Blood Management and Transfusion Practice Handbook

2023 edition

OFFICIAL

Contents

Introduction

The following is designed to provide some context to the Transfusion Nurse/Trainer/Safety Officer role and to help you find answers to questions that might arise. There are links to useful resources throughout the handbook.

If you need further assistance you can contact the Blood Matters team on email bloodmatters@redcrossblood.org.au or go to the Blood Matters webpage for individual contacts Blood Matters Program contacts (health.vic.gov.au).

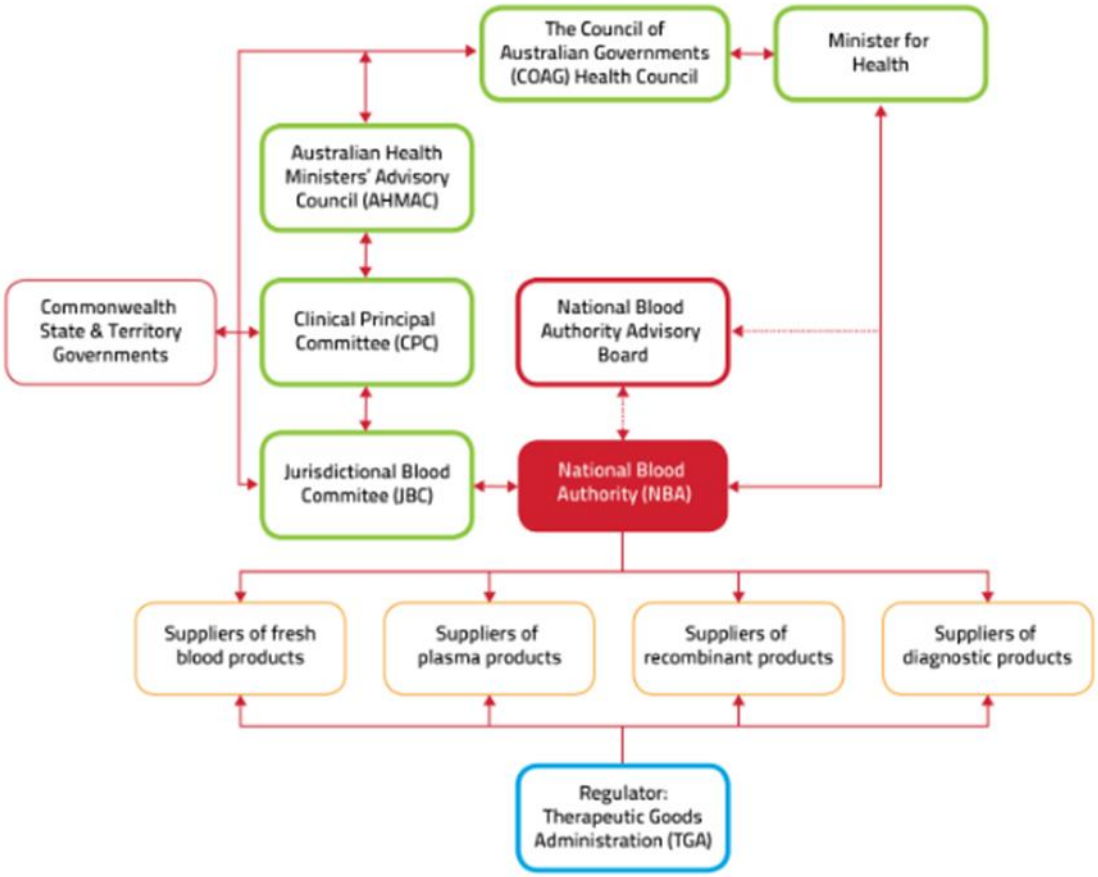
The Australian context

The National Blood Authority (NBA) is a statutory agency within the Commonwealth Government's health portfolio that manages and coordinates arrangements for the supply of blood and blood products and services on behalf of the Commonwealth and jurisdictional governments.

The National Blood Authority (NBA) Stewardship Program is aimed at supporting jurisdictions and health providers to implement the requirements of the *Australian Health Ministers' Statement on National Stewardship Expectations on the Supply of Blood and Blood Products* (the Stewardship Statement), issued on 12 November 2010. http://www.blood.gov.au/system/files/documents/nba-stewardship-stewardship-statement.pdf

Governance structure of the Australian blood sector (Governance Arrangements and Key Stakeholders | National Blood Authority)

The key governing bodies in the Australian blood sector and their roles and relationships with each other are set out in the National Blood Agreement and the NBA Act and are pictured and described below.



The JBC is the conduit between governments and the NBA. Representation from all jurisdictions provides positions on:

1. blood policy, demand, supply planning and product distribution
2. funding and evidence-based approaches to emerging products
3. services and technologies

It oversees the NBA's role in blood supply contracting.

Australia has only one fresh product supplier, Australian Red Cross Lifeblood (Lifeblood), whereas fractionated products are managed through contracts with the successful tenders and include Australian and international suppliers e.g. intravenous immunoglobulin, haemophilia products. Lifeblood then distributes these products to health services.

The budget for blood and blood products is cost shared between the Commonwealth government at 63 per cent and jurisdictional governments at 37 per cent collectively.

At a jurisdictional level, blood budgets are distributed in a variety of ways,

- centrally controlled by the local jurisdictional health department,

- devolved to health services/pathologies where the proportional dollar value is attributed according to designed usage/population figure or
- partially devolved which is a mix of central and devolved funding.

Where funding is devolved, it is to public health services, not private. In jurisdictions with a devolved blood budget, it is only the state portion that is devolved.

Regardless of the funding model applied at the jurisdictional level, blood product costs are not passed onto Australian health consumers, as per the National Stewardship agreement.

National Safety and Quality Health Service Standards – second edition

In 2011, the first edition of the Australian Commission on Safety and Quality in Healthcare National Safety and Quality Health Service (NSQHS) Standards (the Standards) were released to drive the implementation of safety and quality systems and improve the quality of health care in Australia. The NSQHS Standards provide a nationally consistent statement about the level of care consumers can expect from health services.

The second edition of the Standards was released November 2017, with the first health service being accredited against the revised edition in 2019. The second edition addresses gaps identified in the first edition and actions have been consolidated and streamlined to make them clearer and easier to implement and reduce duplication.

The Blood and Blood Product standard has been renamed the Blood Management standard. The revised standard is patient focused rather than product focused, has added important aspects of patient blood management, acknowledging patients' blood is a valuable and unique resource that should be conserved and managed well. This standard aims to ensure that safe, appropriate, effective, and efficient blood systems are in place to minimise risk associated with the use of blood products.

All health services that administer any blood or blood product and is accredited under the National Safety and Quality Health Service Standards will be required to meet the criteria of the Blood Management Standard.

In health services the Transfusion Governance Group (TGG), often known as the Blood Management Committee (BMC), Hospital Transfusion Committee (HTC) or Patient Blood Management Committee (PBMC) plays a key role to ensure that all actions for the Standards are addressed and met. The governance group is responsible for overseeing systems to improve the quality and safety of practice across the range of activities relating to blood management, and blood and blood product transfusion.

Rural or small metropolitan health services may not have access to the expertise available in larger, metropolitan sites; therefore, the governance model may vary, however the outputs to meet the requirements of the standard must still occur. In lieu of a specific committee or group, hospital blood management governance oversight may be added as an agenda item on an existing clinical governance committee such as a clinical review, risk management or quality committee. A team should be formed; however, it may only consist of two people with regular contact that ensures the direction and objectives set by the blood management governance group or equivalent, are implemented. Important individuals may be educators and/or those in quality/risk roles. (See Blood Management Committee section for further information)

Information on the National Safety Quality Health Service Standards and the accreditation process is available at: https://www.safetyandquality.gov.au/our-work/assessment-to-the-nsqhs-standards/nsqhs-standards-second-edition/

National Blood Authority

Patient Blood Management Guidelines

The National Blood Authority (NBA) has funded and managed the development of a series of evidence-based Patient Blood Management (PBM) Guidelines, comprising six modules. Patient Blood Management Guidelines | National Blood Authority

All the modules are intended to assist and guide health-care professionals in making clinical decisions when managing patients in a variety of clinical areas. The guidelines include recommendations and practice points with the aim of reducing the need to blood transfusion where possible and identifying when transfusion is likely to be appropriate. The six modules are:

- Module 1 Critical Bleeding/Massive Transfusion
- Module 2 Perioperative – including pre, intra and postoperative of patients undergoing surgery or invasive procedures, particularly those in which blood loss is anticipated.
- Module 3 Medical – including patients with acute or chronic medical conditions requiring haematological intervention.
- Module 4 Critical Care
- Module 5 Obstetrics and Maternity for managing pregnant and postpartum women.
- Module 6 Neonatal and Paediatrics for blood management in neonatal and paediatric patients.

These guidelines are currently under review.

What Blood Products are Supplied - National Product Price List

The NBA provide a list of products currently available in Australia. What Blood Products are Supplied - National Product Price List | National Blood Authority

BloodNet and BloodSTAR

BloodNet is an online blood ordering and inventory management system. It is a web-based system that allows staff (most often pathology providers/blood banks) in health facilities across Australia to order blood and blood products in a standardised way and to do so quickly, easily, and securely from Lifeblood. Reports within BloodNet provide information on wastage for a health service, including reasons for the waste.

BloodSTAR is an online system used across Australia to manage access to government funded immunoglobulin products (intravenous and subcutaneous). The system manages the authorisation request and review process for the treatment of conditions identified in the Criteria for the clinical use of intravenous immunoglobulin in Australia.

Access to BloodNet and BloodSTAR can be achieved via the Blood Portal on the NBA webpage. You will need to request access to become an authorised user.

Bleeding disorders

Information on bleeding disorders and where to find an Australian Haemophilia Treatment Centre are on the NBA website, as well as information on the Australian Bleeding Disorders Registry (ABDR).

Guidelines for the management of haemophilia in Australia HaemophiliaGuidelines-interactive-updated-260317v2.pdf (blood.gov.au)

Haemovigilance reporting

The NBA analyses data from state and territory health departments on reported adverse events related to transfusion to provide a published report on events occurring. Haemovigilance Reporting | National Blood Authority

The Serious Transfusion Incident Reporting (STIR) system is the Victorian haemovigilance reporting system. STIR is described further in the document.

Australian Red Cross Lifeblood (Lifeblood)

Lifeblood provides all fresh components for health services to use. They also distribute fractionated products produced from Australian plasma by CSL Behring Australia | Home the Australian fractionator, and imported products supplied under NBA contracts with international suppliers.

Lifeblood (previously the Blood Service) was founded in 1929 in Victoria before expanding to other states. It is a division of the Australian Red Cross. Originally each state had its own Blood Service until 1996 when they amalgamated to form a national Blood Service. In 2019 the Blood Service changed its' name to Lifeblood, to reflect the diversity in services it provides. As well as blood and blood products, they are involved in milk, microbiome, tissue and organ donation through collecting, banking and testing.

Blood donation

Lifeblood collected over 1.5 million individual donations in 2021-22 [Lifeblood Annual report 2021-22] from over 520,000 donors with over 93,000 being new blood donors. lifeblood-annual-report-2021-22-13.0-FA (1).pdf

Each week 29,000 donations are required to meet demand. Lifeblood attracts and retains donors through regular advertising and marketing campaigns. Lifeblood also provides advice, information and education about blood products and practices to clinicians and health professionals, through Medical Services. Further information is available at https://transfusion.com.au/

In Australia, blood and its components are collected at fixed and mobile collection centres (currently 96 sites) in accordance with recommendations from the World Health Organisation (WHO), the International Society of Blood Transfusion (ISBT) and the International Federation of Red Cross and Red Crescent Societies. Blood donations are made voluntarily and are non-remunerated.

Lifeblood works alongside Australian regulators, government departments and commercial and professional organisations, as well as international bodies, to constantly review and improve the safety and provision of blood and blood components in Australia.

Blood donors

Donors are required to be aged between 18 and 70 years, weigh more than 50 kg and be fit and healthy, at the time of donation. Donors are asked to complete a donor questionnaire prior to donating. This confidential and legally binding form asks about health and lifestyle and whether they are eligible to donate blood on that day. Since 2019 this has become an electronic form. Donors are interviewed by a

trained member of staff, with the short interview including a health check, a haemoglobin check and blood pressure. This discussion takes place at each donation, to assess recent health and determine that nothing has altered since the last visit.

Approximately 470 mL whole blood is donated. For the majority this is around 10 per cent of their total blood volume and can be donated safely every 12 weeks. Total time taken to give this amount in a whole blood donation is around 10 minutes. A whole blood donation is separated into three critical components: red cells, plasma, and platelets.

Donors can specifically donate plasma and/or platelets through apheresis donation and this can occur every two to three weeks. Donating this way takes approximately an hour. Donor information is available at http://www.donateblood.com.au/

Worldwide the demand for red cells is reducing and in Australia, demand for red cell units continues to decrease year on year. In contrast to declining demand for red cell units, Australia is seeing exponential growth in the use of plasma. The number of plasma donations in Australia is growing by an average of 14 per cent per year. In 2021-22, more than 819 tonnes of plasma (slightly down on the previous year) was sent to CSL Behring to produce plasma products. In 2018, Lifeblood opened two plasma donor centres in Townsville and Canberra, the first of their kind in Australia.

Testing of donated blood products

Each time blood is donated samples are taken for testing. Lifeblood tests the donation for ABO group, Rh D group and other red cell antibodies. It also tests for a number of infectious diseases that may be transmitted by a blood transfusion.

Find out more about blood donation testing at Donation testing | Lifeblood

Test results

Lifeblood notifies its donors of any abnormal results on infectious disease and red cell antibody screening once testing is completed. The donor is advised about the health implications of the positive tests. As with all information held by Lifeblood, the information is confidential and released only to the donor and agencies, such as the Department of Health, as required by law.

Lifeblood Transfusion Policy and Education unit

The Transfusion Policy and Education team provide education for all groups of health professionals. This includes the following resources.

Lifeblood-Blood Component Information – Circular of Information An extension of blood component labels is updated regularly and can be downloaded from: 29 BCI 2023_v1.1 FINAL.pdf

The Blood Book: Australian Blood Administration Handbook 2020 contains information on blood products and their administration and can be used as a bedside resource to assist with correct transfusion practice. Available at: https://transfusion.com.au/bloodbook

Transfusion pack check – This is a learning resource for checking a blood component pack before transfusion, complete with exercises for students, which is available at: pack check | Australian Red Cross Lifeblood (transfusion.com.au)

Resource library | Lifeblood includes:

- Transfusion Orientation Pack 2023
- Factsheets

- Toolkit for Maternity Blood Management
- Blood Component Administration Checklist

On line audit tools The Audit Tool | Lifeblood can be used by health services for internal audits and comparison with other health services. Lifeblood audit tools provide health professionals with free easy-to-use online audits to help hospitals with their clinical transfusion and patient blood management audit activities.

Each audit is based on national standards and/or guidelines including the National Safety and Quality Health Service Standards and the Patient Blood Management Guidelines.

Fractionated plasma products

CSL Behring (formerly CSL Bioplasma) has been Australia's national fractionator of plasma-derived therapeutics since 1952 and is regulated by the Therapeutic Goods Administration (TGA). Plasma is provided by Lifeblood from voluntary Australian donations to produce high-quality plasma-derived therapeutics. This includes:

- Immunoglobulins: intravenous/subcutaneous immunoglobulin and other immunoglobulins
- Clotting factors
- Albumin

For further information on products supplied by CSL Behring, and consumer information go to CSL Behring Australia | Home.

CSL Behring transition of products in 2023

Under the National Fractionation Agreement for Australia in place between the NBA and CSL Behring, CSL Behring has been investing in new facilities at its manufacturing site at Broadmeadows in Victoria to provide expanded capacity for processing Australia's growing annual domestic plasma collections.

The manufacturing process for five of Australia's domestic plasma products will change. The products will continue to be manufactured in Australia from Australia's plasma but will be manufactured using CSL Behring's global manufacturing processes.

Current product	Transitioned product
Intragam 10 (10% Intravenous immunoglobulin)	Privigen AU (10% intravenous immunoglobulin manufactured using the Privigen process)
Evogam (16% subcutaneous immunoglobulin)	Hizentra AU (20% subcutaneous immunoglobulin manufactured using the Hizentra process)
Albumex 4 (4% albumin)	Alburex 5 AU (5% albumin manufactured using the Alburex process)
Albumex 20 (20% albumin)	Alburex 20 AU (20% albumin manufactured using the Alburex process)
Prohrominex-VF (prothrombin complex concentrate containing clotting factors II, IX, and X)	Beriplex AU (prothrombin complex containing clotting factores II, VII, IX, and X manufactured using the Beriplex process)

For further information: AUSTRALIA'S DOMESTIC PLASMA PRODUCTS WILL TRANSITION IN 2023 | National Blood Authority

Intravenous and subcutaneous immunoglobulin supply

The growth in demand for intravenous immunoglobulin (IVIg) means it must be reserved for use in those with the greatest need. Australia has not been able to fully supply all the IVIg it requires for many years, so in 2008 criteria for access to IVIg funded under the National Blood Agreement was developed and endorsed by the Australian Health Ministers Advisory Council for use by clinicians, these criteria have been regularly updated and version 3 is currently available.

Nationally there are five funded IVIg products available. A presentation about the current products is available on the Blood Matters website Immunoglobulin (Ig) replacement therapy (health.vic.gov.au).

Lifeblood distributes IVIg to health services for patients. Clinicians may stipulate which imported product they wish their patient to receive, however Intragam 10 [Privigen® AU] (domestically produced IVIg) cannot be requested as distribution is allocated by Lifeblood. All products are approved by the TGA for therapeutic use. The following table outlines both IVIg and subcutaneous immunoglobulin (SCIg) products currently available.

Current supply arrangements for IVIg

Product name	Supplier	Plasma source	Date available
Flebogamma® 5%	Grifols Australia	International	January 2021
Flebogamma® 10%	Grifols Australia	International	January 2021
Gamunex® 10%	Grifols Australia	International	January 2021
Privigen® 10%	CSL Behring	International	January 2021
Octagam® 10%	Octapharma	International	January 2021
Kiovig® 10%	Takeda	International	May 2023
Intragam 10 (10%)	CSL Behring	Australia	Discontinued – April 2023
Privigen® AU in 2023	CSL Behring	Australia	April 2023

Current supply arrangements for SCIg

Product name	Supplier	Plasma source	Date available
Hizentra® 20%	CSL Behring	International	January 2021
Cuvitru® 20%	Takeda	International	January 2021
Evogam 16%	CSL Behring	Australia	Discontinued – May 2023
Hizentra® AU (20%)	CSL Behring	Australia	May 2023

If a patient's condition is outside the current criteria for IVIg use it may be possible to access an imported IVIg product using the Jurisdictional Direct Order process.

The governance of IVIg is strictly enforced and information on the process for authorisation and management of IVIg products can be found at https://www.blood.gov.au/Ig-program

Many patients who receive IVIg in health services are eligible for SCIg in the home. This requires a health service to be an approved site with a program to teach and support these patients. Blood Matters has a project nurse assisting health services to develop these programs. Contact Blood Matters for assistance if you wish to establish a program in your health service. (See Subcutaneous Immunoglobulin)

Australian and New Zealand Society of Blood Transfusion (ANZSBT)

The Australian and New Zealand Society of Blood Transfusion comprises over 400 members from diverse scientific, medical and nursing backgrounds working within the area of blood transfusion and related fields.

The broad aims of the ANZSBT are:

- The advancement of knowledge in blood transfusion and transfusion medicine.
- The promotion of improved standards in the practice of blood transfusion
- The collaboration with international and other regional societies interested in blood
- The promotion of interest in research into blood transfusion and allied subjects
- The formulation of guidelines in key areas of transfusion practice

The ANZSBT is affiliated with the following societies:

- Thrombosis and Haemostasis Society of Australia and New Zealand
- Haematology Society of Australia and New Zealand (HSANZ)
- British Blood Transfusion Society (BBTS)
- International Society of Blood Transfusion (ISBT)

ANZSBT provides many of the guidelines that help inform our practice, https://anzsbt.org.au/guidelines-standards/anzsbt-guidelines/

Australian and New Zealand Transfusion Professionals (ANZTP) Network

In 2011, those working in transfusion nursing formed the Transfusion Professionals Network (TP Network) special interest group under the auspices of the ANZSBT.

The Australian and New Zealand Transfusion Professionals Network (TP Network) aims to improve transfusion practice by:

- promoting consistency in transfusion practice
- contributing to patient blood management practices
- sharing knowledge and experience gained from local implementation of practice change, particularly with reference to national transfusion guidelines and standards.

Nurses, midwives, scientists or other health professionals in advanced roles are, undertaking quality improvement and clinical practice in transfusion and patient blood management are eligible to become members.

Areas of interest/activities:

- Provide support, education, advice, and exchange of information within the group for new and existing transfusion professionals, and externally, as requested
- Identify areas for transfusion practice audit, other quality improvement activities and research as well as facilitate participation, feedback of results, recommendations, and interventions
- Work collaboratively with the ANZSBT Council and Standing Committees to identify issues and areas of common interest for the attention by the Society
- Provide suggestions and support for formal (external) communications, educational and other materials, for coordination and endorsement through Council and Standing Committee Chairs.

Requirements to join the ANZSBT and affiliate with the ANZTP are available at How to Join : ANZSBT

ANZSBT guidelines

The Australian & New Zealand Society of Blood Transfusion (ANZSBT) have developed a suite of guidelines, that may be useful in everyday practice, see below for a list of some of these guidelines. To access these guidelines on the website: https://www.anzsbt.org.au/pages/anzsbt-guidelines.html

- Guidelines for the Administration of Blood Products
- Guidelines for the Prescription of Blood and Blood Products by Nurse Practitioners
- Guidelines for the Implementation and Use of Electronic Medical Records for Transfusion
- Prevention of Transfusion-Associated Graft-Versus-Host Disease (TA-GVHD)
- Guidelines for Transfusion and Immunohaematology Laboratory Practice

Blood Matters program

History

The Blood Matters project commenced in April 2002, with the formation of a consortium composed of the then Victorian Department of Human Services, Peter MacCallum Cancer Institute, The Royal Melbourne Hospital and what was then the Blood Service, now Lifeblood. This consortium developed and tested tools and processes to improve transfusion practice in hospitals.

The Blood Matters project was expanded in 2003 to include an additional 12 public hospitals in a Blood Matters Breakthrough Collaborative project; using a project methodology developed by the Institute for Healthcare Improvement in the United States. These hospitals further tested and developed transfusion interventions over an 18-month period.

The interventions included:

- improving clinician and patient awareness and knowledge of blood product use
- improving clinical decision making
- enhancing the blood administration process by making all successful practical improvement strategies available to other hospitals in Victoria and Tasmania

As part of the Blood Matters project, the transfusion nurse (TN) role was established in metropolitan and major regional hospitals. To support those in the role, the Blood Matters Consortium project developed a postgraduate Certificate in Transfusion Practice. The Better Safer Transfusion (BeST) program was established in 2004 continuing the work of the Blood Matters project and in 2008 changed its name to the Blood Matters Program.

In 2009, further funding was sought to provide workforce in transfusion improvement to regional and rural health services, with a focus on cancer services. A transfusion trainer (TT) role was established. Currently 43 health services in Victoria employ a specialist clinician to undertake blood management and transfusion improvement.

Current

The Blood Matters program is a joint initiative of the Department of Health, Victoria, and Australian Red Cross Lifeblood. The goal of the program is to support and enhance best practice in all aspects of blood management encompassing patient blood management (PBM), the stewardship of blood and blood products and transfusion practice, for improved patient outcomes in Victorian health services. Health services using blood and blood products are required to be accredited against the National Quality and Safety Health Service Standards, specifically the Blood Management Standard (7), the program provides tools and resources to assist health services meet the requirements of this standard.

Tasmania, the Australian Capital Territory, and the Northern Territory collaborate with Blood Matters regularly through memorandums of understanding (MoU).

The Blood Matters program is supported by a secretariat including a program manager, data and information managers, a transfusion nurse, a PBM education coordinator and two project roles. One project targets transfusion science aspects of blood management and transfusion practice (evolving from the red cell wastage project) and the other assisting health services implement subcutaneous immunoglobulin (SCIg) programs. Blood Matters is supported by a multidisciplinary advisory committee (BMAC).

Education

Blood Matters provide education to clinical staff (nursing and medical) virtually and, when able, in face-to-face education at health services. The five topics over five days (the Five-in-5 education series) is

undertaken two to three times per year and is available to all areas. A specific series for maternity care and an Enrolled nurse study day is available annually and specifically focuses on their needs.

If you have any questions about when sessions are occurring or wish Blood Matters to attend a study day at your health service, please contact the team. Contact details at Blood Matters Program contacts (health.vic.gov.au)

Serious Transfusion Incident Reporting

The Blood Matters' STIR program is a central voluntary reporting system for serious adverse events in hospitals or laboratories involving the transfusion of fresh blood components including near-miss and wrong blood in tube incidents. The system captures two main categories of serious transfusion incidents; clinical and procedural which are reported via data collection forms.

See STIR guide at https://www2.health.vic.gov.au/about/publications/researchandreports/blood-matters-stir-guide-2020 for complete definitions.

STIR currently collects data on the following incident types:

Clinical reports

- acute transfusion reactions – this includes febrile non-haemolytic reactions, allergic or anaphylactic reactions, acute haemolytic and hypotensive reactions
- transfusion-related acute lung injury (TRALI)
- transfusion-associated circulatory overload (TACO)
- transfusion-associated dyspnoea (TAD)
- delayed haemolytic transfusion reactions (DHTR)
- delayed serologic transfusion reactions (DSTR)
- transfusion-associated graft-versus-host disease (TA-GVHD)
- post-transfusion purpura (PTP)
- bacterial/other infection
- post-transfusion viral infection
- RhD isoimmunisations

Procedural reports

- incorrect blood component transfused (IBCT)
- wrong blood in tube (near-miss incident)
- cell salvage incidents
- RhD immunoglobulin (anti-D)
- Near miss events
- Procedural other

If reporting to the system a health service code is required, contact Blood Matters to obtain the code if you do not have one. The initial report is electronic, with the Blood Matters team sending out an investigation form to complete within 24-48 hours of notification. Serious Transfusion Incident Reporting system (health.vic.gov.au)

Projects

Project Nurse - SCIg

Subcutaneous Immunoglobulin (SCIg) is a treatment option for eligible patients otherwise requiring Intravenous Immunoglobulin (IVIg). Having this choice enables patients on immunoglobulin therapy to self/or carer administer SCIg at home at their own convenience, as opposed to attending for hospital admission on a regular ongoing basis to receive IVIg.

The eligibility for patients to access SCIg is set out in the Criteria for the Clinical Use of Immunoglobulin in Australia and can be found @ http://criteria.blood.gov.au

The Victorian Department of Health has developed a SCIg Access Program to support health services offer patients this treatment choice. The project nurse role through Blood Matters is supporting the SCIg access program by working with health services to make this treatment available to patients.

The program funding model, contact details of SCIg nurses & coordinators across Victoria, and tools to assist with the provision of information and the development of SCIg programs can all be found on the SCIg access program webpage Subcutaneous Immunoglobulin (SCIg) access program (health.vic.gov.au).

There are many benefits to both patients and health services in having a SCIg program.

For more information on how to develop a SCIg program within your health service contact SCIg Project nurse angraham@redcrossblood.org.au or telephone 03 9694 0126.

Scientist

The scientific workforce plays a vital role in the healthcare system and is supported by the Blood Matters Scientist. The aim is to assist with education and resources to support scientists with best practice in the areas of blood management and ensure compliance with national guidelines and standards.

The Blood Matters red cell wastage reduction project began in August 2014 and RBC waste reduced from 6.1 per cent to 1.8 per cent in September 2020 through the efforts of the laboratories and health services. The Blood Matters Scientist role continues to support these successful RBC wastage reduction strategies.

In 2019, the focus expanded to include waste reduction of all fresh blood components.

The following principles and approaches have been identified as crucial to the continued reduction of blood and blood product waste in Victoria:

- Effective inventory management is paramount in the reduction of expiry related waste
- Sharing blood fridge compliance data between health services and pathology providers
- Utilising the BloodNet fridges module for blood fridge data recording
- Timely movement of blood components between health services to ensure units can be transfused before expiry
- Reducing the period blood maybe allocated following a crossmatch (e.g. 24 hrs)
- Compliance with correct transportation methods for blood components
- Increasing the use of visual prompts in blood fridges, freezers and platelet agitators e.g. short expiry units
- State-wide implementation of electronic crossmatching methods

- Simplifying procedures, production of and compliance with a maximum blood ordering schedule (MBOS)
- Regular review of stock inventory levels
- Ongoing collaboration between health/pathology services

More information is available at https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/speciality-diagnostics-therapeutics/blood-matters/transfusion-science-blood-stewardship

The Blood Matters Scientist, in consultation with other programs that support transfusion practice, provides education sessions for laboratory scientists on transfusion related topics.

Blood Management/Transfusion Nurse/Trainer/Safety Officer role

Within each state and territory, there are many clinicians, primarily nurses, working in quality and safety for blood management and transfusion practice. These positions have a variety of names and are often supported by jurisdictional programs. In Victoria, these clinical specialists (professionals) are supported by the Blood Matters Program that also supports the roles in Tasmania, Australian Capital Territory (ACT) and Northern Territory (NT), through MoU. In New South Wales, support is provided by Blood Watch (Clinical Excellence Commission) and South Australia it is BloodSafe. Western Australia and Queensland programs are no longer centrally coordinated; however, there are many roles within each of these states.

Blood Matters has a Transfusion Nurse and Patient Blood Management Education Coordinator (both 0.6 FTE) to provide support for these professional roles and help direct activities within Victoria.

Lifeblood also has Transfusion Nurse roles covering all states and territories, with a focus on facilitating specialist blood product support.

Reference: Bielby, L., Akers, C., Francis, S., Darby, S., Campbell, L., Hollis, L., Quested, B. and Hogan, C. (2016), The role of the transfusion safety coordinator in Australia. VOXS, 11: 118–125. doi:10.1111/voxs.12201

Education events for BMN/TN/TT/TSOs

Education is fundamental to ensure that staff working in transfusion/PBM have the knowledge and understanding to provide high quality, effective and safe patient care. It is an ongoing process, requiring regular updates and reinforcement to keep pace with changes, to reduce errors and risk, and improve patient outcomes. Providing education and acting as a resource is a significant part of the BMN/TN/TT/TSOs role.

There are a range of education opportunities for BMN/TN/TT/TSOs to support their development and enhance their knowledge and skills to undertake or enhance their roles as subject matter experts and change agents. While working in a specialist blood management/transfusion role knowledge and expertise can be acquired through mentorship from a transfusion specialist, scientist, or nurse, support from members of the Blood Management Committee and the Blood Matters team.

Blood Matters holds a series of forums for all BMN/TN/TT/TSOs. These are generally short sessions with varying content including discussion of common clinical questions, review journal articles, specialist or specific education topics, and group support.

While the Five in 5 blood management education series is aimed at clinical staff they are also available for the BMN/TN/TT/TSO.

Please contact Blood Matters for further information bloodmatters@redcrossblood.org.au

Lifeblood provides educational opportunities to all clinicians which includes eLearning and webinars. For further information on available education opportunities go to https://learn.transfusion.com.au/

BloodSafe eLearning Australia also provides many education courses to expand your and others knowledge. For further information go to https://bloodsafelearning.org.au/

Specific education in transfusion practice

Previously a Graduate Certificate in Transfusion Practice was offered through the Melbourne School of Health Sciences at The University of Melbourne, in partnership with the Blood Service (now Lifeblood) and the Blood Matters Program, this course was the only one of its kind in the southern hemisphere and was endorsed by the International Society of Blood Transfusion (ISBT) Academy.

In 2020 the University of Melbourne stopped offering the course and new opportunities with Lifeblood Transfusion Policy and Education team are being explored. The course offered through the new partnership will be open to anyone interested in working in transfusion/PBM practice, predominately from nursing, and laboratory specialties. It is recommended for all new BMN/TN/TT/TSOs to assist in learning about all relevant areas of transfusion practice.

Please contact the Blood Matters team for further information on when the course will commence and how to apply.

Blood management committee/transfusion governance group/hospital transfusion committee or patient blood management committee

A governance group, which may be one of the above (referred to as the Committee) is essential for appropriate oversight of blood management and transfusion services within an institution to reduce the need for transfusion ensuring that patients are treated according to the principles of PBM and when blood transfusion is required it is safe, appropriate and effective and there is minimal wastage.

Primary roles of the hospital blood management committee (BMC) or equivalent is to ensure the following activities occur:

- Ensure policies and procedures are in place and are based on best practice guidelines
- Monitoring (including audits) of blood management and transfusion practices are in line with institutional policies and procedures, nationally or internationally relevant benchmarks. Feedback, reporting and improvement is undertaken based on results obtained.
- Ensure education is provided to staff regarding blood management, blood transfusion and blood stewardship to promote best practice.
- Provide an active forum to facilitate communication on blood management and transfusion practices.

The primary role of the Committee is to provide an active forum for communication between staff directly involved in clinical and laboratory based PBM/blood transfusion practices, to identify risks and solutions, provide feedback and education in relation to problems that may arise, and to ensure best practice.

Victorian health services should refer Health Service Blood Management or Patient Blood Management Committee guidance (January 2021) Clinical governance and quality improvement (health.vic.gov.au) Integrating clinical governance 7.1.

Blood management/transfusion team

The ‘team’ expedites (and usually operationalises) the work determined by the governance committee. The work of the team is also to respond to blood management and transfusion issues that arise between committee meetings and determine if the issues need escalation to the governance committee, and therefore membership must include those with relevant expertise and authority.

The team may include a BMN/TN/TT/TSO, transfusion scientist, laboratory haematology registrar, medical champion, and quality/risk representative.

The team should meet at regular intervals; however, work should proceed between meetings, and this may be more as a ‘virtual’ team; collaborating and communicating as a single entity on the directions set by the committee, or on issues arising between committee meetings. The BMN/TN/TT/TSO is usually the key coordinator, if it is not taken up by a senior manager in the organisation.

Resources -guidelines and standards

Many of the resources to support your work have been discussed above.

In addition, other items that may be useful (control + click to follow link):

- Guideline for the prophylactic use of Rh D immunoglobulin in pregnancy care.pdf (blood.gov.au)
- An update of consensus guidelines for Warfarin reversal, on behalf of the Australasian Society of Thrombosis and Haemostasis
- Department of Health Victoria: Victorian health service’s Emergency Blood Management Plan (EBMP)
- Emergency Blood Management Plan (EBMP) template for health services
- Australian standard - AS 3864.2 - 2012 - Medical refrigeration equipment - For the storage of blood and blood products

International organisations

International Society of Blood Transfusion and Transfusion Practitioner forum

The International Society of Blood Transfusion (ISBT) is a scientific society that was founded in 1935. Since that time, the ISBT has grown into an international society where transfusion medicine professionals from across the globe come together and do the one thing they do best: share knowledge to improve the safety of blood transfusion worldwide.

The society’s most important activity is to promote science and education related to blood, cells and transplantation. They have created an educational platform; the ISBT Academy ePortal. This eLearning facility includes webcasts of ISBT congress presentations and a library of transfusion guidelines.

In addition, the society:

- Encourages and supports the ISBT Working Parties that focus on the study of specific topics.
- Publish a scientific journal Vox Sanguinis and provide other high quality educational print and electronic material.
- Organise International and Regional congresses.

- Support and participate in regional workshops, seminars, and congresses either financially or by use of the ISBT logo.
- Support professionals from low and medium development index countries financially.

Membership information can be found at: http://www.isbtweb.org/my-isbt/isbt-membership/

Transfusion Practitioner (TP) Forum*

The Transfusion Practitioners (TP) forum has been established with the Clinical Transfusion Working Party to promote the role and value of TPs within the international blood sector. The forum provides a platform for international TP collaboration; where knowledge and experience can be shared to support development of initiatives and practices of safe transfusion practice, implementation of patient blood management and haemovigilance. The Transfusion Practitioners also have their own online discussion forum on the ISBT Forum; you can join by contacting communication@isbtweb.org

** The term transfusion practitioner (TP) is used internationally to describe roles/titles that are referred to in Australia as blood management nurse, transfusion nurse, transfusion trainer, transfusion safety officer, transfusion quality officer, transfusion clinical nurse consultant, or PBM coordinator. This term is not used in Australia to prevent any possible confusion with the authorised and licensed Nurse Practitioner roles.*

Websites

The following sites may also provide useful information to inform your work.

Title	Website
AABB	http://www.aabb.org/Pages/default.aspx
Better Blood Transfusion Programme – NHS Scotland	http://www.betterblood.org.uk/
British Society for Haematology	http://www.b-s-h.org.uk/
Canadian Society for Transfusion Medicine	http://www.transfusion.ca/Home
Serious Hazards of Transfusion (SHOT)	http://www.shotuk.org/home/
National Health Service Blood and Transplant (UK)	http://www.nhsbt.nhs.uk/
International Society of Blood Transfusion	http://www.isbtweb.org/
Ontario regional blood coordinating network (ORBCoN)	http://transfusionontario.org/en/
Ontario Nurse Transfusion Coordinators (ONTraC)	https://www.ontracprogram.com/Login.aspx?company=&ReturnUrl=%2fdefault.aspx
Network of Advancement of Patient Blood Management, Haemostasis and Thrombosis (NATA)	http://nataonline.com/

Transfusion journals

These are some of the commonly used transfusion related journals that may provide information for your work.

1. Transfusion
2. Vox Sanguinis
3. Transfusion and Apheresis Science
4. Transfusion Medicine
5. Transfusion Medicine Reviews

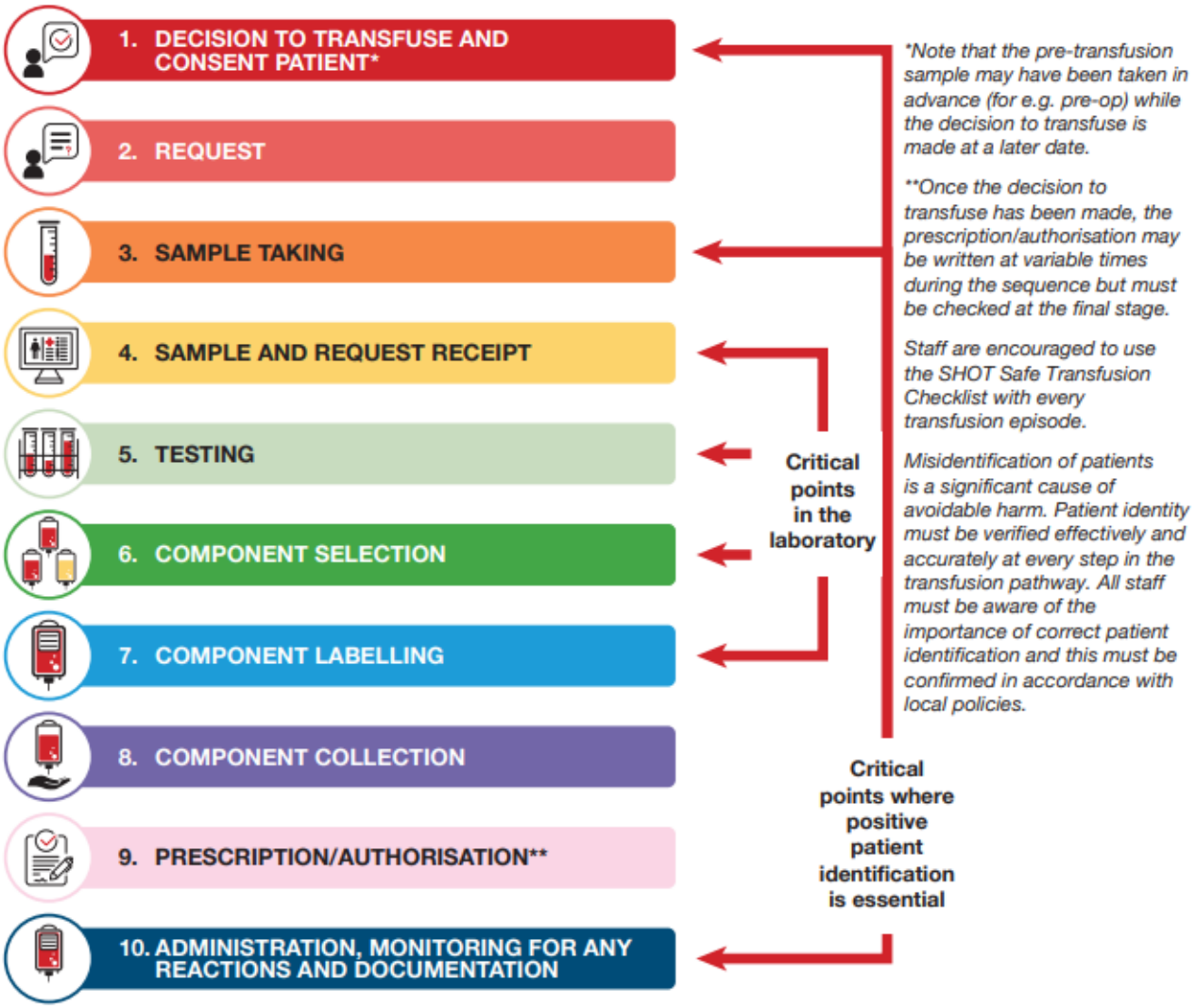
6. British Journal of Haematology
7. Haematological Journal of the European Haematology Association
8. Journal of Thrombosis and Haemostasis
9. Transfusion Alternatives in Transfusion Medicine
10. ISBT Science Series
11. Transfusion Today
12. Journal of Infusion Nursing

Educational materials

The following websites provide education materials that may be used for both staff and patients.

Title	Website	Comments
Blood Matters	Blood Matters Program (health.vic.gov.au)	Includes Blood Management Standard tools and resources, audit templates and reports, serious transfusion incident (STIR) information etc.
BloodSafe	BloodSafe | SA Health	Includes information on blood administration and anaemia management, including tools related to iron supplementation.
BloodSafe eLearning Australia	https://bloodsafelearning.org.au/	Provides courses for all staff on various aspects of the transfusion process, administration, critical bleeding, patient blood management etc.
Blood Watch	Blood Watch - Clinical Excellence Commission (nsw.gov.au)	Provides patient information brochures in several languages.
Australian Red Cross Lifeblood	http://www.transfusion.com.au/	Provides information on products and reactions. There are several educational webinars etc. that you can attend.
Australian Red Cross Lifeblood Patient Information	http://mytransfusion.com.au/	Website for patients and carers with information on the transfusion process.
Australian Red Cross Lifeblood Donor information	http://www.donateblood.com.au/	Provides information on the donation process, eligibility and bookings.

Steps in the transfusion chain



Annual SHOT report 2021 Figures From Annual SHOT Report 2020 (for jpeg)v1.2.indd (shotuk.org)

As shown above there are multiple steps in the transfusion chain, with multiple staff involved at different levels. For clinical staff there are three critical steps where positive patient identification is vital, at the decision to transfuse, pre-transfusion sample collection and blood product administration. The time of component collection, (from the blood bank or satellite fridge), is another step in the process where clinical staff need to perform accurate and detailed identification processes to ensure the right product is collected for the right patient.

Request: refers to the request for the laboratory to prepare blood products/components for a particular patient. This needs to be clear and follow national guidelines from ANZSBT.

The decision to transfuse a patient should be based on their clinical condition, not laboratory results alone. NBA guidelines inform these decisions.

There are a number of other resources to inform the decision to transfuse, see Resources.

Consent for transfusion should be obtained by the prescriber, from the patient (ideally) or the medical treatment decision maker if the patient is unable to consent, prior to the transfusion occurring, except in emergencies when it is not possible to obtain consent.

Consumer information brochures to support the consent process are available from several sources including:

- Blood Matters webpage
- Lifeblood (including the mytransfusion website http://mytransfusion.com.au/),
- Blood Watch (NSW)
- BloodSafe (SA).

Refusal of consent to transfusion is the right of all patients who are deemed competent to give or refuse consent. Health services should have a process in place to manage patients without the use of blood or blood products.

Where a patient is unable to provide consent there are processes in place to assist in determining who can make these decisions, and how they should be documented.

Information can be found at Office of the Public Advocate or Medical Treatment Planning and Decision Act 2016

Sample taking: refers to the pre-transfusion testing for blood component administration, which includes the blood group and antibody screen and the crossmatch. ANZSBT have guidelines that laboratories follow (as above). Blood Matters provides educational materials for safe clinical practice and the prevention of wrong blood in tube errors. ANZSBT provides information on the minimum requirements for blood banking specimens.

Specimens are acceptable for pre-transfusion testing as follows:

• 72 hours from collection: if the patient has been pregnant or transfused in the previous 3 months (or if this information is not available or is unreliable).

• 7 days from collection: if the patient has not been pregnant or transfused in the previous 3 months.

• (Up to) 3 months from collection: for specimens taken in advance of elective surgery; it must be confirmed at the time of collection and again following their subsequent admission to hospital that the patient has not been pregnant or transfused in the preceding 3 months. (ANZSBT)

If a patient is receiving repeated transfusions, a new specimen should normally be collected every 72 hours.

It is important pretransfusion sample collection must include positive patient identification processes and labelling of specimens in the presence of the patient.

Sample receipt, testing, component selection and component labelling: all occur in the blood bank/laboratory and are regulated by ANZSBT guidelines and the National Association of Testing Authorities (NATA) Australia; the national accreditation body for laboratories in Australia.

See Guidelines for Transfusion and Immunohaematology Laboratory Practice (anzsbt.org.au) for further information.

Component collection: This may occur by direct collection from the laboratory or via a secondary collection point, such as a blood fridge outside the laboratory or a pneumatic chute/tube system (PTS) (from the laboratory to a clinical area).

It is important that collection processes are safe for all systems used. The person collecting the blood, should have documentation that clearly defines the patient and product required. Where a blood fridge outside of the laboratory is used, documentation of the date and time of collection, and who collected the product are required.

Where PTS are used, these must be validated for use with blood products and there should be systems in place to check the correct patient product is collected from the destination before going to the patient bedside. Staff need to be aware that there may be several patients requiring transfusion, and therefore products for different patients can arrive via the PTS close in time to each other, and not necessarily in the time order expected.

Prescription: This is the order that the staff will use to administer the blood product. The prescription must give a clear, legible instruction, avoiding abbreviations where possible and ensuring that for processed products where there may be similar, but not necessarily interchangeable products, the needed product is clear.

The prescription must be legible and contain:

- patient identification details: family name and given name, gender, date of birth (DOB) and unique patient identification number if available
- date, timing, and urgency of the transfusion
- appropriate and consistent terminology for the blood product to be administered
- special blood product requirements or modifications required: for example, irradiated or cytomegalovirus (CMV) seronegative
- the route of administration
- the number of units or dose of blood product to be given, using appropriate units of measure (e.g. number of packs, volume in millilitres, units or weight in grams); blood component volumes should be stated in millilitres for neonatal patients and children less than 20 kg.
- the duration over which the blood product is to be administered (ANZSBT)

Administration: This is the final opportunity to detect errors that have occurred earlier in the transfusion chain. The final patient and product checks are vital to patient safety.

Go to Guidelines for the administration of blood products 2nd Edition (anzsbt.org.au) for further information on equipment and compatible fluids and medications.

'30-minute / 4-hour rule' for red cells

- Blood should be commenced as soon as it arrives in the clinical area (after pre-transfusion checks)
- Blood returned to Blood Bank, or signed back into the Blood Fridge within 30 minutes of issue may be returned to stock
- Blood that has remained in the clinical area for more than 30 minutes cannot be returned to stock, but **MAY STILL BE TRANSFUSED** to the patient if the total transfusion time is **WITHIN 4 HOURS**

Two members of staff must undertake the identity check of the patient and blood product *at the patient's side immediately before administration*.

Each of these two staff is responsible for the accuracy of the checking procedure. Although the two staff commonly do the checking together, as a shared process, this approach leaves room for error, including the administration of incorrect products to patients. Thus, each person must complete all the checks independently (a process referred to as 'double independent checking'). Two-person independent checking for safe transfusion poster (health.vic.gov.au)

The staff performing the identity check must be authorised by the relevant professional regulatory body and appropriately trained by their health service and must comply with any jurisdictional and local policy requirements.

The two individuals carrying out the check must both sign the relevant documentation confirming that the patient and product check has occurred, is correct and the component is compatible/suitable for the patient.

The person spiking or hanging the blood product must be one of the two staff members who have independently undertaken the blood and patient identity check. The pack should not be spiked until the identity check of patient and blood product is complete. The pack must be spiked and transfusion started immediately after the check has been completed. If there is a delay, the checking process must be repeated.

It is the responsibility of the person spiking or hanging the blood product to ensure that it is appropriate to undertake the transfusion at that time. This may include assessing the patient's clinical status and confirming with the prescriber.

Blood product checklist

Below is an example of a blood product checklist, detailing the requirements for the patient and product checks. This is used in routine transfusions where all product and patient details are available.

The simultaneous independent checking procedure involves checking the following details (both staff members must view each identifier independently, in the presence of the other staff member).

ALL DETAILS MUST BE CORRECT AND IDENTICAL BEFORE THE UNIT IS ADMINISTERED TO THE PATIENT.

Where there is any discrepancy in information this MUST be corrected prior to the transfusion taking place.

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1. Patient identification

What to check	Where to find it
Full name: first name, last name **Date of birth** **Medical record number (MRN)**	Ask the patient to state and spell full name and date of birth Check all 3 identifiers on: • Patient ID band • Compatibility label on the blood bag (and compatibility report if supplied) • Prescription (or medical order)

2. Blood group

What to check	Where to find it
ABO & RhD group of the patient **Patient blood group must be compatible with the blood group of the product**	• Compatibility label on the blood bag (and compatibility report if supplied) • May be found on the blood administration screen if using an EMR
ABO & RhD group of the product	• Compatibility label on the blood bag (and compatibility report if supplied) • Lifeblood label on the blood bag

3. Product details

What to check	Where to find it
Product type, e.g. red blood cells	• Prescription (medical order) • Compatibility label on the blood bag (and compatibility report if supplied) • Lifeblood label on the blood bag
Donation number	• Compatibility label on the blood bag (and compatibility report if supplied) • Lifeblood label on the blood bag
Expiry of product	• Compatibility label on the blood bag (and compatibility report if supplied) • Lifeblood label on the blood bag

Expiry of cross match	• Compatibility label on the blood bag (and compatibility report if supplied)
Pack integrity	• Pack is intact • Absence of clots, discolouration, or foreign bodies

One of the two staff performing the checks must then spike the blood bag and commence the transfusion, immediately after the checks have been completed.

In an emergency situation product and patient checks still need to occur, but if using emergency group O red cells, patient details may not be attached to the product. The following are the items that still need to be checked prior to administering an emergency group O red cell unit if unnamed.

Emergency unit checklist:

- Is there a patient ID on the component? If so, follow patient ID checking procedure as above. If not proceed to blood group check
- Blood group on the blood bag
    - O RhD negative RBC is suitable to transfuse in an emergency to all patients with an unknown blood group
    - O RhD positive RBC is suitable to transfuse in an emergency to males > 18 years and females > 50 years with an unknown blood group
    - AB FFP is suitable to transfuse in an emergency to all patients with an unknown blood group (group A FFP may be used in some situations)
- Donation number on bag must match the compatibility label or emergency label on the bag (and compatibility report or similar if supplied)
- Expiry date of blood bag
- The component should be checked for leaks, clots, or discolouration
- Blood is still required for this patient

Transfusion reactions and incidents

Blood Matters provides a state-based reporting system for serious transfusion related incidents and reactions known as the Serious Transfusion Incident Reporting (STIR) program. STIR reports Victoria's transfusion incident data to the NBA Haemovigilance program which publish a report of national data. A guide for when to report incidents and reactions can be found at Blood Matters: Serious Transfusion Incident Reporting guide 2020 (health.vic.gov.au)

Although a reaction may not be reportable to STIR, this does not mean it is not a transfusion reaction. All reactions, including those not reported to STIR should go through a process of investigation at the health service.

Lifeblood provides information on clinical reactions, causes, frequency, investigation, and management. Adverse events | Lifeblood The Lifeblood resource library can provide lanyard cards and posters detailing recognition and management of acute reactions. Resource library | Lifeblood

To receive this document in another format, email Blood Matters: bloodmatters@redcrossblood.org.au

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