

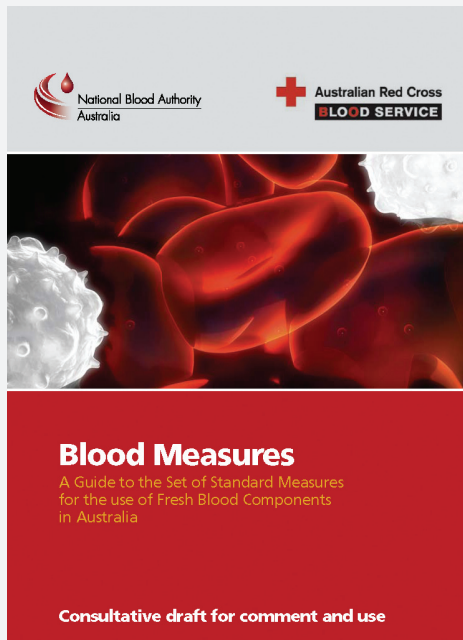
Blood Measures

The Blood Measures Project is a collaborative project between the National Blood Authority (NBA) and the ARCBS with an aim to developing national data standards to encourage consistent reporting on fresh blood component usage. Over time, this will enable comparable and more comprehensive analysis of blood usage data, which in turn will assist in fostering best practice planning and management systems.

Specifically, the project aims to achieve the widespread use by those involved in the collection of blood usage data of:

- ❖ a set of standard measures and data collection points which can be included in any investigation of fresh blood component use; and
- ❖ a set of standard parameters related to the standard measures which can be used to determine appropriate use of blood.

One of the first major outcomes of the Project is the development of a Blood Measures Guide. This *Guide to the Set of*



Standard Measures for the use of Fresh Blood Components in Australia is designed to be an easy reference guide for clinicians, transfusion practitioners, auditors and researchers to assist in the investigation of the use of red cells, platelets, fresh frozen plasma and cryoprecipitate. The Guide contains a national set of standard data definitions and parameters, which could be

used in audits, quality assurance activities, clinical registries, research projects, clinical trials, and surveys of blood component usage. It is hoped that the use of the set of endorsed measures will help to standardise the information reported on the use of blood components.

A *Consultative Draft of the Guide* has now been released for comment and use. The set of measures contained in Guide has been developed in consultation with a wide range of clinical experts, transfusion scientists and nurses, government representatives and other stakeholders.

The Draft is freely available at <http://www.nba.gov.au/bloodmeasures/blood-measures.pdf> to download, print and use. It will be available for comment and use for a six month period, after which the material will be revised and published as a booklet, as well as continuing to be available electronically on the NBA website.

Comments have been invited on all aspects of the material – the measures and their definitions, explanatory information, format and style, ease of use. The deadline for receipt of comments is 31 December 2009.

Preparation, Use and Storage of Thawed Plasma

Thawed Plasma Components: A Framework for the Preparation, Use and Storage, is now available on the ANZSBT website (www.anzsb.org.au/publications/documents/Thawedplasmacomponents.pdf). This document, approved by NATA, RCPA, TGA

and the Society, describes the minimum requirements to maintain the safety and quality of Extended Life Plasma (i.e. clinical fresh frozen plasma which has been thawed but not allocated to a designated patient and intended for

extended storage beyond 24 hours and up to a maximum of five days (at 2–6°C) from the day of thawing). It includes a series of recommendations for hospitals that decide to maintain an inventory of Extended Life Plasma.

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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Allogeneic Blood Transfusion and Long-term Survival After Cardiac Surgery

Over the last two decades, accumulating medical and scientific reports have suggested that blood transfusion may have long-term adverse effects on health, postulated to be primarily through the mechanism of immune modulation.

An article by Weightman et al¹ entitled *Moderate Exposure to Allogeneic Blood Products is not associated with Reduced Long-term Survival after Surgery for Coronary Artery Disease* which was published in the August edition of *Anesthesiology* challenges this thinking.

The authors from Sir Charles Gairdner Hospital in Perth report on the results of a prospective observational study in which the health outcomes of 1,841 consecutive patients who had isolated non-emergency first-time coronary artery surgery and who survived more than 60 days after surgery were determined by data linkage. The study investigated the association between length of survival, blood products transfused and risk factors for long-term survival at entry into the study.

One thousand and sixty-two (1,062) of the 1,841 patients were transfused. Of the transfused patients, 266 died during a mean follow-up period of 8.1 years. Of these, 27 percent had a new malignant condition recorded on the death certificate, compared with 43 percent of the non-transfused patients. Older age, cerebrovascular disease, use of a mammary graft, chronic pulmonary disease, renal dysfunction, reduced left ventricular function and preoperative anaemia were predictive of reduced long-term survival.

As part of the statistical analysis, the patients were divided into four groups depending upon the number of blood or blood products they received. The boundaries between groups were determined *post hoc* to allow approximately equal numbers in each of the transfused groups: Group 1 – not transfused, Group 2 – transfused one or two units of any blood or blood products, Group 3 – transfused three to six units and Group 4 – transfused greater than six units.

After adjusting for major preoperative risk factors, the authors did not observe an

association between the transfusion of up to six units of blood products and reduced long-term survival.

An increased hazard was observed after exposure to more than six units of blood products. Whilst this did not reach statistical significance, the authors noted that the study did not have sufficient power to draw any conclusions in this group and they could not exclude the possibility that the true hazard ratio for Group 4 could be as high as 1.8.

The authors concluded that “Patients who have undergone coronary artery surgery and who have received moderate amounts of blood as part of responsible and conservative management should be reassured that they are unlikely to experience a reduction in long-term survival.”

Reference

1. Weightman et al. Moderate Exposure to Allogeneic Blood Products is not associated with Reduced Long-term Survival after Surgery for Coronary Artery Disease. *Anesthesiology* 2009; 111(2): 327–33.

Improving Lives Through the Power of Humanity

In 2009, the ARCBS is celebrating 80 years in providing a blood service for our community as part of the Australian Red Cross. While blood products are now more diverse and sophisticated, the responsibility to the community has remained the same – to deliver safe, quality blood products and related services.

Our new *Strategic Plan: Improving Lives Through the Power of Humanity* identifies the complex environment within which the ARCBS operates and discusses the forces impacting on us as an organisation and more widely as a blood service. The plan sets out new strategic objectives and change programs which will be used to focus business planning activities in order to meet these challenges.

Successful implementation of the plan will support our mission: to perform a critical role in healthcare by providing a safe, secure and cost effective supply of quality blood



Our new Plan focuses on three central strategic objectives:

- ❖ *Deliver service excellence for our customers and donors* by enhancing our service and championing innovative improvement opportunities;
- ❖ *Provide value for our stakeholders* by delivering our products and services efficiently, and in a way that balances stakeholder priorities; and
- ❖ *Improve our organisational capacity* by attracting and retaining engaged and productive employees and enhancing systems and facilities to support future organisational sustainability.

ARCBS looks forward to working with all our stakeholders in delivering these objectives for the ultimate benefit of the patient.

Further information about our new Strategic Plan can be found at <http://www.donateblood.com.au/page.aspx?IDDDataTreeMenu=170>

products, essential services and leading edge research to meet the needs of patients.

ISBT Regional Congress, Eastern Mediterranean and Europe, March 21–25, 2009, Cairo, Egypt

Cairo has a population equivalent to all of Australia. Being surrounded by incredible antiquity and the Pyramids on the horizon cannot help but inspire. People were welcoming and friendly but the roads were chaotic and some of the taxi rides breathtaking!

The first day of the conference was dedicated to the role of information technology (IT) in blood transfusion services with some salient reminders that IT will not solve your process problems. There was significant emphasis that computers do not make safe or efficient systems in isolation. Experiences were shared from the UK, Egypt, Czech Republic and Sri Lanka including some blood services that have experienced failures and the lessons they learned.

It was clear from many of the presentations that we are experiencing many similar issues in transfusion within Australia with the challenge of patient identification. An Arabic name may have multiple potential ways of spelling and is a real challenge for pre-transfusion testing samples that present to the transfusion laboratory.

A session on 'Vein to vein' covered right blood, right patient, right time, right place from a Polish perspective, but again focused on universal issues including patient identification and appropriate use of blood components.



Adverse events were also reviewed, dealing with both donor and recipient data; with an overview of the European Hemovigilance Network (now the International Hemovigilance Network given the member nations of which Australia also participates) work on definitions, imputability and severity. Of note were reports of under-transfusion in France where there has been mandatory reporting for some time with > 100 deaths attributed. The primary causes of fatality include transfusion-associated circulatory overload (TACO), transfusion-related acute lung injury (TRALI), transfusion-transmitted infection (TTI) and ABO haemolytic transfusion reactions.

Another key theme was equity of access to high quality blood and blood products, as there were a number of countries represented at the meeting from the developing world.

Various strategies and differences in approach were discussed related to budget, availability of technology and how the world blood transfusion community can play a role.

Issues discussed in the "controversies" program included "Donors have no rights", "Safety has not price" and "Blood is a global commodity". The ideas presented certainly do challenge us all to consider blood transfusion in a global light.

Patient Blood Management Guidelines Development

The NHMRC/ASBT Clinical Practice Guidelines for the Use of Blood Components (2001) are currently under review. The review is being conducted by the Australian and New Zealand Society of Blood Transfusion (ANZSBT) and the National Health and Medical Research Council (NHMRC), with funding, project management and secretariat services provided by the National Blood Authority (NBA) on behalf of all Australian governments.

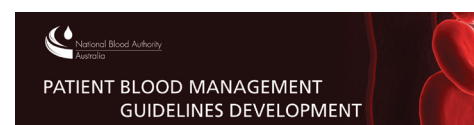
The review will result in the production of five comprehensive, evidence-based, patient-focused blood management guidelines and one product-focused guideline.

There will be a three-phased approach with two guidelines being developed in each phase:

- Phase 1:** Peri-operative Guideline
Critical Bleeding Guideline
- Phase 2:** Medical Conditions Guideline
Obstetrics Guideline
- Phase 3:** Paediatrics/Neonatal Guideline
Product Guideline.

The NBA has facilitated the formulation of a Steering Committee, Expert Working Group and Clinical/Customer Reference Groups.

Progress to date includes development by the Expert Working Group of a series of questions for systematic review relating to all five



clinical guidelines. The questions relating to the two guidelines being developed as part of phase one have also been further refined by the Clinical/Consumer Reference Groups.

Interested groups, organisations and individuals will be invited to make submissions on the draft recommendations when they are made available for public consultation later this year.

For further information, contact the NBA at guidelines@nba.gov.au

Updated 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 assist transfusion decision-making and informed consent processes.

The viral risk estimates presented in Table 1 have recently been revised based on ARCBS data from 1 January 2007 to 31 December 2008.

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.

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.¹

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.

When considering the significance of specific risks, it is often useful to compare them to the risks associated with everyday living. The risk estimates listed above are very small when compared to everyday risks (refer to the Calman scale, right). The chance of dying in a road accident, for example, is about 1 in 10,000 per year.

Reference

1. Dorsey et al. Lack of evidence of transfusion transmission of Creutzfeldt-Jakob disease in a US surveillance study. *Transfusion* 2009; 49: 977-984.

Table 1 Residual risk estimates for transfusion-transmitted infections

Agent and testing standard	Window Period (Days)	Estimate of residual risk 'per unit' ^a
HIV (antibody + NAT)	9	Approximately 1 in 5.4 million
HCV (antibody + NAT)	5.4	Approximately 1 in 2.7 million
HBV (HBsAg)	38	Approximately 1 in 739,000
HTLV I & II (antibody)	51	Approximately 1 in 17.5 million
Variant Creutzfeldt-Jakob Disease (vCJD) [No testing]		Possible. Not yet reported in Australia. See section to the left.
Malaria (antibody)	14	1 in 4.9 million to 1 in 10.2 million

^a HIV, HCV, HBV risk estimates are based on ARCBS data from 1 January 2007 to 31 December 2008. HTLV risk estimate based on data from 1 January 2004 to 31 December 2008. 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.

Non-Viral Serious Risks of Blood Transfusion

The most frequently reported serious or fatal complications of blood transfusion are bacterial contamination, transfusion-related acute lung injury (TRALI) and ABO incompatibility (the later mostly due to preventable patient or sample identification errors). Other serious risks associated with transfusion, based on overseas estimates, are outlined in Table 2.

Table 2 Reported Non-Viral Serious Risks of Blood Transfusion

Adverse reaction	Risk per unit transfused (unless specified)
Bacterial sepsis* – Platelets – Red cells	At least 1: 75,000 At least 1: 500,000
Haemolytic reactions – Acute – Delayed	1: 12,000 to 77,000 1: 4,000 to 9,000
Anaphylaxis – IgA deficiency	1: 20,000 to 50,000
Fluid overload/cardiac failure	Up to 1% of patients receiving transfusions
Transfusion-related acute lung injury	1: 5,000 to 190,000
Transfusion-associated graft versus host disease	Rare

* Clinically apparent reactions

Source: *ARCBS Blood Component Information Booklet 2009*. Available at <http://www.manual.transfusion.com.au/admin/file/content13/c6/BCI%202009.pdf>

The **CALMAN Chart** (Calman 1996[†]) for explaining risk (UK risk per one year)

Negligible:	< 1,000,000 e.g. death from a lightning strike
Minimal:	1:100,000 - 1:1,000,000 e.g. death from a train accident
Very low:	1:10,000 - 1:100,000 e.g. death from an accident at work
Low:	1:1000 - 1:10,000 e.g. death from a road accident
Moderate:	1:100 - 1: 1000 e.g. death from smoking 10 cigarettes per day
High:	> 1:100 e.g. transmission of chickenpox to susceptible household contacts

[†] Calman K. The Health of the Nation. *Br J Hosp Med* 1996; 56: 125-6.

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