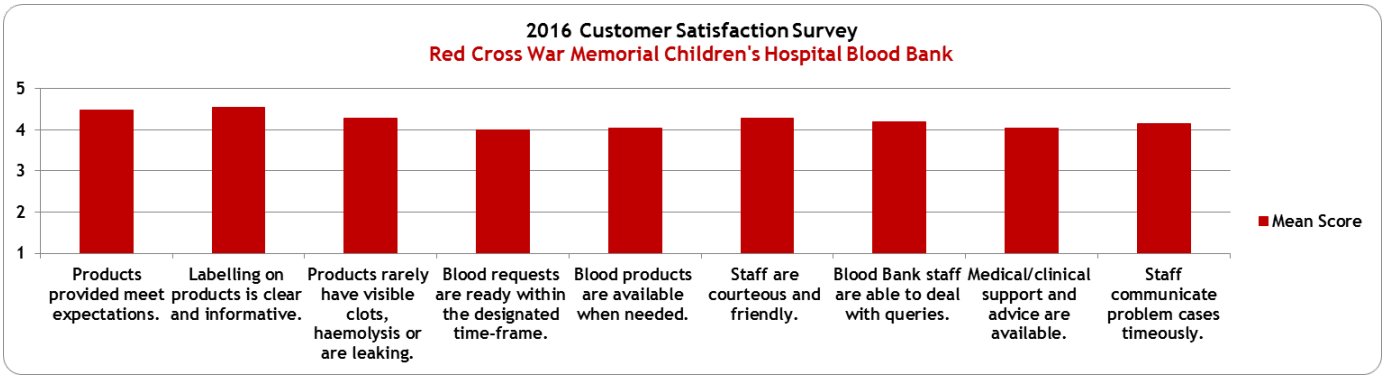
Format and Method of Circulation
The survey was distributed by emailed survey and paper survey. The survey questionnaire included statements about satisfaction with the quality of WPBTS blood products, specific service delivery at the customer's own Blood Bank, product availability, experiences with dealing with WPBTS staff members, along with an opportunity for other comments/suggestions. Responses to statements were scored from 1 to 5 to allow comprehensive analysis of the results. Score legend: 1 = Strongly disagree, 2 = Disagree, 3 = Indifferent, 4 = Agree, 5 = Strongly agree. When more than one score was completed for the same statement, the score was not counted. Areas/parameters which scored less than 4 were acted upon by the relevant department. The survey was distributed to a total of 34 hospitals from July through November 2016 across all WPBTS regions.

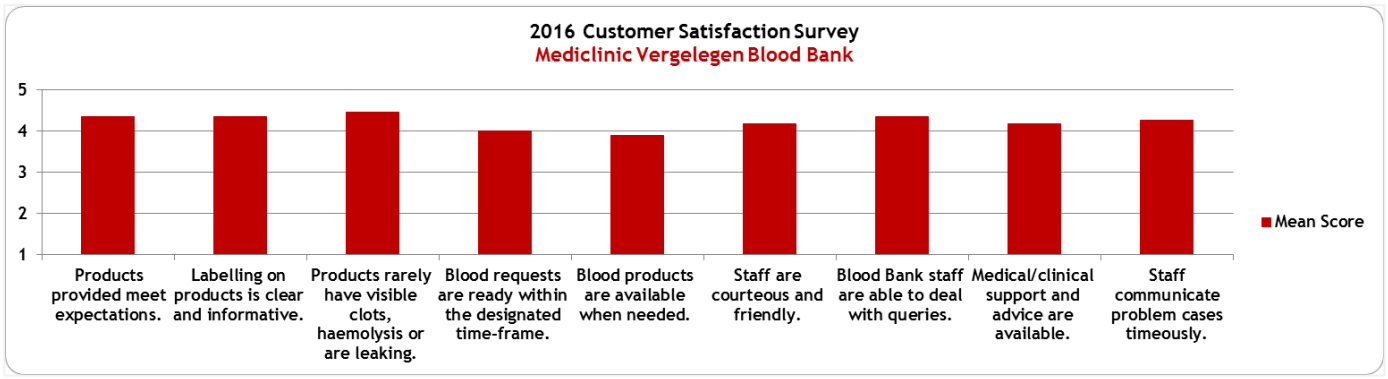
Survey Results
A total of 789 respondents participated in the survey.

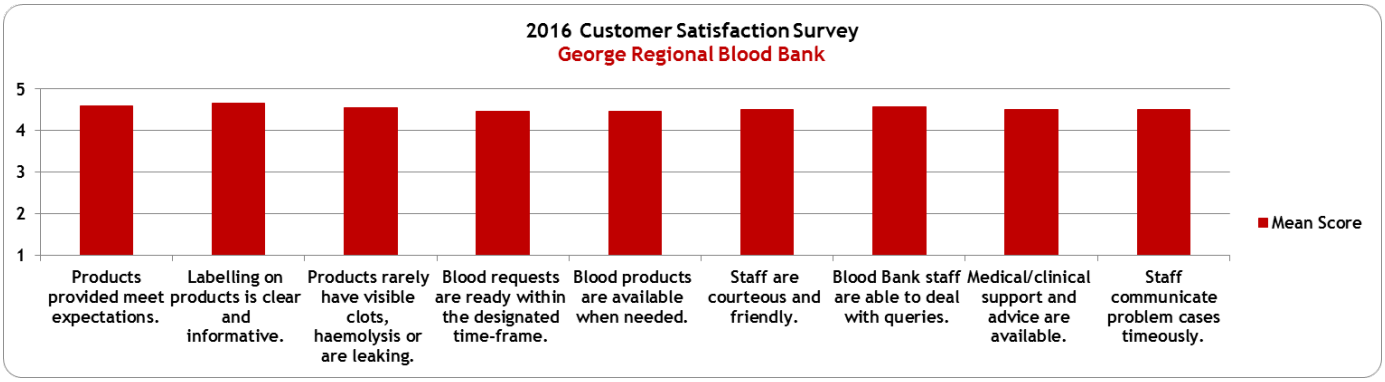


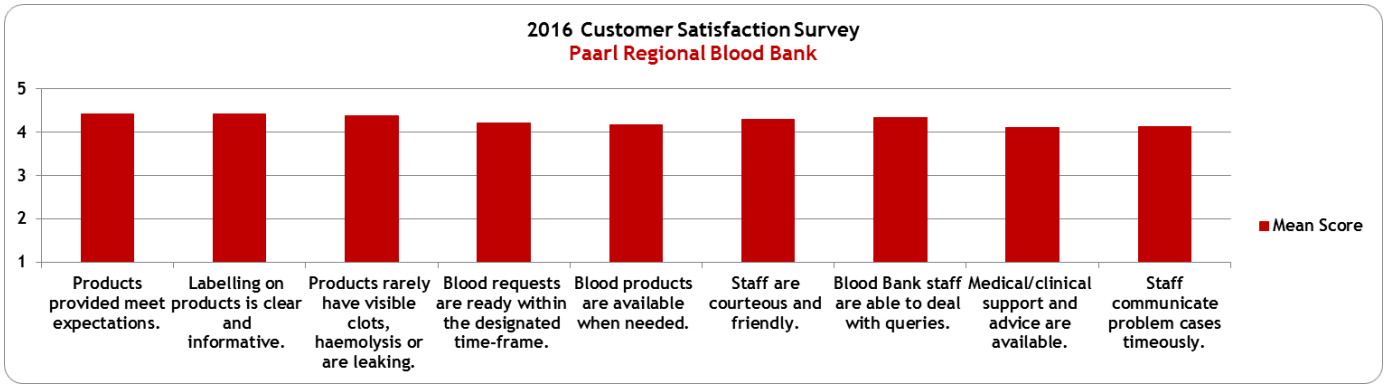

2016 Customer Satisfaction Survey
Groote Schuur Hospital Blood Bank
5
4
3
2
1
Products provided meet expectations.
Labelling on products is clear and informative.
Products rarely have visible clots, haemolysis or are leaking.
Blood requests are ready within the designated time-frame.
Blood products are available when needed.
Staff are courteous and friendly.
Blood Bank staff are able to deal with queries.
Medical/clinical support and advice are available.
Staff communicate problem cases timeously.
Mean Score

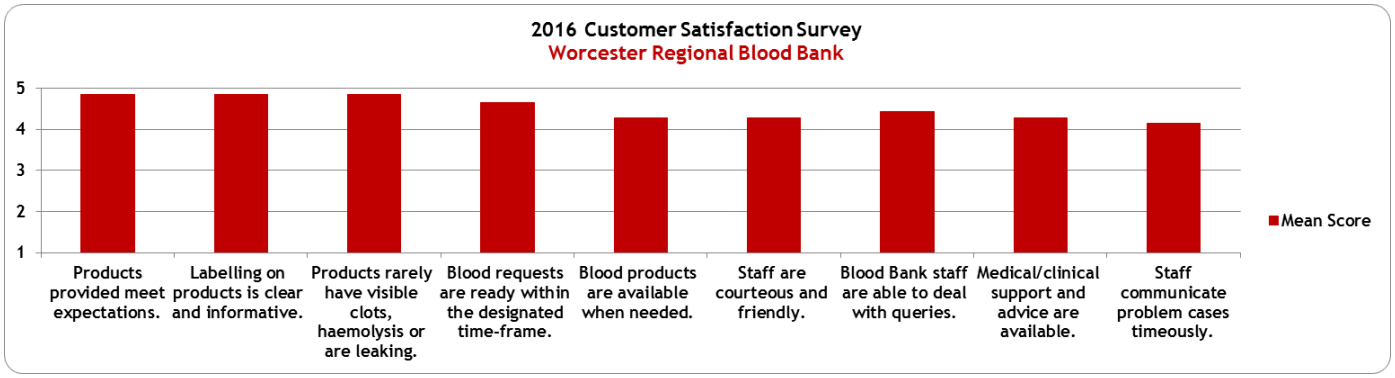

2016 Customer Satisfaction Survey
Tygerberg Hospital Blood Bank
5
4
3
2
1
Products provided meet expectations.
Labelling on products is clear and informative.
Products rarely have visible clots, haemolysis or are leaking.
Blood requests are ready within the designated time-frame.
Blood products are available when needed.
Staff are courteous and friendly.
Blood Bank staff are able to deal with queries.
Medical/clinical support and advice are available.
Staff communicate problem cases timeously.
Mean Score


2016 Customer Satisfaction Survey
Red Cross War Memorial Children's Hospital Blood Bank
5
4
3
2
1
Products provided meet expectations.
Labelling on products is clear and informative.
Products rarely have visible clots, haemolysis or are leaking.
Blood requests are ready within the designated time-frame.
Blood products are available when needed.
Staff are courteous and friendly.
Blood Bank staff are able to deal with queries.
Medical/clinical support and advice are available.
Staff communicate problem cases timeously.
Mean Score


2016 Customer Satisfaction Survey
Mediclinic Vergelegen Blood Bank
5
4
3
2
1
Products provided meet expectations.
Labelling on products is clear and informative.
Products rarely have visible clots, haemolysis or are leaking.
Blood requests are ready within the designated time-frame.
Blood products are available when needed.
Staff are courteous and friendly.
Blood Bank staff are able to deal with queries.
Medical/clinical support and advice are available.
Staff communicate problem cases timeously.
Mean Score


2016 Customer Satisfaction Survey
George Regional Blood Bank
5
4
3
2
1
Products provided meet expectations.
Labelling on products is clear and informative.
Products rarely have visible clots, haemolysis or are leaking.
Blood requests are ready within the designated time-frame.
Blood products are available when needed.
Staff are courteous and friendly.
Blood Bank staff are able to deal with queries.
Medical/clinical support and advice are available.
Staff communicate problem cases timeously.
Mean Score





Pathogen Reduction Technology

Both SANBS and WPBTS have completed their evaluation of pathogen reduction technology (PRT) for processing random donor platelet and single donor platelet units. The Services plan to conduct their final review towards the second quarter of 2017. In keeping with a national blood safety strategy, the final decision regarding the implementation of PRT will include the SANBS, the National Department of Health and other stakeholders.

What is the significance of pathogen inactivated blood and blood products for patients?

1. Provides enhanced safety and protection against transfusion-transmitted diseases by known and unknown pathogens. The spectrum comprises viruses, bacteria (includes spirochetes), protozoa, parasites, as well as leucocytes (white blood cells). The inactivation of leucocytes is particularly beneficial for the prevention of the following: platelet alloimmunisation to HLA-antigens, transfusion associated graft versus host disease, febrile non-haemolytic transfusion reactions, and transmissions of infections as leucocytes represent the reservoir for some intra-cellular pathogens (eg. cytomegalovirus).
2. Its use is successful in diverse patient groups including neonates, children, pregnant women, patients undergoing stem cell transplantations, and patients using chemotherapeutical treatment.
3. Treatment of blood products by the Intercept and Mirasol® pathogen inactivation systems does not compromise the therapeutic performance of the blood products. Platelets and plasma constituents are not inactivated by the pathogen reduction techniques. The shelf-life of pathogen inactivated platelet products will also likely be increased from five to seven days.

What are the different technologies and how do they work?

1. The Cerus Intercept (PI) Blood System uses a combination of amotosalen which is a photoactive synthetic psoralen compound, and ultraviolet (UVA) light to inactivate pathogens. Once added to the blood product, amotosalen easily crosses the cell membrane of the pathogen and intercalates within the DNA or RNA of the nucleus. Exposure to UVA light activates the amotosalen to bind irreversibly to the pyrimidine base pairs resulting in cross-linking and permanent disruption to the genetic material of the pathogen or leucocyte, thereby preventing further proliferation.
2. The Terumo Mirasol® Pathogen Reduction Technology (PRT) System uses riboflavin (vitamin B2) and UV light treatment to inactivate pathogens. Riboflavin is added to the blood product and binds to the DNA or RNA of the pathogen. Upon exposure to UV light, riboflavin causes oxidation of guanine residues and generation of reactive oxygen species, resulting in irreparable genetic lesions to the pathogen or leucocyte, and inhibition of replication. As riboflavin is a vitamin, it does not require removal prior to transfusion of the blood product.

Further Reading

1. Pathogen Inactivation of Platelet and Plasma Blood Components for Transfusion Using the Intercept Blood SystemTM. Johannes Irsch, Lily Lin (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3132977/)
2. The Mirasol PRT System: A Pathogen Reduction Process For All Blood Products (http://www.ipfa.nl/UserFiles/File/WS%202012/0618%20-%20Reddy.pdf)
3. Pathogen inactivation of blood components: current status and introduction of an approach using riboflavin as a photosensitizer. (http://www.ncbi.nlm.nih.gov/pubmed/12430933)
4. Pathogen Inactivation Technologies for Cellular Blood Components: an Update (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4164100/)
5. http://www.transfusionmedicine.ca/sites/transfusionmedicine/files/events/KleinmanPI%20-%20CBS%20webinar%20slides%20-%209-14.pdf
6. Pathogen Inactivation Efficiency of Mirasol PRT System and Intercept Blood System for non-leuco-reduced platelet-rich plasma-derived platelets suspended in plasma (http://www.ncbi.nlm.nih.gov/pubmed/24806328)
7. The Mirasol® Pathogen Reduction Technology System and Quality of Platelets Stored In Platelet Additive Solution (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2906197/)

Zika Virus Self-deferral Policy

The WPBTS has implemented a donor self-deferral policy to lower the risk of possible Zika virus transmission through a blood transfusion. Donors are being asked to defer their donations if they or their sexual partners have travelled to a country in the last twenty-eight days where the Zika virus is endemic. Also, if a donor has had sex with a partner who in the three months prior to their sexual contact has had a Zika virus infection or has travelled to or resided in an area with active Zika virus transmissions they may only donate more than four weeks after their last sexual contact.

Click on the link below to view the Zika information sheet:
http://www.wpblood.org.za/sites/default/files/zika-oct.pdf

Save the Date

Website Update

The WPBTS website has been enhanced with a platform that allows donors to create a profile for them to view their details and update their contact particulars, to ensure their current details are maintained on our system. Blood donors can create their profile if they are in possession of their Donor ID card and have donated within the past 24 months.

This new function allows donors to view selected details, which include:

- The donor's blood type
- birthday
- ID number
- contact information
- current address
- clinic registered to donate blood at
- the last date donated, and
- the number of units donated.

Create your profile now at http://www.wpblood.org.za/user/.

We hope that this function will be a valuable tool to all blood donors.

WPBTS Pharmaceutical Division Closure

The operations of the Western Province Blood Transfusion Service have for many years included the manufacture of plasma-derived medicinal products, namely Albumin, Stabilised Serum, and Anti-haemophilic Factor. The pharmaceutical manufacturing facility is sited in Parow, separate from the Service's Headquarters in Pinelands. Apart from the physical separation, regulation of the Pharmaceutical Division has been the responsibility of the Medicines Control Council (MCC), while the main business of the Service is regulated and accredited under a different legislative framework.

The pharmaceutical plant (also known as the Fractionation Plant, named after the manufacturing process used) has always placed a strong emphasis on meeting good manufacturing practice standards and over the years a number of costly refurbishments and upgrades were undertaken to meet MCC requirements.

In February 2016 the MCC conducted the first inspection in fourteen years of the Fractionation Plant. Based on some of the findings of the inspection, a decision has been made to voluntarily cease manufacturing plasma-derived medicinal products, despite a long track record of product safety. One of the important adverse findings was the layout of the facility (which is in an old building), which cannot be changed without costly and lengthy building works, or a complete rebuild of the facility.

To correct the deficiencies would require major capital expenditure and after careful consideration of the investment required against the long-term sustainability of the Plant, a decision was made by the WPBTS Board of Directors to close the Fractionation Plant.

Customers should please feel free to contact the following suppliers of plasma-derived medicinal products for enquiries and orders:

National Bioproducts Institute (NBI):
Andrea Muller, Marketing Manager
T 031 714 6700 | C 083 259 4831 | E Andrea.Muller@nbisa.org.za | W www.nbi-kzn.org.za
10 Eden Road, Pinetown, 3610 | Private Bag X 9043, Pinetown, 3600

Octapharma South Africa (Pty) Ltd:
Sean Hancock, Country Manager
T 011 465 4289 | C 076 472 5482 | E sean.hancock@octapharma.com | W www.octapharma.com
Building 3 Design Quarter Complex, Cnr William Nicol and Leslie Avenue, Fourways, 2191

On behalf of the WPBTS, we wish to apologise for any inconvenience caused recently as the Service's supply of plasma-derived medicinal products has ceased. I also wish to convey our sincerest thanks for your loyal support over the past thirty years. Please feel free to contact us should you have any queries.

WPBTS would also like to acknowledge the blood donors in the Western Cape for their blood donations, from which plasma-derived medicines have been made for many years by both WPBTS and NBI, and will continue to be made in future by NBI.

Your Questions Answered

Q: Should blood be warmed?

A: Red cell concentrates do not have to be warmed routinely when a unit is transfused slowly over two to four hours. Blood warming is however indicated in rapid, high volume transfusions in emergency settings, in exchange transfusions in neonates (where a large proportion of the neonate's blood is replaced with transfused blood), and when transfusing patients with high titre cold agglutinins which may cause haemolysis.

The Standards of Practice for Blood Transfusion in South Africa, Seventh Edition (March 2016), states the following.

- Standard 56.6.5
  The requirement that blood-warming apparatus specifically designed for that purpose shall be used for warming blood and the temperature shall never exceed 37 °C. Warmed units shall be clearly identified as such with date and time of warming.

Warming blood results in increased red cell metabolism, reduced 2.3 Diphosphoglycerides, increased risk of bacterial overgrowth and alterations in flow rate. However, the rapid transfusion of large volumes of cold blood has been associated with an increased risk of cardiac arrhythmias and arrest. The recommended method for blood warming is to use a commercially verified blood warmer. Blood must NEVER be warmed in a microwave oven, placed on heaters or in the oven, placed under warming lamps, by adding warmed saline or other body fluids, placing the unit under the person's arm or in the groin area, in a basin of hot water, or on a sunny windowsill. All of these methods may haemolyse the red cells and/or potentiate bacterial growth, which could have fatal consequences for the patient.

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SMS 'blood' to 33507 and we'll call back (R1.50 per SMS)
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Do something remarkable