

> ARCBS joins Sydney hospitals on eye treatment

ARCBS has stepped into the gap after commercial collections of autologous blood used to create special eye drop sera ceased in New South Wales (NSW).

The Blood Service has formed a new partnership with the Sydney Hospital and the Sydney Eye Hospital to ensure New South Wales' patients can again have access to this effective treatment. Patients will be able to donate at either the Clarence Street or Parramatta Blood Donor Centres in order to have their own serum made into eye drops.

Autologous serum eye drops are created from the liquid part of the blood left after a patient's whole blood is allowed to clot. They are used to treat many conditions including corneal burns, severely dry eyes (caused by allergy or autoimmune conditions) and chemical burns injuries.

Initially the focus will be on patients with the greatest need, especially those who have been significantly affected by the withdrawal of the commercial operator. However, ARCBS plans to extend the program as capacity increases.

ARCBS already collects autologous eye serum donations in Victoria and Western Australia. New South Wales donations will be sent to Victoria for conversion into the eye drops and returned to the Sydney Hospital Blood Transfusion Laboratory for storage.

Bookings to use the service will require a referral from an ophthalmologist and potential donors will also need to meet normal blood donation guidelines. In NSW, contact the autologous blood coordinators, Jarka or Elisabeth on (02) 9229 4414.

> Risk of transfusion-transmitted viral infection update

ARCBS estimates of the residual risk of transfusion-transmitted viral infection are based on the median value of three published models.¹ The values in the table below detail the estimated risk for the period July 2000 to June 2003. The figures for HIV and HCV antibody testing only are included to allow for risk comparison in the rare event that products are released without Nucleic Acid Testing (NAT).

Virus and Testing Standard	Window period (days)	Point estimate of residual risk 'per unit'
HIV 1 & 2 antibody only	22	1 in 2,976,000
HIV antibody + NAT	9	1 in 7,299,000
HCV antibody only	66	1 in 408,000
HCV antibody + NAT	7	1 in 3,636,000
HBV (HBsAg)	45	1 in 1,339,000
HTLV I & II antibody	51	Considerably less than 1 in 1,000,000
vCJD		Possible. Not yet reported in Australia ²

1 Seed C.R., Kiely P., Keller A. J. Residual risk of transfusion transmitted human immunodeficiency virus, hepatitis B virus, hepatitis C virus and human T lymphotropic virus. *Internal Medicine Journal* 2005; 35: 592-598.

2 vCJD: To date no Australian has been identified with vCJD. In the UK there have been a small number of reported cases of probable transfusion transmission of vCJD since 2004. In Australia, as a precaution, people who have spent a cumulative period of 6 months in the UK between 1/1/80 and 31/12/96 and/or had a transfusion in the UK between 1/1/80 and the present time are not accepted as blood donors.

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> Australia now self-sufficient in Rh (D) Immunoglobulin (Anti-D)

Stage 3 of the Rh (D) immunoglobulin Routine Prophylaxis Program

Australia is now self-sufficient in its supply of Rh (D) immunoglobulin (Anti-D). Professor Richard Smallwood, Chair of the National Blood Authority Advisory Board, has announced that routine Rh (D) antenatal and postnatal prophylaxis can now be given to all Rh (D) negative women without preformed anti-D using Australian Rh (D) immunoglobulin.

From March 31, 2006, the Australian Red Cross Blood Service (ARCBS) ceased to routinely issue *WinRho SDF™*. From that date, imported product will only be issued when access to an intravenous preparation is warranted (contact ARCBS for more information). This change represents Stage 3, the final implementation phase of the routine Rh (D) prophylaxis program.

For Stage 3, Rh (D) Immunoglobulin products should be used as indicated below:

- > First trimester sensitising events¹ (<12 weeks): Rh (D) immunoglobulin 250 IU
- > First trimester sensitising events¹ (multiple pregnancies <12 weeks): Rh (D) immunoglobulin 625 IU
- > Second and third trimester sensitising events¹: Rh (D) immunoglobulin 625 IU
- > All Rh (D) negative women without preformed Anti-D: Rh (D) immunoglobulin 625 IU at 28 and 34 weeks gestation
- > Postnatal prophylaxis: Rh (D) immunoglobulin 625 IU

Note 1: Sensitising events include ectopic pregnancy, miscarriage, termination of pregnancy and ultrasound guided procedures such as chorionic villus sampling, amniocentesis, cordocentesis and fetoscopy, as well as abdominal trauma considered sufficient to cause fetomaternal haemorrhage, external cephalic version, antepartum haemorrhage and normal delivery.

The Joint Rh (D) Consultative Committee (JCC)² has reviewed the *Guidelines for the use of Rh (D) Immunoglobulin* with representatives from all key stakeholders and ensured that updated information has been placed on all relevant websites. A range of revised support materials are also available, including:

- > **You & Your Baby: Important Information for Rh (D) Negative Women** (This booklet is for use when discussing Rh (D) antenatal and postnatal prophylaxis)
- > **Important Information for Rh (D) Negative Women: Prevention of Haemolytic Disease of the Newborn** (This booklet is for women who experience early pregnancy loss)
- > **Guidelines for the Use of Rh (D) immunoglobulin – Brochure/Folder** (folds to A4)
- > **Guidelines for the Use of Rh (D) immunoglobulin – Wall Poster** (500 x 340mm)
- > **Frequently Asked Questions about the use of Rh (D) immunoglobulin** (Pocket size booklet) with answers to common clinical, policy, testing, supply, distribution and product-related questions.

These materials can be downloaded from the ARCBS website: www.transfusion.com.au/RhD. Copies are also available to order by completing a *Material Fax Request Sheet*, available at the same web address. For further information please contact your local ARCBS Centre, CSL Limited or your professional college or society.

Note 2: The Joint Rh (D) Consultative Committee (JCC) includes the Royal Australian and New Zealand College of Obstetrics and Gynaecology; Royal Australian College of General Practitioners; Australian College of Midwives Inc; Abortion Providers' Federation of Australia; Australian and New Zealand Society of Blood Transfusion; Australian Institute of Medical Scientists; Australian Red Cross Blood Service; Royal College of Pathologists of Australasia; CSL Limited and the National Blood Authority.

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> Pre-storage versus post-storage leucodepleted blood components

Leucocyte depletion may be performed before storage (at the blood collection centre) or after storage (in the hospital laboratory or at the bedside). There is little doubt that the optimum time to remove passenger leucocytes is before storage (called pre-storage leucodepletion) for the following reasons:

> *Better process control and quality assurance.*

Leucocyte filtration is a complicated process that is influenced by factors such as the blood component's pre-filtration cellular composition and plasma content, the temperature of the blood component at the time of filtration, the filtration flow rate, the number of units transfused through the filter, and the timing of the filtration step. Studies have documented a higher incidence of filtration failures when performed at the bedside as compared to leucocyte filtration performed in the laboratory setting. Quality checks and comprehensive quality assurance programs can be more easily performed in the pre-storage setting. Bedside filtration also requires training of many nurses.

> *Lower incidence of febrile non-haemolytic transfusion reactions (FNHTR).*

FNHTR are caused not only by leucocyte antigen-antibody reactions but also by the cytokines produced by leucocytes in the transfused blood component. This would be more effectively prevented if the leucocytes were removed immediately after the blood is collected, avoiding the formation of cytokines. This is especially the case with platelet components stored at room temperature as it has been demonstrated that cytokine production occurs more rapidly at 20°C than 4°C.

> After the tsunami: rebuilding the Blood Service in Banda Aceh

Few of us can forget the devastating tsunami that wreaked havoc on many areas of Asia and as far away as Africa on December 26, 2004. Over 200,000 lives were lost and many properties and livelihoods were destroyed. The hardest hit area was Northern Sumatra (Banda Aceh) in Indonesia.

The Indonesian Red Cross, who run the three largest collection centres in Banda Aceh province, requested the assistance of the Australian Red Cross (ARC) to assess the needs of all 11 Blood Services in Northern Sumatra. They needed help to address immediate needs and also, to take the opportunity to develop services in order to improve the quality and range of products available.

Initially, the ARC enlisted the help of an ex ARCBS person, Mr Brian Clark, and later Mr David Jones (ARCBS, Transfusion Medicine Scientist, South Australia) to undertake assessments and produce reports that would contribute to the development of new services. Brian and David's report was presented to an International Federation of Red Cross Global Advisory Panel meeting in Banda Aceh in November 2005.

Since then, the Indonesian Red Cross Blood Service has produced plans for the redevelopment of services. In January this year, the main transfusion centre in Banda Aceh was demolished and a new, purpose-built centre is being erected in its place. During this redevelopment phase, the ARC and ARCBS will contribute project and technical support to help ensure the Blood Service is developed to its full potential.

> *Lower incidence of alloimmunisation and (possibly) diminished immunomodulation that may result from the transfusion of membrane fragments.*

Leucocyte degradation during storage results in cell fragments which may not be removed by post-storage filtration and these can provoke HLA or platelet alloimmunisation. Additionally, it is possible that leucocyte fragments released from cells harbouring leucotropic viruses may carry such viruses through the filter.

> *Avoidance or reduction in the incidence of adverse effects directly related to the filtration process.*

Complications such as bradykinin-associated hypotension and transfusion-related "red eye" syndrome have been reported with particular types of filters used at the bedside.

> *Reduction in the incidence of bacterial contamination of blood components.*

Early removal of leucocytes (within 24 hours) may reduce the likelihood of significant bacterial contamination, particularly relating to *Yersinia enterocolica* and coagulase-negative staphylococcus. However studies of bacterial growth in platelet components are much less convincing.

The Australian Red Cross Blood Service (ARCBS) has recently introduced 100% pre-storage leucodepleted platelets in most States and Territories. The percentage of red cells that are pre-storage leucodepleted is significantly lower, about 10% nationally.

As one of the benefits of pre-storage leucodepleted platelets is a reduction in FNHTR, fevers associated with the transfusion of a pre-storage leucodepleted product should be carefully assessed to exclude complications such as bacterial contamination.



Mr David Jones (ARCBS Transfusion Medicine Scientist, South Australia) and Muchlis (Local resident and ARC Driver)

During David's 10 weeks in Banda Aceh, he saw some of the scenes of devastation and marvelled at how resilient the people were to what they had lost.

"They're moving on and beginning redevelopment of the areas at a rapid pace. The people are extremely friendly and they really appreciate the international efforts," he said.

ARCBS is pleased it was able to offer assistance in the form of expertise and planning advice. As one of the foremost Blood Services in the Asia Pacific region, ARCBS plans to continue to develop this kind of assistance.

> Plasma Fractionation Review

The Australian Government announced a review of plasma fractionation arrangements in early March. The review is being managed by the federal Department of Health and Ageing (DoHA) and overseen by a Steering Committee chaired by Mr Philip Flood, AO.

The review has arisen from the Free Trade Agreement (FTA) with the United States. Included as part of the FTA was a 'side letter' in which the two governments agreed to a review of plasma fractionation arrangements in line with the principles of free trade which underpin the FTA. The Australian Government is obliged to make a recommendation to the States (who are the funding partners for blood arrangements in Australia) with a view to reporting under the FTA by 1 January 2007.

The review raises important issues for ARCBS which have a direct impact on the international, humanitarian principles of the Red Cross Movement as well as – at a practical level – our operations and costs.

ARCBS has prepared a submission to this review. Our position will reinforce the two areas it sees as "not negotiable" – that is, the principle of self-sufficiency in the blood supply (which has been Australian Government policy since 1975) and the role of voluntary, unpaid donors.

Submissions to DoHA closed on April 14. If you require further information, or wish to discuss the issues arising from the review, please contact Dr Joanne Pink, ARCBS National Transfusion Medicine Services Manager, on (07) 3851 4093.

> Emergency Blood Management Plan for Australia

Australia does not currently have an integrated National Emergency Blood Management Plan that clearly dovetails with other emergency response plans. Such a plan would need to be activated in the event of a significant imbalance between the demand and supply of blood components, which may for example occur following a mass casualty incident, major national disaster, a pandemic (e.g. avian flu) or a significant fall in blood collections, with or without increased demand.

ARCBS has now drafted an interim Emergency Blood Management Plan, with input from key stakeholders, as part of Australia's pandemic response planning and disaster preparedness.

The interim plan incorporates a traffic light alert system based on red cell inventory levels held in ARCBS and in Laboratories and Hospital Blood Banks. It is drafted as a 'Health Circular' which could be distributed to all health facilities and organisations (public and private) who are responsible for managing and transfusing red cells.

Stage	Description	ARCBS Stocks (Days Cover)
Green	Normal	3-5 days
Amber	Stand-by	2 days
Red	Activate/Critical	1 day or less

The interim plan lists actions to be taken by governments, ARCBS, and health facilities and organisations during each stage. It incorporates a number of principles including red cell inventory holdings, the creation of local Emergency Blood Management Teams and patient categories for transfusion in the event of a severe blood shortage.

This interim plan was submitted to the National Blood Authority in mid-February 2006 for discussion with the Chief Medical Officer and the Jurisdictional Blood Committee members. For further detail, please contact Sharon McGowan, National Blood Products Manager, Australian Red Cross Blood Service (smcgowan@arcbs.redcross.org.au).

> Aseptic meningitis and intravenous immunoglobulin therapy

Headache during or after intravenous immunoglobulin (IVIg) infusion is a common side effect of this form of treatment. Headache usually occurs with initial infusions, particularly when they are administered rapidly, but may recur even with subsequent slower infusions. Such headaches can usually be treated successfully with *paracetamol* and *diphenhydramine*.

A much more severe form of headache, known as aseptic meningitis (ASM) has been reported to occur infrequently in association with IVIg treatment. In Australia, there have been a total of six cases reported since *Intragam P* was launched in 2000. The syndrome usually commences within six to 24 hours following the completion of the infusion. The headache is intense and pounding, and is associated with meningismus, photophobia, vomiting, fever and cerebrospinal fluid (CSF) abnormalities. The latter are characterised by a high white cell count, predominantly neutrophils, raised protein and normal glucose levels. Culture of the CSF results in no bacterial growth (hence the name ASM), and spontaneous resolution of the condition, usually within three to five days, differentiates it from viral meningitis.

The cause of ASM associated with IVIg therapy is unknown. A raised level of eosinophils in the CSF in some patients supports the possibility of an allergic hypersensitivity reaction. Serum IgG can cross the blood-brain barrier and it is possible that allogenic molecules may stimulate the release of cytokines leading to pleocytosis and the initiation of an inflammatory reaction.

Although ASM is uncommon, it has been observed more frequently in patients with a history of migraine, or in those receiving high-dose therapy e.g. for thrombocytopenia or a variety of neurological disorders. Patients with a history of migraine may have an increased sensitivity of their meningeal microvasculature rendering them more sensitive to various circulating factors such as immune complexes and cytokines.

The onset and severity of ASM are unpredictable. Patients who have experienced ASM may be premedicated with paracetamol and an antihistamine but a successful outcome is not certain, particularly if there is a history of migraine. Other recommended prophylactic measures include a lower initial IVIg concentration, a slower infusion rate and the maintenance of the patient's hydration.

ASM has occurred with most brands of IVIg and, while switching brands may help with patients on high-dose therapy, it is not of benefit for migraine sufferers. Cessation of treatment leads to recovery without sequelae in three to five days.