NATIONAL BLOOD AUTHORITY
AUSTRALIA

National Blood Research and Development Strategic Priorities 2022-27

Applicant Guide

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Context

The Research and Development Strategic Priorities are a resource to help the blood sector deliver better patient and donor outcomes while ensuring value for money for the Australian community. They also are used to provide focus and scope for the National Blood Sector Research and Development Program (Program). The criteria used to assess applications for the Program includes how well the proposed project addresses topics included in the National Blood Research and Development Strategic Priorities.

This Applicant Guide has been developed to assist future applicants of the Program in tailoring their application to address the Strategic Priorities. A set of research and development activities within each priority, along with descriptors and context for the enablers, aims to assist Applicants to identify how their proposed research intends to enhance the ongoing wellbeing of patients, carers and blood donors in Australia.

Background

The National Blood Authority (NBA) was established by the *National Blood Authority Act 2003* (the Act) following the signing of the original National Blood Agreement by state and territory health ministers. Under section 8(I)(h) of the Act and clause 25(n) of the National Blood Agreement, the NBA is charged '*to facilitate and fund appropriate research, policy development or other action in relation to new developments by relevant government or non-government persons or bodies'* on behalf of all Australian governments

In December 2011, the Jurisdictional Blood Committee (JBC) agreed to the development of a strategy to promote blood sector specific research. In 2013, the *National Blood Research and Development Strategic Priorities 2013-2016* were published on the NBA website. These were reviewed in 2021 by an external consultant after extensive consultation across the blood sector and replaced with the National Blood Research and Development Priorities 2022-27 Report (2022-27 Priorities) and available at National Blood Research and Development Strategic Priorities.

There are now three priorities and three enablers for research and development in the Australian blood sector for 2022-27 (2022-27 Priorities). This change is intended to make clearer the distinction between the research and development that has been identified as a priority to improve patient outcomes and the enabling systems and infrastructures needed to improve the blood sector more broadly. The 2022-27 Priorities aim to enhance the wellbeing of patients, carers and blood donors by directing research and development efforts in the blood sector toward improving the sustainability, provision, and safety of Australia's blood supply.

2022-27 Priorities

Research Priorities

1. Optimise the use of blood and blood products.
2. Optimise supply including product innovation and supply chain efficiencies.
3. Reduce donor and patient adverse events.

Enablers

1. Improved data collection, accuracy and sharing.
2. Optimised health service delivery to best meet patient needs.
3. Strengthening workforce capacity.

Priority 1 - Optimise the use of blood and blood products

The appropriate clinical use of blood and blood products is critical to optimise patient outcomes and to manage the use of a limited resource. Evidence indicates that a proportion of transfusions are inappropriate, and that the evidence base for treatment and dosing with blood and blood products is not strong[1]. There has been a paradigm shift toward a focus on patient blood management (PBM), but uptake of PBM principles into the clinical community is variable. Understanding when and how blood and blood products are used will be critical to achieving improvement. Improvements will also require the development of strategies to educate patients about the risks and benefits of blood transfusion, as well as to educate the clinical community about blood conservation techniques. The conduct of high-quality research is crucial to provide a strong evidence base to drive uptake of PBM principles.

At present the use of blood and blood products for many conditions is generic, with the product used to treat a broad range of clinical symptoms. It is important to both prepare for, and take advantage of, emerging opportunities that may reduce reliance on donated blood products. Such opportunities may include the development of blood and blood product substitutes and alternative treatments. In addition, developments in product technologies, such as long half-life products, genetic and cellular therapies, and subcutaneous infusion products, provide opportunities for reducing the burden on the health system, and improving patient outcomes and quality of life.

What we are trying to achieve through further research

Improvement of clinical practice and patient outcomes by improving knowledge to optimise the use of blood and blood products, as well as strategies to avoid use of blood and blood products where appropriate.

Work progressed under the previous 2013-16 Priorities

Since 2013, research and development activities have been funded or undertaken to ensure the use of blood and blood products is appropriate including the development of PBM guidelines and immunoglobulin (Ig) governance frameworks. However, there remain research and development opportunities to strengthen the effectiveness of PBM and to better target the use of Ig.

What we want from the research community

Research activities that:

- Identify strategies to optimise the use of immunoglobulin, including aligning immunoglobulin provision with individual patient needs, cost-effectiveness, and the minimum effective dose to achieve the desired clinical outcomes.
- Develop strategies that reduce reliance on donated blood products, including identification and analysis of alternative treatment pathways.
- Undertake effective and efficient horizon scanning and surveillance of international best practice trends in blood and blood product use.

Research translation activities that:

- Evaluate models empowering patients to understand when the use of blood and blood products is appropriate, and the risks and benefits.

[1] National Blood Authority (NBA) (2010). Technical report on patient blood management in critical bleeding/massive transfusion: Volume 1 – Review of the evidence and evidence-based recommendations for clinical practice. NBA, Canberra, Australia.

- Identify and evaluate strategies aimed at improving collection and the appropriate use of plasma and plasma derived products.
- Identify and evaluate approaches to promoting patient blood management including increasing the uptake of PBM clinical guidelines, and analysis of barriers to implementation.
- Identify characteristics of the different needs of different patient demographics in relation to blood and blood products, particularly for Aboriginal and Torres Strait Islander, migrant and refugee and ageing people and communities.

Priority 2 - Optimise supply including product innovation and supply chain efficiencies

The availability of blood and blood products in the right quantities, at the right time and in the right place is dependent on a complex supply chain. The supply chain involves the collection of blood from donors, processing of the donations through manufacturing facilities and subsequent distribution across Australia. Some products are manufactured by recombinant technology, and some products are imported to meet shortfalls in domestic supply. The supply of some blood and blood products also requires careful management of inventory to ensure the correct matching of product to patient, maintenance of cold storage, management of shelf life and implementation of contingency arrangements in supply shortage situations.

Given the cost and critical nature of blood and blood products, it is essential to optimise the supply chain so it is responsive, effective and efficient.

What we are trying to achieve through further research

Optimisation of the blood supply chain to ensure that blood and blood products are managed in a way that ensures product is available to meet clinical demand while minimising wastage.

Work progressed under the previous 2013-16 Priorities

Research and development activities (including those led by the NBA and Monash University through the Blood Synergy program) have been funded or undertaken to ensure adequacy and sustainability of supply, realise supply chain efficiencies and improve performance.

Ensuring sufficient donor levels is a critical input towards achieving an adequate blood supply, noting the research and development of artificial blood products. For example, research is being undertaken to strengthen donor engagement. Lifeblood's research program includes a focus on donor behaviour and donor health and wellbeing.[2] However, research into donor behaviour since the onset of COVID-19 is limited and it is unclear to what extent the pandemic will impact the adequacy of supply.

What we want from the research community

Research activities that:

- Develop and report evidence related to activities aimed at promoting sustainable donor rates by improving understanding of donor behaviour and motivation.
- Identify opportunities and modelling to improve blood demand and supply forecasting.

[2] Australian Red Cross Lifeblood. (2021). Our research program. Retrieved from: donateblood.com.au/research/our-research-program

- Undertake systematic examinations of global innovations in therapies and products to reduce demand on blood products, including a focus on new treatments and emerging conditions, haemophilia, subcutaneous products and gene therapies.

Research translation activities that:

- Identify and evaluate characteristics of strategies to improve the quality of blood and blood products during storage, such as packaging, storage and handling processes.
- Assess the potential application of novel technology related to new and emerging blood technologies/ components/ substitutes.

Priority 3 – Reduce donor and patient adverse events

Monitoring and reporting on unsafe outcomes, or adverse events, in patients and donors is a key mechanism which is used by researchers, clinicians and policy makers to design strategies to minimise adverse events and improve outcomes.

Some adverse events can be brought about by human factors, such as wrong blood in tube events which is a persistent problem and has the potential to lead to a potentially fatal transfusion of the incorrect blood type. Other adverse events are brought about by characteristics of the product transfused, such as febrile non-haemolytic transfusion reactions. These types of adverse events can be caused by the patient response to the donors' cells or by biological accumulations during storage of blood products. The way products are stored and handled can affect patient outcome.

Also, despite a strong safety profile relating to transfusion in Australia, there remains a risk of transfusion-transmitted infections. Changing climate, travel and other demographic factors are resulting in changes to pathogens, and continuous horizon scanning is required to identify changing risk profiles.

At the other end of the supply chain, the effects on the donor of multiple blood, platelet and plasma donations are not well understood. Ensuring donor welfare is important both for the health of the donors and for the future sustainability of the blood supply chain.

What we are trying to achieve through further research

Maintenance of a safe supply of blood and blood products in Australia, and as well as implementation of collection and transfusion strategies that reduce the incidence of adverse events, improve patient outcomes and maintain donor health and safety.

Work progressed under the previous 2013-16 Priorities

Since 2013, research and development activities funded or undertaken to reduce donor and patient adverse events include national haemovigilance reporting and research by the Australian Red Cross Lifeblood, and mandatory reporting under the Standard 7 – Blood Management of the National Safety and Quality Health Service (NSQHS) Standards[3]. Through the Strategic Priorities Review, it was noted that there could be a greater focus on haemovigilance data collection to enhance monitoring of adverse events.

[3] Actions 7.07 and 7.08 of Standard 7 – Blood Management, National Safety and Quality Health Service (NSQHS) Standards, Second Edition – 2021. https://www.safetyandquality.gov.au/standards/nsqhs-standards/blood-management-standard

What we want from the research community

Research activities that:

- Develop evidence and strategies related to systematic and timely monitoring of adverse events following transfusion.
- Identify and analyse characteristics of human factors, technology changes, physiological and product characteristics which contribute to adverse events, and identification of opportunities for improvement.
- Undertake systematic examination and review of blood sector strategies related to reducing, recognising and responding to adverse events.

Research translation activities that:

- Develop and evaluate models aimed at empowering patients and donors to understand and respond to an adverse event.
- Identify and analyses changes in blood characteristics following multiple blood donations related to the development of iron deficiency in donors, and strategies to reduce its occurrence.
- Identify and evaluates treatment protocols for bleeding disorders that most effectively reduce the risk of, and manage the development of, inhibitory antibody responses.

Enabler 1 – Improve data collection, accuracy and sharing

This Enabler represents a change from how data collection was addressed in the 2013-16 Priorities. The change primarily reflects NBA's desire to be outcomes focused through their priorities and enablers.

What we are trying to achieve through further research

To promote strengthened data linkages with relevant health systems to improve the management and use of blood and blood products promoting timely and efficient data access and consistent data collection practices across Australia. This includes the development and promotion of platforms and forums to share data insights and trends, ensuring that this will be accessible and engaging for the intended audience.

Work progressed under the previous 2013-16 Priorities

Information and communication technology (ICT) platforms and data frameworks have been established or enhanced to promote appropriate blood use and data access. However, through the Strategic Priorities Review it was noted that there were barriers to efficiently access data.

What we want from the research community

Look for strengthened data linkages with relevant health systems to improve the management and use of blood and blood products promoting timely and efficient data access and consistent data collection practices across Australia.

- Develop and promote platforms and forums to share data insights and trends, ensuring that this will be accessible and engaging for the intended audience.

Enabler 2 – Optimise health and patient service delivery to best meet patient and donor needs

This represents a slight change from how service delivery was addressed in the 2013-16 Priorities. The change primarily reflects NBA's desire to be outcomes focused through their priorities and enablers.

What we are trying to achieve through further research

Promote the design and application of frameworks to promote patient and donor engagement in research with a focus on improving patient and donor experience and outcomes.

Work progressed under the previous 2013-16 Priorities

Since 2013, research and development activities funded or undertaken to optimise health service delivery to best meet patient needs include research and development funded by the NBA and by the NHMRC through Blood Synergy.

What we want from the research community

Design and application of frameworks to promote patient and donor engagement in research with a focus on improving patient and donor experience and outcomes.

- Improved understanding of how to align blood-related services with community expectations, particularly for Aboriginal and Torres Strait Islander, diverse cultural and older people and communities.
- Analysis of different ways of providing blood and blood products to patients, such as home administration of treatments, impact of the effectiveness and efficiency of the health system and on patient treatment, outcomes and quality of life.
- Engage with donors to identify and evaluate current models to inform strategies for increasing supply and improving donor experience.

Enabler 3 – Strengthen workforce capability

This represents a new focus for the NBA's research priorities after stakeholders expressed support for strengthening workforce capability to enable the delivery of research priorities.

What we are trying to achieve through further research

Promote the development and regular review of clinical education in undergraduate and postgraduate curricula and liaison between accrediting bodies including universities, colleges, societies, workplace, and prevocational trainers to determine and provide core skills required by the workforce.

What we want from the research community

As part of the Program we track how the results of research programs are shared. Under this enabler, we would like to explore how research can develop and regularly review clinical education and provide core skills required by the workforce.

- Develop and maintain clinical guidelines to support treatment decisions relating to blood and blood products and alternatives.

- Support for the development of training courses, conferences, and education materials for the continuing professional development of the workforce.

Monitoring Plan for 2022-27 Priorities

The NBA will continue to collect information to monitor its progress against the 2022-27 Priorities through the management of its National Blood Sector Research and Development Program.

In September 2015 the NBA received approval from funding governments to offer two grant rounds under a blood sector research and development pilot. Following success of the pilot, the grant scheme has continued under the Program. This is a small niche Program, focused on research priorities relating to PBM and the appropriate use of immunoglobulin (Ig). To support the development of best-practice models of management and use of blood and blood-related products and services, the NBA supports research to:

- enhance the sustainability and affordability of the national supply of blood products, including through increased efficiency and reduced blood product usage and wastage
- identify appropriate use and reduce inappropriate use of blood products
- maintain or enhance clinical outcomes for patients.

How we will monitor progress

When applying for a grant under the Program, applicants are required to identify which Priorities their research best relates to and how this will be tracked throughout the life of their project.

The NBA then requires grant recipients to provide regular reports on the progress they have made in delivering their research or development project. This information is collected from grant recipients using a template status report form to promote consistency in the way information is delivered, and to ensure there is clarity in what is expected from the person or organisation filling out the form.

This reporting requirement is outlined in the relevant Grant Opportunity Guidelines for the National Blood Sector Research and Development Program (Program) which are accessible on the NBA website at Research funding program when a funding Round is open.

The NBA may also utilise this information to provide input into relevant reports and publications as appropriate. For example, this information could be used to inform:

- updates and input for NBA corporate documents such as the Annual Report
- reporting for internal and external stakeholders on the success of the Program.

The NBA will seek and share Program updates and outcomes with managers of complementary research funding streams such as Australian Red Cross Lifeblood Research and Development team and the National Health and Medical Research Council (NHMRC) funded Blood Synergy Group based in Monash University to encourage discussion on impacts across the blood sector.