MTP Connect

TTRA

TARGETED TRANSLATION RESEARCH ACCELERATOR

DIABETES + CARDIOVASCULAR DISEASE

Transforming health outcomes for diabetes and cardiovascular disease in Australia

Interim report on impacts of the first Targeted Translation Research Accelerator

FEBRUARY 2024

MTPConnect

Australia's Life Sciences
Innovation Accelerator

Transforming research to create new medicines, devices and treatments for better health and wellbeing

About MTPConnect

MTPConnect is Australia's Life Sciences Innovation Accelerator – an independent, not-for-profit organisation established by the Australian Government to champion the continuing growth of Australia's vibrant medical products sector.

MTPConnect works with start-ups, SMEs and researchers to accelerate the commercialisation of medical technologies, biotechnologies and pharmaceuticals; taking cutting-edge research from bench to bedside.

We achieve these outcomes by improving industry collaboration and commercialisation, providing accelerator funding and support for cutting-edge innovations, boosting workforce development, optimising the regulatory and policy environment and creating links to international markets.

Across MTPConnect's accelerator and workforce programs, $153 million has been injected into the sector, securing more than $1 billion in additional industry contributions and external investment. MTPConnect's work has seen 1,585 new technologies invented or progressed, 2,294 new jobs created and over 740,000 patients treated.

Acknowledgement of Country

MTPConnect recognises Aboriginal and Torres Strait Islander peoples as the First Peoples of this nation and their ongoing connection to culture and country. We acknowledge First Nations Peoples as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living culture, and Australia's first innovators, inventors and healers. We pay our respects to Elders past and present.

Acknowledgements

MTPConnect would like to thank all those involved in the compilation of this report, including the TTRA Expert Advisory Board.

We would also like to thank the Research Centres and Research Projects funded through the TTRA, whose groundbreaking work forms the basis for the outcomes and impacts described in this report, and the TTRA Partners, whose dedication has helped them achieve this.

Finally, we extend our thanks to MTPConnect's TTRA team of Lauren Kelly, Dr Mana Liao and Dr Erin McAllum for their hard work and dedication which is making these outcomes possible.

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A Message from the CEO of MTPConnect

I am delighted to report that MTPConnect has now delivered the Targeted Translation Research Accelerator (TTRA) program passed the half-way point. It's the perfect time to take stock and provide an update on the program's successes and impacts. Through a robust funding framework, all competitive research funding has been awarded to accelerate innovative products and solutions for diabetes and cardiovascular disease, and we are already seeing outstanding results of this strategic and targeted investment.

This report captures the outcomes to date of the two national Research Centres established and the 22 individual Research Projects funded, which have been collectively awarded $38.3 million funding across four competitive funding rounds.

MTPConnect designed the TTRA program to create a framework that nurtures the translation of innovative products and solutions for the prevention, diagnosis, treatment and management of diabetes and cardiovascular disease and their complications.

With support and strategic direction from the Expert Advisory Board, the TTRA program has benefited from its extensive expertise across diabetes and cardiovascular disease lived experience and advocacy, as well as clinical, public health, research and commercial perspectives. Through the concurrent roles many members have in funding, advocacy and research, they have ensured the TTRA program's positioning is both complementary to, and not duplicative of, other opportunities within Australia. I would like to thank the TTRA Expert Advisory Board members for their deep engagement with the program which has underpinned its success.

The TTRA program aims to address sector- and community-identified priorities, break down silos, enhance collaborative gain and embed translation, commercialisation and implementation of diabetes and cardiovascular disease research outcomes as a natural course of activity in Australia.

Made possible with funding through the Preventive and Public Health Research Initiative of the Medical Research Future Fund (MRFF), MTPConnect's TTRA program was designed to balance commercialisation, public health and health equity outcomes. To achieve this balance, we designed the program to fund innovations across behavioural interventions, digital health, health services innovations, medical devices and therapeutics.

The program also specifically supports projects led by First Nations researchers that will deliver benefits for Aboriginal and Torres Strait Islander health and wellbeing.

To provide comprehensive mentoring and expert guidance across these different modalities, MTPConnect has expanded beyond its established partnerships with ANDHealth, Medical Device Partnering Program (MDPP) and UniQuest to include the Australian Centre for Health Services Innovation (AusHSI) and the Lowitja Institute.

My thanks to our great partners for sharing in the spirit and intent of the TTRA program and for their dedication and commitment to nurturing the projects funded and contributing to the success of our TTRA program to date. While there's more work to do, the potential of this cohort of Research Centres and Research Projects to transform diabetes and cardiovascular disease care in Australia is already apparent.

Tangible impacts that will benefit patients and economic growth include 46 new products, solutions and technologies that are now progressing towards translation, the formation of three new spin-out companies, 17 pre-clinical and clinical trials have commenced and 459 trial participants have been recruited.

As our TTRA program and its supported centres and projects mature, we're confident more successes will flow. Projects awarded funding to address priorities in Aboriginal and Torres Strait Islander health and wellbeing have only just commenced, so we are particularly excited to see the benefits for these communities as the research activities progress.

We look forward to sharing these outcomes and more with you as the program continues into 2026. For now, please enjoy reading about the early outcomes and impacts already achieved by this groundbreaking TTRA program and the exciting research it supports in a bid to improve the lives of those living with diabetes and cardiovascular disease.

Stuart Dignam
Chief Executive Officer

A Message from the TTRA Expert Advisory Board Chair

The TTRA Expert Advisory Board, nominated by the Federal Minister for Health and Aged Care, brings deep expertise around commercialisation, public health, diabetes and cardiovascular disease advocacy, lived experience, clinical and research perspectives and the investment viewpoint to the governance of the TTRA program.

I was delighted, in 2020, to accept an invitation to chair the Targeted Translation Research Accelerator Expert Advisory Board (TTRA Board), a key component of the broadly based funding for translation and commercialisation of medical research provided by the creation of the Medical Research Future Fund (MRFF). I would like to thank all members of the TTRA Board, past and present, that have generously dedicated their time and expertise to ensuring the objectives of this program have been met, with the goal of working towards accelerating diabetes and cardiovascular disease products and solutions towards clinical impact.

Commercialisation of therapeutics, medical devices and digital health solutions are critical to our nation's efforts to improve the health and wellbeing of every Australian and reduce the burden of disease that significantly impacts patients, their families, and our healthcare system. However, for the TTRA program it was equally important to ensure that health equity was also prioritised, given the TTRA program falls within the MRFF's Preventive and Public Health Research Initiative. The TTRA Board was instrumental in expanding the program to include behavioural interventions and health service innovations, and funding implementation science as a means of improving access and equity of diabetes and cardiovascular disease innovations. The third round of Research Projects was a further opportunity to direct funding to areas of greatest need for our First Nations communities and, through the process, privileging First Nations ways of knowing, being and doing.

The TTRA Board benefits from lived experience and diabetes and cardiovascular disease advocacy perspectives, and this important representation is carried through to the TTRA program's assessment panels. The TTRA program's strong engagement with community and end-users was an integral component of the prioritisation research that informed each of the four funding rounds. Embedding community engagement from the top-down and bottom-up of the TTRA program's activities, has ensured that the funding opportunities are targeted to areas of unmet need for diabetes and cardiovascular disease communities, enabling innovation pull rather than technology push.

The vision for the TTRA program is to build new capacity to solve the big challenges posed by diabetes and cardiovascular disease and their complications. MTPConnect is not only executing this vision effectively through design and delivery of the TTRA program, but also through to the Research Centres established with TTRA funding in early 2022 – the Australian Centre for Accelerating Diabetes Innovations and the Australian Stroke and Heart Research Accelerator.

This is a new approach to medical research in Australia, leveraging the existing strengths around the country and building a culture of collaboration and partnership across academic institutions, industry and investor groups, clinical and health networks, and advocacy bodies. This will ensure collaborative gain is realised, and products and solutions are brought into clinical practice faster, resulting in positive health impacts.

On top of this, the Research Centres will share their knowledge and train and mentor the next diabetes and cardiovascular disease researchers and clinicians to continue the work they have started.

I have been so pleased to support MTPConnect in its delivery of the TTRA program, and excited to see the significant achievements made not only by the program, but from all those who have been funded over the last three years, the best is yet to come. Congratulations to all.

I offer my congratulations to the team at MTPConnect for delivering such a successful program and always employing best practice in program governance. The team's administration of four separate funding opportunities offered to the sector has been independent, rigorous, transparent, and equitable. To date, the program has truly accelerated innovations due, in part, to the substantial support mechanism provided by MTPConnect and its program partners, in addition to the funding.

Emeritus Professor Ian Frazer AC FRS
Chair, TTRA Expert Advisory Board
Co-Chair, Australian Medical Research Advisory Board
Member, NHMRC Council

Executive Summary

Executive Summary

The $47 million Targeted Translation Research Accelerator (TTRA) program, delivered by MTPConnect, is part of an initiative of the Medical Research Future Fund (MRFF) to support translational research for the development of novel products and solutions for diabetes and cardiovascular disease. Across 2020-23 and four rounds of competitive funding opportunities, the TTRA program established two national Research Centres and invested in 22 Research Projects. Now past the halfway point and the funding pool fully committed, this report details how the program's objectives are being met and summarises the interim outcomes and impacts being made.

Diabetes and cardiovascular disease are leading causes of death and disability in Australia – and globally – and represent a significant challenge to Australia's health system. With the goal to reduce the burden of disease, the Australian Government established the Targeted Translation Research Accelerator initiative for diabetes and cardiovascular disease, a $124.5 million funding allocation from the Medical Research Future Fund's (MRFF) Preventive and Public Health Research Initiative.

In 2020, MTPConnect was selected, following an open and competitive process, to deliver the initial $47 million TTRA investment as a coordinated and collaborative program of translational research to transform health outcomes. MTPConnect adapted its proven approach to program delivery, pairing non-dilutive funding with mentoring, implementation and commercialisation support to accelerate promising Australian research addressing sector and community-identified unmet needs in diabetes and cardiovascular disease.

The overall intended impact of this investment was a reduction in burden of diabetes and cardiovascular disease, improving knowledge and its translation into practice and supporting the development of novel preventative, diagnostic and therapeutic approaches and products for diabetes and cardiovascular disease[1]. MTPConnect was tasked with delivering the following objectives:

1. Establish through competitive processes two research centres, one for diabetes and one for cardiovascular disease to accelerate therapies for the prevention, early detection and treatment of disease related complications.
2. Support through competitive processes research projects on the potential common pathways interactions, and complexities for patients experiencing two or more of the following: Type 1 diabetes; Type 2 diabetes; and cardiovascular disease.
3. Target investment and related support through partnership projects to progress promising drug and device development projects, with a focus on promoting commercialisation of novel therapeutics and devices for diabetes and cardiovascular disease.
4. Source, nurture, and invest in early-stage therapeutic research targets to transform diagnostic and therapeutic care for people with diabetes.
5. Commission and conduct research to support the health and commercial sectors to deliver transformations in diabetes and cardiovascular disease.

1 TTRA Grant Opportunity Guidelines 2020

In response, MTPConnect designed the distinguishing features of the TTRA program to differentiate it from the MRFF research missions and other MRFF programs and grant opportunities to minimise duplication and enhance synergy in research efforts.

The distinguishing features of the TTRA program

Community-led priority setting. Community includes diabetes and CVD researchers, clinicians, advocacy groups and people with knowledge of the lived experience.

Collaborative Research Centres designed to drive new partnerships, breakdown silos and create a cross-disciplinary multi-sector ecosystem for diabetes and CVD research.

Acceleration of commercialisation, translation and implementation of diabetes and CVD products and solutions to benefit patients and the health system.

Building capacity and capabilities in commercialisation, translation, and implementation of the diabetes and CVD research and clinical sectors.

To achieve its objectives, the TTRA program delivered by MTPConnect aims to break down silos, enhance collaborative gain and embed translation and commercialisation of diabetes and cardiovascular disease research outcomes as a natural course of activity in Australia by implementing a milestone-driven funding model that offers a greater level of support to applicants and awardees, than non-dilutive funding support alone.

The program aligns with the strategic objectives of the MRFF, the guiding principles that support the Australian Medical Research and Innovation Strategy[2] and the Australian Medical Research and Innovation Priorities[3].

Fundamental to determining if and how the TTRA program delivers on its anticipated direct outcomes and impacts, was the development of a strategy and framework for monitoring and evaluation. This has enabled MTPConnect to collect evidence annually which demonstrates delivery of the anticipated outcomes from the TTRA program's undertaking, adjust where necessary and ultimately realise its intended impact. Part of the development of this strategy and framework was to define the intended outcomes and impacts of the TTRA program which were drawn from the original grant opportunity guidelines[4].

2 Australian Medical Research and Innovation Strategy 2021-2026
3 Australian Medical Research and Innovation Priorities 2022-2024
4 TTRA Grant Opportunity Guidelines 2020

Anticipated outcomes

TTRA funding supplements existing initiatives and fills emerging research and clinical gaps not currently addressed in the sector

New products and solutions for D&CVD progressed towards commercialisation or implementation

New products and solutions for D&CVD that will benefit health and wellbeing of Aboriginal and Torres Strait Islander peoples progressed towards commercialisation or implementation

New collaborations across relevant industry, research, clinical and community/ consumer organisations

Jobs created in D&CVD research and translation

New training opportunities to build capacity and capability for research commercialisation and implementation within the D&CVD research and clinical workforce

Increased community/ consumer engagement and empowerment through direct involvement in D&CVD research and broad awareness of the TTRA program and its outcomes

New funding attracted from industry, research and clinical organisations for D&CVD research and translation

Knowledge translation into practice (e.g., influence on policy, clinical guidelines, clinical best practice etc.)

Anticipated impacts

Improve patient health outcomes for D&CVD

Reduction in the burden of disease for D&CVD

New products and solutions for D&CVD widely adopted by patients, clinicians, carers and health systems

A D&CVD research and clinical workforce skilled in commercialisation, translation and implementation

Jobs growth in D&CVD research and in new and existing companies progressing the translation of products and solutions for D&CVD

Now just over halfway through its term, the TTRA program has invested $38.3 million directly into Australian diabetes and cardiovascular disease research, with this investment leveraging an additional $46.5 million from the sector. To enable translation and impact, a further $8.7 million was invested in prioritisation research to ensure the funding was targeted to areas of greatest need; specialty expert support to applicants and awardees across digital health, behavioural interventions and health service delivery, medical devices and therapeutics; events to connect the Research Centres and Research Projects with industry, investors and the wider research sector; and program governance and infrastructure (of which less than 10 per cent of the total funding amount was allocated).

Please note: Unless otherwise stated, all data provided in this report is accurate as at 30 June 2023, and all dollar amounts refer to funds committed/contracted and are not yet expended in full.

$47M TTRA program

$38.3M
awarded to accelerate research towards translation, which leveraged

$14.4M
cash co-contributions

$32.1M
in-kind co-contributions

$8.7M
allocated to enable translation and impact, including prioritisation research, specialty experts, governance, and infrastructure

Pillar 1 Research Centres

Research Centre focused on diabetes complications

Research Centre focused on cardiovascular disease complications

Pillar 2 Research Projects

7 Diabetes projects

5 Cardiovascular disease projects

10 Diabetes + cardiovascular disease projects

Introduction

Introduction

Diabetes and cardiovascular disease in Australia

Over 1.3 million Australians are living with diabetes[5] and 1.2 million Australian adults are living with one or more conditions related to heart, stroke or vascular disease[6]. These numbers represent approximately five per cent of the population, respectively, and it is likely that these are underestimates. In addition, diabetes alone is the fastest growing chronic condition in Australia and has been referred to as the epidemic of the 21st century and the biggest challenge confronting Australia's health system[7].

The high prevalence of these chronic conditions puts substantial strain on the Australian healthcare system and economy. In 2020-21, almost 60,000 hospitalisations were due to diabetes and 600,000 due to cardiovascular disease, representing over five per cent of all hospitalisations. Diabetes is among the 10 leading causes of death in Australia and cardiovascular disease is the second leading cause behind cancer. Together, diabetes or cardiovascular disease was the underlying cause of over 48,000 deaths or approximately 28 per cent of all deaths in 2021. In 2019-2020, 11.4 per cent of total disease expenditure was attributed to diabetes or cardiovascular disease, costing the Australian health system $3.1 billion and $12.7 billion, respectively[4,5].

For Aboriginal and Torres Strait Islander people, not only are rates of diabetes and cardiovascular disease two to three times higher than the wider population, hospitalisations, deaths and other complications are much higher[4,5].

Diabetes and cardiovascular disease are closely associated with multiple common underlying causes and risk factors including high blood pressure, obesity and smoking. Diabetes itself is also a well-known risk factor for cardiovascular disease and in 2011-12, 342,000 Australian adults were reported as having both diabetes and cardiovascular disease, with a further 182,000 also having chronic kidney disease[8]. Comorbidity of these conditions leads to more severe illness, poorer prognosis and premature death, often beyond the sum of the effects of each disease.

While alarming, these statistics alone do not tell the whole story, as people with diabetes and/or cardiovascular disease often live with a number of associated complications and conditions including kidney disease, foot ulcers, blindness, stroke and heart failure. In addition to these physical complications, living with diabetes and cardiovascular disease also includes a substantial mental health burden. For example, people living with type 1 diabetes are disproportionately affected by a psychological phenomenon called decision fatigue, which hinders their ability to make vital decisions – placing them at greater risk of life-threatening complications such as heart attack and kidney disease[9]. They make an extra 180 decisions every day compared to the average person – and these are often decisions that are critical to their health and wellbeing[10].

The impact of both diabetes and cardiovascular disease also stretches beyond those directly affected to family members, carers and the wider community.

There is a clear need for transformative products and solutions to address the significant challenge diabetes and cardiovascular disease represents for individuals, communities, the health system and the economy in Australia.

Medical Research Future Fund – filling research gaps

The MRFF provides grants of financial assistance to support health and medical research and innovation to improve the health and wellbeing of Australians.

The MRFF was established as a long-term investment to support Australian health and medical research to address significant health challenges, both current and emerging. By transforming health and medical research and innovation, and creating an ecosystem that fosters translational research, the MRFF aims to improve lives, build the economy and contribute to health system sustainability.

The MRFF is a priority driven fund with investments aimed at filling research gaps. The funding is directed into four themes – Patients, Research Missions, Researchers and Research Translation – with separate initiatives under these themes delivering grant opportunities.

5 Australian Institute of Health and Welfare. (2023). Diabetes: Australian facts. Retrieved from https://www.aihw.gov.au/reports/diabetes/diabetes
6 Australian Institute of Health and Welfare. (2023). Heart, stroke and vascular disease: Australian facts. Retrieved from https://www.aihw.gov.au/reports/heart-stroke-vascular-diseases/hsvd-facts
7 Diabetes Australia. Diabetes in Australia. Available: https://www.diabetesaustralia.com.au/about-diabetes/diabetes-in-australia/
8 Australian Institute of Health and Welfare (2014) Cardiovascular disease, diabetes and chronic kidney disease: Australian facts: prevalence and incidence 2014, AIHW, Australian Government, accessed 01 December 2023.
9 Diabetes NSW. Complications of diabetes. Available online: https://diabetesnsw.com.au/living-with-diabetes/complications-of-diabetes/
10 Stanford University, 2014. New research shows how to keep diabetics safer during sleep. Available online: https://scopeblog.stanford.edu/2014/05/08/new-research-keeps-diabetics-safer-during-sleep/

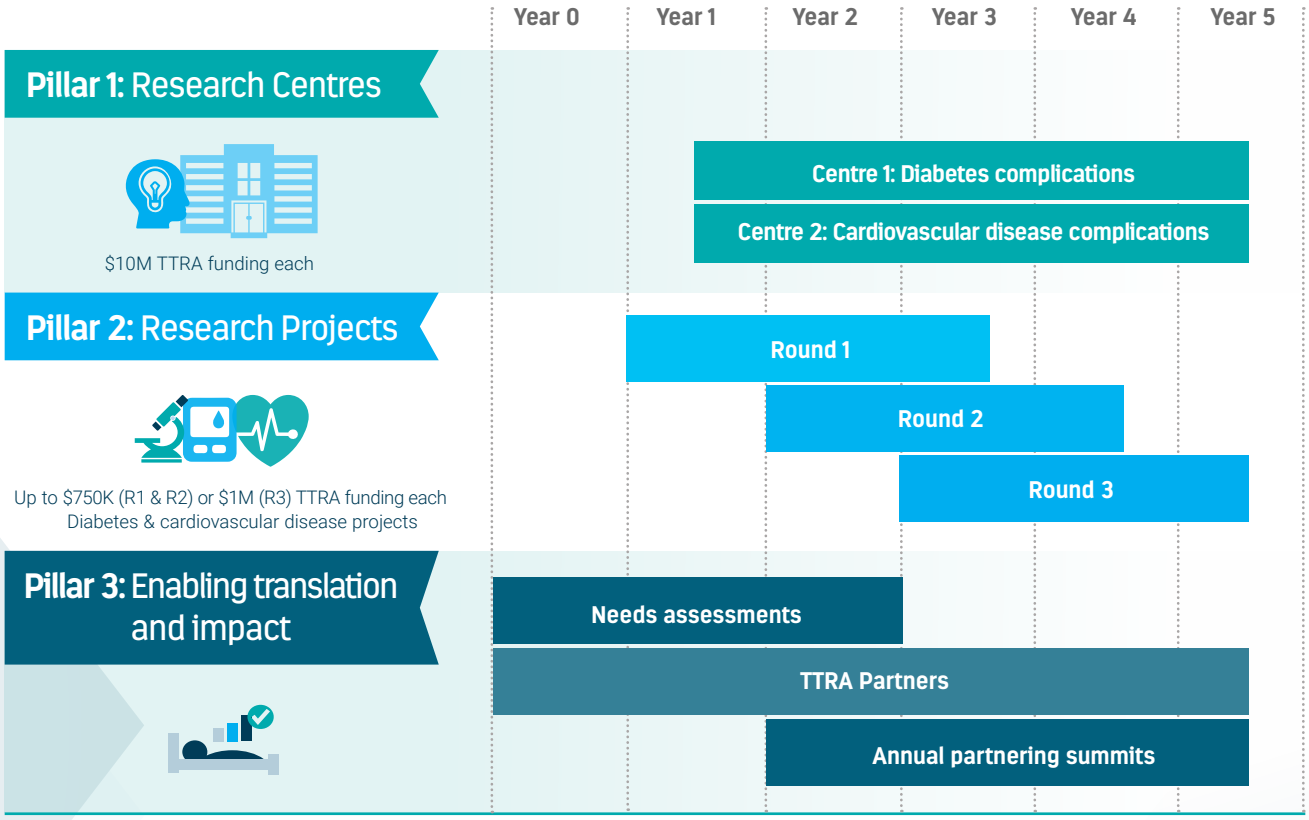
The Preventive and Public Health Research Initiative falls under the Research Translation theme. The Initiative's goal is to support targeted research on new ways to address chronic and complex diseases in Australia.

The Targeted Translation Research Accelerator (TTRA) is a $124.5 million funding allocation for diabetes and cardiovascular disease research that sits within the Preventive and Public Health Research Initiative. In 2020, MTPConnect was selected to deliver the initial $47 million TTRA investment.

MTPConnect's TTRA program anatomy

Improving health outcomes through the application of targeted health research requires three main elements: a process to identify and select priority research; a process for matching priority research with the optimal deployment of capability, capacity and funding; and the necessary infrastructure and support to effectively translate research outcomes into clinical and community health outcomes. The TTRA program delivered by MTPConnect brings together these three requisite elements through a comprehensive suite of activities to support the development of a portfolio of preventive, diagnostic and therapeutic approaches, products and solutions for diabetes and cardiovascular disease.

The program includes three main pillars through which the funding is invested to transform Australia's approach into diabetes and cardiovascular disease research.



At its core, the program aims to stimulate collaboration across relevant industry, research and clinical organisations (including health administration) and to leverage strengths across the sector to produce preventative interventions, cures and treatments for diabetes and cardiovascular disease that reduce the burden of diabetes and cardiovascular disease on patients, families and communities. The TTRA program takes a national and inclusive approach to working with clinicians, researchers, health administrators, Aboriginal and Torres Strait Islander health groups and consumers.

The program leverages MTPConnect's proven accelerator model, extensive capabilities and national footprint and experience in fostering translation of research and promoting collaboration with industry, supporting and incentivising translation as a natural course of activity for those applying and receiving funding.

Through Pillar 1, two national virtual Research Centres were established through a contestable process: one focused on diabetes complications and the other on cardiovascular disease complications. A coordinated, national, inter-organisational strategy is necessary to ensure the optimal deployment of resources that drive the translation of diabetes and cardiovascular disease health discoveries into education and clinical practice. The establishment of these Centres forms the basis for this strategy. Funding provided to each Centre over the term of the program is intended to position the Centres to become self-sustainable by 2025-26.

Through Pillar 2, an open, contestable program of research project funding has deployed $18 million to individual research projects through three rounds of funding. The first two rounds of Pillar 2 were built around MTPConnect's distinct application process that embeds translation and commercialisation capacity and capability building opportunities. This includes information sessions that provide practical advice to potential applications, an application form that applies an investor lens, a multi-stage application process with actionable feedback provided at each stage, a consultation process for shortlisted applicants allowing them to access expert guidance, and assessment and feedback from an expert, international investment panel. The third round, focused on funding projects in Aboriginal and Torres Strait Islander health, necessarily took a different application approach and was co-designed with experts in Aboriginal and Torres Strait Islander health research and funding.

For Pillars 1 and 2, partnerships and co-contributions were strongly encouraged in order to maximise impact of investment and to provide opportunities for translation, commercialisation and implementation of research outputs into clinical practices and outcomes, particularly strategic partnerships with organisations that improve the health of Australians through influencing health policy and health care delivery.

Through Pillar 3, the program provides much more than access to funding providing ongoing expert knowledge, support, mentoring and advisory oversight to those that secure funding, maximising the execution of the project plans and realisation of key milestones. MTPConnect has demonstrated that this process significantly de-risks projects and positions them to translate into practice/products or attract follow-on funding from other granting schemes, through national or international venture capital or through licensing or other commercial transactions. Pillar 3 is supported by our selected program partner organisations: ANDHealth, Australian Centre for Health Services Innovation, Lowitja Institute, Medical Device Partnering Program and UniQuest.

Our partners who support Pillar 3 have significant and proven expertise across the range of digital health, behavioural interventions and health service innovations, Aboriginal and Torres Strait Islander health research, medical devices, biotechnology and pharmaceutical therapeutics, supported by the TTRA program. Through this Pillar, the program is helping to ensure that Australia's research is translated into patient outcomes, jobs growth, economic outcomes and savings in our health system.

Also supporting the intent of Pillar 3, an annual series of 'Partnering Summits' brings together the recipients of Pillar 1 and Pillar 2 funding to connect and explore research synergies and access expert advice and training.

This framework of pairing non-dilutive grant funding with extensive wraparound support was first developed by MTPConnect for its Biomedical Translation Bridge (BTB) program. The BTB program was among the first of its kind in Australia with industry mentors and commercialisation experts nurturing the next generation of health and medical research innovators, creating a unique Australia-wide initiative.

This proven framework has been further expanded by the TTRA program to include partners with expertise in translation and implementation of behavioural interventions and health service innovations, and in Aboriginal and Torres Strait Islander health.

Governance and specialist support

TTRA Expert Advisory Board

Another unique aspect of the TTRA program is the overarching governance by the TTRA Expert Advisory Board, nominated by the Federal Minister for Health and Aged Care, which brings deep expertise around commercialisation, diabetes and cardiovascular disease advocacy, lived experience, clinical and research perspectives and the investment viewpoint:

TTRA Expert Advisory Board members

Emeritus Professor Ian Frazer AC FRS (Chair)
Co-Chair, Australian Medical Research Advisory Board (AMRAB)
Emeritus Professor of Medicine, University of Queensland
Clinical immunologist and co-inventor of the HPV vaccine

Emeritus Professor James Best AO
Research Director, Austin Health,
Professor Emeritus, University of Melbourne
Former Dean, Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore
Endocrinologist and diabetes researcher

Rebecca Davies AO
Director, National Heart Foundation of Australia
Deputy Chair, MedTech Actuator
Former Board Member, JDRF International
Lived experience of diabetes and heart disease as a parent and wife

Yasser El-Ansary
Chief Executive Officer
The Financial Services Institute of Australasia (FINSIA)
Financial services sector representative and AMRAB Board Member

Alfred Deakin Professor Rachel Huxley
Executive Dean
Faculty of Health Deakin University
Epidemiologist focusing on major determinants of chronic disease

Professor Garry Jennings AO
Chief Medical Advisor
National Heart Foundation of Australia
Cardiologist and cardiovascular researcher

Hon. Judi Moylan AO
Former Independent Chair of the Board and National President, Diabetes Australia
Former Member of NHMRC and Chair of the Consumer and Community Advisory Group to the NHMRC
Diabetes and consumer and community advocacy representative

Mike Wilson OAM
Chief Executive Officer
JDRF Australia
Type 1 diabetes advocacy representative

Support from Specialist Partners

The TTRA program's specialist partners provide mentoring, commercialisation and implementation advice to those applying for and receiving funding. As the TTRA program supports a range of modalities – digital health, medical devices, behavioural interventions, health service innovations and therapeutics – each partner brings unique expertise in its translation.

ANDHealth is Australia's only organisation dedicated to providing commercialisation support programs designed exclusively for digital and connected health technologies and companies. ANDHealth's mission is to strengthen the Australian digital health ecosystem and support Australian digital health companies to prepare for institutional investment and international market entry. ANDHealth's non-equity-taking, industry-led programs actively de-risk digital health innovations across key areas of clinical and commercial validation, providing hands-on support, access to clinical and industry experts, and to global networks. ANDHealth also partners with MTPConnect on the Researcher Exchange and Development within Industry (REDI) Program.

Australian Centre for Health Services Innovation (AusHSI), based at Queensland University of Technology (QUT), is one of Australia's leading health service research centres, with strengths in health economics, implementation science, statistics and data analysis. AusHSI enables health service organisations to make changes that bring about greater efficiencies and improved patient outcomes. By combining leading edge health services research with hands on experience, AusHSI generates practical insights and independent guidance on how to identify, implement and evaluate innovation for real life health practice problems.

Australia's national institute for Aboriginal and Torres Strait Islander health research, The Lowitja Institute, named in honour of its Patron, Dr Lowitja O'Donoghue AC CBE DSG works for the health and wellbeing of Australia's First Peoples, through high impact quality research and knowledge translation, and by supporting Aboriginal and Torres Strait Islander health researchers. Established in January 2010, the Lowitja Institute operates on key principles of Aboriginal and Torres Strait Islander leadership, a broader understanding of health that incorporates wellbeing, and the need for the work to have a clear and positive impact. Lowitja Institute is a community controlled organisation, with a membership base of 39 Aboriginal and Torres Strait Islander organisation members and 51 associate non Indigenous organisation members.

For more than 15 years the Medical Device Partnering Program (MDPP) has run its flagship Ideas Incubator program which drives an entrepreneurial culture within the medtech sector. MDPP has seen more than 1,000 medical device ideas, provided more than 31,000 hours of hands-on biomedical engineering expertise and facilitated more than 400 hours of ideation workshops. MDPP fosters collaborations between researchers, industry, end-users and government to develop novel medical devices with global market potential. It forms the essential links between clinical need and knowledge with technical expertise and industry know-how. MDPP also partners with MTPConnect on the Clinical Translation and Commercialisation Medtech (CTCM) Program.

UniQuest is a leading university-based commercialisation company, managing the intellectual property (IP) of The University of Queensland (UQ). UniQuest has facilitated more than 125 start-up companies built on UQ IP, a milestone unsurpassed by any other Australian university. These companies have gone on to raise more than $1 billion to take UQ technologies to market. The Queensland Emory Drug Discovery Initiative (QEDDI), a division of UniQuest, is a small molecule drug discovery and development facility translating UQ and collaborator's biomedical research into new medicines to meet unmet needs and deliver faster health benefits.

Through the support provided by the TTRA Partners, MTPConnect's TTRA program has brought together Australia's pioneering diabetes and cardiovascular disease clinicians and researchers with Australia's leading medtech, biotech/pharma, digital health and health service innovators. This greatly increases the likelihood of successful translation and clinical uptake of the research.

Achievements

after three years of targeted funding and support

Achievements after three years of targeted funding and support

1. Priority-driven research to maximise funding impact

Setting priorities for government health and medical research funding is an important step to ensure the investment has impact, is not duplicative and contributes to delivering health benefits for the public. The MRFF publishes new priorities every two years following a national consultation process.

The intention for the TTRA program is to target health and medical research funding for diabetes and cardiovascular disease, given their significant burden on patients, carers, communities and the health system. To ensure the initial investment of $47 million builds upon existing successful initiatives, is targeted towards the areas of greatest unmet need in diabetes and cardiovascular disease, and has maximum impact on improving health outcomes, MTPConnect undertook a structured needs assessment and prioritisation process, prior to each funding round. The most pressing unmet needs identified through these assessments formed the priority areas for each funding call.

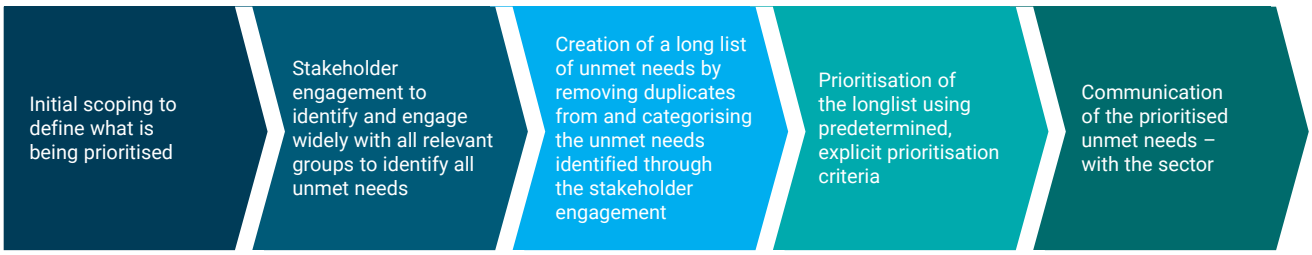
The rigorous process employed for each needs assessment ensured that the priority areas funded were not just unmet needs from the perspective of researchers and clinicians, but, importantly, were also unmet needs for people living with diabetes and/or cardiovascular disease and their carers.

Priority setting for translational diabetes and cardiovascular disease research

Identifying unmet diabetes and cardiovascular disease needs for the general Australian population

For Pillar 1 funding and the first two rounds of Pillar 2, MTPConnect sought to determine priority areas that were unmet needs for the general Australian population. MTPConnect partnered with the Australian National University, Monash University's BehaviourWorks and Research Australia to conduct each needs assessment and develop the prioritisation process. See infographic on pages 20-21.

The process leveraged an established, evidence-based methodology to conduct national, coordinated, sector-wide needs assessments that involved five key principles[11]:



Each needs assessment used a slightly different scoping question to prompt survey respondents when identifying unmet needs. For the Research Centres, respondents were asked to list unmet needs related to the prevention and management of complications associated with diabetes or cardiovascular disease. For the first round of Research Projects, respondents were asked to list unmet needs related to the common pathways, interactions and complexities for patients experiencing two or more of type 1 diabetes, type 2 diabetes or cardiovascular disease. For the second round of Research Projects respondents were asked to list unmet needs related to diabetes and/or cardiovascular disease more broadly (see Appendix A for long lists of unmet needs).

11 Grundy, E.A.C., Kelly, L.E., Kneipp, E. et al. Prioritising research funding for cardiovascular disease and diabetes in Australia. J Public Health Pol (2023). https://doi.org/10.1057/s41271-023-00441-6

To prioritise the 'long lists' of unmet needs for each needs assessment, virtual roundtables were held including a group broadly representative of the survey participants. This included representatives from diabetes and cardiovascular disease research, clinical care and delivery, peak bodies, advocacy groups, and lived experience and Indigenous perspectives (See Appendix B for organisations represented). Overall, 78 individuals have participated in one or more of the roundtables to determine the priority areas for Pillar 1 and the first two rounds of Pillar 2.

The 'long lists' of unmet needs were prioritised by roundtable participants using pre-determined criteria. These were:

1. Clinical impact
2. Quality of life
3. Consumer expectations
4. Diversity/regional, rural remote impacts
5. Commercial potential and
6. Economic outcomes.

Clinical impact and quality of life were weighted as twice as important as the other criteria.

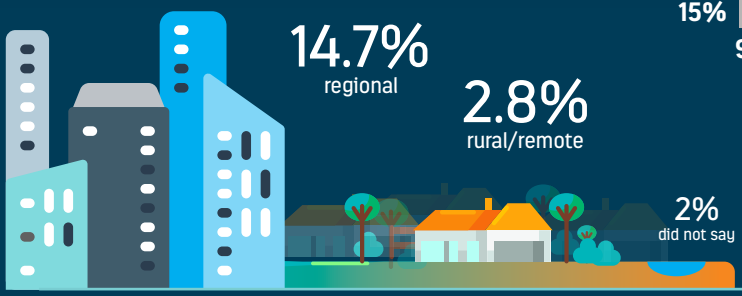
Needs assessment 1

to determine priority areas for Research Centres and Research Projects Round 1 funding opportunities

318 survey responses

237	63	18
experts	lived experience	family, carer, advocate
51%	**49%**	**0%**
female	male	prefer not to say

0.9% Identified as Aboriginal and/or Torres Strait Islander



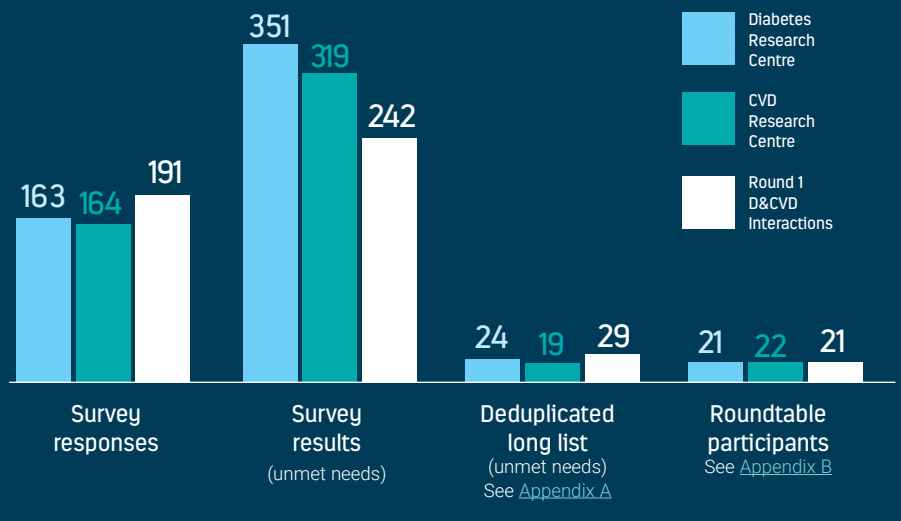
80.5% major city

14.7% regional

2.8% rural/remote

2% did not say

38%	VIC
29%	NSW
15%	QLD
9%	WA
6%	SA
2%	ACT
1%	TAS
0%	NT



Diabetes Research Centre

3 **Priority areas called for**

CVD Research Centre

3 **Priority areas called for**

Research Projects Round 1

3 **Priority areas called for**

See priority areas from page 25

Needs assessment 2

to determine priority areas for Research Projects Round 2 funding opportunity

180 survey responses

144 experts	22 lived experience	14 family, carer, advocate
56% female	42% male	2% prefer not to say

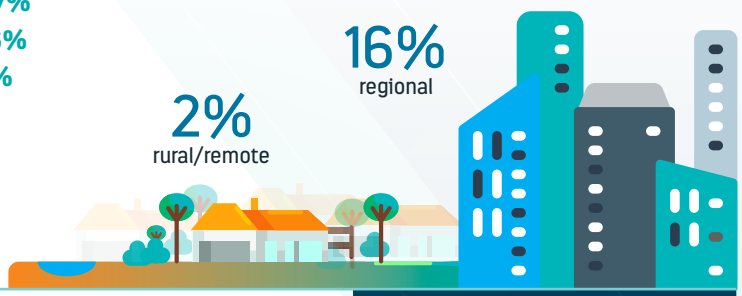
1.7% Identified as Aboriginal and/or Torres Strait Islander

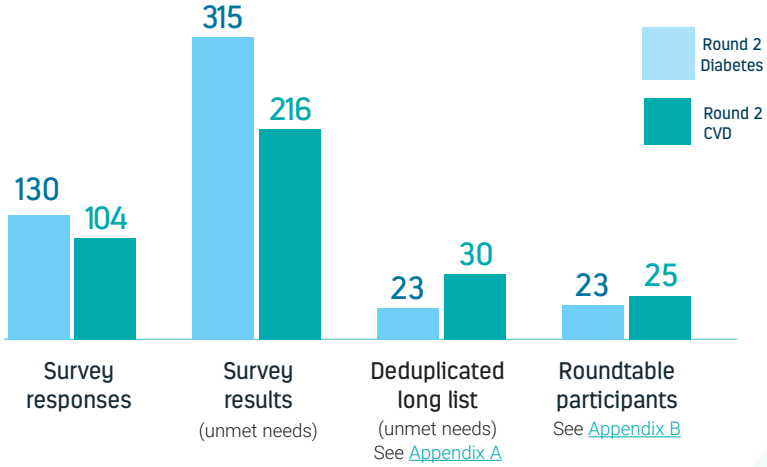
VIC	45%
NSW	33%
QLD	7%
WA	6%
ACT	5%
SA	3%
NT	1%
TAS	0%

82% major city

16% regional

2% rural/remote





Cardiovascular disease

2 Priority areas called for

Diabetes

3 Priority areas called for

See priority areas from page 26

Identifying unmet diabetes and cardiovascular disease needs for Aboriginal and Torres Strait Islander Peoples

Aboriginal and Torres Strait Islander peoples are significantly disproportionately impacted by diabetes and cardiovascular disease and there is a clear need for targeted innovations to help close this gap. Following the needs assessments conducted for the first two rounds of TTRA Research Projects funding, it was noted that Aboriginal and Torres Strait Islander people were under-represented in survey responses meaning that the data collected was not reflective of these communities' medical- or health-related unmet needs. As a result, the Priority Areas for Rounds 1 and 2 of the Research Projects were not representative of the unmet needs of Indigenous Australians.

Given these outcomes, Round 3 of the Pillar 2 Research Projects opportunity focused on addressing diabetes and cardiovascular disease-related unmet needs of Aboriginal and Torres Strait Islander peoples in rural, remote, regional and urban Australia.

As a necessary step, the needs assessment and prioritisation process for this round took a different approach to previous needs assessments to accurately capture the unmet needs of Aboriginal and Torres Strait Islander Peoples in appropriate and culturally sensitive ways.

Recognising that priority setting for Aboriginal and Torres Strait Islander research must be Indigenous-led, MTPConnect established the TTRA Indigenous Advisory Group, made up of prominent Indigenous researchers, clinicians and thought leaders, as well as representatives from organisations that have deep engagement with Aboriginal and Torres Strait Islander communities through healthcare delivery.

TTRA Indigenous Advisory Group Members

Prof Alex Brown
Professor of Indigenous Genomics
Australian National University | Telethon Kids Institute

Dr Fergus Gardiner
Director, National Emergency Response, Public Health and Research
Royal Flying Doctor Service of Australia

Prof Lisa Jackson Pulver AM
Deputy Vice-Chancellor Indigenous Strategy and Services, University of Sydney
Professor Public Health and Epidemiologist, Sydney Medical School

Mr Ray Kelly
Accredited Exercise Physiologist
Indigenous Allied Health Australia

Mr Chris Lee
Assistant Director – Programs
National Aboriginal Community Controlled Health Organisation

Prof Ray Mahoney
Professor of Aboriginal and Torres Strait Islander Health and Discipline Lead for Population Health at Flinders University
Visiting Scientist with the Australian e-Health Research Centre, CSIRO

Adjunct Professor Janine Mohamed
Chief Executive Officer
Lowitja Institute

Dr Simon Quilty
Medical Advisor
Purple House (Western Desert Nganampa Walytja Palyantjaku Tjutaku Aboriginal Corporation)

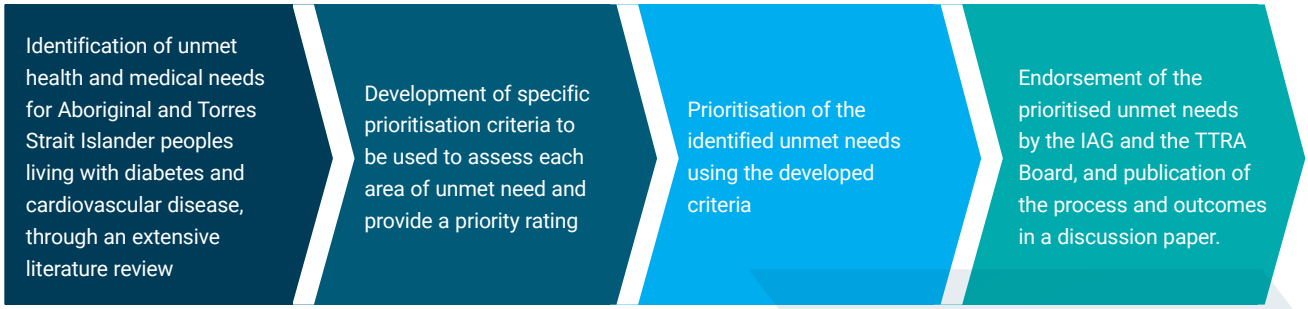
Dr Tanya Schramm
Senior lecturer of Aboriginal and Torres Strait Islander Health Education
University of Tasmania

Dr Sean Taylor
Executive Director Aboriginal Health & Diversity, NT Health
Deputy Director Indigenous Leadership and Engagement, Menzies School of Health Research
Adjunct Associate Professor, Public Health and Tropical Medicine, James Cook University

Based on the Indigenous Advisory Group's recommendation, MTPConnect partnered with the Lowitja Institute, a community controlled organisation and Australia's National Institute for Aboriginal and Torres Strait Islander Health Research, to lead the needs assessment and prioritisation process. It was essential that the design and execution of the process for this needs assessment was led by individuals and groups that have deep knowledge of Aboriginal and Torres Strait Islander health and wellbeing, as well as expertise in engaging with communities.

This needs assessment and prioritisation project is detailed in a discussion paper developed and published by the Lowitja Institute and MTPConnect as a resource to help guide priority setting for research funding programs that will benefit Aboriginal and Torres Strait Islander health and wellbeing[12].

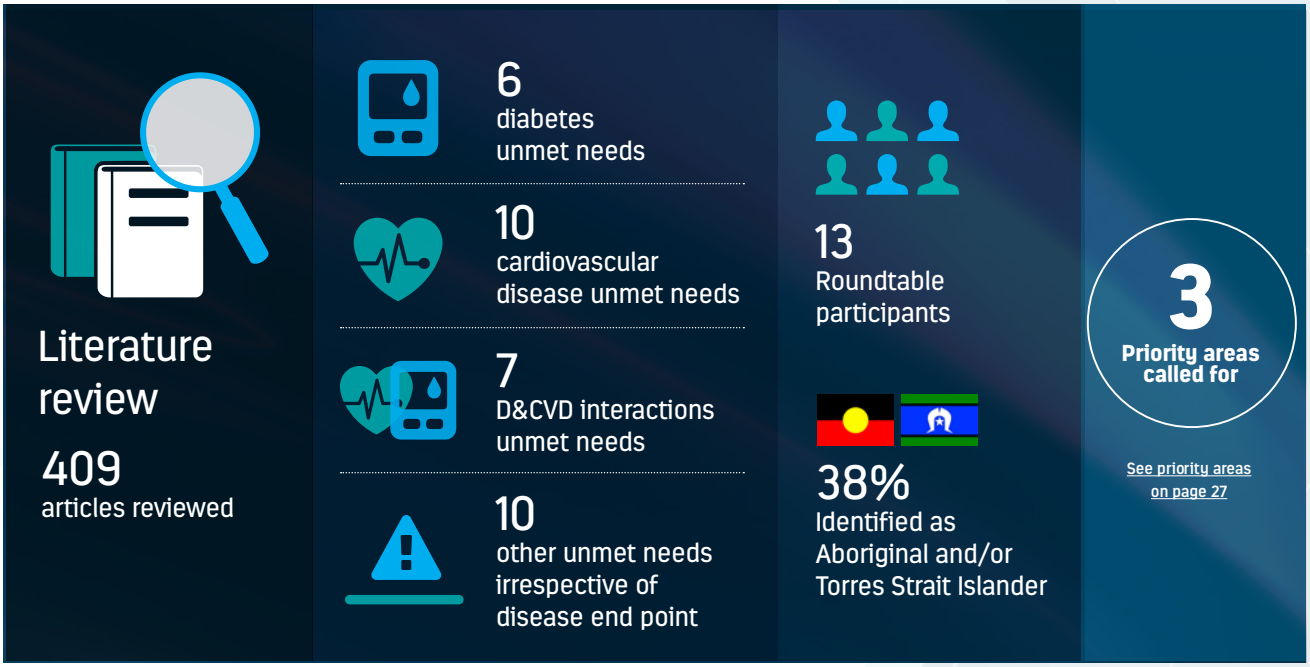
As for previous rounds, the overarching aim of the needs assessment was to ensure that the considerable investment made through the TTRA program for diabetes and cardiovascular disease research would both build upon existing successful initiatives and fill unmet needs in the sector. The process followed four key steps:



As for the previous needs assessments, the identified unmet needs were prioritised by participants during a virtual roundtable which brought together TTRA Indigenous Advisory Group members, clinicians, researchers, patient advocacy groups and people with lived experience.

The prioritisation criteria developed as part of the process and employed during the roundtable were:

1. Status
2. Potential impact
3. Sustainability and
4. Equitability.



12 Lowitja Institute (2023). Targeted Translation Research Accelerator Needs Assessment and Prioritisation Project Discussion Paper. Available: https://www.lowitja.org.au/page/services/resources/health-policy-and-systems/knowledge-translation/targeted-translation-research-accelerator-needs-assessment-and-prioritisation-project

How this work can inform the funding and research policy landscape in Australia

The Australian health and medical research sector must foster both discovery and priority-driven research to ensure that projects across the development pipeline are supported and Australian discoveries are turned into technologies, products and solutions that have health benefit and contribute to economic growth.

For priority-driven research, it is essential that the priorities are set through a transparent, evidence-based and reproducible process carried out in partnership and collaboration with those whom the research will impact most, to ensure that funding is directed towards projects that are of value to the community and reflective of expert opinion. The prioritisation process used must carefully consider which stakeholders the process should engage and appropriate methods for this engagement.

The needs assessment and prioritisation work conducted through the TTRA program demonstrates this is feasible in the design of research funding programs and maximises the impact of the investment.

The published outcomes of this work provide important resources for the sector that can be used in two ways – firstly, they serve as a resource of high priority unmet needs in diabetes and cardiovascular disease, and secondly, they provide a framework for determining priorities for other areas of research that can be used by other funding bodies and policy makers to determine future funding and policy agendas.

This is particularly important for funding for Aboriginal and Torres Strait Islander research priorities given the long history in Australia of research being done on Aboriginal and Torres Strait Islander people, used as a tool of colonial violence and embedded in a deficit discourse. The resulting significant gaps in health outcomes and life expectancy experienced by Aboriginal and Torres Strait Islander Peoples today will only begin to close by necessarily embedding Indigenous leadership and voices in every step of research funding beginning with priority setting.

The work conducted through the TTRA program and led by the Lowitja Institute demonstrates that an Aboriginal and Torres Strait Islander led, evidence-based approach to identifying and assessing priorities, is achievable[13]. However, it is important to acknowledge that the process employed for the TTRA program was limited by time and resources. To fully understand research priorities for Aboriginal and Torres Strait Islander communities, wider community consultation is needed, particularly to understand new and emerging areas of need that are not included with the published literature.

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VIEWPOINT

Prioritising research funding for cardiovascular disease and diabetes in Australia

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Abstract
The Targeted Translation Research Accelerator program was created to address cardiovascular disease and diabetes in Australia. To maximise the impact of the considerable investment in this program, a structured prioritisation project was undertaken to determine the highest priority health and medical unmet needs in cardiovascular disease and diabetes. The project was led by Monash University's Behaviour Works Australia in collaboration with Australian National University, Research Australia, and MTPConnect. We conducted an online survey with 318 experts and community representatives to generate a 'long list' of unmet needs for (1) cardiovascular disease; (2) diabetes; and (3) interactions in the pathogenesis of Type 1 diabetes, Type 2 diabetes, and cardiovascular disease. We then convened roundtables of clinical, research, and community leaders to discuss survey results. They prioritised unmet needs against six predefined criteria then discussed results. We present the final priority areas for funding. We demonstrate how a feasible, reproducible, and collaborative prioritisation methodology can be used when designing research funding programs. Such approaches can ensure that funding is directed towards projects that are valuable to the community and reflective of expert opinion.

Keywords Research prioritisation · Co-design · Diabetes · Cardiovascular disease · Research strategy · Funding optimisation

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4 Research Australia, Canberra, Australia

Published online: 28 November 2023

13 Lowitja Institute (2023). Targeted Translation Research Accelerator Needs Assessment and Prioritisation Project Discussion Paper.
Available: https://www.lowitja.org.au/page/services/resources/health-policy-and-systems/knowledge-translation/targeted-translation-research-accelerator-needs-assessment-and-prioritisation-project

Directing research dollars to sector and community-identified priorities in diabetes and cardiovascular disease

Pillar 1 Research Centres

Priority areas		Total investment	Centre	Research Portfolio
Diabetes Research Centre	• Diabetic kidney disease • Peripheral neuropathy and diabetic foot syndrome • Short-term complications of hypoglycaemia and/or hyperglycaemic hyperosmolar syndrome and ketoacidosis	**$20.5M** $10M TTRA funding $2.3M cash contributions, $8.2M in-kind contributions	Australian Centre for Accelerating Diabetes Innovations (ACADI)	**18 Projects** 2 Behavioural Interventions, 4 Digital Health Solutions 5 Medical Devices 4 Therapeutics 2 Digital+Device 1 Device+Therapeutic
Cardiovascular Disease Research Centre	• Coronary artery disease (including angina and MACE) • Cardiomyopathy / heart failure • Transient ischaemic attack / stroke (ischaemic and haemorrhagic)	**$29.6M** $10M TTRA funding $8.2M cash contributions, $11.4M in-kind contributions	Australian Stroke and Heart Research Accelerator (ASHRA)	**19 Projects** 5 Digital Health Solutions 7 Medical Devices 7 Therapeutics Note: 7 of these projects are yet to start

Pillar 2 Research Projects

Priority areas	Total investment	Organisation/s	Project title	Modality
Round 1				
Priority 1: Mental health conditions in people living with at least two of the following: Type 1 diabetes, Type 2 diabetes and/or cardiovascular disease	**$1,537,661** $748,384 TTRA funding $223,600 cash contribution $565,677 in-kind contribution	Deakin University's Australian Centre for Behavioural Research in Diabetes	Low Intensity mental health Support via a Telehealth Enabled Network (LISTEN) for adults with diabetes and CVD: Effectiveness and scalability	Behavioural Intervention
Priority 2: Chronic kidney disease in people living with at least two of the following: Type 1 diabetes, Type 2 diabetes and/or cardiovascular disease	**$4,065,944** $1,454,211 TTRA funding $1,783,644 cash contribution $828,089 in-kind contribution	Inosi Therapeutics Pty Ltd	Lead optimisation of novel inhibitors of IRAP for the treatment of fibrosis in diabetes-induced renal and cardiovascular disease	Therapeutic
		University of Melbourne	Future Health Today and TorchRecruit: Changing the course of chronic disease	Digital Health

Pillar 2 Research Projects				
Priority areas	**Total investment**	**Organisation/s**	**Project title**	**Modality**
Round 1 cont.				
Priority 3: Cardiac and vascular complications arising in people living with diabetes (Type 1 or Type 2) and cardiovascular; OR Cardiovascular disease in people living with Type 1 diabetes and insulin resistance (double diabetes)	**$5,549,060** $2,984,751 TTRA funding $779,270 cash contribution $1,785,039 in-kind contribution	Heart Research Institute and University of Sydney	Development of novel safe adjunctive antithrombotic therapies for the improved treatment of acute ischaemic stroke	Therapeutic
		Nirtek Pty Ltd	NIRAF Guidewire for Detection of Unstable Coronary Plaques to Prevent Heart Attack and Death	Medical Device
		Queensland University of Technology	Towards a diagnostic tool for atheroma assessment to better manage vulnerable patients	Digital Health
		University of Sydney	Local Regulation of Inflammation for the Treatment of Peripheral Arterial Disease	Medical Device/ Therapeutic
Round 2				
Priority 1: Atherosclerosis, including cerebrovascular disease	**$2,712,932** $1,449,536 TTRA funding $720,000 cash contribution $543,396 in-kind contribution	Cyban Pty Ltd	A hospital-based point of care monitor to provide earlier detection and treatment of stroke, that prevents long-term disability and death	Medical Device
		University of Sydney	Small molecule inhibitors of the P2X7 receptor as a safe and effective way of tackling the inflammatory contribution to atherosclerosis	Therapeutic
Priority 2: Cardiomyopathy and heart failure	**$4,322,063** $1,490,153 TTRA funding $440,000 cash contribution $2,391,910 in-kind contribution	BiVACOR Pty Ltd	Development of the BiVACOR total artificial heart controller for long-term use	Medical Device
		Cardihab Pty Ltd	Getting to the Heart of It: Improving Heart Failure Outcomes with the Smart-HF program	Digital Health
Priority 3: Obesity as it relates to diabetes	No projects funded*			

*The TTRA program's rigorous assessment process ensures applicants are evaluated against defined selection criteria, with the most meritorious projects with high potential for success and impact funded. The program does not apply quotas across priority areas, modalities or any other aspects.

Pillar 2 Research Projects				
Priority areas	**Total investment**	**Organisation/s**	**Project title**	**Modality**
Round 2 cont.				
Priority 4: Mental health as it relates to diabetes	**$2,953,539** $1,494,637 TTRA funding $1,458,902 in-kind contribution	Deakin University's Australian Centre for Behavioural Research in Diabetes	HypoPAST: Online psycho-educational training for 'Hypoglycaemia Prevention, Awareness of Symptoms, and Treatment' in adults with type 1 diabetes	Behavioural Intervention
		Western Sydney University	The APHLID-M project: Apps and Peer support for a Healthy future and Living Well with Diabetes Project	Behavioural Intervention
Priority 5: Glucose control in type 1 diabetes, type 2 diabetes, double diabetes and/or gestational diabetes mellitus	**$5,356,397** $2,249,979 TTRA funding $100,000 cash contribution $3,006,418 in-kind contribution	Garvan Institute of Medical Research	Restoring glucose control in T1D patients with genetically engineered GARV-AAV2-A20-islet cells – a first in Human safety and efficacy trial	Therapeutic
		Monash University	Improved glucose control, with lower insulin doses, for the treatment of type 1 diabetes	Therapeutic
		University of Sydney	Bringing oral quantum dot insulin to phase I clinical studies	Therapeutic
Round 3				
Priority 1: Strengths-based perspectives to chronic disease – A need to adopt a strengths-based perspective to chronic disease, which builds and develops the existing strengths, skills and capacities of Aboriginal and Torres Strait Islander peoples.	**$4,382,033** $2,989,988 TTRA funding $1,392,045 in-kind contribution	Menzies School of Health Research	'Doing it together'- innovative peer-support and peer-led education for Aboriginal and Torres Strait Islander youth living with type 2 diabetes	Health Service Innovation
		University of Queensland	The Diabetes Using Our Strengths Service (DUOSS)	Digital Health
		Victorian Aboriginal Community Controlled Health Organisation Inc	Chronic Disease Prevention through the Culture+Kinship Model: A strength-based prevention approach based on Aboriginal Culture, Kinship, Community, and Country	Health Service Innovation

Pillar 2 Research Projects				
Priority areas	**Total investment**	**Organisation/s**	**Project title**	**Modality**
Round 3 cont.				
Priority 2: Culturally safe programs and supports – Development of culturally safe programs and supports for diabetes and cardiovascular disease prevention and promotion of 'healthy lifestyles' among Aboriginal and Torres Strait Islander peoples, using empowering, evidence-based, health promotion campaigns.	**$2,430,386** $1,999,270 TTRA funding $431,116 in-kind contribution	Nunyara Aboriginal Health Service Inc	The Nunyara cardiometabolic screening and complication model: a three-pronged community-led strategy to achieving comprehensive Aboriginal primary preventative care	Health Service Innovation
		The Peter Doherty Institute for Infection and Immunity, University of Melbourne	Marrtjin limurr rrambaŋin (walking together): co-designing innovative, culturally adapted methodologies to improve heart health in remote communities in North-East Arnhem Land	Health Service Innovation
Priority 3: Culturally safe strategies to address cardiometabolic disease – Culturally safe strategies to address cardiometabolic disease / risk factors to improve the health of Aboriginal and Torres Strait Islander women prior to and during pregnancy. This should also include a focus on babies through the life course, including management of women with pre-existing and gestational diabetes.	**$1,383,025** $998,685 TTRA funding $384,340 in-kind contribution	Australian National University	Aboriginal women working to reduce risk of diabetes and cardiovascular complications in pregnancy	Health Service Innovation

Figures correct as at 31 December 2023

2. National Research Centres to transform the diabetes and cardiovascular disease research landscape

In January 2022, then Minister for Health and Aged Care, the Hon. Greg Hunt MP, announced the establishment of two new national research centres for diabetes and cardiovascular disease, made possible through the TTRA program. The Australian Centre for Accelerating Diabetes Innovations (ACADI) and the Australian Stroke and Heart Research Accelerator (ASHRA) were each awarded $10 million from the TTRA program, attracting substantial co-contributions from academic and industry partners totalling $30.19 million.

ACADI and ASHRA are accelerating therapies towards clinical practice for the prevention, diagnosis, treatment and management of disease-related complications for diabetes or cardiovascular disease, respectively. They include carefully considered portfolios of research projects to initially address sector-identified priorities.

Both ACADI and ASHRA bring together large sector-wide collaborations of clinical, research, industry and community partners across Australia. These extensive collaborative networks will facilitate the breaking down of silos in diabetes and cardiovascular disease research in Australia, fostering innovation and the translation of medical research into tangible outcomes for Australians living with diabetes and/or cardiovascular disease, their families and carers, and the health system more broadly.

Both research centres are focused on the adoption and implementation of their therapies and subsequent delivery of health system outcomes, public health policy outcomes, consumer outcomes, commercial outcomes and reducing the burden of disease and health inequities in Australia. It is anticipated that each research centre will become self-sustainable with continued financial viability and talent management of the entity beyond the four years of TTRA funding. In addition to research and development, each research centre has a training program to support students and early-to-mid career researchers and clinicians to strengthen and grow capability and capacity in the sector and create the next generation of diabetes and cardiovascular disease research leaders.

The TTRA research centres initiative was showcased by the American Diabetes Association (ADA) as part of its 2022 'Thought Leadership' series. This involved production of a six-minute editorial film highlighting the intent of the funding and each centre's vision, as well as some key innovations. The film was played during the ADA's Scientific Sessions, a hybrid virtual and in-person conference in New Orleans, in June 2022. The ADA is one of the most prominent scientific associations, with a global audience of over half a million across industry, government and academia. The ADA's Scientific Sessions is the largest diabetes meeting in the world, bringing together nearly 20,000 participants – including more than 14,000 clinicians and researchers from over 100 countries.

The film was distributed as part of the official ADA TV 2022 broadcast during the meeting and post-meeting and shared on the ADA TV Twitter account to over 15,800 followers. The film was also integrated into the daily ADA TV program, which was distributed online via the meeting platform, on the ADA YouTube Medicine Channel with 11,000 subscribers, various other social media platforms, the ADA website, and all other ADA TV social media accounts.

The film is available on the ADA TV YouTube channel.

Pictured: ADA 'Thought Leadership' series filming underway in Melbourne.

The Australian Centre for Accelerating Diabetes Innovations (ACADI)

Led out of The University of Melbourne by ACADI Director Professor Elif Ekinci, ACADI has 33 partners and 23 additional project supporters across all Australian states and territories. Over its four-year term, ACADI will deliver at least 18 projects that progress a series of therapeutic, device, in vitro diagnostic, digital health products and behavioural interventions towards practical use.

To support Australian diabetes research and enable cutting-edge innovation, ACADI will establish a contract research organisation as part of its ongoing sustainability plans.

ACADI will train future leaders, providing critical skills in clinical evaluation, translation and commercialisation and will be a place of new ideas intersecting with innovation in diabetes. This will support Australia in being a global leader addressing many of the serious complications of diabetes.

Ultimately ACADI strives to address inequities in diabetes-related healthcare, particularly for Indigenous Australians, for whom the rates of diabetes are highest, and to reduce disease burden and improve quality of life for all people living with diabetes, regardless of their geographic location or cultural background.

Pictured: ACADI centre launch, from left to right, Dr Susan Alberti AC, Professor James McCluskey AO, Dr Erin McAllum, Professor Elif Ekinci, Lauren Kelly, Professor John Prins, Dr Mana Liao, Lisa Dubé.

Australian Stroke and Heart Research Accelerator (ASHRA)

Bringing together a team of internationally renowned Australian researchers and institutions, ASHRA is a partnership between Monash University, The University of Sydney, the Victor Chang Cardiac Research Institute, The George Institute for Global Health, The University of Melbourne and Australian National University. As well as these core leadership partners, ASHRA has support from 27 additional partner organisations.

ASHRA is led by Australia's foremost heart and stroke clinicians and researchers, with Professor Clara Chow AM and Professor Stephen Nicholls as current ASHRA Director and Deputy Director, respectively.

ASHRA takes a flexible and dynamic approach to its research portfolio, initially supporting 12 projects with significant commercialisation and impact opportunities and spanning preclinical, clinical and policy pathways. Since 2022, this portfolio has continued to evolve, both removing projects through a fast-fail approach and adding new projects that show significant promise in addressing unmet needs in heart disease and stroke. ASHRA also aims to rapidly accelerate discoveries to the clinic with an explicit focus on reducing health inequities for Indigenous Australians, as well as those living in rural and remote areas.

Through its training program, ASHRA is bringing a new sector-wide focus on clinical impact and entrepreneurship with a specific focus on building the capacity of the next generation of researchers to see the translation of their discoveries into practice.

Pictured: ASHRA Centre launch, from left to right, Professor Bruce Neal, Professor Alex Brown, Professor Clara Chow AM, Dr Erin McAllum, Professor Jason Kovacic, Dr Mana Liao, Professor Stephen Nicholls.

Case Study 1

Academia and industry join forces to deliver innovative solutions for heart disease and stroke

The Australian Stroke and Heart Research Accelerator (ASHRA) supports a sector-wide collaborative approach to delivering innovative solutions for stroke- and heart-related health challenges.

Australia's ageing population is placing a significant burden on the healthcare sector, with rising rates of cardiovascular disease; in particular, having a substantial impact on morbidity, mortality and lost revenue. Modelling predicts by 2029, more than one million Australians will have prevalent cardiovascular disease and the associated healthcare costs will exceed $61.89 billion.[14]

This challenge requires a sector-wide commitment to identify unmet needs and develop devices, digital health solutions and therapeutics that will both improve patient outcomes and ease the strain on the healthcare system and society.

Since its establishment in 2022, the Australian Stroke and Heart Research Accelerator (ASHRA) has driven this collaborative effort, thanks in large part to its unique partnership model, and focus on clinical-impact and entrepreneurship.

Collaboration boosts innovation

One of ASHRA's key value propositions is that it forges deep and sustainable connections between researchers, business leaders and industry investors around Australia. These collaborations drive greater investment in research, thereby accelerating the translation of ideas into clinical products and delivering nationwide social, economic and health gains.

The ASHRA partnership model takes a decentralised approach to foster true collaboration between some of Australia's biggest academic institutes. Monash University, The University of Sydney, the Victor Chang Cardiac Research Institute (VCCRI), The George Institute for Global Health (TGI), The University of Melbourne and Australian National University all have an equal voice in the leadership of the centre. They are further supported by five additional academic and industry core partners and 22 project and impact partners from across academia, industry, healthcare delivery and advocacy.

ASHRA's broad academic network allows the centre to tap into research and clinical excellence in a range of areas across heart disease and stroke. This, coupled with the locally and globally recognised industry and impact partners, has resulted in projects funded by ASHRA receiving access to critical academic infrastructure, clinical and community insight and industry expertise.

ASHRA's partnership model has been intentionally designed to allow the centre to continue to grow and adapt to respond to current and emerging unmet needs in heart and stroke research. The model ensures flexibility when it comes to negotiating partnership terms and levels of engagement, ensuring the partnership is mutually beneficial for all parties. For example, ASHRA has observed that its flexible IP model encourages industry engagement with academia. Accommodating for different levels of engagement also encourages industry partnerships from early concept stage to commercialisation stage. ASHRA believes being adaptable in this way is essential, to enable the sorts of collaborations needed to accelerate big innovations and impact.

Director of ASHRA, Professor Clara Chow AM, said that since its inception, "The centre has expanded its industry network beyond traditional pharma and medtech organisations to include biotech start-ups, as well as education and training platforms.

"In this way, ASHRA has facilitated a collaborative network where we are building people, networks, knowledge, skills and capacity together, accelerating research into impact".

Building a pipeline of solutions

Industry and commercial partnerships are often sought once a product or solution has been developed to the point where the translational pathway is clear. However, ASHRA also sees these partnerships as critical to support innovative solutions in the early stages as well. The partnership brought together by ASHRA is intended to accelerate products and solutions at all stages of translation and commercialisation. This has enabled ASHRA to create a pipeline of solutions across the research and development pathway.

14 Marquina C, Talic S, Vargas-Torres S, et al. Future burden of cardiovascular disease in Australia: impact on health and economic outcomes between 2020 and 2029. Eur J Prev Cardiol. (2022) https://doi.org/10.1093/eurjpc/zwab001

As an indication of its breadth, ASHRA's portfolio of research projects brings together more than 130 investigators, while the number of early-career researchers supported has doubled since launch. ASHRA's partnering model has been a major catalyst for this growth, thanks to the flexibility it gives researchers to rapidly progress their projects by expanding their network of resources. The centre's partnership model is nurturing an innovative culture within the Australian heart and stroke research eco-system – setting up a local network of talent in research acceleration and commercialisation and opening up opportunities for research and clinical trials from industry partners.

ASHRA believes that its approach to multi-institutional and industry partnerships is the best way to break down silos in the sector and will be a key driver for the progression and sustainability of the centre.

ASHRA Deputy Director, Professor Steve Nicholls emphasised, "Acceleration and impact comes in lots of different shapes and sizes; influencing policy and treatment guidelines, improving healthcare delivery and access, are equally as important as commercialisation."

ASHRA's broad, agile and collaborative partnership model with a sector-wide focus is necessary to realise this. To continue to build this approach, Professor Nicholls highlighted that, ASHRA will continue to welcome new partners into its expanding network, for the remainder of its TTRA funding term and beyond.

"Moving forward, we truly want this to be a national enterprise," Professor Nicholls said.

Pictured: ASHRA Leadership left to right:
Professor Geoffrey Donnan AO, ASHRA Stroke Lead and Co-Chair, Australian Stroke Alliance; Richard Taggart, Chair, ASHRA Executive Management Committee; Professor Stephen Nicholls, ASHRA Deputy Director and Director of the Victorian Heart Institute; Professor Jason Kovacic, ASHRA Research Advisory Committee Chair and CEO, Victor Change Cardiac Research Institute; Professor Clara Chow AM, ASHRA Director and Academic Director, Westmead Applied Research Centre; Professor Bruce Neal, ASHRA Education and Training Committee Chair and Executive Director, The George Institute; Karen Carey, Member, ASHRA Executive Management Committee; Not pictured: Professor Alex Brown, ASHRA Indigenous Lead and Professor of Indigenous Genomics, Australian National University / Telethon Kids Institute; Professor Louise Maple-Brown, ASHRA Executive Management Committee, Deputy Director (Research), Menzies School of Health Research.

Case Study 2

Accelerating translational diabetes research with platform services

ACADI
Australian Centre for Accelerating Diabetes Innovations

The Australian Centre for Accelerating Diabetes Innovations (ACADI) platforms serve to create a comprehensive ecosystem that supports and accelerates different elements of the research process.

In Australia, diabetes is the fastest growing chronic condition and represents one of the most significant challenges facing the health system.[15] New innovations for the prevention, diagnosis, treatment and management are desperately needed to meet this serious challenge.

Advancing new innovations for diabetes towards clinical impact requires collaborative and multidisciplinary approaches to research. With this in mind, ACADI's vision was to create a centralised capabilities hub to support its portfolio of research projects, encompassing a wide range of disciplines.

As the ACADI portfolio was built up, ACADI Director Professor Elif Ekinci wanted to "ensure that all projects were able to have access to many different forms and types of intellectual infrastructure without necessarily replicating this across [every] project."

The ACADI platform research services were specifically designed to meet this challenge, providing tools and resources from various fields (see diagram below), allowing researchers with different expertise to collaborate seamlessly in diabetes research, without the burden of sourcing and managing these resources on an *ad hoc* basis.

ACADI's platforms provide specialist services across six domains, using consistent, proven approaches to accelerate projects towards key milestones and translational outcomes.

Health Economics

Supports economic modelling to assess the cost-effectiveness of healthcare interventions, supporting reimbursement of innovations.

Co-Design

People living with all forms of diabetes work with researchers across the research lifecycle, emphasising a collaborative and inclusive approach to developing solutions.

Biostatistics

Biostatisticians provide statistical expertise to design experiments, analyse data, and draw meaningful conclusions, ensuring the validity and reliability of research findings.

Behavioural

Focuses on understanding and influencing human behaviour in the context of health and healthcare, to assist in designing effective health promotion strategies and interventions.

Implementation Science

Provides expertise in the methods and strategies for effectively integrating evidence-based practices into real-world settings, bridging the gap between research findings and practical implementation in healthcare systems.

Epidemiology

Epidemiologists provide expertise in understanding the factors influencing health outcomes at a population level.

15 Diabetes Australia. Diabetes in Australia. Available: https://www.diabetesaustralia.com.au/about-diabetes/diabetes-in-australia/

Building capacity and capability

Each platform contributes to capacity building for research teams by providing specialised training, fostering interdisciplinary collaboration, and equipping researchers with the skills needed to address complex issues in health research. By leveraging these platforms, research projects enhance their overall capability to conduct impactful and relevant research, ultimately contributing to advancements in healthcare and public health.

As an example, the Biostatistics platform not only ensures methodological rigour through the validity and reliability of research findings, it also supports researchers to acquire advanced statistical skills, improving their ability to design experiments, analyse complex data sets, and interpret results accurately. Building statistical literacy in this way boosts the robustness of research findings, and builds confidence in research from the Australian diabetes sector.

ACADI platforms prove popular

Professor Ekinci said two years into the Centre's life, it was forecast that approximately half of ACADI's portfolio of research projects would be taking advantage of the support provided by the platforms.

"However, over the last six months every single one of our projects are using one or more of the platforms offered," she said.

In the previous six months alone, ACADI platforms reported nearly 1,400 hours of project engagement, providing rapid access to expertise through a diabetes-focused lens.

Professor Paul Breen from Western Sydney University, who is developing the 'Feeling Aid' medical device for peripheral neuropathy/diabetic foot, engaged with the ACADI Co-Design platform to help accelerate the commercialisation of the device to improve sensory perception, enhance quality of life, and reduce the risk of foot complications and related healthcare costs.

Among the recommendations of the platform was a scoping review, which Professor Breen said had highlighted some key factors that would need to be considered when designing the device.

"This has underscored a significant dearth of empirical evidence concerning the lived experience of individuals recently diagnosed with diabetes-related peripheral neuropathy," said Professor Breen.

Now, the teams review of the lived experiences of those with recently diagnosed peripheral neuropathy is currently in preparation for publication and has unveiled notable gaps in knowledge.

"Engagement with and insight from the platform has profoundly influenced our methodology and put co-design at the core of our work, leading to the addition of a Clinical Psychologist to our team. This, along with feedback from ACADI's advisory groups, has improved this project considerably and will lead to a better Feeling Aid, as well as having had the unintended effect of improving how we manage all other projects within our group," he said.

Long term impacts

With positive feedback like this from other projects in its research portfolio, ACADI anticipates its platforms will yield significant long-term impacts in diabetes research and healthcare delivery.

Through specialised expertise and resources, these platforms aim to drive advancements in diabetes treatment, prevention, and management, ultimately leading to improved healthcare outcomes and enhanced population health. It's another example of how the TTRA Research Centres are 'doing research differently'.

Professor Ekinci emphasises, "By fostering collaboration and innovation, ACADI's platforms have the potential to catalyse transformative changes in diabetes research and healthcare delivery, empowering stakeholders and building capacity within the research community for lasting impact."

3. New diabetes and cardiovascular disease products and solutions accelerated towards commercialisation and implementation

Across the Research Centres and Research Projects, the TTRA program is supporting an innovative portfolio of new behavioural interventions, digital health solutions, health service innovations, medical devices and therapeutics for the prevention, diagnosis, treatment and management of diabetes and cardiovascular disease. The program's overarching mission is to see these innovations accelerated towards translation and clinical impact, to truly transform diabetes and cardiovascular disease health outcomes and reduce the burden of disease on individuals, families and the community.

Note: this captures outcomes across both TTRA funded Research Centres and Research Projects Rounds 1 and 2

Case Study 3

TTRA program funding enables formation of spin out companies to accelerate translation

Formation of a spin out company from an academic institute is an important step for commercialisation of a product or solution. A spin out company provides a commercial vehicle, a greater level of agility with respect to research and development and partnerships, and a foundation with which to attract venture capital and other forms of external investment.

For three TTRA Research Projects funded through Rounds 1 and 2, the structure of the funding and the support offered through the program enabled them to spin out from their respective universities to take advantage of these substantial benefits. This corresponds to 27 per cent of the academic-led projects funded through Rounds 1 and 2, further exemplifying the commercialisation springboard that is the TTRA program.

TTRA Research Project	Academic Institute	Spin out company
Future Health Today and TorchRecruit: Changing the course of chronic disease	University of Melbourne	Torch Recruit
Local Regulation of Inflammation for the Treatment of Peripheral Arterial Disease	University of Sydney	Nanomedx
Bringing Oral Quantum Dot Insulin To Phase I Clinical Studies	University of Sydney	Endo Axiom

Nanomedx, Torch Recruit and Endo Axiom are clear examples of how funding focused on translation and the capacity and capability building that is hardwired into the programs that MTPConnect delivers, can accelerate commercialisation and translation of medical products.

For all three companies, the founders felt that spinning out from the academic environment was the most efficient way to enable further translation of their products and the commercial activities necessary to move them towards clinical use. Founding the companies also facilitated access to new external investment sources leading to a combined raise of over $4 million in seed and Series A funding.

Importantly, operating as a spin out company has allowed each of the projects a greater level of agility, accelerating development of the products to a pace beyond that experienced in the academic setting, and to engage with new skill sets in business development and medical technology commercialisation.

For Nanomedx, adding expertise in medtech regulation and clinical development through engagement with consultants has meant the company has been able to connect with industry experts in a way that it found more difficult when within the academic system. Nanomedx co-founder, Professor Steven Wise, puts much of this down to the commercial mentality and experience of CEO Ashish Mitra.

Torch Recruit had a similar experience and found that the new expertise gained through spinning out has allowed the company to focus on optimising the software product, forming partnerships and developing the business and pricing models.

For Endo Axiom, the youngest of the three companies, spinning out has allowed for greater engagement with industry to guide future research and development and has provided greater scope to work with different partners.

The three projects have all deeply engaged with the support offered through the TTRA program and see different aspects of this support as providing valuable learnings that were able to be applied during the company formation process.

Nanomedx – developing a new therapy to treat peripheral artery disease

Professor Steven Wise of Nanomedx found the support provided by the TTRA Partners to be of significant value, starting with the consultation phase of the application process. The interactions with MDPP and UniQuest highlighted gaps in the dataset and the best approaches to fill these, leading to a re-frame of the project. Formation of Nanomedx began shortly after notification that the funding application was successful, but the process was not straightforward. Legal negotiations to assign the background IP to Nanomedx and then licence to the University of Sydney to facilitate the TTRA funded activities threatened to be drawn out, but the support from MTPConnect acted as a catalyst to expedite the process.

Professor Wise said, "I feel fortunate to have had the opportunity to found Nanomedx and have it supported through the early stages by MTPConnect and TTRA Partners MDPP and UniQuest. We are much further down the commercialisation path than I thought possible, thanks to the TTRA program. The ultimate goal of our research is to help patients with peripheral artery disease and the commercial activities enabled through Nanomedx will allow us to progress beyond the lab."

Torch Recruit – accelerating clinical trial recruitment in general practice

For the formation of Torch Recruit, founder **Associate Professor Jo-Anne Manski-Nankervis** took learnings from the TTRA program reporting process, which compelled the spin out to focus and reflect on progress and future planning. This body of reporting was able to be used to demonstrate progress in terms of engagement, media and the program of work to build Torch Recruit. Further to this, Torch Recruit also drew on MTPConnect's knowledge and relationships in the clinical trials space.

Associate Professor Manski-Nankervis said, "Torch Recruit aims to accelerate recruitment for clinical trials, providing opportunities to people in the community to participate in studies that may lead to new innovations to benefit health. The TTRA program, powered by MTPConnect, provided key funding and support to grow our business."

Endo Axiom – using nanotechnology to develop oral insulin

For **Dr Nicholas Hunt,** co-founder of Endo Axiom, the TTRA Research Projects application form itself provided valuable insight that could be applied to the formation of the company. The questions in the application form apply an investor lens and are framed around what is typically included in a business plan. Dr Hunt felt that the application helped refine the business plan for Endo Axiom, with the plan eventually adopted for the company having a high degree of similarity to their responses in the original application.

Dr Hunt said, "Company formation and leading translation are strong areas of interest for me. I have been working on this technology for 6-7 years and it has always been geared towards translation. Getting oral insulin to the clinic is central to why we developed this technology to address challenges we saw in our hospital. Our current program of work is now beyond academic basic science research, in the so called 'valley of death' funding gap. The TTRA program kickstarted the $2-3 million investment need to bridge this gap, with the formation of Endo Axiom taking us the rest of the way."

Nanomedx, Torch Recruit and Endo Axiom are strong and well-defined examples of what can be achieved with funding and support at the right time. With many of the research projects supported directly through the TTRA and through the Research Centres ACADI and ASHRA still in the early phases of research and development, it is expected that many more of the commercially focused projects will benefit from spinning out to form companies. MTPConnect and its partners will continue to provide the crucial support to enable spin out formation, where appropriate, to accelerate translation of new products and solutions for diabetes and cardiovascular disease into the clinic.

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4. Research funding designed by and for Aboriginal and Torres Strait Islander people and communities

"...when Aboriginal and Torres Strait Islander people have a genuine say in the design and delivery of services that affect them, better life outcomes are achieved." National Agreement on Closing the Gap[16]

Round 3 of the Pillar 2 Research Projects opportunity took a novel approach to designing and delivering funding for Aboriginal and Torres Strait Islander health research, by centring and elevating the Indigenous voice at every stage of the process. For funded research to contribute to closing the gap in health outcomes experienced by Aboriginal and Torres Strait Islander people, Indigenous leadership must be embedded at every stage from funding program design to decision making and allocation of funding and leading the funded research.

Aboriginal and Torres Strait Islander academics and communities have been calling for funding schemes that address their interests, prioritise Indigenous leadership, require meaningful community engagement, and privilege Indigenous ways of knowing, being and doing. There is evidence that this can improve uptake and the quality of applications, and lead to significant community benefit.

For this round of funding, this began with Indigenous-led priority setting (see page 22-23). Alongside the prioritisation project, MTPConnect brought together a co-design group to shape the design of the round itself. The co-design group included members of the TTRA Indigenous Advisory Group as well as other appropriate individuals with experience in delivering funding focused on Aboriginal and Torres Strait Islander research. Collectively, this group shaped the opportunity available through Round 3, the eligibility and selection criteria, and the application process.

As a result, the opportunity and application process necessarily differed from Rounds 1 and 2 to ensure that Round 3 was appropriately structured to fund the highest quality Aboriginal and Torres Strait Islander health research. These changes included increasing the maximum amount of TTRA funding able to be requested; removal of minimum co-contributions as an eligibility requirement, while still encouraging these as a way to demonstrate commitment to the project; and changes to the timing of the application process to allow adequate time for researchers to build their teams and seek meaningful engagement and commitments from community groups.

The most significant change compared with Rounds 1 and 2 was made to the selection criteria to ensure that funded projects addressed the needs of communities; were culturally safe; would have the potential for significant health and economic impact; embedded Aboriginal and Torres Strait Islander leadership and community engagement; and included diverse teams with clear plans for capacity and capability building, for the team and wider community that the research was intended to benefit.

The partnership built between MTPConnect, the Indigenous Advisory Group and the Lowitja Institute enabled the considered development and implementation of this targeted funding round to address an area of great need for Aboriginal and Torres Strait Islander health research. The time and care put into this process was echoed in the outstanding quality of the applications received and the projects funded.

The calibre of applications also reflected how well this round was regarded by the Aboriginal and Torres Strait Islander health research community. Most notable is that several Aboriginal Community Controlled Organisations (ACCOs) submitted applications to this grant round, with two awarded funding. The Assessment Panel advised that it is not common for ACCOs to apply for this sort of funding and is not experienced in NHMRC or other MRFF grant rounds.

Feedback received following the close of the round supported this, saying: "We were delighted to find a research funding opportunity which was accessible to an ACCO ...[the information session] webinar was really excellent, the best I have ever attended in outlining a funding opportunity, with special mention to your [co-design group] who were there in numbers and so very well prepared. This had a huge influence on our going forward with an application."

MTPConnect and the TTRA Expert Advisory Board view that the framework employed for Round 3 – which embedded Indigenous leadership and centred and elevated Indigenous voices across all facets of administration, from priority setting through to design of the funding opportunity and evaluation of applications – results in better uptake from health research communities, and, ultimately, leads to more meaningful and impactful Aboriginal and Torres Strait Islander health research being funded.

16 Coalition of Aboriginal and Torres Strait Islander Organisations, et al (2020). National Agreement on Closing the Gap Downloaded from https://www.closingthegap.gov.au/national-agreement

Case Study 4

TTRA develops new resource with webinar series on Aboriginal and Torres Strait Islander health research

To coincide with the TTRA program's third funding round – supporting diabetes and cardiovascular disease projects that address the unmet health and medical needs of Aboriginal and Torres Strait Islander people in rural, remote, regional and urban centres – MTPConnect developed a series of webinars to highlight key elements of Aboriginal and Torres Strait Islander health research. The resources are intended for anyone with a broad interest in Aboriginal and Torres Strait Islander health research but also provided potential applicants for Round 3 with key elements to consider when building their projects and teams.

Webinar 1: Principles of Aboriginal and Torres Strait Islander health research and engaging meaningfully with community

Professor Alex Brown Professor of Indigenous Genomics at the Australian National University and Telethon Kids Institute.

Associate Professor Michelle Kennedy Executive Manager of Research and Knowledge Translation at the Lowitja Institute.

Ray Kelly Accredited Exercise Physiologist/Researcher and creator of 'Too Deadly for Diabetes'.

Webinar 2: Ethics and reciprocity

Dr Summer May Finlay Ethics Committee Co-Chair Aboriginal Health & Medical Research Council of NSW.

Professor Jenni Judd Professorial Research Fellow, Central Queensland University.

Webinar 3: implementation Science

Professor Gillian Harvey Strength Lead – Implementation, Australian Centre for Health Services Innovation (AusHSI).

Professor Ray Mahoney Professor of Aboriginal and Torres Strait Islander Health and Discipline Lead for Population Health at Flinders University and a Visiting Scientist with the Australian e-Health Research Centre, CSIRO.

Artwork by Ngarrindjeri Artist, Jordan Lovegrove – Karko Creations.

The first webinar in the series began by outlining the principles and foundations for beneficial Aboriginal and Torres Strait Islander health research, including an honest appraisal of the lasting negative effects of colonisation and a long history of harmful research *on* Aboriginal and Torres Strait Islander people, contributing to the well-documented gaps in health outcomes between Indigenous and non-Indigenous Australians.

A number of useful resources for researchers were provided and speakers emphasised that, to close the gap, health research must be conducted *by* and *with* Aboriginal and Torres Strait Islander people and communities, addressing their priorities, embedding their leadership and harnessing their ways of knowing, being and doing.

The presentation concluded with a case study demonstrating how strong community engagement has enabled the success of the 'Too Deadly for Diabetes' program, with people taking part in the program seeing dramatic decreases in blood pressure, HbA1c, reliance on medications such as insulin, and co-morbidities associated with diabetes.

The second webinar in the series explored the ethical obligations of researchers, the importance of cultural safety in research design and governance, and the critical importance of reciprocity.

The speakers took an in-depth look at the NHMRC's *Ethical conduct in research with Aboriginal and Torres Strait Islander Peoples and Communities: Guidelines for researchers and stakeholders.* The six core values of ethical research were discussed, particularly highlighting the central core value of 'spirit and integrity', which binds the five other values – cultural continuity, responsibility, reciprocity, respect and equity – together.

Building on the message from the first webinar, this second webinar emphasised the importance of meaningful community engagement and empowering Aboriginal and Torres Strait Islander people in the research through their inclusion and substantial involvement at all stages, including leadership and co-design, to generate impactful outcomes that benefit Indigenous people and communities. Reciprocity recognises shared responsibilities and contributions to research and ensures research outcomes are of equitable and long-lasting value for Aboriginal and Torres Strait Islander people and communities.

The three-part series concluded with a final webinar examining how implementation science is essential to translate the knowledge and evidence generated through research into practice to improve health services and benefit health and wellbeing. Thoughtful, collaborative and systematic implementation into healthcare systems and communities is key for new products and health innovations to be effective, acceptable and sustainable.

Speakers highlighted that implementation is complex, non-linear, multi-faceted, context dependent, unpredictable and dependent on collaboration, networks and relationships. It is a social process, as much as a technical one, and it is a process that is absolutely necessary to promote the uptake of evidence into policy and practice.

The session demonstrated how implementation science can be incorporated into Aboriginal and Torres Strait Islander health research to translate outcomes, through the sharing of two case studies: mHealth Hypertension, partnership with Aboriginal and Torres Strait Islander Community Controlled Health Organisations in Far North Queensland – 'Exploring Mobile Health Technology for the Management of Hypertension in the Aboriginal and Torres Strait Islander Community Controlled Health Sector'; and St George Community Wellbeing Centre, Goondir Health Services, central-west Queensland – 'better health, better living, longer life'.

The third webinar concluded by emphasising that, to translate into benefits for health and wellbeing, research must be flexible, invest time and resources into building and maintaining relationships, and centre the lived expertise of Aboriginal and Torres Strait Islander people and communities.

The webinar broadcasts generated substantial interest from researchers, health professionals, policymakers, health service administrators and others. More than 45 per cent of participants surveyed indicated that they had not previously been involved in Aboriginal and Torres Strait Islander health research. This demonstrated that there is a substantial appetite for capacity and capability building for the sector where knowledge gaps exist in conducting First Nations health research.

Throughout the webinar series, participants were also surveyed to understand what topics the sector is interested to learn more about, and MTPConnect is exploring options to extend the series as the TTRA program continues.

5. Encouraging partnerships and collaborations to accelerate translation

A key objective of the MRFF is to encourage strategic partnerships to enhance research outcomes and accelerate the translation of Australian research into practice. For the TTRA program, the objective was to stimulate collaboration across relevant clinical, research and industry organisations and leverage strengths across the sector to ultimately produce novel approaches and products for diabetes and cardiovascular disease.

From its beginning, the TTRA program has taken a national and inclusive approach to working with clinicians, researchers, health administrators, Aboriginal and Torres Strait Islander health groups and consumers, bringing together key opinion leaders and leading organisations to support delivery of the program (see infographic on page 42).

MTPConnect also recognises the importance of engaging with people that have knowledge of the lived experience of diabetes and cardiovascular disease, as well as other end users. This engagement is essential to accelerate the translation of products and solutions that will positively impact the lives of Australians living with these chronic diseases.

MTPConnect has integrated people that have knowledge of the lived experience of diabetes and cardiovascular disease, as well as other end users into all aspects of the delivery of the TTRA program, including program governance, priority setting, application assessment and other advisory roles such as the Research Projects Round 3 Co-Design Group.

Pictured: TTRA Program Partnership Operations Team left to right: Dr Michelle Allen AusHSI; Dr Erin McAllum MTPConnect; Dr Leigh Ford UniQuest; Dr Amabel Tan ANDHealth; Lauren Kelly MTPConnect; Stephen Blakeney MDPP; Dr Mana Liao MTPConnect. Not pictured: Rosemary Smith Lowitja Institute.

MTPConnect's national and inclusive approach to delivering the TTRA program

Program Governance

TTRA Expert Advisory Board made up of **8 members** with expertise across diabetes and cardiovascular disease lived experience and advocacy, clinical, public health, research, and commercial perspectives (see page 15).

Program Partner Organisations

Program delivery partners to create a unique support ecosystem for those applying for and receiving funding.

ANDHealth · AusHSI Australian Centre for Health Services Innovation · LOWITJA INSTITUTE · MEDICAL DEVICE PARTNERING PROGRAM · UNIQUEST

Prioritisation Research

Needs assessments to determine priorities for funding.

Across 3 needs assessments, **93 individuals participated** in one or more of 6 roundtables.

MONASH University · MONASH SUSTAINABLE DEVELOPMENT INSTITUTE · BehaviourWorks AUSTRALIA · Australian National University · RESEARCH AUSTRALIA · LOWITJA INSTITUTE

To deliver the TTRA program

MTPConnect has partnered or collaborated with:

- **8** Organisations (3 new partnerships since launch)
- **143** Experts and individuals with knowledge of the lived experience

Application Assessment

45 national and international experts and community members participated in one or more of 5 Investment/ Assessment Panels.

Indigenous Advisory Group

Made up of **10 members**, including prominent Indigenous researchers, clinicians and thought leaders, as well as representatives from organisations that have deep engagement with Aboriginal and Torres Strait Islander communities through healthcare delivery (see page 22).

The Indigenous Advisory Group led the design and provided oversight for the needs assessment to determine Indigenous-specific priority areas for funding through Research Projects Round 3.

Research Projects Round 3 Co-Design

Co-design Group made up of 5 individuals, including members of the Indigenous Advisory Group as well as others with experience in delivering funding focused on Aboriginal and Torres Strait Islander research.

The Co-Design Group led the development of funding guidelines, selection criteria and application process for Research Projects Round 3, focused on Indigenous health and wellbeing.

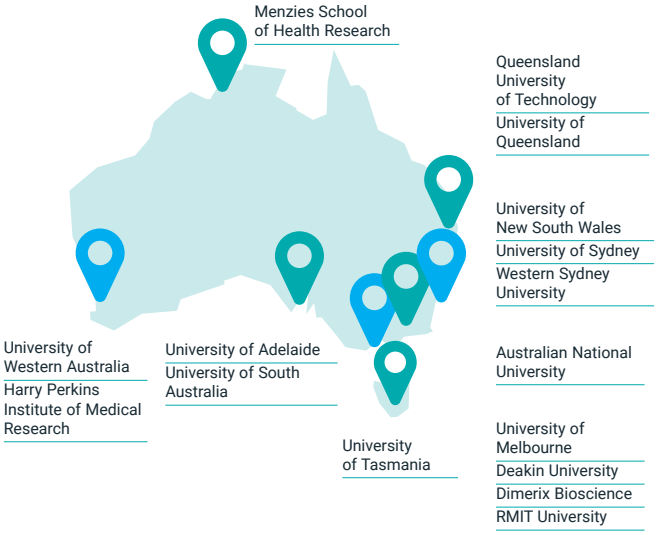
Breaking down silos and building collaborative gain

In addition to forming strategic collaborations to enhance the delivery of the TTRA program, MTPConnect also encouraged applicants to form partnerships that will lead to collaborative gain, with this built into funding guidelines and selection criteria for the different funding opportunities.

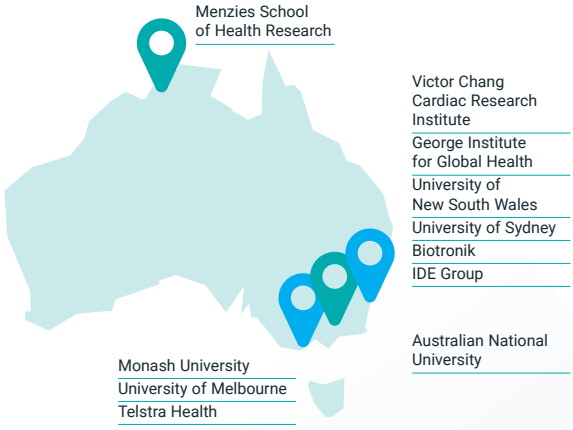
TTRA Research Centre's partnerships and collaborations

The two successful Research Centres, ACADI and ASHRA, bring together 66 partner organisations from across all Australian States and Territories and internationally. Some of these partnerships already existed but were built upon with new collaborations established as a direct result of the TTRA Research Centre funding opportunity.

ACADI Core Partners



ASHRA Core Partners



Academic 19
Industry 6
Healthcare Delivery 4
Advocacy 4

Academic 14
Industry 12
Healthcare Delivery 5
Advocacy 2

Not only do ACADI and ASHRA build collaborative gain through their extensive networks, but the application process itself for Research Centre funding facilitated new partnerships and collaborations within the sector.

100% of applicant survey respondents **agreed** that
"The application process for the TTRA Research Centre funding opportunity facilitated new collaborations"

TTRA Research projects partnerships and collaborations

Similar to the TTRA Research Centres, the Research Projects supported through the program have brought together new and existing collaborations for project delivery.

Community and end-user engagement in research

To reflect MTPConnect's own commitment to integrating knowledge of the lived experience into the delivery of the program through engaging with people living with diabetes and/or cardiovascular disease, MTPConnect strongly encourages applicants and awardees to effectively engage with community and other end-users. This meaningful engagement results in innovation pull, rather than technology push.

Both ACADI and ASHRA embed community engagement and knowledge of the lived experience in their governance structures and in centre activities.

For ACADI, this includes representation of the lived experience of diabetes on the ACADI Council, a Community Advisory Group, ensuring lived experience perspectives on its PhD and early career researcher grant selection committee and the ACADI Health Technology Innovation Challenge pitch panel, and enabling projects within the ACADI research portfolio to engage with community through the ACADI Co-Design Platform (see Case Study 2 page 33).

Similarly, the ASHRA Executive Management Committee includes representation of the lived experience of cardiovascular disease and an ASHRA Consumer Panel has been established for consultation and engagement by projects within the ASHRA research portfolio, to ensure community engagement is embedded in all ASHRA activities. ASHRA anticipates the membership of this panel will expand as the centre matures.

For TTRA Research Projects funded through Rounds 1 and 2, community and other end-users are included in research to ensure the products and solutions being developed: address a genuine unmet need and meet a demand; have been designed incorporating feedback from community and end-users; will provide value and benefit for people living with diabetes and cardiovascular disease; will fit within existing clinical workflows and healthcare journeys; and will achieve or enhance equitable health service delivery and access.

For TTRA Research Projects Round 3 focused on Aboriginal and Torres Strait Islander health and wellbeing, applicants were required to provide evidence of and plans for previous, current and future community engagement across all aspects of the project. The six projects funded all embed extensive community involvement from project governance to co-design, implementation, monitoring, evaluation and knowledge sharing. Having begun activities in September 2023, how this community engagement strengthens this research will be shared in future reports once these projects have further progressed.

Pillar 1: Research Centres

62
people with lived experience of diabetes and cardiovascular disease involved in ACADI and ASHRA activities

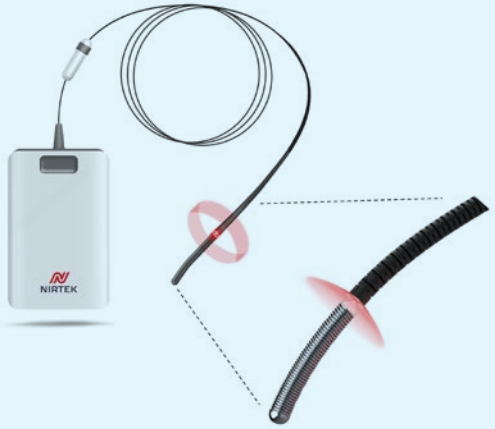
Pillar 2: Research Projects

37
people with lived experience of diabetes and cardiovascular disease involved in TTRA Research Projects (Rounds 1 and 2)

166
clinical end-users involved in TTRA Research Projects (Rounds 1 and 2)

Case Study 5

Nirtek collaborates on developing guidewire for unstable plaque detection to prevent heart attack



Pictured: above right, a rendered image of Nirtek's NIRAF Guidewire.

Cardiovascular disease is the leading cause of death worldwide, responsible for one third of all global mortality. Of these fatalities, a staggering 85 per cent are attributed to heart attacks and strokes[17]. In Australia, heart attacks alone account for nearly one in 20 deaths – this equates to a heart attack claiming a life every 74 minutes, or on average 19 people every day[18]. These alarming statistics underscore the pressing need for innovative solutions.

A diagnostic guidewire being developed by Nirtek – a company formed to prevent heart attacks and save lives – is providing new optimism in the battle against this formidable health challenge. The science behind the technology was discovered by leading interventional cardiologist and Deputy Director of the Baker Heart and Diabetes Institute, Professor Karlheinz Peter, with the clinical need for the product identified through his daily insight treating patients.

Despite the presence of diagnosed coronary artery disease, many individuals continued to suffer major adverse cardiovascular events, including heart attacks and even death. The clear unmet need was to identify unstable plaques within coronary arteries that were vulnerable to rupture. In the absence of a reliable means of detecting their instability, plaques often go untreated, leaving what Professor Peter describes as a ticking time bomb.

The core science behind Nirtek's technology is certain compounds within plaques that are strongly correlated with instability, produce a specific auto-fluorescence signal when stimulated with near infrared light. Nirtek realised that if this could be measured during routine angiography procedures, unstable plaques could be detected and rapidly treated before they rupture and block the artery.

Collaborating with optical physicists and biomedical engineers at Swinburne University of Technology, the company Nirtek was created with the vision to develop a Near Infrared Auto-fluorescence (NIRAF) Guidewire using this discovery.

The NIRAF Guidewire is an intracoronary device capable of directing near infrared light at a coronary plaque, analysing its instability and vulnerability to rupture, and directing the need for interventional therapy such as coronary stenting or targeted drug therapy.

Through the inaugural round of the Targeted Translation Research Accelerator (TTRA) Research Projects opportunity, Nirtek was awarded $750,000 in 2021 along with support from TTRA Partner, the Medical Device Partnering Program (MDPP).

Prior to being awarded TTRA funding, the NIRAF Guidewire was at technology readiness level (TRL) 3 – the underlying science had been established and some proof-of-concept sub-components of the device had been designed and tested, but only in a research laboratory environment. The goal of the TTRA-funded project was to transition into formal product development to create a prototype of both the guidewire and its associated controller device, ready for rigorous testing in representative environments and eventually humans.

17 https://www.who.int/en/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)
18 https://www.heartfoundation.org.au/bundles/for-professionals/key-statistics-heart-attack

Pictured: Neo-Bionica mechatronics engineer Ioanna Stamatopoulos preparing guidewire testing rig.

Pictured: Nirtek Chief Technical Officer Paul Stoddart testing prototype device on an unstable plaque sample.

Accelerating project development, reaching TRL5 and building a demo prototype

In just under 21 months, Nirtek significantly accelerated product development, reaching TRL5 and successfully building a functional concept demonstrator prototype (CDP) of the NIRAF Guidewire and controller. The guidewire is almost two metres long, yet only the thickness of a few human hairs. Laser light is directed via optical fibres through its length to the tip, where a specially designed reflector transmits the laser light into a plaque and detects autofluorescence signatures that are unique to plaques that are unstable and at risk of rupture causing heart attack.

Nirtek's guidewire looks, feels and reacts just like the off-the-shelf guidewires used in clinical practice by interventional cardiologists every day. This is essential to ensure that the NIRAF Guidewire can be used by clinicians without having to change the way they perform procedures or undergo retraining. Voice of Customer interviews with interventional cardiologists were built into the TTRA project, ensuring user requirements were central to the device's development.

Coinciding with the technology's progress, the project also realised significant intellectual property milestones, with patents granted in the US, EU, Australia and Japan. These achievements confirm the pioneering nature of the NIRAF Guidewire technology.

It was also essential that the development of the NIRAF Guidewire proceeded in such a way as to meet regulatory standards. To ensure this, Nirtek established a robust quality management system to govern all research and development activities. The prototype device has now been tested and proven to successfully detect unstable plaques in artificial models and genuinely representative biological samples, including mouse models and *ex vivo* human samples. With a small amount of further testing and design refinement, the device will be ready for first-in-human clinical testing.

TTRA program – much more than just funding

When asked what being part of the TTRA program meant for the company and project, Nirtek Managing Director and CEO Matthew Hoskin said the program had provided more than just funding.

"The TTRA funding for this project is dependent on significant vetting and diligence being conducted by an independent body, who in turn is answerable to government," Hoskin said.

"For Nirtek, this is a form of validation for not only our company and product, but also for our management and governance. This provides a level of credibility and trust that may otherwise be difficult for a small start-up to demonstrate to others including potential partners, service providers, contractors and investors."

Similarly, Nirtek derived substantial value from the support offered through the TTRA program from MDPP.

"The relationship was one of genuine partnership, and our TTRA partner has felt like almost an extension of our own resources, always available for consultation but, importantly, also willing to take on tasks that contribute to the progress of the project.

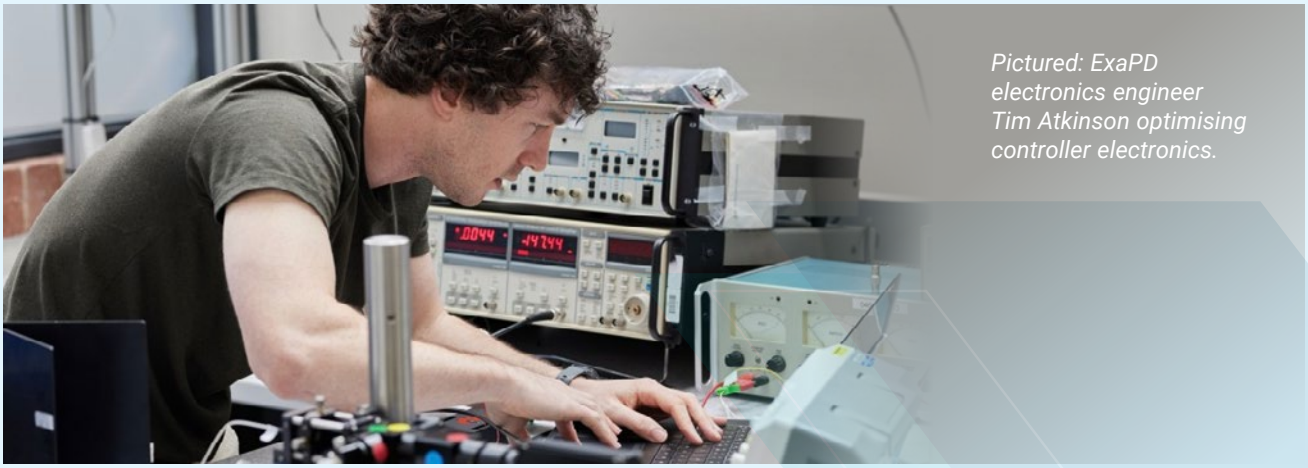
"The advice from MDPP further propelled the project towards success including introduction to potential investors, brokers and related parties, assisting our capital raising effort and helping us to secure vital additional external investment funding," Hoskin said.

Successful collaboration and partnership

The impact of Nirtek's TTRA project transcends technical advancements and at the heart of Nirtek's success is a story of collaboration and partnership, beginning with the clinicians, scientists and engineers at the Baker Institute and Swinburne University. The TTRA program funding allowed Nirtek to build on this and gave the company the necessary resources to take advantage of a thriving local ecosystem, including establishing lasting partnerships with key R&D service providers – Neo-Bionica and Exa Product Development (Exa PD), among others. These key partnerships were critical to progress the development of the NIRAF Guidewire.

For Exa PD and Neo-Bionica, the relationship with Nirtek is greater than simply fee-for-service, with both companies deeply committed to the success of the NIRAF Guidewire and excited about the future possibilities.

EXA PD founder and Engineering Manager Stephen Leahey, said: "With its innovative, high-tech approach and strong technical foundation, the solution has immense potential to benefit patients. We are excited to be part of this remarkable endeavour, to make a meaningful impact in healthcare."



Pictured: ExaPD electronics engineer Tim Atkinson optimising controller electronics.

Neo-Bionica CEO Dr Ludovic Labat said: "Neo-Bionica is very proud to work with Nirtek as a commercialisation and manufacturing partner. We look forward to continuing to support Nirtek as the company brings its exciting, smart diagnostic device to prevent heart attacks to market."

These partnerships have a circular effect – not only do these deep tech service providers contribute to the advancement of the NIRAF Guidewire, but the collaboration also enhances their company's skills, capabilities and know-how, and further develops their partnerships and future work opportunities.

Mr Hoskin said the project's success is a testament to the transformative potential of partnerships.

'The team hopes to make Nirtek and our NIRAF Guidewire an example of what our local medtech ecosystem can achieve – the successful translation of targeted research through to the global launch of a novel medical device that will solve a major clinical problem, serve an enormous global commercial market, and save the lives of those at risk of heart attack from sudden plaque rupture," Hoskin said.

The next phase for Nirtek is to ready a prototype device for a first-in-human clinical trial. This trial, conducted on a small number of patients, will evaluate product usability performance in the intended environment. The NIRAF Guidewire project embodies a beacon of hope for millions worldwide and, as the TTRA project concludes, Nirtek stands on the precipice of a transformative breakthrough in preventing heart attack.

The extensive partnerships and collaborative networks built to deliver the TTRA program and enabled through TTRA funding are facilitating the breaking down of silos in diabetes and cardiovascular disease research in Australia – fostering innovation and the translation of medical research into tangible outcomes for Australians living with diabetes and/or cardiovascular disease, their families and carers, and the health system more broadly.

6. Capacity and capability building for the diabetes and cardiovascular disease sector and community

Job creation and capacity and capability building are intrinsic features of all funding programs delivered by MTPConnect. For the TTRA program, capacity and capability building for research commercialisation and implementation is integrated throughout all activities. A research and clinical workforce skilled in commercialisation and implementation will accelerate the translation of Australian innovations for diabetes and cardiovascular disease, leading to positive health outcomes.

Capacity and capability building aspects of the TTRA program

At every step of the funding process, the TTRA program has opportunities for applicants and awardees to build their knowledge around research commercialisation and implementation, beginning with the publicly available information sessions for each funding round, through the application process itself, and during post award.

Outreach

As each TTRA funding round opened for applications, MTPConnect held information session webinars to outline expectations for funding and to provide general advice to the sector around what makes a strong application. The sessions were made available as on-demand videos and episodes of the MTPConnect Podcast. The advice was delivered by the TTRA Partners, from their specialist perspective of what is necessary for the successful commercialisation and implementation of digital health solutions, medical devices, therapeutics, behavioural interventions and health service innovations. While this advice was specifically aligned with the funding rounds selection criteria, it was also applicable to those seeking funding more generally, including from other non-dilutive schemes, private equity or industry engagement.

4
information session webinars held

634
participants tuned in live

783
participants viewed on-demand

1,410
podcast downloads

Investor/Health Economics Lens

The application process for the Research Projects was also purposefully designed to not only ensure the most meritorious projects were funded, but to provide value for every applicant regardless of outcome. The application process applied an investor or health economics lens (depending on the commercialisation or implementation pathway), something that applicants may not have been exposed to with other funding schemes but is essential to understand if they are looking to commercialise and/or implement their product or solution (see Case Study 3 on page 36 for further information).

Consultation with Modality Experts

A core aspect of the TTRA Research Projects is the opportunity for each applicant and awardee to interact with one or more of the TTRA Partners, specialists in the commercialisation and implementation of digital health solutions, medical devices, therapeutics and behavioural interventions/health service innovations.

During the application process, each applicant interacted with the TTRA Partners at the Consultation phase and at the Full Proposal phase. Each applicant was paired with the relevant modality expert for these interactions. As this was still part of the competitive assessment process, in cases where the modality partner was conflicted, a second TTRA Partner facilitated the interactions.

Through Rounds 1 and 2, a total of 100 partner hours was spent by the TTRA Partners in one-on-one interactions with applicants during Consultation and Full Proposal preparation. Applicants found these interactions to be invaluable, not only for improving their TTRA application, but also for improving their project more broadly.

Applicant feedback

"The rigorous process of application for this funding, as well as the funding itself strengthens the chances of success for the proposed project. It can be game changing for successful applicants and something that needs to be nurtured and grown in order for our local ecosystem to thrive. Thank you for the opportunity to apply."

"[TTRA Partner] were very helpful with constructive feedback, clarification etc. Should my application not be successful, I believe that there was benefit in applying because of the feedback provided."

"It was a great process. Incredibly helpful to hear from experts. Several elements added to the project that improved it following consultation."

"As a basic researcher with some experience in biotech, this process was very valuable."

Post-Award Support from TTRA Partners

Post award, TTRA Research Projects are built around SMART (specific, measurable, achievable, relevant and time-bound) milestones, with clearly defined go/no-go decision points. The TTRA funded activities are designed to enable projects to reach a value inflection point (e.g. progressing and de-risking the product or solution to the point that it is more attractive to industry or investors). This model of project management aligns with industry-funded translational research, allowing awardees to become familiar with this model, while taking advantage of non-dilutive funding.

To assist with the management of this type of project and to provide mentoring and advice, each awardee is paired with one or more of the TTRA Partners, depending on their modality expertise. These partnerships create significant impact for the awardees beyond simply providing funding.

Awardee feedback

"Support from these partners has been invaluable to the project from our first meeting during the application process through to now. They have been integrally involved in the development of the overall strategy, progression of the experimental plan, reporting, wider contacts and networking etc. These partners are a critical important value add that has really shaped the project. Hard to imagine how [they] could have had more impact – real value add that has made the program rewarding from our point of view."

"...[our TTRA Partner Representative] has had a positive impact on our project direction as [they] provided an unbiased outside view with expertise in troubleshooting when various situations have occurred."

"[Our TTRA Partner Representative] have connected us with their network, including pharmaceutical companies, and also assisted in linking us with Amazon credits to further our business... [They] have been positive in facilitating ongoing development and translation of our work. This will be important in helping us to attain the greatest impact possible from our project."

"[Our TTRA Partner Representative] actively provided opportunities to attend industry events (TGA webinars) and information related to commercialisation, competitor technologies/companies, potential industry partners and networking. The insights have been invaluable in ensuring regulatory compliance and guiding our [products] development within the evolving regulatory landscape."

"...interactions with [our] TTRA Partner Representative have positively impacted several aspects of the research project, including providing valuable guidance and advice on...key program and clinical sustainability assessment tools that may be used to frame discussions with industry/government potential partners about the commercialisation of [our product and] implementation science frameworks and theories used to analyse the implementation outcomes of [our project]."

Capacity and capability building within Research Centres and Research Projects

In addition to the opportunities created by MTPConnect through the TTRA program, capacity and capability building is also embedded in the funded research projects and centres. For the Research Centres, a comprehensive training program is a central element of their activities.

33
new jobs created (in years) by Research Centres and Research Projects

45
training events held with 244 individuals trained

32
webinars/seminars held with 918 attendees

33
internal and external training materials and resources developed

Through the comprehensive support offered by MTPConnect for both applicants and awardees and the opportunities created by the awardees themselves, the TTRA program has created an ecosystem of capacity and capability building that will continue to grow. The outcomes and impacts of this are already being realised and what will be created is a diabetes and cardiovascular disease research and clinical workforce in Australia that is skilled in commercialisation, implementation and entrepreneurship, which will lead to Australian discoveries being translated into real health benefits for people with diabetes and cardiovascular disease, their families, carers, and communities.

Case Study 6

Preparing 'next gen' researchers to address the complex challenges of diabetes

ACADI
Australian Centre for Accelerating Diabetes Innovations

The Australian Centre for Accelerating Diabetes Innovations (ACADI) training program is growing capability and capacity in the diabetes sector – and cultivating future research leaders in the process.

Globally, approximately 537 million adults are living with diabetes – a figure that's expected to rise to 643 million by 2030 and 783 million by 2045.[19]

To meet this challenge, ACADI envisions an Australian diabetes clinical and research workforce equipped with commercialisation and implementation skills, to translate research into innovative products and solutions desperately needed.

Advancing the next generation of diabetes researchers

One of ACADI's key offerings is its customised training program, which aims to advance exceptional PhD students, early-career postdoctoral researchers and clinician researchers to ensure ongoing workforce development. The training program is open to all ACADI's 16 core partners, with selected elements also available to its entire network and the general public.

The training program provides a supportive and collaborative environment, where participants can leverage the strengths of ACADI's national network of partners and project leads to undertake multi-institutional patient-focused research. Committed to promoting diversity and inclusion, one of the program's main goals is to enhance broad skills and leadership within the diabetes sector, particularly within Indigenous communities.

Through the program – and often in collaboration with partners, other external organisations and people living with diabetes – participants gain critical skills and knowledge pertaining to the commercialisation of therapeutics and medical technologies/digital health solutions, clinical trial design and research translation, combined with diabetes perspectives from consumer, clinical and regulatory bodies.

According to the Director of ACADI, Professor Elif Ekinci, the training program plays a pivotal role in Australia's healthcare sector: nurturing the development of creative solutions to the complex challenges associated with diabetes care, by embedding non-academic training within ACADI from industry, research, health services and community.

"The training program is one of the most unique elements of ACADI," she said. "We're taking a pro-active approach to ensure the next generation of researchers have the skills necessary to lead successful research programs incorporating industry and lived experience."

Innovation Challenge fosters industry engagement and entrepreneurship

Since its establishment in mid-2022, the ACADI training program has facilitated an assortment of initiatives, including a mentoring program and monthly seminars and workshops. It also delivers annual PhD and early career researcher (ECR) grants, with $375,000 awarded so far to the next generation of researchers across Australia.

One of the program's standout features is its Health Technology Innovation Challenge. This annual event offers students and researchers the opportunity to pitch for seed funding for a health technology innovation that addresses any of ACADI's three clinical priority areas.

Shortlisted finalists receive expert pitch training, enabling them to refine their pitches and learn how to translate their academic research into a commercial pitch for investors.

For the inaugural challenge in 2023, first prize, which included $30,000 in seed funding, was awarded to Dr Buddini Karawdeniya and her team from Australian National University for their 'ketowhistle' device – a highly accurate point-of-care home-use breath acetone sensor for diagnosing diabetic ketoacidosis.

Dr Karawdeniya said the challenge provided an invaluable platform to realise the commercialisation pathway for her team's device.

"As scientists, our primary focus has always been on sensor engineering and optimisation," she said. "However, we lacked

19 International Diabetes Federation, 'Facts & Figures', https://idf.org/about-diabetes/diabetes-facts-figures/, accessed 3 January 2024

Pictured: Dr Buddini Karawdeniya, Australian National University.

experience in the realms of business and commercialisation. The ACADI Health Technology Innovation Challenge was pivotal for us to see our work in a different light and think about how to extend this work towards commercialisation."

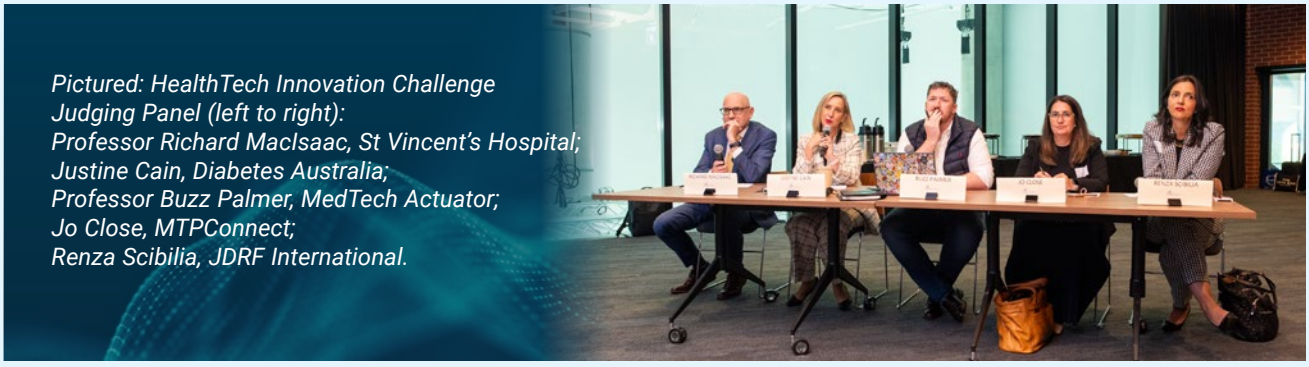
ACADI sees the Health Tech Innovation Challenge as a platform to foster innovation, inspire ground-breaking solutions and drive positive change in diabetes care. ACADI anticipates that the winning solutions will make a meaningful impact on the lives of individuals affected by diabetes, and could contribute to more effective monitoring, treatment or enhanced overall wellbeing for people living with diabetes.

A pipeline of skilled innovators

Over time, the ACADI training program will develop a pipeline of researchers equipped with the training and experience to develop new innovations that deliver practical outcomes for complex medical issues.

The high quality of the ACADI training program will enable ACADI researchers and clinicians to excel in their future endeavours – not only giving them the skills they need to lead innovation projects, but also fostering connections with expert interdisciplinary collaborators through the ACADI network, said ACADI Training Lead, Associate Professor Sarah Glastras.

"We've built the ACADI training program from scratch into an integral part of the centre's offerings," she added. "We can't wait to build on this success to ensure that people living with diabetes and its complications experience the benefits of the research outcomes from our upcoming research superstars."



Pictured: HealthTech Innovation Challenge Judging Panel (left to right):
Professor Richard MacIsaac, St Vincent's Hospital;
Justine Cain, Diabetes Australia;
Professor Buzz Palmer, MedTech Actuator;
Jo Close, MTPConnect;
Renza Scibilia, JDRF International.

Case Study 7

Translating cardiovascular health research – a policy, partnerships, and First Nations community engagement perspective

In line with ASHRA's commitment to deliver solutions which meet the needs of all Australians, including the most vulnerable populations, ASHRA's Education and Training program is striving to grow the capability of cardiovascular researchers to design and deliver research in partnership with Australia's First Nations Peoples.

In collaboration with the Menzies School of Health Research and the Diabetes across the Lifecourse: Northern Australia Partnership Aboriginal and Torres Strait Islander Advisory Group (ATSIAG), a select group of early-mid career researchers (EMCRs) were involved in a workshop hosted on Larrakia Country (Darwin), on 9 November 2023. The Darwin workshop complemented previous ASHRA translation workshops, which focused on commercialisation strategies for therapeutics, medical devices, and digital health, and provided an exclusive occasion for networking and to learn about research translation through a policy and community lens.

The workshop was a unique opportunity to foster sustainable ASHRA EMCR relationships between interstate and Northern Territory cardiovascular research cohorts, and explored themes of translating research into policy, developing community partnerships to inform policy priorities and realities of writing for policy. The workshop also sought to deepen the understanding of implementation science and community co-design through real-world experiences.

Over the course of the day the EMCRs learnt from Aboriginal and Torres Strait Islander researchers, clinicians and thought leaders, as well as those who have deep experience in collaborating with First Nations communities.

Ms Sian Graham, Senior Research Officer, and Chair, ATSIAG, Menzies School of Health Research, was the co-lead scientific organiser of the workshop. Ms Graham, a Bardi-Jawi and Noongar woman said "The ASHRA workshop held in Darwin was a great opportunity to network and build relationships with external researchers from other institutions from all around Australia. The workshop created a platform for Aboriginal and Torres Strait Islander researchers to come together, connect and share knowledge. The workshop created a safe space which enabled participants to showcase cardiovascular research and discuss the importance of partnering with Aboriginal and Torres Strait Islander people and right ways of working.

As an Aboriginal Researcher, I would like ASHRA to continue to partner with Aboriginal and Torres Strait Islander leaders and continue creating opportunities to build capacity of Aboriginal and Torres Strait Islander people at all levels – from community members, community based workers, people with lived experience and people working at all levels within health and research. In order to see change in the current health system and research space, we need to continue to work together in true partnership."

The workshop participants and presenters agreed there was a role that ASHRA could play in continuing to support First Nations capacity building by providing ongoing opportunities such as the Darwin workshop to build closer ties and trusted partnerships with researchers working in First Nations cardiovascular research and with the Aboriginal and Community Controlled Health Organisation (ACCHO) sector. The shared goal being to further enable direct and meaningful benefits for communities and the need to address all factors that drive chronic conditions. This approach is supported by the ASHRA Indigenous Program to be led by Keziah Bennett-Brook and Dr Julieann Coombes, *Guunu-maana* (heal), The George Institute for Global Health, in close collaboration with Professor Alex Brown, ASHRA Leader for First Nations Cardiovascular Research Translation.

Workshop facilitators, presenters and participants.

Outlook

Outlook

The TTRA program has now officially passed the halfway point in its timeline. In the first three years, the program has undertaken three distinct prioritisation projects to inform four different funding opportunities, established two nationwide Research Centres, and funded 22 individual Research Projects. The first of these projects have already finished their TTRA funded activities and have obtained follow-on external investment.

As this report demonstrates, the TTRA program has delivered significant outcomes to date, and has already realised anticipated impacts. The ability to deliver these outcomes and impacts so rapidly is largely due to the distinguishing features of the TTRA program:

The distinguishing features of the TTRA program

Community-led priority setting. Community includes diabetes and CVD researchers, clinicians, advocacy groups and people with knowledge of the lived experience.

Collaborative Research Centres designed to drive new partnerships, breakdown silos and create a cross-disciplinary multi-sector ecosystem for diabetes and CVD research.

Acceleration of commercialisation, translation and implementation of diabetes and CVD products and solutions to benefit patients and the health system.

Building capacity and capabilities in commercialisation, translation, and implementation of the diabetes and CVD research and clinical sectors.

The strong engagement of the sector with the TTRA program is indicative of the appetite for dedicated funding to enable the translation of diabetes and cardiovascular disease research and for programs that build capacity and collaborative gain. This well-rounded approach to research funding will see even more significant outcomes and impacts in the longer-term as the Research Centres become further established, and the Research Projects progress and meet their commercialisation or implementation objectives.

Now in the post-award phase of the program, MTPConnect and the TTRA Partners will continue to deliver the wraparound support offered to awardees to accelerate translation of research into practice. The TTRA program has created a distinct and valuable peer-to-peer network of researchers, clinicians, industry and community for the diabetes and cardiovascular disease research sector. MTPConnect will continue to proactively build this network, identify areas of synergy between the Research Centres, Research Projects and the wider diabetes and cardiovascular disease sector, and foster the creation of new partnerships and collaborations to further build on and drive research excellence and translational success to deliver impact for those living with these chronic conditions.

With 196 projects within the company portfolio across our six distinct programs, MTPConnect has created an extensive ecosystem of trailblazing alumni. Our TTRA awardees will be able to further plug into and harness this thriving network of researchers, clinicians and entrepreneurs to seek advice and mentorship now and well into the future.

Appendix A

Appendix A: Long lists of unmet needs identified through needs assessments

Pillar 1: Research Centres

Priorities for research examining complications of diabetes

From the 297 research topics, 24 unique complication categories were identified (listed in rank order following prioritisation). The priority areas called for are in bold.

1. **Diabetic kidney disease (DKD)**
2. Mental health
3. Cardiac, CVD / coronary artery disease / Major adverse cardiac events (MACE)
4. **Glucose control, Hypoglycaemia, Hyperglycaemia, Ketoacidosis**
5. **Diabetic foot (combined with #8)**
6. Consumer behaviour (adherence, knowledge)
7. Eye, Retinopathy
8. **Neuropathy (combined with #5)**
9. Cardiac, Cardiomyopathy / heart failure
10. Vascular, Atherosclerosis / Thrombosis
11. Weight gain
12. Vascular, Stroke
13. Skin (ulcer, wound healing)
14. Glucose control, Insulin resistance
15. Vascular, Peripheral artery disease / Intermittent claudication
16. Hepatic, Fibrosis / Non-alcoholic fatty liver disease (NAFLD) / steatohepatitis (NASH)
17. Immunosuppression
18. Metabolic disturbances / Lipid disturbances
19. Periodontitis
20. Reproductive health, Gestational diabetes & consequences
21. Myopathy (skeletal muscle)
22. Vascular, Hypertension
23. Bone, Impaired osseointegration
24. Pancreatitis

Rationale for priority areas differing from top ranked:

Through the roundtable discussion, it was agreed that Neuropathy (ranked #8) and Diabetic Foot (ranked #5) should not have been split as two separate categories. When the polling results were combined, this joint priority rose to second in the overall ranking.

There was robust discussion around Mental Health and diabetes, particularly around cause and effect. As Mental Health was the top priority in the Research Projects roundtable and strongly aligned with consumer perspectives, it was recommended that Mental Health be addressed through Pillar 2 Research Projects funding to avoid funding duplication.

Similarly, there is no doubt that cardiovascular disease is a leading complication for people living with diabetes. However, TTRA program funding is not seeking to be duplicative, and as cardiovascular disease was also a top priority in the Research Projects roundtable, it was not recommended as a priority area for the Diabetes Research Centre.

The recommended priority areas were strongly validated through their alignment with consumer perspectives, and if reviewed against the summary of expert responses from the survey there are a high number of opportunities for the acceleration of innovative therapies to address these complications.

Priorities for research examining complications of cardiovascular disease

From the 300 research topics, 19 unique complication categories were identified (listed in rank order following prioritisation). The priority areas called for are in bold.

1. **Cardiac, Coronary artery disease / Angina / Major adverse cardiac events (MACE)**
2. **Cardiac, Cardiomyopathy / heart failure**
3. **Cerebrovascular, TIA & Stroke (Ischaemic and Haemorrhagic)**
4. Effective Practice and Organisation of Care including Consumer, Adherence / knowledge; Consumer, Access to and timeliness of care, Evidence-practice gaps
5. Cerebrovascular, Cognitive impairment / Dementia
6. Cardiac, Arrhythmia / AF
7. Functional impairment including work, exercise and ADLs
8. Vascular, Peripheral vascular disease / Intermittent claudication / Ischaemic Ulcers / Amputation
9. Mental illness
10. Vascular, Diabetic microvascular disease / Eye, Retinopathy / Kidney disease
11. Metabolic dysregulation, glucose & lipid metabolism
12. Bleeding (side effect of anti-platelet therapy, post bypass)
13. Sleep disturbances
14. Vascular, Large vessel disease
15. Cardiac, Valvular abnormalities
16. Cardiac, Cardiac hypertrophy
17. Complications of COVID-19
18. Inflammation / Fibrosis
19. Vascular, Endocrine / secondary hypertension

Pillar 2: Research Projects

Round 1: Priorities for research examining interactions in the pathogenesis of Type 1 diabetes, Type 2 diabetes, and cardiovascular disease

From the 209 research topics, 29 unique complication categories were identified (listed in rank order following prioritisation). The priority areas called for are in bold.

1. **Mental illness**
2. **Diabetic Kidney Disease (broadened to chronic kidney disease)**
3. **Cardiac, CVD**
4. Primary prevention
5. Evidence-Practice gaps
6. Vascular, Atherosclerosis
7. Weight gain / weight loss
8. Glucose control, NOS
9. Eye, Retinopathy
10. Vascular, Ischaemia / Peripheral arterial disease (PAD)
11. Skin, Ulcer / Wound healing
12. Cardiac, Heart failure
13. Alzheimer's disease / Dementia
14. Metabolic disturbances
15. Glucose control, Insulin resistance
16. Neuropathy (target not specified)
17. Sleep disturbances
18. Inflammation (target not specified)
19. Cardiac, Cardiomyopathy
20. Cardiac, Not otherwise stated (NOS)
21. Hypertension
22. Liver, Non-alcoholic fatty liver disease (NAFLD) and steatohepatitis (NASH)
23. Vascular, NOS
24. Immunosuppression
25. Cardiac, Arrhythmia
26. Eye, NOS
27. Liver, Fibrosis
28. COVID-19 mortality
29. Vascular, Thrombosis

Round 2: Priorities for research examining unmet needs in diabetes

From the 315 research topics, 23 unique unmet need categories were identified (listed in rank order following prioritisation). The priority areas called for are in bold.

1. **Obesity**
2. Health Service Delivery Innovations: Health Systems Factors (Models of care, care coordination, treatment monitoring, personalised / precision medicine, shared decision-making, co-design, efficiency in care delivery)
3. **Mental health (depression, anxiety, eating disorders, sleep disturbances, stigma)**
4. Renal-related complications (including diabetic kidney disease)
5. **Glucose control**
6. Pre-diabetes
7. Diabetic foot: Foot ulcer (neuropathic or vascular), lower limb amputation (minor and major)
8. Cardiac complications: Myocardial infarction, major adverse cardiac events
9. Risk factors (prediction, beta-cell protection)
10. Health Service Delivery Innovations: Enablers and barriers to treatment adherence
11. General complications: Multimorbidity
12. Cardiac complications: Diabetic cardiomyopathy, heart failure
13. Gestational diabetes mellitus
14. Liver: Non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH)
15. Eye-related complications: Maculopathy, Retinopathy
16. Diabetic neuropathy
17. General complications: Weight gain / weight loss
18. General complications: Side effects of treatments
19. Reproductive (breastfeeding, high c-section proportion, sexual dysfunction including impotence)
20. Musculoskeletal system (fracture risk, therapies targeting skeletal muscle)
21. Peripheral arterial disease-related complications
22. General complications: Hypertension
23. General complications: Inflammation

Rationale for priority areas differing from top ranked:

It was recommended that obesity and mental health Priority Areas be specifically related to diabetes, as these unmet needs were only prioritised as part of the diabetes roundtable.

Although mental health was prioritised in Round 1 Research Projects (with one project funded), this was in the context of people living with both diabetes and cardiovascular disease. Mental health has been identified and prioritised in every survey and roundtable for diabetes, and it has become clear through these discussions that it is a particularly significant issue for those living with diabetes.

It was recommended that glucose control was prioritised above diabetic kidney disease, as this is a broader category for innovations that could address all types of diabetes (Type 1, Type 2, double diabetes and/or gestational diabetes) more equitably. Additionally, glucose control focused innovations have not been called for before in the Research Projects funding opportunity. Kidney disease was prioritised in Round 1 of the Research Projects (with two projects awarded) as well as the Diabetes Research Centre, so it was felt to be too duplicative to be prioritised again.

Round 2: Priorities for research examining unmet needs in cardiovascular disease

From the 216 research topics, 30 unique complication categories were identified (listed in rank order following prioritisation). The priority areas called for are in bold.

Note that two priorities (Management: Lifestyle intervention; and Management: Pharmacology) ranked equal fifth.

1. Health Service Delivery: Consumer groups (underserved groups incl. women, Aboriginal & Torres Strait Islander people, and other vulnerable populations)
2. Health Service Delivery: Consumer engagement (accessibility, affordability)
3. **Prevention: Coronary atherosclerosis (broadened beyond prevention and to include #14 cerebrovascular disease)**
4. Health Service Delivery: Health Systems Factors (workforce availability and skills, care co-ordination)
5. Management: Lifestyle intervention (exercise / weight management)
5. Management: Pharmacology (new drugs, better targeting of existing drugs)
7. Prevention: Risk factor management (hypertension, aldosteronism, genomics)
8. Diagnosis: Genetic screening / biomarkers
9. Prevention: Non-pharmacological (diet, physical activity, environmental pollution)
10. Health Service Delivery: Consumer practices (adherence, health literacy)
11. Other: Mental health (CVD-associated and post-operative depression)
12. Diagnosis: Acute Myocardial Infarction / Aortic dissection
13. **Complications: Cardiomyopathy (hypertrophy, heart failure) (broadened to include #17 and #28)**
14. **Complications: Cerebrovascular disease (dementia, stroke)**
15. Other: Diabetes / CVD interaction
16. Other: Comorbidity (inc. ageing)
17. **Management: Cardiomyopathy**
18. Complications: Peripheral vascular disease
19. Management: Arrhythmias
20. Diagnosis: Coronary atherosclerosis
21. Management: End of life (palliative care where treatment benefits are minimal)
22. Complications: Arrhythmias
23. Complications: Medication complications (side effects)
24. Management: Pulmonary hypertension
25. Complications: Renal (kidney disease, kidney failure)
26. Management: Surgical management
27. Diagnosis: Aortic stenosis
28. **Diagnosis: Cardiomyopathy**
29. Complications: Haematological
30. Complications: Liver (fatty liver disease)

Rationale for priority areas differing from top ranked:

It was determined during the roundtable discussion that the coding framework used for the cardiovascular disease survey analysis created several biases in the polling.

The first being unnecessary splitting of topics into prevention, diagnosis or management and complications resulting in critical medical unmet needs, such as cardiomyopathy and heart failure, being diluted in the ranking.

The second was that by categorising consumer and underserved population needs, not by the medical focused area, but as a category itself, created a double weighting for these topics considering they were also represented in the prioritisation criteria 'consumer expectations' and 'diversity / regional, rural, remote impacts.'

As such it was recommended that atherosclerosis was broadened to include cerebrovascular disease, as discussed during the roundtable, and not focused primarily on prevention. If atherosclerosis was not split into prevention or diagnosis, it would have risen to second place in the rankings. Broadening the category to include cerebrovascular disease would have placed it as the number one priority.

It was also recommended that cardiomyopathy and heart failure were prioritised, as when the individual management and complication scores are combined, this unmet need rises to fourth place in the list.

Round 3: Indigenous-specific priority areas for research into diabetes and cardiovascular disease

From the 33 unique unmet needs identified through the literature review, 12 areas were most highly rated overall through the roundtable (listed in rank order following prioritisation). The priority areas called for are in bold.

1. **Culturally safe programs and supports**
2. Capability building for Aboriginal and Torres Strait Islander health practitioners
3. **Culturally safe strategies to address cardiometabolic diseases**
4. **Strengths-based perspectives to chronic disease**
5. Impacts of food supply and quality
6. Research leadership
7. Strategies to address geographic distance from health services
8. Cardiac patients' continuity of care
9. Culturally safe stroke services
10. Self-management, shared decision making and per support
11. Prevention knowledge for young people
12. Screen for diabetes and other related conditions

Rationale for priority areas differing from top ranked:

While the importance of capability building for Aboriginal and Torres Strait Islander health practitioners was recognised, this unmet need was deemed out of scope to receive TTRA Research Projects funding. However, the TTRA program model includes significant capacity building support for all awardees, which will allow the program to partially address this unmet need in its delivery. Additionally, the selection criteria for this round were designed to select for applicants that have embedded substantial capability building opportunities within the project.

Appendix B

Appendix B: Needs assessments roundtables – represented organisations

Pillar 1 Research Centres		**Pillar 2** Research Projects			
Diabetes	**Cardiovascular disease**	**Round 1 D&CVD Interactions**	**Round 2 Diabetes**	**Round 2 Cardiovascular disease**	**Round 3 Indigenous D&CVD research**
Baker Heart and Diabetes Institute	Baker Heart and Diabetes Institute	Abbott	ANDHealth	Abbott	ANU
Consumers Health Forum of Australia	CSIRO	Australian National University	AstraZeneca	ANDHealth	Diabetes Australia
CSIRO	CSL Ltd	Baker Heart and Diabetes Institute	Australian Diabetes Society	Australian Cardiovascular Alliance	Flinders University
Deakin University	Deakin University	Consumers Health Forum of Australia	Baker Heart and Diabetes Institute	Australian Investment Council	Heart Net
Harry Perkins Institute of Medical Research	Harry Perkins Institute of Medical Research	CSIRO	Charles Perkins Centre, University of Sydney	Baker Heart and Diabetes Institute	Indigenous Allied Health Australia
Curtin University	Heart Foundation	CSL Ltd	Diabetes Australia	Cardiac Society of Australia and New Zealand	JDRF Australia
Sir Charles Gairdner Hospital	Leducq Foundation	Harry Perkins Institute of Medical Research	Fiona Stanley Hospital	Concord Repatriation General Hospital	Kalinda IT
JDRF Australia	Medtech Actuator	Heart Foundation	Medical Device Partnering Program	Consumers Health Forum	Kidney Australia
Mater Research Institute, University of Queensland	Medtronic	JDRF Australia	Medtech Actuator	Deakin University	Menzies School of Health Research
Medtech Actuator	Menzies Institute for Medical Research, University of Tasmania	La Trobe University	Menzies School of Health Research	Harry Perkins Institute for Medical Research	Purple House
Medtronic	Monash University, Monash Health	Medtech Actuator	Monash University	Heart Foundation	Queensland University of Technology
Monash University	National Aboriginal Community Controlled Health Organisation	Monash University	Nanyang Technological University Singapore	Heart Research Institute	Royal Flying Doctor Service of Australia
MSD	Queensland University of Technology	MSD	National Aboriginal Community Controlled Health Organisation	Medtech Actuator	South Australian Health and Medical Research Institute

Appendix B: Needs assessments roundtables – represented organisations (continued)

Pillar 1 Research Centres		**Pillar 2** Research Projects			
Diabetes	**Cardiovascular disease**	**Round 1 D&CVD Interactions**	**Round 2 Diabetes**	**Round 2 Cardiovascular disease**	**Round 3 Indigenous D&CVD research**
Nanyang Technological University Singapore	Royal Australian College of General Practitioners	Nanyang Technological University Singapore	R&D AeroMed	Medical Device Partnering Program	The Heart Foundation
National Aboriginal Community Controlled Health Organisation	Royal Flying Doctor Service of Australia	National Aboriginal Community Controlled Health Organisation	Roche Diabetes Care ANZ	Menzies Institute for Medical Research, University of Tasmania	University of Western Australia Medical School, Rural Clinical School
Novo Nordisk A/S	South Australian Health and Medical Research Institute	Royal Flying Doctor Service of Australia	Royal Australian College of General Practitioners	Menzies School of Health Research	
Royal Australian College of General Practitioners	The George Institute for Global Health	South Australian Health and Medical Research Institute	Royal Flying Doctor Service of Australia	Monash Institute of Pharmaceutical Sciences	
Royal Australian College of Medical Administrators	University of Sydney	The George Institute for Global Health	South Australian Health and Medical Research Institute	Nanyang Technological University Singapore	
Royal Flying Doctor Service of Australia	University of Western Australia	University of Melbourne	The George Institute for Global Health	National Aboriginal Community Controlled Health Organisation	
South Australian Health and Medical Research Institute	Victor Chang Cardiac Research Institute	The University of Queensland	The University of Queensland	NHMRC Community and Consumer Advisory Group	
The George Institute for Global Health		University of Sydney	UniQuest	Royal Australian College of General Practitioners	
University of Melbourne/Austin Health		University of Western Australia	University of Melbourne	Royal Flying Doctor Service of Australia	
University of Sydney		Victor Chang Cardiac Research Institute	Westmead Institute for Medical Research	South Australian Health and Medical Research Institute	
				The George Institute for Global Health	
				UniQuest	
				Victor Chang Cardiac Research Institute	

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