



# Life Blood Issue 10

Dear Lifeblood Reader

Welcome to the 10th edition of Lifeblood. The WP Blood Transfusion Service (WPBTS) remains committed to advancing transfusion science. Later this year, the WPBTS together with the South African National Blood Service will convene in Gauteng from 15 to 18 November at the 31st SA National Blood Transfusion Congress. The Congress is expected to attract participants from all fields within the blood transfusion industry. The theme for this year's congress is "Sustainable Safe Blood: Mastering Change". We are looking forward to a congress of high technical standard and the opportunity to exchange knowledge and ideas and thereby to remain the transfusion leader in Africa. Please feel free to join us. For more detailed information visit the congress website viz. <http://www.sabloodcongress.org>

In this 10th edition of Lifeblood you can read more about the clinical guidelines for leucocyte depletion of blood components, the WPBTS leucocyte depletion product array, haemovigilance data collection; services offered by the WPBTS, the WPBTS iron supplementation program, the detection of viral loads and the result of the recent increase in incidence of the H1N1 virus for blood donors.

We are currently updating our database and would appreciate your assistance with providing the contact details of those clinicians who currently do not receive Lifeblood, who may benefit from this e-zine. Please forward the particulars to the marketing department as follows:

**Tel:** 021 507 6326 | **Cell:** 083 454 3455 | **E-mail:** [marketing@wpbts.org.za](mailto:marketing@wpbts.org.za)

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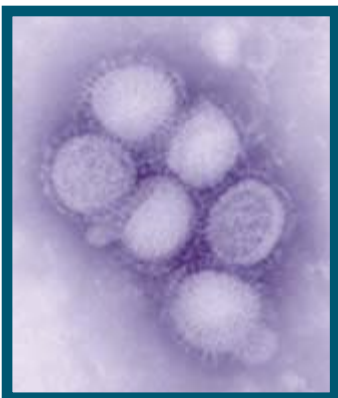
## In this issue...

<b>Deferrals for WPBTS Blood Donors who have Symptoms of Pandemic Flu .....</b>	<b>Page 2</b>
<b>Clinical Guidelines for Leucocyte Depletion of Blood Components .....</b>	<b>Page 2</b>
<b>The WPBTS Leucocyte Depletion Product Array .....</b>	<b>Page 3</b>
<b>WPBTS Haemovigilance Information .....</b>	<b>Page 4</b>
<b>Services Offered by the WPBTS .....</b>	<b>Page 4</b>
<b>The WPBTS Iron Supplementation Program .....</b>	<b>Page 5</b>
<b>Detection of Viral Loads using the Rotor-Gene™ 6000 .....</b>	<b>Page 5</b>



# Life Blood Issue 10

## Deferrals for WPBTS Blood Donors who have Symptoms of Pandemic Flu



The WPBTS is committed to providing a safe blood supply to the community. In response to the recent rapid increase in the incidence of H1N1 influenza in South Africa, blood donor vigilance has been increased at all our donor clinics to ensure that blood donations are collected from healthy individuals. Donors are thus questioned carefully in this regard. A precautionary deferral of 2 weeks has been implemented to safeguard donations and donors who may potentially be infected with H1N1.

Should you require more information feel free to browse our website on the link as set out below or contact the WPBTS to speak to our Medical Officer or Medical Director on telephone 021 5076329 or 021 5076318 respectively.

<http://www.wpbtsmedical.org.za/latestnews.asp>

## Clinical Guidelines for Leucocyte Depletion of Blood Components



Leucocytes in blood components are responsible for a number of adverse effects associated with blood transfusion. The pathogenesis has not been precisely elucidated in many instances but it is likely that it is immunologically mediated. Potential mechanisms include clonal deletion or anergy, induction of suppressor cells, production of anti-idiotypic antibody and suppression of NK cell activity among others.

Accordingly, filters capable of removing leucocytes by several orders of magnitude have been developed and can effectively reduce the number of white cells in, for example, a red cell concentrate to  $< 1 \times 10^6$ . A less efficient but much more economical process for depleting components of leucocytes involves removing the buffy coat from red cell components and also using the buffy coats to prepare random donor platelet concentrates. This result in red cell and platelet components with residual leucocytes intermediate in number between filtered components and those with the buffy coat retained. The standard red cell concentrate prepared in South Africa is buffy coat reduced.

A number of countries have adopted a policy of universal pre-storage leucocyte depletion (ULR) while others have adopted a policy of selective leucocyte depletion of components. The costs associated with ULR are considerable e.g. in the USA it would amount to  $> \$400m$  and in South Africa (based on 2002/2003 figures), the costs would amount to  $\pm 24\%$  of the total annual turnover of all the services. Given the competing health priorities in South Africa, there should therefore be convincing evidence that such an intervention is clinically beneficial and cost effective.



# Life Blood Issue 10

The transfusion services in South Africa have reviewed the medical literature and conclude the following:

- There is good evidence to support the avoidance of febrile non-haemolytic transfusion reactions (FNHTR's) by leucocyte depletion.
- Leucocyte depletion of platelet concentrates will reduce the incidence of platelet refractoriness to platelet transfusions.
- Leucocyte depletion significantly reduces the risk of transfusion transmitted CMV infection in susceptible individuals.
- The evidence for reduction in post-operative infection is not consistent.
- The evidence for reduction in cancer recurrence is not consistent.
- Although meta-analyses do not provide convincing evidence of a reduction in post-operative mortality for leucocyte depleted products, sub group analyses suggest a benefit for seriously ill and cardiac surgery patients.
- An association with reactivation of viral infections (HIV and CMV) and non-leucocyte depleted components has not been demonstrated.
- Sensitisation to transplant antigens can be ameliorated by leucocyte depletion where HLA allo-immunisation is important.
- Leucocyte depletion may reduce prions in blood components but there is as yet no evidence that leucocyte depletion will avoid transmission of vCJD by blood components.

A policy of selective leucocyte depletion of blood components is therefore recommended as follows:

- All standard red cell concentrates are buffy coat depleted.
- Random donor platelet concentrates are prepared from buffy coats.
- Single donor platelet concentrates collected by apheresis incorporate a leucocyte depletion process.
- Patients on chronic transfusion regimens should receive leucocyte depleted products.
- Infants < 1 year should receive leucocyte depleted products.
- Critically ill patients and patients undergoing cardiac surgery should receive leucocyte depleted products.
- Pre-storage (<48 hours after donation) leucocyte depletion in blood processing labs is recommended. If this product is unobtainable it is recommended that freshest units available be filtered in the blood bank for immediate use.

Bedside filters should only be utilised when neither of the former 2 options is available.

We emphasise that the above be regarded only as guidelines. If individual clinicians wish to use leucocyte-depleted products for patients that fall outside these guidelines they should request accordingly and the services will issue if the product is available. By continually monitoring the usage and gearing up accordingly, the services will be in a position to meet such demands. However, the cost of a leucocyte depleted component is considerably greater than a standard component.

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## The WPBTS Leucocyte Depletion Product Array

The following products have undergone a leucocyte filtration process which ensures 99.9% leucocyte removal. These include Red Cell Concentrates, Platelets and Fresh Frozen Plasma.

- Adult Leucocyte Poor Red Cell Concentrate: Volume 235-265 ml; Hct 0.5-0.7 l/l; Expiry 24 hours
- Adult Pre-Storage Leucocyte Poor Red Cell Concentrate: Volume 260 ± 50 ml; Hct 0.5-0.7 l/l; Expiry 42 days
- Paediatric Leucocyte Poor Red Cell Concentrate: Volume 25-150 ml; Hct 0.5-0.7 l/l; Expiry 42 days
- Infant Leucocyte Poor Red Cell Concentrate: Volume 25-150 ml; Hct 0.5-0.7 l/l; Expiry 42 days
- Leucocyte Poor Pooled Random Donor Platelets: Expires 6 hours after filtration
- Adult Leucocyte Poor Fresh Frozen Plasma: Expires 6 hours after filtration
- Paediatric Leucocyte Poor Fresh Frozen Plasma: Expires 6 hours after filtration



# Life Blood Issue 10

## WPBTS Haemovigilance Information

The WPBTS participates in haemovigilance monitoring of key focus areas within the blood transfusion industry of South Africa and has recently undertaken to gather additional information for the clinical usage modalities of blood and blood products. The overall blood usage for all hospitals in the Western Cape will thus be divided into the various modalities listed below:

- Medical
- Intensive Care Unit
- Surgical
- Childbirth and gynaecology
- Paediatrics
- Casualty / Trauma
- Orthopaedics
- Cardio-thoracics
- Oncology
- Unknown / others (including laboratories)

The data will be extrapolated from the hospital ward which is indicated on the cross-match request form. In order for this programme to run efficiently, clinicians are requested to ensure the hospital ward is completed on the cross-match request form. We are also continually striving to improve our data capturing of suspected transfusion reactions so that these may be promptly recognised and treated.



## WPBTS Services Offered by the WPBTS

The services offered by the WPBTS include gamma irradiation of blood and blood products; autologous transfusion; designated donation; therapeutic phlebotomy; paternity investigations; transportation of blood and blood products.



The WPBTS provides gamma irradiated blood and blood products to all the hospitals in the Western Cape. Should you require blood and blood products to be gamma irradiated please indicate this on the cross-match request form, alternately contact your servicing blood bank telephonically.

If you have any questions, please do not hesitate to contact the Red Cross Hospital Blood Bank to speak to the Blood Bank Supervisor on telephone 021 685 5489 or 021 689 1118.

Paternity Investigations – DNA tests have been identified as the most accurate method of human identification and thus used successfully in paternity disputes. For more information contact the WPBTS Paternity Laboratory to speak to the Supervisor on telephone 021 5076334 or e-mail [dna@wpbts.org.za](mailto:dna@wpbts.org.za)



# Life Blood Issue 10

## The WPBTS Iron Supplementation Program



Blood donor's haemoglobin levels are measured before donation using a portable HemoCue device that utilises a standardised biochemical methodology. A minimum haemoglobin level of 12.5 grams per decilitre is considered the international accepted standard for blood donation. When haemoglobin levels fall below 11.5 grams per decilitre in women and 12.5 grams per decilitre in men, they are classified as anaemic.

International studies have shown that women between menarche and menopause are particularly at risk of developing iron deficiency due to menstruation and the demands of pregnancy on the body. Regular blood donation could contribute to depleted iron stores and it is with this in mind that the WPBTS has adopted a voluntary iron supplementation programme as a preventative measure for regular female donors who fall into this category. All registered female donors in the targeted age group (17-50 years) have the opportunity to participate in the supplementation programme and receive a packet of 30 iron tablets (approximately 2000 mg in total) after each donation to replace the iron lost during that specific session.

The iron study is ongoing at the Blood Donor Centre in Long Street but the Service is in the process of selecting a second blood donor centre where as many blood donors can benefit from this program.

This study will assess the adequacy and efficacy of iron supplementation at 170 mg/day in reducing deferrals in the female donor group. As a result of the success of this project and with the implementation of this supplementation program in all our clinics it could be possible to reduce the acceptance criteria for our female donor population from 12.5g/dl to 12g/dl.

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## Detection of Viral Loads using the Rotor-Gene™ 6000



The Rotor-Gene™ 6000 is a real time analyser which is utilised in the Virology Laboratory to determine viral loads on all blood donor samples detected in the window phase. The viral load provides a more precise clinical picture which provides useful information when counselling a donor who has a positive viral status.

It is also used to monitor the viral loads of staff members who are on ARV's, who have had occupational exposure to blood and blood products and who have since seroconverted.

Real time analysis is the exponential phase of amplification that provides the most useful data. The fluorescent data is collected at least once during each cycle of amplification allowing for real-time monitoring of amplification. Detection is achieved via the thermal cycler and fluorometer for the detection of fluorescence during the cycling process.