

2019 Annual Report



Our organisation

We are one of Australia's leading medical research institutes dedicated to improving the health and wellbeing of Aboriginal and Torres Strait Islander peoples. We are also a leader in global and tropical health research into life-threatening diseases. Through effective partnerships with communities across northern Australia and the Asia-Pacific region, we aim to translate our research into real change.



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.



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.

◀ Cover images

Top Elias and Jonas Bonson, in Maningrida, NT.

Middle Menzies trainee and HealthLAB volunteer, Raelene Collins with Dr Kalinda Griffiths during a HealthLAB session.

Lower left Daw Ngwe Tein with her grandchild, Blu Nay L'Paw in Mae Sot, Thailand. *Photo credit: Pearl Gan in association with Oxford University Clinical Research Unit (OUCRU), Vietnam and Eijkman-Oxford Clinical Research Unit (EOCRU), Indonesia.*

Lower right Professor Josh Davis at work in the laboratory.

Find out more at
www.menzies.edu.au

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Who we are

Our diverse workforce fulfill key roles in health service delivery, research, and training throughout Australia and across the region.

Number of staff



Number of Aboriginal and/or Torres Strait Islander staff and community-based researchers

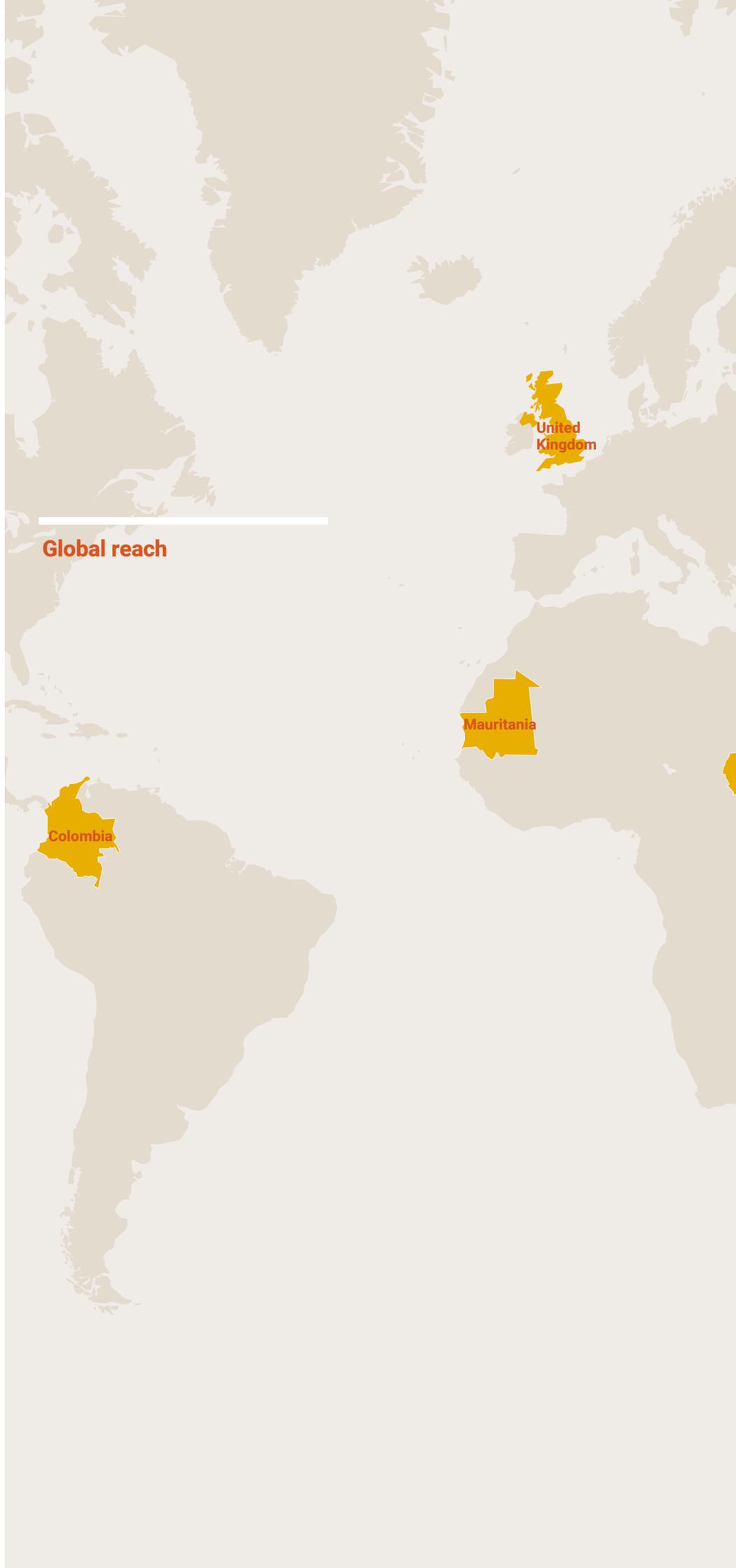


Number of students enrolled in Menzies courses



* Full-time equivalent

Global reach





Where we work

Our headquarters are in Darwin, with offices in Alice Springs, Brisbane and Dili, Timor-Leste. Our work spans central and northern Australia and countries within our global neighbourhood.

Key

- Countries where we work
- Field sites

2019 highlights

February

Launched the Trakz resource, designed to address the impact of teasing and bullying experienced by remote Aboriginal youth, developed in collaboration with an advisory group of young community-based leaders.



^ The Trakz resource was designed to help Indigenous youths cope with teasing and bullying.

The Fighting Liver Cancer Together fundraiser in Darwin raised funds for equipment used at our 'One-Stop Liver Shops' in remote Northern Territory (NT) communities.

March

Professor Amanda Leach was named the 2019 Telstra NT Business Woman of the Year and was also the winner of the For Purpose and Social Enterprise category.



^ Professor Amanda Leach receiving her 2019 Telstra NT Business Woman of the Year award.

March

Professor Gail Garvey was a finalist in the 2019 Telstra Queensland (QLD) Business Woman of the Year Public Sector and Academia Award Category.

Professor Josh Davis was awarded a National Health and Medical Research Council (NHMRC) Research Excellence Award for being the top-ranked Career Development Fellowship applicant in clinical health research.



^ The Hon Ken Wyatt AM, with Menzies HealthLAB's Kate Duncan at the announcement.

The Hon Ken Wyatt AM, Minister for Indigenous Health, announced a \$6.57 million grant to tackle youth and diabetes health.

May

Professor Ric Price was recognised by The Academy of Medical Sciences as one of the UK's 50 leading figures elected to their esteemed Fellowship.



^ Professor Ric Price is now a Fellow of the UK's Academy of Medical Sciences.
Photo credit: Charles Darwin University

July

Eleven adult Yolŋu students celebrated their Certificate II Community Health Research graduation with a ceremony on country in Baniyala Homeland, NT.



^ Certificate II Community Health Research graduates on Baniyala Homeland.

The Aboriginal Birth Cohort Study (ABC) commenced its fifth wave of data collection.



^ Camille Damaso, son Cian McCue, Associate Professor Gurmeet Singh and Belinda Davidson at the launch of the fifth wave of the ABC Study.

Menzies was awarded a Fleming Fund Country Grant of £4 million to support testing and surveillance for antimicrobial resistance (AMR) in Timor-Leste.

August

In collaboration with the Centre of Best Practice in Aboriginal and Torres Strait Islander Suicide Prevention, Menzies released new guidelines to improve assessments for Aboriginal and Torres Strait Islander people presenting to hospital with self-harm and suicidal thoughts.

September

A Memorandum of Understanding (MOU) between Menzies and the Timor-Leste Ministry of Agriculture and Fisheries was signed in Dili at the Fleming Fund Country Grant launch and Symposium for the One Health Antimicrobial Resistance Project.



^ Professor Alan Cass signing the MOU with Dr Domingos Gusmão, Director General, Timor-Leste Ministry of Agriculture and Fisheries in Dili.

Dr Renae Kirkham drove the establishment of the inaugural Youth Health Summit to discuss health research priorities for young people in the NT.



^ Dr Renae Kirkham and Magnolia Maymuru at the Youth Health Summit.

October

Dr Jaquelyne Hughes was named the Australian Indigenous Doctors' Association's (AIDA) doctor of the year.



^ Dr Jaquelyne Hughes receiving the AIDA doctor of the year award.
Photo credit: Brad Newton Photography

> Menzies Medallion and Companion recipients, Professor Tony Barnes, Professor Peter d'Abbs and Pat Anderson AO, with Menzies director, Professor Alan Cass.

October

The Ramaciotti Biomedical Research Award was awarded to Menzies to establish the Ramaciotti Centre for Excellence in Building Regional and Remote Biomedical Capability.



^ Menzies' Dr Robyn Marsh, Dr Kalinda Griffiths, Mark Mayo and Associate Professor Heidi Smith-Vaughan at the Ramaciotti Awards.

Leanne Liddle, director of the Aboriginal Justice Unit, Department of the Attorney - General and Justice, delivered the 2019 Oration: 'Where is the Justice?'.



^ Leanne Liddle delivering the Menzies Oration.

Professor Peter d'Abbs was awarded the 2019 Menzies Medallion for his significant contribution to research into substance misuse, alcohol and other drug policy issues and program evaluations.

Pat Anderson AO and Professor Tony Barnes were awarded the 2019 Menzies Companion award for their exceptional contributions to the development and success of Menzies.



November

Our Centre for Child Development and Education (CCDE) was awarded the tender to evaluate the Maternal Early Childhood Sustained Home-Visiting (MECSH) program.

✓ Professor Gary Robinson with NT Minister for Health, the Hon Natasha Fyles, at the MECSH program announcement.



December

We farewelled associate director, Aboriginal programs, Heather D'Antoine, after a decade of leadership and guidance.



^ Heather D'Antoine with Mark Mayo and Professor Bart Currie at her farewell.

Menzies' Child Health Respiratory Team received a Charles Darwin University (CDU) Vice-Chancellor's Award in recognition of their national and international contribution to research that alters clinical practice and policy.

✓ Lesley Versteegh, Dr Gabrielle McCallum and Amy Le Compte from the Child Health respiratory team accept their award from CDU Vice-Chancellor, Professor Simon Maddocks.



Menzies 2021 Strategic Plan

Launched in 2017, our five-year strategic plan **Menzies 2021** 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...

Met
82%
of Menzies 2021 key targets/significant progress made in 2019

Maintained a ranking of the highest
ERA rating of 5
for the Field of Research Medical and Health Sciences

\$34m
raised in research income to fund finding solutions to health problems that matter

Increased our Aboriginal and Torres Strait Islander workforce to
30 FTE

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

Strengthened our relationship with CDU for mutual benefit

Established a new research centre and programs in Timor-Leste

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

Director and Chair's message

As we reflect on 2019, we can honestly say that Menzies is going from strength to strength. There has been great success across many of our key areas of work including clinical translation, research discoveries, research excellence and attraction of external funding support.



During the year we have had outstanding success winning funding from the NHMRC to support our national and international research which aims to make a difference to the lives of people throughout Australia and across the region.

This was the first year of significant changes to NHMRC grant schemes, with a focus on the impact of research. Menzies was awarded more than \$15 million in research funding from the schemes, with an overall success rate of more than 44 per cent compared to a national average of 13 per cent. Our success in this area demonstrates that Menzies is recognised for conducting and leading world-class research.

Other 2019 highlights include:

- Our research directly informing national and international treatment guidelines and health policies for suicide prevention, kidney disease management, malaria, antimicrobial resistance (AMR) and paediatric respiratory health.
- Establishing an office in Timor-Leste, with 18 staff and signing MOUs with key government departments. Our projects in Timor-Leste support testing and surveillance for AMR and health systems strengthening.

- Seeing the highest number of higher degree by research (HDR) graduates on record with nine PhDs, two Masters of Research and one Doctor of Public Health.
- Being awarded the Ramaciotti Biomedical Research Award to establish the Ramaciotti Centre for Excellence in Building Regional and Remote Biomedical Capability. The Centre will lead the way in developing a sustainable, local and Indigenous biomedical workforce in regional and remote northern Australia.
- Commencing the fifth wave of the ABC Study, Australia's largest and longest running study of Aboriginal and Torres Strait Islander people.
- Recognising Professors Amanda Leach and Bart Currie who both marked thirty years of service to Menzies.
- Farewelling Heather D'Antoine, our associate director of Aboriginal Programs, after a decade of leadership and guidance with a colourful celebration of culture and friendship.

The last two points are of particular significance. We value our people, and recognise that without our talented and dedicated staff, Menzies would not be the respected research institute that it is.

These results were not achieved alone. Our engagement with CDU, the NT and QLD Governments, health services, and communities here and across the region is essential to our success.

We are also grateful to the support and guidance provided by our Board. We were pleased to welcome two new Board members during the year, Leanne Liddle, director of the Aboriginal Justice Unit, Department of the Attorney-General and Justice and Dr Sean Taylor, executive director, Aboriginal Health, Top End Health Services.

We thank everyone who supported us throughout 2019 and look forward to 2020 as we continue to work together towards a healthier, more equitable future.

Director
Professor Alan Cass

Chair of the Menzies Board
Peter Plummer

Our Board

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



Peter Plummer
Board Chair

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

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 the National Curriculum Corporation, CDU Council and CDU Strategic Positioning Project. He has also had significant experience within the government and private sectors of Malaysia, Indonesia, Thailand, Philippines, in addition to the minerals and energy sectors of the United States of America (USA) and France.



Professor Alan Cass

Professor Cass has been the director of Menzies since 2012.

He is Chair of the Advisory Board for the Australasian Kidney Trials Network and Deputy Chair of the NT 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.



Leanne Liddle

Appointed 23 August 2019

Leanne is the director of the Aboriginal Justice Unit, Department of the Attorney-General and Justice.

She is an Arrernte woman born and raised in Alice Springs.

She was the first Aboriginal policewoman in South Australia (SA) where she worked for 11 years as a senior constable in remote and Adelaide police stations.

She has held a number of senior public service roles, including as the manager of Food Security for Aboriginal communities in SA, and the manager of the APY and West Coast regions of SA within the Department of the Premier and Cabinet.

She has also worked on the international circuit, for the United Nations with stints in Geneva, New York and Paris with UNESCO, and as a director for Bush Heritage Australia.



Dr Sean Taylor

Appointed 23 August 2019

Dr Taylor is the executive director Aboriginal Health for Top End Health Services.

He is from Murray Island (Mer) in the Torres Strait and was a health worker there in the early 1990s before becoming one of the first three nursing students to graduate from James Cook University's (JCU) Thursday Island campus in 2005.

He worked as a nurse in QLD, SA and the NT and graduated with a Graduate Certificate in Health (Diabetes Management and Education) from Flinders University. Later he gained experience as a research officer on several large-scale, collaborative research programs in NSW, before completing his Bachelor of Health Science (Honours) through the University of SA and Doctor of Public Health through JCU, specialising in improving diabetes care and management in regional and remote health care settings.



Richard Ryan AO
Board
Co-Treasurer

Richard is 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.



Rowan Johnston
Board
Co-Treasurer

Rowan is a Sydney-based corporate advisor and is 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

Professor Maddocks is the Vice-Chancellor and President of CDU. He has extensive leadership experience at senior levels of 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 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.



Ros Moriarty

Ros 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 the Australian Design Institute Hall of Fame and the Australian Businesswomen’s Hall of Fame. Her board appointments have included 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* 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.



Our Board



Ken Davies

Ken is 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 Principals' 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.



Professor Catherine Stoddart

Professor Stoddart has been CEO of NT Health since 2017. She was previously the deputy chief executive and chief nurse at Oxford University Hospitals Foundation Trust in the National Health Service in the UK.

She has held positions across health including chief nurse and midwifery officer of Western Australia (WA), regional director for the Kimberley 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.



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 also 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 Chair of the AFLNT Appeals Board.



Donna Ah Chee

Until 10 April 2019

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

She is a Bundgalung woman from the far north coast of NSW 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 sits on the National Drug and Alcohol Committee and at a local level, represents the Congress on the People's Alcohol Action Coalition.



Dr Steven Kho at work in the Menzies laboratory.



Our research

Creating and sharing knowledge is a large part of what we do at Menzies. Of equal importance to us is the translation of our research into practicable and everyday applications. This has meant listening to and working collaboratively with key stakeholders, partners and governments to design and implement strategies that can lead to effective and sustainable change.

Research impact

Helping farming communities to weather the drought

During 2019, the Menzies Stay Strong app was identified as an ideal template to address the mental health and wellbeing of Australian farming communities experiencing adversity from drought and other climatic events. It was adapted to create the Weathering Well app, an innovative digital mental health and wellbeing tool.

Originally developed in 2014 for Indigenous people with wellbeing concerns, the Stay Strong app has since become a well-regarded mental health and substance use digital application for Indigenous Australians.

Through a collaboration with Western Queensland Primary Health Network (WQPHN), development of the Weathering Well app drew on the expertise of graziers, growers, rural financial counsellors and mental health clinicians.

Released in September, the Weathering Well app uses a simple, highly visual interactive design to focus on recovery. The first training workshops have been delivered and the app is available for use as a psychological support intervention to be delivered by workers who have some mental health training but are not necessarily health professionals.

Facilitators guide participants through a conversation about their strengths and concerns and support them to set goals to improve their own wellbeing. The app also provides an opportunity to identify their supportive social network including family, friends and services.

The app aligns with Menzies' Australian Government funded digital Mental Health program that raises awareness of online and device-based counselling and support programs.

The app is available for download from www.weatheringwell.com



^ The Weathering Well app.

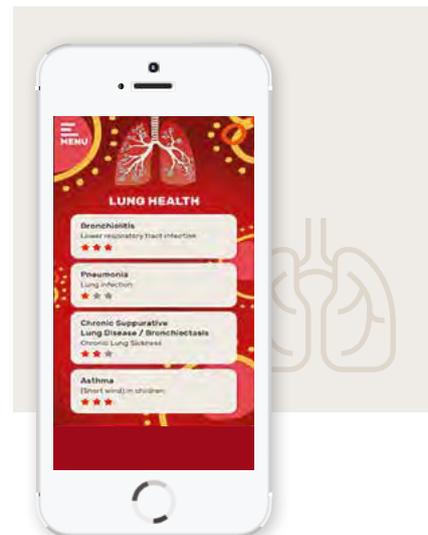
Increasing accessibility of valued lung resource

In 2010, our child health respiratory team released a flipchart to support health professionals working with Aboriginal and Torres Strait Islander children with the chronic lung disease bronchiectasis.

Ten years later, as a result of the success of the flipchart, the team is developing a multilingual digital version to improve access to the information by caregivers of Aboriginal and Torres Strait Islander children with bronchiectasis.

As part of the project, the team will evaluate whether the use and benefits of a digital platform improves caregivers' knowledge and understanding of bronchiectasis.

The new look digital flipchart will be available as a free web-based and smartphone app in 2020.



^ The multilingual digital app for lung health education.

✓ Case study

Eliminating chronic hepatitis B in the NT

Senior clinical research fellow, Dr Jane Davies, has dedicated the past eight years to eliminating the burden of chronic hepatitis B (CHB) in Aboriginal and Torres Strait Islander communities in the NT. CHB, a virus that causes inflammation of the liver, is endemic in communities. Approximately 25 per cent of cases lead to liver cancer and liver failure.

In 2014, in collaboration with community-based researchers in Galiwin'ku, Elcho Island, Dr Davies and her team piloted a model of care that delivered on-country care, naming it a 'One-Stop Liver Shop'.

In addition to on-country care, the team developed and trialled an education app, the Hep B Story, in both English and Yolŋu Matha, one of the primary languages in Galiwin'ku. Importantly, the app was designed

so that once downloaded, it no longer required data to access it.

The participatory bottom-up approach of the One-Stop Liver Shop model was critical to the success of the trial, with the local community-based workers playing a key role in the engagement process.

"It has been a massive game changer – you see people's eyes light up as they go through the app for the first time and discover it speaks to them in their own language," Dr Davies said.

"And our team of community-based researchers, some who have been working with us for more than five years, are able to utilise the app as they sit with people either in the waiting room or on the veranda outside the clinic.

"We are seeing figures well above the 50 per cent target outlined in the National Hepatitis B Strategy report for people engaged in care."

Recently, the team received funding to translate an additional 10 Aboriginal languages for the app as well as creating a Hep B hub and rolling out the concept of the One-Stop Liver Shop.

"Being able to increase access to the app is so important. It means we can substantially improve community health literacy; 70 per cent of Aboriginal people will now have access to the Hep B Story in their first language," Dr Davies said.

The organisations that form the partnership are Menzies, NT Department of Health, Miwatj Health Aboriginal Corporation, Katherine West Health Board, Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine and the NT AIDS and Hepatitis Council.

✓ Dr Jane Davies, Sarah Bukulatjpi and female patient talking about hepatitis B using the "Hep B Story" app.



Research at a glance

The NHMRC restructured their grant schemes in 2019 and Menzies had significant success in the new schemes in this very competitive space of Australian Grants. The below information highlights successful NHMRC and Medical Research Future Fund (MRFF) grants across all Menzies divisions and reflects the value of our work both in Australia and internationally.

Investigator grants

Professor Gail Garvey – Leadership 2 Reducing the cancer burden for Indigenous Australians.

Dr Jaquelyne Hughes – Emerging Leadership 2 ‘Yes We Will’ – Implementing Indigenous-led Aboriginal and Torres Strait Islander kidney health in northern and central Australia.

Centres of Research Excellence

Professor Anne Chang AM CRE in preventing and managing bronchiectasis, especially in Aboriginal and Torres Strait Islander children.

Ideas grants

Dr Matthew Grigg Parasite and human genetic risk factors for emerging *Plasmodium knowlesi* (Pk) malaria.

Dr Robyn Marsh Novel diagnostic tools for management of chronic wet cough in children.

Postgraduate scholarships

Paula Binks Improving early diagnosis of liver cancer among Aboriginal Australians.

Kelly Hosking Partnership and paradigm shift: Tools to sustainably eliminate CHB in the NT.

Dr Emily Papadimos The influence of in-utero diabetes exposure on growth outcomes and cardio-metabolic risk in early childhood: follow up of the PANDORA cohort.

Dr Mary Wicks Looking Forward: Looking Back. Diabetes in Remote Australia.

Clinical trials and cohort studies

Dr Jaquelyne Hughes Progression of chronic kidney disease in Aboriginal and Torres Strait Islander adults: the eGFR3 Cohort Study.

Dr Kamala Ley-Thriemer Effectiveness of novel approaches to radical cure of vivax malaria.

Professor Peter Morris ‘Deadly Ears at Discharge’ - A hospital-based randomised controlled trial of an additional ear and hearing assessment to inform discharge planning by a trained Aboriginal ear health worker in Aboriginal children with chronic ear infection.

NHMRC grants awarded to Menzies

■ Research support grants
■ People support grants



Menzies research income by funding source category 2019

* Research income \$(AUD)

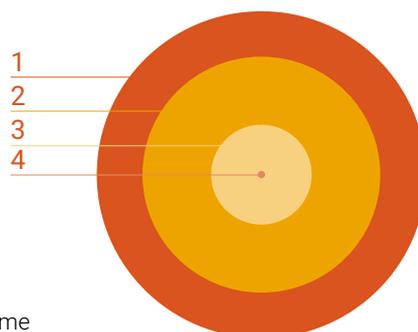
■ **Category 1 \$18 287 554**
Australian competitive grant R&D income

■ **Category 2 \$13 111 133**
Other public sector R&D income

■ **Category 3 \$5 562 834**
Industry and other R&D income

■ **Category 4 \$357 228**
Cooperative Research Centre (CRC) R&D income

* Preliminary data



MRFF research grant

Professor Anne Chang AM Improving outcomes of children and young adults with primary ciliary dyskinesia: a multi-centre, double-blind, double-dummy, 2x2 factorial, randomised controlled trial (RCT).



Our research

Centre for Child Development and Education

Our CCDE is committed to improving the lives of children through research to support better health, education and wellbeing.



^ A student at a remote community school in Gunbalanya.



^ Annie and Stella Latis.



^ Brayden Freeman, Emma Budgen and Aaron Cochrane.

Hearing loss linked to poor school attendance in the NT

During the year, the Hearing Loss in Kids (HeLoKids) research program provided the first clear evidence of the impact of hearing loss on social and education outcomes for Aboriginal and Torres Strait Islander children.

The program used audiometric records for more than 10 000 Aboriginal children living in remote NT communities to assess the independent impact of hearing impairment (HI) on outcomes, including early child development, school attendance and child maltreatment.

In one study, children with hearing loss, including mild and unilateral hearing loss, were found to have attended four to six fewer school days each year than their counterparts with normal hearing.

Notably, this study also reported a range of other factors that influenced school attendance including community-level factors, with crowded housing associated with 25 fewer school days attended, approximately four times the impact of hearing loss.

The results from the HeLoKids program have emphasised the need to manage hearing loss, not only as a health problem, but with a multipronged response to address a range of outcomes.

The Story of Our Children and Young People

In November, in consultation with the NT Government, CCDE released the *Story of our Children and Young People, NT, 2019*.

Led by Professor Steven Guthridge, the Story provided a comprehensive series of indicators of the wellbeing of children and young people from all regions across the NT.

“The Story presents information that is not limited by the administrative ‘silos’ of service delivery but is inclusive of all of the domains that are important for positive child and youth development: domains that include being loved and safe, adequate family income and housing, being healthy, learning, participating and having a positive sense of identity and culture,” Prof Guthridge said.

The Story also included stories of activities that are making a positive difference to lives of Territory children – from the Community Shuttle Bus in Katherine, which has improved access to services for mothers and their young children, to the Time on Country cultural program at Yuendumu School.

The report was launched by the Chief Minister of the NT, The Hon Michael Gunner in November. There are plans for biennial reports, with the next due in 2021.

Middle schools program builds resilience

An innovative social-emotional learning curriculum taught in middle schools to children from remote Indigenous communities as part of a program of research into resilience and suicide prevention has reported some promising findings in its initial evaluation.

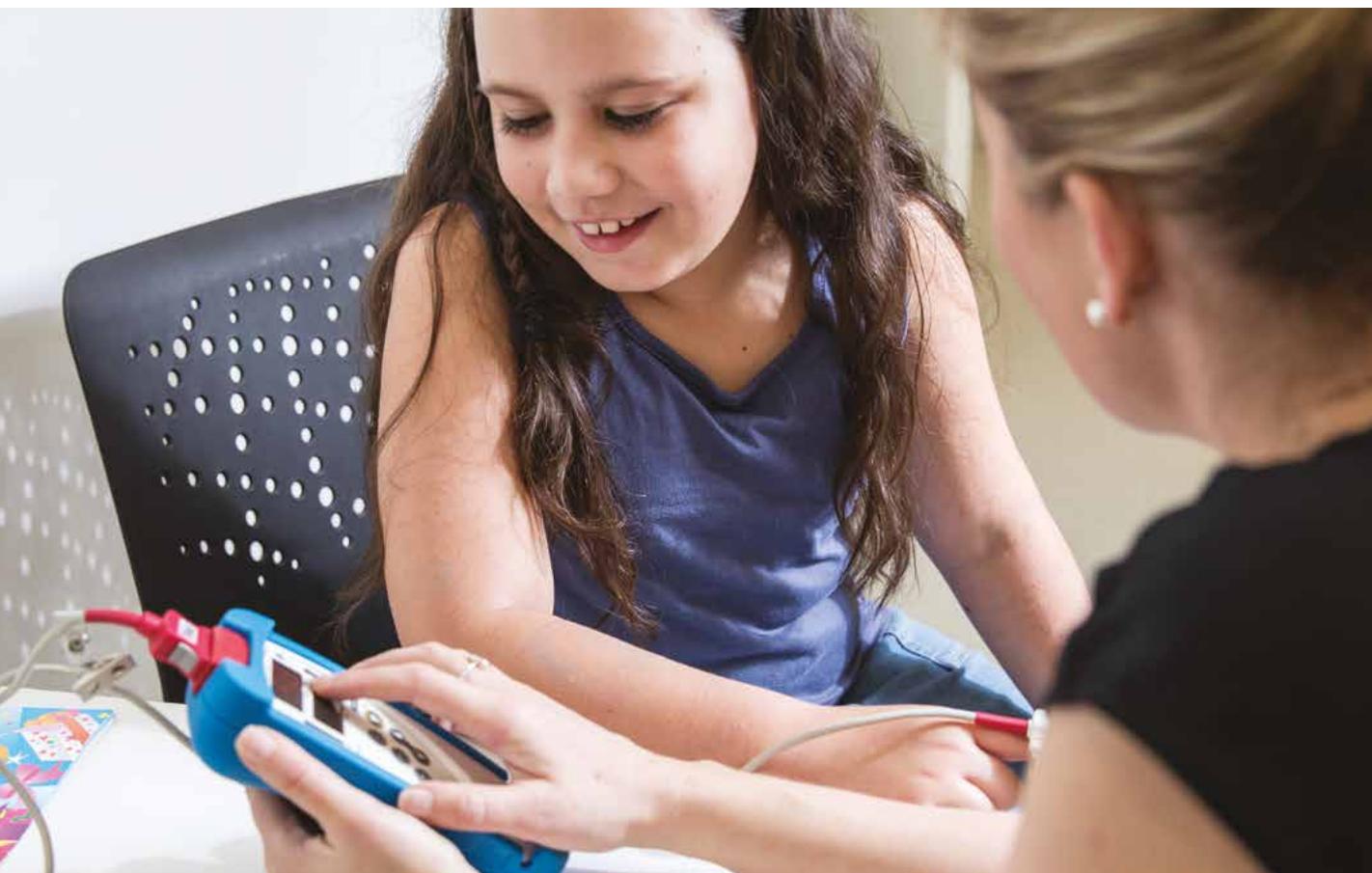
Since 2016, over 700 students from four remote NT schools and one boarding college in Darwin have participated in the Skills for Life program.

Students answered questions about resilience, strengths and life stressors. Data from the program is being fed back to schools to inform school support for student wellbeing and social-emotional learning.

Initial evaluation of the program found a reduction in behavioural symptoms in some schools, indications of improvements in capacity for help-seeking and an increase in teacher confidence to engage with students requiring support.

Our research

Child Health



△ Dr Gabrielle McCallum at a lung check-up with Haylee Versteegh.

Our child health focus is on prevention and treatment of early childhood illness, which impedes the ability of children to grow, develop, learn and thrive.

Landmark work set to help children with bronchiectasis

One of the highlights of the year was the announcement of the establishment of a CRE in preventing and managing bronchiectasis, especially in Aboriginal and Torres Strait Islander children (CRE AUS-BREATHE), following a successful clinical-based CRE on lung diseases in children that concluded in 2018.

Many cases of lung disease seen in adults started in childhood, and many of these lung conditions can be prevented or treated if they are recognised and managed before irreversible lung damage occurs. Bronchiectasis is one such disease and is an increasingly recognised cause of morbidity and mortality especially among Indigenous Australians.

The collaboration, led by Menzies' head of Child Health, Professor Anne Chang, seeks to improve the lung health of children by preventing and reducing the burden of bronchiectasis and its long-term complications. The CRE will conduct a range of studies to improve the understanding and management of bronchiectasis in order to improve service, practice and policy.

The CRE is a collaboration with QLD University of Technology, Griffith University, University of Melbourne, University of WA, Monash University and the QLD Children's Hospital.

International trial to reduce respiratory infections

A new study led by our child health respiratory program leader, Dr Gabrielle McCallum, will determine whether 12 months of weekly antibiotics will improve outcomes for Indigenous children aged less than two years of age, hospitalised with an acute lower respiratory infection (ALRI).

The study, an international multi-centre double-blind RCT will determine whether weekly azithromycin for 12 months reduces ALRI hospitalisations and future bronchiectasis.

The study will be conducted in collaboration with Australian and New Zealand researchers and is expected to influence local, national and international guidelines, contribute to policy and maximise health outcomes for young Indigenous children.

Study to improve chronic wet cough management

Dr Robyn Marsh was granted funding to conduct an innovative study to improve the clinical management of children with chronic wet cough.

This study is the first of its kind, aiming to predict outcomes of children with chronic wet cough through the early detection of pathobiological markers of recurrent protracted bacterial bronchitis (PBB).

To achieve this, Dr Marsh's team will evaluate two new tests: a breath test for detecting respiratory pathogens and airway endotyping tests to identify children at risk of recurrent PBB, a common cause of chronic cough in children.

The results of this study are expected to influence future treatment guidelines for clinical management of children with chronic wet cough.

Tackling acute malnutrition in Timor-Leste

Child malnutrition rates in Timor-Leste are among the highest in the world.

Menzies' Dr Nick Fancourt leads a team that aims to improve outcomes for children hospitalised not only for malnutrition, but also for pneumonia in Dili, Timor-Leste.

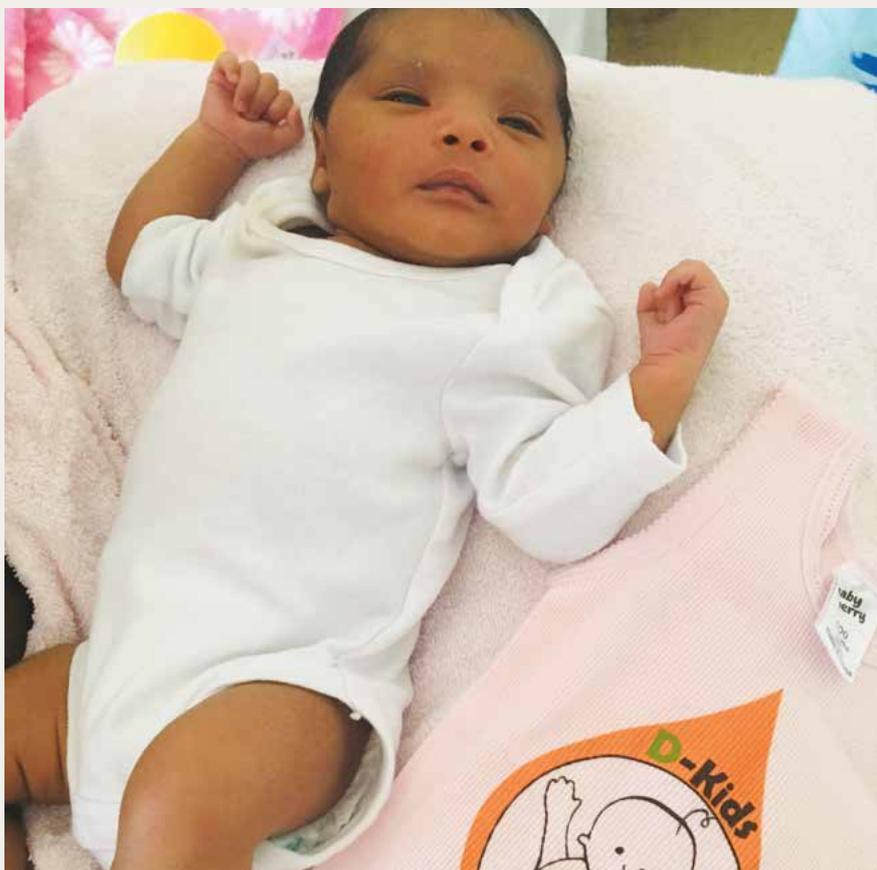
Broadly, the study will identify different features of pneumonia between children who are malnourished and those who are not. As part of the study, a randomised controlled trial will be undertaken to determine the role of pneumococcal conjugate vaccine (PCV) in children hospitalised with severe acute malnutrition (SAM).

The trial will inform if an early versus delayed primary dose of PCV is most effective in improving clinical outcomes in children with SAM.

✓ Dr Nick Fancourt, Ellie Price, Kat Lawrence and Nevio Sarmento at the Timor-Leste National Health Laboratory.



✓ Case studies



△ D-Kids study participant, Allaiynah McPherson, baby of Magdalene Lewin.

Vitamin D supplementation in pregnancy trial

A study led by senior research fellow, Dr Michael Binks, and his team will determine whether weekly vitamin D supplementation given to pregnant Indigenous mothers and their infants reduces the incidence of acute respiratory infections (ARI) in the infants' first 12 months of life.

Vitamin D is a natural immune regulator, with previous studies by the team finding low levels at birth to be common and linked to a higher risk of childhood respiratory infection in the NT.

The D-Kids study is the first vitamin D clinical trial to be conducted among Indigenous Australian children. The study will validate the utility of vitamin D supplementation against infant ARI in this high-risk population, provide much needed evidence on vitamin D reference ranges in pregnancy and infancy and explore individual level variation in vitamin D utilisation.

Working together to tackle pneumococcal disease in the region

A network of microbiologists from Australia, PNG, Timor-Leste and Vietnam are working together to tackle pneumococcal disease in our region.

Several years in, the scientists have built support networks of researchers facing the same challenges, shared knowledge, increased laboratory capacity and built new systems.

Menzies' head of Child Health laboratory research, Associate Professor Heidi Smith-Vaughan, and Jemima Beissbarth have been working with the team at Pasteur Institute in Ho Chi Minh City, Vietnam, since the network's inception.

"One of the most rewarding parts of our work is seeing this network of researchers going from strength to strength," said Assoc Prof Smith-Vaughan.



△ Associate Professor Heidi Smith-Vaughan and Jemima Beissbarth with the team at Pasteur Institute in Ho Chi Minh City, Vietnam.



Our research

Wellbeing and Preventable Chronic Diseases

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.

To do this, we examine the environmental and behavioural factors that contribute to the development and progression of chronic illnesses or harmful long-term habits, including problem gambling and excessive alcohol consumption.



▲ Michelle Woody with daughter Maria on the Tiwi Islands, NT.

Evaluating changes in pokies legislation on user losses

During the year, Dr Matt Stevens evaluated the effect of a change in pokies (electronic gambling machines) legislation for hotels and clubs on user losses in the NT.

From May 2013, the new legislation permitted hotels and clubs to increase the single load-up amount by pokies users from \$250 (in \$1 coins) to \$1000 (in any denomination of notes). In addition, the cap on pokie machines in hotels was lifted from 10 to 20 and in clubs from 45 to 55 in 2015.

Through his research, Dr Stevens found the increase in single load-up amounts led to a 41 per cent increase in real user losses over the next four years after several years of stagnant user losses, with losses higher in the hotels and clubs with the maximum allowable number of machines.

The evaluation demonstrated that a reduction in the load-up limit and/or the abolition of note acceptors along with a reduction in the number of pokie machines in venues is likely to reduce harm to users.

Shining the spotlight on youth type 2 diabetes

In 2019, the Menzies-led Diabetes Across the Lifecourse: Northern Australian Partnership turned its attention to youth onset type 2 diabetes, with a focus on improving models of care for Aboriginal and Torres Strait Islander youth.

Rates of type 2 diabetes among Aboriginal and Torres Strait Islander children and youth are increasing. Aboriginal and Torres Strait Islander youth have a more than 20 times greater risk of being diagnosed positive than non-Indigenous youth.

Managing youth type 2 diabetes is challenging: it can be complex, and many young people also experience mental health concerns, socioeconomic disadvantage, food insecurity and issues associated with remoteness.

The study's formative qualitative findings from the NT have highlighted that, for many young people, being diagnosed with type 2 diabetes is a shock and a source of worry. In many cases, it can contribute to feelings of shame and subsequent isolation. The study also found that young people value support from family, peers and clinic staff.

In recognising this, the Diabetes Across the Lifecourse team will continue to work closely with health services, clinicians and Aboriginal and Torres Strait Islander community members to develop, pilot and evaluate culturally appropriate diabetes management programs for Aboriginal and Torres Strait Islander children and youth with type 2 diabetes across northern Australia, encompassing the Kimberley, NT and Far North QLD.



Our research

Wellbeing and Preventable Chronic Diseases

Evaluating the demand for alcohol treatment services in the NT

In April, the Demand Study for Alcohol Treatment Services in the NT report was presented to the NT Government by our Alcohol and Other Drugs team.

The report provided the first comprehensive approximation of met and unmet demand for alcohol treatment services in the NT.

The study found there were 117 encounters for alcohol treatment every day across the NT, with a relatively small unmet demand, of approximately 2000 people per year who required treatment.

A large unmet demand was highlighted for screening and brief intervention – of approximately 18 500 to 19 000 people. In addition, the NT requires 15 per cent more residential rehabilitation beds to meet demand and the number of clinical staff required to provide this care is higher than the current staff numbers.

The results of the study suggest that the configuration of the intensity and level of care could be improved and that more treatment is required to respond to mild to moderate needs, including community-based treatment options.

The report also highlighted the intergenerational nature of alcohol-related trauma, particularly among Aboriginal clients, which requires both generalist and specialist skills within the alcohol treatment services system.

The report, commissioned by the NT Government, was prepared in partnership with the Drug Policy Modelling Program at the University of NSW and the Aboriginal Medical Services Alliance NT (AMSANT).

The full report can be viewed at www.menzies.edu.au/demandstudy.

Using social media to help people quit smoking



^ Social media was identified as a successful means to convey quit smoking messaging.

A NT-wide partnership aimed at reducing smoking rates among Aboriginal and Torres Strait Islander people via social media messaging has paved the way for future social media strategies by health services.

Led by our tobacco control team, the partnership identified the type of information people share online as well as how it would be received. With a focus on Facebook, the team found the most successful posts about reducing smoking were child focused, practical, relevant and credible, with a clear and direct message.

In addition, the study found community members responded positively to posts from friends and family, viewing them as personally relevant and culturally appropriate.

The organisations that formed the partnership were Miwatj Health Aboriginal Corporation, Danila Dilba Health Service in Darwin, Central Australian Aboriginal Congress in Alice Springs and AMSANT.

✓ Case studies

Enhancing clinical care for kidney disease

In the NT, escalating rates of severe or end-stage kidney disease are devastating Aboriginal communities. Almost 1000 Aboriginal Territorians now require life-preserving dialysis three times per week.

To assist in addressing these statistics, Menzies, through respectful collaboration, has led the development of an innovative system to improve the identification and management of people with kidney disease across the NT, to slow the progression to dialysis.

Launched in April, Territory Kidney Care (TKC), is an integrated clinical information system that supports the early identification and best-practice management of people with kidney disease. The system consolidates patient information from government and non-government and primary and tertiary health services, to close the information gap and enhance clinical care.

Critically, TKC provides a means to facilitate earlier and targeted patient care without increasing the resource burden on staff. It has been designed to facilitate seamless incorporation into business as usual within the primary health service, enhancing care with minimal impact on resources.

Although TKC focuses on improved identification and management of kidney disease, it provides a platform for broader service innovation with potential expansion to other chronic conditions.

Improving cervical cancer screening rates

Despite Australia being a global leader in cervical cancer prevention, offering routine Cervical Screening Tests to women aged 25-74 years and vaccination against human papillomavirus (HPV) to adolescents, Aboriginal and Torres Strait Islander women experience a higher burden of cervical cancer compared with other Australian women. This in part is due to the lower participation in cervical screening.

Dr Lisa Whop and her team hit the road to yarn with Aboriginal and Torres Strait Islander women about cervical cancer.

They talked with 80 women – 50 who had participated in screening in the past five years and 30 who had not – and 12 health professionals.

The interviews highlighted the fundamental need for trust and control over decision-making by Aboriginal and Torres Strait Islander women to partake in cervical screening. In recognising this, the team were able to map the process of cervical screening and explore ways to increase screening uptake by this demographic.



↗ Professor Gail Garvey and Dr Lisa Whop hit the road to yarn about cervical cancer with Indigenous women.
Photo credit: Jen Dainer

↖ TKC Health Informatics Nurse, Paul Kamler, and Joe Parry from Radical Systems discuss the TKC system.

Our research

Global and Tropical Health

The research performed within the Global and Tropical Health division spans a wide geographical area, from central to northern Australia to much of the Asian continent. We have partnerships in the USA and in Africa, among other countries.

In 2019, we strengthened our commitment to finding meaningful ways to improve health and wellbeing in our region, particularly for those who are disadvantaged by poverty and access to services.

We observed emerging themes of treatment adherence as well as improved intercultural communication in healthcare and will continue to concentrate our efforts in bridging these gaps.

Trial determines two drugs are not better than one

Results from a Menzies-led clinical trial that aimed to improve the treatment for methicillin-resistant *Staphylococcus aureus* (MRSA) blood infections provided critically important new data on what works and what does not.

The project, CAMERA2, built on previous work by Menzies researchers, Professor Josh Davis and Associate Professor Steven Tong. It discovered that a combination of two antibiotics was no better than one, and led to more adverse effects.

MRSA, more commonly known as golden staph, causes around 5000 bloodstream infections a year in Australia with a mortality rate between 20–25 per cent.

The biggest international trial of MRSA bloodstream infections to date, CAMERA2 involved patients from 27 hospitals across four countries. The study combined the current treatment for MRSA bloodstream infections, vancomycin, with a second antibiotic, flucloxacillin, to kill the bacteria faster. Patients were randomly allocated to receive vancomycin or the combination therapy.



Professor Josh Davis inspects a sample of 'golden staph'.

Surprisingly, although the MRSA was killed more quickly using the combination therapy, this did not translate to fewer deaths and increased the chance of kidney damage.

This work will now continue with recent funding provided to conduct the *Staphylococcus aureus* Network Adaptive Platform trial, a global collaboration to address questions on how to treat MRSA infections for patients internationally.

Bridging the communication gap for doctors

Getting better outcomes for hospitalised Aboriginal patients through improved communication is at the core of work being done by HOT NORTH Indigenous Development Training Award recipient, Stuart Yiwarr McGrath.

Working closely with PhD student Vicki Kerrigan for the Communicate Study, Stuart conducted interviews with patients in their shared first language, Djambarrapuyŋu, about the communication barriers Yolŋu patients face.

Currently studying nursing at CDU, Stuart used his experience as an Aboriginal health practitioner to co-produce an innovative cultural education package for Top End doctors.

The package, *Ask the Specialist*, includes seven short podcasts in which Larrakia, Tiwi and Yolŋu leaders who also have personal experience at Royal Darwin Hospital (RDH) answer the questions doctors struggle with when working with Aboriginal patients. The podcasts will be publicly available in 2020.



Stuart Yiwarr McGrath recording for the *Ask the Specialist* podcast.



^ Barunga schoolchildren with Justine Clarke.

'Boom Boom!' a hit for heart health

A key component of our rheumatic heart disease (RHD) prevention work is the development of END RHD communities by our SP Plus study, in which Aboriginal community workers become the focal point for information about rheumatic fever and RHD within their communities.

During the year, our SP Plus team collaborated with schoolchildren and popular children's entertainer Justine Clarke to produce *Boom, Boom!*, an educational song written for kids, by kids about RHD prevention.

Led by Aboriginal community worker, Anne-Marie Lee, with support from the Bupa Health Foundation and study collaborator, Telethon Kids Institute, the children from the remote community of Barunga launched the song at the 2019 Barunga Music Festival.

In the END RHD participating community of Milikapiti on the Tiwi Islands, community worker Valerina Mungatopi is now well recognised as the go-to person for information about rheumatic fever and RHD.

"After talking to me, the kids get their penicillin injections," Valerina said.

"We talk about getting sore throats and skin sores looked at by the clinic to stop rheumatic fever."

The song *Boom Boom!* is available for download on YouTube.



^ Barunga schoolchildren perform 'Boom Boom!' at the Barunga Festival.

Ten years of malaria studies in Sabah

For 10 years, Menzies has teamed with Sabah's Infectious Diseases team to improve the diagnosis, treatment and prevention of malaria.

Over the past year, the team have demonstrated:

- the ongoing rise in zoonotic malaria from *Plasmodium knowlesi* in parallel with land-use changes
- the near elimination of *Plasmodium falciparum* and *Plasmodium vivax* malaria
- the decline in the case-fatality rate due to increased recognition and the widespread rollout of artesunate and artemisinin-combination therapies
- the first comprehensive analysis of mortality risk factors.

New mechanisms underlying severe disease from each of the parasite species causing severe malaria were identified, including the importance of red blood cell rupture in causing acute kidney injury – a major complication in falciparum and knowlesi malaria.



^ Paracetamol was found to protect against further kidney injury for patients suffering from severe knowlesi malaria.

As a result, a large randomised clinical trial of a low-cost adjunctive agent, paracetamol, was undertaken. The trial demonstrated that regularly dosed paracetamol can protect against kidney injury in patients with severe knowlesi malaria or with existing kidney injury at the time of treatment, especially in those with pronounced red cell rupture.

The findings of the study have informed changes to national malaria treatment protocols.

Case studies

30 years of melioidosis study



^ Melioidosis program manager, Mark Mayo, sampling water in Darwin.

2019 marked 30 years of the Darwin Prospective Melioidosis Study (DPMS), run by Menzies in collaboration with the RDH, which aims to understand the clinical and microbiological aspects of melioidosis in order to optimise the diagnosis and therapy of the disease in the NT.

Melioidosis is a potentially lethal infectious disease predominantly found in tropical regions of the world and is endemic in northern Australia. Between 1989–2019, 1418 individuals have been confirmed with melioidosis in the Top End, with 12 per cent of those cases resulting in death.

To add further value to the DPMS, Menzies' melioidosis team, through collaborations with overseas colleagues, discovered the environmental niches of the melioidosis-causing bacterium *Burkholderia pseudomallei*.

The team, led by Professor Bart Currie, has shown that *B. pseudomallei* evolved in the Australian landscape and subsequently spread to Southeast Asia then Africa and the Americas. With likely links to movement of humans and animals, modelling by the team suggests anthropogenic climate change, along with landscape disruption from development projects, will accelerate the global dissemination of melioidosis.

Ground-breaking trial a step towards the elimination of vivax malaria

Outside of sub-Saharan Africa, the predominant cause of malaria in many areas is *Plasmodium vivax*, a parasite that forms dormant liver stages (hypnozoites) that can reactivate weeks or months following an acute infection and can lead to severe or life-threatening disease. Primaquine is the only widely available drug that kills hypnozoites.

A highlight of the year was the findings of the Menzies-led international, multi-centre IMPROV trial, which showed that a short course (7-day), high-dose primaquine regimen was just as effective as the 14-day course recommended by the World Health Organisation (WHO).

The findings have important implications for the treatment and elimination of vivax malaria in the Asia-Pacific, the Horn of Africa and the Americas with the short-course regimen having potential to improve adherence and therefore effectiveness of primaquine.

To accelerate the uptake of research findings into policy and practice, our malaria research team convened a meeting in Kathmandu, Nepal, to identify the specific needs and formal processes needed to change policy in 20 malaria endemic countries.



< Our malaria research team has discovered a short-course (7-day) regimen for the treatment of malaria is as effective as the current 14-day course recommended by WHO.

Photo credit: Pearl Gan in association with OUCRU, Vietnam, and EO CRU, Indonesia.



^ The melioidosis team sampling in the Darwin region.

Major initiative

RHDAustralia

RHDAustralia produces and disseminates evidence-based resources to patients and families living with acute rheumatic fever (ARF) and RHD and the health professionals who support them.

During the year, we continued to work with our key partner organisations, state and territory-based RHD control programs, researchers, health professionals, communities, patients and their families to produce numerous valuable educational materials and resources.



Champions4Change – Sharing, caring and inspiring

RHDAustralia launched Champions4Change, a program designed and led by Aboriginal and Torres Strait Islander peoples and communities with lived experience of ARF and RHD.

The champions are people (or carers of people) with ARF or RHD who work in partnership with RHDAustralia. They are mums, dads, brothers, sisters, grandparents and friends. They are leaders who are concerned about ARF and RHD in their communities and volunteer their time to support each other, advocate for ending RHD and design education and awareness programs for those in their own communities.

Champions4Change work in partnership with RHDAustralia and are invited to attend events and activities organised by RHDAustralia, or to design their own. An example during 2019 was the RHDAustralia Champions4Change attending the national Australasian Society for Infectious Diseases Annual Scientific Meeting. For the first time, an Indigenous yarning circle was held at the conference. The session was well-attended by Australian and international medical delegates who experienced a unique opportunity to learn directly from people impacted by this chronic disease.

RHDAustralia leader recognised with prestigious award

A highlight of the year was the presentation of the Sidney Sax Medal to RHDAustralia's senior cultural advisor, Vicki Wade.

The prestigious award, which recognises outstanding contributions to the development and improvement of the Australian healthcare system in the field of health services policy, organisation, delivery and research, acknowledged Vicki's commitment, spanning over 30 years, to Aboriginal health.

A proud Nyoongar woman, Vicki was the first Aboriginal person to receive the award.

"I encourage other Aboriginal and Torres Strait Islander people to join the health workforce and dedicate this award to all Aboriginal nurses who work tirelessly every day to influence the healthcare system, to reduce inequity and disparities for their people," Vicki said.



^ RHDAustralia's senior cultural advisor, Vicki Wade, receives the Sidney Sax Medal.

For more information about RHDAustralia visit rhdaustralia.org.au

Major initiative HOT NORTH

HOT NORTH - Leading the future of health in the north

Menzies is the lead institution of the \$6 million NHMRC collaborative project HOT NORTH which commenced in 2017.

The multi-institutional project aims to improve health outcomes in the tropical north and the Indo-Pacific region through cross-disciplinary collaboration.



^ Year 3 snapshot.

> Dr Teresa Wozniak led the development of the first online tool to track AMR in northern Australia, HOTspots.

Tackling antimicrobial resistance in the north

Through a suite of projects, HOT NORTH is involved in tackling the challenge of AMR in northern Australia and neighbouring countries.

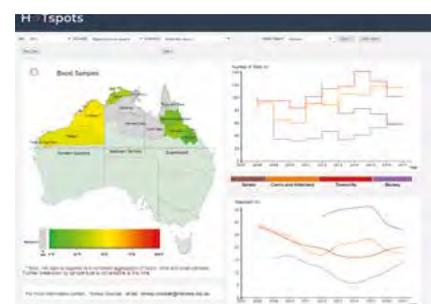
The danger posed to Australia's tropical north by drug resistant TB (DR-TB) is well recognised. Just to our north, Daru, PNG, is a world hot-spot for DR-TB.

Led by Dr Suman Majumdar, a HOT NORTH-funded team of researchers commenced a comprehensive household contact screening in Daru as a routine programmatic activity, a first for PNG. As a result, in October 2018, 212 children under five had been started on preventative therapy.

Further afield, HOT NORTH fellow Dr Chris Lowbridge undertook field visits to Malaysia and Indonesia as part of a program of work partnering with local clinician researchers to better characterise the TB epidemics and strengthen local systems for TB prevention and control.

In Australia, projects studied social factors potentially important for an effective response against AMR and identified gaps and opportunities to promote antimicrobial stewardship in remote medical services.

In addition, HOT NORTH researcher, Dr Teresa Wozniak, led the development of HOTspots, a tool, which provides information on hotspots of superbugs to end-users (clinicians, pharmacists, laboratory staff and policy-makers) across northern Australia. HOTspots is available at www.amrhotspots.com.au





Our research

Featured publications

In 2019, 339 publications, including 302 peer-reviewed articles were published. Below is a selection of highlighted publications.

O'Grady, K.F., Grimwood, K., Torzillo, P.J., Rablin, S., Lovie-Toon, Y., Kaus, M., Arnold, D., Roberts, J., Buntain, H., Adsett, D., King, A., Scott, M., Anderson, J., Toombs, M., & Chang, A.B. (2019). Effectiveness of a chronic cough management algorithm at the transitional stage from acute chronic cough in children: a multicentre, nested, single-blind, randomised controlled trial. *The Lancet Child & Adolescent Health*, 3(12), 889-898.

This NHMRC-funded multicentre RCT showed, for the first time, that using a cough pathway in children with chronic cough post an acute respiratory infection was effective (ORadjusted 1.5, 95 per cent CI 1.3-1.6 favouring the intervention group). 48 per cent of cohort randomised were three Aboriginal controlled medical centres and the cough pathway was designed by CI-Chang under the auspices of the American College of Chest Physicians.

Goyal, V., Grimwood, K., Ware, R.S., Byrnes, C.A., Morris, P.S., Masters, I.B., McCallum, G.B., Binks, M.J., Smith-Vaughan, H., O'Grady, K.F., Champion, A., Buntain, H.M., Schultz, A., Chatfield, M., Torzillo, P.J., & Chang, A.B. (2019). Efficacy of oral amoxicillin-clavulanate or azithromycin for non-severe respiratory exacerbations in children with bronchiectasis (BEST-1): a multicentre, three-arm, double-blind, randomised placebo-controlled trial. *The Lancet Respiratory Medicine*, 7(9), 791-801.

This NHMRC-funded study is the world's first RCT comparing any oral antibiotics with placebo for treating exacerbations in patients with bronchiectasis. In our three-arm RCT, both amoxicillin-clavulanate and azithromycin showed benefit compared to placebo for achieving symptom resolution at 14 days when treating non-severe (non-hospitalised) acute exacerbations of bronchiectasis in children.

Singh, G.R., Davison, B., Ma, G.Y., Eastman, C.J., & Mackerras, D.E. (2019). Iodine status of Indigenous and non-Indigenous young adults in the Top End, before and after mandatory fortification. *The Medical Journal of Australia*, 210(3), 121-125.

The only study showing the change in iodine levels in the same people pre and post mandatory fortification of bread with Iodised salt. Highly commended for the Stawell prize (annual AMA prize for best publication).

Su, J.Y., He, V.Y., Guthridge, S., Howard, D., Leach, A., & Silburn, S. (2019). The impact of hearing impairment on Aboriginal children's school attendance in remote NT: a data linkage study. *The Australian and New Zealand Journal of Public Health*, 43(6), 544-550.

This study demonstrates that Aboriginal children with any level of hearing impairment are likely to have lower school attendance rates in Year One than their peers with normal hearing.

He, V.Y., Su, J.Y., Guthridge, S., Malvaso, C., Howard, D., Williams, T., & Leach, A. (2019). Hearing and justice: The link between hearing impairment in early childhood and youth offending in Aboriginal children living in remote communities of the NT, Australia. *Health & Justice*, 7(1), 16.

This study highlights a range of risk factors that underpin the pathway to youth-offending, demonstrating the urgent need for interagency collaboration to meet the complex needs of vulnerable children in the NT.

Thomas, D.P., Lyons, L., & Borland, R. (2019). Predictors and reasons for quitting smoking and sustaining abstinence in national sample of Aboriginal and Torres Strait Islander smokers. *Drug and Alcohol Review*, 38, 244-253.

Different factors predict making and sustaining quit attempts among Aboriginal and Torres Strait Islander smokers. We need to do more than increasing motivation to quit, as motivation and making more quit attempts does not predict eventual success; we could focus more on increasing smokers' confidence that they can successfully quit.

Cunningham, F.C., Ranmuthugala, G., Westbrook, J., & Braithwaite, J. (2019). Tackling the wicked problem of health networks: the design of an evaluation framework. *BMJ Open*, 9(5), e024231.

As there is a prevalence of network forms and society has a high level of reliance on and investment in them, there is a need for evaluation models to assess their effectiveness and sustainability. We report on the progress in evaluating networks, particularly in the health sector, and present an evaluation framework designed for health settings to assist health researchers, social scientists, policy-makers and managers with the evaluation of clinical and health networks.



Our research

Featured publications

Gorham, G., Howard, K., Zhao, Y., Ahmed, A.M.S., Lawton, P.D., Sajiv, C., Majoni, S.W., Wood, P., Conlon, T., Signal, S., Robinson, S.L., Brown, S., & Cass, A. (2019). Cost of dialysis therapies in rural and remote Australia – a micro-costing analysis. *BMC Nephrology*, 20, 231.

The growing number of people requiring kidney treatment from remote areas has resulted in the development of unique dialysis models of care in the NT. We compared the recurrent and infrastructure costs of providing services in urban, rural and remote areas as well as self-care and nurse supported options. This analysis is the first step in an economic appraisal of broader health services costs including overnight hospital admissions by model of care.

Longmore, D.K., Barr, E.L.M., Lee, I., Barzi, F., Kirkwood, M., Whitbread, C., Hampton, V., Graham, S., Van Dokkum, P., Connors, C., Boyle, J.A., Catalano, P., Brown, A.D.H., O'Dea, K., Oats, J., McIntyre, H.D., Shaw, J.E., Maple-Brown, L.J., & PANDORA study research team. (2019). Maternal body mass index, excess gestational weight gain, and diabetes are positively associated with neonatal adiposity in the Pregnancy and Neonatal Diabetes Outcomes in Remote Australia (PANDORA) study. *Pediatric Obesity*, 14(4), e12490.

We reported that maternal weight and weight gain in pregnancy are key modifiable risk factors that contribute to higher body fat in babies born to mothers with and without diabetes in pregnancy in the NT.

Butler, T.L., Anderson, K., Garvey, G., Cunningham, J., Ratcliffe, J., Tong, A., Whop, L.J., Cass, A., Dickson, M., & Howard, K. (2019). Aboriginal and Torres Strait Islander people's domains of wellbeing: A comprehensive literature review. *Social Science & Medicine*, 233, 138–157.

Existing tools of wellbeing do not appear to include domains relevant to Indigenous Australians. This article provides the first comprehensive literature review identifying nine broad interconnected wellbeing dimensions: autonomy, empowerment and recognition; family and community; culture, spirituality and identity; Country; basic needs; work, roles and responsibilities; education; physical health; and mental health.

Webb, J.R., Rachlin, A., Rigas, V., Sarovich, D.S., Price, E.P., Kaestli, M., Ward, L.M., Mayo, M., & Currie, B.J. (2019). Tracing the environmental footprint of the *Burkholderia pseudomallei* lipopolysaccharide genotypes in the tropical "Top End" of the NT, Australia. *PLoS Neglected Tropical Diseases*, 13(7), e0007369.

Genotyping of bacterial strains from the DPMS has enabled us to correlate specific bacterial genotypes with clinical parameters. In this study we showed that severity of melioidosis and deaths are linked strongly to the human host risk factors and not to differences in the genomes of the melioidosis-causing bacteria.

Rachlin, A., Shilton, C., Webb, J.R., Mayo, M., Kaestli, M., Kleinecke, M., Rigas, V., Benedict, S., Gurry, I., & Currie, B.J. (2019). Melioidosis fatalities in captive slender-tailed meerkats (*Suricata suricatta*): Combining epidemiology, pathology and whole-genome sequencing supports variable mechanisms of transmission with one health implications. *BMC Veterinary Research*, 15, 458.

Meerkats are documented as the most murderous mammals. They are also highly susceptible to melioidosis. This One Health study brings together ecology, veterinary pathology and microbial genomics to provide new insights into the diversity of ways that animals (and humans) can get melioidosis.

Meumann, E.M., Anstey, N.M., Currie, B.J., Piera, K.A., Kenyon, J.J., Hall, R.M., Davis, J.S., & Sarovich, D.S. (2019). Genomic epidemiology of severe community-onset *Acinetobacter baumannii* infection. *Microbial Genomics*, 5(3), e000258.

This is the first detailed description of the genomic epidemiology of severe community-onset *Acinetobacter* infection – a cause of severe pneumonia in the NT.

Kenangalem, E., Poespoprodjo, J.R., Douglas, N.M., Burdam, F.H., Gdeumana, K., Chalfein, F., Thio, F., Devine, A., Marfurt, J., Waramori, G., Yeung, S., Noviyanti, R., Penttinen, P., Bangs, M.J., Sugiarto, P., Simpson, J.A., Soenarto, Y., Anstey, N.M., & Price, R.N. (2019). Malaria morbidity and mortality following introduction of a universal policy of artemisinin-based treatment for malaria in Papua, Indonesia: a longitudinal surveillance study. *PLoS Medicine*, 16(5), e1002815.

After implementation of new malaria treatment policy in Papua, Indonesia, the incidence of malaria fell by about 60 per cent for *P. falciparum* and 40 per cent for *P. vivax*. There was a 50 per cent fall in the proportion of malaria patients needing hospital admission and a 30 per cent fall in malaria-related mortality. The results highlight the importance of highly effective antimalarial drugs in reducing the burden of drug-resistant malaria.

Yeo, T.W., Weinberg, J.B., Lampah, D.A., Kenangalem, E., Bush, P., Chen, Y., Price, R.N., Young, S., Zhang, H.Y., Millington, D., Granger, D.L., & Anstey, N.M. (2019). Glycocalyx breakdown is associated with severe disease and fatal outcome in *Plasmodium falciparum* malaria. *Clinical Infectious Diseases*, 69(10), 1712–1720.

The glycocalyx, a gel-like protective barrier lining all blood vessels, is broken down during severe and fatal malaria. Measures to repair damaged glycocalyx to prevent its breakdown may have potential use in malaria treatment.



Commons, R.J., Simpson, J.A., Thriemer, K., Hossain, M.S., Douglas, N.M., Humphreys, G.S., Sibley, C.H., Guerin, P.J., & Price, R.N. (2019). Risk of *Plasmodium vivax* parasitaemia after *P. falciparum* infection: a systematic review and meta-analysis. *Lancet Infectious Diseases*, 19, (1), 91-101.

This systematic review of malaria clinical trials demonstrated a high risk of one species (*P. vivax*) following treatment of another (*P. falciparum*). Clinical trials are now underway to investigate whether using a simplified treatment regimen for all malaria infections, irrespective of the species, will help speed malaria elimination across the region

Taylor, W.R.J., Thriemer, K., von Seidlein, L., Yuentrakul, P., Assawariyathipat, T., Assefa, A., Auburn, S., Chand, K., & Price, R.N. (2019). Short-course primaquine for the radical cure of *Plasmodium vivax* malaria: a randomised placebo-controlled multicentre trial. *The Lancet*, 394(10202), 929–38.

This paper reports the results of the IMPROV trial - a multicentred trial in four countries, following almost 2400 patients for up to a year. The study showed that a high dose 7-day primaquine regimen for *P. vivax* was safe and as effective as the standard 14-day regimen. The trial paves the way for a more effective treatment that will speed the elimination of vivax malaria from the Asia-Pacific.

Yuen, L.K.W., Littlejohn, M., Duchêne, S., Edwards, R., Bukulatjpi, S., Binks, P., Jackson, K., Davies, J., Davis, J.S., Tong, S.Y.C., & Locarnini, S. (2019). Tracing ancient human migrations into Sahul using hepatitis B virus genomes. *Molecular Biology and Evolution*, 36(5), 942-954.

This study used cutting edge evolutionary analyses of the unique hepatitis B C4 sub-genotype to deduce ancient population movements into Australia. We found that the precursor of hepatitis B C4, which has only been identified in Aboriginal Australians in the NT entered Australia 51 000 years ago. "The fact the virus is so old helps add to the evidence that Aboriginal people have been in Australia for a long long time," Hep B Team Aboriginal health practitioner.

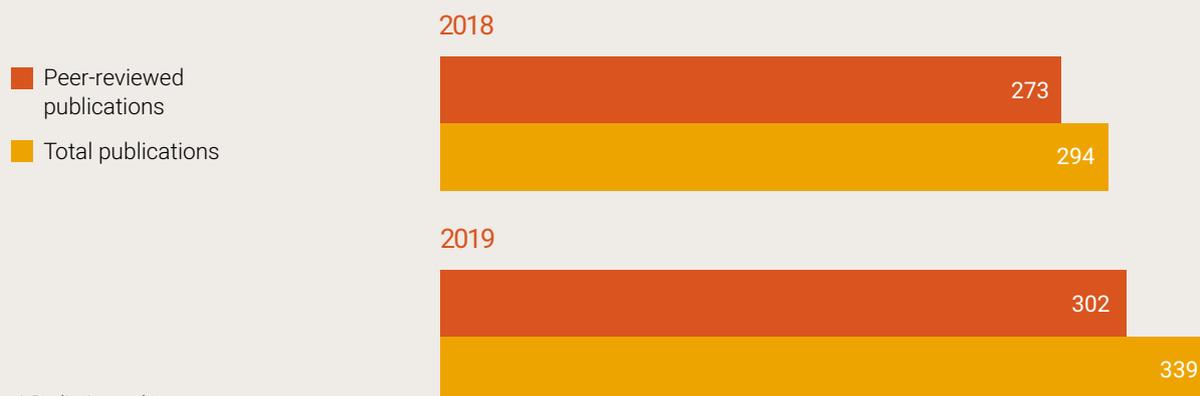
Giffard, P.M., Tong, S.Y.C., Holt, D.C., Ralph, A.P., & Currie, B.J. (2019). Concerns for efficacy of a 30-valent M-protein-based *Streptococcus pyogenes* vaccine in regions with high rates of rheumatic heart disease. *PLoS Neglected Tropical Diseases*, 13(7), e0007511.

Streptococcus strains in the NT, responsible for rheumatic fever, post-strep kidney disease and invasive infections, are highly diverse and would not be covered by vaccines that only targeted limited numbers of strep strains. These data help inform Australian vaccine development efforts.

Lestari, T., Graham, S., van den Boogaard, C., Triasih, R., Poespoprodjo, J.R., Ubra, R.R., Kenangalem, E., Mahendradhata, Y., Anstey, N.M., Bailie, R.S., & Ralph, A.P. (2019). Bridging the knowledge-practice gap in tuberculosis contact management in a high-burden setting: a mixed-methods protocol for a multicenter health system strengthening study. *Implementation Science*, 14(1), 31.

Putting TB prevention into practice is challenging in low-resource settings. This project is ensuring that highest-risk people get access to TB prevention medications.

Publications authored by Menzies researchers 2018–2019*



* Preliminary data



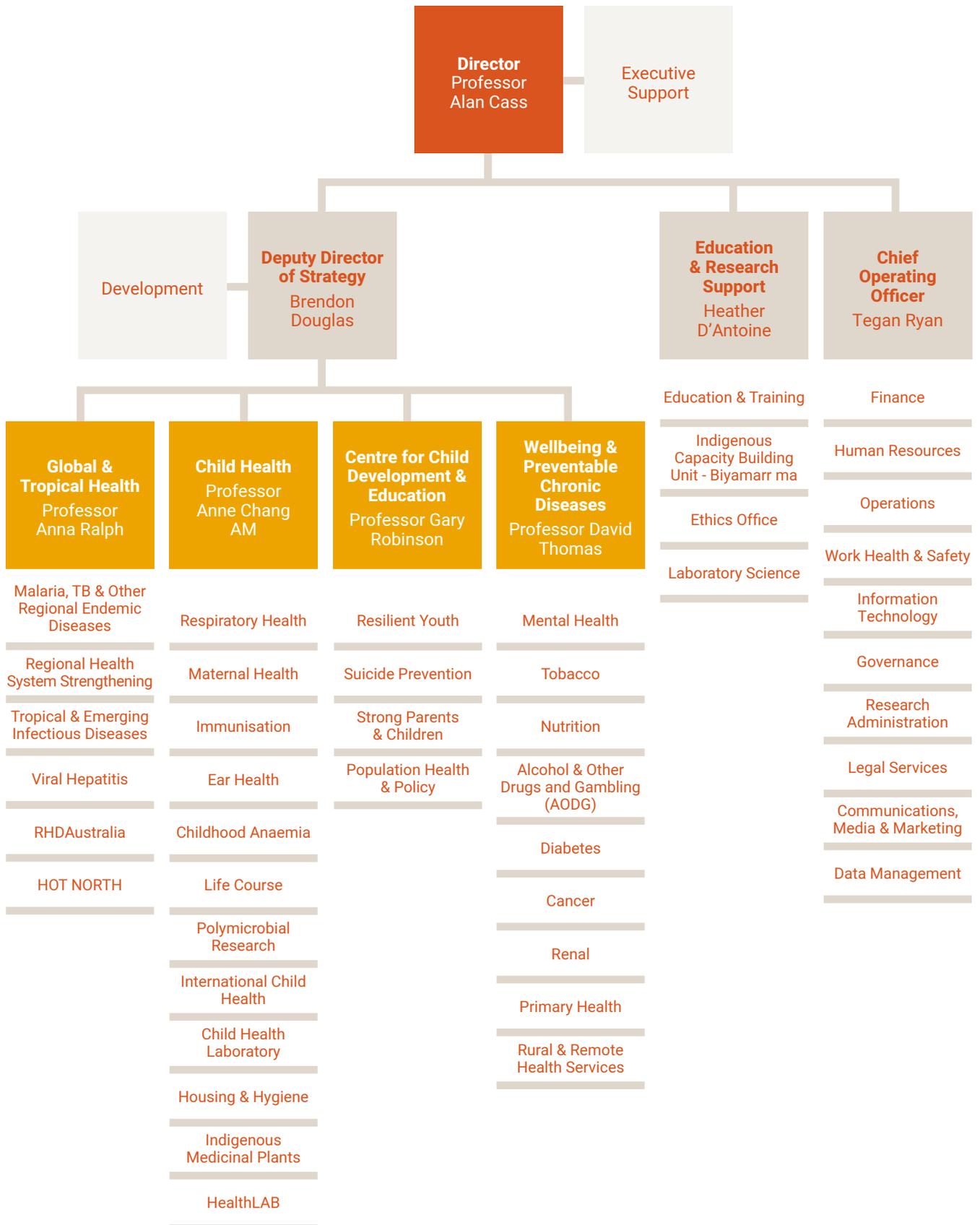
Our people

Our successes would not be possible without the expertise, passion and dedication of our people. We value their expertise as well as potential, and believe in equipping them with the skills and confidence to pass their knowledge on to others.

We also acknowledge the achievements of our staff and students, and encourage them to continue pursuing excellence.

Lydia Agius, Tasha Cole and Dianne Walker.

Organisational structure



Our people

Capacity building

Our mission is to break the cycle of disease and improve health outcomes for people in Australia, particularly in Indigenous communities, and in the Asia-Pacific region. We do this primarily through excellence and leadership in research, education and capacity development.

During 2019, we continued to strengthen the knowledge and confidence of our collaborators and encourage their agency in making decisions that best suit their needs and circumstances.

Genomic sequencing transforming infectious disease surveillance

The Top End of Australia has unique environmental bacteria that can cause severe human disease. *Acinetobacter*, is a good example: although it is best known globally as a multidrug-resistant hospital pathogen, it presents differently in the Top End as a nasty form of pneumonia acquired in the community.

Until now, the geographic origin of this environmental bacterium, why it causes such severe disease, and whether repeat episodes are a result of relapse or reinfection were not known.



Dr Ella Meumann with a sample of the multidrug-resistant hospital pathogen, *Acinetobacter*.

Now using whole-genome sequencing, Menzies PhD student, Dr Ella Meumann, has been able to address these questions. Genomic sequencing is faster and cheaper than ever before and has the potential to transform infectious disease surveillance, epidemiologic investigation and outbreak detection. Expansion of genomics capacity in northern Australia and in our region is critical, and Menzies has the potential to be at the forefront.

The research team found that some NT *Acinetobacter* strains were closely related to overseas hospital strains and that they were genetically diverse. The genetic make-up of the bacteria did not correlate with disease severity. Additionally, approximately 10 per cent of surviving patients had recurrence, and these were new infections not relapses.

The findings highlighted that host risk factors, particularly hazardous alcohol consumption, were more important than bacterial factors in explaining the severity of this disease.

In the next stages of her PhD, Ella plans to apply her genomics skills to TB and melioidosis in the Top End. Ultimately she aims to work with pathology providers and public health units in the implementation of genomics for public health surveillance.

Deadly Ears at Discharge Trial

A new trial led by Menzies' paediatrician, Professor Peter Morris, seeks to improve the management of ear health for Aboriginal and Torres Strait Islander children.



The study, Deadly Ears at Discharge, aims to improve the clinical information obtained and provide a more individual approach to treatment and ongoing care following discharge from hospital.

It will assess whether an additional examination by an Aboriginal ear health worker to inform ear health discharge planning will improve health outcomes for children with ear disease.

The trial will also build the capabilities of Aboriginal health practitioners in the NT, including the medical management of important chronic diseases, motivational interviewing, assessment of family satisfaction with hospital care and the discharge planning approach.

Indigenous capacity building

Through respectful leadership and collaboration we work to sustain a culturally safe organisation, empower Aboriginal and Torres Strait Islander voices and maximise opportunities for Aboriginal and Torres Strait Islander peoples.

In 2019, to celebrate the International Year of Indigenous Languages, our Indigenous Capacity Building Unit was honoured to receive a Larrakia name, Biyamarr ma, meaning Pandanus, by Larrakia man Patj Patj, Janama, Robert Mills. In Larrakia culture, the Biyamarr

ma gives the whole tribe the capacity to function in multiple ways. It provides food, string, rope, baskets, mats, fishing and hunting utensils. Women use it to make all types of medicinal and comfort living products and garments including the famous dilly bag worn by healers, doctors and elders.

Together with the Biyamarr ma team, we worked collaboratively to develop our Aboriginal and Torres Strait Islander Employment Strategy and progress our Innovate Reconciliation Action Plan, which has been conditionally endorsed by Reconciliation Australia for launch in

2020. Through our employment strategy and our Reconciliation Action Plan, we clearly outline our commitment and the ways in which we will continue to build and sustain a strong Aboriginal and Torres Strait Islander workforce across all levels of our organisation.

2019 saw us strengthen our Indigenous traineeship program by incorporating important leadership and development opportunities in addition to support provided to complete certificate qualifications in Community Services and Business Administration. We had an intake of seven bright and enthusiastic new trainees, employed across the broad cross-section of our research and operations.

In December we farewelled our associate director for Aboriginal programs, Heather D'Antoine. For almost a decade, Heather provided vital leadership and guidance to Menzies. She recognised the importance of 'growing our own' workforce and championed the pathways for Indigenous youth. Heather also helped strengthen our approach to genuine community engagement at all stages of research and worked hard to foster relationships with our key stakeholders and partner organisations. Heather constantly displayed unwavering commitment and passion for her work and we are sincerely grateful for all she contributed during her time at Menzies.



^ Biyamarr ma, meaning Pandanus, is the Larrakia name given to our Indigenous Capacity Building Unit.



^ Biyamarr ma acting manager, Lydia Agius with Indigenous trainees, Paris Caton-Graham, Tasha Cole, Henry Craigie, Raelene Collins, Anna Wommatakimmi-Chapman and Niamah Walters.

Indigenous traineeship program

During the year, we welcomed seven trainees to our Indigenous traineeship program and celebrated one graduate with a Certificate III in Business Administration.

As part of the program, the trainees are employed within research project teams, including the Menzies laboratory, while being provided a holistic approach to professional development to further enhance their skills upon completion of their traineeship.

The professional development activities included an introduction to Indigenous leadership, team building and confidence workshops, cultural workshops and involvement in event management of the Menzies Youth Summit.

"Menzies has given me direction and clarity. I am now interested in pursuing a career in health research," Indigenous traineeship program participant, Anna Wommatakimmi-Chapman, commented.



^ Biyamarr ma team members, Rachel Walker, Heather D'Antoine, Lydia Agius and Dianne Walker, at the launch of the community engagement guidelines.

Launch of community engagement guidelines

One of our major goals at Menzies is to address the health inequalities between Aboriginal and Torres Strait Islander people and non-Indigenous Australians. We do this through meaningful research in partnership with the community.

In May, we launched our Guidelines for Engagement and Implementation for Community Research, a valuable resource tailored to Menzies staff to build on our framework developed from 35 years of engagement with remote communities throughout our research partnerships.

The guidelines provide practical information about the importance of community consultation, how to prepare and conduct the research as well as the importance of knowledge translation.

Case studies

The B.strong story

In response to the significant differences in health outcomes for Aboriginal and Torres Strait Islanders living in QLD and the rest of the population, the QLD Government engaged Menzies to develop and deliver a brief health intervention training program to Aboriginal and Torres Strait Islander community health and hospital workers across the state.

Since 2017, the Menzies B.strong Brief Intervention Training Program has delivered training to 1150 health professionals, 62 per cent identifying as being of Aboriginal and/or Torres Strait Islander descent, building the capacity of QLD's frontline health and community workers to deliver smoking cessation, nutrition and physical activity brief interventions for Aboriginal and Torres Strait Islander clients.

The program comprised a one-day face-to-face workshop, six online modules and practitioner and client resource kits, including a Facebook support group. It was designed

to increase knowledge and skills and provide tools to assist with the delivery of brief interventions to promote healthy changes with Indigenous clients.

An evaluation of the B.strong training program demonstrated significant improvements in participants' knowledge, attitudes, usual practice and skills to promote healthy changes with Indigenous clients.

B.strong Indigenous training facilitator, Grace Ward, was inspired by the passion of the training participants.

"There was one common thread that linked all the workshop sites, and that was the passion and dedication of the B.strong workshop participants in striving to improve the health of all Aboriginal and Torres Strait Islander people within their community," Grace said.

Based on the success of the program, the development of a new B.strong training program focused on pregnancy and early life is currently underway.

^ B.strong Indigenous training facilitators, Grace Ward and Royden Fagan.



Hearing for Learning Initiative hits the ground

During the year, we commenced the ground-breaking initiative to train and employ remote community members to qualify as ear health facilitators who can assist with the diagnosis and treatment of otitis media and hearing loss in children.

Hearing for Learning aims to tackle hearing problems while boosting education opportunities among Aboriginal and Torres Strait Islander children.

The project is being led by Menzies' head of ear health research, Professor Amanda Leach, and renowned First Nations ear, nose and throat surgeon, Associate Professor Kelvin Kong.

Despite it being preventable, 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 causes hearing impairment that can lead to social isolation and communication, behaviour and learning problems.

"Our research confirms the negative impacts of chronic untreated otitis media on developmental milestones, school attendance and performance, parenting, and social inclusion," Prof Leach said.

"The project aims to comprehensively train and employ up to 40 community-based ear health facilitators, which we believe will provide a culturally safe and appropriate long-term approach to prevention and treatment, and reduce the need for costly fly-in/fly-out specialists."

During 2019, the Hearing for Learning team has travelled around the NT to invite communities to participate in the initiative.



Wurrumiyanga trainees with Jenny Jenkins, senior clinical training research officer, and Libby Hoppo, clinical training research officer.

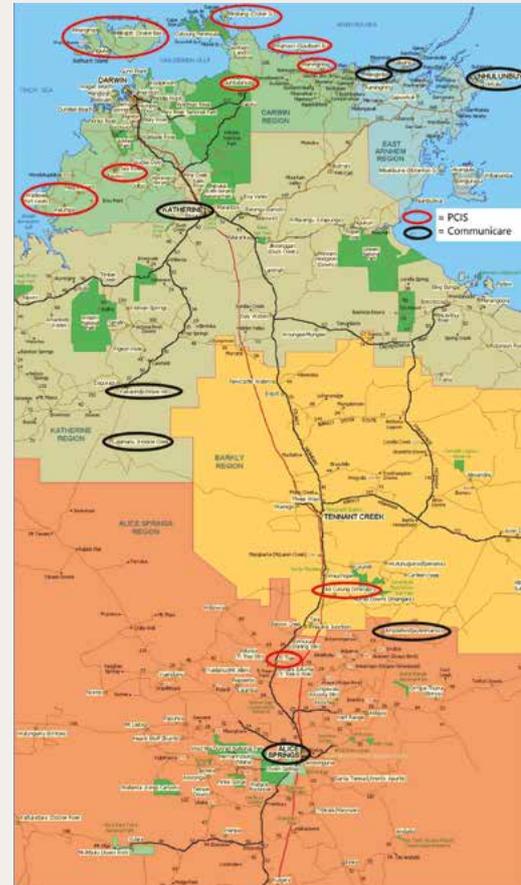


Visiting Aboriginal research officer from Inala Health, Claudette (Sissy) Tyson, demonstrating tympanometry with trainees Agnella Tipungwuti and Elizabeth Puruntatameri.

The 20 participating communities are:

- in the Top End: Wurrumiyanga, Pirlangimpi, Milikapiti, Wadeye, Palumpa (and Peppimenarti), Nauiyu, Katherine, Kalkaringi (and Daguragu), Minjilang, Waruwi, Gunbalanya, Maningrida, Milingimbi, Galiwin'ku and Yirrkala.
- in the Central Desert/Barkly: Lajamanu, Ali Curung, Ti Tree, Ampilatwatja and Alice Springs.

The project has received \$7.9 million in joint funding from the NT and Australian Governments and The Balnaves Foundation over five years.



Twenty communities across the Territory will participate in the Hearing for Learning Initiative.

Research excellence

Australia Day Awards

Professor Anne Chang was named Member of the Order of Australia (AM) for her significant service to paediatric respiratory medicine as a clinician and researcher.

Telstra Business Woman of the Year

Professor Amanda Leach was named the 2019 Telstra NT Business Woman of the Year and was also the winner of the For Purpose and Social Enterprise category.

Professor Gail Garvey was a finalist in the QLD Public Sector and Academia Award Category.

NHMRC Research Excellence Award

Professor Josh Davis received a Research Excellence Award from the NHMRC for being the top-ranked Career Development Fellowship applicant in clinical health research.

Academy of Medical Sciences Fellowship

Professor Ric Price was selected as a Fellow of The Academy of Medical Science (UK) in recognition of his outstanding contributions to advancing medical science and translating developments into benefits for patients and the wider society.

Australian Indigenous Doctors' Association

Dr Jaquelyne Hughes was named the Australian Indigenous Doctors' Association's Indigenous Doctor of the Year in recognition for her impact in improving health outcomes for Aboriginal and Torres Strait Islander people with kidney disease.

Australia Healthcare Hospitals Association Sidney Sax Medal

Vicki Wade was awarded the Australian Healthcare and Hospitals Association's 2019 Sidney Sax Medal for her outstanding contribution to the development and improvement of the Australian healthcare system in the field of health services policy, organisation, delivery and research.

CSL Centenary Fellowship

Dr Kamala Ley-Thriemer was awarded a prestigious \$1.25 million CSL Centenary Fellowship to develop and optimise treatment programs against vivax malaria in Southeast Asia and the Horn of Africa.



^ Dr Kamala Ley-Thriemer at the CSL Centenary Fellowship awards night.

Georgina Sweet Award

Dr Sarah Auburn received the Georgina Sweet Award for women in Quantitative Biomedical Science in recognition of her ground-breaking work on *P.vivax* genomic epidemiology.

Lowitja Institute Emerging Researcher Award

Dr Kalinda Griffiths was named the Lowitja Institute Emerging Researcher for her academic excellence in addressing complex health disparities and the use of Indigenous data.

Fulbright Scholarship

Professor James Smith was named as a 2019 Fulbright Scholar. He will travel to Vanderbilt University in Tennessee and the University of Michigan where he will look at synthesising global evidence to improve health promotion strategies aimed at reducing health inequalities among black men.

Al & Val Rosenstrauss Fellowship

Dr Robyn Marsh was awarded the 2020 Al & Val Rosenstrauss Fellowship by the Rebecca L. Cooper Medical Research Foundation.

MJA MDA Award – Excellence in Medical Research

Dr Josh Francis received the 2019 Medical Journal of Australia national prize for the best research paper.

Superstars of STEM

Associate Professor Heidi Smith-Vaughan, Dr Teresa Wozniak and Dr Kalinda Griffiths were named as 2019 Superstars of STEM.



^ Menzies' Superstars of STEM, Assoc Prof Heidi Smith-Vaughan, Dr Kalinda Griffiths and Dr Teresa Wozniak.

CDU Vice-Chancellor's Exceptional Performance in Research Award

The Child Health Respiratory Team received the award in recognition for their national and international contribution to research that alters clinical practice and policy.



^ Associate Professor Nyanda McBride from the National Drug Research Institute with Menzies' Professor James Smith, Sarah Clifford and Tessa Wallace.

National AOD Awards

The alcohol and other drugs team was awarded the 2019 National AOD Award for Excellence and Innovation in the Research Category by the Alcohol and Drug Foundation.

NAIDOC Week Awards

Raelene Collins was awarded the Top End Indigenous Trainee of the Year and George Gurruwiwi received the Top End Elder of the Year award.

NT Young Achievers – Career Achievement Award

Ben Christie received the NT Career Achievement Award.



^ Raelene Collins, pictured with Kaye Thurlow, receiving her award.

Group Training NT (GTNT) Award

Raelene Collins was awarded the GTNT 2019 Indigenous Trainee of the Year.

QLD Trainee Award

Cylence Fewquandie was named the MIGAS Scholarship winner in the Indigenous Apprentice/Trainee of the year category.



^ Menzies' Meg Norris and Cylence Fewquandie with Craig Westwood, CEO of MIGAS.

Department of Foreign Affairs and Trade

Menzies para-legal, Zarah Ramoso will undertake a New Colombo Plan Scholarship during 2020.

CDU – Legal Studies Recognition

Zarah Ramoso also received the following awards: the HWL Ebsworth Lawyers Scholarship, and CDU – Outstanding Academic Achievement in Criminal Law.

Internal awards

The **2019 Menzies Medallion** was presented to Professor Peter d'Abbs for his significant contribution to research into substance misuse, alcohol and other drug policy issues and program evaluations.

The **2019 Companion of Menzies** was presented to Pat Anderson AO and Professor Tony Barnes. The award recognises those who have made exceptional contributions to the development and success of Menzies.

Child Health clinical trials coordinator, Nicole Wilson, was the recipient of the **2019 Ryan Family Prize**.



^ Nicole Wilson with Menzies Board Chair, Peter Plummer at the Annual General Meeting.

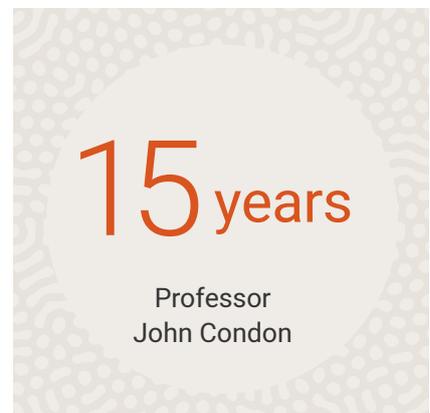
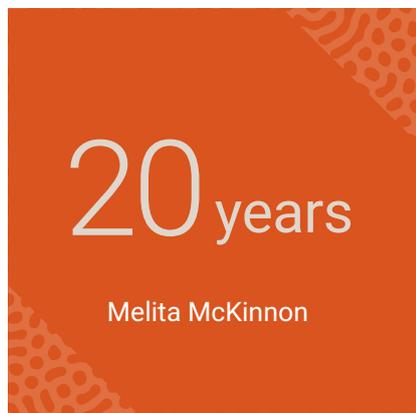
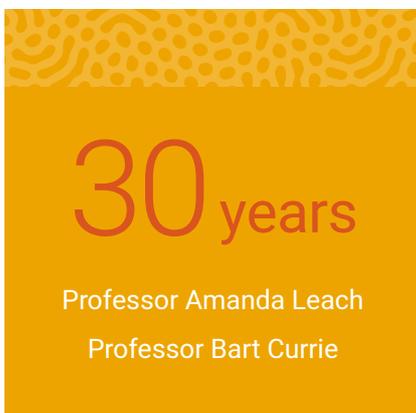
The **2019 Harry Christian Giese Research Into Action** award was won by Dr Nick Fancourt. Dr Fancourt leads a team in Timor-Leste that aims to improve outcomes for children hospitalised not only for malnutrition, but also for pneumonia. He will use the award to support a nutrition worker to lead an education program to better understand the social and cultural drivers of malnutrition.

The **2019 Val Asche Memorial Prize** for academic excellence was awarded to Alexander Wetten (Master of Public Health), Hannah Singleton (Graduate Diploma in Public Health) and joint winners April Carpenter and Fiona Johnson (Graduate Diploma in Health Research).

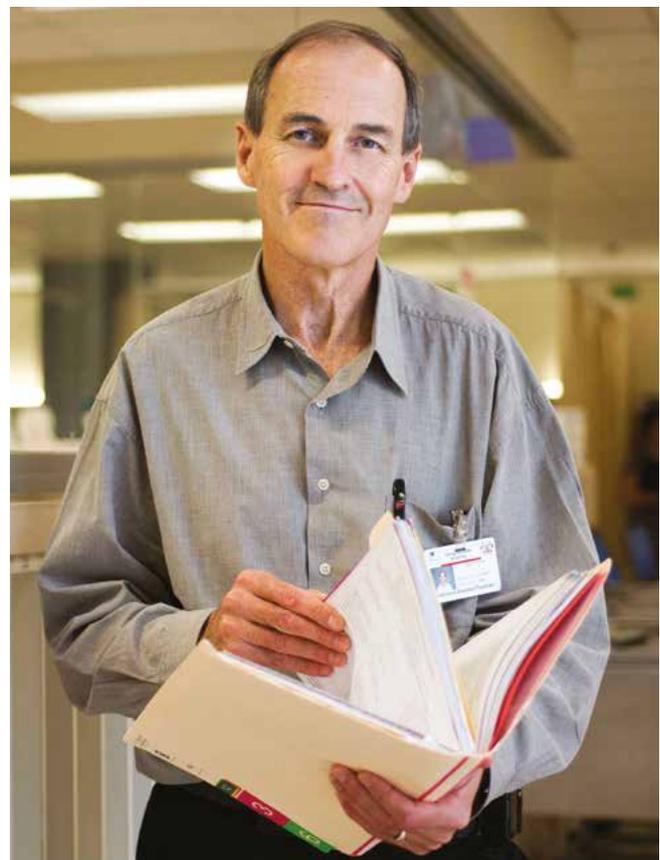
Long service awards

Our long service awards provide the opportunity to reflect on the contributions of those who have been instrumental to Menzies' development, growth and success.

Recognised in 2019 for their long-standing contributions were:



^ Prof Amanda Leach.



^ Prof Bart Currie.

Celebrating 30 years of service

As part of our 2019 long service awards, we were honoured to recognise Professor Amanda Leach and Professor Bart Currie for a milestone 30 years of service at Menzies.

Prof Leach and Prof Currie have had distinguished careers, leading some of our most significant research studies which make a difference to the lives of people throughout Australia and across our region. Through their leadership and guidance, we have been able to continue our work to improve the health and wellbeing of Indigenous Australians and are recognised as global leaders in tropical research into life-threatening illnesses.



▲ Prof Amanda Leach and Prof Bart Currie with their 30 years of service awards.

Professor Amanda Leach

Prof Leach began her career with Menzies in 1988 in Alice Springs as a research assistant working on a project on diarrheal disease affecting Aboriginal and Torres Strait Islander people.

She later moved to Darwin to work in the laboratory there, before starting her PhD on otitis media (middle ear infection). Since then she has developed and led microbiological and epidemiological studies of otitis media in Aboriginal and Torres Strait Islander children and now leads Menzies' Ear Health Research Program in the Child Health Division. Prof Leach's work has included clinical trials of treatment and prevention strategies, evidence-based guidelines and the national Care for Kids' Ears campaigns.

Prof Leach's work is well recognised. Earlier this year, she was awarded the Telstra NT Business Woman of the Year, the first researcher to win this award. In 2011, she was awarded the Elizabeth Blackburn Fellowship for top-ranking female applicant in the clinical category.

Professor John Mathews, the founding director of Menzies, believes that Prof Leach's success is due to her great ability and commitment.

"Her work has been enriched by the many friends and colleagues she has made and by the students she has mentored," Prof Mathews said. "The quality of Amanda's scientific output and leadership has been recognised by multiple grants from NHMRC and other agencies, including her richly deserved personal award as an Elizabeth Blackburn Fellow."

Professor Bart Currie

Prof Currie started with Menzies in December 1989, working in a mixed role between RDH, Menzies and training medical students. Thirty years on, he continues to be associated across these areas and in addition, is now the director of Menzies' major initiatives RHD Australia and HOT NORTH.

Prof Currie's passion is in coordinating links between clinicians, public health colleagues and other service providers, laboratory scientists and community. For example, he helped establish the Clinical School in Darwin to better connect the specialist hospital expertise with the health needs in communities. He also helped better identify cases of RHD, to set up a register, and to provide penicillin prophylaxis more effectively.

Early on in his work at RDH, Prof Currie recognised the importance of melioidosis as an exotic infection affecting immune-compromised patients and launched microbiological (and later molecular) techniques to enhance his clinical and epidemiological studies that were to make Darwin a world leader on melioidosis research.

Professor John Mathews, remembers first hearing about Prof Currie as a young infectious disease doctor working in PNG, who also had a deep interest in snake bites and venom.

"Bart has achieved relevance and excellence in everything that he has done as a clinical researcher, leader and mentor; he deserves recognition nationally as well as in Darwin," Prof Mathews said.



Education and training

Within our teams of researchers are internationally recognised authorities on their topics of expertise. In addition to conducting critical research and developing solutions to health problems, they also provide guidance to a new cohort of health researchers through our course offerings at CDU.

Menzies students Fiona Hildebrand and Michelle Ganzer at the 2019 CDU graduation.



^ Dr Steven Kho with CDU Vice-Chancellor, Professor Simon Maddocks.



^ October graduates with Professor Alan Cass and Her Honour The Hon Vicki O'Halloran AM, Administrator of the NT.

A highlight of 2019 was the record number of students who graduated with HDR along with the continued growth of our vocational education and training (VET) courses.

During the year, we celebrated the graduation of 11 HDR students, where two, Dr Steven Kho and Dr Robert Commons, received high praise from examiners.

What distinguishes Menzies from other institutions is the outstanding track record of our research academics. Our student supervision continued to grow stronger, which resulted in high completion rates and scholarship successes and our postgraduate coursework numbers remained steady.

New scholarships were provided to six HDR students in recognition of their potential and to support their research training.

The VET Certificate II in Community Health Research continued to attract interest with successful delivery to cohorts in both Alice Springs and Darwin.

We are building capacity of Indigenous community-based researchers through the Certificate II in Community Health Research, welcoming 25 new enrolments and seeing 14 graduates.

In a break from academic tradition eleven adult Yolŋu students celebrated their Certificate II Community Health Research graduation with a ceremony on country in Baniyala Homeland on the shores of Blue Mud Bay in North East Arnhem Land.

Students enrolled in the certificate are working on two new research projects; Monitoring and Evaluation for the Remote Alcohol and Other Drugs Workforce and Adaption for Central Australia.

Another highlight in the VET space was our first pilot of the Learning Literacy Numeracy (LLN4U) tool developed by Central Australian Remote Health Development Service and the introduction of a mentoring course to support learners in the workplace.

During the year, we have continued to enhance and evolve our education offering to our public health and health research higher education as well as vocational education and training courses. Several new Higher Education awards were accredited to be offered in 2020 and 2021, which include the Graduate Certificate of Epidemiology and Master of Health Research. Our Certificate II gained reaccreditation to 2023, with a greater range of units on offer to meet diverse project and learner needs.

HDR graduates

Claire Bartlett (PhD) A constructivist grounded theory study of reformers' experience of scaling-up accelerated literacy: Legacies of failure and a quest to make a difference.

Gokula Chandran (PhD) Place Matters: the role of "place" in the developmental outcomes of children in the NT.

Robert Commons (PhD) Primaquine radical cure of *Plasmodium vivax* malaria: a risk-benefit analysis.

Jessica De Dassel (PhD) Adherence to prophylactic penicillin and clinical outcomes for people with ARF and/or RHD in the NT of Australia.

Oiwodu Estella Ega (PhD) Social and emotional wellbeing of newly settled African women in Australia: A qualitative study.

Mascha Friderichs (PhD) They do think about health – Health, culture and identity in Katherine.

Steven Kho (PhD) Roles of platelets, neutrophils and the spleen in human malaria.

I-Lynn Lee (PhD) Maternal antenatal characteristics, perinatal outcomes and postpartum glycemic status of women in the NT, Australia, with hyperglycaemia in pregnancy.

Bo Reményi (PhD) Towards early detection of RHD in the young: international standardisation of echocardiographic diagnostic criteria.

Susan Edwards (Master by Research)

Psycho-educational assessment of remote Indigenous students in the NT.

Lyndall Warton (Master by Research)

Engaging parents in school-based nutrition education interventions to encourage healthy eating among children in low-income populations: A systematic review and meta-analyses.

Doctor of Public Health graduate

Richard Sager Body Mass Index: a preferred anthropometric measure towards predicting abnormal biochemical markers of cardiovascular disease within Australian Indigenous children in the Top End of the NT.

Higher Education Course	Equivalent full-time student load (EFTSL)	Graduates
Master of Public Health	19.625	19
Graduate Diploma in Public Health	15.0	9
Graduate Diploma in Health Research	3.375	4
Cross course participation in Menzies-taught units	13.0	N/A
Vocational education and training	Enrolments	Graduates
10513 NAT Certificate II in Community Health Research	25	14

HDR scholarships announced in 2019

Matthew Hare, PhD Intergenerational metabolic health in Indigenous and non-Indigenous Australians – Understanding trends, determinants and outcomes. NHMRC Scholarship.

Diana Mackay, PhD Improving the implementation of recommended postpartum care of Aboriginal and Torres Strait Islander women in the NT. NHMRC Scholarship.

Alana Gall, PhD Wellbeing and Quality of Life of Indigenous People. NHMRC Scholarship.

Monica Green, PhD Measuring the experiences of care of Aboriginal and Torres Strait Islander people with cancer. Research Training Program (RTP) Scholarship.

Nevio Sarmiento, PhD Epidemiology of *Streptococcus pneumoniae* among children in Timor-Leste and evidence pneumococcal conjugate vaccine uses in children with severe acute malnutrition. International Research Training Program (RTP) Scholarship.

Angelica Tan, PhD *Plasmodium knowlesi* and other zoonotic malaria species in Sabah, Malaysia: molecular detection, red blood cell interactions, and exposure trends within a longitudinal cohort. Malaysia Australia Colombo Plan Commemoration (MACC) Scholarship.

✓ Student case study

Becoming a part of the magic of Menzies

Menzies PhD candidate, paediatric cardiologist, Dr Bo Reményi was drawn to Menzies by the reputation of her supervisor and the opportunity to work with Indigenous communities.

Bo moved to Darwin to commence her studies in 2011 under renowned RHD specialist, Professor Jonathan Carapetis, then director of Menzies and quickly found doors opening that she could not have dreamed of.

“Through Prof Carapetis, I was invited to be part of and later as a leader of the international scientific community, with my work recognised in leading journals such as *Lancet* and *Nature*,” Bo said.

As the demand for her expertise increased, Bo changed to part-time study, allowing her to work as a scientific advisor to the World Heart Federation on rheumatic fever and RHD while continuing her work as a paediatric cardiologist in the NT.

“This was really important to me, to be able to simultaneously be involved in research, clinical work and policy,” she said.

Bo graduated in 2019. Her thesis, which looked at the early detection of RHD in young people by standardising echocardiographic diagnostic criteria has had a huge impact on the awareness of RHD nationally – namely due to her being recognised as the NT Australian of the Year in 2018.

“The recognition of my research allowed me to put the focus of early detection of RHD on the national agenda, which, in turn enabled an Australian “Road Map” towards eradication of RHD.



△ Dr Bo Reményi at her graduation.

“Now I could meet any politician in Australia, and they would say yes, I know about RHD, can you advise us on the solution,” she said.

Bo is passionate about ‘keeping the heat’ on politicians to help eliminate RHD by delivering solutions to the most disadvantaged people of the world, including those living in remote Indigenous communities.

“I am only at the beginning of my journey to make sure all children have equal access to healthcare in Australia and overseas. Together, researchers, clinicians, the general public and politicians, can overcome new diseases like COVID-19 and eliminate an old disease like RHD,” she said.

Reflecting on her PhD, Bo said she felt like she was being invited into the “magic circle” by “world-class magicians” when her candidacy was accepted.

“I would urge anyone with something worthwhile to achieve to come and experience the magic of Menzies.”

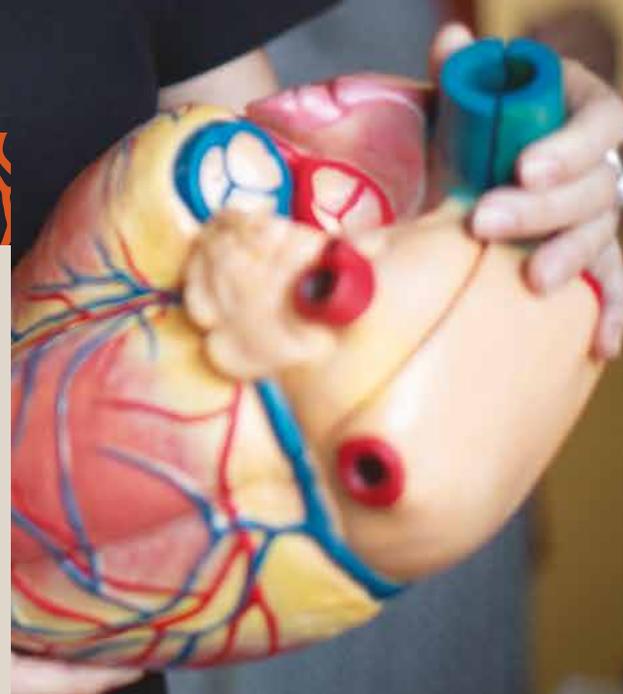
Dr Bo Reményi

HealthLAB manager,
Nicole Boyd.



In the community

Research does not exist in a vacuum. It is important to us to interact and share knowledge with the communities in which we work, live and study.



Community engagement

Every year, we hold various events and invite our communities to attend, including the Menzies Oration, lunchtime seminars and HealthLAB hands-on health promotion activities.

2019 Menzies Oration delivered by Leanne Liddle

In October, Director of the Aboriginal Justice Unit, Department of the Attorney-General and Justice, Leanne Liddle, delivered an insightful Menzies Oration in the Menzies Auditorium.

Leanne's presentation, "Where is the justice?", identified key challenges to achieving equity and justice for Aboriginal and Torres Strait Islander people along with the issue of institutional racism in the health and justice systems.

HealthLAB tours the Top End during National Science Week

Assisted by a National Science Week grant, HealthLAB held three community events in the Top End throughout August.

The HealthLAB team engaged community members in the remote community of Milingimbi to conduct their own health tests and find out what the results mean for their general wellbeing.

During the week, the team also dropped into Parliament House, Darwin to test the health of our politicians and along with our partners, NT Thunder, tested the mettle of aspiring students at the CDU Open Day.

Youth have voice at summit

Researchers, policymakers, service providers and young people came together at the Youth Health Summit in September to discuss health research priorities for young people.

Coordinated by Menzies, the Youth Health Summit was funded primarily by Menzies' HOT NORTH collaborative program, which aims to improve the health and wellbeing of people living in northern Australia.

Menzies senior researcher Dr Renae Kirkham said the summit enabled young Territorians to raise their priorities for health and wellbeing research.

"In collaboration with young delegates, service providers, policymakers and researchers, a declaration was agreed upon. It identified four major priorities and calls to action to achieve a healthier, safer future for all young Territorians," Dr Kirkham said.

"These included mental health, sexual health, equitable access of support services and climate change."

The NT Youth Health Declaration, which identifies the top four priorities for youth health and wellbeing, is available for download on the Menzies website.



^ Leanne Liddle delivered the 2019 Menzies Oration.



^ HealthLAB volunteer Charlotte Watson with Raelene Collins.



^ Attendees at the NT Youth Health Summit.

Our donors and supporters

In 2019, more than \$4 million was committed by our donors and supporters which has helped us to further our research efforts.

These funds are advancing Menzies' work in many areas including Indigenous youth diabetes, the National Indigenous Preventative Health and Education Program, the Remote Indigenous Health and Early Years Program and the Hearing for Learning program.

We are grateful to our patrons and ambassadors for their ongoing commitment to the work of Menzies: Annette Schmiede, Ben McLaughlin, Dr Jane Andrews, Kate Gillingham, Kate and Richard Russell, Kym Cairns, Andrew Brightmore, Les Trudzick, Dr Lesley Braun, Maryjane Crabtree, Michael Rose, Olivia Tyler, Rebecca McGrath, Sandra McPhee AM, Dr Sue Abhary, Susan Alberti AC, The Hon Helen Coonan, Suzi Hullick and Toby Patten.

Many of our successes are due to their expertise, advice and networking, demonstrating that non-financial support is just as important to Menzies as financial donations.

During the year, the strength of our partnerships was showcased through several initiatives including the Catalyse mentorship program, networking opportunities, pro bono legal counsel and a fundraising dinner in Darwin.

Building sustainable female leadership



A highlight of 2019 was the development of the Catalyse mentorship program, an exciting opportunity to build sustainable female leadership and facilitate the advancement of women in STEM. Catalyse grew out of HOT NORTH's Women in Tropical Health Network.

Ten women from across Menzies, CDU, the Northern Institute, Flinders University and Torres and Cape Hospital Health Services were selected to participate as mentees in the first Catalyse cohort. The mentees were introduced to a range of targeted personal, professional and leadership development opportunities as well as being networked with potential funders, influential supporters and strategic counsellors (corporate, philanthropic and academic) to assist in advancing their work interests and careers.

^ Catalyse mentorship program members; Amelia Pickering, Catherine Martel, Vicki Kerrigan, Katrina Lawrence, Rebecca Slade, Dr Bianca Middleton, Dr Kamala Ley-Thriemer and Dr Teresa Wozniak.

Mentors came from a range of organisations including the BUPA Foundation, Griffith Institute for Drug Discovery, Technology One, Westpac, Cairns Industries, Epworth Private, Medibank, Russell Group, JP Morgan, Suncorp, Blackmores Institute, University of Adelaide, Telethon Kids Institute, University of Sydney, ANU, Water Wise Australia, JCU and Menzies.

Women in science event

In August, eight of our women scientists shared the joys and challenges of careers in research science with some of Australia's best-known and successful women leaders in business, philanthropy and government.

Hosted at JP Morgan's head offices in Sydney by Chief Executive Women's Network, Rebecca McGrath, The Hon Helen Coonan and Sandra McPhee AM, our researchers had the opportunity to make important connections with mentors, supporters and funders in support of themselves, their careers and their vital health research work.

Pro bono partner spotlight

Menzies is immensely grateful for the support of pro bono partner, law firm Baker McKenzie.

The relationship with this leading international firm has bolstered our networking opportunities and, with their expertise in the area of healthcare and life sciences, has provided important advisory counsel.

We are grateful for the generosity of their time, expertise and encouragement and look forward to continuing the partnership into the future.

Fighting liver cancer together fundraiser

In February, nearly 100 guests attended the Fighting Liver Cancer Together fundraiser in Darwin to raise funds for equipment used at our One-Stop Liver Shops in remote NT communities.

Hep B is the leading contributor to liver cancer among Indigenous Australians. Access to specialised equipment is vital to the prevention of liver cancer and liver failure. Through recent fundraising efforts, the Hep B team purchased two Fibroscan machines, the only Fibroscan machines in the NT.

The aim of the evening was to raise funds to purchase a new liver ultrasound probe to go with the new Fibroscan machines.

Fibroscan machines use advanced ultrasound technology to assess the stiffness of the liver. The machine measures the speed of a vibration wave made by a probe on the lower chest overlying the liver. The stiffer the liver, the more likely the liver has fibrosis or cirrhosis (liver disease). Knowing the condition of a liver increases the chance of preventing death from liver cancer or liver failure.

We thank the local businesses who generously donated all auction and raffle items and Pee Wees at the Point, Dreamedia Events and Bendigo Bank for donating the venue and equipment, and the guests who helped to reach our fundraising goal.



^ Maria Scarlett, Dr Elaine 'Lawurrpa' Maypilama and Heather D'Antoine at the event.



^ Mr O'Halloran, Menzies Patron, Her Honour the Honourable Vicki O'Halloran AO, Administrator of the Northern Territory with Dr Jane Davies at the event.

Major donors and partners

We are grateful to the following donors and partners for their generous support in 2019:

- ASIC - Australian Securities and Investment Commission
- Baker McKenzie
- Belinda Gibson
- Charles Darwin University
- Commonwealth Government of Australia
- Gerry Wood
- Graham Blashki
- Harry Christian Giese Award
- Ian Albrey and Edwina Menzies
- INPEX
- James Hogben
- Lavercombe Quarries
- Maple-Brown Charitable Foundation
- McArthur River Mine Golf Day
- Megan Duffy
- Northern Territory Government
- Norton Rose Fulbright
- Northern Territory Airport Golf Day
- Peter Morr
- R K Cadan
- Richard Ryan
- Shannon Spriggs
- The Asche Family
- The Balnaves Foundation
- The Cohen Family
- The Ian Potter Foundation
- The Macquarie Group Foundation
- The Ray and Margaret Wilson Foundation
- The Snow Foundation
- The Williams Family
- Woolworths

2019 donations and major gifts

Major contributions*

\$995 000

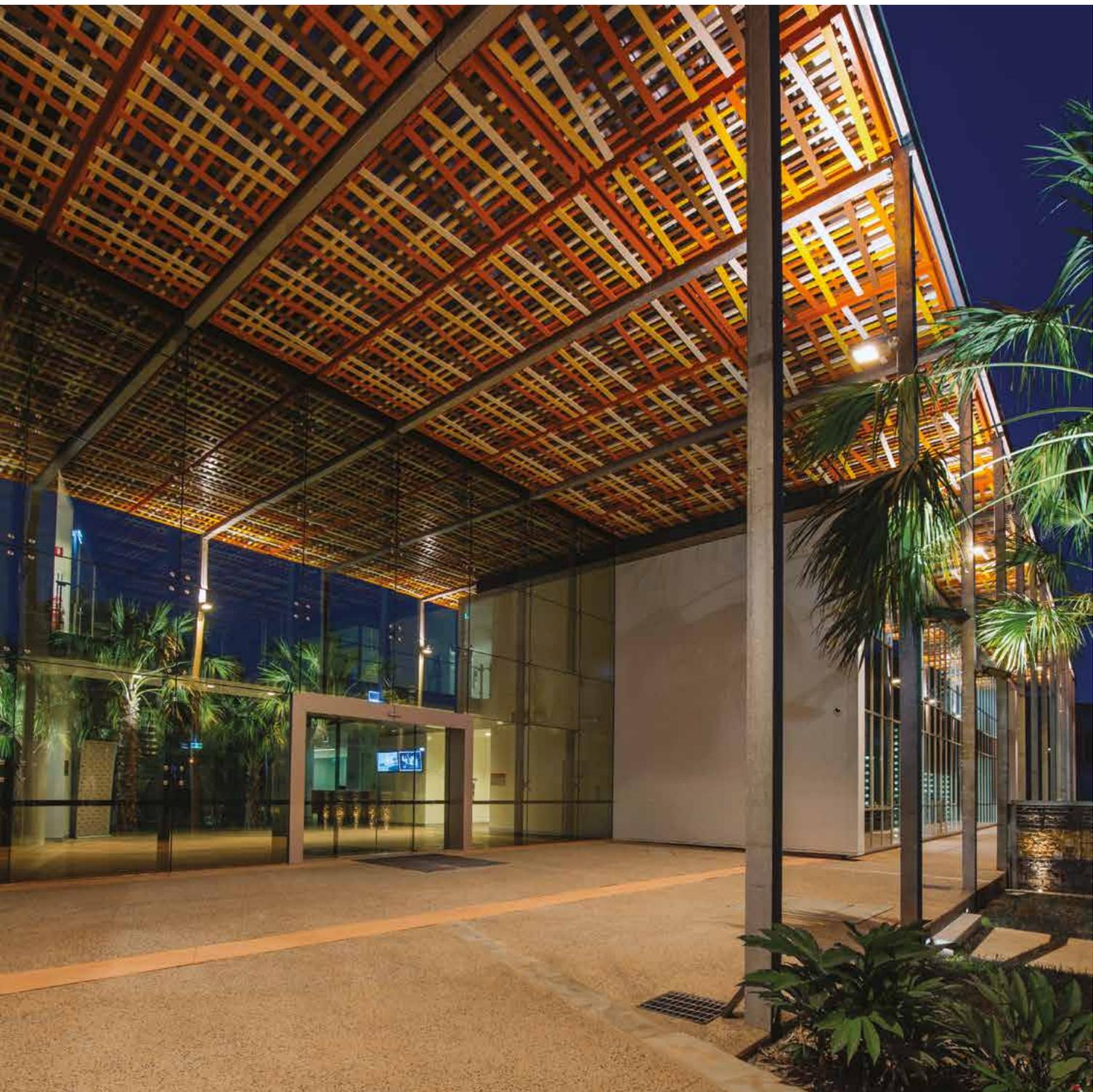
* Major contributions are recorded as consultancy and contract research in the presentation of Menzies financials

Donations

\$881 976

In-kind contributions

\$60 000



Our financials

Financial summary

Total revenue

\$48 178 918

NHMRC Grants

\$16 581 468



Investment income

\$682 633



Other Australian Government Grants

\$4 223 497



Consultancy and contract research

\$9 757 950



NT Government Funding and Grants

\$7 435 475



Other revenue

\$6 275 223



Course fees and other charges

\$3 222 225



34% NHMRC Grants

20% Consultancy and contract research

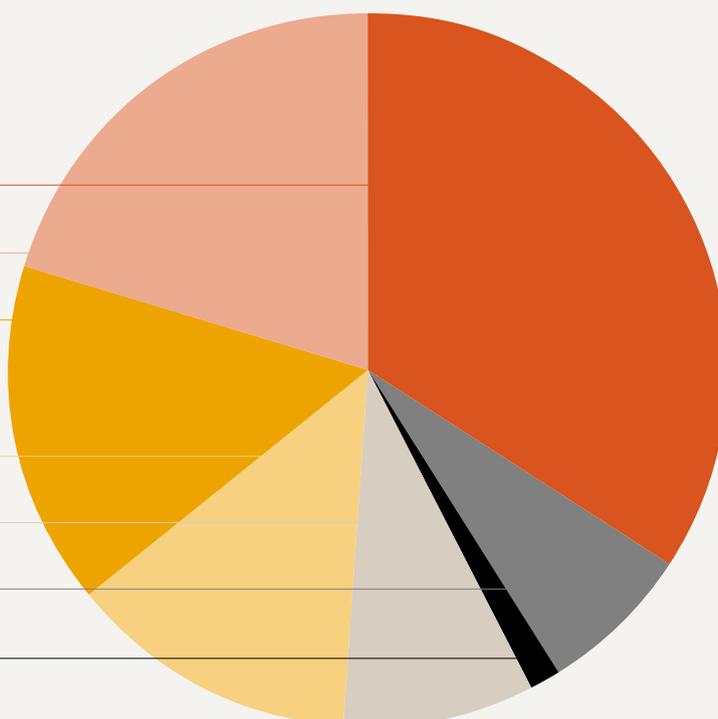
16% NT Government Funding and Grants

13% Other revenue

9% Other Australian Government Grants

7% Course fees and other charges

1% Investment income





Total expenses

\$44 260 733

Salary and other employment related costs

\$27 984 604*

* 88% spent on delivery of research, education and training



Direct research and other costs

\$15 208 741



Depreciation

\$854 844



Repairs and maintenance

\$212 544

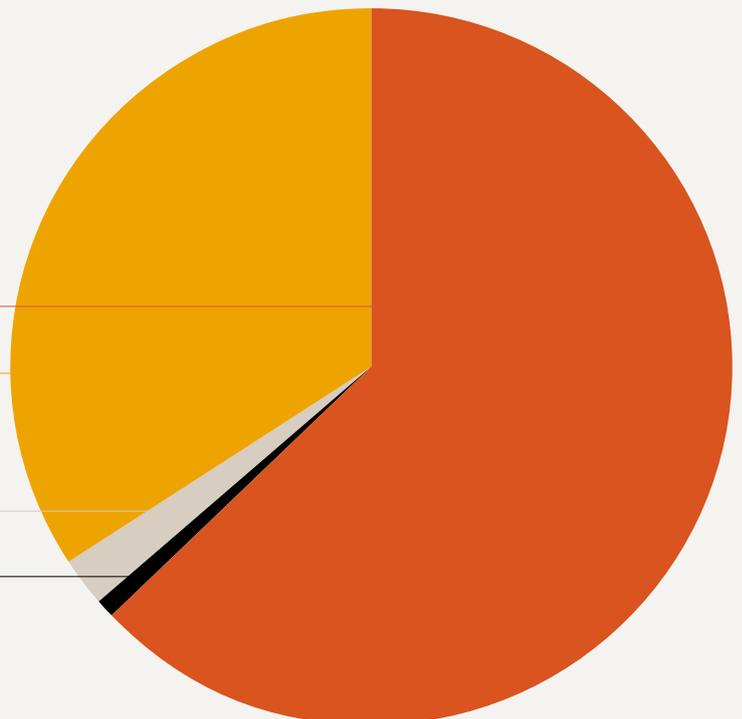


63% Salary and other employment related costs

34% Direct research and other costs

2% Depreciation

1% Repairs and maintenance



Sabna, a phlebotomist at the Indus Hospital in Karachi, Pakistan which processes malaria patients. *Photo credit: Pearl Gan in association with OUCRU, Vietnam, and EOCRU, Indonesia.*



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

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