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Research equips us to face the future with excitement and confidence
FOREWORD

Research and Development (R&D) at the Blood Service contributes to outcomes across the business, from donor recruitment to patient safety. This year our team members have contributed their expertise to estimate the risk of Hepatitis E virus in the Australian Blood Supply, collaborated to reduce donor adverse events, and proven the utility of new genetic technology to enable better matching of donors with patients.

Our new strategy, Beyond 2020: Connected, collaborative and curious was prepared this year with input from the Executive, Board, Advisory Committee and others. The strategy ensures that our research program continues to respond successfully to new opportunities and changing business needs, effectively translates research outcomes into practice and equips us for future challenges.

Building on the strong foundations established over the past several years, we aim to strengthen our performance and broaden the profile of R&D—such that we are recognised as leaders in innovative, cutting edge research.

The Research and Development Annual Report for 2016-2017 illustrates that we are already making progress on our four key strategic directions as follows:

STRENGTHEN OUR CORE

R&D will be seen as the “go-to” place for Blood Service staff members seeking solutions and for academic and clinical researchers looking for high caliber, outcomes-based research partners.

This year our researchers have worked with colleagues from across the business to define long term research problems, and have been agile in planning to allow them to assist in a number of short term projects with immediate benefits. These studies, described in more detail in the following pages, range from explorations of how donors perceive our new centre designs, through to assessing the safety and quality of an enhanced method of collecting platelets. R&D has been pivotal in the design and execution of the world’s first clinical trial of first-appointment plasma donation in a non-remunerated environment.

RAISE OUR PROFILE

We will promote awareness of our research program within the organisation and in the public arena, through a diverse communications strategy that is tailored to specific audiences while remaining cost-effective.

In 2016-2017, our researchers presented a record 96 conference presentations, of which 20 were selected to be given orally at major international scientific conferences. These presentations are key to ensuring that our researchers are able to form new innovative collaborations.

We aim to raise our profile in the general public, and this year we have updated our public-facing website (www.donateblood.com.au), and taken part in numerous radio interviews and features, and published several successful online science articles for the general public.

ATTRACT AND RETAIN LEADING EDGE RESEARCHERS

We will be recognised as an employer of choice for bright young researchers in Australia. We will explore the establishment of collaborative, cross-disciplinary networks so we have access to the best available expertise and problem solving skills.

We continue to attract high calibre researchers from around the world to work in our team, and as part of the Centre for Biopharmaceutical Innovation, we have successfully recruited a post-doctoral fellow and four PhD students. Two of the students are supported by highly competitive RTP scholarships (these awards were formerly known as Australian Postgraduate Awards). The number of postgraduate research students who have chosen to carry out their research project with a Blood Service R&D team member has continued to climb, with a total of 22 PhD students enrolled this year across the team.

Two of our Senior Researchers, Dr Denese Marks and Dr Melinda Dean have recently been given roles as adjunct Associate Professors, at the University of Sydney and Queensland University of Technology, respectively.

EXTEND OUR REACH

As the Blood Service ventures into areas beyond blood, such as human breast milk banking, we will explore opportunities to diversify into areas that will leverage our existing skill sets.

We have commenced developing a Statistical and Analytics Resource Group (STAR). The vision is to have a streaming unit of analytics professionals and researchers from the Blood Service and tertiary institutions working together with a shared vision to enable data-driven insights for the Blood Sector.

We’re developing our collaborative research network and have joined forces with leading cell biologists and clinicians. We’ve already seen very exciting outcomes from studies that use extracts of expired platelets to manufacture experimental cellular therapies for use in regenerative medicine, tissue repair and cancer.

This Annual Report highlights our achievements for 2016-2017, including the translation of our research outcomes to the business and our growing scientific impact on health and medical research sector, while looking towards a collaborative and curious future.

Prof David O Irving
Director, Research and Development
We’re delighted to present the Australian Red Cross Blood Service Research and Development Annual Report for 2016-2017, showcasing the impressive, leading edge work being carried out by our Research and Development team.

The Blood Service is a unique organisation delivering one of the world’s safest supplies of life-giving blood and blood products, as well as producing world class research and providing expertise in diagnostic, clinical, transplantation and immunogenetics services. In a rapidly changing global environment, our researchers play a pivotal role in positioning us to face emerging challenges. Their work maintains and improves blood safety, makes the best of every donation, demonstrates significant returns to our funders and uses data analytics to understand a range of significant issues for the sector.

Key to the success of our research and development team is their focus on delivering real world outcomes, whether that’s how to get a first time donor through the door, or minimising the risk of adverse health outcomes in patients. Their collaborative spirit shines through in their many interactions within the business and with academics, clinicians and others both in Australia and internationally. Our translation is second to none.

It’s fantastic to see that our researchers are recognised globally for their expertise, participating in Expert Working Parties and expert consultations for organisations including the International Society for Blood Transfusion and the World Health Organisation.

As we look to the future we will be faced with a tougher external environment; we will be stretched to meet the growing demand for plasma products; we will be seeking to find efficiencies and new ways of working within our supply chain; and we will be growing our services to cater to the Australian healthcare sector. Our research team is an integral part of our future, and their work equips us to face the future with excitement and confidence.

Our research work wouldn’t be achievable without the confidence and financial investments of our funders – for this we thank them. We are extremely proud of the calibre of our Research and Development team, which is showcased in this report. We thank them for their outstanding work and continued ability to deliver world-leading research that broadens our contribution to healthcare, and ultimately improve the lives of Australians. Together, we commit our Annual Research Report to you.
WORKING TOGETHER TO IMPROVE, BUILD AND GROW

By partnering with our colleagues within and outside the business, the Research and Development team supports the Blood Service’s strategic directions of:

**IMPROVE**
- Conducting translatable research is just the first step on the road to research translation.
- Efficient translation of our research outputs into benefits for the organisation or the sector requires cooperation with the end user throughout the research project cycle, from experimental design to technology transfer.
- Our R&D team have strong relationships with operational divisions and external stakeholders, and are able to respond to requests for research assistance, as well as carrying out longer term strategic research on poorly defined research problems.
- The outcomes from completed projects this year are shown on page 8, and this section describes how the ongoing research program contributes to the overall strategy of the organisation.

**BUILD**
- Making a greater contribution to healthcare.
- Building Australian plasma.
- Our Donor Research team has worked closely with Donor Services to find ways to implement processes to decrease adverse reactions during donations. Designed with the end in mind, staff feedback has been an integral part of the study. A large scale implementation study is being rolled out as a result of this research.
- Productive and efficient collections and storage of plasma.
- Our Donor Research team is intensely focused on building plasma donor capacity for the future, through ongoing projects that use behavioural psychology methods and aim to reduce donor loyce, increase donation frequency, and facilitate conversion of whole blood donors to plasma donation. An important study involves data linkage of health records and is useful for manufacturing new life-saving stem cell therapies. This work provides a new product line to advance healthcare from material that would otherwise be wasted.

**GROW**
- Greater contribution to healthcare.
- Efficient and effective business.
- Securesting research.
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MEASURING OUTCOMES

The table below shows the key outcomes from projects that were completed this year.

<table>
<thead>
<tr>
<th>Type of learning</th>
<th>Project number and name</th>
<th>Key business outcomes</th>
</tr>
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<tbody>
<tr>
<td>PS16-07</td>
<td>Hepatitis E virus risk management: a study of 75,000 donations</td>
<td>This research has shown that the risk of hepatitis E infection in Australia is much lower than in other developed countries. This has allowed the Blood Service to accurately model the Hepatitis E transmission risk and determine that routine testing for Hepatitis E is not justified in Australia.</td>
</tr>
<tr>
<td>CH15-01</td>
<td>A trial of interventions to increase adherence to applied muscle tension during whole blood donation</td>
<td>Our Donor Research team found that donors are most likely to use applied muscle tension and pre-donation water loading to avoid adverse events when they are provided with an instruction card combined with support from staff in Centre. They tested a range of materials, including online instructions and a video. In the study, 99 per cent of people who were given the card used the technique. These findings have been implemented in a large scale trial that commenced in 2016-2017.</td>
</tr>
<tr>
<td>DB15-02</td>
<td>Recruitment of male donors</td>
<td>This collaborative study found gender differences in motivations for blood donation, and identified subtypes of masculine identities that are associated with blood donation.</td>
</tr>
<tr>
<td>DB16-04</td>
<td>Hospitals to hospital: understanding the influence of interaction with staff and service quality on donor intention to donate</td>
<td>This study identified that the influence of family and friends is a key motivator for men under 40 to donate blood. This information and the detailed results of the study have been disseminated to marketing and are being used to inform future campaigns.</td>
</tr>
<tr>
<td>DB15-02</td>
<td>Informing new donors about different donation types</td>
<td>This research found that using the welcome pack to inform new donors about different donation types had no significant effect on their rate of return within six or nine months. Thus including such information is not detrimental, and it may improve the success of plasma conversion campaigns.</td>
</tr>
<tr>
<td>PS14-18</td>
<td>Reduction in anti-D and Rh IgM usage by genotyping: a cost benefit analysis</td>
<td>Our Donor Research team found that donors are most likely to use applied muscle tension and pre-donation water loading to avoid adverse events when they are provided with an instruction card combined with support from staff in Centre. They tested a range of materials, including online instructions and a video. In the study, 99 per cent of people who were given the card used the technique. These findings have been implemented in a large scale trial that commenced in 2016-2017.</td>
</tr>
<tr>
<td>P34A-22</td>
<td>Cellular processes that regulate the lifespan of red blood cells</td>
<td>Our researchers discovered previously unknown molecules in red cells that are important for their metabolism. These molecules are potential targets for new therapies. Further development of this concept will take place through a new project at the Centre for Biopharmaceutical Innovation.</td>
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Understand the rate of infection of HEV in Australia has led to potential savings of $3 million per annum

New technology solves blood typing problems

Support to keep donors feeling great

Improving efficiency and safety of platelet collections

Our research has shown that the rate of Hepatitis E infection in Australia is much lower than in other developed countries. This has allowed the Blood Service to accurately model the Hepatitis E transmission risk and determine that routine testing for HEV is not justified in Australia. This information allowed us to avoid introducing costly testing, as has been done in countries such as the UK and Netherlands, saving Australia an estimated $3 million each year.

Our Product Safety team has established technology to determine blood types through genetic analysis. This allows us to determine the details of all 35 blood group systems in a single analysis. Already this technology has allowed our team to solve 29 problem serology cases that were unable to be solved by conventional methods. The technology has now been approved for routine implementation in our Red Cell Reference Laboratories after a formal technology transfer process.

Our Donor Research team wanted to help donors avoid adverse events during their donation, such as fainting and disorientation. They found that donors are most likely to use helpful techniques such as applied muscle tension and pre-donation water loading when they are provided with an instruction card combined with support from staff in Centre. Online or video instructions were less effective. These findings have been implemented in a large scale trial commencing in 2016-2017.

Our Product Development and Storage team collaborated with Donor Services and Manufacturing in a successful evaluation of the quality and safety of triple platelet collections in platelet additive solution (PAS). Triple dose apheresis platelets will enable the Blood Service to increase the productivity of platelet collections. Reducing the volume of plasma in apheresis platelets (from the current 100 per cent to around 40 per cent) and replacing it with PAS will increase patient safety by further reducing the risk of TRALI and allergic transfusion reactions.
TRACKING OUR IMPACT

PUBLICATION QUALITY METRICS

The global scientific impact of Blood Service research is growing, reflected in an increase in individual investigator metrics, and in rating measures of the scientific impact of our body of published work.

A researcher’s individual impact on their field can be measured in a number of ways. One frequently used measure is the H-index, which combines both quantity and citation impact of a researcher’s body of work. The average H-index for our researchers in 2016-2017 is 13.7, up from 11.56 in the preceding year. For comparison, it’s been suggested that for physicists, an H-index of 22 is typical for promotion to senior Associate Professor. It should be noted that the H-index is a record of a researcher’s lifetime publication achievement, and depending on their career path it may not always reflect the impact of the research that they have conducted at the Blood Service.

To examine more specifically the impact of Blood Service research over time, this year we have used a new tool to analyse our research output. The tool, known as “iCite,” was developed by the US National Institutes of Health (NIH) Office of Portfolio Analysis and was first made available in late 2016. iCite shows the total scientific influence of a group article relative to the average NIH funded paper.

A graph showing the growing impact of publications from Blood Service R&D is shown in Figure 1. By this measure, the impact of our research has increased significantly over the last five years. Note that papers published recently have not yet had a chance to be widely read and cited, so the impact of 2016 papers is expected to grow over time.

iCite also provides data on the citation rates of individual publications relative to NIH funded papers. A complete list of our publications for 2016-2017 appears in Appendix 1.

Our published research has a growing impact beyond the confines of the Blood Service, contributing to the growth in global knowledge and practice in blood science. A full list of our publications for 2016-2017 appears in Appendix 1.

COLLABORATIONS

Collaborations with researchers from other institutions at home and abroad provide us with access to additional multi-disciplinary expertise. Of the 53 peer reviewed publications appearing in print during 2016-2017, 86 per cent were co-authored with researchers from outside the Blood Service, including 28 per cent published with international colleagues. For the second consecutive year, this exceeds the five year target of 25 per cent of publications being overseas collaborations.

Our collaborators are listed in Appendix 5.

This year saw the opening of the Australian Research Council funded Centre for Biopharmaceutical Innovation, in which the Blood Service partnered with the University of Queensland and industry partners including Patheon Bioning, GE Healthcare and CSL Ltd to train industry-ready post graduates in biopharmaceutical development. The Blood Service has one postdoctoral scientist and four PhD students working in this centre.

TRAINING

For our research impact to continue into the future, we need to ensure that bright, innovative researchers are inspired to conduct research in the blood sector. To this end, our 2004-2019 strategy set out to increase the recruitment of PhD students who are scholarship supported by actively promoting Blood Service research programs within universities. The growth of our training in line with our 2014-2019 strategy is shown in Figure 2.

During the 2016-2017 year, 22 PhD students were supervised by Blood Service researchers. 11 of these students are supported by external scholarships. Three of these students completed their PhDs this year.
In addition to PhD candidates, ten students have worked with our team on their honours or master’s research projects throughout the year. Details of all our student enrolments are given in Appendix 4.

PRESENTATIONS
Increasing our impact depends on disseminating the results of our work not only through peer reviewed publications, but through scientific conferences within and outside the blood sector, and more broadly in the public domain.

Presentations at scientific conferences are key for establishing new scientific connections, which form the foundations for innovative collaborations. During 2016-2017, our researchers presented a record 96 conference presentations, 24 of which were invited. Our presentations are all listed in Appendix 3.

Figure 3 shows the growth in our dissemination to the sector through publications and presentations. Our public profile in the mainstream media has increased this year, with six radio interviews, including a 30 minute special on ABC radio’s Health Report. We have contributed to several stories posted by the Australian Academy of Sciences on their website Nova-Science for Curious minds. Both of our stories were among the most viewed of all time on the News website, and attracted considerable attention when shared on our own Blood Service social media. Our public visibility has been enhanced with a renewed web presence at www.donateblood.com/research. Each of these successes has led to further opportunities and we anticipate growth in these activities in the following reporting period. A full listing of our public profiling activities this year is given in Appendix 1, under Public dissemination.

FIG 3: INCREASED RESEARCH DISSEMINATION
This figure shows the increase in our research dissemination through peer reviewed publications and abstracts accepted at conferences.

EXTERNAL GRANTS
Our R&D team is currently involved in a range of collaborative grants, which are detailed in Appendix 2. The total value of our grant funded research (over the lifetimes of the grants) stands at over $14.9 million, with a trend over time towards fewer, larger grants. In addition, successful new grant applications this year total $597,000.
Leading edge research is championed by world-leading researchers who are driven by curiosity and the desire to contribute to society through improving health outcomes.

Our team are actively engaged in Australian and international scientific communities, with many holding adjunct academic appointments at universities where they have ongoing collaborations. This year, Denise Marks was appointed as an Adjunct Associate Professor at the University of Sydney Dental Clinical School, and Mehrota Dean was appointed as Adjunct Professor in the Faculty of Health, Queensland University of Technology.

Product development and storage

- New grant applications: successful
- International database listings
- Invited publications
- Product usage
- Product development and storage
- Product safety
- Product usage.

Our research is organised into areas that align with the supply chain of the Blood Service, namely:

- Donor behaviour
- Donor health and wellbeing
- Product development and storage
- Product safety
- Product usage.

Our team are engaged with the Blood Service, maintaining research skills into the future, our team trains and mentors students in the field of blood research. With the commencement of the Centre for Biopharmaceutical Innovation, our postgraduate program has grown significantly over the last year.

This year marks the first year of multiple PhD completions from our student program, with three students completing their PhDs. Kathleen Chell was awarded her PhD from the Queensland University of Technology (QUT), supervised by Dr Geoff Smith at the Blood Service, and by Prof. Rebekah Frussell-Bennett and Dr Gary Mortimer of QUT. Her thesis was titled, ‘Giving and sharing: the predictors and outcomes of online donor appreciation’.

Ashish Shrestha was awarded a PhD from the University of Queensland. His thesis was titled ‘Evaluating the Risks Posed by Hepatitis E Virus to Blood Supply Safety’ and was supervised by Dr Helen Faddy and Prof. Robert Flower at the Blood Service.

Katrina Ki was awarded her PhD from the University of Queensland for her thesis entitled ‘Characterisation of dendritic cell immunoregulatory profile in models of transfusion.’ She was supervised by A/Prof. Melinda Dean, Prof. Robert Flower and Dr Helen Faddy.

Ms Amela Bajecil delivered completed requirements for her Master’s in Biotechnology of Health Science and Technology Engineering, France, while working with the R&D team in Brisbane. Her project ‘Red cell storage duration and procoagulant effects: Role of microparticles’ was supervised by Marie Arne Balianat, Dr John-Paul Tong and Prof. Robert Flower at the Blood Service, with Dr Natalie Pecheniuk from Queensland University of Technology.

As our influence spreads further afield, Dr Helen Faddy was invited to represent Australia and the Blood Service at a WHO consultation on ‘Estimating the impact of emerging infections to the blood supply requirements for risk estimation and decision making support’, which was held in Geneva 14-15 June 2017. This resolution is an indication of Dr Faddy’s global leadership in the field of transfusion transmitted diseases.

Sharing our results with others extends the impact of our research beyond the walls of the Blood Service. This year, our team this year published over 50 peer reviewed publications, and presented 96 conference presentations, including nine oral presentations at the ISBT congress in Copenhagen, and three at AABB in Orlando.

Appendix 1

- Peer reviewed publications: 46
- Invited publications: 53
- Book chapters: 53
- Public dissemination: 53
- Books and other materials (including theses): 56
- International database listings: 57

Appendix 2

- Grants active 2016-2017: 58
- New grant applications: successful: 59

Appendix 3

- Abstract accepted for oral or poster presentations: 60

Appendix 4

- Student projects: 66

Appendix 5

- Collaborations: 70

Awards presented to Blood Service researchers 2016-2017

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<thead>
<tr>
<th>Award</th>
<th>Name of award</th>
<th>Date awarded</th>
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<tr>
<td>Marie Anne Balanant Harold Gunson Travel Award (ISBT)</td>
<td>April 2017</td>
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<tr>
<td>Dr Rachel Colbran</td>
<td>MBBS Valedictorian</td>
<td>August 2016</td>
</tr>
<tr>
<td>Gordon Lopata</td>
<td>AMC2017 Travel Grant</td>
<td>August 2016</td>
</tr>
<tr>
<td>Dr Helen Faddy</td>
<td>VIA Travel Grant</td>
<td>November 2016</td>
</tr>
<tr>
<td>A/Prof. Gabrietta Hopley</td>
<td>AABB17 Travel Grant</td>
<td>November 2016</td>
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<tr>
<td>A/Prof. Alena Bolin</td>
<td>QUT Travel Grant</td>
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Four honours students, Dr Rachel Colbran, Elise Gordon, Aine Moscat and Lauren Merson, successfully completed this year, with all receiving first class honours. Of particular note, Dr Rachel Colbran received first class honours consumption to her MBBS, and was Valedictorian for The University of Queensland School of Medicine. Her thesis was titled ‘Making every question count’, the impact of temporary donor deferral for suspected acute retroviral syndrome.’ She was supervised by Dr Helen Faddy, A/Prof. Melinda Dean, Prof. Robert Flower and Dr Robert Hartley.

We can expect further higher degree completions in the years to come, with a half of PhDs currently in progress across the group.

A full listing of all students, projects and supervisors appears in Appendix 4.
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MEET OUR RESEARCH LEADERS

Dr Nina van Dyke
Research Fellow
Nina has conducted research for a variety of academic institutes, not-for-profit organisations, and research companies both in Australia and the United States. For the past 10 years her research has focused on public health and behaviour change. She also has a particular interest in survey methodology. She joined the Blood Service in November 2016.

Dr Alison Carver
Research Fellow
Alison has completed her research focused on the recruitment of male donors, first appointment plasmaphenisms and retention of O negative donors. She was awarded her PhD in Behavioural Epidemiology at Deakin University. Currently, Alison’s research aims to map the emotional journey of new and novice donors, resulting in interventions to retain these donors.

Dr Anne van Dongen
Honorary Research Fellow
Originally from the Netherlands, Dr van Dongen worked at the Dutch Blood Service Sanquin for 10 years. She obtained her PhD in Health Psychology, focusing on the retention of new blood donors. Currently, Anne’s research aims to map the emotional journey of new and novice donors, resulting in interventions to retain these donors.

Dr Lacey Johnson
Research Fellow
Lacey completed her PhD at The University of New South Wales, which focused on understanding the mechanisms leading to the maturation of megakaryocytes, the parent cell of platelets. At the Blood Service her primary focus is improving the quality of platelets for transfusion.

Dr Celine Loh
Research Fellow
Celine has completed her PhD at the University of Sydney, focusing on the development and characterisation of platelet lysate for in vitro propagation of human therapeutic cells, such as the mesenchymal stromal cells.
Appendix 4

- New grant applications: successful

Appendix 5

- Abstracts accepted for oral or poster presentations
- Books and other materials (including theses)
- Invited external presentations

Product usage

Appendices

- Peer reviewed publications
- Peer reviewed published abstracts
- Invited publications
- Invited external presentations
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- International database listings

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- Collaborations
DONOR BEHAVIOUR

Donors are literally the lifeblood of the Australian Red Cross Blood Service, and knowledge of how to support people to make the life-changing decision to become, and then to remain, a blood donor is essential.

Australia is one of the few blood services in the world to have established a donor research program, and our team includes researchers with expertise across public health psychology, sociology, statistics, economics and marketing. The Donor Research team includes researchers with co-appointments to major universities, including the University of NSW (psychology), the University of Technology, Sydney (bioinformatics), and the University of Queensland (psychology).

The Donor Research team has strong expertise in the complex motivations underlying blood donation. This information ensures that communications are appropriately framed to engage would-be donors and support them through the process of making an appointment and actually presenting to donate on the day, and encourage them to return.

The goal for this team is to deliver leading-edge research that is cost-effective and translates into evidence-based business practice, while expanding academic knowledge about blood donation.

DONOR RECRUITMENT

In 2016-2017, the Donor Research team completed projects designed to improve our engagement with young male donors and Gen Y donors, and studied the impact of incentives on blood donation.

Young male donors, who are typically less responsive to marketing campaigns than other groups, currently make up a relatively small proportion of the donor panel. This project involved a systematic review of the literature on why men donate blood, bringing together findings from 28 research studies. In addition, a collaborative project with the Marketing department generated some key learnings for how to engage with this traditionally challenging group.

A second large project completed this year, representing the culmination of a long-standing collaboration with marketing researchers at Queensland University of Technology, was led by Professor Rebekah Russell-Bennett. This multi-faceted project focused on service expectations held by Generation Y donors. This knowledge is important for the business to ensure that the Blood Service is well positioned to engage with our donors of the future.

DONOR RETENTION

It’s important not just to get donors in the door, but also to keep them coming back. Return donors provide safety and cost advantages over newly recruited donors, and allow for more accurate forecasting. Yet approximately 40 per cent of first-time whole blood donors and 22 per cent of first-time plasmapheresis donors do not return within a two-year period.

The Donor Research team is therefore actively engaged in understanding why donors do and do not return and in designing evidence-based interventions to increase donor retention. This area of
blood donation generates strong and varied feelings, yet the role of emotions in promoting blood donor retention has largely been ignored in the academic literature to date. The Donor Research team and their collaborators are leading the way internationally on this important topic. Data collection has been completed for the first study, which determines the emotions experienced by novice donors at key points during their donation experience (pre-donation, during donation, and post-donation in the refreshments area). By tracking which emotions predict the return behaviour of these new donors, the researchers will be able to develop and test interventions designed to improve donor retention. Additional studies of the emotions of donors over the months following donation, and those who haven’t returned to donate for several months, will lead to further interventions.

A second study in the area of donor retention focuses on determining why donors lapse, in order to inform the development of interventions to keep donors coming back. This study focuses on segments of the donor panel that are critical to the Blood Service, especially donors who have lapsed following a temporary deferral and O negative donors. The research team has already identified key changes in practice that will encourage donors to return following their deferral period. The research recommendations are being translated to the business through an effective collaboration across Donor Services, the National Contact Centre, and Medical Services. Learnings from this study will lead to a targeted intervention that will be evaluated by the Donor Research team during 2017-2018.

A third study aims to improve the retention of valuable O negative donors in the target group of 18-39 year olds. This is a collaborative project with leading health psychologists, Professor Christopher France at the University of Ohio. It will test a targeted online intervention for first-time O negative donors based on the principle of motivational interviewing, originally developed by Prof. Chris France. Phase 1 of this project, which was used to inform the content of the online psychological intervention, consisted of interviews with first-time O negative donors and was completed in March 2017. Phase 2 will provide an evaluation of the online tool in an Australian context to test whether it encourages donors to return to give another blood donation.

PLASMAPHERESIS DONATION
The need to recruit and retain plasmapheresis donors is of critical importance, with plasma collection now a key focus of the Blood Service. Demand for plasma derived products has increased dramatically since 2003-2004, resulting in Australia moving from self-sufficiency in the supply of these products to a situation where 40 per cent of these products are now imported. To maintain this level, and slowly reverse this trend, plasma collections need to expand rapidly. This expansion will occur both by increasing the proportion of eligible Australians who engage in plasmapheresis, as well as by improving the retention of plasmapheresis donors and increasing the frequency of their donations. Our team’s expertise supports the growing need for plasma. While globally, many donor researchers have traditionally focused predominantly on whole blood donation, the Donor Research team is recognised internationally for its expertise in the behaviour of plasmapheresis donors. Through the work led by Associate Professor Barbara Masser (University of Queensland), and this critical panel continues to be a primary focus for the team.

To date, Blood Service marketing has relied on providing information on the plasmapheresis process in Welcome Packs provided to new donors. We found that this information could be safely provided with no negative impact on donation behaviour. A second, ongoing study focuses on improving the retention of successful first-time plasmapheresis donors in the panel. The first phase of this project involved interviews with first-time plasmapheresis donors to understand why they decide to return (or not) for a second donation within a range of timeframes. The second phase will use these findings to develop and test simple interventions, designed to increase return rates and encourage new plasmapheresis donors to donate at an increased frequency.

Looking to the future, we’re trialing the use of virtual reality technology to encourage whole blood donors to try plasmapheresis. This innovative use of a new technology may prove more engaging than traditional media, such as videos or brochures, as it allows donors to gain a more realistic understanding of the plasmapheresis process. The Media team have used previous findings from the Donor Research team to produce a virtual reality video, targeted to address the hesitancy of donors about plasmapheresis. Data collection to determine the feasibility and acceptability of using this technology in a donor centre is underway.

Donor health and wellbeing
- Abstracts accepted for oral or poster presentations
- Books and other materials (including theses)

Product usage

Meet our research leaders

Researchers

Tracking our impact

- Peer reviewed publications
- Invited publications
- Peer reviewed published abstracts
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CALLING YOUNG MALES

Young men are in demand as blood donors, but they are not fairly represented in our donor panel. How can we get more of these potential heroes through the doors of our donor centres? One solution suggested by our research might involve getting their mates to bring them in.

The Blood Service particularly wants to recruit men under 40 because, compared with women, they are less likely to experience adverse reactions to donation, such as fainting and dizziness. Men are also preferred donors of clinical plasma due to the increased risk of Transfusion-Related Acute Lung Injury (TRALI) from transfusion of plasma from women who have recently been pregnant.

Dr Tanya Davison explains the study, “When we reviewed the work of other scientists in this field, we found that men were more likely to donate when they are encouraged by family members or friends who are donors themselves. We then asked young Australian males who had never donated blood before what might actually motivate them to donate blood. Many said they were unlikely to take the first step to donate blood on their own, similar to the results in international studies. Instead they said they were more likely to act if encouraged or supported by other people, and if someone else made arrangements for them such as booking the appointment and organising transport.”

PROJECTS

Donor research projects arranged by key research area, showing Blood Service Researchers. All our collaborators are listed in Appendix 5.

DONOR RECRUITMENT

**COMPLETED PROJECTS**

DB15-02 Recruitment of male donors
Dr Alison Carver, Dr Tanya Davison, A/Prof Barbara Masser, Dr Kathleen Chell

DB16-02 Informing new donors about different donation types
Dr Alison Carver, Dr Tanya Davison, A/Prof Barbara Masser, Carley Gemelli, Carmela Germano

**ONGOING PROJECTS**

DB16-01 Development and evaluation of interventions to improve first-time plasma donor retention
A/Prof Barbara Masser, Dr Tanya Davison, Dr Nina Van Dyke

ABANDONED

DB15-03 Behavioural economics to better understand plasma and bone marrow donations

PLASMAPHERESIS DONATION

**ONGOING PROJECTS**

DB16-04 Pilot trial of an innovative online intervention with first-time O negative donors
A/Prof Barbara Masser, Dr Tanya Davison, Dr Nina Van Dyke

ABANDONED

DB15-02 Behavioural economics to better understand plasma and bone marrow donations

By donating plasma, Chris inspires his students to learn more about blood donations and how they can make a difference.
DONOR HEALTH AND WELLBEING

The ongoing health and wellbeing of our donors is one of our highest priorities. This research theme focuses on the prevention and management of donation-related adverse events, interventions to improve the donation experience, and promotion of long-term donor health.

Research in this theme is divided into key research areas:

- Reducing donor adverse events
- Improving blood donation practices
- Data linkage
- New donation options for donors.

REDUCING DONOR ADVERSE EVENTS

This key research area focuses on the prevention of donor adverse events by introducing prevention techniques into routine blood collection practices. This project of research is based on a holistic approach, using qualitative and quantitative techniques to explore the knowledge and behaviors of both donors and collection staff.

This year our researchers tested materials to educate donors about how to avoid adverse events during donation. They worked collaboratively with Donor Services staff to evaluate donor educational materials (instruction card, video, webpage) and found that the instruction card provided in centre, combined with staff support was the most effective method. Findings will be implemented during a national translational trial in 2017-2018.

IMPROVING BLOOD DONATION PRACTICES

The Donor Research team has been involved in several projects during 2016-2017, which will be presented in the context of improving the donation experience and donation safety.

The second project relates to the importance of ensuring that donors have a safe and comfortable donation environment. This project is investigating how donor risk is assessed and the potential for donor adverse events. The Donor Research team is working with Donor Services staff to evaluate new technology that reduces the pain of needle insertion. This project is likely to be of particular benefit in improving donor experiences.

New donation options for donors.

Donor Research is assisting Dr Philip Mondy, Medical Specialist in Clinical Services and Research, to evaluate a classification method to enable staff to assess the suitability of donors’ veins. This method is likely to be of significant benefit in reducing the number of failed phlebotomies.

The first stage of the linkage project is almost completed. Of 150,000 eligible-to-donate first and study participants, approximately 40,000 were linked, and projects exploring associations between blood donation and related morbidities are due to start soon.

RESULTS

- •••

DATA LINKAGE

Linking data from Blood Service records with health information will allow us to see if there are any long term impacts (positive or negative) of ongoing and frequent blood donation. Through collaboration with the Sax Institute, the Blood Service is linking donor records with information from the 45-and-up study and other large health databases including the Pharmaceutical Benefits Scheme (PBS), Medicare Benefits Scheme (MBS), disease registries, and admitted patient hospital records. The linked datasets will provide a valuable resource to examine whether there are any risk-associations or protective-effects between blood donation and cardiovascular risk, bone fractures and other common ageing-related morbidities.

The first stage of the linkage project is almost completed. Of 150,000 “eligible-to-donate” first and study participants, approximately 40,000 were linked, and projects exploring associations between blood donation and aged related morbidities are due to start soon.

This project represents the first instance of a large-scale data linkage exercise at the Blood Service.

NEW DONATION OPTIONS FOR BLOOD DONORS

Global demand for platelet and plasma-derived products including intravenous immunoglobulin (IVIg) continues to grow. We’re testing new ways to educate donors about how to avoid adverse events during donation.

We’re testing new ways to educate donors about how to avoid adverse events during donation.
PROJECTS

Donor Health and Wellbeing projects arranged by key research area, showing Blood Service researchers. All our collaborators are listed in Appendix 5.

REDUCING DONOR ADVERSE EVENTS

COMPLETE PROJECTS

DH15-01 A trial of interventions to increase adherence to upright muscle tension during whole blood donation

- Amanda Thyssen, Jenny Fisher, Carley Gemelli, Dr Barbara Bell
- A/Prof. Barbara Masser, Dr Tanya Davison

ONGOING PROJECTS

DH16-03 Reducing vasovagal reactions in whole blood donation through the controlled introduction of applied muscle tension during whole blood donation – a randomised controlled trial

- Amanda Thyssen, A/Prof. Barbara Masser, Dr Tanya Davison, Carley Gemelli, Barbara Bell

DH16-04 Donor Haemoglobinometer Evaluation

- Dr Joanna Speedy, Dr Jo Pink, A/Prof. Sant-Rayn Pasricha

DH16-05 Does oral iron polymaltose cause hypophosphataemia in blood donors?

- Dr Masser, Dr Tanya Davison, Carley Gemelli, Amanda Thijsen, A/Prof. Barbara Bell

DH16-06 A pilot trial of the Coolsense® pain numbing device in phlebotomy

- Dr Tanya Davison, Carley Gemelli, Lui Knight, A/Prof. David Irving

DH16-07 Iron Status, Blood Donation, and Long-term Health Outcomes

- Dr Stephen T. Wright, Dr Tanya Davison, Carley Gemelli

DATA LINKAGE

ONGOING PROJECTS

DH15-01 Iron Status, Blood Donation, and Long-term Health Outcomes in Other NSW Blood Donors

- Dr Stephen T. Wright, Dr Tanya Davison

NEW DONATION OPTIONS FOR DONORS

ONGOING PROJECTS

DH15-02 Frequent Apheresis Donation and Long-term Health Outcomes

- Dr Stephen T. Wright, Dr Tanya Davison

IMPROVING BLOOD DONATION PRACTICES

ONGOING PROJECTS

DH16-02 Donor Transfusional Iron Status: A New and Improved Model

- A/Prof. Sant-Rayn Pasricha, Dr Tanya Davison

DH16-03 A pilot trial of the CoobiCare® pain-reducing device in phlebotomy

- Dr Tanya Davison, Carley Gemelli, Lui Knight, A/Prof. David Irving

DH16-04 The need for plasma in growing, and to help in her daughter’s fight against leukaemia.

Simone’s mother encouraged her to donate plasma when she was 18. Now, her daughter relies on plasma donations in her fight against leukemia.
PRODUCT DEVELOPMENT AND STORAGE

The Product Development and Storage team maximise the potential of each donation by developing new and more efficient ways to process and store blood components, improve product quality and develop new products to meet demand and reduce waste.

Members of this team work closely with other Blood Service divisions as well as with external collaborators from other institutions to conduct research that focuses on blood component development and quality and improvements in operational efficiency. Projects within this theme develop and optimise robust protocols that can be translated to the Manufacturing and Donor Services Divisions of the Blood Service, which are integral to our core business.

Product Development and Storage research is divided into three key research areas:

- Conventional components
- Extended component storage
- Novel Products

CONVENTIONAL COMPONENTS

The conventional components research area identifies key areas where there is potential to improve or better understand the quality of our current components, or where collection and processing methods can be made more efficient.

The Product Development and Storage research team have strengthened our collaborations with the manufacturing division of the Blood Service this year, working together on numerous continuing projects. We have embarked on a new collaborative project to evaluate the quality of components at ambient temperature during processing steps, initially focusing on the collection of plasma and plasma components. Product Development and Storage researchers have evaluated the quality of triple-dose platelet collections, as part of a collaborative project led by Donor Services, contributing to a key efficiency-driven project.

Recruitment in the Frequent donation, iron deficiency and red cell storage project has been strong with 138 of 300 donations collected in the last six months. An interim analysis will be conducted at the halfway point. So far 25 platelet donors have been recruited into the Identifying the best donors for our platelet components study. For the four donors who have so far returned for a second donation, this in vitro testing correlated between the first and second donations.

The Quality Monitoring Program is now in its third year and we have continued to test pooled platelets from all four Blood Service processing centres (Sydney, Brisbane, Melbourne and Perth). This data has been valuable in monitoring trends that otherwise would not be observed from routine testing.

EXTENDED COMPONENT STORAGE

Projects within the extended component storage theme are focused on assessing technologies and developing strategies to extend the shelf-life of blood products. Cryopreservation is an attractive alternative method for blood product storage, as it enables a considerable extension of the product shelf-life, compared to liquid storage. This research theme encompasses the cryopreservation of both platelets and red cells. In addition, alternatives such as refrigerated storage of platelets and anaerobic storage of red cells are under investigation. It’s essential to understand any biochemical and functional alterations in the cells within the components that may occur as a result of cryopreservation or refrigeration, and to determine how these changes may influence their clinical utility.

This year our expertise in storing pooled, frozen platelets and apheresis platelets in the cold for up to three weeks. Further, we have explored the possibility of delaying cold storage to maximise pooled platelet inventory. The results of these studies have been received very enthusiastically by internal stakeholders, as well as internationally.
An international collaborative study conducted under the auspices of the Biomedical Excellence for Safer Transfusion (BEST) has been completed. This project, led by Dr Lacey Johnson, in collaboration with Dr Larry Dumont, included participants from the USA, New Zealand and Scotland, evaluated additive solutions for reconstitution of cryopreserved platelets. Data from this study suggests that cryopreservation processes used internationally and in Australia are robust, such that differences in manufacturing methods may not greatly influence the quality or function of cryopreserved platelets.

Methods for freezing sheep platelets have been optimised based on those developed for freezing human platelets. The ability to freeze sheep platelets will allow them to be utilised in the well-established sheep transfusion models. Investigating frozen platelets in this model will provide essential pre-clinical data regarding the ability of frozen platelets to regulate bleeding.

**NOVEL PRODUCTS**

Projects within this theme focus on the development and characterisation of novel products that are either derived from our current blood components, or completely new products and therapies that have not been previously explored by the Blood Service. These products are developed to meet an unmet clinical demand and have the potential to improve patient outcomes. A large proportion of this theme is focused on producing platelet gels and lyates from expired platelets. Platelet lyate has been identified as a substitute for bovine serum in the culture of human mesenchymal stem cells intended for therapeutic use. The benefits of developing these novel products will be the development of new business lines for the Blood Service and reduction of wastage when expired products are used, as is the case for platelet lyates and gels.

Our team was invited to participate in an International Forum on the manufacture of platelet lyates, which will be published in the journal Vox Sanguinis. Collaborators who have tested our platelet lyates were extremely satisfied with the product and several have requested for more product for larger scale testing. Technology transfer for the production of 10 L research grade platelet lyates has been initiated at the Blood Service.

**NEW USE FOR WASTE**

With the growth of new stem cell-based therapies, there is an increasing demand for material to feed stem cells as they grow. This material needs to be rich in growth factors and nutrients, and ideally should not be derived from animal sources to minimise the chance of transmission of animal-borne diseases to patients.

Platelet lyates, produced from expired platelets, is a potential novel product that can be used for this purpose. The Product Development and Storage team are developing a process to produce platelet lyates using expired platelet concentrates. So far our findings indicate that platelet lyates produced from expired buffy coat derived platelets is very effective in supporting the growth of therapeutic stem cells.

A method to produce a large volume of platelet lyate for commercial purposes is currently being developed. The image shows stem cells that have been grown in platelet lyate. These cells maintain their ability to mature into adipose (fat) cells. The red in the picture shows fat production in the cells.
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## PROJECTS

Projects listed by key research area, showing Blood Service researchers. All our collaborators are listed in Appendix 5.

### CONVENTIONAL PRODUCTS

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<th>Project Code</th>
<th>Project Title</th>
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<tbody>
<tr>
<td>PD14-01</td>
<td>PD14-01 Quality Monitoring Program (QMP)</td>
<td>A/Prof. Denese Marks</td>
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<tr>
<td>PD15-02</td>
<td>PD15-02 Evaluation of new plasmapheresis systems</td>
<td>Dr Kelly Winter, A/Prof. Denese Marks</td>
</tr>
<tr>
<td>PD16-01</td>
<td>PD16-01 Frequent donation, iron status and the red cell storage lesion (RCS)</td>
<td>Dr Joanne Tan, A/Prof. Denese Marks, A/Prof. Cate Hyland, Dr Helen Faddy</td>
</tr>
<tr>
<td>PD16-02</td>
<td>PD16-02 Pilot study to determine whether in vitro testing can identify the best donors for our platelet components</td>
<td>Dr Dianne van der Wal, A/Prof. Denese Marks and Dr Lacey Johnson</td>
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### EXTENDED COMPONENT STORAGE

#### COMPLETED PROJECTS

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Title</th>
<th>Principal Investigator(s)</th>
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<tr>
<td>PD14-07</td>
<td>PD14-07 Improvements to end cell cryopreservation</td>
<td>Dr Kelly Winter, Dr Lacey Johnson, A/Prof. Denese Marks</td>
</tr>
<tr>
<td>PD15-01</td>
<td>PD15-01 Extending the shelf-life of FFP and cryoprecipitated platelets</td>
<td>Dr Kelly Winter, A/Prof. Denese Marks, Dr John-Paul Tang, A/Prof. Melinda Dean</td>
</tr>
<tr>
<td>PD15-03</td>
<td>PD15-03 Use of additive solutions for reconstitution of cryopreserved platelets</td>
<td>Dr Lacey Johnson, A/Prof. Denese Marks, Dr Janet Wong</td>
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### NOVEL PRODUCTS

#### ONGOING PROJECTS

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<tr>
<th>Project Code</th>
<th>Project Title</th>
<th>Principal Investigator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD14-09</td>
<td>PD14-09 Development and characterisation of platelet lysates</td>
<td>Dr Celine Loh, A/Prof. Denese Marks</td>
</tr>
<tr>
<td>PD14-10</td>
<td>PD14-10 Development and characterisation of platelet gels</td>
<td>Dr Celine Loh, A/Prof. Denese Marks</td>
</tr>
<tr>
<td>PD15-04</td>
<td>PD15-04 Development and characterisation of platelet gels</td>
<td>Dr Celine Loh, A/Prof. Denese Marks</td>
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PRODUCT SAFETY

Members of the Product Safety research team apply expertise to a broad range of problems related to blood safety, including transfusion transmitted infections, the causes of adverse reactions to transfusions and methods to better match donors to patients using genetic technology. Our focus ranges from the whole patient, down to immunological models and application of the most advanced molecular genetic analyses.

In our work we welcome collaborations both within and external to the Blood Service, providing the Blood Service with access to world-leading multi-disciplinary expertise, and broadening the reach of our research.

This year saw the commencement of operations of the Australian Red Cross Blood Service Centre for Biobank and Biomedical Research in which the Blood Service is a partner. In this centre a number of staff and students are working between the University of Queensland and the Blood Service, in a collaborative centre that involves multiple industry partners. Other collaborations are also in progress with UQ, QUT and Griffith University including Physics, Engineering and Biomedical Science. A cross-divisional project team, of an assay to measure and minimise the risk of transfusion reactions in patients. The Product Safety team continue to recruit outstanding postgraduate students and obtain significant external funding.

The team has continued to generate outcomes that translate into evidence-based advice to the organisation and the sector, and ultimately to improved safety for patients.

THERAFLEX PI systems can reduce Zika virus (PI) studies and demonstrated that the THERAFLEX PI systems can reduce Zika virus infectivity in platelets and plasma, suggesting that such systems have capacity to manage potential Zika virus transmission risk. The team is also undertaking research to determine the probability of Zika virus transmission in Australia and impact on blood safety.

Our global network in the field of transfusion transmitted infections is evidenced by the fact that Dr Helen Faddy represented Australia and the Blood Service at a WHO consultation on ‘Estimating the probability of Zika virus transmission in Australia and impact on blood safety.’

The team has continued to generate outcomes that translate into evidence based advice to the organisation and the sector, and ultimately to improved safety for patients.

The team has continued to generate outcomes that translate into evidence-based advice to the organisation and the sector, and ultimately to improved safety for patients.

TRANSFUSION TRANSMITTED INFECTIONS AND EMERGING RISKS

Transfusion safety can be impacted by emerging risks, including those with an infectious origin. Many transfusion risks have become global, however, unique region-specific concerns exist. This research theme investigates possible risks to the Australian blood supply, which drives the development of appropriate management strategies for future-proofing our blood supply against emerging threats.

The team has continued to generate evidence in relation to whether Hepatitis E virus (HEV) poses a risk to the Australian blood supply. This year we have shown that Australian donors have the lowest published rate of HEV viremia in the world. The team used these data along with a transmission-risk model to estimate a very low risk of an adverse outcome associated with transmission of HEV.

The results of this study indicate that HEV donor screening is currently unnecessary and we are currently seeking stakeholder feedback.

Due to the global emergence of Zika virus, as well as reports of transfusion transmission, the team is also heavily involved in research on this agent. We continued our Pathogen Inactivation (PI) studies and demonstrated that the THERAFLEX PI systems can reduce Zika virus infectivity in platelets and plasma, suggesting that such systems have capacity to manage potential Zika virus transmission risk. The team is also undertaking research to determine the probability of Zika virus transmission in Australia and its impact on blood safety.

The team has continued to generate outcomes that translate into evidence-based advice to the organisation and the sector, and ultimately to improved safety for patients.

IMPENDING IDENTIFICATION OF BLOOD GROUPS BY GENOTYPING

Blood groups are inherited, with different frequencies and patterns in different ethnic groups. Human blood group antigens are of significance in transfusion medicine because patients who have made antibodies to red cell antigens are at risk of being affected by haemolytic transfusion reactions following transfusion of incompatible blood. The Red Cell Reference Laboratory (RCRL) employs serology and single nucleotide polymorphism genotyping technology to solve complex red cell cases. When these approaches fail to resolve the case, further avenues of investigation are required. The team has validated a Massively Parallel Sequencing (MPS) approach to improve the identification of blood groups by genotyping of the 38 blood group systems in a single test. This approach has been used to assist the Red Cell Reference Laboratory to solve more than 50 complex serology cases over the past year.

Of particular interest was a case from Thailand, where the investigation of an unusual patient antibody led to the discovery of a new frequency blood group antigen, known as J/EV/1, and designated at MN44. This blood group antigen is present in over 50 per cent of the population, and was officially recognized by the International Society for Blood Transfusion Reference Group in late 2016. The discovery of this novel antigen has expanded the current list of known blood group antigens and may have implications for transfusion practice.

The analysis of genomic data has also allowed blood group information to be predicted from anthropological samples, allowing blood group information to be predicted from anthropological samples.

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The analysis of genomic data has also allowed blood group information to be predicted from anthropological samples, allowing blood group information to be predicted from anthropological samples.
OPTIMISING TRANSFUSION SUPPORT FOR NEONATES AT RISK OF HAEOMLYTIC DISEASE OF THE NEWBORN

In order to optimise transfusion support for neonates at risk of haemolytic disease of the fetus and newborn (HDFN), the team has extended their previous work with RhD genotyping to develop sensitive new real-time blood tests using droplet digital PCR. These tests allow non-invasive prenatal analysis for the detection of further clinically significant fetal blood groups (K, k, C, E, and HPA-1a) where there is a suspected fetal-mother mismatch. These assays are currently being validated in a library of samples from a management case in collaboration with the Mater Mothers’ Hospital, the Mater Medical Research Institute and the High Risk Obstetrics, Prince Alfred Hospital and Osteotics.

A cost-benefit analysis of the use of genotyping to reduce anti-D immunoglobulin use was completed, predicting that non-invasive RhD genotyping for RhD negative women during pregnancy would produce substantial cost savings for the National Blood Authority, while remaining cost-neutral to the health system as a whole.

REDUCING THE RISK OF TRALI

Despite the introduction of risk-reduction strategies, transfusion-related acute lung injury (TRALI) is still a significant cause of mortality and morbidity following transfusion of blood products. TRALI may be caused by antibodies that target the patient’s white blood cells or by molecules known as biological response modifiers (BRMs).

These molecules accumulate in blood products during routine storage and include lipids and proteins. Current risk reduction strategies focus on antibody-mediated TRALI (for example leukocyte depleted, only clinical plasma); but no such strategies exist to combat the risk of TRALI caused by biological response modifiers. This research theme aims to develop an understanding of the mechanisms underlying such transfusion-related adverse outcomes.

REDUCING THE RISKS ASSOCIATED WITH TRANSFUSION

Blood transfusion is essential to modern medicine. However, it is not without risk and transfusion has been associated with an increased risk of illness and death in certain patient groups. This theme of research uses laboratory and animal models to understand whether transfusion is associated with poor clinical outcomes, and whether the storage time and conditions of the blood products contribute to these outcomes. Additionally, this research theme aims to develop new strategies to improve patient safety.

AUSTRALIA HAS THE LOWEST PUBLISHED RATE OF HEV IN THE WORLD

In recent years, the detection of hepatitis E virus (HEV) infection has increased in developed countries, and higher than expected infection rates have been found in blood donors around the world. The Blood Service doesn’t routinely test for HEV because, although common worldwide, it is not currently needed in Australia. A recent study, led by Dr Helen Faddy from R&D in collaboration with colleagues at Prince Henry's Hospital and the Donor and Product Safety Lab, investigated how prevalent the virus is in Australia. To make sure we're doing everything we can to ensure our blood supply remains safe.

HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine. In developed countries, HEV can cause water-borne hepatitis or can be transmitted by eating undercooked pork products or through contact with porcine.
TRANSMISSION TARGETED INFECTIOUS AND EMERGING RISKS

COMPLETED PROJECTS

PS16-04 Hepatitis A virus risk assessment in a study of 15,000 donors
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS15-06 Risk of transmission of human papilloma virus (HPV) associated with vitamin D deficiency in plasma
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-02 Microbiological marker and inactivation for a sheep model — what can our existing data tell us?
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-03 Determination of the clinical significance of the Red Blood Cell Antibodies: Phase 1
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PROJECTS - Product safety research projects, arranged by key research area, showing Blood Service researchers, All our collaborators are listed in Appendix 5.

REDUCING THE RISK OF TRAUMA

ONGOING PROJECTS

PS16-11 Using a sheep model to investigate the impact of primary storage lesions on RBC viability
- Dr John-Paul Tung, Gabriela Simonova, Sanne Engkilde Pedersen, Elise Hewlett, Helen O’Brien, Genghis Lopez

PS16-10 Investigating in vitro and in vivo efficacy of the lauren technology to improve cell survival
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-08 Novel red blood cell targets for transfusion medicine
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-07 Hepatitis B virus risk assessment in a study of 1,000,000 donors
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-05 Determine the clinical significance of the Red Blood Cell Antibodies: Phase 1
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

UNDERSTANDING THE PATHOGENESIS OF ADVERSE TRANSFUSION REACTIONS-ROLE OF THE IMMUNE SYSTEM

ONGOING PROJECTS

PS16-13 Impact of transfusion on endothelial cell function
- Katrina K, Dr Helen Faddy, Dr Veronica Hyland, Dr Lacey Johnson, Fenny Chong

PS16-12 Transfusion associated immune suppression in a cohort of cardiac patients
- Annette Sultana, Gabriela Simonova, Marie-Anne Balanant, Dr John-Paul Tung, A/Prof. Melinda Dean, Dr Chris Hogan

PS16-10 Investigation of the THERAFLEX pathogen inactivation (PI) technologies
- Dr Helen Faddy, Prof. Robert Flower, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-09 Development of a sheep model to investigate the impact of primary storage lesions on RBC viability
- Dr John-Paul Tung, Gabriela Simonova, Sanne Engkilde Pedersen, Elise Hewlett, Helen O’Brien, Genghis Lopez

PS16-08 Novel red blood cell targets for transfusion medicine
- Dr Helen Faddy, Dr Veronica Hyland, Dr Olive Snow (principal investigator), Dr Tony Britter, Dr Zofia Perkowska-Guse, Dr Emily McDonald, Dr John-Paul Tung, A/Prof. Melinda Dean

PS16-06 A/Prof. Catherine Hyland, Dr Eliza Schenker, Gabriela Simonova, Dr Helen Faddy, Dr Chris Hogan, Dr Veronica Hyland, Dr John-Paul Tung, Dr Emily McDonald, Dr Zofia Perkowska-Guse, Dr John-Paul Tung, A/Prof. Melinda Dean

RESEARCH PROGRAM 2016-2017
DONOR HEALTH AND WELLBEING
- Abstracts accepted for oral or poster presentations
- Books and other materials (including theses)
- Invited external presentations

INVITED PUBLICATIONS

Researchers
- Peer reviewed publications

Appendix 1
- Peer reviewed publications
- Invited presentations
- Public dissemination
- International database listings

Appendix 2
- Grants active 2016-2017
- New grant applications: successful

Appendix 3
- Abstract accepted for oral or poster presentations

Appendix 4
- Student projects

Appendix 5
- Collaborations

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PRODUCT USAGE

Research within the Product Usage research theme provides data to support effective transfusion outcomes, identify the most effective products for various clinical settings and understand how high-demand products are used. Collaborations with clinicians, hospitals and policy makers ensure this research is relevant to current practice and will influence outcomes both for patients and the blood sector as a whole.

Research in this theme is divided into key research areas:
- Optimising product usage
- Clinical trials of novel products
- Clinical trials of conventional products
- Data linkage

OPTIMISING PRODUCT USAGE

Despite a decreasing demand for red cells in Australian and overseas, the demand for O (D) negative red cells continues to increase.

Last year we reported the results of a study tracking the usage of O(D) negative red cells within the hospital system. The results of this study have been disseminated this year, preparing the way for change in the usage of this resource.

The results were published in the prominent journal Transfusion, communicated to customers via Blood Service in Brief, and presented to key stakeholders at the Strategic Blood Forum. A list of recommendations have been presented to the jurisdictional blood committee for consideration.

More detail on jurisdictional differences in O (D) negative blood usage will be published soon, to allow more informed strategies to be identified to potentially reduce O (D) negative red blood cell usage.

Based on the success of this work, a medical registrar project was performed to analyse the use of CMV-negative blood components at three tertiary NSW based centres. The results from this work were highly valued by the blood sector and it was presented at the quality assurance session of the Royal College of Pathologists conference in February 2017. The results of this work are undergoing cardiac surgery. To date, 80 patients have been randomised and 44 have been transfused, with no treatment related adverse events. Recruitment is expected to be complete by the end of 2017.

Outcomes from this trial will provide data to support the possible use of frozen platelets in non-military hospitals.

CLINICAL TRIALS OF NOVEL PRODUCTS

Frozen blood components, particularly platelets, hold the promise of extended shelf life. For platelets, this promise is combined with potentially improved ability to stop bleeding in patients.

To extend our knowledge in this area, the Blood Service is participating in a clinical trial of frozen platelets (the CLIP trial) in collaboration with researchers from the University of Queensland.

The study compares the feasibility and clinical effectiveness of frozen platelets with fresh, liquid-stored platelets in patients that are undergoing cardiac surgery.

To date, 150 patients have been randomised and 24 have been transfused, with no treatment related adverse events. Recruitment is expected to be complete by the end of 2017.

Outcomes from this trial will provide data to support the possible use of frozen platelets in non-military hospitals.

CLINICAL TRIALS OF CONVENTIONAL PRODUCTS

So far there is conflicting evidence regarding the effect of red cell storage on outcomes for patients, with systematic reviews unable to reach a definitive answer to whether or not ‘fresh is best’ in a blood transfusion setting.

To answer this question, the Blood Service is a partner in a landmark study to examine the effect of age of blood on patient outcomes. The study, known as TRANSFUSE is a prospective, randomised controlled study funded by the NHMRC, and involving multiple centres around the world.

Based on the success of this work, a medical registrar project was performed to analyse the use of CMV-negative blood components at three tertiary NSW based centres. The results from this work were highly valued by the blood sector and it was presented at the quality assurance session of the Royal College of Pathologists conference in February 2017. The results of this work were highly valued by the blood sector.

Recruitment of the 5000 patients has concluded, and analysis of data is underway.

Fibrinogen concentrate is licensed in Australia for treatment of congenital hypofibrinogenaemia, but is being increasingly used off-label for urgent treatment of trauma associated coagulopathy and bleeding, for which cryoprecipitate is indicated. There are a number of clinical advantages of fibrinogen concentrate over cryoprecipitate, including simplified product storage and administration, reduced time to treat, and no need to ARB match. In emergency situations, AB cryoprecipitate is used generically if the patient ABG group is unknown, which places a disproportional demand on this limited resource.

The FEISTY trial is a pilot study to demonstrate faster streamlined treatment using fibrinogen concentrate in place of cryoprecipitate, and to guide the design of a larger trial to demonstrate superior patient outcomes using guided fibrinogen storage in trauma. Increased use of fibrinogen concentrate in Australia may improve patient outcomes, and save demand for group AB cryoprecipitate at the Blood Service.

The Blood Service is collaborating with Gold Coast University Hospital to trial the use of fibrinogen concentrate as a replacement for cryoprecipitate (known as the FEISTY trial). A detailed discussion of the study design and protocol, was published this year, and the lead the commercialised in December 2016. Recruitment is currently ahead of schedule, with 60 of 100 patients randomised to the study at the end of June 2017.

DATA LINKAGE

Projects within this area aim to improve policy and practice through analysing existing data related to blood usage and patient outcomes. Of particular note, this work includes a collaboration between the Blood Service, the Rpling Institute and NSW Kids and Families to improve the treatment of mothers who are bleeding during childbirth. By understanding how blood is used in these situations, and the outcomes of those transfusions, we can inform guidelines for clinical practice. The inclusion of NSW Health as a stakeholder in this collaboration is expected to facilitate the timely implementation of any findings into the health system.
PROJECTS

Product Usage projects arranged by key research area, showing Blood Service researchers. All our collaborators are listed in Appendix 5.

OPTIMISING PRODUCT USAGE

COMPLETED PROJECTS

PU13-01 To reduce the use of O negative red cells, cryopreserved and washed cells nationally
Dr Sara Wyke, Prof. David Irving, Dr Elaine Fokin, Anthony Dye, Dr Lisa Davidson, Dr Janet Wong, Sam Price

ONGOING PROJECTS

PU14-02 Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk?
Dr Rena Hirani, Prof. David Irving, Dr Wayne Dyer, Dr Phillip Mondy

PU14-03 Clip Trial - Cryopreserved versus Liquid Stored Platelets for surgical bleeding
Janet Wong, Sam Price

PU14-04 Transfuse Sub-Study - Investigating the effects of pre-drip transfusion on coagulopathy in critically ill patients
Ms Christa Gelati, Dr Lisa Davidson, Dr Janine Tan, Prof. David Irving

PU14-05 Transfuse Outcomes Research Programme Oral Presentations award. The award is presented in recognition of work which highlights the use of CMV negative blood components.
Prof. David Irving, Dr Janet Wong

PU14-06 TRANSFUSE - Standard Issue Transfusion versus fresher red blood cell use in intensive care - a randomised controlled trial
Prof. David Irving, A/Prof. Melinda Dean, Prof. Robert Flower, A/Prof. Denise Marks, Dr Lacey Johnson (TORC II Steering Committee members)

PU14-07 TRANSFUSE Sub-Study - Investigating the effects of pre-drip transfusion on coagulopathy in critically ill patients
Prof. David Irving, A/Prof. Denise Marks, Dr Peta Dennington, Dr Lacey Johnson, A/Prof. Melinda Dean, Prof. Robert Flower, A/Prof. Denise Marks, Dr Lacey Johnson (TORC II Steering Committee members)

PU14-08 Exploring the impact of blood transfusion on maternity outcomes and healthcare utilisation
Prof. David Irving, Dr Janet Wong

PU14-09 Transfusion Outcomes Research Collaborative II (TORC II)
Prof. David Irving, Prof. Robert Flower, Dr Chris Hogan (TORC II Steering Committee members)

PU14-10 Massive Transfusion registry
Prof. David Irving, Prof. Robert Flower, Dr Chris Hogan (TORC II Steering Committee members)

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APPENDIX 1

PEER REVIEWED PUBLICATIONS

Publications which have been epublished ahead of print during the reporting period, 1 July 2016–30 June 2017 are indicated in italics. These items will also appear in print in the following reporting period. Blood Service authors are shown in bold.

DONOR BEHAVIOUR

Goretti CN, Hayman I, Waller D. Frequent whole blood donors: understanding this population and predictors of latency. Transfusion 2017;57:108-114.

Masser BM, Davison TE, Chapman CM. How can we encourage our voluntary non-remunerated donors to donate more frequently? ISBT Science Series 2016;112:118.


DONOR HEALTH AND WELLBEING


PRODUCT DEVELOPMENT AND STORAGE


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PEER REVIEWED PUBLISHED ABSTRACTS

DONOR BEHAVIOUR


Davison TE, Masser B, Chapman C. How can we encourage our voluntary non-remunerated donors to donate more frequency? Vox Sang 2016; 111 (S1): 1-32.

Gemelli CN, Thijssen A, Wright ST, Davison TE. Examining trends in first-time plasmapheresis donors’ return behaviour: Why do some donors only donate once? Vox Sang 2016; 111(S1).

DORR HEALTH AND WELLBEING


PRODUCT DEVELOPMENT AND STORAGE


Hyland RA, Chu Y, Marks DC. Adapting lean methodology to improve workflow in a research and development laboratory. Transfusion 2016; 56 (Suppl S4): 3A-262A.


Tan JC, Webb KG, Marks DC. Serum growth factor and fibrinogen concentrations in dry-eye patients and healthy blood donors. Transfusion 2016; 56 (Suppl S4): 3A-262A.


Davison TE, Masser B, Chapman C. How can we encourage our voluntary non-remunerated donors to donate more frequency? Vox Sang 2016; 111 (S1): 1-32.


PRODUCTION SAFETY


suspected confirmed placental chimerism following detection of fetal RHD signals in maternal plasma donor consistent with the newborn serology, 34th International Congress of the ISBT, Dubai, United Arab Emirates 03-08 September 2016. Vox Sanguinis 2016 Sept; 111(Suppl 1): 245. (Poster)


Porres AL, Flower RL, Christiansen AM, Dean MN. Transfusion-related immunomodulation: Importance of cell-to-cell interactions in stimulating underlying mechanisms. European Journal of Immunology 46, 51, 2016


Routti E, Schwenman EM, Nagaraj SH, Hyland CA, Flower RL. A number of novel blood group variants discovered from the Denisovan human sequencing project. 27th Regional Congress of the ISBT, Copenhagen 17-21 June 2017. Vox Sanguinis 2017 June; 111(Suppl 1): 42. (Oral)

Schwenman EM, Hyland CA, Routti EK, Nagaraj SH, Flower RL. Blood group variant-canal analysis from a 100-year-old lock of hair of an Indigenous Australian. 27th Regional Congress of the ISBT, Copenhagen 17-21 June 2017. Vox Sanguinis 2017 June; 111(Suppl 1): 42. (Poster)


PRODUCT USAGE


CROSS-DISCIPLINARY COLLABORATIONS

KJ, Johnson L, Faddy H, Marks DN, Flower RL, Routti EK, Dean MN. Exposure to cryopreserved platelets mediates suppression of myeloid dendritic cell tested immune responses. Pathology 49, 5107, 2017

Fryk JL, Marks DC, Hobson-Peters J, Watterson O, Hall RA, Young PR, Reichenberg S, Sultana A, Georgieff M, Sultana I, Faddy H. ZIKV virus infectivity is reduced following treatment with the THERAFLEX UVC-Platelet and THERAFLEX MS-Plasma systems Vox Sanguinis Volume 112 (Suppl 1) 152 June 2017

Marks DC, Fryk JL, Hobson-Peters J, Watterson O, Hall RA, Young PR, Reichenberg S, Tolkoff-Rochberg S, Sultana A, Georgieff M, Sultana I, Faddy H. ZIKV virus infectivity is reduced following treatment with the THERAFLEX UVC-Platelet and THERAFLEX MS-Plasma systems Vox Sanguinis Volume 112 (Suppl 1) 152 June 2017

INVITED PUBLICATIONS


dvan Doozen A, Williams LA, Masser B, Thijssen A, Davison T. The psychological health of blood donors: A time-course approach. Invited address at the 25th Regional Congress of the International Society of Blood Transfusion (ISBT), June 2017, Copenhagen, Denmark

Davison TE, Masser BM. How to recruit and maintain voluntary non-remunerated plasma donors. The 44th International Congress of the International Society of Blood Transfusion, 3-8 September 2016, Dubai, UAE.

Messer BM, Davison TE, Chapman C. How can we encourage our voluntary non-remunerated donors to donate more frequently? The 34th International Congress of the International Society of Blood Transfusion, 3-8 September 2016, Dubai, UAE.

INVITED EXTERNAL PRESENTATIONS


dvan Doozen A, Williams LA, Masser B, Thijssen A, Davison T. The psychological health of blood donors: A time-course approach. Invited address at the 25th Regional Congress of the International Society of Blood Transfusion (ISBT), June 2017, Copenhagen, Denmark

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DONOR HEALTH AND WELLBEING

Prent J, Kellon T, Wright ST. Safe and Sustainable Plasmapheresis. 27th Regional Congress of the ISBT, 17-21 June 2017. Copenhagen, Denmark.

PRODUCT DEVELOPMENT AND STORAGE

Johnson S. Keeping platelets cool: cold storage and cryopreservation. Transfusion Update 2017, Sydney Australia, 27 April 2017 (Oral)

Johnson L. BEST91: Resuspension of cryopreserved platelets in PDA. Biomedical Excellence for Safer Transfusion (BEST) U1, Sydney, 28 April 2017 (Oral)


Marks DC. Pathogen Inactivation: Research at the Blood Service. Transfusion Update, Sydney Australia, April 2017
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Marks DC, Donor factors and blood processing methods that contribute to red cell haemolysis. Biomedical Excellence for Safer Transfusion Collaborative. Sydney, Australia, April 2017.

Marks DC. The CLIP Trial: Metropolis Blood User Group Meeting, Sydney Australia, 29 November 2016.


PRODUCT SAFETY


Faddy HM. Dengue fever in Australia: Clinical features, outbreaks & prevention. AACR AWES 2016 Combined Scientific Meeting, Brisbane, Australia, September 15 2016.


Tang JP. The role of transfusion in exacerbating underlying patient morbidity: What can we learn from models of transfusion and TRIAL? Perioperative Patient Blood Management Symposium: The journey of a trauma patient. Brisbane, Australia. 18 Feb 2017

PRODUCT USAGE

Hirai R. Analyzing molecular changes following blood transfusion: Study launch for Lady Cilento Children’s Hospital and John Hunter Children’s Hospital: June and November 2016

Knight E. Introduction to Clinical Trials. Wolfson University Research Methodology Series October 2016

PUBLIC DISSEMINATION

DONOR BEHAVIOUR


Gould A, Masser BM and Thijssen A Getting to know you: Life Donor Magazine Winter 2016 3-4

DONOR HEALTH AND WELLBEING


PRODUCT DEVELOPMENT AND STORAGE

Marks DC. Frozen blood for the military. ABC Radio National, PM, 1 June 2017 - http://www.abc.net.au/pn/content/2016/s4671405.htm


PRODUCT SAFETY


Gould A, Flower R. The blood type you didn’t know you had. Life Donor Magazine Spring 2016 11-12

Hyland CA. What are blood groups and why do they matter ABC Local OSO 3 10.10am, March 2017


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PRODUCT USAGE

Hiran R Survey results: Or negative red cell use Blood Service in Brief Ed 19 April 2017

APPENDICES

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- Peer reviewed publications
  - □ Peer reviewed abstracts
  - □ Invited publications
  - □ Invited external presentations
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Appendix 2

- Grants active 2016-2017
- □ New grant applications: successful
- □ Abstract accepted for oral or poster presentation

Appendix 4

- □ Student projects
- □ Collaborations

DONORS AND OTHER MATERIALS (INCLUDING THESES)

BOOKS AND OTHER MATERIALS (INCLUDING THESES)

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**APPENDIX 2**

**GRANTS ACTIVE 2016-2017**

**PRODUCT SAFETY**

**$983 000**

A new pharmacokinetic model for understanding aging of stored Red Blood Cells (2015-2016)

**Invited investigator:** Florence SF, Faddy A, Guo YT, Sanders L, Lange J, Zien H, Zien Y

**S 4 340 402**


**$584 995**


**$946 279**


**$4 986 416**


**NEW GRANT APPLICATIONS: SUCCESSFUL**

**PRODUCT DEVELOPMENT AND STORAGE**

**$10 640**

The role of melanomas in protein bioactivity in general and during storage. ANZSOLT Research Fund, Chief Investigators: von der Walt KE and Marks IM

**PRODUCT SAFETY**

**$1 200**


**$9 945**


**$10 000**


**$9 995**

Nitric oxide scavenging in extracorporeal membrane oxygenation (ECMO): How ECMO induced haemolysis can result in vasoconstriction. New Investigator: Florer RE. Mentor Investigator: Tung JP

**$30 000**

Intraoperative cell salvage as a safer and cost effective alternative to autologous blood transfusion.
APPENDIX 3

ABSTRACTS ACCEPTED FOR ORAL OR POSTER PRESENTATIONS

DONOR BEHAVIOUR


Chell K, Russell-Bennett R, Martin G. Donors, smile and share: Exploring motivations to share online donor recognition on Facebook. Australian and New Zealand Marketing Academy Conference. 5-7 December 2016. Christchurch, New Zealand. (Oral)


Van Dongen A, Williams L, Masser B. The emotional psychology of blood donors: understanding and using the affective key to donor return. The 37th Regional Congress of the International Society of Blood Transfusion. 17-21 June 2017. Copenhagen, Denmark. (Oral)

DONOR HEALTH AND WELLBEING

Wright ST, Ryan LM, Pham T. A Novel Case-Control Subsampling Approach for Rapid Model Exploration of Large Clustered Binary Data. International Bioinformatics Conference. 32nd July 2016. Victoria, Canada. (Oral)


Wright ST, Carver A, Davison TE, Gemelli CN, Thijsen A, Irving DO. Extended Donor Vigilance: a data linkage study to evaluate health outcomes in older blood donors. 45th and Up Study Collaborators Day. 6 September 2016. Sydney, Australia. (Oral)

Thijsen A, O’Donovan J, Bell B, Fisher J, Jensen K, Davison TE, Gemelli CN, Carver A, Masser B. The crucial role of blood collection staff in preventing and managing vasovagal reactions. 27th Regional Congress of the ISBT. 17-21 June 2017. Copenhagen, Denmark. (Poster)

Wright ST, Gemelli CN, Thijsen A, van Dongen A. So just how healthy are older Australian Blood Donors? Examining the healthier donor effect. 27th Regional Congress of the ISBT. 17-21 June 2017. Copenhagen, Denmark. (Oral)

PRODUCT DEVELOPMENT AND STORAGE


Davis AM, Johnson L, Valev NV, Raynal S, Hyland RA, Marks DC. The role of microparticles in mediating adhesion of cryopreserved platelets to collagen. IMAAD2016. November 13-16 2016, Melbourne, Australia (Poster)

Hyland RA, Cha Y, Marks DC. Adapting Lean Methodology to Improve Workflow in a Research and Development Laboratory: The Annual Meeting of the AABB. 22-25 October 2016, Florida USA (Oral)

Hyland R, Wood B, L Johnson L, Marks D. Maximising platelet usage by delaying refrigerated storage. 27th Regional Congress of the ISBT, June 17-21, 2017, Copenhagen, Denmark. (Poster)


Johnson L, Jenkins E, Wood SW, Marks DC. Leukin mapping reveals differences in glycoprotein patterns on platelet proteins following cryopreservation and cold storage. The Annual Meeting of the AABB. 22-25 October 2016, Florida USA (Poster)


Marks DC, van der Meer PF, Best Collaborative. Serum eye drops: a survey of international production methods. The Annual Meeting of the AABB. 22-25 October 2016, Florida USA (Poster)

Tan JC, van der Meer PF, Best Collaborative. Serum growth factor and fibronectin concentrations in dry eye patients and healthy blood donors. Internation Congress of the International Society of Blood Transfusion. 34th September 2016. Dubai, United Arab Emirates. (Poster)


van Dongen A. The role of microparticles in mediating adhesion of cryopreserved platelets to collagen. IMAAD2016. November 13-16 2016, Melbourne, Australia (Poster)

van Dongen A. The role of microparticles in mediating adhesion of cryopreserved platelets to collagen. IMAAD2016. November 13-16 2016, Melbourne, Australia (Poster)

van Dongen A. The role of microparticles in mediating adhesion of cryopreserved platelets to collagen. IMAAD2016. November 13-16 2016, Melbourne, Australia (Poster)
APPENDIX 3

ABSTRACTS ACCEPTED FOR ORAL OR POSTER PRESENTATIONS

Waters L, Paicul M, Marks D, Johnson L. Cryopreserved platelets demonstrate a reduced response to collagen stimulation: 27th Regional Congress of the ISBT. June 17-21, 2017, Copenhagen, Denmark. (Poster)


Winter KM, Weiss RG, Johnson L, Marks DC. A comparison of additive solutions (SAG-M, AS-3 & ESCOL-S) for storage of thawed cryopreserved red cells. 34th International Congress of the ISBT, September 3-8, 2016, Dubai, United Arab Emirates. (Oral)

Winter KM, Hyland RA, Tan S, Weiss RG, Davis A, Dowmonyng PM, Marks DC. Extending the post-thaw shelf-life of cryoprecipitate. 34th International Congress of the ISBT, September 3-8, 2016, Dubai, United Arab Emirates. (Poster)


PRODUCT SAFETY


Dean MM, Rooks KM, Chong PK, Faddy HM, Tung JP, Flower RL. Do donor and/or processing-related differences impact on blood product quality? 34th International Congress of the ISBT, 3-8 September 2016, Dubai UAE. (Oral presentation)

Dean MM, Rooks KM, Chong PK, Faddy HM, Tung JP, Flower RL. Do donor and/or processing-related differences impact on blood product quality? HAA Joint Scientific Meeting, 13-16 November 2016, Melbourne, Australia. (Oral presentation)


Dean MM, Ki KK, Faddy HM, Johnson L, Marks D, Flower RL. Characterisation of DC immune profile in transfusion models. 14th International Congress on In-vitro Immunity, June 19-24 2017, Crete Greece. (Poster presentation)


Ross River virus in "at-risk" Australian blood donors: implications for blood supply safety. 34th International Congress of the ISBT, 3-8 September 2016, Dubai UAE. (Oral presentation)

Faddy HM, Tran T, Seed C, Chau Y, Saux E, Hoga C, Flower R. Cytomegalo-virus-seronegative component supply and demand: are we able to meet our future needs? 34th International Congress of the ISBT, 3-8 September 2016, Dubai UAE. (Oral presentation)


Faddy HM, Gorman E, Head V, Forrest T, Tözer S, Białasiewicz S, Flower RLP. Seroprevalence of antibodies to primate erythroparvovirus 1 in Australia. Communicable Disease Centre Conference 26-28 June 2017, Melbourne, Australia. (Poster)


Flower R, Balasaran MA, Dean M, Saucedo E, Saha G, Yu T. Reversal of storage-related morphological changes in red blood cells: what is the impact in micro-inulasion? 16th International Conference on Biomedical Engineering, Singapore 7-10 December 2016 (oral)


Fry J, Marks DC, Hilton-Peters J, Winterton D, Hall RA, Young PR, Reichenberg S, Sumam C, Faddy HM. ZIKV virus in plasma is inactivated after treatment with methylene blue and light illumination. Pathology Update 24-26 February 2017, Sydney, Australia. (Poster)

Gorman EC, Flower RLP, Head VC, Fentiff TD, Faddy HM. Seroprevalence of antibodies to primate erythroparvovirus 1 among Australian blood donor. Pathology Update, 24-25 February 2017, Sydney, Australia. (Poster)

Gordon LG, Hyland CA, Head J, O'Brien N, Millard GM, Flower RL, Garland CJ. Cost-effectiveness analysis of fatal RHD genotyping of RHD negative pregnant women for targeted versus universal anti-D therapy in Australia. 3rd International Meeting on Cell-free DNA, Copenhagen, Denmark. 6-7 April 2017 (Poster)


Hyland CA, Millard GM, O'Brien E, Head J, Lopez DH, Schuermann EM, Flower RL. African and Asian RHD blood group genotypes as a complication of non-invasive prenatal testing (NIPT). 34th International Congress of the ISBT, Dubai, United Arab Emirates 03-08 September 2016. (Oral)

Hyland CA, Schuermann EM, Powley T, Wilson B, Martin JR, Liew YW, Lopez DH, Millard GM, O'Brien E. Flower RL. Evaluation...
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ABSTRACTS ACCEPTED FOR ORAL OR POSTER PRESENTATIONS

of targeted exome sequencing for 28 blood group systems, including homologous gene systems, for comprehensive blood group genotyping.
34th International Congress of the ISBT, Dubai, United Arab Emirates 03-08 September 2016 (Oral)
Hyland CA, Gardener GJ, Baidya S, O’Brien H, Millard GM, McGowan EC, Lopez GH, Schoeman EM, Liew YW, Flower RL. A case of suspected confirmed perinatal chromosomal following detection of fetal RHD signals in malekala platelet donor with the newborn serology. 34th International Congress of the ISBT, Dubai, United Arab Emirates 03-08 September 2016 (Poster)
Krauth C, Nylander CA, Lopez GH, Flower RL. Routine prophylactic use of RHD immunoglobulin in Australia: comparison with international practice. HAA Annual Scientific Meeting. Melbourne, Victoria, Australia 13-16 November 2016 (Poster)
Kii KK, Johnson L, Faddy MM, Flower RL, Marks DC, Dean MM. Exposure to cryopreserved platelets mediates suppression of myocardial dextric cell subcellular immune responses. Pathology Update 24-26 February 2017. Sydney, Australia. (Poster)
Marks DC, Fryk JJ, Hobson-Peters J, Watterson D, Hall RA, Young PR, Reichenberg S, Tolksdorf F, Sumar C, Gromeoehl U, Sellman A, Faddy MM. Zika virus infectivity is reduced following treatment with the THERAFLEX UVC-Platelet and THERAFLEX MB-Plasma systems. 27th Regional Congress of the ISBT 17-21 June 2017. Copenhagen, Denmark. (Poster)
Mousa A, Krauth C, Tung JP. Evaluation of the ability of commercial assays to quantify sheep cytokines. International Veterinary Immunology Symposium. 16-19 August 2016. Gold Coast, Australia. (Poster)
Tung JP, Wong S. Evaluation of the ability of commercial assays to quantify sheep cytokines. International Veterinary Immunology Symposium. 16-19 August 2016. Gold Coast, Australia. (Poster)
Tung JP, Simonova G. Zika virus infectivity is reduced following treatment with the THERAFLEX UVC-Platelet and THERAFLEX MB-Plasma systems. 27th Regional Congress of the ISBT 17-21 June 2017. Copenhagen, Denmark. (Poster)
Student Projects

R&D team members collaborate with universities, research institutes and hospitals to support students who undertake original research under the supervision of senior Blood Service researchers. A full listing of students and their project titles appears in the following pages. Blood Service supervisors are shown in bold. Students who hold scholarships are indicated by an asterisk.

APPENDIX 4

STUDENT PROJECTS

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<th>Student Name</th>
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<th>Project Title</th>
<th>Institution</th>
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<tr>
<td>Timothy An</td>
<td>Dr Irene Faddy, A/Prof Malcolm Davis, Prof Robert Flower</td>
<td>Occult Hepatitis C infection: Is There a Risk to Transfusion Safety?</td>
<td>The University of Queensland (PhD) National Health and Medical Research Council (NHMRC) National Hepatitis Centre (NHPC)</td>
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<tr>
<td>Arnaud Bakker (completed)</td>
<td>Marie-Anne Belanger, Dr John-Paul Tong, Prof Robert Flower</td>
<td>Red cell storage duration and procollagen effects: Role of microcrystals and smaller particles</td>
<td>Université Paris-Sud (France) (PhD)</td>
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<tr>
<td>Marie-Anne Belanger*</td>
<td>Prof Yuan-Ting Gu, Prof Robert Flower, Dr Emilie Saurel-Saurel</td>
<td>Experimental study of the aging effects on the red blood cell membrane during storage</td>
<td>Queensland University of Technology (PhD)</td>
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<tr>
<td>Sarah Barnes*</td>
<td>Prof Yuan-Ting Gu, Dr Emilie Saurel, Prof Robert Flower</td>
<td>Numerical Modelling of Red Blood Cell Morphological and Deformability Changes during the Cell Aging Process in Storage</td>
<td>Queensland University of Technology (PhD)</td>
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<tr>
<td>Liam Byrne</td>
<td>A/Prof Francesca Han, Dr John-Paul Tong, Prof Robert Flower</td>
<td>Fluid resuscitation during sepsis: Effects upon the microcirculation</td>
<td>University of Sydney (PhD)</td>
</tr>
<tr>
<td>Kathleen Cheer (completed)</td>
<td>Dr Danielle Berkley, Dr John-Paul Tong, Prof Robert Flower</td>
<td>Going and sharing: The predictors and outcomes of online donor appreciation</td>
<td>Queensland University of Technology (PhD)</td>
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<tr>
<td>Anne-Marie Christian</td>
<td>Dr Danielle Berkley, A/Prof Malcolm Davis, Dr John-Paul Tong, Prof Robert Flower</td>
<td>Extracellular traps (ETs) and cell membrane alterations in the microcirculation</td>
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<tr>
<td>Rachel Collaros (completed)</td>
<td>Dr Irene Faddy, A/Prof Malcolm Davis, Dr Robert Harling, Prof Robert Flower</td>
<td>Investigating the blood donor questionnaire effective in screening for donor HIV re-sensitisation?</td>
<td>The University of Queensland (PhD)</td>
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<tr>
<td>Serena Dimitri*</td>
<td>A/Prof Catherine Hyland, Dr Eunice McGowan, A/Prof Melinda Dean, Dr Helen Faddy</td>
<td>Isolation of novel ligand binding that binds to the extracellular matrix</td>
<td>Queensland University of Technology (PhD)</td>
</tr>
<tr>
<td>Nicole Flower</td>
<td>Dr Christine Koziol, A/Prof Terry Tong, Dr Emilie Scheneman, A/Prof Catherine Hyland, Prof Robert Flower</td>
<td>Gene variations of ALF1 and their variable effects on Blood Groups and Hereditary Traits in Inherited Blood Diseases</td>
<td>Queensland University of Technology (Honours)</td>
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Ellen Gemmell (completed) | Dr Helen Faddy, Prof Robert Flower | Is pulmonary VAP a concern for blood safety in Australia? | Queensland University of Technology (PhD) | 
| Hee-Hwang Kyung | Prof Louis M. Ryan (honorary), Dr Francesca Han | Coagulation and Prothrombin Complex Formation | Queensland University of Technology (PhD) | 
| Yu Jie | A/Prof Malcolm Davis, Prof Robert Flower | Characterisation of Red Blood Cell Porphyrins and Assessment of the Metabolism of Novel Treatment Delivery Systems | Queensland University of Technology (PhD) | 
| Haruna KI (completed) | A/Prof Malcolm Davis, Dr Helen Faddy, Prof Robert Flower | Characterisation of cellular immune profile in models of inflammation | The University of Queensland (PhD) | 
| Gissane Kuhar (completed) | A/Prof Robert Flower, Prof John Fong, Dr Michael Reade | Feasibility and development of a voice assessment tool in blood donation | Queensland University of Technology (PhD) | 
| Melanie van der Molen* | Dr Emilie Saurel, Prof Yuan-Ting Gu, A/Prof Robert Flower, and Dr Susan Saha | The role of angiogenesis in platelet function and storage | Queensland University of Technology (PhD) | 
| Natasha Mackay | A/Prof Catherine Hyland, Dr Elizna Schoeman, Dr Robert Flower, and Dr Michael Reade | Interactions and development of a vein assessment tool in online donor appreciation | Queensland University of Technology (PhD) | 
| Ellen Milford | Prof Michael Bows, Dr John-Paul Tong | Effects of commonly used and emerging resuscitation fluids on end-organ function in severe trauma | The University of Queensland (PhD) | 
| Amelia Muccino (completed) | Dr Christopher Marouda, Prof Terry Walsh, Dr Elizna Schoeman, A/Prof Catherine Hyland, Prof Robert Flower | The significance of “inhibition of Lubricin” / Hageman Like Factor in haemophilia | Queensland University of Technology (PhD) | 
| Michelle Ng* | Prof John Fong, Dr Brian-Paul Tong | The double whammy: impact of activated endothelium and stored blood transfusion on myocardial function and function | Queensland University of Technology (PhD) | 
| Awole Fosun | A/Prof Malcolm Davis, Dr Helen Faddy, Dr Stuart Hulm, Prof Robert Flower | Investigation of therapeutic role of adenosine in cardiac surgery patients | Queensland University of Technology (PhD) | 
| Sandra Siew* | A/Prof Malcolm Davis, Prof Stephen Marini, Dr Kevin Bui, Dr Martinia Jones, Prof Robert Flower | Identifying novel red-blood cell targets as a focus for development of biologic treatments for treatment of infectious diseases | Queensland University of Technology (PhD) | 
| Lunny Ramani | Dr Louis Harrison, Prof Robert Flower, A/Prof Catherine Hyland, Prof David Irving, Dr Emilie Scheneman | Extended Blood Group Serology to resolve complex Blood Group Incompatibility and to identify Rheno Donors | Queensland University of Technology (PhD) |
APPENDIX 4

STUDENT PROJECTS

Katelyn Richards*  An analysis of systems that modify red blood cell antigens and their role in red blood cell maturation, lifespan and disease resistance. PhD The University of Queensland

Ashleigh Stierstra  Evaluating the Risk Posed by Hepatitis E Virus to Blood Supply Safety. PhD The University of Queensland

Beatric Sim  Blood transfusion and risk of eGFR change. UQ MPH

Gabriela Simonova*  Developing laboratory models to help translate findings from the sheep model to the clinical setting. UQ PhD

Ashish Shrestha  Evaluating the Risks Posed by Hepatitis E Virus to Blood Supply Safety. PhD The University of Queensland

Beatrice Sim  Blood transfusion and risk of sepsis. UQ MPhil

Gabriela Simonova*  Developing laboratory models to help translate findings from the sheep model to the clinical setting. UQ PhD

Yufei Su  Development and characterisation of patient got variants of red blood cell antigens. UQ Summer student

Amrato Sabair*  Investigation of different mechanisms that contribute to the development of transfusion-related acute lung injury (TRALI). UQ PhD

Matthew Tumbilga  A retrospective analysis of pre-transfusion haemoglobin, haematocrit, and patient outcomes in all Queensland inpatients from 2007 – 2013. UQ MPH

Siddha Vakula  An evaluation of the benefits of blood group genotyping in chronically transfused recipients. QUT PhD

Matthew Tunbridge  A retrospective analysis of pre-transfusion haemoglobin, haematocrit, and patient outcomes in all Queensland inpatients from 2007 – 2013. UQ MPhil

Shaba Vakalia  An evaluation of the benefits of blood group genotyping in chronically transfused recipients. QUT PhD

Lauren Waters  Characterisation of the ability of platelets to respond to activation signals following cryopreservation. University of Technology Sydney Bachelor of Medical Science (Honours)

Peter Watson-Brown  Assessing the Risk of Zika Virus Transmission in Australia. The University of Queensland MBBS Honours

Kelly Wing  Lipoprotein particle number on red cell haemolysis. University of Sydney Summer student project

Michael Wu  The role of atherogenic reactions due to transfer of medication in blood products in a pilot study. The University of Queensland Scholar

Janeen Yu  Revisiting Regression to the Mean. University of Technology Sydney, Australia PhD
APPENDIX 5

COLLABORATIONS

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<tr>
<td>Australian National University</td>
<td>Product safety: Novel red cell targets for transfusion medicine</td>
<td>Prof Simon Crowe, Dr Brendan Millican, Dr Gulshan Bagain</td>
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<tr>
<td>James Cook University</td>
<td>Product safety: Exotic mosquito borne virus threats to Australia (including WNV, CHIKV, LNV etc); investigate burden and consequences for blood supply safety</td>
<td>Prof John Whitelock, Dr Megan Lord, Dr Brooke Watterson, Prof Paul Young</td>
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<td>Monash University</td>
<td>Product usage: Transfusion Outcomes Research Collaborative (TORC)</td>
<td>Prof J McNeill and members of the TORC steering committee</td>
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<tr>
<td>Queensland University of Technology</td>
<td>Product safety: Red cell alloimmunisation; how can extended genotyping support the ongoing transfusion needs of haemoglobinopathy patients?</td>
<td>Prof Louise Maher</td>
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<tr>
<td>University of Newcastle</td>
<td>Product safety: What is the role of alloimmunisation by transfusion of variant RhD red cells that express as RhD Negative?</td>
<td>Prof Abbie Barnett, Anne-Marie Christiansen</td>
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<td>University of South Australia</td>
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<td>Prof John McBride</td>
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<td>Product development and storage: Cold storage of platelets</td>
<td>Prof Ben Barfield</td>
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<td>Canberra Hospital</td>
<td>Product safety: Developing levels of MABs in donors implanted in clinical cases of TRALI</td>
<td>Prof Matthew Cook, Dr Zufu Lu</td>
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<tr>
<td>Concord Repatriation and General Hospital</td>
<td>Product usage: Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk?</td>
<td>Prof Peter Makari, Dr Rosalba Cross</td>
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<td>Flinders Medical Centre</td>
<td>Product development and storage: Characterisation of cryopreserved platelets</td>
<td>Prof Peter Maitz, Dr Rosalba Cross</td>
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<td>Gold Coast Hospital</td>
<td>Product usage: Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk?</td>
<td>Prof Peter Maitz, Dr Rosalba Cross</td>
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<td>Mater Mothers’ Hospital Brisbane</td>
<td>Product usage: Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk?</td>
<td>Prof Peter Maitz, Dr Rosalba Cross</td>
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<tr>
<td>Melbourne Medical Centre</td>
<td>Product usage: Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk?</td>
<td>Prof Peter Maitz, Dr Rosalba Cross</td>
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<tr>
<td>University of Newcastle</td>
<td>Product safety: Q Fever. How common is it? who are at risk and what does this mean for blood safety?</td>
<td>Prof Stephen Graves</td>
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<tr>
<td>University of NSW</td>
<td>Product safety: Q Fever. How common is it? who are at risk and what does this mean for blood safety?</td>
<td>Dr Heather Golding</td>
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<tr>
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<td>Dr Zufu Lu</td>
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<td>Walter and Miller’s Hospital Melbourne</td>
<td>Product safety: Reducing the risk of TRALI: how effective are interventions to reduce TRALI?</td>
<td>Dr Craig Williams, Dr Stephen Fox</td>
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<td>Dr Craig Williams, Dr Stephen Fox</td>
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<td>Dr Craig Williams, Dr Stephen Fox</td>
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*INSTITUTION RESEARCH AREA AND PROJECT COLLABORATOR(S)*

- **Universities**
  - AUSTRALIAN NATIONAL UNIVERSITY: Product safety. Novel red cell targets for transfusion medicine. Prof Simon Crowe, Dr Brendan Millican, Dr Gulshan Bagain.
  - JAMES COOK UNIVERSITY: Product safety. Exotic mosquito-borne virus threats to Australia (including WNV, CHIKV, LNV etc); investigate burden and consequences for blood supply safety. Prof John Whitelock, Dr Megan Lord, Dr Brooke Watterson, Prof Paul Young.
  - QUEENSLAND UNIVERSITY OF TECHNOLOGY: Product safety. Red cell alloimmunisation; how can extended genotyping support the ongoing transfusion needs of haemoglobinopathy patients? Prof Louise Maher.
  - UNIVERSITY OF NEWCASTLE: Product safety. What is the role of alloimmunisation by transfusion of variant RhD red cells that express as RhD Negative? Prof Abbie Barnett, Anne-Marie Christiansen.

- **Hospitals**
  - CANBERRA HOSPITAL: Product safety. Developing levels of MABs in donors implanted in clinical cases of TRALI. Prof Matthew Cook, Dr Zufu Lu.
  - WESTERN MOTHERS’ HOSPITAL MELBOURNE: Product safety. Reducing the risk of TRALI: how effective are interventions to reduce TRALI? Dr Craig Williams, Dr Stephen Fox.
  - ORANGE HEALTH SERVICE: Product usage. Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk? Dr Craig Williams, Dr Stephen Fox.
  - PRINCE CHARLES HOSPITAL: Product usage. Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk? Dr Craig Williams, Dr Stephen Fox.
  - PRINCE OF WALES HOSPITAL: Product usage. Blood product safety in massive transfusion recipients - Does white cell filtration really remove transfusion risk? Dr Craig Williams, Dr Stephen Fox.
APPENDIX 5

COLLABORATIONS

Royal North Shore Hospital
Product usage: Blood product safety in massive transfusion recipients - Does cell collection filtration really remove transfusion risk? Dr Tony Joseph, Dr Mark Galloway, Dr Lino Vereycke
Product safety: Red cell alloimmunisation: How can extended genotyping support the ongoing transfusion needs of alloimmunised patients? Prof Chris Ward
Product usage: Exploring the impact of blood transfusion on maternal outcomes and healthcare utilisation: informing the use of blood and blood products in the obstetric setting Dr Chris Ward, Dr Lino Vereycke
Product usage: The incidence of microorganisms in chemically transfused patients Dr Horburg Saur and Dr Lois Browning

Royal Perth Hospital
Product development and storage: Development and characterisation of platelet glycoprotein Dr Martin James, Dr Jennifer Bransford, Dr David Maynor

Royal Prince Alfred Hospital
Product safety: Production in anti-D immunoglobulin usage by genotyping: a cost (and benefit) analysis Clin Prof Jonathan Hyett
Product Safety: Non-invasive assessment (NIPA) translation: for high risk pregnant women who are alloimmunised to the RhD blood group antigen Dr Janet McPherson and Dr James Kessell

St George Hospital
Product usage: Blood product safety in massive transfusion recipients - Does cell collection filtration really remove transfusion risk? Dr Mary Longlois

Sydney Eye Hospital
Product development and storage: Development and characterisation of platelet glycoprotein Simon Cooper

Westmead Hospital
Product usage: Blood product safety in massive transfusion recipients - Does cell collection filtration really remove transfusion risk? Dr Jeremy Hsu, Dr Leonardo Pecotic

Queensland Health
Product safety: Q fever - how common is it, who is at risk and what does this mean for blood safety? Dr Penny Hutchison
Product safety: Transfusion Transmitted Infections and Emerging Risks - Chikungunya and/or Zika or emergence and establishment in Australia. Prof Andreas Suhrbier, Dr Greg Davey
SA pathology
Product safety: Red cell alloimmunisation: How can extended genotyping support the ongoing transfusion needs of haemoglobinopathy patients? Dr Philip David Rocky

RESEARCH INSTITUTES

NH&MRC Centre of Excellence for Mathematical & Statistical Frontiers (KEMES)
Donor health and wellbeing: 45 and up: Blood Service data linkage project in a world class donor health data-asset Prof Louise Ryan

Australian Genome Research Facility
Centre for Biopharmaceutical Innovation
Product safety: Novel red blood cell targets for biopharmaceutical development Professor Steven Mohr, Dr Xuan Bui

Centre for Children’s Health Research
Product safety: Is parechovirus B19 a concern for blood safety in Australia? Dr Sarah Teer, Serynow Bialewicz

Centre for Infectious Diseases and Microbiology Laboratory Services, Westmead
Product Safety: Non-invasive assessment (NIPA) translation: for high risk pregnant women who are alloimmunised to the RhD blood group antigen Dr Tony Joseph, Dr Mark Gillett, Dr Lesley Survela

Mater Medical Research Institute
Product safety: Transfusion Transmitted Infections and Emerging Risks - Chikungunya and/or Zika virus emergence and establishment in Australia. A/Prof. David Roxby

National Centre for Immunisation Research and Surveillance
Product safety: Q fever - how common is it, who is at risk and what does this mean for blood safety? Dr Nick Wood, Dr Helen Quinn, Prof. Peter McKay

Perth Blood Institute
Product safety: Product yield and storage duration and associated effects: Role of microparticles and smaller particles Ross Baker and Quentin Hughes

Queensland Institute of Medical Research-Berghofer Medical Research Institute
Product safety: Detection of Ross River virus in Australian blood donations Dr Natalie Price

Queensland Institute of Medical Research-Berghofer Medical Research Institute
Product safety: Exotic mosquito-borne viruses threats to Australia (including WNV, Chikungunya and/or Zika) and their burden and consequences for blood supply safety Dr Andreas Suhre, Dr Greg Davey

SA pathology
Product safety: Reduction in anti-D immunoglobulin usage by genotyping: a cost (and benefit) analysis Dr Laura Sando

Sav Sight Institute
Product usage: An open label, single arm clinical trial assessing the safety and efficacy of allergenic 20% saline eye drops in severe dry eye patients Dr Dan Podlogha
APPENDIX 5

COLLABORATIONS

Sax Institute
- Donor Health and Wellbeing: 45 and up study: Blood Service data linkage project: a world class donor health data asset
- Product development and storage: Characterisation of cryopreserved platelets
Dr Peter Schubert, Dr Dana Devine

The Australian and New Zealand Intensive Care Research Centre
- Product usage: TRANSFUSE: Standardised Issue Transfusion versus fresher red blood cells in ICU patients - a randomised controlled trial
Prof DJ (Darren) Cooper

The Rading Institute, University of Sydney
- Product usage: Exploring the impact of blood transfusion on mortality outcomes and healthcare utilisation: informing the use of blood and blood products in the obstetric setting
Prof Andrew Fearon, Prof Jonathan Morris, Ms Julia Paterson

Vision Eye Institute
- Product usage: An open label, single arm clinical trial assessing the safety and efficacy of alginate 25% serum eye drops in severe dry eye patients
Dr Colin Chan

INDUSTRY

Blood Systems Research Institute
- Product safety: Exotic mosquito-borne virus threats to Australia: including WNV, Chikungunya, Zika etc: isolating barriers and consequences for blood supply safety
Prof Eric Dineart

CSL
- Product usage: Evaluation of candidate immune biomarkers as predictors of Chikungunya virus response in COVID patients to promote cost-effective COVID testing
Dr Simone Skirvin, Dr Adrian Zuechner and Dr Bradley Saggers

Grifols
- Product usage: Does Hepatitis C Virus pose a risk to the Australian blood supply?
Dr Jeremy Hocking

Mochapsena
- Product usage: Inclusion of Zika virus in plasma and in platelet concentrates following treatment with the THROM-X GPI pathogen inactivation (PI) technologies
Dr Stefan Reichenberg, Dr Frank Tolksdorf, Dr Chrysalin Gunman

New Health Sciences Inc
- Product development and storage: Anaerobic Red Cell storage
Dr Tatsuro Yoshida

Product development and storage: Pilot study to determine whether in vitro testing can identify the best donors for our platelet components
Chryslain Sumian

Product development and storage: Pilot study on clinical efficacy and safety of platelet concentrates treated with the Thermanex VIAPlast® system in comparison to conventional platelet components
Dr Souravi GHosh, Dr Adrian Zuercher and Dr Prof Eric Delwart

Canadian Blood Services
- Product safety: Inactivation of Zika virus in plasma and in platelet concentrates following treatment with the Thermanex VIAPlast® technologies
Dr Juraj Petrik

McMaster University, Canada
- Product usage: Exploring the impact of blood transfusion on mortality outcomes and healthcare utilisation: informing the use of blood and blood products in the obstetric setting
Dr Mireille Baart

New Zealand Blood Service
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Jia Lu

Saudi Arabia Blood Service
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Andy Scott

Singapore Defence Medical & Environmental Research Institute
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

Scottish Blood Transfusion Service
- Product safety: Inactivation of Zika Virus in Plasma and in Platelet Concentrates Following Treatment with the THROM-X GPI Pathogen inactivation (PI) technologies
Dr Chadwick Ackland, Dr Richard McKeown, Dr Miriam McKeown, Dr Jia Lu

University of British Columbia
- Product development and storage: Pilot study to determine whether in vitro testing can identify the best donors for our platelet components
Dr Elizabeth Maurer

University of Dhaka
- Product development and storage: Pilot study on clinical efficacy and safety of platelet concentrates treated with the Thermanex VIAPlast® system in comparison to conventional platelet components
Dr Darryl Crimmins

University of Ottawa
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

University of Sydney
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

University of Victoria
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

University of Wisconsin
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

Vaccinology Laboratory, University of New South Wales
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

ASSOCIATE ON THE EXECUTIVE COMMITTEE

New Zealand Blood Service
- Product usage: TRANSFUSE: Standardised Issue Transfusion versus fresher red blood cells in ICU patients - a randomised controlled trial
Dr Melanie Madsen

McMaster University, Canada
- Product usage: Exploring the impact of blood transfusion on mortality outcomes and healthcare utilisation: informing the use of blood and blood products in the obstetric setting
Dr Mireille Baart

University of British Columbia
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Darryl Crimmins

University of Ottawa
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

University of Victoria
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

Canada Blood Services
- Product safety: Inactivation of Zika virus in plasma and in platelet concentrates following treatment with the Thermanex VIAPlast® technologies
Dr Ana Sarpelli

McMaster University, Canada
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Dr Mireille Baart

New Zealand Blood Service
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Andy Scott

Singapore Defence Medical & Environmental Research Institute
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

Scottish Blood Transfusion Service
- Product safety: Inactivation of Zika Virus in Plasma and in Platelet Concentrates Following Treatment with the THROM-X GPI Pathogen inactivation (PI) technologies
Dr Chadwick Ackland, Dr Richard McKeown, Dr Miriam McKeown, Dr Jia Lu

University of British Columbia
- Product development and storage: Pilot study to determine whether in vitro testing can identify the best donors for our platelet components
Dr Elizabeth Maurer

University of Ottawa
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

University of Victoria
- Product development and storage: Use of additive solutions for reconstitution of cryopreserved platelets
Dr Nancy Heddle

Vaccinology Laboratory, University of New South Wales
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Dr Ana Sarpelli

ASSOCIATE ON THE EXECUTIVE COMMITTEE

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