Improving Health Outcomes in the Tropical North: Case Study

Origin
The Asia-Pacific region is a global epicentre for emerging infectious diseases and drug resistance. Growing economic integration and population movements mean that disease epidemics are likely to increase, and reach Australia more frequently. The Australian Government’s Our North, Our Future: White Paper on Developing Northern Australia included a focus on health care and medical research in Australia’s tropical North.

The Northern Australia Tropical Disease Collaborative Research Program (NATDCRP), announced in 2015 as part of the White Paper, aims to support research into the diagnosis, treatment and prevention of tropical diseases, to build strong collaborations and capacity in the health and medical research workforce, and to promote effective translation of this research into health policy and practice.

Grants and Investment
NHMRC funding has contributed significantly to improving health outcomes in Australia’s tropical north. The NATDCRP, delivered through NHMRC provided grant funding for the improving health outcomes in the Tropical North (HOT North) program led by Professor Bart Cerme at the Menzies School of Health Research, with funding commencing in 2017. This grant was awarded through a competitive, peer reviewed process.

Research and research impacts arising from this grant will have also been supported by other NHMRC funding including:
- Associate Professor (A/Prof) Asha Bowen
  - Postgraduate Scholarship (PGS): 2010
  - Early Career Career Fellowship (ECF): 2015
  - Project Grant (PG): 2017
  - Investigator Grant: 2020
- Dr Matthew Grigg
  - PGS: 2014, ECF: 2018
  - Ideas Grant: 2020
- Dr Pamela Laird
  - PGS: 2017
- Professor Louise Maple-Brown
  - Partnership Project Grant: 2012
  - Practitioner Fellowship: 2015
  - International Collaborative Grant: 2015
- Professor Anna Ralph
  - Translating Research into Practice (TRIP) Fellowship: 2016
  - Career Development Fellowship: 2018
- Dr Emily Maple-Brown
  - Research Fellowship: 2013

Collaborations
During HOT North’s first three years, 97 research activities were established, including pilot projects, fellowships and scholarships, that were instrumental in building the capacity of emerging researchers. These researchers formed collaborations with 23 research organisations across Australia and South Asia, and more than 60 health organisations such as health departments, hospitals and Aboriginal medical services also participated in these projects.

Results and Translation
A/Prof Bowen’s project - the Anti-microbial Academy for Aboriginal and Torres Strait Islander Health Professionals, has developed a strategy for combating ‘superbugs’ in remote health settings. Skin sores are the most frequent reason for antibiotic usage in the tropical north, but preventing resistance to those antibiotics is an emerging science that remains inaccessible to many healthcare workers.

Dr Laird’s research on how to reach children at risk of chronic lung disease more quickly and efficiently is developing a culturally secure way for parents and carers to identify signs of chronic lung disease in infants. This does not rely on expensive media campaigns but does need to work in partnership with communities and ensure the message provides a culturally secure way of delivering this message. Led by Professor Ralph, the Communicate study has investigated the causes of poor communication between health care providers and Aboriginal people that results in adverse outcomes including death. This study aimed to identify redeemable barriers to the use of Aboriginal interpreter services at the Northern Territory’s tertiary hospital, which currently manages over 25,000 Aboriginal inpatients annually.

The Diabetes in Youth project, led by Professor Maple-Brown, assessed prevalence rates of type 2 diabetes in Aboriginal and Torres Strait Islander young people across the Kimberley, Northern Territory and Far North Queensland.

Professor Ritchie has worked to develop novel mosquito traps for the detection of pathogens, while Dr Grigg has conducted research in Sabah, Malaysia, working on how to improve treatment and reduce transmission of zoonotic malaria.

Health Outcomes and Impact

Skin health research, such as the SToP (See, Treat, Prevent) skin sores and scabies trial led by Dr Laird, has led to the establishment of the SkinSore Guidelines, a new tool now widely used across the remote health sector to prevent and manage skin infections.

Child lung health communication tools, developed by Dr Laird in Western Australia, have begun to reverse the ‘normalisation’ of chronic wet cough by clinicians across northern Australia, resulting in fewer children at risk of bronchiectasis.

The Communicate study has led to increased access to Aboriginal language interpreters at Royal Darwin Hospital. With 11 years of intervention, there was a significant decrease in self-discharge rates for Aboriginal inpatients.

The Diabetes in Youth collaboration has led to a marked increase in screening and diagnosis of type 2 diabetes in people under 25, with Darwin-based paediatric and adult endocrinologists receiving more referrals for young people diagnosed with the condition.

Mosquito-borne virus surveillance methods, developed by investigations in Professor Ritchie’s Queensland group, are now used by multiple state and Commonwealth authorities to monitor for incursions of the Murray Valley and Japanese encephalitis viruses.

Plasmodium knowlesi malaria research, undertaken by Dr Grigg and team, led to changes in Malaysian national treatment policy and provided the evidence base for updated World Health Organisation (WHO) Global guidelines and Australian malaria treatment guidelines.

A/Professor Asha Bowen

A/Prof Bowen is a Paediatric Infectious Diseases Specialist at the Perth Children’s Hospital and leader of the Menzies Centre for Childhood Infectious Diseases, based at the Telethon Kids Institute. Recently appointed as the Institute’s Program lead of ‘Vaccines and Influenza Diseases’, A/Prof Bowen’s focus is on enabling the rapid translation of results from ‘bench to bedside’.

Dr Matthew Grigg

Dr Grigg is a post-doctoral researcher and NHMRC Early Career Fellow who has experience conducting and leading studies related to the epidemiology, diagnosis and clinical drug trials of infectious and other adverse outcomes diseases in Southeast Asia, with a focus on zoonotic malaria; dengue; and yellow fever. Dr Grigg was also a clinician in Indigenous health care in remote communities in the Kimberley, Northern Territory.

Dr Pamela Laird

Dr Laird is a senior respiratory physiotherapist at Perth Children’s Hospital with a special interest in Aboriginal paediatric respiratory disease and Cystic Fibrosis. Dr Laird is the physiotherapist for the Kimberley and Tiwi Specialist Respiratory Service and has over 25 years of clinical experience in respiratory care. Dr Laird is a graduate of the University of Queensland and has worked as a respiratory physiotherapist in Australia, Asia and currently undertaking research in the Kimberley and Pilbara. Dr Laird has been involved in improving health outcomes for Aboriginal children by preventing chronic lung disease.

Professor Louise Maple-Brown

Professor Maple-Brown is a senior endocrinologist and Head of the Diabetes in Pregnancy Partnership and The PANDORA (Pregnancy And Neonatal Diabetes) Project. Prof Maple-Brown is an endocrinologist and researcher at North_eastern General Medicine and Infectious Diseases at Royal Darwin Hospital.

Professor Anna Ralph

Professor Ralph is Director of Global and Tropical Health at Menzies School of Health Research, a Deputy Director of the NHMRC’ Centre for Research Excellence (CRE) in Tropical Health, a co-director of the Rhabdomyosarcoma Study Group, and Director of the Northern Australia Tropical Disease Network. Prof Ralph leads research programs in Paediatric and Adolescent Medicine, and Rheumatic and Musculoskeletal Diseases in Pregnancy and Partnership in the Northern Territory (PANDORA) Cohort Study.

Professor Scott Ritchie

Professor Ritchie is Director of Field Entomology within the World Mosquito Program that has successfully driven the global effort to prevent dengue in 12 countries, including Australia. Previously, Prof Ritchie was a Research Associate in the College of Public Health, Medical and Veterinary Sciences at James Cook University and Head of the Department of Tropical Health and Medicine’s Centre for Tropical Environmental and Sustainability Science.