

## ARCBS Bloodhound study data contribute to emergency blood supply planning

How would we maintain Australia's blood supply in a pandemic or major disaster?

Information about where blood is used and the clinical urgency with which it is required is essential when developing blood supply contingency plans. There are very few data to guide planning for a blood shortage either in Australia or internationally. Therefore, ARCBS and Monash Institute of Health Services Research designed a study to determine the clinical urgency of red cell use.

The aim of Bloodhound was to determine what proportions of red cells issued in Victoria were used for urgent and elective indications, and then ascertain the proportion of red cells issued which could potentially be deferred in an emergency.

Over six months, 5000 randomly selected red cell units were tagged with a case report form. When the red cells were issued for transfusion by the hospital transfusion laboratory, the form was completed with information regarding the clinical use and clinical urgency of the transfusion. The response rate was excellent with more than 98 percent of case report forms returned.

Approximately one third of tagged red cells were used to support surgery,

one third for haematology/oncology and one third for other medical and miscellaneous indications.

Just under 10 percent of transfused red cells were used to support elective surgery or non-urgent medical conditions, much lower than the 20 percent proportion commonly used in emergency blood supply contingency plans. Additionally, fewer than 40 percent of red cell transfusions were judged to have been deferrable for more than 24 hours.

These results suggest that triaging of red cells may only have a very short-term impact on actual use, and cancellation of elective surgery would only partially assist in the setting of a major blood shortage. Therefore, additional strategies are required to ensure maintenance of red cell supply during potential future blood shortages.

The data collected during the Bloodhound project have assisted in the development of the National Blood Supply Contingency Plan and will help ensure that blood products are available for urgent transfusion in the event of a pandemic or other national emergency resulting in a blood shortage.



Red cell unit tagged with a Bloodhound case report form

Preliminary findings of Bloodhound have been very well received. Final study results are now available and will be released shortly. ARCBS is the advanced stages of planning the follow-up study, Puppy (**P**rospective **U**tutilisation of **P**latelets and **P**lasma), to determine the clinical urgency of use for platelets and fresh frozen plasma.

Bloodhound would not have been possible without the enthusiastic participation of scientists and other staff from more than 80 transfusion laboratories throughout Victoria.

### DISCLAIMER

Medilink® Australian Red Cross Society through its division Australian Red Cross Blood Service. Every endeavour has been made to ensure the contents are correct and accurate at the time of publication, however, the medical environment is constantly changing and information herein may become out of date. The information in this publication is provided as a general guide only and should not be used to replace professional advice.

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# Guidelines for the use of Group O Rh (D) negative red cells

The following guidelines for the use of Group O Rh (D) negative red cells were endorsed by the National Blood Transfusion Committee on 15 February 2008.

## Purpose

To provide recommendations for the use of Group O Rh (D) negative red cells in order to conserve stocks and ensure availability for those patients for whom there is no alternative. To provide a framework that is designed to ensure that hospitals and pathology providers work in a consistent, integrated manner to manage shortages of Group O Rh (D) negative cells.

## Background

Every blood service has encountered recurrent shortfalls of Group O Rh (D) negative red cells. To some extent, this is predictable, given that Group O Rh (D) negative red cells are justifiably given to some non-Group O Rh (D) negative recipients, for example in emergencies before the patient's blood group is known. The Australian Red Cross Blood Service strives to collect a higher percentage of Group O Rh (D) negative red cells than is present in the donor population. Between 7–8 percent of Australian blood donors are Group O Rh (D) negative, whilst ARCBS issues of Group O Rh (D) negative red cells represent between 10–12 percent of total red cell issues. This means that the donation frequency rate has to be high from these donors to keep up with demand. Further enhancements of Group O Rh (D) negative collections would be both difficult and costly.

## General principles

1. Adequate stock management policies should be in place to minimise wastage of Group O Rh (D) negative red cells arising from time expiry, and to avoid the need to electively transfuse to non-Group O recipients to prevent time expiry.
2. Adequate stocks of other groups should be maintained by hospitals to avoid the unnecessary use of Group O Rh (D) negative red cells for patients with other groups.



Group O Rh (D) negative red cells

3. Sensitisation to the D antigen through blood transfusion must, where possible, always be avoided in women with child-bearing potential (< 50 years when unknown). These guidelines aim to ensure continuous supply for this patient group.

## Indications for the use of Group O Rh (D) negative red cells

### Mandatory

- ❖ Group O Rh (D) negative patients with anti-D
- ❖ Group O Rh (D) negative females with child-bearing potential
- ❖ In emergency to premenopausal (< 50 years) females of unknown blood group
- ❖ Group O Rh (D) negative children (males and females < 16 years)

### Recommended

- ❖ Group O Rh (D) negative patients who will receive repeated transfusions, or are likely to become transfusion-dependent, for example patients with haemoglobinopathies, aplastic anaemia, myelodysplasia.

### Acceptable

- ❖ In an emergency situation, Group O Rh (D) negative red cells should be given while the patient's blood group is being established. Blood grouping should be carried out as quickly as possible to minimise the 'blind' use of Group O Rh (D) negative red cells, and this can be limited to no more than two units in most instances. Once the patient's blood group has been determined, a switch to group specific red cells should be made.
- ❖ If blood for neonatal use is required and suitable group specific red cells are unavailable.
- ❖ If the specific phenotyped red cells provided is Group O Rh (D) negative.

## Use of Group O Rh (D) positive red cells for Group O Rh (D) negative patients

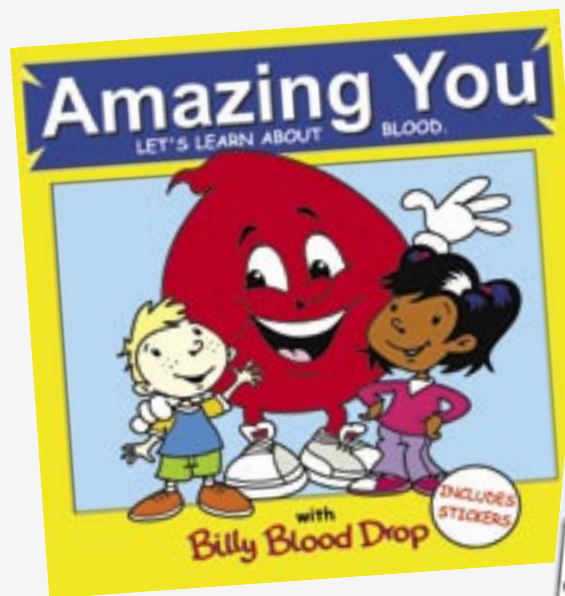
- ❖ In order to conserve stocks of Group O Rh (D) negative red cells, Group O Rh (D) positive red cells should be used in larger volume blood replacement (e.g. more than 6–10 units of blood) in females with no child-bearing potential and adult males who do not have an existing or historical anti-D.
- ❖ When Group O Rh (D) negative red cells are unavailable or in extremely short supply, it is acceptable to use Group O Rh (D) positive red cells for Group O Rh (D) negative female patients with no child-bearing potential and unimmunised males, provided no anti-D is detected on pre-transfusion testing. It should be noted that although there is a theoretical possibility that in a sensitised Rh (D) negative patient, anti-D could fall after many years to an undetectable level, this is highly unusual with current sensitive screening techniques.

# A new transfusion guide for parents and children

Having a sick or injured child in hospital is a difficult time for everyone in the family. To try to help families and young patients understand the transfusion process, information booklets, originally created by the National Health Service in the UK, have been adapted for Australia and New Zealand.

The guide has three components:

- ❖ *Receiving a Blood Transfusion – A Parents' Guide* outlines in detail what is involved in receiving a blood transfusion and is targeted at an adult audience.
- ❖ *Amazing You – Let's Learn about Blood*, featuring the character Billy Blood Drop, explains the workings of the body and blood in a story book, including a sticker exercise. It explains the reasons for transfusion, as well as the process, and has been designed for younger children.



Amazing You – Let's Learn about Blood and Voyages

- ❖ *Voyages* is a comic book designed for older children and contains more facts and information for children to read and learn by themselves.

The guide was produced collaboratively by the Bloodsafe program and ARCBS and endorsed by the New Zealand Blood Service (NZBS) and the Australian and New Zealand Society of Blood Transfusion (ANZSBT).



The information explains to parents what to expect if their child needs to receive blood or blood products during their treatment.

**To obtain further information or copies of these packages, please contact your local TMS team. Electronic versions are available at [www.transfusion.com.au](http://www.transfusion.com.au)**

# New CSL packaging

As outlined in *May Med e-News*, CSL Bioplasma has redesigned the packaging of its plasma-derived therapeutics. Cartons, vial labels, flip off caps and foil crimps have been redesigned to optimise correct use.

The new simplified labelling and design helps ensure correct identification of products.



INTRAGAM® P Human Normal Immunoglobulin (10, 20, 40, 50, 100, 200 mg/ml)	50mL	200mL
ALBUMEX® 4 Human Albumin (4%)	50mL	500mL
ALBUMEX® 20 Human Albumin (20%)	10mL	100mL
THROMBOTROL® – VF Human Fibrinogen (5)	1000U	
BIOSTATE® Human Cryoprecipitate Factor (50)	250U	500U
MonoFX® – VF Human Cryoprecipitate Factor (5)	500U	1000U
PROTHROMBINEX® – VF Human Prothrombin Complex	500U	
Normal Immunoglobulin – VF Human Normal Immunoglobulin	2mL	5mL
CMV Immunoglobulin – VF Human Cytomegalovirus Immunoglobulin	1.5MU	
Hepatitis B Immunoglobulin – VF Human Hepatitis B Immunoglobulin	100U	400U
Tetanus Immunoglobulin – VF Human Tetanus Immunoglobulin	250U (IM)	4000U (IV)
Zoster Immunoglobulin – VF Human Zoster Immunoglobulin	200U	
RH(D) Immunoglobulin – VF Human Rh(D) Ig	250U	625U

# Residual risk estimates for transfusion-transmitted infections

ARCBS publishes estimates of the residual risks of transfusion-transmitted infections in every edition of *Medilink* as a service to clinicians to guide transfusion decision-making and informed consent processes.

The viral risk estimates presented in Table 1 (below) have recently been revised based on ARCBS data from 1 January 2006 to 31 December 2007. ARCBS estimates of

residual risk of transfusion-transmitted viral infection are based on published models and represent the median risk estimate derived using three models. These estimates are updated annually. It should be noted that, as the order of magnitude of these risks is very small, the calculated median risk estimate may fluctuate from year to year.

**Table 1** Residual risk estimates for transfusion-transmitted infections

Agent and testing standard	Window Period (Days)	Estimate of residual risk 'per unit' <sup>a</sup>
<b>HIV (antibody + NAT)</b>	9	Approximately 1 in 35.2 million
<b>HCV (antibody + NAT)</b>	5.4	Approximately 1 in 3.2 million
<b>HBV (HBsAg)</b>	38	Approximately 1 in 1.9 million
<b>HTLV I &amp; II (antibody)</b>	51	Approximately 1 in 14.7 million
<b>Variant Creutzfeldt-Jakob Disease (vCJD) [No testing]</b>		Possible. Not yet reported in Australia. See section below.
<b>Malaria (antibody)</b>	N/A	1 in 4.9 million to 1 in 10.2 million

<sup>a</sup> HIV, HCV, HBV risk estimates are based on ARCBS data from 1 January 2006 to 31 December 2007. HTLV risk estimate based on data from 1 January 2004 to 31 December 2007. For other agents refer below.

*Viral estimates:* Seed CR, Kiely P and Keller AJ. Residual Risk of Transfusion Transmitted Human Immunodeficiency Virus, Hepatitis B Virus, Hepatitis C Virus and Human T Lymphotropic Virus. *Intern Med J* 2005; 35(10): 592–8.

*Malaria:* Seed CR. Residual Risk Estimates for Transfusion Transmitted Malaria (TTM). ARCBS DPARC: November 9/10 2005 meeting.

There have been no reported cases of transmission by transfusion of classical Creutzfeldt-Jakob Disease (cCJD), and retrospective studies suggest that the possibility of such transmission of cCJD is remote.

To date, there have been no reported cases of vCJD in Australia. In the UK, there have

been a small number of reported cases of putative transfusion transmission since 2004. In Australia, as a precaution, people who have spent a cumulative period of six months in the UK between 1 January 1980 and 31 December 1996 and/or had a transfusion in the UK between 1 January 1980 and the present time are not accepted as blood donors.

## medilink

*Medilink* is published by Transfusion Medicine Services at Australian Red Cross Blood Service to update health professionals with the latest news and research relating to transfusion. It is published in tandem with our electronic newsletter, *Med e-News*, which is distributed in the months between *Medilinks*.

If you or your colleagues would like to be added to either of these mailing lists, please email details to Lisa Reid [lreid@arcbs.redcross.org.au](mailto:lreid@arcbs.redcross.org.au)

An archive of *Medilink* and *Med e-News* can be accessed at [www.transfusion.com.au](http://www.transfusion.com.au)

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**Australian governments fully fund Red Cross for the provision of blood products and services to the Australian community.**

## Diary note

### Transfusion Update 2009

Powerhouse Museum, Sydney  
Wednesday 6 – Friday 8 May 2009



## What's new on [www.transfusion.com.au](http://www.transfusion.com.au)

### Leucodepletion

By the end of November 2008, all red cells and platelets produced by ARCBS will be leucodepleted. Frequently asked questions about how this will affect the safety of product, and bedside practice, can be found at: [www.transfusion.com.au](http://www.transfusion.com.au)

The information is located in the Transfusion Manual area of the site, under Red Cells.

### Patients from non-English speaking backgrounds

The NSW Health Department, under its Blood Watch project, has created transfusion information material for patients in Arabic, Chinese, Croatian, English, Farsi, Greek, Indonesian, Italian, Korean, Sinhalese and Vietnamese.

The brochures explain the benefits and risks of blood transfusion, and have a checklist to help clinicians ensure the patient has understood the information.

They are available in the Consent and Risk area of [www.transfusion.com.au](http://www.transfusion.com.au) as well as at [www.cec.health.nsw.gov.au](http://www.cec.health.nsw.gov.au)