menzies
school of health research

2018 ANNUAL REPORT

In the spirit of respect, Menzies School of Health Research (Menzies) acknowledges the people and elders of the Aboriginal and Torres Strait Islander nations who are Traditional Owners of the land and seas of Australia.

Front cover photo: Mr Mark Mayo, an internationally regarded melioidosis scientist, and Dr Jaquelyne Hughes, a national leader in Indigenous kidney health, are demonstrating listening to a dialysis fistula. This is a common health check for people living with kidney disease.

At Menzies, Mr Mayo and Dr Hughes collaborate to find ways to reduce the impact of melioidosis, an infectious disease caused by bacteria found in the soil and water, in people with kidney disease. Both researchers are Indigenous, grew up in the Northern Territory and are longstanding employees of Menzies.

For the purposes of this document, 'Indigenous' refers to Australia's Aboriginal and Torres Strait Islander peoples.

Aboriginal and Torres Strait Islander people should be aware that this document may contain images or names of people who have since passed away.

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Galiwin'ku, Northern Territory.

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menzies school of health research

CHARLES DARWIN UNIVERSITY

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WHO WE ARE

ABOUT US

We are one of Australia's leading medical research institutes dedicated to improving the health and wellbeing of Indigenous Australians, and a leader of global and tropical health research into life-threatening diseases. We aim to translate our research into effective partnerships and programs in communities across the Asia-Pacific region.

OUR VISION

To find enduring solutions to health problems that matter.

OUR PURPOSE

To achieve sustainable health improvements through excellence and leadership in research, education and capacity development.

We have a multicultural and diverse workforce

OUR VALUES

- **Quality:** we strive for excellence and rigour in everything we do.
- **Integrity:** we are open, honest and transparent, and maintain the highest standards of governance, accountability and ethics.
- **Relevance:** we concentrate on solving problems that matter. Our work is informed by the health needs and shared priorities of the people and communities with whom we work.
- **Partnerships:** we seek to partner with communities, health and other service providers, policy-makers and other researchers.
- **Innovation:** we embrace new approaches and technologies.
- **Communication:** we maintain an ongoing dialogue with partners, stakeholders and the local and national community during the research process, from conception through to completion and translation of results.
- **Accountability:** we take responsibility for our actions and results.

OUR DIVERSITY

WHERE WE WORK

Menzies' headquarters are in Darwin, with offices in Alice Springs and Brisbane. We also collaborate with partners at the Papuan Health and Community Development Foundation in Timika, Papua, and the Infectious Disease Society in Kota Kinabalu, Malaysia, to support the design, implementation and interpretation of research activities in these key overseas locations.

Our work spans central and northern Australia, and developing countries within our global neighbourhood. Our primary international partners are Indonesia and Malaysia. We also work in Timor-Leste, Ethiopia, Bangladesh, Bhutan, Nepal, Thailand, Vietnam, Myanmar, Colombia, and Tanzania.

DIRECTOR'S AND CHAIR'S MESSAGE

Mr Peter Plummer and Professor Alan Cass.

It has been a busy 12 months for Menzies as we continue our work to achieve health equity for people living in northern and central Australia and the Asia-Pacific region.

We would like to congratulate Menzies staff for attaining a large number of National Health and Medical Research Council (NHMRC) grants during 2018. Menzies had a success rate of 41.5%, more than double the national rate of 19.5%, and received total funding of $18.7 million. Outstanding results like this would not be possible without the dedication and skill of both our research and professional staff.

Menzies was also successful in winning other competitive grants in 2018, as well as attracting significant philanthropic funding. This recognition by funders of the enduring importance of our work reinforces the need for us to continue to conduct rigorous research that addresses priority health issues for communities across our region, and to sustain close and respectful partnership with health services, patients, their families and communities. These results, however, were not achieved alone. Our engagement with health services, and communities here and across the region, Charles Darwin University (CDU), the Northern Territory (NT) and Australian governments, continues to be essential to our success.

Some of our research projects and highlights of 2018 included:

- Menzies, in collaboration with the Burnet Institute and with support from our Indonesian tuberculosis (TB) research partners, delivered the first Australia Awards in Indonesia: TB Prevention and Eradication course during March. Twenty-five participants spent 10 days in Australia, including five in Darwin, learning from Australia's experience in TB eradication.

- The Hep B PAST partnership was launched at CDU in September. This NHMRC supported project sees partners across the NT, including Katherine West Health Board, Miwatj Health Aboriginal Corporation, NT AIDS and Hepatitis Council and the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine, working together with the goal of eliminating chronic hepatitis B in the Territory.

- Dr Lisa Whop received the NHMRC Rising Star award for her work in improving the rates of cervical cancer screening in Indigenous Australian women, follow-up care and the uptake and completion of the HPV immunisation program among the younger population.

- Professor Nick Anstey was recognised as an Honorary International Fellow of the American Society of Tropical Medicine and Hygiene. This award formally recognises up to five individuals who have made eminent contributions to tropical medicine or hygiene.

- Associate Professor Heidi Smith-Vaughan, Dr Teresa Wozniak and Dr Kalinda Griffiths were chosen to participate in the Superstars in STEM (science, technology, engineering and mathematics) program run by Science and Technology Australia.

We are pleased to announce that the negotiations for the 2018 Menzies Enterprise Agreement were successful with a large majority of staff voting in favour of the agreement. We feel the renewed agreement recognises the value our people and the contributions all staff members make to the organisation.

In 2018 we initiated and continued some internal processes aimed at ensuring our staff are as competitive as possible when it comes to external fellowships and other grant applications. This included continuing the Menzies Small Grant scheme, as well as introducing two new fellowship funding initiatives: the Menzies Early/Mid-Career Fellow and the Gender Equity Fellow. The Early/Mid-Career Fellowship aims to support researchers to improve their research outputs and boost their track records, while the Gender Equity Fellowship aims to promote equity by offering opportunities for women to develop and strengthen their research in preparation for promotion.

This year we welcomed our new Chief Operating Officer, Blake Repine, who joined the Menzies team in October. Blake brings with him knowledge and experience in the tertiary sector as well as an enthusiastic approach to ensuring our corporate services are fit for purpose and efficient.

Blake, along with our Deputy Director Strategy Brendon Douglas, Associate Director for Aboriginal Programs Heather D'Antoine and I, have reinvigorated our Senior Executive team and are looking at innovative ways to ensure the strategic growth of Menzies.

We recognise and acknowledge the enthusiasm and commitment of our Board, staff and students. We thank everyone who supported us throughout 2018 and look forward to 2019 as we continue to work together towards a healthier, more equitable future.

Director
Professor Alan Cass

Chair of the Menzies Board
Mr Peter Plummer

MENZIES 2021 STRATEGIC PLAN

Launched in 2017, our five year strategic plan builds on our proud history of achievement and positions our institution as:

1. **A recognised innovator and leader in Indigenous and tropical health and wellbeing.**
2. **Achieving excellence in research translation and impact.**
3. **A strong and resilient organisation.**

This year we have:

71% of **Menzies 2021** key targets were met/significant progress made in 2018.

Participated in the National Research Council impact and engagement assessments to measure and reflect upon the quality of our work.

Strengthened engagement with key partners and communities, including providing strong support to the Central Australia Academic Health Science Network and Top End Academic Health Partners.

Raised $29m in research income to fund finding solutions to health problems that matter.

Increased our Aboriginal and Torres Strait Islander workforce to 25 FTE positions.

Continued to support the next generation of researchers, including increasing our number of Higher Degree by Research students.

The full plan is available on our website www.menzies.edu.au/Menzies2021

OUR BOARD

The Menzies Board has the ultimate responsibility for organisational strategy and performance and to oversee the governance of Menzies' activities.

BOARD CHAIR
MR PETER PLUMMER

Prior to retirement, Peter spent 40 years working in the public service in Papua New Guinea (16 years) and the NT (25 years).

He was founding principal of Batchelor College and subsequently deputy secretary of Primary Industries and Fisheries, then Industries and Development. He also held appointments as CEO of Mines and Energy, Health and Community Services, as well as Education.

He has also served on many boards and committees including as the Chair of Cullen Bay Management Committee, National Curriculum Corporation, CDU Council, and the CDU Strategic Positioning Project. He has also had significant experience within the government and private sectors of Malaysia, Indonesia, Thailand and the Philippines, in addition to the minerals and energy sectors of the United States of America and France.

BOARD DEPUTY CHAIR
MS DONNA AH CHEE

Donna is the CEO of the Central Australian Aboriginal Congress Aboriginal Corporation, the Aboriginal community controlled primary health care service in Alice Springs.

She is a Bundgalung woman from the far north coast of New South Wales and has lived in Alice Springs for over 25 years.

She has been actively involved in Indigenous affairs for many years, especially in the areas of adult education and health.

She convened the Workforce Working Party under the NT Aboriginal Health Forum, was Chairperson of the Central Australian Regional Indigenous Health Planning Committee, a member of the NT Child Protection External Monitoring Committee and jointly headed up the NT Government's Alcohol Framework Project Team.

She currently sits on the National Drug and Alcohol Committee and at a local level, represents the Congress on the People's Alcohol Action Coalition.

BOARD CO-TREASURER
MR RICHARD RYAN AO

Richard is currently director of a number of public and government boards including the NT Treasury, the Australian Government Solicitor's Advisory Board and the Adelaide Festival.

He is the Chair of Editure, Chair of Auspep Holdings Ltd and Deputy Chancellor of CDU.

He is a member of the NT Treasury Corporation Advisory Board and the Attorney-General's Audit and Risk Management Advisory Board.

A recipient of the Australia Day Honours on three occasions, he was made a member of the Order of Australia in 1989 for Services to the Community and was made an Officer of the Order of Australia in 1998 for Services to Indigenous People.

PROFESSOR
ALAN CASS

Alan has been the Director of Menzies since 2012.

He is currently Chair of the Advisory Board for the Australasian Kidney Trials Network and Deputy Chair of the Northern Territory Clinical Senate.

He is a kidney specialist with a particular interest in the prevention and management of chronic disease and Indigenous health.

His research has focused on developing, implementing and evaluating strategies to improve health outcomes.

MR KEN DAVIES

Ken is currently the CEO of Territory Families and a member of the CDU Council.

He has previously held CEO roles with NT departments of Education, Lands, Planning and Environment, Housing, Local Government and Regional Services, and was the Deputy Chief Executive of the Department of the Chief Minister.

He is a former chair of the NT Board of Studies, and former NT Principal's Association President. He has also held appointments to the boards of the Australian Children's Television Foundation, the Waterfront Development Corporation and the Land Development Corporation.

BOARD CO-TREASURER
MR ROWAN JOHNSTON

Rowan is a Sydney-based corporate advisor and is currently the Managing Director of C42 Consulting, a private advisory firm.

He previously spent almost 30 years as an investment banker and corporate advisor with Greenhill & Co. Australia (formerly Caliburn) and Deutsche Bank in Australia and Hong Kong.

He continues to advise a range of private and public sector clients on corporate and financial issues, including equity capital markets, and has advised a range of Australian and overseas governments and their agencies on strategic, infrastructure and financial matters.

PROFESSOR
SIMON MADDOCKS

Simon is the Vice-Chancellor and President of Charles Darwin University. He has extensive leadership experience at senior levels of both academia and government.

He was formerly with the Department of Primary Industries and Regions, South Australian Research and Development Institute (2003-2014), most recently as Director Science Partnerships.

He has held both senior management and board positions on a number of national research bodies including Cooperative Research Centres, the national Primary Industries Standing Committee's Research and Development Committee, and with organisations such as the Menzies Foundation.

THE HON **TREVOR RILEY**

Prior to retirement in 2016, Trevor was the Chief Justice of the Supreme Court of the NT.

He served on the Supreme Court for 18 years. During his tenure as Chief Justice, he was outspoken about cuts to Legal Aid, high imprisonment rates and addressing alcohol abuse.

He was appointed as Queen's Counsel in 1989, sworn in as a judge in 1999 and was the president of the NT Bar Association between 1993 and 1997.

His other roles include being a long-term Director of St John Ambulance (NT) and the Chair of the AFLNT Appeals Board.

PROFESSOR **CATHERINE STODDART**

Catherine commenced as the CEO of NT Health in March 2017. She was previously the Deputy Chief Executive and chief nurse at Oxford University Hospitals Foundation Trust in the National Health Service in the United Kingdom.

She has held positions across health including Chief Nurse and midwifery officer of Western Australia, Regional Director for the Kimberly region, WA Country Health Service (WACHS), Executive Director nursing and midwifery WACHS, and director clinical reform WA Health.

She was the 2011 Telstra WA Business Woman of the Year. In 2013, she received the Public Service Medal in recognition of her contribution to health.

MS ROS MORIARTY

Ros Moriarty is a business owner, social investor and author. She is Managing Director and co-founder of both Balarinji and the Moriarty Foundation.

She was named Winner Business Enterprise in the 2015 Financial Review/ Westpac Australian 100 Women of Influence Awards, and is an inductee of both the Australian Design Institute Hall of Fame and the Australian Businesswomen's Hall of Fame. Her board appointments have included Menzies School of Health Research, the National Gallery of Australia, Australian Major Events SA and the Australian Academy of Design.

Ros is the author of the memoir Listening to Country (Allen & Unwin 2010), shortlisted for both The Age 2010 Book of the Year and the Australian Human Rights Commission Literary Award. She has also written eight picture books for children (Allen & Unwin 2012-18), variously listed for The Speech Pathology Australia Book of the Year Award (2012 & 2015), and the 2013 Australian Environment Award for Children's Literature.

MS OLGA HAVNEN

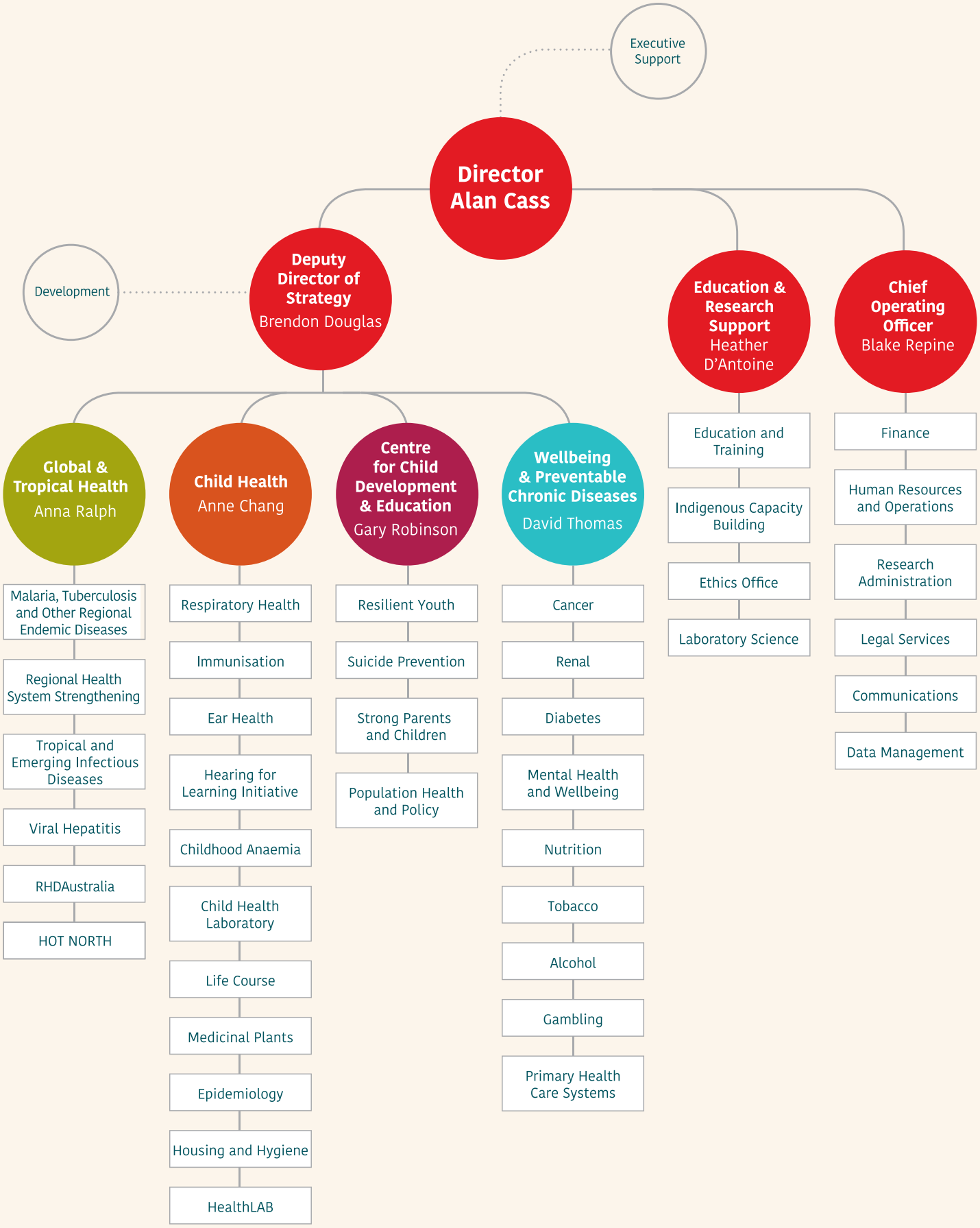
Olga has been CEO of Danila Dilba Health Service since 2013. She is of Western Arrernte descent and grew up in Tennant Creek.

She has held a range of senior public and private sector roles at the Australian Red Cross, the Northern Land Council, the NT Department of the Chief Minister and The Fred Hollows Foundation.

Olga has served as a Director at the Indigenous Land Corporation, Voyages Indigenous Tourism Australia, NT Primary Health Care and as the deputy chair of Aboriginal Medical Services Alliance Northern Territory (AMSANT).

She is currently a member of the NT Community Justice Council and is a Director on the AMSANT, National Aboriginal Community Controlled Health Organisation (NACCHO), MJD Foundation and Stars Foundation boards.

OUR ORGANISATIONAL STRUCTURE



OUR RESEARCH

Associate Professor Heidi Smith-Vaughan
in the Menzies lab.

RESEARCH AT A GLANCE

Menzies continues to achieve significant outcomes in the very competitive space of Australian Competitive Grants. Together with success well above the national average with NHMRC grants in all schemes, Menzies was also successful in the international arena.

CENTRE FOR RESEARCH EXCELLENCE

Professor Gail Garvey - *Targeted Approaches to Improve Cancer Services for Aboriginal and Torres Strait Islander Australians.*

PROJECT GRANTS

Professor Joshua Davis - *A novel genotype of hepatitis B virus in Indigenous Australians with an aggressive phenotype and poor vaccine efficacy: implications for clinical care and public health policy.*

Professor Louise Maple-Brown - *PANDORA (Pregnancy And Neonatal Diabetes Outcomes in Remote Australia) Generations.*

Dr Bridget Barber - *Targeting acute kidney injury pathway in knowlesi malaria.*

Dr Gabrielle McCallum - *Preventing recurrent respiratory-related hospitalisations in young Indigenous children using long-term, once-weekly azithromycin: a multi-centre randomised controlled trial.*

Dr Paul Lawton - *Return To Country: A national platform study to return Indigenous renal patients home.*

Professor Alan Cass - *NT Safety and Efficacy of Iron in Haemodialysis Study.*

FELLOWSHIPS

Professor Anne Chang - Practitioner Fellowship Level 2: *Improving the lung health of children, especially for Aboriginal and Torres Strait Islander children.*

Professor Joshua Davis - Career Development Fellowship Level 2 Clinical: *Received a NHMRC Award of Research Excellence for this application focusing on 'Strengthening the evidence base for the management of common severe infectious diseases'.*

POSTGRADUATE SCHOLARSHIPS

Ms Alana Gall - *Wellbeing and Quality of Life of Indigenous People.*

Ms Gillian Gorham - *Considering place in the delivery of cost-effective services for Aboriginal people with kidney disease in rural and remote Northern Territory.*

Dr Anna McLean - *Improving outcomes for women with diabetes in pregnancy in Far North Queensland.*

Dr Diana MacKay - *Improving the implementation of recommended postpartum care of Aboriginal and Torres Strait Islander women in the Northern Territory and Far North Queesnland following a pregnancy complicated by diabetes.*

Dr Matthew Hare - *Intergenerational metabolic health in Indigenous and non-Indigenous Australians – Understanding trends, determinants and outcomes.*

NHMRC GRANTS AWARDED TO MENZIES

	Research support grants	People support grants
2016	4	6
2017	5	8
2018	9	7

MENZIES RESEARCH INCOME BY FUNDING SOURCE CATEGORY 2018

*Research income $ (AUD).

Category 1 $13,428,537
Australian Competitive Grants.

Category 2 $12,612,074
Other public sector income including tenders, contracts, consultancies and grants.

Category 3 $5,442,262
Australian contract consultancies, philanthropic grants, donations and international competitive grants and consultancies.

Category 4 $334,646
Cooperative Research Centres.

* Preliminary data

PARTNERSHIP PROJECTS

Professor Gail Garvey - *Collaboration and Communication in Cancer Care for Aboriginal and Torres Strait Islander people: The 4Cs Project improving patient-centred care and treatment outcomes.*

INTERNATIONAL GRANTS

Dr Kamala Ley-Thriemer - *NHMRC-NAFOSTED (Australia and Vietnam) Collaborative Research for 'Radical cure for falciparum malaria in co-endemic areas'.*

OUR RESEARCH:

CHILD HEALTH

Our focus is on prevention and treatment of early childhood illness, which can lead to long term health impacts. This year our research looked at new and innovative ways to better engage communities and improve the health outcomes of Indigenous children living in remote areas.

HARVESTING BUSH MEDICINE

The Traditional Australian Medicinal Plants project was initiated in 2018, with over $1 million contributed by the Cooperative Research Centre for Developing Northern Australia (CRC-NA) and project partners.

The project is a joint initiative between the CRC-NA, Menzies, the University of Queensland, Traditional Homeland Enterprises and Integria Healthcare. It will support research into the medicinal benefits of native plants, explore product development and opportunities for Traditional Owner led sustainable agribusiness in northern Australia

At Menzies the project is led by botanist Honorary Fellow Dr Greg Leach and molecular microbiologist Dr Johanna Wapling. According to Dr Leach the collaboration brings together extensive research and industry experience to focus on traditional Australian medicinal plants as an important biological, cultural and economic resource.

The project also brings together learnings as it looks to develop meaningful economic opportunities for Indigenous communities and explore solutions to important challenges such as supply chain, benefit sharing and intellectual property management.

The Menzies Child Health Laboratory will examine the antimicrobial activity of select native plants against infections that significantly impact rural and remote communities. The initial phase for Menzies will also include opportunities for young Indigenous scientists, with two Indigenous trainees already working on the project.

"Participating in such an enterprise requires a range of skills and the project expects to expand the involvement of Indigenous trainees across several disciplines and create further opportunities to include students," says Dr Leach.

The project grew from the Menzies Child Health Division Indigenous Reference Group (IRG) advocating for research projects that involved Indigenous traditional knowledge.

This project was initiated with a view to create important opportunities for collaboration and mutual learning through the application of modern science to Indigenous knowledge.

The IRG continues to have oversight of the project.

Menzies trainee Raelene Collins collecting *Crinum arenarium* (Onion Lily).

Preparing for an I HEAR BETA feedback movie night.

I HEAR BETA

I HEAR BETA aimed to discover if oral antibiotics and Betadine ear wash (added to routine care) could stop 'runny ears' (chronic suppurative otitis media).

The study commenced in 2015 and was carried out in 24 communities across the NT. This was made possible due to Menzies' ongoing commitment to appropriately engage and build relationships with communities.

In 2018, the I HEAR BETA team used an innovative approach to community engagement by showcasing the findings of the study to communities, on a portable outdoor cinema.

Project Manager Christine Wigger says delivering engaging feedback to the communities is a vital part of the research and was much appreciated by those who participated.

“Delivering results by video via a portable outdoor cinema, was more culturally appropriate and easily understood, compared to written reports.

“We also showed a full-length feature film along with the I HEAR BETA feedback video, which helped to engage the whole community, not just those involved in the study.

“We conducted a feedback survey after the filming and an overwhelming number of people stated they enjoyed the movie night and would like to receive video feedback for future projects,” says Christine.

The I HEAR BETA team transported the cinema by road, plane and boat to communities in central Australia and the Top End of the NT.

The outdoor cinema will be used again for future community engagement and feedback for other Menzies projects.

ABC STUDY

The Aboriginal Birth Cohort (ABC) study is the longest and largest study of Indigenous people in Australia and is led by Menzies.

Researchers have been tracking the health of hundreds of Indigenous people from birth to adulthood for over three decades. The study, involving regular comprehensive health checks, has provided vital clues to help predict, prevent and treat chronic diseases that are common in Indigenous Australians.

Over the years of the study, the findings have influenced health policies, such as:

- replacing the one-size-fits-all policies with tailored approached for Indigenous people living in urban and remote areas.
- early ultrasounds in pregnancy done at the clinic of residence to provide accurate dates of delivery.
- providing data on hepatitis B immunity after vaccination at birth.

The ABC study was established by the late Professor Susan Sayers AO in 1987, and now in its 32nd year it’s still going strong.

The ABC team is preparing for its fifth wave of data collection in 2019. Study leads Professor Gurmeet Singh and Belinda Davison will be examining participants now aged 28 to 32 years old, across more than 40 urban, rural and remote NT communities.

Photo credited to Lauren Roberts NT News.

FIGHT HEARING LOSS IN NT CHILDREN

Menzies is leading a groundbreaking initiative designed to tackle hearing problems and boost educational opportunities among Indigenous children in remote NT communities.

The Hearing for Learning Initiative is an innovative project that will focus on employment and training of community members to assist with the diagnosis and treatment of otitis media, or 'glue ear', and hearing problems.

Up to nine in every 10 Indigenous children under the age of three in the NT suffer from otitis media in one or both ears, which can lead to hearing impairment and/or loss. Researchers at Menzies have long observed the negative impacts of this disease on children's education, childhood development and social outcomes, due to late detection.

Ear health researcher Professor Amanda Leach says otitis media is mostly caused by bacteria, which is often transmitted from young children to small babies. Social determinants, such as overcrowding, exacerbated the issue in remote Australian communities.

"It's preventable if we didn't have the overcrowding and cross infection issues," she says.

"It's important for the Territory because, sadly, we do have the highest presence of otitis media and the most severe cases of otitis media.

"It's a chronic condition, and the cumulative effect is that it reduces and limits kids' readiness for school and life after school, but it is a treatable condition."

The project will be led Prof Amanda Leach, and renowned ear, nose and throat surgeon Associate Professor Kelvin Kong.

"The long-term effects or the consequences of having ear disease are lack of work, substance abuse, lack of education.

All these things all stem from the very crux and the initial part of not hearing," says Assoc Prof Kong.

"Statistics show that 28% of Australia's prison population is Indigenous and 85% of incarcerated Indigenous Australians are hearing impaired."

Otitis media also presents a substantial economic impact with over $600 million per year spent on Medicare, over $300 million per year on social welfare and over $850 million per year on incarceration.

Assoc Prof Kong says taxpayers should be offended by the amount of money spent at the end of the spectrum when the dollar put in at the birth, or early stage, would rectify the whole situation.

The Hearing for Learning Initiative will increase early detection of otitis media, by training local community members to support on ground health and education services. This will decrease the need for fly-in-fly-out specialists, reduce the treatment waiting period and create employment opportunities for up to 40 community-based workers.

According to Assoc Prof Kong, ear health project officers, once trained, should be able to conduct basic medical examinations and help get their patients access to appropriate care.

"We want to teach them to look into the ears, see holes in ears, see perforation, and know how to manage them," he says.

"They are not going to be able to necessarily prescribe or treat or do surgery, but they are going to be able to know this kid is all right, this kid is not all right."

The initiative is expected to reach 5000 children with a focus on children under three, as prompt diagnosis and optimal treatment in the first 1000 days of a child's life can vastly impact learning outcomes.

"We think this program will provide a culturally safe and appropriate long-term service every day," Prof Leach says.

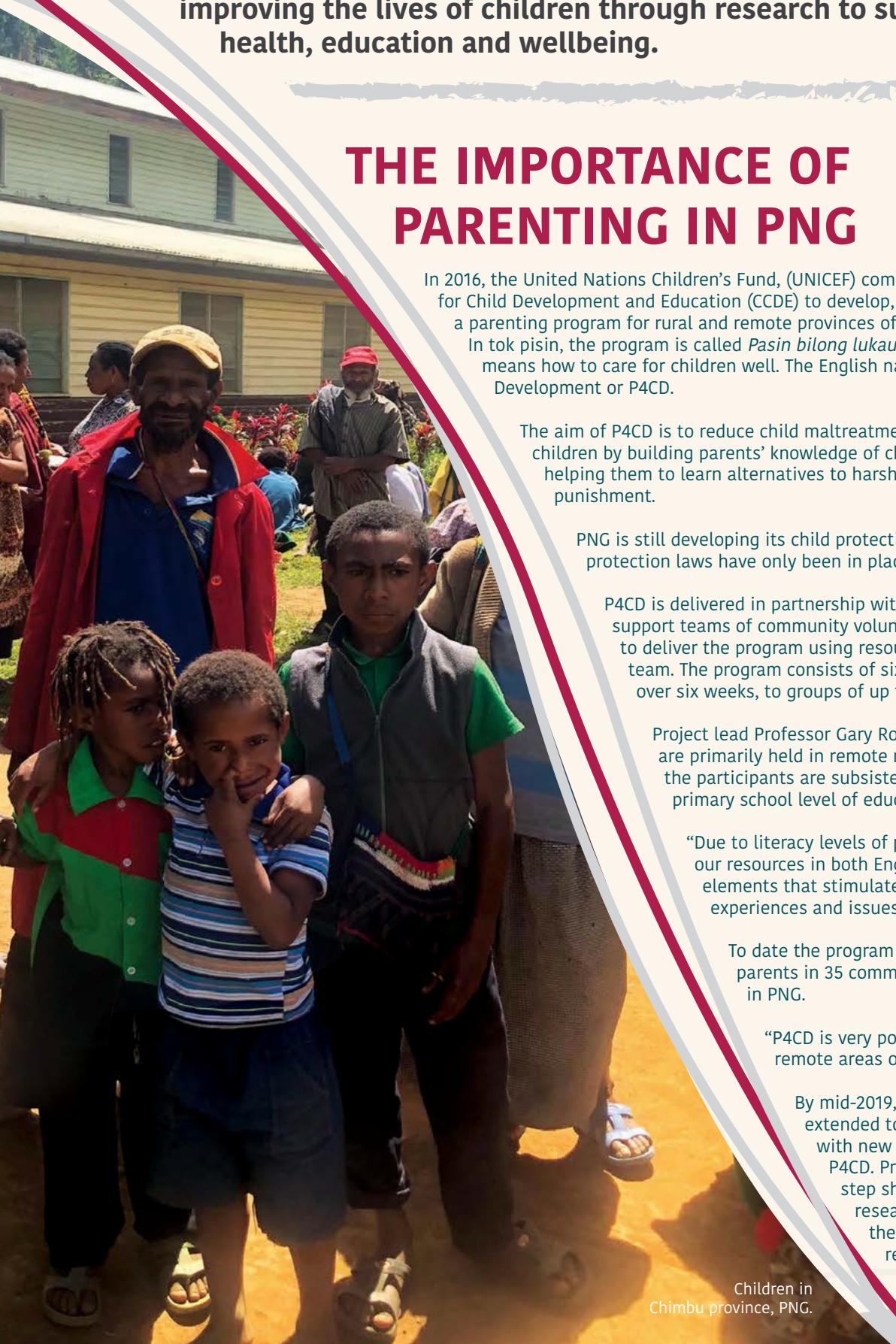
The project has received $7.9 million in joint funding, from the Northern Territory and Australian governments and The Balnaves Foundation, over five years.

Co-leads of the Hearing for Learning Initiative Associate Professor Kelvin Kong and Professor Amanda Leach.

OUR RESEARCH:

CENTRE FOR CHILD DEVELOPMENT AND EDUCATION

Our Centre for Child Development and Education (CCDE) is committed to improving the lives of children through research to support better health, education and wellbeing.



Children in Chimbu province, PNG.

THE IMPORTANCE OF PARENTING IN PNG

In 2016, the United Nations Children's Fund, (UNICEF) commissioned Menzies Centre for Child Development and Education (CCDE) to develop, implement and evaluate a parenting program for rural and remote provinces of Papua New Guinea (PNG). In tok pisin, the program is called *Pasin bilong lukautim pikinini gut*, which means how to care for children well. The English name is Parenting for Child Development or P4CD.

The aim of P4CD is to reduce child maltreatment and violence against children by building parents' knowledge of child development and helping them to learn alternatives to harsh parenting and corporal punishment.

PNG is still developing its child protection system and child protection laws have only been in place since 2015.

P4CD is delivered in partnership with the Catholic Church, which support teams of community volunteers, who have been trained to deliver the program using resources created by the CCDE team. The program consists of six all-day workshops, held over six weeks, to groups of up to 20 parents and caregivers.

Project lead Professor Gary Robinson says the workshops are primarily held in remote regions and 70% to 80% of the participants are subsistence farmers, with mostly primary school level of education.

"Due to literacy levels of participants we have created our resources in both English and Pidgin, with visual elements that stimulate discussion about local experiences and issues," he says.

To date the program has reached over 700 parents in 35 communities and four provinces in PNG.

"P4CD is very popular and in demand in remote areas of PNG," says Prof Robinson.

By mid-2019, the program will be extended to a further three provinces, with new Church partners adopting P4CD. Prof Robinson says the next step should include a formal research trial to determine the effectiveness of P4CD in reducing domestic violence.

Let's Start program in action.

PLAY TO CONNECT

Play to Connect is a new pilot project based on the CCDE's Let's Start: Parent Child Program. Play to Connect is a four-session interactive program that aims to help parents engage confidently with their children's early education to build positive relationships between parent and child.

The Play to Connect program is designed to build the skills of local Indigenous community members to deliver the program in the future or become more employable in the early childhood sector. Many parents who participated in the program have gone on to gain meaningful employment with preschools and other early childhood community service providers.

The most notable success story was Maggie Kerinaiua, who participated in the program in 2015 to get support with parenting her two young children. Due to her enthusiasm and willingness to learn, Maggie is now employed by Menzies to provide support in delivering Play to Connect on the Tiwi Islands.

The Play to Connect program started in 2018. It is currently being piloted on the Tiwi Islands and is funded until mid-2019.

Play to Connect facilitator Maggie Kerinaiua.

DIGITAL RESOURCE TO REDUCE THE IMPACT OF TEASING

The CCDE partnered with Northern Territory PHN, and collaborated with an advisory group of young community-based leaders, to produce a resource kit called Trakz, designed to help youths cope with teasing and bullying.

Trakz uses cartoon graphics to tell real-life stories about teasing that happens in communities and gives examples of how youths can respond to protect themselves and their friends from the effects of teasing and bullying.

In 2018, Trakz was piloted by youth workers in Wadeye and teachers at the Top End School of Flexible Learning. CCDE provided teachers with resources and training to deliver six Trakz stories to youths.

"Trakz has been well received to date. Evaluation and feedback from students about the Trakz stories are very positive, and 85% of the students said they had learned how to respond to teasing in a better way," says Professor Gary Robinson, Director of Menzies CCDE.

To expand the footprint of Trakz, Menzies collaborated with Hitnet to convert two of the Trakz stories into digital format.

"The digital version of Trakz engages Indigenous youth across the country in an interactive storytelling format.

"The stories of Priscilla and Tom will be made accessible on touch screen Hitnet Kiosks, based in select communities.

"This is a great way to bring information and services to people in the most hard to reach places," says Prof Robinson.

Digital Trakz is also available in an animated audio version via either iTunes or Google Play App Stores.

Menzies classroom in Gunbalanya.

BIG PICTURE ON SCHOOL ATTENDANCE

In 2018, a groundbreaking data linkage study led by the CCDE found regular attendance at preschool will improve a child's long-term school attendance and learning outcomes.

The Early Pathways to School Learning: Lessons from the NT Data Linkage Study reviewed health, education and other government data of over 60,000 children between 1994 and 2013 to develop a 'big picture' understanding of factors that impacted on school attendance and education outcomes.

According to Professor Steve Guthridge the study shows children's patterns of attendance are established very early in their schooling. This is influenced by developmental readiness for school learning, which in turn is shaped by early-life health and social circumstances.

Indigenous children living in remote communities in overcrowded houses, with English as a second language, and who have changed schools at least once in 12 months, were estimated to have attended school 61 fewer days a year than children not facing these challenges. Other factors such as the mother smoking or drinking during pregnancy and low birth weight also impacted a child's learning development and subsequent school attendance.

"Our analysis found the widely reported difference in school readiness and educational outcomes between NT Indigenous and non-Indigenous children can be explained by differences in potentially modifiable health and social factors," says Prof Guthridge.

"Improvements for Indigenous children requires support for mothers during pregnancy and for families through a child's early development, with strategies that include better housing and social conditions, and the universal availability of preschool."

The study was funded by the NT Government and the National Health and Medical Research Council, and was undertaken in partnership with the NT departments of Health, Education and Territory Families, the Aboriginal Medical Service Alliance Northern Territory and researchers from five universities.

The linkage of de-identified information for NT children from across multiple services is a valuable resource, which underpins a continuing program of research. Projects to be reported in 2019 include research on the impact of hearing loss on education and development and studies related to children in contact with child protection services.

OUR RESEARCH:

WELLBEING AND PREVENTABLE CHRONIC DISEASES

The research of the Wellbeing and Preventable Chronic Diseases division aims to provide practical solutions to prevent and treat long-term diseases among Indigenous populations, while also informing policy and practice.

EVALUATION OF THE BANNED DRINKER REGISTER

The NT has the highest rate of alcohol consumption per capita and the highest rate of hospitalisation from drinking related problems in Australia. In response to this, the NT Government reintroduced the Banned Drinker Register (BDR) in 2017.

The BDR is a policy initiative that aims to improve community health and safety by reducing alcohol-related harms. It is an alcohol supply reduction measure by prohibiting the consumption, possession or purchase of alcohol, by people who consume alcohol at harmful levels.

In 2018 the NT Minister for Health commissioned Menzies to conduct a six-month and 12-month evaluation of the BDR as part of a commitment to regularly evaluate the BDR with independent oversight.

According to Menzies Professor James Smith, who led the independent evaluations, the BDR is showing promising signs in reducing alcohol related harm across the NT.

"The BDR is changing some people's behaviours around alcohol use, but there are still people on the BDR accessing alcohol and engaging in behaviour that brings them into contact with the justice system. Secondary supply and grog running are not stopped by the BDR," says Prof Smith.

"Our evaluation identified an increase in the number of heavy drinkers seeking treatment for alcohol related problems, from a monthly average of 221 to 259. We also identified that the self-referral option offered through the BDR is showing encouraging signs of uptake."

The six-month evaluation included 23 recommendations to inform future policy, practice and research related to alcohol harm minimisation in the Territory. The government has supported 14 recommendations and provided in-principle support for a further nine recommendations. An additional 12 recommendations from the 12-month evaluation are currently under assessment.

"The BDR is one of many alcohol harm minimisation policy initiatives in the NT, and it does not work in isolation. It forms part of a larger body of work required in achieving a healthier and safer community through a reduction in alcohol related harms," says Prof Smith.

Menzies will continue to support the NT Government to undertake independent evaluations of the BDR

National award from the National Alliance for Action on Alcohol.

Store in Nyrippi.

NEW MEDICARE ITEM DIALYSIS

More people from remote Indigenous communities will be able to access dialysis closer to home, after the Australian Government agreed in early 2018 to add dialysis treatment to the Medicare Benefits Schedule (MBS).

The item was added in response to a recommendation from the MBS Review Renal Committee, chaired by Menzies Director Professor Alan Cass.

“For more than 20 years Menzies has led collaborative research with Top End and Central Australia Health Services, Aboriginal Medical Services, patients and communities that highlights the burden of kidney disease, and how to optimise prevention and management of Chronic Kidney Disease," says Prof Cass.

“Our research has also focused on improving access to dialysis and transplant care, the need for high quality cross-cultural renal services and the importance of effectively advocating for care through strengthening the voice of the patients."

Menzies has completed many commissioned reports for the NT and Australian governments over the years and developed a range of feasible clinical service delivery models and care pathways to best meet the needs of Indigenous people with kidney disease.

“Our work has had direct impact through the recommendation to add dialysis to the MBS, through the Renal Committee.

“We have also worked closely with the Commonwealth Minister for Aboriginal Health in developing a roadmap in Indigenous kidney health,” says Prof Cass.

Kidney disease is the second highest cause of hospital expenditure among Indigenous Australians and dialysis treatment is the leading cause of hospital admission for Indigenous Australians.

The dialysis item will apply to treatments managed by a registered nurse or an Indigenous health worker in very remote areas.

FOODFOX

FoodFox is an innovative food and nutrition tracking and reporting system that helps decision makers to build evidence-based nutrition policy and practice. The system tracks the consumption of both healthy and unhealthy foods and compares nutrition quality to recognised dietary guidelines.

“FoodFox helps to assess the nutrition trend over time and enables community leaders and decision makers to ‘make the healthy choice the easy choice’ for the public,” says Dr Emma McMahon, Research Fellow at Menzies.

Food and beverage sales are uploaded using a semi-automated process aided by cross-referencing to a pre-existing database of food products and nutrient information. The reports generated are designed to be used by store committee members, community leaders, store owners, store managers, store association staff, public health nutritionists and other decision makers.

“Community stores that promote public nutrition awareness generally alter the placing, pricing and availability of healthy and unhealthy products. For them, FoodFox is a useful tool for measuring sales of healthy and unhealthy food and seeing how these change over time," says Dr McMahon.

Each store can set a target of dietary indicators and evaluate their performance against other participating stores. The dietary indicators are benchmarked against the recommendations of the Australian Dietary Guidelines.

“Cardiovascular disease and other preventable chronic diseases in remote communities, are often linked to poor nutrition.

“For community stores and key decision makers, FoodFox is a valuable tool to test nutrition strategies and policies to influence the public’s food choices,” says Dr McMahon.

The FoodFox program has funding for a further two years and Dr McMahon says the findings will inform future food and nutrition policies.

Twins in PANDORA Wave 1.

THE PANDORA STUDY

Diabetes during pregnancy can lead to short and long term health risks, including reduced life expectancy, for mothers and their babies.

Menzies Diabetes in Pregnancy Partnership (DIPP), led by Menzies Professor Louise Maple-Brown, is a project aimed at improving health outcomes, systems of care and services for women with diabetes during pregnancy.

“The DIPP is a partnership between researchers, policy makers and health service providers to improve systems of care and services for women with diabetes in pregnancy, particularly for those living in remote areas,” says Prof Maple-Brown.

The DIPP commenced in the NT in 2011 and has since expanded to include Far North Queensland. The project currently consists of four components that look at the impacts of diabetes across the life course (ranging from pre-conception to adulthood).

The longest running research in the project is the Pregnancy and Neonatal Diabetes Outcomes in Remote Australia (PANDORA) study, which is a prospective birth cohort study that examines clinical outcomes among NT women with and without diabetes during pregnancy, and their children.

“PANDORA provides a better understanding of the long term impacts of diabetes during pregnancy to mother and child.

“Reducing risk associated with diabetes in pregnancy as early as possible in the life course has the potential to improve the long term health outcomes for the child,” said Prof Maple-Brown.

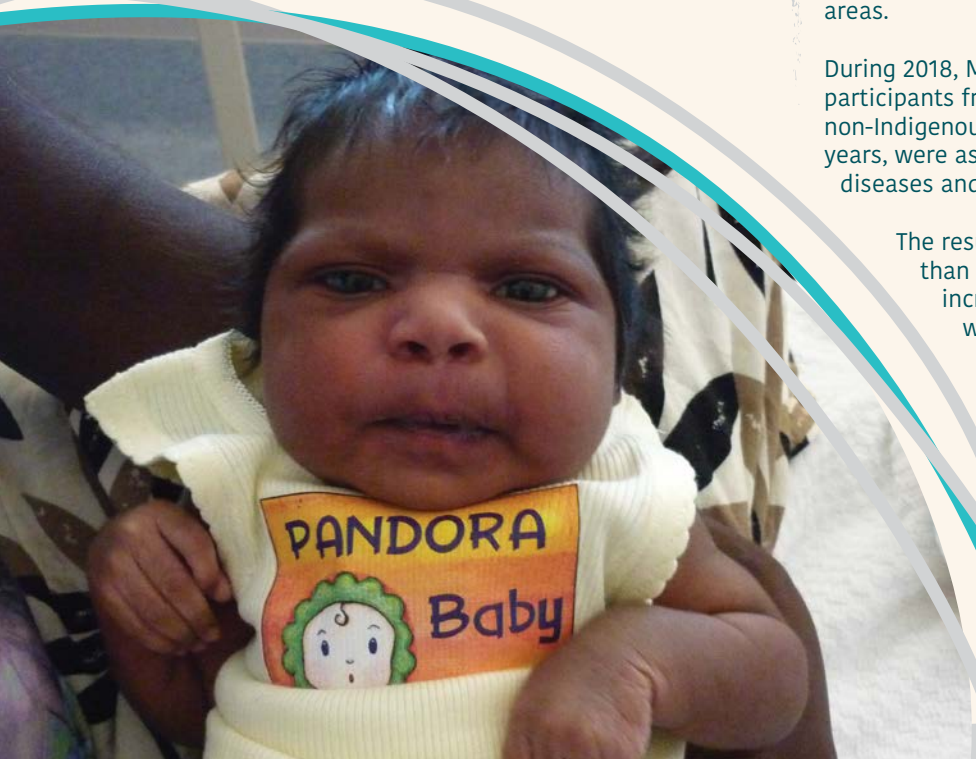
Over 1140 women and 1170 babies were examined from 2012 to 2017, with continued follow up assessment at set post birth time intervals. Follow up assessment involved physical assessments of both mothers and babies to look for early predictors of chronic diseases.

Out of the total number of women recruited to the cohort, 50% were Indigenous women, living in both remote and urban areas.

During 2018, Menzies completed a subset study involving participants from the existing cohort. Over 400 Indigenous and non-Indigenous mothers, and their children aged two to five years, were assessed for growth, early predictors of chronic diseases and developmental risk.

The results showed Indigenous children were smaller than non-Indigenous children. It also showed an increase in body fat distribution between children, which was linked to whether the mother had diabetes during pregnancy. This finding is concerning as other studies have reported links between higher childhood body fat and chronic diseases later in life.

The next wave will involve assessing all the PANDORA mothers and children aged between six and 10 years and will commence in late 2019.



PANDORA baby soon after birth.

OUR RESEARCH:

GLOBAL AND TROPICAL HEALTH

The Global and Tropical Health Division is committed to tackling key public health concerns including, malaria, tuberculosis and infections. Our research spans a wide geographical area.

SPLEEN HIDES MALARIA PARASITES

Some malaria parasite species are known to remain dormant in the liver, but researchers at Menzies suspect the spleen may be another hiding spot for malaria parasites. In 2015, researcher Steven Kho commenced his PhD with Menzies to determine if the spleen housed live malaria parasites, which could potentially drive disease progression and help maintain infection and transmission.

Steven collaborated with Menzies partners in malaria-endemic Timika in Papua, Indonesia, collecting spleens from patients undergoing splenectomy as part of standard hospital treatment for trauma-related spleen injury (mostly caused by vehicle accidents) or massively enlarged spleens. A total of 22 spleens were collected and examined, of which 21 were found to contain malaria parasites.

"The spleen is an immune organ responsible for filtering blood of damaged cells. Malaria is a blood-borne disease and we have traditionally understood that the spleen traps and destroys malaria parasites when they pass through the organ," says Steven.

"We discovered between 30 and 40% of parasites that we see in the spleen are intact and not being destroyed, and what was particularly surprising was that the biomass of these apparently live parasites was up to 3000 times greater in the spleen than what we saw in the blood."

Steven concluded that the life cycle of some species of malaria parasites may be primarily taking place in the spleen, and what is observed in the blood may be only what is trickling out of this spleen.

"These findings may alter our understanding of malaria, parasite biology and could have the potential to significantly impact global malaria treatment policies and practices. For example, we don't know if current treatment strategies are killing all parasites in the spleen, which is critical for the prevention and spread of malaria," he says.

Steven's PhD findings resulted in three significant publications in 2018 and he is now working to determine if some parasites can remain dormant for several months or years in the spleen. Menzies is extending its collaboration with Indonesian partners and other research institutes to further explore the role of the spleen in malaria.

PhD student Steven Kho receiving a spleen from the theatre nurse at RSUD hospital in Timika, Indonesia.

The launch of the Hep B Partnership Approach to sustainably eliminating CHB in the NT.

THE HEP B JOURNEY

The hepatitis B virus (Hep B) research program started at Menzies in 2010 to look at the types of Hep B that existed in the NT. Due to the changes in available molecular technologies over the last decade, Menzies researchers have been able to look at the structure of the Hep B found in the NT Indigenous population.

According to Dr Jane Davies, Infectious Diseases Physician and Menzies Senior Clinical Research Fellow, the Hep B we have in the NT is a unique type, now called C4, not found anywhere else in the world.

"There are over 4000 people living with chronic Hep B in the NT, most of whom got the infection around the time of birth or before the age of five years. When Hep B is acquired early in life there is a 95% chance it will become chronic and stay with someone for the rest of their life. If Hep B is acquired in adult life, there is a 95% chance that the immune system will fight the infection and cure it without treatment.

"Chronic Hep B (CHB) is endemic in NT communities with a prevalence of up to 12%. Of those living with CHB 25% will die from of either liver failure or liver cancer.

In 2018, Menzies received partnership grant funding from the NHMRC to work towards eliminating CHB from the NT Aboriginal and Torres Strait Islander population by 2023.

The project will be delivered in partnership with the NT Department of Health, Katherine West Health Board Aboriginal Corporation (KWHBCA), Miwatj Health Aboriginal Corporation (Miwatj), the NT Aids and Hepatitis Council and the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM), who have financially contributed.

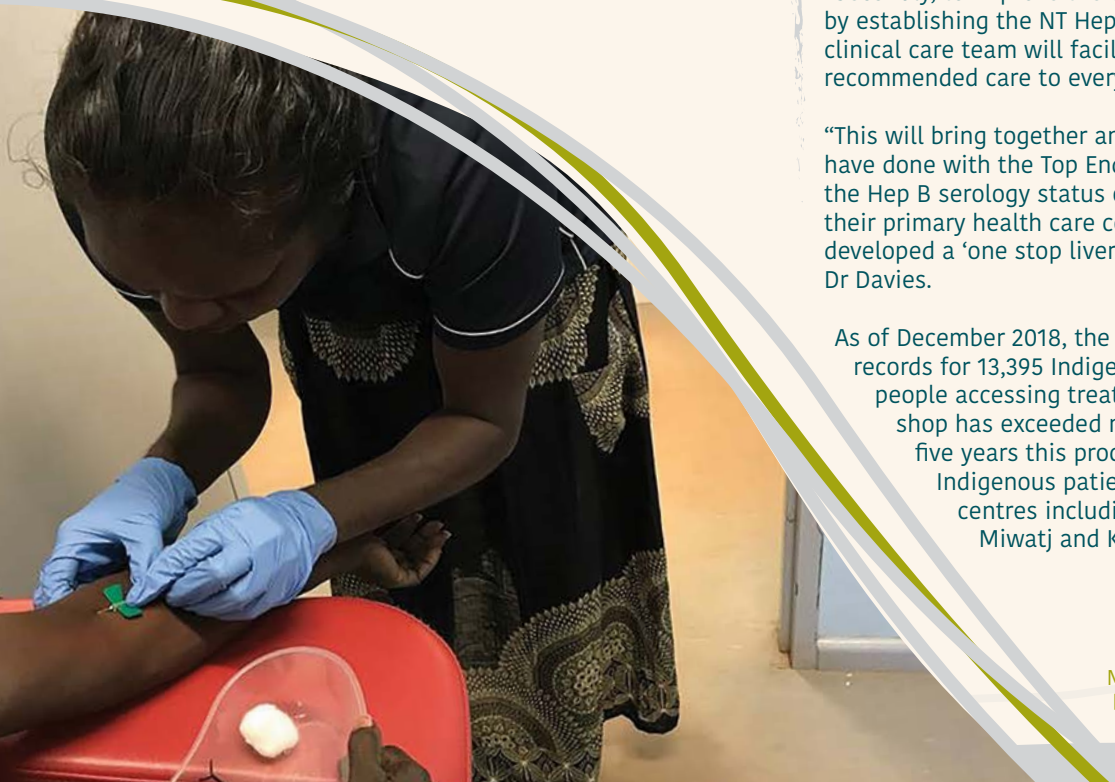
Project lead Dr Jane Davies says elimination means no more new cases of CHB will be acquired in the NT and minimised morbidity and mortality from existing cases through the provision of gold standard care.

"Our project consists of two critical parts. Firstly, we will focus on improving health literacy about Hep B among communities, people living with CHB and primary healthcare providers, with the use of our existing Hep B story app. We have had good feedback about the app, but we are now adapting and translating it into 10 more Aboriginal languages and providing training in its use to Aboriginal Health Practitioners.

"Secondly, to improve the care for individuals living with CHB by establishing the NT Hep B Hub, through which a focused clinical care team will facilitate the organised delivery of recommended care to everyone who needs it.

"This will bring together and build on the existing work we have done with the Top End Health Service who have recorded the Hep B serology status of all Indigenous people who attend their primary health care centres, and Miwatj where we have developed a 'one stop liver shop' model of care delivery," says Dr Davies.

As of December 2018, the Top End Health Service has serology records for 13,395 Indigenous people and the number of people accessing treatment through the one stop liver shop has exceeded national targets. Over the next five years this process will also extend to include Indigenous patients of other primary care health centres including Central Australia Health Service, Miwatj and KWHBCA.



Menzies researcher Sarah Bukulatjpi takes blood in the Miwatj one stop shop clinic.

Microscopy diagnosis at the IMPROV site in Ethiopia.

IMPROV STUDY

Malaria is an infectious disease common in tropical and subtropical countries, caused by parasites that spread from person to person via the bite of a mosquito. If not treated quickly, malaria can lead to long term health problems and even death. One type, vivax malaria, can remain undetected in the liver and can cause recurrent infection after the blood stage parasites have been treated successfully.

Primaquine is the only medicine available to kill vivax malaria in the liver and prevent relapse, a process known as radical cure. Primaquine is usually administered as a 14-day course, but adherence to this treatment can be low.

The Menzies parasitology team explored whether a higher dose of primaquine for seven days was as effective as the standard 14-day course.

The IMPROV study (Improving the Radical Cure of Vivax Malaria) was a large multicentre trial, from seven sites in four countries: Afghanistan, Ethiopia, Indonesia and Vietnam Between July 2014 and November 2017, 2388 participants were treated with either the seven-day regimen, the 14-day regimen or only treatment of the blood stages of the parasites. Patients were followed for 12 months. The study was completed in February 2018.

According to Principal Investigator Professor Ric Price, the results demonstrate that the seven-day regimen was safe and equally effective as the 14-day regimen. Although higher doses of primaquine may sometimes cause side effects in some patients, overall the seven-day regimen was well tolerated.

“The results from this very large study are likely to impact on global antimalarial policy. A shorter course regimen will improve the radical cure of vivax malaria and help eliminate the parasite from the Asia Pacific region,” says Prof Price.

The IMPROV study was jointly funded by the UK MRC/ Wellcome Trust and the Bill & Melinda Gates Foundation and complementary sub-studies will be conducted in 2019.

MELIOIDOSIS

This year marks the 29th year of Menzies Darwin Prospective Melioidosis Study (DPMS), which aims to understand the clinical and microbiological aspects of melioidosis in the NT.

Melioidosis is a potentially lethal infectious disease caused by a soil-dwelling bacterium. It is predominantly found in tropical regions of the world, but is endemic in northern Australia.

According to Professor Bart Currie, DPMS lead, melioidosis has been on the rise over the past decade, particularly during the monsoon season. In susceptible people, it can lead to pneumonia, blood poisoning and even death.

“These bacteria that cause melioidosis usually enter the body via cuts and sores on the skin, but during severe weather events direct inhalation of aerosol droplets into the lungs can lead to particularly severe disease. In most cases illness begins within one to 21 days after the infecting event," Prof Currie says.

The discoveries from the DPMS include genetic profiling of bacteria from patients and their environment (to pinpoint the specific infecting event), and finding ways the bacteria can mutate to become resistant to antibiotics used for treatment.

“Each case of melioidosis is from a bacterium with a unique genetic footprint. Our field team samples the patient’s property or workplace soil and surface and bore waters. The laboratory team then grows the bacteria and performs genetic fingerprinting. We then look for a match between the environmental and patient bacteria to establish a likely scenario to explain the infection.

“This informs our work with NT Centre for Disease Control to create more targeted public health messages and warnings. This is particularly important for people with risk factors for melioidosis such as diabetes, hazardous alcohol use, those with chronic kidney disease and those on immune suppressive therapy for cancer and other conditions,” says Prof Currie.

The DMPS will continue in 2019 and will include ongoing evaluation of rapid diagnostic testing and further studies of animal melioidosis outbreaks.

FEATURED PUBLICATIONS

In 2018, Menzies published 294 articles, including 273 peer-reviewed articles. Here are some of our featured publications from this year.

Auburn S, Benavente ED, Miotto O, Pearson RD, Amato R, Grigg MJ, Barber BE, William T, Handayuni I, Marfurt J, Trimarsanto H, Noviyanti R, Sriprawat K, Nosten F, Campino S, Clark TG, Anstey NM, Kwiatkowski DP and Price RN. Genomic analysis of a pre-elimination Malaysian Plasmodium vivax population reveals selective pressures and changing transmission dynamics. *Nature communications.* 2018; 9(1):1-12.

Malaria has almost been eliminated from Malaysia, but the remaining parasites are under intense selection. Using parasite population genomics this study shows that most malaria cases are now imported and those from within the country are due to a new strain that has emerged rapidly.

Kho S, Barber BE, Johar E, Andries B, Poespoprodjo JR, Kenangalem E, Piera KA, Ehmann A, Price RN, William T, Woodberry T, Foote S, Minigo G, Yeo TW, Grigg MJ, Anstey NM and McMorran BJ. Platelets kill circulating parasites of all major Plasmodium species in human malaria. *Blood.* 2018;132(12):1332-1344.

In malaria-endemic Indonesia and Malaysia platelets were discovered to be at the frontline of defence in malaria patients by directly sticking to and releasing a potent platelet molecule into the parasite suggesting that platelet-based molecules could potentially be used as a new class of antimalarial drug.

Grigg MJ, William T, Barber BE, Rajahram GS, Menon J, Schimann E, Piera K, Wilkes CS, Patel K, Chandna A, Drakeley CJ, Yeo TW and Anstey NM. Age-Related Clinical Spectrum of Plasmodium knowlesi Malaria and Predictors of Severity. Clinical infectious diseases: an official publication of the Infectious Diseases Society of America. *Infectious Diseases Society of America.* 2018; 67(3):350-359.

This study of nearly 500 people in Malaysian Borneo was the first to compare knowlesi malaria between adults and children. We found that children had high risk of anaemia and acute kidney injury, but severe disease and deaths were only seen in adults. The most sensitive and useful predictor of severe disease was having a high parasite count >15000/uL. These findings will influence clinical guidelines on selecting initial antimalarial treatment.

Ralph AP, de Dassel JL, Kirby A, Read C, Mitchell AG, Maguire GP, Currie BJ, Bailie RS, Johnston V and Carapetis JR. Improving Delivery of Secondary Prophylaxis for Rheumatic Heart Disease in a High-Burden Setting: Outcome of a Stepped-Wedge Community Randomized Trial. *Journal of the American Heart Association.* 2018;7(14):1-15.

Ten NT communities participated in this trial to improve delivery of penicillin injections to stop rheumatic heart disease. The trial found that although adherence to penicillin is increasing multi-faceted interventions with deeper community linkages are needed to achieve better adherence.

de Dassel JL, de Klerk N, Carapetis JR and Ralph AP. How Many Doses Make a Difference? An Analysis of Secondary Prevention of Rheumatic Fever and Rheumatic Heart Disease. *Journal of the American Heart Association.* 2018;7(24):1-22.

This study including nearly 2000 people needing penicillin for rheumatic heart disease prevention found that increased adherence to penicillin reduced the risk of acute rheumatic fever recurrence and the risk of death.

Sarovich DS, Webb JR, Pitman MC, Viberg LT, Mayo M, Baird RW, Robson JM, Currie BJ and Price EP, Raising the stakes: Loss of efflux-pump regulation decreases meropenem susceptibility in *Burkholderia pseudomallei. Clinical Infectious Diseases.* 2018; 67(2):243-250.

This paper documents a small number of cases where resistance to the antibiotic Meropenem has indeed occurred when treating patients with melioidosis. Genetic mutations in the bacteria that confer this resistance have also been found and characterised. This finding is altering our approach to therapy of melioidosis in select patients.

Webb JR, Price EP, Somprasong N, Schweizer HP, Baird RW, Currie BJ and Sarovich DS. Development and validation of a triplex qPCR assay to detect efflux pump-mediated antibiotic resistance in *Burkholderia pseudomallei. Future Microbiology.* 2018;13(12):1403-1418.

Following our characterisation of resistance to some antibiotics developing in some melioidosis patients on long term therapy we have begun to develop diagnostic genetic tests to identify and characterise the specific antibiotic resistance mechanisms. This is one such test that will enable rapid assessment of antibiotic resistance in the laboratory and help guide appropriate switches in antibiotic use for patients with ongoing or relapsed melioidosis.

Cheah BC, Davies J, Singh GR, Wood N, Jackson K, Littlejohn M, Davison B, McIntyre P, Locarnini S, Davis JS and Tong SYC. Sub-optimal protection against past hepatitis B virus infection where subtype mismatch exists between vaccine and circulating viral genotype in northern Australia. *Vaccine.* 2018;36(24): 3533-3540.

This paper provides evidence that mismatch between the hepatitis B circulating in an area and the vaccine being used in that area can influence the efficacy of the vaccine.

Doernberg SB, Tran TT, Tong SYC, Paul M, Yahav D, Davis JS, Leibovici L, Boucher HQ, Corey GR, Cosgrove SE, Chambers HF, Fowler VG, Evans SR and Holland TL, Antibacterial Resistance Leadership Group. Good studies evaluate the disease while great studies evaluate the patient: Development and application of a DOOR endpoint for Staphylococcus aureus bloodstream infection. *Clinical Infectious Diseases.* 2018:1-8.

Staphylococcus aureus infections are common and potentially serious or fatal. Using data from our 'CAMERA-1' trial we validated a new patient-centred method for measuring endpoints in treatment of Staphylococcus aureus bloodstream infection. This is now being put into practice in clinical trials.

McHugh L, Marshall HS, Perrett KP, Nolan T, Wood N, Lambert SB, Ware RS, Kildea S, Binks P, Binks MJ and Andrews RM. The safety of influenza and pertussis vaccination in pregnancy in a cohort of Australian mother-infant pairs, 2012-2015: The FluMum study. *Clinical Infectious Diseases.* 2018;68(3):402-408.

This study provided important new safety data on vaccination in pregnancy. Previously it was unknown whether flu and pertussis vaccines at different times in pregnancy affect birth outcome. The study provides reassurance for pregnant women and their treating healthcare providers that vaccination in pregnancy is safe.

Cunningham FC, Matthews V, Sheahan A, Bailie J and Bailie R. Assessing collaboration in a national research partnership in quality improvement in Indigenous primary health care: a network approach. *Frontiers in Public Health.* 2018;6:182.

This paper describes the application of network methods to assess collaboration in a national research partnership in quality improvement in Indigenous primary health care. Social network analysis assisted with monitoring collaboration in the partnership over time to develop strategies to improve connections between partners to sustain collaborative learning in quality improvement in Indigenous primary health care.

Gorham G, Majoni SW, Lawton P, Wood P, Brown S, Dube B, Conlon T, Sajiv C, Signal S and Cass A. Interesting times: Renal Service Development in NT (1980-2014). *Renal Society of Australasia Journal.* 2018;14(3):108-116.

This paper provides a background document for senior planners and policy makers in the NT. It describes the rapid and continuing growth in end stage kidney disease and the failure of successive governments to respond proactively to either the numerous studies predicting accelerated growth or the community demand for more appropriate services. Consequently, communities determined and developed their own solutions and unique models of care.

Thomas DP, Davey ME, Panaretto KS and van der Sterren AE. Cannabis use among two national samples of Aboriginal and Torres Strait Islander tobacco smokers. *Drug and Alcohol Review.* 2018;37(S1): S394-S403.

Health staff helping Aboriginal and Torres Strait Islander tobacco smokers to quit should also talk about cannabis as it is so commonly used and mixed with tobacco. We did not find consistent evidence that cannabis use is or is not an obstacle to quitting smoking tobacco.

Brands J, Garvey G, Anderson K, Cunningham J, Chynoweth J, Wallington I, Morris B, Knott V, Webster S, Kinsella L, Condon J and Zorbas H. Development of a National Aboriginal and Torres Strait Islander Cancer Framework: A shared process to guide effective policy and practice. *International Journal of Environmental Research and Public Health.* 2018;15(5):1-16.

In 2015, Menzies worked with Cancer Australia to develop the first National Aboriginal and Torres Strait Islander Cancer Framework. This year we described how the framework was developed using Menzies' approach of combining evidence and the lived experience of many stakeholders to build momentum and produce robust and

practical guidance for a more strategic approach to improving the cancer outcomes of Aboriginal and Torres Strait Islander peoples.

Smith J and Adamson E. The six-month process evaluation of the Banned Drinker Register in the Northern Territory. *Menzies School of Health Research.* 2018.

The BDR evaluation report provides a detailed overview of the impact that the BDR is starting to have on reducing the harms of alcohol across the NT. Recommendations within this report are already being used by the NT Government to further enhance the effectiveness of the BDR and to inform additional alcohol harm minimisation policy and practice reforms.

Barr ELM, Barzi F, Hughes JT, Jerums G, Hoy WE, O'Dea K, Jones G, Lawton PD, Brown ADH, Thomas M, Ekinci EI, Sinha A, Cass A, MacIsaac RJ and Maple-Brown LJ. High baseline levels of tumor Necrosis Factor Receptor 1 are associated with progression of kidney disease in Indigenous Australian with diabetes: The eGFR follow-up study. *Diabetes Care.* 2018; 41(4):739-747.

We reported that markers of inflammation predict kidney disease progression. This may open new lines for developing drug treatments that target chronic inflammation in the management of kidney disease.

Lee I, Purbrick B, Barzi F, Brown A, Connors C, Whitbread C, Moore E, Kirkwood M, Simmonds A, Van Dokkum P, Death E, Svenson S, Graham S, Hampton V, Kelaart J, Longmore D, Titmuss A, Boyle J, Brimblecombe J, Saffery R, d'Aprano A, Skilton MR, Ward LC, Corpus S, Chitturi S, Thomas S, Eades S, Inglis C, Dempsey K, Dowden M, Lynch M, Oats J, McIntyre D, Zimmet P, O'Dea K, Shaw J and Maple-Brown LJ on behalf of the PANDORA Study Research Team. Cohort Profile: The Pregnancy and Neonatal Outcomes in Remote Australia (PANDORA) *Study. International Journal of Epidemiology.* 2018;47(4):1045-1046h.

We reported that preventable and modifiable risk factors (diabetes, maternal BMI, gestational weight gain) contributed to higher rates of poorer birth outcomes among Indigenous women (rather than Indigenous ethnicity per se). Results highlight the importance of prevention or delay of diabetes in Indigenous communities early in the lifecourse and have informed priorities of the NT Diabetes Network and the National Diabetes Strategy Implementation Plan.

Garvey G, Cunningham J, Janda M, He V and Valery PC. Psychological distress among Indigenous Australian cancer survivors. *Supportive Care in Cancer.* 2018;26(6):1737-1746.

This is the first published assessment of distress among Indigenous cancer survivors with results indicating that 33% had clinically significant distress. These results highlight the need for services to provide culturally sensitive tailored psychological support for Indigenous cancer patients.

Goyal V, Grimwood K, Byrnes CA, Morris PS, Masters IB, Ware RS, McCallum GB, Binks MJ, Marchant JM, van Asperen P, O'Grady KF, Champion A, Buntain HM, Petsky H, Torzillo PJ, Chang AB. Amoxicillin-clavulanate versus azithromycin for respiratory exacerbations in children with bronchiectasis (BEST-2): a multicentre, double-blind, non-inferiority, randomised controlled trial. *Lancet.* 2018;392(10154):1197-1206.

This is the first ever study on treatment of acute flare-ups in children with bronchiectasis. This international muticentre study found that azithromycin, in a convenient once a day dosing, was non-inferior to amoxicillin-clavulanate after 21 days of treatment but was associated with longer duration of illness time. The trial showed that azithromycin provides a useful additional treatment option for exacerbations of bronchiectasis for some patients, such as those with penicillin allergy.

Chang AB, Bush A, Grimwood K. Bronchiectasis in children: diagnosis and treatment. *Lancet.* 2018;392(10150):866-879.

Bronchiectasis is conventionally considered to be an irreversible condition, associated with reduced lung function. This review examines available evidence that mild bronchiectasis might be reversible at any age if treated early. It provides an updated definition of bronchiectasis, and explores controversies relating to the management of bronchiectasis in children.

Hare KM, Smith-Vaughan HC, Leach AJ, Pizzutto SJ, McCallum GB, Chang AB. Reduced nontypeable Haemophilus influenzae lower airway infection in children with chronic endobronchial suppuration vaccinated with the 10-valent pneumococcal H. influenzae protein D conjugate vaccine. Vaccine. 2018;36(13):1736-1742.

Haemophilus influenzae is an important cause of lower airway infection in children, which can led to protracted bacterial bronchitis and bronchiectasis. This study in >500 children found that vaccination with the 10-valent pneumococcal conjugate vaccine (PHiD-CV), which also contains an H. influenzae antigen, were significantly less likely to have lower airway infection with H. influenzae than children vaccinated compared to other pneumococcus vaccines.

Sjöholm P, Pahkala K, Davison B, Juonala M, Singh GR. Early life determinants of cardiovascular health in adulthood. The Australian Aboriginal Birth Cohort Study. *International Journal of Cardiology.* 2018;269:304-309.

This study explored the cardiovascular health of participants in the Aboriginal Birth Cohort Study that has been following 686 Indigenous people born in Darwin between 1987-1990. The study identified that ideal cardiovascular health was rare among the cohort in adulthood. Several early life factors were identified including areal disadvantage, urban living environment, maternal BMI and family sizes, that affected later cardiovascular health status.

Smith-Vaughan HC, Binks MJ, Beissbarth J, Chang AB, McCallum GB, Mackay IM, Morris PS, Marsh RL, Torzillo PJ, Wurzel DF, Grimwood K, Nosworthy E, Gaydon JE, Leach AJ, MacHunter B, Chatfield MD, Sloots TP, Cheng AC. Bacteria and viruses in the nasopharynx immediately prior to onset of acute lower respiratory infections in Indigenous Australian children. European Journal of Clinical Microbiology and Infectious Disease. 2018;37(9):1785-1794.

This study that examined whether the microbes present in the nasopharynx before an acute lower respiratory illness (ALRI) in young Indigenous children was associated with disease onset. The study found very high presence of nasopharyngeal pathogens, with human adenovirus being the only pathogen detected in the period before illness presentation that was significantly associated with ALRI onset.

Hare KM, Pizzutto SJ, Chang AB, Smith-Vaughan HC, McCallum GN, Beissbarth J, Versteegh L and Grimwood K. Defining lower airway bacterial infection in children with chronic endobronchial disorders. Pediatric Pulmonology. 2018;53(2):224-232.

In children undergoing bronchoscopy, it is important to distinguish between lower airway bacterial infection and possible contamination of specimens by bacteria from the upper airway. This study analysed inflammatory markers and the load of bacterial pathogens in lung samples and established that a bacterial load of ≥104 CFU/mL should be used to define lower airway infection in children.

Beissbarth J, Binks MJ, Marsh RL, Chang AB, Leach AJ and Smith-Vaughan HC. Recommendations for application of Haemophilus influenzae PCR diagnostics to respiratory specimens for children living in northern Australia: a retrospective re-analysis. *BMC Research Notes.* 2018;11(1):1-5.

Haemophilus haemolyticus can be misidentified as nontypeable Haemophilus influenzae due to their phenotypic similarities. Retrospective PCR analysis of respiratory specimens from children living in northern Australia found that routine culture misidentified H. haemolyticus in 0.3% of nasal specimens, 25% of bronchoalveolar lavage and 40% of throat specimens. Therefore, in this population, PCR-based diagnostics are indicated for throat and bronchoalveolar specimens, but not for nasal specimens.

Chalmers JD, Chang AB, Chotirmall SJ, Dhar R and McShane PJ. Bronchiectasis. *Nature Reviews. Disease Primers.* 2018;4(1):1-18.

A state of the art review on the physiology, treatment and prevention of bronchiectasis, a condition that is particularly common and deadly among Indigenous adults.

McEwen EC, Guthridge SL, He VYF, McKenzie JW, Boulton TJ and Smith R. What birthweight percentile is associated with optimal perinatal mortality and childhood education outcomes? *American Journal of Obstetrics & Gynecology.* 2018;218(2):S712-S724.

This retrospective cohort study used data linkage to determine the optimal birthweight percentile for low perinatal mortality and high reading and numeracy scores. Additionally those birthweights between the 50th-93rd percentiles were most consistently associated with both low perinatal mortality and high reading and numeracy scores.

Commons RJ, Simpson JA, Thriemer K, Humphreys GS, Abreha T, Alemu SG, Añez A, Anstey NM, Awab GR, Baird JK, Barber BE, Borghini-Fuhrer I, Chu CS, D'Alessandro U, Dahal P, Daher A, de Vries PJ, Erhart A, Gomes M, Gonzalez-Ceron L, Grigg MJ, Heidari A, Hwang J, Kager PA, Ketema T, Khan WA, Lacerda M, Leslie T, Ley B, Lidia K, Monteiro WM, Nosten F, Pereira DB, Phan GT, Phyo AP, Rowland M, Saravu K, Sibley CH, Siqueira AM, Stepniewska K, Sutanto I, Taylor W, Thwaites G, Tran BQ, Tran HT, Valecha N, Vieira J, Wangchuk S, William T, Woodrow CJ, Zuluaga-Idarraga L, Guerin PJ, White NJ and Price RN. The effect of chloroquine dose and primaquine on Plasmodium vivax recurrence: a WorldWide Antimalarial Resistance Network systematic review and individual patient pooled meta-analysis. *The Lancet Infectious diseases.* 2018; 18(9):1025-1034.

Chloroquine is the main treatment for the type of malaria called vivax malaria but there are increasing reports of treatment failure. This systematic review and meta-analysis found a 40% drop in rate of recurrences if higher chloroquine doses (30 mg/kg) are used. Adding another drug primaquine was even more effective, reducing recurrence by 90%.

OUR IMPACT

Dr Rin Wahyu Iriani from Timika Jaya Health Centre, visiting one of Dr Lestari's project intervention sites.

OUR IMPACT

The impact of our research can be measured in a variety of ways including changes to policy and practice, community uptake of important health messages and economic impact.

PROMOTING BOWEL SCREENING

Menzies training and support officer Boden Tighe (in costume) and health centre officer ready to promote bowel screening.

Bowel cancer is one of the few cancers that can be detected in its pre-cancerous stage and if found early, chances of survival are good. Often bowel cancer has no clear signs or symptoms until it reaches an advanced stage, when the chances of survival are low.

Bowel screening can make a big difference to the chances of surviving bowel cancer. The National Bowel Cancer Screening Program (NBCSP) offers free bowel screening to Australians aged 50 to 74.

Indigenous Australians are less likely to get bowel cancer than other Australians but have a lower rate of survival. The screening participation rate of Indigenous people in the NBCSP is less than half that of other Australians, which means four out of five eligible Indigenous Australians are missing out on this potentially life-saving test.

NBCSP screening kits are mailed out to eligible people to complete in their own home. The test can pick up tiny amounts of blood in the poo, which may be a sign that a cancer is developing in the bowel.

In 2018, Menzies commenced the Australian Government funded National Indigenous Bowel Screening Pilot, which focuses on engaging primary health care centres to administer NBCSP kits to its eligible clients.

Principal investigator Professor Gail Garvey said health centres are encouraged to embed bowel screening into their routine practice.

“Preliminary work indicated that screening could be increased if primary health care centre staff could give out NBCSP kits directly to their eligible Indigenous clients.

“Health centres are encouraged to embed bowel screening into their routine practice. Staff have access to training to help upskill them about bowel cancer, bowel screening and how to administer the program, and are provided with resources such as posters and music videos to help promote bowel screening with Indigenous clients. State, territory and regional agencies have also been engaged to provide health centres and their clients with longer term support."

Up to 50 health centres across Australia, in urban, regional and remote areas, are taking part in the pilot.

“The level of support health centres received, in the pilot, was randomised. This gives Menzies the ability to report on not only whether the pilot increases screening rates, but also on the level of support required if such an approach was introduced more widely,’ said Prof Garvey.

The pilot will end in October 2019 and results will be reported to the Australian Government in 2020.

A local nurse conducting an outreach home visit in Timika.

NATIONAL GUIDE TO PREVENTATIVE HEALTH ASSESSMENT

The life expectancy for Aboriginal and Torres Strait Islander people is around 10 years lower than that of other Australians. There is strong evidence that the delivery of clinical preventative health services, particularly within primary healthcare, can help close this gap.

In 2018, the National Aboriginal Community Controlled Health Organisation in collaboration with the Royal Australian College of General Practitioners released the third edition of the *National guide to preventative health assessment for Aboriginal and Torres Strait Islander people.* This guide is designed for all healthcare providers delivering primary healthcare to the Aboriginal and Torres Strait Islander population, including health workers and practitioners, nurses, specialists with a role in delivering preventative care, educators and students.

The purpose of the guide is to make recommendations aimed at early detection, prevention, social determinants and diagnosis of unrecognised diseases affecting the Aboriginal and Torres Strait Islander population. The creation of the guide is a mammoth collaboration between researchers, clinicians and key stakeholders. Menzies staff Professor David Thomas, Professor Amanda Leach and Professor Anne Chang were all contributing authors, while Professor Alan Cass, Professor Gail Garvey and Dr Lisa Whop provided expert review.

CLOSING THE TUBERCULOSIS POLICY-PRACTICE GAP

Tuberculosis is an airborne bacterial infection that can be transferred via coughing. It is the leading cause of death in Indonesia, with those most at risk being people with weakened immune systems and children. Treatment for the disease involves a six-month course of antibiotics. If left untreated, tuberculosis can lead to decreased quality of life or premature death.

In 2017, Menzies PhD student Dr Trisasi Lestari, under the supervision of Associate Professor Anna Ralph, commenced an Australian Government funded project to strengthen local health systems and bridge the policy-practice gap in tuberculosis prevention, in Indonesia's Papua Province.

"There were many challenges with this project, including supply shortages and medicine not being available in the right doses for children," said Dr Lestari

"We also had to come up with innovative ways to motivate health workers to distribute medicines directly to people's homes."

Some of Dr Lestari's engagement strategies included running competitions and providing awards to clinics who achieved targets.

"At the start of the project there were zero children getting access to tuberculosis prevention treatment. After one year it increased to 98 children. Then by the end of 2018 that number increased again to 197 children receiving treatment.

"Tuberculosis preventive treatment has averted many potentially life-threatening cases of tuberculosis in this region," says Dr Lestari.

The District Health Authority is collaborating closely with the project, a key factor for ensuring sustainability after Dr Lestari's PhD finishes. With their support, the number of participating health facilities has increased from five to 13.

In 2018, the National Tuberculosis Program recognised Dr Lestari's project as one of the top four tuberculosis prevention programs in Indonesia.

Dr Trisasi Lestari delivering training to staff from the Timika healthcare and clinic centres.

Rheumatic heart disease (RHD) is damage to one or more heart valves caused by acute rheumatic fever (ARF), an autoimmune response to a streptococcus bacterial infection. Untreated RHD can cause heart failure, progressive disability, a reduction in the quality of life and premature death.

Australia has the highest rate of ARF and RHD in the world, Aboriginal and Torres Strait Islander children living in remote areas are most at risk. Public awareness and education are key for reducing the spread and impact of RHD.

The Australian Government has provided funding for a Rheumatic Fever Strategy that includes control programs in Western Australia, NT, South Australia and Queensland. The strategy also funds RHDAustralia, which is based at Menzies.

RHDAustralia focuses on developing:

- evidence based national guideline for the prevention, diagnosis and management of ARF and RHD.
- education and training resources for health professionals, people living with ARF/RHD, their families and communities.
- supporting health systems focused on prevention activities in high-risk communities.

RHDAustralia continues to work closely with key stakeholders to build on existing relationships and produce new educational resources. Examples of projects completed in 2018 include:

Sharing a Heartbeat 2

Sharing a Heartbeat 2 was released this year and is the sequel to Sharing a Heartbeat, a movie for young women with RHD, and their families. The film was developed, written and directed by Australian Indigenous women. It is in their words, and answers their questions about RHD. Sharing a Heartbeat 1 and 2 are now available in English, Kriol and Burrara.

Translated Health Message

The short video, Important Health Message for the prevention of rheumatic fever, was translated into two more languages in 2018: Torres Strait Creole and Ndjebbana. The video is now available in 13 different Aboriginal and Torres Strait Islander languages.

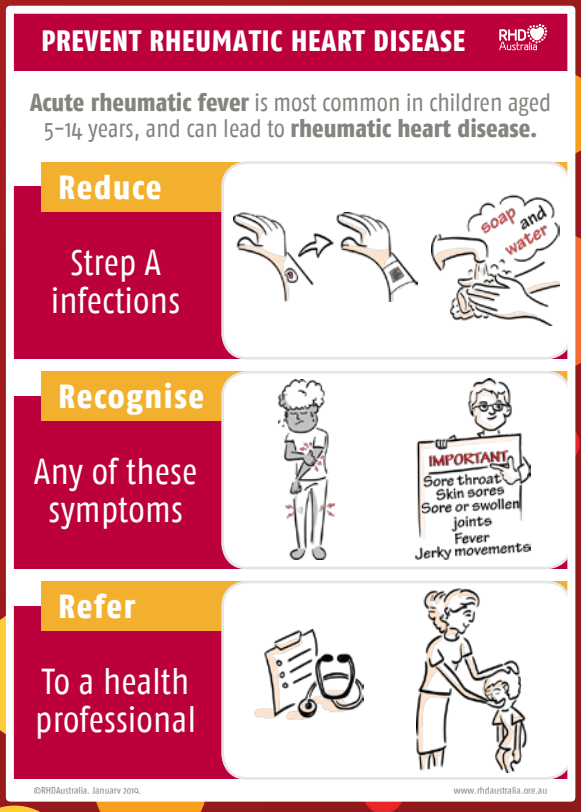
New resources for schools

RHDAustralia produced a video and poster for distribution throughout Australian schools. These resources provide a brief overview about ARF and RHD and key messaging about how a sore throat could lead to open heart surgery, for people living in high risk areas. The resources are aimed at school staff who are well placed to assist children aged five to 14 years, their families and communities to prevent and manage conditions associated with ARF and RHD.

All RHDAustralia resources are found at www.rhdaustralia.org.au

Sharing a Heartbeat 2.

RHD Australia School Poster.



HOT NORTH

Improving Health Outcomes in the Tropical North

The health needs of those living in NT are multiple, complex and varied. In remote NT communities, up to 70% of Indigenous babies have scabies by their first birthday. Far North Queensland has faced repeated dengue outbreaks introduced from the north and has been impacted by the epidemic of multi-drug resistant tuberculosis in Papua New Guinea. Areas of north Western Australia have escalating levels of suicide and mental illness.

HOT North is an NHMRC funded research program led by Menzies that draws on more than three decades of research collaboration, education and translational leadership to address these enduring health challenges. A multidisciplinary collaboration involving eight of Australia's leading health research organisations, HOT North aims to improve health outcomes in the tropical north through projects that link organisations, translate research into outcomes and create pathways for health professionals.

The first two years of funding has provided for the establishment of 68 pilot/translation projects and funded individual fellowships and scholarships for researchers. The funded researchers have formed collaborations with 22 other research organisations across Australia and South Asia. More than 70 health sector implementation organisations such as health departments, hospitals and Aboriginal Medical Services also participate in these HOT North supported projects.

HOT North Will Cunningham.

Capacity Building

HOT North's primary aim is to build the health research workforce across northern Australia. In its first two years, HOT North has supported 12 undergraduate and postgraduate students at universities, 17 early-career and mid-career fellows at three research institutes and seven Aboriginal and Torres Strait Islanders working in the health research sector. HOT North also offers specific training to build research and research translation capacity and networking and mentoring opportunities to compensate for professional isolation caused by geographical distance. For example, it has established the 80-member Women in Tropical Health (WITH) network.

HOT North Broome 2018.

On the Ground Impact

Every year HOT North conducts a series of teaching workshops in remote towns and cities across northern Australia, from Broome to Thursday Island. By the end of 2018, eight workshops had been conducted with a total of 885 participants, who listened to 136 presentations from Indigenous and non-Indigenous researchers.

These workshops provide opportunities for local health professionals to meet university-based researchers and discuss research ideas that work towards closing the health gap between Indigenous and non-Indigenous Australians.

HOT North also provides opportunities for northern-based health professionals to participate in projects that build research capability and capacity in northern Australia. To date, at least 406 people have participated in HOT North supported projects and the participation rate is expected to continue in 2019.

For more information see www.hotnorth.org.au

COMMUNITY ENGAGEMENT

Lawurrpa Maypilama with Clare Brown.

COMMUNITY ENGAGEMENT

We recognise the success of our work is dependent on meaningful relationships and engagement with the communities we work with. This includes capacity building, relationship management, events and other activities.

THE PEDRINO PROJECT

Rheumatic heart disease (RHD) remains a major cause of child morbidity and mortality in remote Indigenous communities in northern Australia and Timor-Leste. Early detection and treatment is key to reducing the impacts of RHD.

This year Dr Josh Francis and colleagues utilised HOT North funding to successfully measure prevalence of RHD in school-aged children and young people in Timor-Leste and Maningrida, West Arnhem Land.

"The HOT North pilot funding supported the Pedrino project in Timor and Maningrida and has provided us opportunities to build capacity within communities to ensure early detection, accurate diagnosis and implementation of effective public health measures for controlling RHD," says Dr Francis.

Over 2500 school-aged children were screened for RHD in both Timor-Leste and Maningrida and more than 70 new cases of RHD were identified. Importantly the study highlighted the prevalence of RHD in Maningrida as being higher than anywhere else in the world. Menzies researchers partnered with the Lurra Language and Culture Unit of Maningrida College to develop a school-based RHD program to educate people in local languages about the signs, symptoms and risks of RHD.

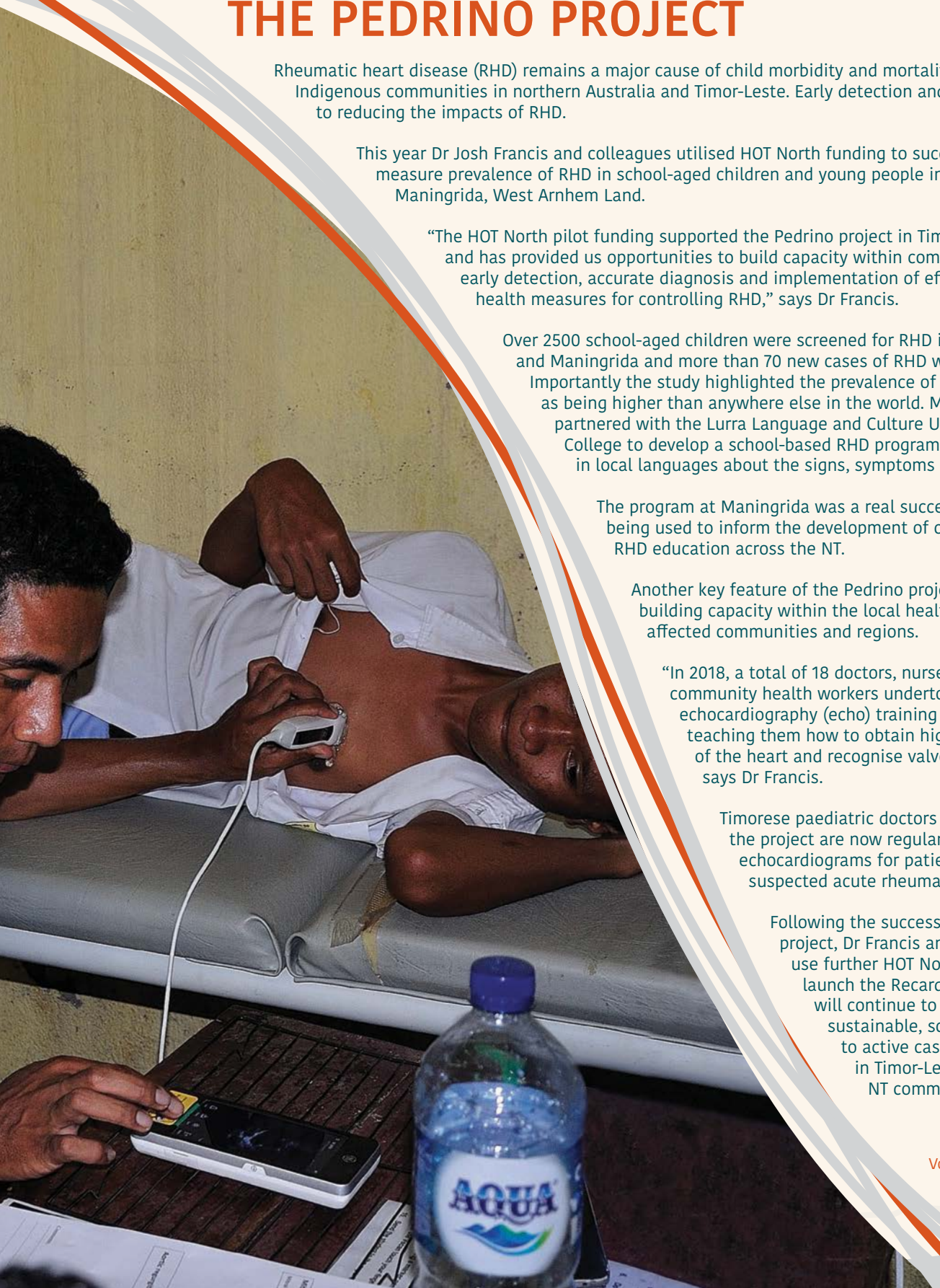
The program at Maningrida was a real success and is now being used to inform the development of culturally relevant RHD education across the NT.

Another key feature of the Pedrino project involved building capacity within the local health workforce of affected communities and regions.

"In 2018, a total of 18 doctors, nurses and community health workers undertook an intensive echocardiography (echo) training course at Menzies, teaching them how to obtain high quality images of the heart and recognise valve abnormalities," says Dr Francis.

Timorese paediatric doctors trained in the project are now regularly performing echocardiograms for patients with suspected acute rheumatic fever and RHD.

Following the success of the Pedrino project, Dr Francis and his team will use further HOT North funding to launch the Recardina project, which will continue to work towards a sustainable, scalable approach to active case finding for RHD in Timor-Leste and in remote NT communities.



Volunteers in Timor-Leste.

Orators the Hon Margaret White AO and Mr Mick Gooda.

HEALTHLAB

Menzies HealthLAB is an innovative, interactive and educational experience where participants can measure their own biomedical risk factors for chronic diseases in a mobile 'pop up' laboratory. Smoke exposure, unhealthy weight, nutrition and physical activity are just some of the risk factors targeted by HealthLAB to engage with the public on the importance of making healthy lifestyle choices for better health.

This year was a busy year for HealthLAB with 29 events and over 2227 participants across the NT including a showcase event at Parliament House in Canberra. A broad range of events included school visits, National Science Week, health centre visits, community visits, expos and shopping centre displays.

This year HealthLAB also partnered with the Heart Foundation to deliver the Live Lighter Program to remote NT communities. The partnership enabled HealthLAB to engage with the public at festivals and sporting events from Yuendumu in Central Australia to Maningrida in Arnhem Land.

HealthLAB continues to be very popular and has many invitations from schools and remote communities for follow up visits where HealthLAB aims to continue to inspire and track positive health change.

HealthLAB at Barunga.

MENZIES ORATION

This year's Oration was delivered by Mr Mick Gooda and The Hon Margaret White AO, who presided over the Royal Commission into the Protection and Detention of Children in the NT. It was the first time the commissioners had spoken publicly about the findings of the royal commission since its conclusion.

The Oration also provided the opportunity for Menzies Director Professor Alan Cass to present the Menzies Medallion. Professor Paul Torzillo was awarded this prestigious prize for being a national leader in Aboriginal healthcare, research and policy, and in recognition of his work to improve the health of Aboriginal people across urban, rural and remote Australia.

The Professor is also a Senior Respiratory and Intensive Care Physician at the Royal Prince Alfred Hospital in Sydney, and Medical Director of the Nganampa Health Council in South Australia.

Menzies Director Prof Alan Cass says Prof Torzillo has been a tireless campaigner for Aboriginal health in the NT, and across Australia, and has been a key and active collaborator with Menzies.

"Prof Torzillo has maintained his involvement with Menzies for many years particularly working in research collaboration on ear disease, vaccines and respiratory disease," says Prof Cass.

Prof Cass also had the opportunity to award the Companion of Menzies, which recognises the exceptional contributions and support to the continued development and success of Menzies.

This year's inaugural recipients were Dr Valerie Asche, the Hon Austin Asche AC QC and Richard Ryan AO.

Catching some AIR meeting in Darwin with Dr Jaquelyne Hughes.

CATCHING SOME AIR

Chronic kidney disease is estimated to affect one in 10 Australians; however, Aboriginal and Torres Strait Islander people are five times as likely to receive treatment for kidney failure, compared with other Australians.

Catching Some AIR - Asserting Aboriginal and Torres Strait Islander Information Rights in Renal Disease (Catching Some AIR) is a project that provides opportunity for renal patients, their carers and community to have input into guidelines.

One of the key activities of the Catching Some AIR project is to consult and gather recommendations from Aboriginal and Torres Strait Islander kidney health community groups to develop best practice and community-informed guidelines for:

- Indigenous Data Governance Framework for Aboriginal and Torres Strait Islander data within the Australian and New Zealand Dialysis and Transplantation Registry (ANZDATA).
- Kidney Health Australia-Caring for Australasians with Renal Impairment (KHA-CARI) Guidelines for the management of Chronic Kidney Disease in Aboriginal and Torres Strait Islander peoples.

In 2018, Catching Some AIR consultation meetings took place in Darwin, Alice Springs and Thursday Island. Meeting participants primarily included renal patients, their carers and family members, since this group was the prime focus for guideline input. Other key stakeholders at the consultation meetings included clinicians, policy makers, federal government, local government, housing and accommodation service providers, Northern Territory Department of Health, Aboriginal Community Controlled Health Organisations.

Catching Some AIR coordinator Dr Jaquelyne Hughes says this consultation process gives Aboriginal and Torres Strait Islander people impacted by kidney disease a voice to influence clinical practice guidelines and policies.

“This is an Indigenous led project and we are facilitating Aboriginal and Torres Strait Islander people who live with kidney disease to design the guidelines according to how they could benefit from care and treatment."

Dr Hughes regards focused consultation as an important part of developing fit-for-purpose clinical care guidelines that primarily intended to advance health and health comes of Aboriginal and Torres Strait Islander people.

“By talking with people living with kidney disease, their carers and various service providers, we can prepare meaningful, relevant guidelines and policy which will advance kidney health management,” says Dr Hughes.

The Catching Some AIR project team is based at Menzies, but acknowledges the support and funding provided by the Lowijta Institute and its project partners the Top End Renal Patient Advisory and Advocacy Committee.

EDUCATION AND TRAINING

Professor Gail Garvey and Master by Research graduate Alana Gall.

EDUCATION AND TRAINING

During 2018, the Education and Training team exceeded Menzies' strategic targets in Higher Education and Vocational Education and Training, significantly contributing to the knowledge and skills of emerging researchers and public health practitioners.

Our reach is extending, with a greater proportion of enrolments from outside the NT in the Master of Public Health, Graduate Diploma in Public Health and Graduate Diploma in Health Research in 2018. Our reach also includes undergraduate students via the public health unit within the Bachelor of Health Science. Greater involvement by Menzies researchers in teaching and research project supervision enabled us to capitalise on our research strengths and bolstered our education capacity.

In Semester 1, the Menzies postgraduate courses achieved the highest student evaluations across Charles Darwin University (CDU), demonstrating the level of our teaching excellence and student satisfaction.

Our VET team experienced a substantial increase in demand for the delivery of the Certificate II Community Health Research, with this pathway recognised as the preferred mechanism for building the research capacity of Indigenous researchers working on Menzies research projects.

Menzies' Higher Degree by Research training program continues to excel. Our Higher Degree by Research students experienced scholarship success and graduates were recognised for contributing new knowledge in important areas. The Education and Training team plays an important role by providing administrative support for Higher Degree by Research students and supervisors in partnership with the Office of Research Innovation at CDU.

Associate Professor Anna Ralph, PhD graduate Alison Mitchell and Professor Alan Cass.

EDUCATION AND TRAINING

DOCTOR OF PHILOSOPHY

- **Zuleima Pava Imitola**
  Molecular Epidemiology of Malaria in Papua, Indonesia.
- **Abbey-Rose Diaz**
  The impact of comorbidity on the survival and supportive care needs of Aboriginal and Torres Strait Islander Australians diagnosed with cancer.
- **Megan Ferguson**
  A framework to support evidence-informed local food policy in remote Indigenous Australia.
- **Megan Whitty**
  Implementing alcohol harm reduction interventions in an Australian Indigenous context.
- **Alison Mitchell**
  That heart sickness: Exploring Aboriginal young people's experiences of rheumatic fever care from childhood to adulthood.
- **Linda Viberg**
  Within-host evolution of Burkholderia pseudomallei during chronic infection.
- **Jessica Webb**
  Using genomics to better understand antiobiotic resistance mechanisms in Burkolderia pseudomallei.
- **I-Lynn Lee**
  Maternal antenatal characteristics, perinatal outcomes and postpartum glycemic status of women in the Northern Territory, Australia, with hyperglycaemia in pregnancy.

MASTER BY RESEARCH

- **Alana Gall**
  Indigenous Australian cancer patients' use and disclosure of Traditional and Complementary Medicine.

Higher Education Course	Equivalent full-time student load (EFTSL)	Student Numbers	Graduates
Master of Public Health	23.4	69	17
Graduate Diploma in Public Health	12.4	39	7
Graduate Diploma in Health Research	6	17	4
Cross course participation in Menzies-taught units	14	137	N/A

Vocational Education and Training	Enrolments	Graduates
10513 NAT Certificate II in Community Health Research	15	2

Dr Abbey Rose-Diaz, Dr Zuleima Pava Imitola and Dr Megan Ferguson (all PhD graduates)

OUR PEOPLE

Menzies' PhD student Dr Trisasi Lestari and Associate Professor Anna Ralph.

INDIGENOUS CAPACITY BUILDING

The Indigenous Capacity Building Unit (ICBU) offers guidance and support to Menzies. Through leadership and collaboration, we work to sustain a culturally safe organisation, empower Aboriginal and Torres Strait Islander voices and maximise opportunities for Aboriginal and/or Torres Strait Islander people.

In 2018, Menzies partnered with the NT Department of Health to host two cadets as part of the NT Government's Aboriginal Cadetship program. The cadets undertook a 12 week placement in Menzies' Communications team and RHDAustralia team, where they gained work experience relevant to their studies.

This year also saw the ICBU traineeship program evolve to include a professional development program. This provided opportunities for the trainees to obtain Ochre cards, Senior First Aid, cultural immersion experiences and mentoring.

Other functions of the IBCU this year have included working with staff to finalise Menzies' Innovate Reconciliation Action Plan, which outlines Menzies' commitment to the national reconciliation movement, and facilitating our Aboriginal Staff Network.

NATIONAL CLOSE THE GAP DAY

In partnership with Northern Territory General Practice Education (NTGPE), Menzies hosted a Close the Gap event on 15 March 2018, in the foyer of our CDU campus.

Dr Bo Remenyi (NT Australian of the Year 2018) was the guest speaker who spoke passionately about RHD being a third world disease in a first world country.

The event offered Menzies and NTGPE staff the chance to network over morning tea, listen to live music by Jana Mills and his son Junior, immerse themselves in a basket weaving demonstration and browse locally made Aboriginal artworks. To keep everyone active, a smoothie bike was available to guests to make their own healthy smoothie.

Importantly, all who attended were given the opportunity to sign the Close the Gap petition, which was then sent direct to Canberra.

NAIDOC MARCH

More than 20 Menzies staff members attended the 2018 NAIDOC march and carried the Menzies banner in support of walking in solidarity with the community.

The march started at Bennett Park with a free BBQ breakfast. The crowd then made its way through the Darwin CBD and finished at Raintree Park with words of encouragement and strength from official speakers.

INRA CONFERENCE

ICBU staff represented Menzies at the Inaugural National Reconciliation Australia Conference held in Melbourne on 5 and 6 December 2018.

From left to right: Rachael Walker, Heather D'Antoine, Lydia Agius and Diane Walker (ICBU team).

STAFF AWARDS

WELLBEING AND PREVENTABLE CHRONIC DISEASES

- Professor James Smith was awarded the prestigious Fulbright Northern Territory Scholarship, funded by the Northern Territory Government, Charles Darwin University and Blackboard Ltd.
- Dr Tamara Butler journeyed to London as part of the 2018 Melbourne Poche Centre for Indigenous Health's Indigenous Leadership Fellows program.
- 2018 was a big year for Paul Lawton who was presented with the Australian and New Zealand Society of Nephrology Rural Science Award and the Mark Cocks Transplant Research Scholarship, funded by Transplant Australia.
- Dr Lisa Whop received the NHMRC Rising Star Award for her work in cervical cancer screening in Indigenous women.

CHILD HEALTH

- Dr Michael Binks was presented with the Charles Darwin University Vice Chancellor Award for exceptional performance in research - emerging researcher.
- Professor Anne Chang received an NHMRC Practitioner Fellowship for Improving lung health of children, especially Aboriginal and Torres Strait Islander children.

CENTRE FOR CHILD DEVELOPMENT AND EDUCATION

- Researcher Bernard Leckning was awarded a Suicide Prevention Australia (SPA) Higher Degree by Research Scholarship.

GLOBAL AND TROPICAL HEALTH

- Professor Nick Anstey was presented an Honorary International Fellow of ASTMH (American Society of Tropical Medicine and Hygiene).
- Associate Professor Anna Ralph was formally awarded an internationally renowned Fulbright Scholarship to help eliminate rheumatic heart disease (RHD) in Australia.
- Matthew Grigg received the Aileen Plant Memorial Prize in Infectious Diseases Epidemiology for his P. knowlesi acquisition risk factors case-control study jointly awarded by UNSW and the Australian Government Department of Health.
- Professor Joshua Davis received a Career Development Fellowship from NHMRC for strengthening the evidence base for management of common severe infectious diseases.

STUDENTS

- Former Menzies Master of Public Health student Greg Smith was named NT Nurse of the Year.
- Alana Gall received a NHMRC Postgraduate Scholarship.
- Anna McLean received a NHMRC Postgraduate Scholarship.
- Diana Mackay received a NHMRC Postgraduate Scholarship.
- Gillian Gorham received an NHMRC Postgraduate Scholarship.
- Masters student Dr Michelle Goroh was announced as the winner at University of Malaysia Sabah of the 'best research award' in Public Health for her work on a Menzies tuberculosis prevention project.
- Dr Bo Remenyi was the NT Australian of the Year for 2018.
- Angelica Tan received a CDU Malaysia Australia Colombo Plan Commemoration scholarship for her PhD.
- Decio Sarmento and Nevio Sarmento both received the Australian Government Research Training Program Stipend Scholarship to undertake a Higher Degree by Research.
- Stefanie Puszka (Menzies and CDU PhD candidate) was one of the recipients of this year's Australian Federation of Graduate Women's Barbara Hale Fellowships.
- Professor James Smith was part of a team that won an Australian Rural Education Award by the Society for the Provision of Rural Education in Australia.
- Damian Oyong was awarded NT Government International Student Development Grant to attend the Malaria World Congress 2018.
- Dr Matthew Hare received an NHMRC Postgraduate Scholarship.
- Josie Povey was awarded the Ian Scott Scholarship through Australian Rotary Health.

STAFF AWARDS

PROFESSIONAL RECOGNITION

- Professor Gail Garvey was nominated for the 2019 Telstra Business Women's Award – Public Sector & Academia (QLD).
- Professor Amanda Leach was nominated for the 2019 Telstra Business Women's Award - For Purpose & Social Enterprise (NT).
- Top End Health Service recognised several of our clinical researchers at the Service Excellences Awards: Associate Professor Anna Ralph, Professor Bart Currie, Professor Nick Anstey and Professor Ric Price recognised for their contributions to the TEAMS: Top End AntiMicrobial Stewardship initiative and Dr Jaqui Hughes part of the nephrology team at RDH in receiving the 'Doing Things First' category.
- Associate Professor Heidi Smith-Vaughan, Dr Teresa Wozniak, and Dr Kalinda Griffiths were chosen to participate in the Superstars in STEM program run by Science and Technology Australia because of their ability to champion change for women in STEM.
- In 2018 Professor Anne Chang was nominated for a Pride of Australia medal – Queensland.
- Dr Jaqui Hughes recognised as a finalist for the Bupa Health Foundation Emerging Health Research Award.
- Gillian Gorham was a recipient of the Annual Scientific Meeting ANZSN 2018 Clinical Science Award Kidney Health Australia.
- Professor Josh Davis was elected President of the Australasian Society for Infectious Diseases.
- The Menzies Viral Hepatitis Team was nominated in the NT Health Excellence Awards in the category of 'Improving Patient Experience Award' and was one of the three finalists.
- Menzies honorary fellow and data scientist Dr Kalinda Griffiths was named a recipient of the Indigenous Scholarship: Science Meets Parliament, from Science and Technology Australia.

INTERNAL AWARDS

- The 2018 Menzies Medallion was awarded to Professor Paul Torzillo in recognition of his work to improve the health of Indigenous people across urban, rural and remote Australia.
- The Hon Austin Asche AC QC, Dr Valerie Asche and Richard Ryan AO were awarded the Companion of Menzies.
- Hep B projects program manager Paula Binks was the recipient of the 2018 Ryan Family Prize.
- The 2018 Val Asche Prize for Academic Excellence was awarded to Clare Brown (Graduate Diploma in Health Research), Alison Fitzgerald (Graduate Diploma in Public Health) and joint winners Judith Watson and Dr Eswaran Waran (Masters of Public Health).
- Teresa Wozniak and Sarah Auburn were recipients of HOT North Fellowships.

QUEEN'S BIRTHDAY HONOURS LIST

The late Associate Professor Sue Mary Baddeley (Sayers) was recognised posthumously in the Queen's Birthday honours, receiving the Officer (AO) of the Order of Australia for her distinguished service to child health as an academic and researcher, to neonatal paediatric medicine, and to the Indigenous community of the NT.

Professor Alan Cass with long service award recipient Michelle Matts.

LONG SERVICE AWARDS

20 Years

- Robyn Liddle

15 Years

- Kim Piera
- Debbie Taylor-Thompson
- Associate Professor Gurmeet Singh

10 Years

- Dr Michael Binks
- Glenda Harrington
- Dr Jutta Marfurt
- Professor Philip Giffard
- Associate Professor Tricia Nagel
- Debbie Wang
- Julianne Giffard
- Tsin Yeo
- Sharon Thompson
- Julie Green

5 Years

- Dr Sharon Chirgwin
- Jacqueline Carroll
- Bernard Leckning
- Associate Professor Bridget Barber
- Claire Addinsall
- Gill Gorham
- Erin Higgins
- Dr Marita Hefler
- Dr Leisa McCarthy
- Dr Matt Grigg
- Maria Ivone
- Michelle Matts
- Brian Arley
- Dr Michelle Sweet

Long service award winner Robyn Liddle.

OUR SUPPORTERS

Menzies researcher Christine Wigger with Neil Balnaves AO.

DONOR AND SUPPORTERS UPDATE

2018 was a busy year for the Development team with a total of $2.7 million raised.

Many of our efforts during the year were aided and championed by Menzies Patrons and Ambassadors who were instrumental in supporting our efforts through their expertise, advice, networking and hosting.

We are deeply grateful to John Hardy AO, Vicki O'Halloran AM, Helen Coonan, Daniel Gilbert, Brandon and Nicky Carp, Dean Rioli, Belinda Gibson, Dr Richard Russell and Kate Russell, Suzi Hullick, Les Trudzick, Maryjane Crabtree, Rebecca McGrath, Allan Vidor, Michael Rose, Jason Eades, Rosemary Calder, Charlie King, Lesley Braun, Simon McKeon, Simon Schwarz, Susan Alberti AC, Bronwyn Pike, Michele Levine, Ian Kew, John Cossons, Olivia Tyler and Mark Carnegie.

ENGAGEMENT EVENTS

Throughout the year, the Development team organised six successful donor engagement events (sponsored and hosted by key partners). These events provided the opportunity for our researchers to present to key business and philanthropic leaders, raising awareness of and garnering support for their projects.

We extend our deep gratitude to our event hosts Ben McLaughlin (Partner at Baker McKenzie) Michael Bridge (Director at Airnorth), Susan Alberti AC, Ann Sherry AO (Chairman Carnival Australia) and Shelley Roberts (CEO of Compass).

HEARING FOR LEARNING INITIATIVE

In August 2018, Chief Minister Michael Gunner launched the Hearing for Learning Initiative at Parliament House, in Darwin. This $7.9 million initiative was funded by a public-private collaboration of The Balnaves Foundation, the NT Government and the Commonwealth Government.

SUPER BUGS

Philanthropic support by Ian Albrey and Edwina Menzies is funding critical new research on superbugs (antimicrobial resistance) led by Menzies' Dr Teresa Wozniak.

BRIDGING THE GAP FOUNDATION

The Menzies Development team continued to work closely with the Bridging the Gap Foundation.

A number of key partnerships were facilitated with the Moriarty Foundation and the Port Adelaide Football Club's Power Community Program, which will commence in 2019.

SUPPORTER SPOTLIGHT

Pro-bono corporate support by Baker McKenzie, led by Partner Ben McLaughlin, continued to contribute enormous value to Menzies. Baker McKenzie provided pro bono legal services and advice on a range of Development initiatives throughout 2018.

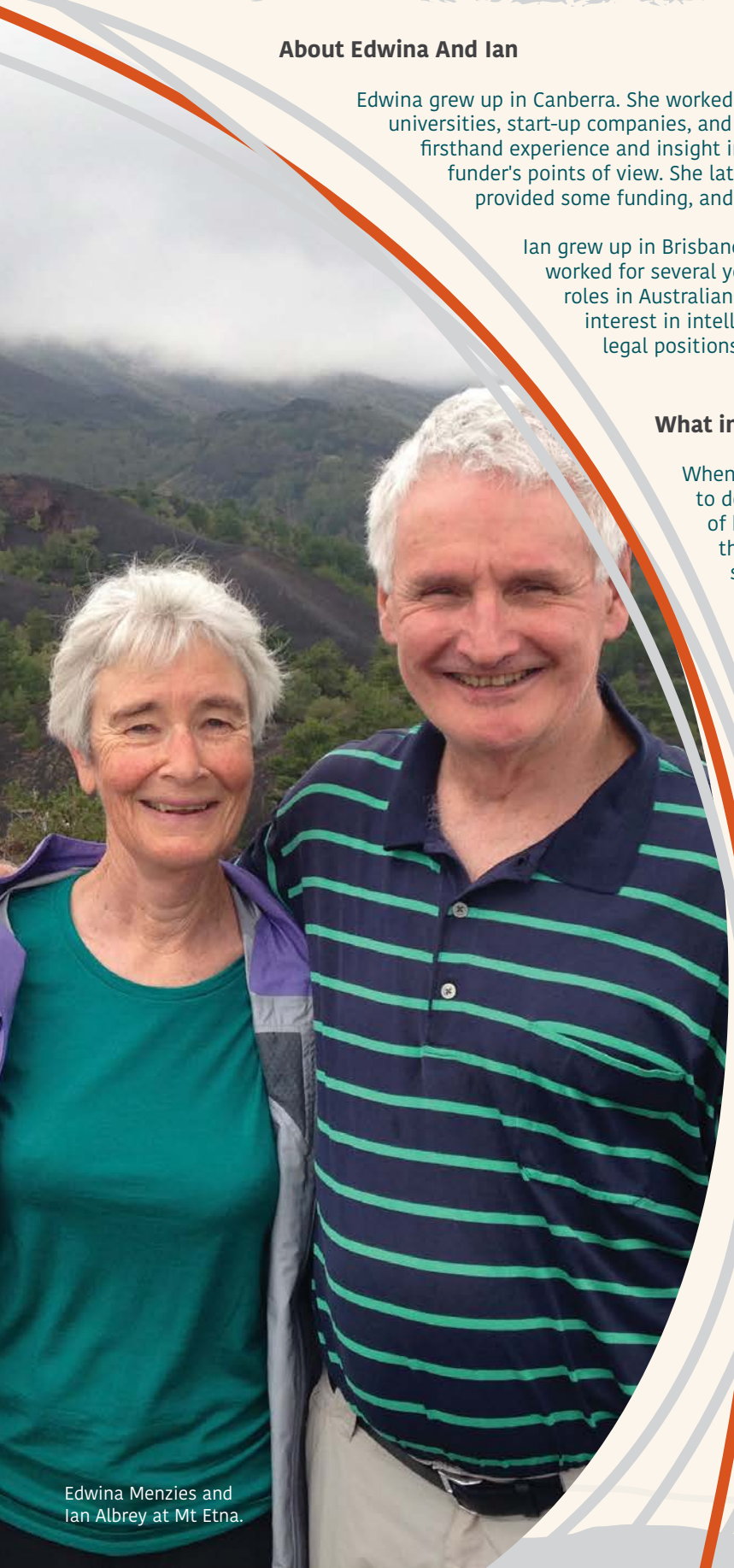
In addition, Ben hosted a successful engagement event in 2018, giving Professor Gail Garvey and Dr Lisa Whop a platform to share their cancer research with an audience of supporters, partners and sponsors.

We are deeply grateful to Ben McLaughlin and Baker McKenzie for their ongoing commitment to the work of Menzies.

From left to right: Chief Minister Michael Gunner, Minister Ngaree Ah Kit, Neil Balnaves AO and Professor Alan Cass.

DONOR SPOTLIGHT

Our donors play an important role in supporting our research. This year we interviewed Edwina Menzies and Ian Albrey to find out what motivates them to support our work.



Edwina Menzies and Ian Albrey at Mt Etna.

About Edwina And Ian

Edwina grew up in Canberra. She worked as a lawyer in various organisations, including CSIRO, universities, start-up companies, and numerous Cooperative Research Centres. This gave her firsthand experience and insight into funding research from both the reseacher's and the funder's points of view. She later joined the board of the Menzies Foundation, which provided some funding, and the name, for the Menzies School of Health Research.

Ian grew up in Brisbane, leaving there with a PhD in electrical engineering. He worked for several years in various engineering, R&D and commercialisation roles in Australian industry and CSIRO. While at CSIRO, he developed an interest in intellectual property law and undertook a law degree leading to legal positions in private practice and the Commonwealth Public Service.

What inspired you to donate to Menzies?

When Ian received his inheritance from his mother, he wanted to donate a large part towards child-related research in honour of his mother's lifelong interest in children. Edwina suggested that we contact the Menzies School of Health Research to see if there were any relevant projects in need of funding.

The response was prompt and enthusiastic. We were given various child-related research projects to consider and we felt we had some say into how our donations were used.

What does giving to Menzies mean for you?

We believe donating a larger sum, directly to a Menzies project, has more of an impact than donating to a large well-known charity, where it can become lost in the general pool of funds.

We enjoy receiving the regular update reports from PANDORA, HOT North and the superbug project. We really feel our donation is not only helping people now, but also potentially the next generations.

What message do you have for other people considering donating to Menzies?

You don't need to be a billionaire to provide an amount that will have a significant impact and donating to Menzies has been very rewarding, to say the least. And the professionalism and dedication of the people at Menzies whom we have been privileged to meet over the several years in which we have been donors bring nothing but credit to the organisation.

MAJOR DONORS AND PARTNERS

We are grateful to the following donors and partners for their generous support in 2018:

MAJOR DONORS

ASIC
Belinda Gibson
Dr Anna Ralph
Dr Jaqui Hughes
Dr Val Asche
Graham Blashki
Ian Albrey and Edwina Menzies
James Hogben
McArthur River Mine Community Benefits Trust
McArthur River Mine Annual Charity Golf Tournament
Megan Duffy
NT Airports
Shannon Spriggs
The Maple-Brown Charitable Foundation
The Ray and Margaret Wilson Family Foundation

PARTNERS AND FUNDERS

AMSANT
AccessBio, USA
Addis Ababa University, Ethiopia
Addis Continental Institute of Public Health (ACIPH), Ethiopia
Agency for Clinical Innovation (ACI) NSW
Airnorth
Alaska Native Tribal Health Consortium
Allen and Clarke Policy and Regulatory, New Zealand
Allens Linklaters
Amity Community Services Inc
Ann Sherry, AO
Anyinginyi Health Aboriginal Corp
Apunipima Cape York Health Council
Armauer Hansen Research Institute
Asthma Australia Inc
Asthma Foundation NT
Auckland University
Aurizon Community Fund
Australasian Society for Infectious Diseases Clinical Research Network
Australian Academy of Science
Australian and New Zealand Dialysis and Transplant Registry
Australian Army Malaria Institute
Australian Broadcasting Corporation
Australian Federation of Graduate Women
Australian Government Attorney General's Department
Australian Government Department of Education and Training
Australian Government Department of Families, Housing, Community Services and Indigenous Affairs
Australian Government Department of Foreign Affairs and Trade
Australian Government Department of Health
Australian Government Department of Industry and Science
Australian Government Department of Social Services
Australian Government Department of the Prime Minister and Cabinet
Australian National University
Australian Red Cross Society
Australian Regional and Remote Community Services
Australian Society for HIV Medicine
Australian Unity
Baker McKenzie
Baker Heart and Diabetes Institute
Balarinji
Baniyala Garrangali School
Bawinanga Aboriginal Corporation
Ben McLaughlin
Beyondblue
Bila Muuji Upper Sector Consortium NSW
Bill & Melinda Gates Foundation
Bupa Health Foundation
Burnet Institute
Brisbane Indigenous Media Association (989fm)
Central Australian Academic Health Science Centre
CAAMA Productions
Cairns Diabetes Centre
Canadian Partnership Against Cancer
Cancer Australia
Cancer Council Australia
Cancer Council NSW
Cancer Council QLD
Cancer Council WA
Catholic Archdiocese of Mount Hagen, PNG
Catholic Archdiocese of Madang, PNG
Catholic Archdiocese of Kundiawa, PNG
Catholic Education NT Center for Tropical & Emerging Global Diseases, University of Georgia, Athens, GA, USA
Central Adelaide Local Health Network
Central Australian Aboriginal Congress
Central Australian Health Service
Central West Hospital and Health Service
Centre for Disease Control (CDC) (NT)
Centre for Remote Health (NT)
Centre for Tropical Medicine and Global Health, University of Oxford
Centro Internacional de Entrenamiento e Investigaciones (CIDEIM), Colombia
Channel 7 Children's Research Foundation
Charles Darwin University
Children's Hospital Queensland
Collier Charitable Fund
Columbia University
Cook Medical Health
Cooperative Research Centre for Developing Northern Australia
CSIRO
Danila Dilba Health Service
Deakin University
Defence Threat Reduction Agency, USA
Deloitte Australia
Department of Chemistry and Chemical Biology and Department of Pharmaceutical Sciences, Northeastern University, Boston, MA, USA
Department of Homeland Security, USA
Department of Malaria, National Institute of Parasitic Disease, Chinese Center for Disease Control and Prevention
Department of Medical Research, Myanmar
Department of Parasitology and Medical Entomology, University of Kassala, Sudan
Department of Zoology, University of Colombo, Sri Lanka
Developing East Arnhem Limited (DEAL)
Diabetes Australia Research Program
Dreammedia Creative
Drug and Alcohol Services Association (DASA)
Duke University Medical Center, USA
Eijkman Institute for Molecular Biology, Jakarta, Indonesia
Eijkman Oxford Clinical Research Unit (EOCRU), Indonesia
Ethiopian Public Health Institute (EPHI), Ethiopia
EY Ernst & Young
Faculty of Medicine, University of Antioquia, Colombia
Family Health International, USA
Financial Markets Foundation for Children
Fiona Stanley Hospital WA Department of Nephrology

Fitzroy Crossing Foundation for Alcohol Research and Education
Flinders University, NT Clinical School
Giese Family
Geraldton Regional Aboriginal Medical Service
Gilead Sciences
Glaxo Smith Kline Australia
Global Health Group, University of California, USA
Goodman Fielder
Griffith University
Group Training NT
Guardian Trust - The James Russell Lewis Trust
Gurriny Yealamucka Health Service Aboriginal Corporation
Hanako Foundation
Health and Social Development Organization, Afghanistan
Health Protection and Research Organisation, Afghanistan
Health Protection NSW
Healthy Living NT
Heart Foundation Australia
Heart Foundation NSW
Heart Foundation NT
Heart Foundation QLD
Hepatitis Australia
Hormozgan University of Medical Sciences, Iran
Hubert Kairuki Memorial University, Dar-es-Salaam, Tanzania
Hunter Medical Research Institute
IAG Foundation
Ian Garton
Ian Potter Foundation
Icon Cancer Care
Inala Indigenous Health Service
InBios International, Inc. USA
Infectious Diseases Society Kota Kinabalu Sabah, Malaysia
Infectious Diseases Unit, Queen Elizabeth Hospital, Malaysia
Inpex Operations Australia Pty Ltd
Insein General Hospital, Yangon, Myanmar
Institut Pasteur du Cambodge, Cambodia
Institute for Healthcare Improvement
Institute of Infectious Disease and Epidemiology, Tan Tock Seng Hospital, Singapore
Institute of Tropical Medicine (ITM) Antwerp, Belgium
Integria Healthcare
Integria Healthcare (Australia) Pty Ltd
International Agency for Research on Cancer
International Centre for Diarrhoeal Disease Research, Bangladesh
J.P. Morgan
James Cook University
Jiangsu Institute of Parasitic Diseases, Jiangsu, China
Jilamara Arts and Crafts, Milikapiti, Tiwi Islands
Kate Russell
Katherine West Health Board Aboriginal Corporation
Keningau Hospital, Sabah, Malaysia
Klang Hospital, Malaysia
Kidz First Children's Hospital, NZ
Korea Center for Disease Control and Prevention, Republic of Korea
Korea National Institute of Health, Republic of Korea
Kormilda College
Kota Marudu Hospital, Sabah, Malaysia
KPMG Australia
Kuching Specialist Hospital, Sarawak, Malaysia
Kudat Hospital, Sabah, Malaysia
Laynhapuy Homelands Aboriginal Corporation
Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore
Likas Hospital, Sabah, Malaysia
London School of Hygiene and Tropical Medicine
Lung Foundation Australia
Maari Ma Health Aboriginal Corporation
Mackay Hospital and Health Service
Mahidol-Oxford Tropical Medicine Research Unit, Thailand
Mailman School of Public Health, University of Columbia, USA
Malaria Atlas Project (MAP), Oxford Big Data Institute, University of Oxford
Malaysia Ministry of Health
Mallee District Aboriginal Services
Mamu Health Service Limited
Maningrida College
McArthur River Mining
McMaster University
Medibank
Menzies Foundation
Medical Oncology Group of Australia
Medical Research Council, UK
Medicines for Malaria Venture
Melbourne Health
Memorial University, Newfoundland
Michael Bridge
Michael Long Learning and Leadership Centre
Ministry of Health, Bhutan
Mitra Masyarakat Hospital, Papua, Indonesia
Miwatj Health Aboriginal Corporation
Monash University
Mulungu Aboriginal Corporation Primary Health Care Service
Murdoch Childrens Research Institute
Nanyang Technological University, Singapore
National Aboriginal Community Controlled Health organisation
National Breast Cancer Foundation
National Centre for Parasitology Entomology and Malaria Control, Cambodia
National Critical Care and Trauma Response Centre
National Health and Medical Research Council
National Heart Foundation NT
National Institutes of Health, USA
National Rural Health Alliance
National University of Singapore
Naval Medical Research Center, USA
NAVSUP Fleet Logistics Center Singapore Office
Ngaanyatjarr Health
Nganampa Health
Ninti One Limited
North and West Remote Health Ltd
Northern Adelaide Local Health Network
Northern Arizona University
Nossal Institute for Global Health
NSW Government Department of Health
NSW Government Far West Local District
NT Airports
Northern Territory Community Benefit Fund
Northern Territory Department of Business
Northern Territory Department of Territory Families
Northern Territory Department of Education
Northern Territory Department of Health
Northern Territory Department of Housing
Northern Territory Department of Land Resource Management - Water Resources Division
Northern Territory Department of Local Government and Community Services
Northern Territory Department of Primary Industry and Fisheries
Northern Territory Department of the Attorney-General and Justice
Northern Territory Department of Trade, Business and Innovation
Northern Territory Department of Treasury and Finance
Northern Territory Primary Health Network
Northern Territory Public Health Network
Nunkuwarrin Yunti Inc Office for Aboriginal and Torres Strait Islander Health (Cth)
OLSH Thamarrur Catholic School, Wadeye
Ord Valley Aboriginal Health Service
Organization for Social Science Research in Eastern and Southern Africa (OSSREA), Ethiopia
Outback Stores
Oxfam Australia
Oxford University Clinical Research Unit Vietnam

Oxford Wellcome Trust
Papuan Health and Community Development Foundation, Timika, Indonesia
Pasteur Institute of Ho Chi Minh City
PATH, USA
Perpetual Limited (The Ramaciotti Foundation)
Pfizer Australia
Pierre and Marie Curie University, Paris, France
Pika Wiya Health Service
Poche Centre for Indigenous Health and Wellbeing, Alice Springs
Poche Centre, University of Sydney
PNG Government Department of Community Development and Religion
Primary English Teaching Association Australia
Prince Charles Hospital
Princess Alexandra Hospital
Professor Paul Zimmit, AO
QIMR Berghofer Medical Research Institute
Queensland Government Department of Health
Queensland University of Technology
Quitline - Queensland Ranau Hospital, Sabah, Malaysia
Rebecca L Cooper Medical Research Foundation Limited
Research Institute for Tropical Medicine, Department of Health, Philippines
RHD- QLD
RhEACH
Richard Russell
RJ Baker
Robinson Institute, University of Adelaide
Rotary Club of Darwin
Roy Morgan Research Ltd
Royal Adelaide Hospital
Department of Nephrology
Royal Australasian College of General Practitioners
Royal Australasian College of Physicians
Royal Darwin Hospital
Seattle Children's Hospital, USA
Shoklo Malaria Research Unit, Tak Province, Thailand
South Australian Health & Medical Research Institute (SAHMRI)
Susan Alberti, AC
St Vincent's Hospital Melbourne
Starship Children's Hospital, NZ
Suicide Prevention Australia
Sunrise Health
Telethon Kids Institute
Tengku Ampuan Rahimah Hospital, Klang, Malaysia
TGen North, USA
The Balnaves Foundation
The Black Dog Institute
The Catholic Bishops' Conference of Papua New Guinea and the Solomon Islands (CBC)
The Clive and Vera Ramaciotti Foundation
The Corella Fund
The Fred Hollows Foundation
The Kirby Institute, University of NSW, Sydney
The Hon Helen Coonan
The Lowitja Institute
The Peter Dohery Institute for Infections and Immunity (Doherty Institute)
The Pratt Foundation
The Prince Charles Hospital Chermside QLD
Timika Regional Hospital, Papua, Indonesia
Top End Health Services
Townsville Aboriginal and Islander Health Service
Traditional Homeland Enterprises
Tropical Public Health Services - Cairns
Uncle Jimmy Thumbs Up!
UNICEF
Universiti Malaysia Sarawak (UNIMAS)
University Centre of Rural Health
University Malaya Medical Centre (UMMC), Kuala Lumpur, Malaysia
University of Adelaide
University of California, USA
University of Gadjah Mada, Yogyakarta, Indonesia
University of Khartoum, Sudan
University of Malaya, Kuala Lumpur, Malaysia
Universiti Malaysia Sabah (UMS), Sabah, Malaysia
University of Medicine 2, Yangon, Myanmar
University of Melbourne
University of Nevada, USA
University of NSW
University of Newcastle
University of Otago, NZ
University of Oxford, UK
University of Queensland
University of SA
University of Sydney
University of Sydney, University Centre for Rural Health
University of Tasmania
University of Technology Sydney
University of Utah, USA
University of WA
University of Western Sydney
University of Wollongong
Victorian Aboriginal Community Controlled Health Organisation Inc. (VACCHO)
VicHealth
Victoria University
Victorian Cytology Service
Victorian Infectious Diseases Reference Laboratory
Vysnova Partners Inc
Western Australian Department of Health
Walter and Eliza Hall Institute of Medical Research
Walytja Palyantjaku Tjutaku Aboriginal Corporation
Wellcome Trust Sanger Institute
Wellington Aboriginal Corporation Health Service
Wells Bio, Republic of Korea
Western Desert Nganampa
Western University, Schulich Interfaculty Program in Public Health, Canada
Westpac
Whyalla, SA
Women's & Children's Health Network
World Health Organisation
WorldWide Antimalarial Resistance Network (WWARN)
Wuchopperen Health Service Ltd
Wurli Wurlinjang Health Service
Xavier Catholic College, Wurrumiyanga
Yalu Marngithinyaraw Galiwin'ku
Yothu Yindi Foundation

OUR FINANCIALS

Menzies sign outside our JMB building at the Royal Darwin Hospital.

FINANCIAL SUMMARY

The following pages provide a summary of Menzies' financial statements for the year ended 31 December 2018.

STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME

For the year ended 31 December 2018.

	NOTE	2018 $	2017 $
Income from continuing operations			
Australian Government financial assistance			
National Health and Medical Research Council	2	**12,421,771**	10,959,791
Other government agencies	2	**5,896,116**	2,448,708
NT Government financial assistance	3	**6,325,715**	5,161,924
Fees and charges	4	**2,932,808**	3,090,634
Investment income	5	**910,455**	816,782
Consultancy and contract research	6	**7,929,234**	10,353,570
Other revenue	7	**5,813,071**	4,265,807
Total revenue from continuing operations		**42,229,170**	37,097,216
Gain/(Loss) on disposal of assets	8	**53,939**	(1,003)
Total income from continuing operations		**42,283,109**	37,096,213
Expenses from continuing operations			
Employee related expenses	9	**24,436,817**	24,904,426
Depreciation and amortisation	10	**2,563,730**	2,577,823
Repairs and maintenance	11	**1,299,116**	1,261,071
Direct research costs	12	**5,236,469**	5,843,061
Other expenses	13	**6,867,828**	5,883,996
Total expenses from continuing operations		**40,403,960**	40,470,377
Operating result from continuing operations		**1,879,149**	(3,374,164)
Operating result attributable to members		**1,879,149**	(3,374,164)
Revaluation of investment	23	**(6,298)**	3,732
Total comprehensive income/(loss) attributable to members		**1,872,851**	(3,370,432)

The above Statement of Profit or Loss and Other Comprehensive Income should be read in conjunction with the accompanying notes included in Menzies' 2018 audited financial statements.

STATEMENT OF FINANCIAL POSITION

As at 31 December 2018.

	NOTE	2018 $	2017 $
Assets			
Current Assets			
Cash and cash equivalents	14	**3,996,924**	2,473,893
Trade and other receivables	15	**516,429**	625,870
Other financial assets	16	**34,727,000**	31,727,000
Other non-financial assets	18	**592,785**	692,571
Total Current Assets		**39,833,138**	35,519,334
Non-Current Assets			
Other financial assets	16	**35,528**	39,907
Property, plant and equipment	19	**981,232**	1,683,874
Intangible assets	17	**26,647,831**	28,337,831
Total Non-Current Assets		**27,664,591**	30,061,612
Total Assets		**67,497,729**	65,580,946
Liabilities			
Current Liabilities			
Trade and other payables	20	**731,262**	841,545
Provisions	22	**4,329,631**	4,072,346
Other liabilities	21	**178,229**	212,730
Total Current Liabilities		**5,239,122**	5,126,621
Non-Current Liabilities			
Provisions	22	**335,204**	403,773
Total Non-Current Liabilities		**335,204**	403,773
Total Liabilities		**5,574,326**	5,530,394
Net Assets		**61,923,403**	60,050,552
Equity			
Reserves	23	**8,462,739**	7,657,326
Retained earnings	24	**53,460,664**	52,393,226
Total Equity		**61,923,403**	60,050,552

The above Statement of Financial Position should be read in conjunction with the accompanying notes included in Menzies' 2018 audited financial statements.

STATEMENT OF CHANGES IN EQUITY

As at 31 December 2018.

	NOTE	Retained Earnings $	Reserves $	Total $
Balance at 1 January 2018		52,393,226	7,657,326	60,050,552
Operating result for the year	25	1,879,149	-	1,879,149
Net Revaluation loss on investments	23	-	(6,298)	(6,298)
Total Comprehensive Income		**54,272,375**	**7,651,028**	**61,923,403**
Transfers	24	(811,711)	811,711	-
Balance at 31 December 2018		**53,460,664**	**8,462,739**	**61,923,403**
Balance at 1 January 2017		56,589,121	6,831,863	63,420,984
Operating result for the year	25	(3,374,164)	-	(3,374,164)
Net Revaluation gain on investments	23	-	3,732	3,732
Total Comprehensive Income		**53,214,957**	**6,835,595**	**60,050,552**
Transfers	24	(821,731)	821,731	-
Balance at 31 December 2017		**52,393,226**	**7,657,326**	**60,050,552**

The above Statement of Changes in Equity should be read in conjunction with the accompanying notes included in Menzies' 2018 audited financial statements.

STATEMENT OF CASH FLOWS

For the year ended 31 December 2018.

	NOTE	2018 $	2017 $
Cash flows from operating activities			
Australian Government grants		**18,503,001**	13,345,614
NT Government funding		**6,325,715**	5,161,924
Receipts from student fees		**2,932,809**	3,090,634
Interest received		**908,536**	815,351
Consultancies and contract research		**7,884,991**	10,248,315
Other receipts		**5,813,072**	4,265,807
Payments to suppliers		**(13,520,521)**	(13,308,550)
Payments to employees		**(24,207,423)**	(24,583,143)
Net cash provided by/(used in) operating activities	27	**4,640,180**	(964,048)
Cash flows from financing activities		**-**	-
Cash flows from investing activities			
Menzies investments funds held with Charles Darwin Uni.	16, 29	**2,000,000**	(7,000,000)
Term deposit with Australian Financial Institution	16	**(5,000,000)**	-
Proceeds from sale of plant and equipment		**61,273**	-
Payments for property, plant and equipment	19	**(178,422)**	(207,988)
Net cash outflow from investing activities		**(3,117,149)**	(7,207,988)
Net increase/(decrease) in cash and cash equivalents		**1,523,031**	(8,172,036)
Cash and cash equivalents at the beginning of the year		**2,473,893**	10,645,929
Cash and cash equivalents at end of the year	14	**3,996,924**	2,473,893

The above Statement of Cash Flows should be read in conjunction with the notes included in the 2018 audited financial statements.

ANALYSIS OF RESULTS

In 2018, Menzies posted an operating surplus of $1,879,149 represented by the following:

	2018 $	2017 $
Research and Education surplus/(deficit)	**3,583,299**	(981,955)
Non-research and education surplus	**805,641**	186,315
Depreciation and amortisation	**(2,563,730)**	(2,577,823)
Gain/(Loss) on disposal of assets	**53,939**	(1,003)
Interest earned on capital funding	**-**	302
	1,879,149	(3,374,164)

In interpreting Menzies' financial results, it is critical to understand that Menzies' income is predominantly for the conduct of multi-year research, and is recorded as income in the year it is received, though expenditure related to that income may occur in future years.

This often causes a mismatch between research income and expenditure which can result in research surpluses in one year as income is received (for example, 2018: Research and Education surplus of $3.583M), and research deficits in other years as expenditure is incurred (for example, 2017: Research and Education deficit of $981K).

These year on year variations in the research financial result are not reflective of underlying changes in performance, operations or effectiveness from year to year, rather, they are simply a snapshot at a point in time of the income and expenditure patterns across multiple, multi-year research programs.

Menzies continues to operate in an increasingly competitive research environment, and in a relatively high cost setting given the remote and regional context in which our research is conducted. There continues to be a shortfall between the funding awarded and the costs associated with competitive research. Continued focus on and success in our income diversification strategies is critical, as is support received from the Northern Territory and Commonwealth governments.

For the full 2018 audited financial report, please visit www.menzies.edu.au/2018financialreport

We wish to thank the many individuals and communities who granted permission to use the photographic images of themselves and their children throughout this publication.

Menzies PhD student Dr Trisasi Lestari visiting a household in Papua to conduct tuberculosis contact investigation.

menzies
school of health research

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