Research and Development at the Blood Service supports the organisation's core activities, removing risk and adding value.
Research and Development: Delivering evidence-based outcomes

Blood sector research throughout the world, particularly that which is focused on blood donors and blood components destined for transfusion, is a specialised area of health and medical research that blood operators are uniquely positioned to carry out. As recently highlighted in the Australian government’s Strategic Review of Health and Medical Research (the McKeon Review), embedding health research into Australia’s health system is key to delivering a healthy and wealthy Australia. By embedding its Research and Development (R&D) program into its core activities, the Blood Service will increasingly be recognised for its significant contributions towards achieving Better Health Through Research.

R&D at the Blood Service supports the organisation’s core activities, removing risk and adding value. Its role is to conduct world class research and continually scan the horizon for new and emerging opportunities or threats in the blood sector. Research project outcomes provide evidence to inform decision making and help drive best practice, thereby maximising return on investment. Blood Service R&D is underpinned by a robust business plan and focuses on understanding what motivates current and future donors; ensuring the safety and quality of blood components manufactured; developing sensitive, specific and cost-effective testing capabilities; enhancing knowledge of transfusible blood components and their interactions with patients; and improving practice. A strong emphasis is placed on translational research through close interaction between R&D and operational arms of the business through all stages of a research project’s life cycle.

This strategy has been developed to guide improvements in R&D performance such that the projects we carry out are not only leading edge in quality, but are strategically aligned with internal and external stakeholder priorities, are internationally competitive and, most importantly, have a capacity for translation into changed business practices or learnings.
Research and Development:
Striving for improved outcomes in an increasingly competitive research landscape

Over the course of the Blood Service’s previous strategic plan, R&D projects moved from being primarily investigator driven to a more applied, outcomes driven approach, specifically aimed at aligning research project priorities with the strategic requirements of the Blood Service and its key stakeholders – conducting ‘leading edge research to meet the needs of patients’.

A “health check” conducted by a leading independent expert in blood sector research acknowledged the significant progress Blood Service R&D had made towards aligning its research effort with the mandate of the Blood Service. The establishment of a formal donor research program; the ability to attract and retain high quality junior researchers; the creation of new laboratory facilities in Brisbane, Sydney and Melbourne and the development of strong partnerships and collaborative research programs with leading external academic researchers were all viewed as strong attributes of the previous program.

Furthermore, outcomes from R&D projects established several years ago are now transitioning into operational activities. A notable example includes the finalisation of validated processes to prepare deep frozen blood components which can be supplied to the Australian Defence Force (ADF). This is the culmination of over five years’ research, which will provide the ADF with life-saving blood components when deployed in remote locations or austere environments where fresh blood products are difficult to access. Other examples of translation of research outcomes into operational capabilities include the optimisation of a new blood processing platform to improve efficiency and safety of blood component production; the development of an effective mechanism to re-establish contact with “lapsed” blood donors, ie, those who had been regularly donating but had stopped doing so for some years; and the introduction of fluid replacement for our apheresis donors during plasma collections.

The National Blood Research and Development Strategy details the government’s priorities for the blood sector. The Blood Service Research and Development Framework has been developed and implemented to facilitate development of the Blood Services’s R&D strategy in line with government priorities and to ensure appropriate reporting from the Blood Service to the National Blood Authority (NBA) and governments. The Framework outlines the scope of research activities conducted at the Blood Service. It includes governance of the program, which is guided by a Research Advisory Committee consisting of a senior representative of the NBA, independent, external experts and senior executives of the Blood Service. The Framework guides consultation and collaboration between the Blood Service and its stakeholders, and the translation of Blood Service research outcomes to inform government policy debate and development.

Not withstanding the significant progress made within Blood Service R&D over the course of the previous Strategic Plan, challenges remain. The Blood Service has set ambitious goals for R&D in its new corporate strategic plan, “At the Leading Edge”. How these goals are planned to be achieved is outlined in the following.
This research and development strategy has been developed to improve the performance of the Blood Service’s research and development program over five years to ensure that the research that is conducted is not only leading edge, but strategically aligned with both internal and external stakeholder strategic priorities; is internationally competitive with other blood sector research programs; and is directed towards translation into changed business practice or learnings.
FOCUS AREA 1: INCREASED ALIGNMENT

The Blood Service’s research and development program will increasingly focus and prioritise its research projects and project outcomes to deliver innovation that clearly contributes to the strategic goals of the Blood Service, the priority research areas articulated by Australian governments and leads the way in selected areas internationally.

STRATEGIC GOAL:
We will prioritise and introduce research streams and new projects that directly align with the future direction and requirements of the Blood Service and deliver outcomes for the broader Australian blood science and transfusion research sector. We will re-focus our international efforts to deliver collaborative high-profile projects with outcomes that can be used world-wide to improve blood systems. Significant changes to our planning and prioritisation efforts will be made to achieve this with early input from the operational arms of the Blood Service included in all new projects.

STRATEGIC ACTIONS:

In order to achieve this goal we will:

1. DEVELOP AND PRIORITISE RESEARCH PROJECTS THAT:

   a. Improve the Blood Service and the sector’s capacity to **better meet blood and blood product demand in the future** through:

      i. Increasing our knowledge of the **underlying characteristics of the present and future donor base and its impact on supply and demand**;

      ii. Increasing our understanding of **mechanisms that improve blood donor recruitment, retention and flexible donation patterns**;

      iii. Determining and evaluating methods to maximise the **effectiveness and efficiency of every blood donation**;

      iv. Evaluating improved methods to **increase the safety of the donation process**; and

      v. Harnessing Blood Service and external data to **better understand long term demand patterns**.

   b. Ensure the continued and improved **safety of the Australian blood supply** through:

      i. Evaluating present and emerging **risks to the national blood supply**;

      ii. Evaluating and developing more **effective and efficient screening and testing methods**; and

      iii. Identifying and evaluating **blood component enhancements to improve shelf-life and safety and reduce waste**.

   c. Increasing the overall efficiency of the Australian blood supply through:

      i. Evaluating **leading edge manufacturing technologies and techniques**; and

      ii. Improving **blood collection techniques**.

   d. Improving outcomes for patients who receive blood and blood products through:

      i. Developing products that provide **improved outcomes for patients receiving transfusions** and

      ii. Contributing to national and international efforts to improve the **appropriateness of transfusion and to identify appropriate alternative treatments**.
FOCUS AREA 1:
INCREASED ALIGNMENT contd

2. INCREASE OUR INTERNATIONAL CONTRIBUTION AND COLLABORATIONS IN THE FOLLOWING KEY AREAS OF BLOOD RESEARCH:
   a. Red cell genotyping;
   b. Improved platelet storage;
   c. Greater understanding of blood component characteristics that affect patient responses to transfusion; and
   d. Determining underlying blood donor motivations and how they can be harnessed to improve the effectiveness of recruitment methods.

3. CHANGE OUR RESEARCH PROJECT EVALUATION AND PRIORITISATION METHODS SO THAT:
   a. Blood Service and government input is sought earlier through existing planning mechanisms (through the annual business planning and budgeting cycle) to ensure that research addresses the identified needs of stakeholders.
   b. All research and development project proposals are evaluated against their ability to deliver clear outcomes in the above priority areas.

STRATEGIC SUCCESS MEASURES:

We will know if we have achieved our goal of increased alignment if, at the end of five years:

1. a. Revised recruitment and retention processes and more efficient collection procedures, based on the outcomes of our donor research projects, have been implemented at the Blood Service;
   b. Emerging risks have been identified and communicated to the business and successful risk mitigation procedures implemented where required, based on the outcomes of our sero-surveillance research and horizon scanning activities;
      Cost effective product enhancements, including alternative storage media and conditions, and testing methodologies have been assessed and recommendations delivered to customers in Manufacturing;
   c. Research projects relating to blood product development and storage have contributed to a minimum of five percent of operational efficiency gains as determined by Manufacturing benchmarking data; and
   d. Material changes in clinical practice based on research outcomes from Blood Service R&D are evident.

2. More than 25 percent of R&D publications each year are co-authored with international collaborators.

3. More than 50 percent of all research projects have originated from collaborations with external researchers or other divisions within the Blood Service (an increase of 10 percent per annum).
FOCUS AREA 2:
INCREASED COMPETITIVENESS

Competition for research dollars and for skilled researchers is increasing, both nationally and internationally. In order to increase its national and international profile, the Blood Service will increase its ability to secure a greater proportion of competitive research funding including through collaborative research projects that are co-funded.

We will also increase our capacity to attract and retain the best and brightest who are able to sustain a competitive research income stream and deliver an increasing number of high impact publications.

**STRATEGIC GOAL:**

We will be recognised as a leading edge research body within Australia that is capable of securing highly competitive research grants and increase the number of projects that are joint-funded with collaborative partners. We will increase our publication output per researcher to maximise the impact of our research program. We will attract the brightest and best researchers, by recruiting emerging talent from universities and collaborating with eminent researchers. We will actively seek research opportunities that have intellectual property protection potential.

**STRATEGIC ACTIONS:**

In order to achieve this goal we will:

1. **SET EXTERNAL FUNDING TARGETS FOR ALL BLOOD SERVICE RESEARCHERS TO:**
   a. Drive a performance culture within our research teams where securing grant funding becomes the norm by including targets within individual plans; and
   b. Increase our research focus on ‘outcomes’ that are publishable in high impact publications nationally and internationally – and can generate intellectual property.

2. **ESTABLISH AN EMINENT RESEARCHER PROGRAM THAT WILL:**
   a. Import additional research expertise, skills and networks that are established and leading edge.

3. **INCREASE THE NUMBER OF JOINT APPOINTMENTS WITH AUSTRALIAN UNIVERSITIES TO:**
   a. Increase our integration with the broader health and medical research community and expand the Blood Service’s R&D footprint beyond our four walls.

4. **INCREASE THE RECRUITMENT OF PhD STUDENTS WHO ARE SCHOLARSHIP SUPPORTED TO:**
   a. Attract and retain emerging talent in the field, by actively promoting Blood Service research programs within universities; and
   b. Increase the number of collaborative projects with Australian research faculties.

5. **SET PUBLICATION TARGETS AND PROVIDE EXTERNAL COMMUNICATIONS SUPPORT TO THE RESEARCH PROGRAM TO:**
   a. Increase the publication output of our research teams;
   b. Assist our researchers to disseminate their findings in ‘plain English’ to maximise their impact across both the blood sector and the broader research community; and
   c. Generate increased publicity for our research outcomes, including through the mainstream media.
FOCUS AREA 2: INCREASED COMPETITIVENESS contd

STRATEGIC SUCCESS MEASURES:

We will know if we have achieved our goal of increased competitiveness if, at the end of five years:

1. More than 25 percent of total research funding comes from external sources and a minimum of one patent application will be in progress.

2. A researcher exchange program is fully implemented with at least one visiting high profile international researcher visiting Blood Service R&D facilities annually.

3. All senior R&D Staff (from Senior Research Fellow) have a joint or adjunct appointment with a university with research interests aligned with those of the Blood Service.

4. At least two new PhD students, with external scholarship support are joining the Blood Service R&D Division annually.

5. The total number of publications per researcher has increased to a rolling average of three or more per annum.
FOCUS AREA 3:
INCREASED TRANSLATION

Research and development investments are increasingly being assessed against their ability to deliver tangible results that deliver improvements in either blood component production or clinical outcomes. Critical to the ongoing viability of the Blood Service’s research and development program is its ability to translate results and findings from the research domain into changed business, manufacturing and clinical practices that deliver measurable outcomes and benefit the blood and health sector generally. At the organisational level, the Blood Service has set an ambitious target to increase the percentage of research projects that are translated into improved business practice or learnings to 75 percent. Our aim is for all research to have potential to be translated within the Blood Service, depending on the findings.

STRATEGIC GOAL:

Over the next five years: We will be increase the practical translation of our research and development program so that we are known as a leader in translational research – within the Blood Service itself as well as within the broader Australian health and medical research community and in blood services worldwide. We will have a well-established and tested technology transfer process that is delivering improved business results within the Blood Service and we will have a demonstrated track record of published results being adopted in the international blood service community.

STRATEGIC ACTIONS:

In order to achieve this goal we will:

1. ENGAGE MANUFACTURING AND DONOR SERVICES DIVISIONS IN PROJECT PLANNING TO:
   a. Identify areas in need of R&D input and to identify trends in the operational areas of the business; and
   b. Incorporate technology transfer processes into the plans of all operationally oriented research projects.

2. FULLY COMMISSION A DEVELOPMENT LABORATORY IN SYDNEY THAT WILL:
   a. Enable GMP compliant evaluations and validations of processes and components.

3. FINALISE AND HAVE IN ROUTINE USE A TECHNOLOGY TRANSFER PROCESS THAT WILL:
   a. Speed the technology transfer process from pure research to development to routine use.

4. INCREASE THE NUMBER OF ABSTRACTS WITH TRANSLATABLE OUTCOMES THAT ARE ACCEPTED AT LEADING INTERNATIONAL CONFERENCES AND MEETINGS TO:
   a. Raise the potential for international adoption of Blood Service research outcomes within other blood services and in the international medical community.
FOCUS AREA 3:
INCREASED TRANSLATION contd

STRATEGIC SUCCESS MEASURES:

We will know if we have achieved our goal of increased translation if, at the end of five years:

1. All operational research projects are jointly sponsored by research and operational team leaders, as nominated by an Executive Director.
2. Our development laboratory in Sydney is fully operational and in routine use, with Manufacturing staff and R&D staff actively engaged in the translation process.
3. All research projects have the potential to be translated into changed business practice or learnings which can be applied further up the “research and development chain”, with more than 75 percent being translated into changed business practice or learnings.
4. More than 100 research abstracts per annum are accepted at national and international conferences and meetings with at least ten oral presentations per year.

REFERENCES

We will increase the practical translation of our research and development program so that we are known as a leader in translational research.
For further information contact:

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