

Equity through better health

ANNUAL REPORT 2018



Burnet Institute
Medical Research. Practical Action.

Medical Research. Practical Action.

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Cover: Young boy in Kokopo, Papua New Guinea. Image: Lynton Crabb Photography.

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Burnet is an active member of the Australian Council for International Development (ACFID), and is committed to full adherence to the ACFID Code of Conduct. Information about how to make a complaint on any breach of conduct can be found at www.acfid.asn.au.

A full copy of the Financial Report is available on our website. Alternatively, for a printed copy please call +61 3 9282 2111. The Financial Report has been prepared in accordance with the requirements set out in the *Corporations Act, 2001* and the ACFID Code of Conduct.

Burnet Institute is a member of the Association of Australian Medical Research Institutes (AAMRI), the peak body representing Australia's pre-eminent independent medical research institutes. All members of AAMRI are internationally recognised as leaders in health and medical research.

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For more information about our work, visit burnet.edu.au or call +61 3 9282 2111.



VISION

Equity through
better health.

Improvement in health
of the most vulnerable
people drives greater
equity and leads to a more
sustainable, secure and
prosperous world.

Our Organisation

Burnet Institute is an Australian, unaligned, independent, not-for-profit organisation that aims to achieve better health for vulnerable communities throughout the world.



Mission

To achieve better health for vulnerable communities in Australia and internationally by accelerating the translation of research, discovery and evidence into sustainable health solutions.

Values

We are an **unaligned, independent** organisation that operates with transparency and **respect**. We are passionate about **social justice, equality, evidence-based** research and development, and strive to deliver **excellence** and health solutions through **innovation, collaboration** and **accountability**.

Burnet 2020

“Clear direction led by our ambitious strategic plan, Burnet 2020, is driving a greater focus on the most important global health issues to achieve a lasting impact for vulnerable communities as a result.”

Professor Brendan Crabb AC,
Director and CEO

Burnet 2020 more fully exploits our international and local field presence, our laboratories, and our mixed development and research cultures. A revitalised and focused organisation, Burnet is harnessing its remarkable technical breadth to help solve devastating health problems.

It also builds on our rich 30-year history and close links with communities in Papua New Guinea, Myanmar, China, Lao PDR and in other African, Asian and Pacific countries.

Our strategic objectives

- To develop ambitious but achievable goals
- To achieve our goals using high-quality research and knowledge
- To translate and apply our research and knowledge
- To develop a talented and committed workforce
- To provide a value-added and supportive work environment
- To secure financial sustainability.

Our technical breadth

More than 30 research working groups are focused on solving some of the most devastating health problems globally. They are addressing challenging issues across five interdisciplinary programs – Maternal and Child Health, Disease Elimination, Behaviours and Health Risks, Health Security, and Healthy Ageing.

Burnet's unique approach and highly diverse skill base sets us apart from other organisations.

Our Research Working Groups

- Alcohol and Other Drugs Group
- Blood-Borne Viruses and Global Health Group
- Diagnostic Markers in Chronic Immune Disorders Group
- Global Adolescent Health Group
- Global Health Diagnostics Development Group
- Global Women's and Newborn's Health Group
- Health Emergencies Group
- Healthy Mothers, Healthy Babies
- HIV Prevention Group
- Immune Therapies Group
- Immunometabolism in HIV and Inflammatory Diseases Group
- Infection, Inflammation and Innate Immunity Group
- Influenza Group
- Justice Health Group
- Malaria and Infectious Diseases Epidemiology Group
- Malaria and Tropical Diseases Group
- Malaria Immunity and Vaccines Group
- Malaria Virulence and Drug Discovery Group
- Maternal, Newborn, Child Health and Nutrition Group
- Modelling and Biostatistics Group
- Myanmar Program
- Other International (Including Australian NGO Cooperation Program)
- Papua New Guinea Program
- Retroviral Biology and Antivirals Group
- Strategies for HIV prevention, management of acute and chronic HIV infection Group
- Surveillance and Evaluation Group
- Tuberculosis Elimination and Implementation Science Group
- Vector-Borne Diseases and Tropical Public Health Group
- Viral Entry and Vaccines Group
- Viral Hepatitis Elimination Group
- Young People's Health Group

Chair's Report



I'm delighted to present this Annual Review which highlights many of the key activities and achievements of Burnet Institute over the past year.

This is my final Chair's Report as I stepped down as Chair in early 2019 after 19 years on the Institute's Board. It has been a tremendous honour to have served as a member of Burnet's Board, and to have worked with such a talented, passionate and committed group of professionals. It has been inspiring to see how the Institute has grown and developed over the past two decades notably in:

- The increasing breadth of research and public health activities across disease elimination, maternal and child health, behaviours and health risks, health security, and healthy ageing
- The strengthening of our international research across the region, especially in Papua New Guinea
- The growth from a small organisation with an annual turnover of AUD\$10 million to one of the top medical research institutes in the region with an annual turnover of more than AUD\$47 million.

In reflecting on my time at the Institute, there are a few words that encapsulate how I think of Burnet – **EXCELLENCE, INNOVATION** and **IMPACT**. We use these words often, but it really is a true reflection of Burnet:

- **EXCELLENCE** in the quality of the staff, and the internationally recognised research and public health programs that are undertaken by Burnet staff, ably led by Director and CEO, Professor Brendan Crabb AC and his leadership team
- **INNOVATION** in the extraordinary breadth of activities and novel approaches to achieve better health for the vulnerable people we work with
- **IMPACT** in that lives are being saved directly through the discoveries and interventions made by researchers, through capacity building, and policy changes that are influenced by the findings of research programs.

I would like to congratulate all Burnet staff and students on their significant achievements and contributions over the past 12 months.

Also, I would like to acknowledge the significant contribution made by Mr Ross Cooke OAM who stepped down from the Board in late 2018 after 20 years' service. Ross led our Audit Risk and Finance Committee for many years, overseeing the Institute's finances and management processes. He was instrumental in the relocation of the Institute from Fairfield Hospital to the AMREP Campus in 2002, and in the development and financing of the Alfred Centre Stage 2 which now houses the Institute's laboratories. We welcomed Mr John Georgakis, CEO of CNPR, and a former partner at Arthur Andersen, and Ernst and Young, to the Board. John will step into the role played by Ross and brings a wealth of accounting and risk management expertise to the Institute.

Burnet is a wonderful organisation and I am forever grateful for having the opportunity to participate in these activities. It truly has enriched and changed my life.

I know I leave the Institute in good hands with Ms Mary Padbury taking on the role of Chair and with Professor Crabb continuing his tremendous work as Director and CEO. Mary has been a member of the Burnet Board since 2011, and has had a long and distinguished legal career as well as significant experience on several corporate boards.

Thank you to my fellow board members, the staff, and all those who support the Institute for their commitment, and their contributions to improving the health of vulnerable people in Australia and internationally. While in future I'll be watching the Institute's progress from the sidelines, my commitment to Burnet remains as strong as ever, and I will continue to support its work wherever and whenever I can.

Mr Robert Milne
Chair

2018 was a very successful year for the Institute, both in terms of how much we achieved towards our Mission and answering some of the biggest global health issues on which we focus.



Director's Report

In the past year the Institute performed extremely well. Most importantly, we progressed strongly toward achieving two high-level Institute goals that underpin our Burnet 2020 strategic plan: to achieve a 50 per cent reduction in new hepatitis C infections in Australia by 2020, and to provide strong, new evidence to guide child growth and development programs in Papua New Guinea.

Among other highlights in 2018, we:

- Published an Institute-record 263 research papers in peer-reviewed journals
- Received the largest philanthropic grant in the Institute's history to progress our flagship hepatitis C elimination program with our national partners
- Achieved full five-year accreditation with the Department of Foreign Affairs and Trade (Australian Aid) as a non-government organisation
- Founded and co-chaired the inaugural Malaria World Congress (MWC2018), which attracted more than 1000 global delegates
- Supported the establishment of a safe injecting facility for Melbourne
- Established strong programs and government support for the elimination of HIV, malaria and drug-resistant tuberculosis
- Played a key role in the *Lancet* commission on adolescent health
- Oversaw remarkable growth in our clinical trials support company, 360biolabs
- Achieved well above the national average for competitive grant success from the National Health and Medical Research Council.

Congratulations also to the Healthy Mothers, Healthy Babies research team for achieving an outstanding milestone of completing their long-term cohort study that saw 700 women and their babies followed closely for 18 months from the mothers' first antenatal visit in Papua New Guinea. This is an incredible achievement in a logistically challenging environment, and has involved multiple partners including national and provincial health departments, as well as support from the PNG Institute of Medical Research and the University of Papua New Guinea. We eagerly await the results of this work.

Burnet is committed to ensuring an equitable workplace and driving change to ensure women can achieve their full potential. The Institute has been working towards bronze accreditation through Athena SWAN and the Science and Gender Equity (SAGE) Program. I would like to acknowledge the tremendous amount of work involving many areas across the Institute in preparing our accreditation submission.

Thank you to our tremendous supporters and donors. Philanthropy is critical to our success and sustainability, and makes a huge contribution to enable us to innovate, expand existing programs and develop new areas of work.

I would especially like to acknowledge the Paul Ramsay Foundation, and Kel and Rosie Day Foundation, for their extraordinary generosity in supporting the Elimination of Hepatitis C (EC) Australia Partnership and the Kel and Rosie Day Translational Research Facility respectively. Collaboration is a hallmark of how Burnet operates, and the EC Australia Partnership is an outstanding example, involving a major collaboration between government, researchers and affected communities. The Kel and Rosie Day Translational Research Facility brings together our researchers to help fast-track research findings through improved access to new and advanced high throughput technologies. We're extremely grateful for this support.

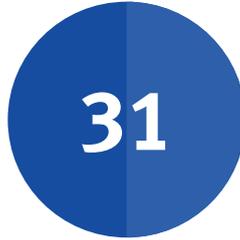
Finally, I would like to thank Mr Rob Milne who, after almost two decades as a Burnet Director, including four years as Chair, has retired from the Board. Rob's skill, enthusiasm and commitment led the Institute through a period of sustained growth, leaving an incredible legacy of organisational focus, strong leadership and a sustainable future. I look forward to working with our new Chair, Ms Mary Padbury, to take the Institute through its next phase of growth. Thank you also to our Board members for their tremendous support, and our staff and students for their commitment, enthusiasm and incredible contributions.

Professor Brendan Crabb AC
Director and CEO

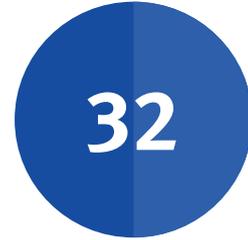
Year at a glance



Thematic Programs



Research Working Groups



Students

January

Research led by Professor James Beeson (pictured) and Dr Damien Drew unlocks malaria secrets, effectively tricking a different malaria species, *Plasmodium falciparum*, into expressing a *P. vivax* protein.



March

Trailblazer in maternal health Professor Caroline Homer AO announces she is joining Burnet as Co-Program Director, Maternal and Child Health and the Executive team.



July

Burnet plays a key role in 1st Malaria World Congress (MWC2018). Professor Brendan Crabb AC (on right), the Congress founder and Co-Chair in 2018, is pictured with (L-R) Professor Alan Cowman, the Hon Julie Bishop MP, PNG's Health Minister the Hon Dr Sir Puka Temu KBE, and Associate Professor Helen Evans AO.



February

Landmark study into adolescent health in Myanmar conducted in 16 monastic schools and communities involving 1,500+ students.



June

Increasing awareness around sexting was a key finding of the 2018 Sex, Drugs and Rock'n'Roll online survey of young Victorians.



July

Professors Mark Stoové and Gilda Tachedjian were among Burnet researchers to present at the prestigious 2018 AIDS Conference in Amsterdam.

263

Peer-reviewed publications in 2018 – a record for Burnet!

400+

Scientists, public health professionals and support staff

\$47+ million

Spent on improving health for vulnerable communities

August

Professor Margaret Hellard AM is to lead a Burnet-coordinated, multimillion-dollar national response to eliminate hepatitis C in Australia. Launched by Federal Health Minister, the Hon Greg Hunt MP, in partnership with the Paul Ramsay Foundation, and supported by Opposition Leader the Hon Bill Shorten MP (both pictured).



October

Burnet farewells pioneering HIV researcher and infectious diseases physician, Professor Suzanne Crowe AM.



December

Burnet attracts more than AUD\$3.3 million in NHMRC Project Grants including for Professor Paul Dietze's research into the use of intranasal naloxone for the reversal of opioid overdose.



September

Burnet's new Quick Development of Solutions (qDOS) Lab launched to fast-track innovative technologies, and Alfred Research Alliance heralds new era for the research precinct.



November

Professor Margaret Hellard AM at the World Innovation Summit for Health (WISH) in Qatar, chairing the Viral Hepatitis Forum.



December

After more than 2290 maternal health checks and 1500 baby checks over four years, field work is completed on the first Healthy Mothers, Healthy Babies study in East New Britain, Papua New Guinea. (L-R) Ms Primrose Homiehombo, Dr Chris Morgan, Ms Rose Suruka and Ms Pele Melepia.

Healthy Mothers, Healthy Babies



Each year, more than
5,000 babies
die before they reach
one month
in PNG



700
pregnant women
enrolled into
the Mothers and
Babies Follow-up
Study



1,200+
molecular tests
for malaria



2,800+
follow-up visits
with study
participants



3,800+
rapid diagnostic
tests for malaria



More than
90% seen after
delivery



5,000+
finger-prick rapid
tests for anaemia



More than **50%**
followed up to
12 months after
delivery



5,000+
molecular tests
for sexually
transmitted
infections



A major milestone for HMHB with the final mum and baby follow-up in the HMHB longitudinal study. (L-R) Ms Primrose Homiehombo, Dr Chris Morgan, Ms Rose Suruka and Ms Pele Melepia.



Australia's nearest neighbour, Papua New Guinea (PNG), experiences one of the highest maternal and child mortality rates in the world. It's heartbreaking. Each year 5,000+ newborn babies die and 1,500+ women lose their life from childbirth related causes.

Burnet's innovative research program Healthy Mothers, Healthy Babies (HMHB) comprises a suite of studies that aims to save lives and improve health and wellbeing in PNG. Four years into HMHB's research, major progress is being made in understanding the causes of poor maternal and child health and identifying potential areas for improvement. The first major HMHB study, a longitudinal study of 700 mothers and their babies, completed follow-up in 2018, and early results have already been provided back to local communities, health facilities and provincial government.

Our findings

HMHB is based in Kokopo, East New Britain (ENB) and is a partnership with the ENB Provincial Health Authority, PNG Institute of Medical Research, National Department of Health, University of PNG, Kirby Institute and local health facilities. Initial analysis of data and samples collected through the Mothers and Babies Follow-up Study are revealing:

- High rates of many preventable illnesses including childhood stunting, anaemia, nutritional deficiencies and malaria

- Reproductive tract infections (including chlamydia, gonorrhoea, trichomonas) and bacterial vaginosis are also common among pregnant women
- The first-ever estimates of the prevalence of maternal carriage of Group B Streptococcus and the sexually transmissible infection mycoplasma genitalium in pregnant women in PNG.

Our impact

Knowledge gained from the Mothers and Babies Follow-up Study and Health Services Study is helping to test different approaches to providing care for women and newborns to improve outcomes. Further study results will assist in developing effective interventions against common causes of poor maternal and child health which are targeted to local health needs. Interventions will be designed in collaboration with our research partners and piloted in selected areas of ENB. If successful, they will reduce infections, stunting and poor nutrition, and be rolled out across the province and in other regions of PNG.

Evaluation of the quality of health services in the postnatal period has demonstrated low childhood immunisation coverage in the province, but has also given us insight into which methods would work best to strengthen routine immunisation and postnatal care services. In 2018 in partnership with the ENB Provincial Health Authority and GSK, we began a trial of a low-cost, non-profit formulation of chlorhexidine for

umbilical cord care straight after birth; this has been demonstrated to significantly reduce newborn mortality in many countries in Asia and Africa. Strategies to improve the quality of immunisation care, to integrate care for the mother with care for the baby, and new ways to improve vaccine coverage are also being developed.

An evaluation of a new, highly sensitive rapid diagnostic test for malaria among pregnant women in the province will assess whether it is more sensitive than conventional rapid diagnostic tests.

A future prospective study will evaluate different implementation strategies and measure their impact on pregnancy outcomes of both mothers and newborns.

Our health team

As well as working to save lives and improve health for mothers and babies, Burnet's work is improving health capacity in PNG. Dozens of local research staff and health care workers have been trained in skills such as taking samples and performing tests, taking accurate baby measurements, carrying out laboratory techniques, first aid, computing skills, and presenting at national conferences. We work in close partnership with the Provincial Health Authority and health services in ENB.

Principal Supporter



Partners



Eliminate Hepatitis C Australia Partnership (EC Australia)

The missing link in hepatitis C elimination

Reaching the 170,000+ Australians who have yet to start life-saving hepatitis C treatment is the driving force behind the Eliminate Hepatitis C Australia Partnership (EC Australia).

EC Australia, launched by Federal Health Minister the Hon Greg Hunt MP at Parliament House in August 2018, in partnership with the Paul Ramsay Foundation, is a multimillion-dollar targeted national response to the significant decline in the uptake of highly effective drugs to cure hepatitis C among Australians living with the deadly virus. Federal Opposition Leader the Hon Bill Shorten MP also supported the national launch.

Coordinated by Burnet Institute, EC Australia is playing a catalytic role in the elimination of hepatitis C as a public health threat in Australia by 2030. This involves increasing community awareness about hepatitis C – the importance of testing and the availability of groundbreaking cure for all

Australians infected with hepatitis C, many whom are from high-risk and vulnerable communities. Importantly, EC Australia will gather key information to inform government policy to ensure the hepatitis C elimination response is sustained through to 2030.

Funded through an AUD\$11.33 million grant from the Paul Ramsay Foundation, EC Australia brings together researchers, scientists, government, health services and community organisations to deliver a coordinated national response.

“I congratulate Burnet Institute and its partners in working together to ensure all people living with hepatitis C have the opportunity to access direct-acting antivirals, including the most vulnerable.”

The Hon Greg Hunt MP

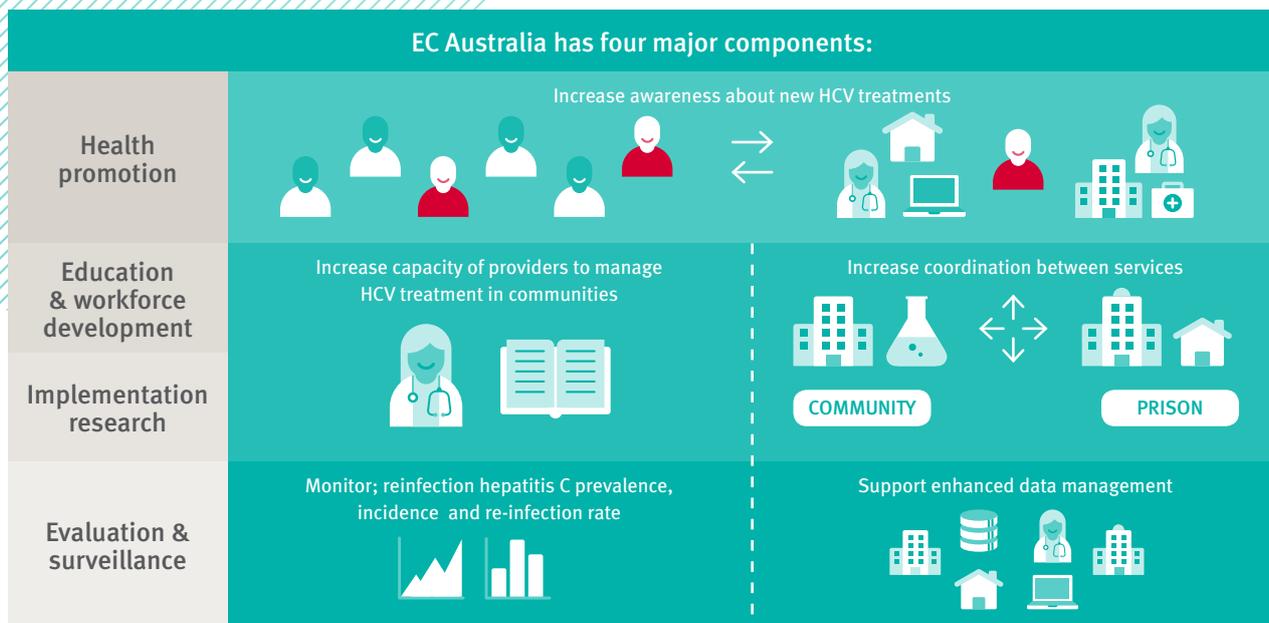
EC Australia Chief Investigator and Burnet Deputy Director, Professor Margaret Hellard AM, said it’s critical for Australians infected with hepatitis C to be tested, treated, and cured to stop the transmission of new infections and hepatitis C-related deaths.

“If at least 15,000 people are treated annually, Australia could reach its elimination goal by 2026, cementing it as a world leader in this field. But it will be a challenge,” she said.

“While treatment that leads to cure has been funded by the Australian Government since 2016, making it affordable for all, the current challenge is to reach the people infected with hepatitis C. They need to get tested and treated. Also we need to ensure that health service are structured in such a way that services are accessible and welcoming and meet the needs of people who are often marginalised and stigmatised. This task, combined with ongoing prevention efforts, is complex.”



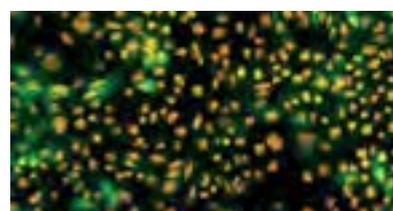
Hepatitis C virus (HCV) causes a chronic infection of the liver, resulting in inflammation leading to fibrosis, cirrhosis and sometimes cancer. HCV affects **70 million** people globally, and each year more than **350,000** people die from HCV-related illness.



Health Minister the Hon Greg Hunt MP launches EC Australia.



Professor Margaret Hellard AM at EC Australia launch.



HCV-infected liver cells (stained green).

About 170,000 Australians, including people who have injected drugs, prisoners, Aboriginal and Torres Strait Islanders, and gay and bisexual men, are estimated to be living with hepatitis C. The stigma associated with the virus can prevent such people from talking to health professionals about their risk behaviours in the first place.

“Given the target population is so diverse, a large part of the EC Australia project involves educating and developing a broad range of health provisions, including services in prisons and remote areas, and telehealth, so all people who need it are offered testing and treatment.”

Professor Hellard

Building on a similar project in Victoria, EC Partnership, the team is educating GPs about how they can reach out to the right people at their clinics. They are also working to determine the most effective and cost-effective approach so they can inform governments about the most efficient ways forward.

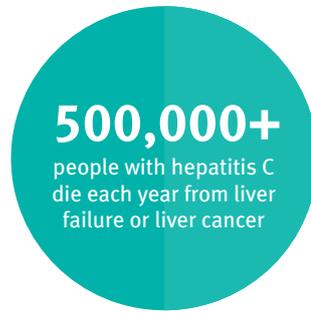
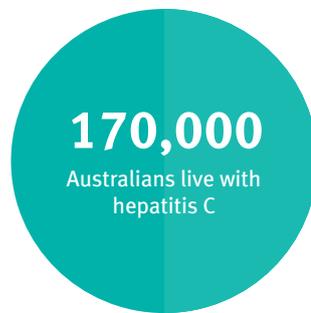
Burnet’s Eliminate Hepatitis C Strategy

Burnet Institute was given funding for EC Australia due to its longstanding commitment to hepatitis C research, which includes the Eliminate Hepatitis C Partnership in Victoria, a partnership supported by the NHMRC, government and industry. It is also backed by a highly prestigious AUD\$7 million NHMRC program grant focusing on the global elimination of hepatitis C.

The Eliminate Hepatitis C Strategy draws on the Institute’s strengths in biomedical science, vaccine research, public health, harm reduction and data modelling, and involves many innovative research collaborations in Australia and internationally.

Under the leadership of Adjunct Professor Heidi Drummer, Burnet has developed a hepatitis C vaccine, currently in late preclinical development (HepSeeVaxDelta3™), that is designed to generate protective immunity against all genotypes of HCV. Burnet has also comprehensively studied how the virus spreads, and whether testing and treatment through primary health care services, including nurses in outreach vans (as opposed to hospitals), can improve uptake and reduce infections.

Global impact



Proudly supporting EC Australia

IMPACT



“

Burnet Institute's vision of improving equity through better health and its unique approach to linking medical research with innovative, evidence-based practical action is making a profound impact on vulnerable communities around the world.

Her Excellency the Honourable Linda Dessau AC
Governor of Victoria and Patron-in-Chief, Burnet Institute



Maternal and Child Health

Program Goal

Equity in maternal and child health.

Drawing on Burnet's extensive technical breadth, the Maternal and Child Health Program works with communities with a high burden of poor health and generates new knowledge about key contributors to these poor health outcomes. We are also developing and testing new tools, technologies and strategies to overcome these challenges.

In 2018 our work in Papua New Guinea (PNG), Myanmar and other Asian and Pacific countries focused on improving sexual and reproductive health (SRH), particularly of adolescents; strengthening community and health systems to improve access and quality to maternal and child health care; and addressing outcomes such as unnecessary caesarean sections, and stillbirth. We were also involved in building and supporting local health workforces, especially midwives, to improve outcomes.

Key projects

Non-communicable disease burden in Indonesian adolescents

Adolescent health is a key focus of our program. In addition to work in sexual and reproductive health, we are leading work in non-communicable disease (NCD). In Indonesia, the Global Adolescent Health team surveyed more than 2000 adolescents to better inform NCD policy and response. We studied metabolic risk and mental health using culturally and clinically validated scales. Data are currently being analysed and the findings will help inform targeted interventions.

Chlorhexidine preventing neonatal sepsis in PNG

The Postnatal Care Study in East New Britain responds to major gaps identified by earlier Healthy Mothers, Healthy Babies research. The study aims to improve care after childbirth through education of new parents and distribution of umbilical chlorhexidine, a new commodity proven to reduce bacterial infection in newborn babies which contributes to approximately 25 per cent of the 5000 newborn deaths each year in PNG. This new form of chlorhexidine gel (Umbipro, by GSK) is well suited for conditions in PNG.

In 2018 we trained health care workers and community volunteers on better postnatal counselling (including how to recognise danger signs) and began testing approaches to distribute umbilical chlorhexidine, a first for PNG. These outcomes will contribute to finding ways to reduce neonatal sepsis and saving the lives of newborn babies in PNG.

Improving sexual and reproductive health of adolescents in Myanmar

The Integrated Multi-Sectoral Approach to improve SRH of Adolescents (IMSA) and Resilient Adolescents and Integrated Life Skills projects are being implemented in 18 schools, communities and health facilities. These projects improved competency-based, in-service training for primary-level teaching and health providers; developed teaching materials to facilitate improved SRH curriculum delivery; assessed health facilities to improve the privacy of consultation rooms; and prepared for delivery of parent-adolescent communication workshops and community mobilisation workshops.

Maternal and child deaths exceed six million a year globally, with most of them preventable. This remains one of the largest and most persistent inequities in global health.

Disease Elimination

Program Goal

The elimination of HIV, viral hepatitis, malaria and tuberculosis as public health threats.

Globally, more than four million people die each year from preventable infectious diseases – mainly HIV, malaria, tuberculosis (TB) and viral hepatitis B and C. The Disease Elimination Program is a coordinated response focused on elimination of these four major diseases that disproportionately affect vulnerable communities and populations in Australia, Papua New Guinea (PNG), Myanmar and other African, Asian and Pacific countries.

Activities centre on the major sub-programs: Eliminate HIV, Eliminate Viral Hepatitis, Eliminate Malaria, and Eliminate Tuberculosis, drawing on the Institute's unique technical breadth. Australia's and the global response to these devastating diseases require a coordinated approach to prevent new infections and stop infectious disease-related deaths.

Key activities

WISH Summit

Professor Margaret Hellard AM was invited to chair the Viral Hepatitis Forum at the 2018 World Innovation Summit for Health (WISH) in Qatar. The Forum addressed the challenges of achieving the goal set by the World Health Organization in 2016 of eliminating viral hepatitis as a public health threat by 2030. Inadequate financial resources and a lack of political commitment have been singled out as the main barriers to the elimination of hepatitis globally by 2030. To accompany the Viral Hepatitis Forum, the team developed a Report on the Global Investment Case for the Elimination of Viral Hepatitis. Co-authored by Burnet researchers Dr Alisa Pedrana, Dr Jess Howell, Ms Sophia Schroeder, Dr Nick Scott, Professor David Wilson, Dr Christian Kuschel, Professor Hellard and a team of world experts, it makes key recommendations to stimulate investment in viral hepatitis elimination.

Vaginal microbiota: Implications for HIV transmission

Optimal vaginal microbiota that produces lactic acid is associated with a reduced risk of acquiring and transmitting HIV. However, the anti-HIV role of lactic acid in vaginal fluids is unknown. The Retroviral Biology and Antivirals Group led by Professor Gilda Tachedjian, found that concentrations of a specific chemical form of lactic acid is significantly associated with inactivating HIV. This work suggests that lactic acid has an important role in preventing women from acquiring and transmitting the virus during vaginal intercourse

and vaginal birth. Co-authored by Burnet researchers Mr David Tyssen, Dr Joshua Hayward, Mr Paul Agius and Professor Gilda Tachedjian, the article appeared in 2018 in *mSphere*, the journal of the American Society for Microbiology and resulted in a new NHMRC project grant.

Malaria elimination: Developing an optimal community-delivered model

The malaria landscape is changing in the Greater Mekong Subregion. Current community-delivered models – typically village health volunteers with basic training, which have worked well for malaria control – may not work well for malaria elimination. The Malaria and Infectious Disease Epidemiology Group, led by Associate Professor Freya Fowkes, has secured a major grant from The Global Fund to develop an optimal community-delivered malaria elimination model that is acceptable, operational, pragmatic, effective and cost-effective across the Greater Mekong Subregion. Field trials of the new elimination model will start in Myanmar and Lao PDR in 2020.

Globally, more than four million people die each year from preventable infectious diseases – mainly HIV, malaria, TB and viral hepatitis B and C.



Behaviours and Health Risks

Program Goal

Promote improved health and wellbeing by reducing harms related to alcohol and other drugs, and sexual and mental health.

Key populations most vulnerable to behaviour-based health risk include people who inject drugs (PWID), young people and adolescents. PWID experience rates of mortality and morbidity far in excess of the general population, driven not just by their drug use but by poverty and homelessness. Mortality rates among Australian young people are now higher than in the first year of life, a reversal of historical trends and often the result of risk behaviours. This pattern occurs as teen abstinence from drinking increases, suggesting a polarisation in risk behaviours across the population. We have had major success in attracting National Health and Medical Research Council (NHMRC) grant funding and will expand our research into Burnet's focus countries, Myanmar and Papua New Guinea.

Mortality rates among Australian young people are now higher than in the first year of life, a reversal of historical trends and often the result of risk behaviours.

Key projects

PATH Study – a first of its kind in Australia

The Prison and Transition Health (PATH) Study is a prospective cohort study of men leaving prison with a history of injecting drug use immediately prior to incarceration. The study recruited from three Victorian prisons from late 2014 and followed 400 participants using baseline interviews prior to their release from prison and three follow-up interviews, the last being conducted two years after their release. Follow-up interviews are completed with over 80 per cent of the cohort attending at least one follow-up. This high attendance rate is an outstanding achievement by the research team, considering nearly all participants were unable to provide accurate contact details at the time of recruitment.

The study will explore a range of justice, health and social outcomes, including through extensive record linkage with a range of health, welfare and justice databases. This will provide unprecedented insights into a time of significant risk for people recently released from prison, and improve understanding of the timing and approach of successful interventions. The study is entering a post-interviewing phase, involving record linkage, publishing key findings, and translating findings into health, criminal justice and social policy and practice outcomes.

Health Education and Online Literacy for Vulnerable Young People

Burnet is partnering with VicHealth and digital design company Sheda to create a resource to help young people navigate sexual health, relationships, and pornography literacy. We are using co-design workshops, user experience methods and design sprints to workshop ideas with vulnerable young people. The resource will provide a safe and quality forum for positive information, focusing on changing the conversation about pornography. The design of the resource will mirror digital features that young people already like and are familiar with.

VMAX

The Victorian Methamphetamine Cohort Study (VMAX) is the first study focused specifically on methamphetamine smoking in Melbourne and regional Victoria. Established with Monash Rural Health using Colonial Foundation Trust and NHMRC funding, we recruited and are following around 800 participants to provide the first contemporary picture of regional methamphetamine use in Australia. We have shown that cohort members from regional areas are much more likely to be arrested than cohort members from Melbourne, even after adjusting for patterns of methamphetamine use.



Health Security

Program Goal

Improved domestic, regional and global health security through strengthened public health systems and reduced vulnerability to infectious disease threats.

The Health Security program aims to strengthen core public health system capacities required to prepare for and respond to infectious diseases threats in the Asia-Pacific region.

This involves improving our understanding of infectious disease threats, developing new laboratory-based, clinical and public health tools to improve health security, and building the capacity of health professionals, researchers, policymakers and the general community to address health security issues.

Major components of this program are focused on improving responses to drug-resistant tuberculosis (DR-TB), and strengthening preventive and control measures for antimicrobial resistance and diseases that can be transmitted from animals to people.

Key projects

RID-TB: Reducing the impact of drug-resistant tuberculosis in Western Province, Papua New Guinea

The TB epidemic and outbreak of DR-TB on Daru Island, Western Province is a public health emergency. Together with the DFAT Centre for Health Security-funded project, *Stronger Health Systems for multidrug-resistant tuberculosis and malaria*, the RID-TB project has helped stabilise the epidemic through a comprehensive response model consisting of active case finding and effective treatment, scaling up treatment of household contacts for latent TB infection, strengthening health systems, training health care workers and promoting research.

STRIVE PNG: Stronger Surveillance and Systems Support for Rapid Identification and Containment of Resurgent or Resistant Vector-Borne Pathogens in Papua New Guinea

A DFAT Centre for Health Security-funded project, STRIVE PNG employs a partnership-based approach to strengthen vector-borne disease surveillance and responses. STRIVE PNG will also assess the implications of novel policy options for health system strengthening to avert antimicrobial resistance and prevent vector-borne disease resurgence.

Australia Awards Indonesia: Tuberculosis Elimination and Implementation Training Courses

Funded by DFAT and delivered by global TB experts and health professionals from Burnet, Menzies School of Health Research and The University Gadjah Mada, 76 Indonesian health professionals (doctors, nurses and policymakers) participated in three courses to equip stakeholders with the knowledge and skills to control and eliminate TB in Indonesia.

Responding to Drug-Resistant Tuberculosis and Malaria in the Asia-Pacific – Tropical Disease Research Regional Collaboration Initiative

Menzies School of Health Research and Burnet joined with institutions in Indonesia, PNG and Malaysia to build regional research capacity. Burnet conducted operational research training for PNG TB staff and established a state-of-the-art data system for TB in Daru with electronic medical records, geo-spatial mapping and mobile health innovations. Eleven manuscripts were published; two won awards at the annual PNG Medical Symposium.

Australian NGO Cooperation Program (ANCP) – Kickstarting antimicrobial resistance responses in Papua New Guinea

This ANCP project piloted a model for developing hospital-based antimicrobial stewardship, infection prevention and control, and microbiological services in Port Moresby General Hospital through a series of in-country workshops. The project provides PNG with a model that could be scaled up in hospitals throughout the country.

Healthy Ageing

Program Goal

Healthy ageing from birth and improved physical, mental and social wellbeing in vulnerable communities.

In 2017, 14 per cent of Australians were aged over 65. This proportion is projected to rise to 22 per cent by 2057, putting a burden on health care services treating age-related diseases such as chronic heart disease, type 2 diabetes and hypertension, a situation reflected globally.

The program focuses on ageing in vulnerable populations in Australia and the Asia-Pacific region. It contributes to knowledge about biological and psychosocial determinants of healthy ageing, develops new tools and therapeutics, promotes inclusive communities and services for healthy ageing, and integrates related concepts into our research and development activities.

People living with HIV can be afflicted by frailty, cardiovascular disease, cancers and dementia at an earlier age than the general population.

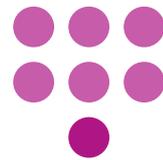
Key projects

Caring for our ageing HIV+ population

Despite effective medication to prevent AIDS, people living with HIV experience accelerated ageing and suffer an increased risk of many age-related conditions including frailty, cardiovascular disease and neurocognitive decline. This leads to further challenges for those ageing with HIV, although this is yet to be fully considered in aged care approaches. Burnet's researchers were awarded a AUD\$450,000 grant from the Australian Government to identify the current and projected needs of older HIV+ people in Victoria, and identify strategies to accommodate these needs within the health and aged care systems.

When good cholesterol goes bad

Our researchers have previously shown similarities between mechanisms driving cardiovascular disease in HIV+ individuals and the general population, and have now identified that 'good cholesterol' known as HDL is modified in HIV infection. Rather than protect against heart disease, it can actually potentiate processes which drive atherosclerosis. Burnet research is identifying the presence of this 'good cholesterol gone bad' species in elderly people and will investigate whether this represents a novel mechanism driving cardiovascular disease in the ageing population.



1 in 7 (14%)

Australians were aged over 65 in 2017



By 2057, 22% of Australians will be aged 65+



\$450,000

grant awarded by the Australian Government to identify current and projected needs of older HIV+ people in Victoria



Papua New Guinea is a priority country for Burnet.

"I have been an HIV peer counsellor for more than 10 years. Burnet Institute has provided me with counselling skills, knowledge and empowered me to help others. I can make a difference to other people's lives, because of Burnet."

Ms Winifred Loiea,
Mt Hagen Rebimui HIV/AIDS Clinic, PNG
'Yumi helpim yumi yet' program

Where we work

Australia

We work directly with local vulnerable communities on key health issues affecting them; manage national disease elimination research and public health surveillance projects; drive changes in policy and practice at a state and national level; conduct cutting-edge medical research in our Melbourne laboratories; and create effective relationships with community organisations, stakeholders and governments on complex health issues. We work on activities in Victoria, NSW, South Australia, Western Australia, Queensland, ACT and Northern Territory.

Internationally

Our international health work continues to reflect the strategic direction of Burnet 2020 and the strategic plans of our thematic Programs. Our International Operations Team supports our overseas-based staff, research and development programs. As a DFAT-accredited non-government organisation, Burnet can operate internationally in a research as well as technical and service delivery capacity. Papua New Guinea and Myanmar remain our priority countries, but we also work in many other countries in the Asia-Pacific Region and Africa.

Papua New Guinea

Burnet PNG is registered as an Incorporated Association, with our head office in Kokopo, East New Britain Province. We have approximately 45 locally employed staff across five sites – Kokopo, Port Moresby, Daru, Kavieng and Kimbe. Highlights this year include:

- The collaborative Sexual & Reproductive Health Integration Project (SRHIP) working to achieve improved SRH and wellbeing for women, girls and vulnerable groups
- Implementation research project to accelerate access to postnatal care and chlorhexidine in East New Britain
- Three-year STRIVE PNG, DFAT Centre for Health Security-funded project focused on strengthening surveillance and response for vector-borne pathogens.
- A Memorandum of Understanding with the Oil Search Foundation to enable opportunities for collaboration in research, individual and institutional capacity building, technical and policy advice, and implementation.
- Reducing the impact of drug-resistant TB through patient-centred education and counselling, alongside a community-based model for screening and delivering preventive therapy for latent TB in Daru.

Myanmar

Burnet's program evolved in 2018 to focus on research for development programming. This created changes to our staffing. We have 35 public health professionals, social research scientists, organisational development and monitoring and evaluation specialists working across three local field sites, and supported by our main office in Yangon and also Melbourne, to implement research activities across all 14 States and Divisions in Myanmar.

Highlights this year included:

- Progressing our adolescent health work through undertaking a baseline study with teachers, students and basic health staff on knowledge of and attitudes to adolescent SRH
- Burden of Disease Country Profile for Adolescent Health
- Disease elimination projects with the DFAT-funded ACCESS HIV surveillance project in partnership with the National AIDS Program. The UNITAID/FIND Hepatitis C Community Test and Treat project was endorsed by the Myanmar Ministry of Health.

"... Burnet's Burden of Disease Country Profile for Adolescent Health will be very useful for the National Adolescent Health Program to inform the Reproductive, Maternal, Neonatal, Child and Adolescent Health Strategic Plan review and 2019-2023 Strategic Plan development ..."

Dr Su Mon Myat,
Deputy Director School Health,
Ministry of Health & Sports, Myanmar

Priority countries:

Papua New Guinea

Myanmar

Australia

We also work in a wide range of other countries in the Asia-Pacific Region and Africa, including China, Lao PDR, Timor-Leste, Fiji, Indonesia, Vietnam, Thailand, Kenya and Zimbabwe.

Our research and development activities in these countries reflect the priorities of the Institute's thematic Programs. They range from basic and implementation research to the trialling of novel interventions. Highlights include:

Kenya

Access to point-of-care testing for HIV, mHealth interventions among sex workers, and major advances in understanding malaria immunity and biology.

Lao PDR

Accelerating healthy agriculture and nutrition, and integrated solutions for healthy birth and growth.

Timor-Leste

Building capacity and improving tuberculosis diagnosis.

Zimbabwe

Improved point-of-care test to eliminate congenital syphilis, and increasing demand and uptake of quality, facility-based services.

Vietnam

Use of highly sensitive tests to detect low levels of malaria, and developing enhanced mapping and surveillance systems to detect hot spots of malaria transmission.



Burnet conducted a landmark study into adolescent sexual and reproductive health in Myanmar, where one in five people is aged 10-19 years.

Measuring effectiveness

Our approach to measuring effectiveness is directed by an organisational-wide framework assessing each project and also the organisation's output and outcome indicators. The Leadership Council, a key initiative of the Burnet 2020 Strategic Plan, assesses the effectiveness of Burnet's aid and development activity at a program level, including insights into how this development approach/change model is tested and can be improved. Metrics also monitor progress against Burnet's Program outcomes. These program and organisational metrics aim to contribute to measuring the Institute's Mission: "To achieve better health for vulnerable communities in Australia and internationally by accelerating the translation of research, discovery and evidence into sustainable health solutions".

INNOVATION

Biomedical innovation needs pathways to commercialise research and practical, inexpensive health technologies that are accessible to everyone, especially the most vulnerable.

Translational research and commercialisation

The Business Development and Commercial Operations Office continues to initiate and progress the development of products and technologies that will improve health on a large scale.

Burnet is committed to translation of our research to achieve our goals. Among the many initiatives in 2018, some highlights include:

Quick Development of Solutions Lab (qDOS Lab) – new “Accelerator” program

Specifically addressing the transition from a research-focus to a technology development project, the objective of qDOS Lab is to fast track technologies through early proof-of-concept; decision-making feasibility stages, using commercially driven decision making, and a milestone-based approach. qDOS Lab brings together a cross-functional team from business, clinical and technical experts to progress early-stage projects through a market validated pathway towards ‘go-no-go’ points.

qDOS Lab operates at a pre-incubator stage supporting technologies at slightly earlier stages to a defined product concept. By clearly understanding our path to market from the very early stages the many inter-related issues and requirements of the commercialisation process can be addressed, allowing the selection and pursuit of the most appropriate mechanisms for successful product development and achieving market readiness. Led by Ms Serina Cucuzza with Technical Leads Ms Mary Garcia and Associate Professor Rose Ffrench, qDOS is initially being used to guide the development of the Sepsis Point-of-Care Diagnostic technology.

The Institute's work continues to have reach and impact via three ventures: Nanjing BioPoint, 360biolabs and Optima Consortium for Decision Science



Prestigious NHMRC award for sepsis point-of-care diagnostic test

Burnet Co-Head, Global Health Diagnostics Laboratory, Associate Professor David Anderson, received the NHMRC Research Excellence Award for the highest-ranked Development Grant in the 2018 funding rounds for the project “Development of a rapid, point-of-care test with high sensitivity for the diagnosis of sepsis based on detection of CD64”.

Recognising the critical need for a fast and simple test for sepsis, Burnet researchers explored the concept for a point-of-care (POC) test based on the established laboratory tests for CD64, and primarily through the research of Ms Riya Palchaudhuri, they discovered new aspects of the biology of CD64 that allowed them to reach almost 100 per cent sensitivity for detection of sepsis using a combination of simple lab tests.

The challenge now is to turn those lab tests into a POC test following the strategies we have used for previous successful projects for CD4 and other disease markers. But its development needs to be faster than normal, especially the steps between having a working test in the lab (known as “proof of concept”) and a final manufactured test that is approved and available for use by health care workers globally. The project’s progress will be enhanced by Burnet’s new qDOS product development mechanism.



“This is where the collaboration with our industry partners at Axxin Ltd, Melbourne and Nanjing BioPoint, China, together with the business development team at Burnet and Burnet’s new “Accelerator” program, Quick Development of Solutions Lab (qDOS Lab), will be critical in achieving our goals as quickly as possible, with substantial benefits for patients globally.”

Associate Professor David Anderson

Emerging technologies and initiatives

Multi-prevention technologies (MPTs) such as next-generation intra-vaginal rings, have the potential to fundamentally shift the sexual and reproductive health treatment paradigm. Burnet's Professor Gilda Tachedjian has established an interdisciplinary collaboration with Swinburne University in Australia, bringing together therapeutic innovation with novel materials and device design. The ultimate goal of this collaboration is to create a portfolio of MPTs, empowering women to choose how they approach contraception, prevention and treatment for sexually transmitted infections.

For the elimination of hepatitis C to become a reality, a low-cost vaccine is needed. Burnet, led by Adjunct Professor Heidi Drummer, in collaboration with Oxford University, is creating a joint vaccine candidate that is showing great promise in pre-clinical studies. Following further development, the Institute’s vaccine candidate will be exposed to Oxford University’s clinical expertise in progressing hepatitis C vaccine candidates through clinical development, bringing hepatitis C elimination one step closer.



EXCELLENCE

Burnet brings together a highly diverse and remarkable technical breadth working across cutting-edge research and projects to help solve some of the most challenging global health issues.

Key publications

Maternal and Child Health

Multiple morbidities in pregnancy: Time for research, innovation, and action.

Beeson JG, Homer CSE, Morgan C, Menendez C, *PLoS Med* 2018 15(9): e1002665.

Improving pregnancy outcomes for women and infants must go beyond research into individual diseases and address the fact that many women suffer combinations of infection, nutritional deficits and other illness complicating pregnancy.

Iron deficiency during pregnancy is associated with a reduced risk of adverse birth outcomes in a malaria-endemic area in a longitudinal cohort study.

Fowkes FJI, Moore KA, Opi DH, Simpson JA, Langham F, Stanicic DI, Ura A, King CL, Siba PM, Mueller I, Rogerson SJ, Beeson JG, *BMC Med.* 2018 Sep 20;16(1):156.

In a cohort of PNG women we found that iron deficiency was associated with substantial reductions in low birthweight and preterm birth, predominantly through malaria-independent protective mechanisms.

Short-term and long-term effects of caesarean section on the health of women and children.

Sandall J, Tribe RM, Avery L, Mola G, Visser GH, Homer CS, Gibbons D, Kelly NM, Kennedy HP, Kidanto H, Taylor P, Temmerman M, *The Lancet*, 2018, Oct 13: 396.

Caesarean section can save the lives of women and babies when complications occur. However, globally the rates of caesarean section are either too high or too low, causing concern at each end of the spectrum.

A qualitative exploration of menstruation-related restrictive practices in Fiji, Solomon Islands and Papua New Guinea.

Mohamed Y, Durrant K, Huggett C, Davis J, Macintyre A, Menu S, Wilson J, Ramosaea M, Sami M, Barrington DJ, McSkimming D, Natoli L, *PLoS One*. 2018 Dec; 13(12):e0208224.

This qualitative study in Solomon Islands, Fiji and PNG found that beliefs about menstruation can place restrictions on women and girls, limiting their ability to participate in community life, education and employment.

Disease Elimination

Linkage and retention in HCV care for HIV-infected populations: early data from the DAA era.

Sacks-Davis R, Doyle JS, Rauch A, Beguelin C, Pedrana AE, Matthews GV, Prins M, van der Valk M, Klein MB, Saeed S, Lacombe K, Chkhartishvili N, Altice FL, Hellard ME, *Journal of the International AIDS Society*. 2018, 21(Suppl 2):e25051.

This study examined the cascade of care in HCV-infected, HIV-positive populations and found that amongst those who initiated and completed treatment, HCV was cured in 93 per cent of people. The study also found that more work is required to increase diagnosis rates and increase rates of uptake of HCV antiviral therapy in this population.

Human antibodies activate complement against *Plasmodium falciparum* sporozoites, and are associated with protection against malaria in children.

Kurtovic L, Behet MC, Feng G, Reiling L, Chelimo K, Dent AE, Mueller I, Kazura JW, Sauerwein RW, Fowkes FJI, Beeson JG, *BMC Medicine* 2018 16(1):61.

This study reported a key mechanism of human immunity to malaria, enabling new strategies for developing highly efficacious malaria vaccines and correlates of protective immunity in humans.

Cost-effectiveness of the controlled temperature chain for the hepatitis B virus birth dose vaccine in various global settings: a modelling study.

Scott N, Palmer A, Morgan C, Lesi O, Spearman CW, Sonderup M, Hellard M, *The Lancet Global Health*, 2018 6(6):e659-67.

This study assessed the cost-effectiveness of a cold temperature chain strategy for the HBV birth dose across six world regions and 72 countries, and found that the strategy would significantly reduce costs and reduce the burden of HBV infection associated with perinatal transmission.

Behaviours and Health Risks

The pitfalls of prevalence estimation: the case of regular and dependent methamphetamine use in Australia.

Dietze P, Quinn B, Scott N, Jenkinson R, Chalmers J, Fitzgerald J, *Addiction Research Theory* 2018.

Important paper highlighting limitations with multiplier methods for estimating the prevalence of drug use in the community and the need for caution when interpreting figures in the context of major drug market changes.

What behaviors do young heterosexual Australians see in pornography? A cross-sectional study.

Davis AC, Carrotte ER, Hellard ME, Lim MSC, *The Journal of Sex Research*, 2018, 55 (3), 310-319.

Our findings draw attention to the gendered ways that behaviours in pornography are seen by young audiences – with a focus on men's pleasure and women's submissiveness.

Mobile Phone-Based Ecological Momentary Intervention to Reduce Young Adults' Alcohol Use in the Event: A Three-Armed Randomized Controlled Trial.

Wright C, Dietze PM, Agius PA, Kuntsche E, Livingston M, Black OC, ... *JMIR, mHealth and uHealth* 2018, 6 (7).

Describes findings from a trial of MIDY (the mobile intervention for drinking in young people) which used SMS and brief web surveys to reach young people while out on a night drinking.

Health Security

Multi-clonal evolution of multi-drug-resistant/extensively drug-resistant *Mycobacterium tuberculosis* in a high-prevalence setting of Papua New Guinea for over three decades.

Bainomugisa A, Lavu E, Hiasiri S, Majumdar S, Honjepari A, Moke R, Dakulala P, Hill-Cawthorne GA, Pandey S, Marais BJ, Coulter C, Coin L, *Microb Genom.* 2018 Jan; 4(2):e000147.

This paper utilised whole-genome sequencing to refine our understanding of the epidemiology and acquisition of drug resistance in Daru, PNG. The insights gained provide added impetus to efforts to contain the spread of MDR and XDR-TB transmission on Daru Island.

One Health, Bioethics, and Nonhuman Ethics.

Coghlan S, Coghlan B, *Am J Bioeth.* 2018 Nov; 18(11):3-5.

One Health, in its approach to address global health threats, has already been shaped by the ethical priorities of veterinary and environmental science. This paper argues that medical and public health researchers need to be aware of ethical arguments about the value of animals and the natural world from these non-human fields. Such understandings are critical to the way in which One Health responses to infectious and other health security threats are designed and implemented.

Healthy Ageing

Health and wellbeing of Indigenous adolescents in Australia: a systematic synthesis of population data.

Azzopardi PS, Sawyer SM, Carlin JB, Degenhardt L, Brown N, Brown AD, Patton GC, *The Lancet.* 2018 Jan; 391(10122):766-782.

Burnet researchers led a study looking at the health of Indigenous adolescents in Australia and found they were at over twice the risk of all-cause mortality. Indigenous adolescents had increased prevalence of emerging type 2 diabetes and ischaemic heart disease, and had multiple poor health practices (i.e. 43 per cent of 15-24-year-olds were tobacco smokers and 45 per cent were overweight or obese) which place them at increased risk of future age-related diseases.

Frailty in men living with HIV: a cross-sectional comparison of three frailty instruments.

Yeoh HL, Cheng A, Palmer C, Crowe SM, Hoy JF, *Antivir Ther.* 2018 Jan; 23(2):117-127.

This study found the prevalence of frailty amongst HIV+ men aged over 50 years ranged from 10.8 to 22.6 per cent (depending on the frailty test used), which is higher than that of the HIV-uninfected population. Frailty in this population was associated with osteoporosis, serious morbidity events and with a significantly poorer quality of life. Identifying frailty is thus an important consideration for the care of the ageing HIV+ population.

Education



As a member of the Alfred Research Alliance (A+), Burnet Institute provides opportunities for talented undergraduate (Honours) and postgraduate students (Masters and PhD). Within the three core disciplines of Life Sciences, Public Health and International Development, we offer highly translational projects and strong mentorship from leading scientists and world-class facilities.

Our students participate in biomedical laboratory-based projects, epidemiology and field-based research, including our flagship Healthy Mothers, Healthy Babies Program. Burnet students are enrolled through national (Monash University and the University of Melbourne), and international universities (Leipzig University, Germany; Utrecht University, The Netherlands) creating a diverse and stimulating environment. They are supported by the Research Student Committee, which includes senior scientists, postdoctoral scientists and student representatives. Burnet thanks the Chair of Education, Dr Raffi Gugasyan, for his tremendous contribution.

In 2018 students appeared in 36 published papers and several students received prestigious travel awards to present their research findings at national and international conferences.

Congratulations to students awarded PhDs:

- | | |
|---------------------|------------------|
| Jessica Anania | Dan O'Keefe |
| Alicia Chenoweth | Minh Duc Pham |
| Caroline van Gemert | Kathleen Ryan |
| Jun Gu | Kyu Kyu Than |
| Andrew Guy | Amanda Wade |
| Hannah King | Cassandra Wright |
| Annamarie Laumaea | |



“Studying at Burnet has given me the freedom to pursue projects which are both challenging and rewarding, and has ultimately provided me with the broad skillset needed to pursue further research in computational biology.”

Dr Andrew Guy

Education in numbers



32
students



PhD students



Masters students



Honours students

Awards



Alastair Lucas Prize for Medical Research

Professor Caroline Homer AO with (L-R)
Professor Brendan Crabb AC, Ms Chloe Bryce Shorten
and the Hon Mr Bill Shorten MP.



The Fenner Award

Joint winners –
Professor Mark Stoové
and Associate Professor
Freya Fowkes



Gust-McKenzie Medal

Dr Anna Hearps



Jim and Margaret Beever Fellowship

Dr Jo-Anne Chan

Gust Translational Fellowship

Dr Anna Hearps and
Associate Professor Leanne Robinson

Travel awards

These awards enable talented
researchers to attend conferences or
undertake further study:

Harold Mitchell Foundation Postdoctoral Travel Fellowship

Dr Josh Hayward and
Dr Cassandra Wright

Harold Mitchell Postgraduate Fellowship

Dr Liriye Kurtovic

Miller Foundation Biomedical Research Travel Award

Ms Joey McGregor

Miller Foundation Public Health Travel Award

Dr Tafireyi Marukutira

The Pauline Speedy Biomedical Research Travel Fellowship

Mr David Delgado Diaz

The Hon Geoffrey Connard Travel Fellowship

Mr Michael Traeger

The Crockett-Murphy Travel Award

Dr Win Lei Yee

Dorothy Vida Martin Postdoctoral Fellowship

Dr Jo-Anne Chan

Dorothy Vida Martin Postgraduate Fellowship

Ms Leanna Surrao

Other Awards

Professor Margaret Hellard AM

Fellow of the Australian Academy of
Health and Medical Sciences

Professor Caroline Homer AO

Council of the National Health and
Medical Research Council

Dr Kerryn Moore

Public Health and Overall
Excellence at the Victorian
Premier's Awards for Health and
Medical Research

Dr Megan Lim

Australian Institute of Policy and
Science (AIPS) Tall Poppy Award

Dr Philipp du Cros

Royal Australasian College of
Physicians' RACP International
Medal for 2018

Mr Michael Traeger

Lange/Van Tongeren Prize for
Young Investigators at the AIDS
2018 Conference

Dr Liz Peach

Graham Rouch Award of
the Australian Faculty of Public
Health Medicine (Victoria)

Mr Neil Edwards and Professor Jim McCluskey

Former Burnet Institute Board
Members were made a Member in
the General Division (AM) for their
community service in the 2018
Queens Birthday Honours

Leadership



Chair
Mr Robert L. Milne*



Chair
Ms Mary Padbury
(as of Feb 2019)



Director and Chief Executive Officer
Professor
Brendan Crabb AC

Directors



Mr Robin
Bishop



Professor
Peter Colman AC



Mr Ross E.
Cooke OAM*



Associate
Professor
Helen Evans AO



Mr Ben
Foscett



Mr John
Georgakis



Mr Leigh
Jasper



Ms Alison
Larsson



Professor
Sharon Lewin AO



Professor
Christina Mitchell



Ms Miche
Paterson



Mr Michael
Ziegelaar

*Resigned as a Director during 2018 or since year end:

Mr Robert L. Milne
Mr Ross Cooke OAM

DEPUTY DIRECTORS

Associate Professor David Anderson
Professor Margaret Hellard AM
Professor James Beeson

EXECUTIVE MANAGEMENT

Professor Brendan Crabb AC
Director and CEO
Associate Professor David Anderson
Deputy Director
Professor Margaret Hellard AM
Deputy Director
Professor James Beeson
Deputy Director
Mr Geoff Drenkhahn
Head, Business Development and Commercial Operations
Mr Mark Tennent
Chief Operating Officer
Ms Mary-Ann Nicholas
Project Management and Quality Assurance
Professor Caroline Homer AO
Co-Program Director, Maternal and Child Health

PROGRAM DIRECTORS

Dr Elissa Kennedy and Professor Caroline Homer AO
Maternal and Child Health
Adjunct Professor Heidi Drummer
Disease Elimination
Professor Paul Dietze
Behaviours and Health Risks
Dr Ben Coghlan
Health Security
Professor Suzanne Crowe AM
Healthy Ageing

DEPUTY PROGRAM DIRECTORS

Associate Professor Freya Fowkes
Maternal and Child Health
Mr Chad Hughes and Dr Joseph Doyle
Disease Elimination
Dr Megan Lim and Ms Lisa Davidson
Behaviours and Health Risks
Dr Suman Majumdar
Health Security
Dr Anna Hearps
Healthy Ageing

DISCIPLINES

Professor Gilda Tachedjian
Head, Life Sciences
Professor Mark Stooev
Head, Public Health
Dr Chris Morgan
Head, International Development

SENIOR MANAGEMENT

Professor Robert Power
Head, International Operations
Mr Peter Spiller
Chief Finance Officer, Company Secretary
Mr Paul Rathbone
Head, Public Affairs and Development, Government Relations
Mr Paul Duffy
Head, Human Resources
Mr Ian Briggs
Chief Technology Officer
Ms Tracy Parish
Head, Communications
Associate Professor Bruce Loveland
Head, Research Support and Facilities
Dr Margarete White
Manager, Occupational Health and Safety

SUPPORT



“

The more I find out about the Institute's work the more inspired I am to offer my support. I have been a regular donor for many years and have now also left a gift in my Will to Burnet to help ensure its continued success into the future.

Ms Dorothy Davies, Long-term supporter

Thanks to our supporters

It is only through your generosity that we are able to make many advances in medical research and help those most in need in Australia and internationally.

Appeals



HIV self-testing implementation research

The HIV self-testing device is an essential tool to facilitate earlier diagnosis of HIV. This is critical if Australia is to reach its target of eliminating HIV transmission. The HIV self-test implementation trials, led by Professor Mark Stoové, will help identify the best ways to expand the coverage of the tests, to support people to self-test, and ensure those using self-tests are linked to after-test care.

“I would like to thank everyone who contributed to the HIV self-test implementation trial appeal. When, in the future, you read about the positive impact these tests are having in Australia, you can proudly say you were a part of it.”

Professor Mark Stoové,
Head of HIV Research Group



Healthy Mothers, Healthy Babies

Papua New Guinea (PNG) has one of the highest maternal mortality rates in the world, with a mother 80 times more likely to die in childbirth in PNG than in Australia. Thanks to community and corporate support, Burnet’s flagship research project – Healthy Mothers, Healthy Babies (HMHB), underway in Kokopo, East New Britain – continues to meet important milestones. Since enrolling 700 pregnant women in the first research study, this year we completed the final follow-up data collection of mothers and babies at 12-month postpartum. This important data is now being analysed.

“We asked for your support to enable us to undertake the next phase of our research. Your response was incredible, and it is only thanks to you that we have been able to achieve this important milestone.”

Dr Michelle Scoullar,
a Principal Investigator for HMHB

“

Hepatitis C can be cured... and we are proud to support this initiative in the hope that we can break the cycle of hepatitis C – improving prevention and ensuring treatment access for anyone who needs it.

Mr Simon Freeman,
former CEO,
Paul Ramsay Foundation



Our HMHB staff in PNG says thanks to all our donors. (L-R) Elizabeth Walep, Lucy Au, Sr Cathlyne Telo from Paparatava Health Centre, and Rose Suruka.

Major gifts

The Kel and Rosie Day Research Translation Facility

This new facility will fast track the development of new diagnostics, vaccines and therapies for the prevention, diagnosis and treatment of disease. It will enhance the capacity and efficiency of our research programs by bringing together our existing technologies and skilled researchers into a strong and integrated facility.

With special thanks to the Kel and Rosie Day Foundation for their very generous support.

Eliminate Hepatitis C Partnership (EC Australia)

Coordinated by Burnet Institute, EC Australia is a multimillion-dollar targeted response to the serious decline in the uptake of highly effective drugs to cure hepatitis C in Australians infected with the virus. Through funding support from the Paul Ramsay Foundation, this national initiative will focus on increasing the take-up of treatment and helping meet Australia’s elimination targets.

With special thanks to the Paul Ramsay Foundation.

Cancer research – a focus of Hogarth Immune Therapies Group

The Immune Therapies Group is manipulating the body’s own immune system to attack cancer cells. They are focusing on developing specially engineered monoclonal antibodies, also called mAbs, which directly kill cancers, specifically stimulate immune responses, and avoid side-effects.

With special thanks to the Janina and Bill Amiet Foundation.



“

You should be very proud of what your support of Burnet has helped achieve. Philanthropy is critical to our success, enabling us to innovate, find solutions to challenging health issues, and improve the lives of the most vulnerable.

Professor Brendan Crabb AC,
Burnet Director and CEO

Philanthropic support makes all the difference

There are many other ways to support Burnet, and we thank everyone who has chosen to support us in one of the following ways:

Bequests

Leaving a gift in your Will can provide a lasting legacy to help vulnerable people in need. It can enable Burnet to use the funds where they are most needed at the time they are received. Thank you to all our bequestors.

Workplace giving/monthly giving

Giving a gift every month is a great way to support Burnet’s work. Also, if you give through your employer it means you get a tax advantage immediately, and in many cases employers match gifts, which makes your support go twice as far.

Thank you to everyone donating monthly.

Endowment funds

Individuals or families can create a fund and contribute significant donations over extended periods. These donations can be invested in perpetuity, or otherwise, with the investment returns being used to fund Burnet’s crucial work.

Thank you to everyone who has set up an endowment fund.

Find out how you can support Burnet Institute’s work by contacting us on (03) 9282 2111, email info@burnet.edu.au, or visit our website burnet.edu.au.

In appreciation

Gifts in Wills

Gifts in Wills, or bequests, help to secure our long-term efforts to achieve better health for vulnerable communities. We thank the late Susan Sandra Fitzpatrick, Murray Francis Piper, Alan Ross Raphael, Jean Allison Rentoul, Marion Alice Wakefield and Ronald Charles White for their generous and thoughtful bequests to the Institute.

Trusts and Foundations

Thank you to the charitable trusts and foundations that support us:

Australian Philanthropic Services Foundation	Nancy E Pendergast Charitable Trust Fund
Eirene Lucas Foundation	Naylor-Stewart Ancillary Fund
Ernest & Piroška Major Foundation	Orloff Family Charitable Trust
Harbig Family Foundation	Pat (OAM) & Helen La Manna Cancer/Stroke Research Legacy
Harold Mitchell Foundation	Paul Ramsay Foundation
HMA Foundation Pty Ltd	Peter Falvey Foundation
Hon Geoffrey Connard AM Travel Scholarship (a charitable fund account of Equity Trustees Foundation)	State Trustees Australia Foundation – Ruby C Thomas and Ronald R Fraser
Hopetoun Fund (a sub-fund of Australian Communities Foundation)	The CASS Foundation
Ian Potter Foundation	The Illuminate Fund (a sub-fund of Australian Communities Foundation)
Jasper Foundation	The Jack Brockhoff Foundation
Joe White Bequest	The Kel and Rosie Day Foundation
John Burge Trust Fund	The Wadham Family Gift
Joyce Adelaide Healey Charitable Trust Fund	Thomas John Beresford Will Trust
June Canavan Foundation	Uptopotpon Foundation
Margaret Walkom Bequest	William Angliss Charitable Fund
Marshall Fund (a charitable fund account of Lord Mayor’s Charitable Foundation)	William & Georgena Bradshaw Charitable Trust
Michael Frank Herman Charitable Trust	

Corporates

Thank you to the corporations that support us:

AJ Kaynes Lawyers	FB Rice
Arnold Bloch Leibler	GlaxoSmithKline
Ashurst Lawyers	Hylands Law Firm (Shanghai)
Axxin	Islands Petroleum
Bank South Pacific	Lamana Group of Companies
Biointelect	Lazard
Chin Communications	Lynton Crabb Photography
Corporate Traveller	PwC
C-Suite Corporate (USA)	Sing Wo Sons
Exxon Mobil	Tropicana

Community engagement



Burnet plays major role at 1st Malaria World Congress (MWC2018)

Commitment and spirit of collaboration united malaria researchers including Burnet's team.



Burnet's #UniteAgainstMalaria pledge wall at MWC2018

Delegates signed their pledges of support to Eliminate Malaria and joined our #UniteAgainstMalaria campaign in the Global Village.



Big day in Kokopo, East New Britain, with our team celebrating the last maternal and child follow-up check to complete field work for the first HMHB study.



Her Excellency, The Honourable Linda Dessau AC, Governor of Victoria and Burnet's Patron-in-Chief was among the distinguished guests at the Chair's and Patrons' Dinner.



Burnet at the heart of the Midsumma Carnival in Melbourne. (L-R) Mr Michael Traeger, Dr Cassandra Wright, Mr Reece Cossar and Dr Joost Vanhommerig.



Burnet opened its labs to inspiring young scientists and the community on the Day of Immunology.



Community engagement at the forefront of our activities on World AIDS Day 2018 in Myanmar.



Comedy under the microscope! INFECTIOUS 2018 MC, Josh Earl, helped raise money for our HIV research at this community event.



Professor Mark Stoové presented the keynote address at the 2018 Victorian community launch of World AIDS Day in Melbourne.



Burnet's Annual International Women's Day luncheon. (L-R) Professor Suzanne Crowe AM and Dr Michelle Scoullar with longstanding Burnet supporter Lady Anna Cowen AM.



Researcher Tope Adeyoyibi answers a donor's question at the 'Road to Ending Tuberculosis' supporter's function.

Financial Summary

In 2018, the Institute spent more than AUD\$47 million on improving health for vulnerable communities in Australia and internationally.

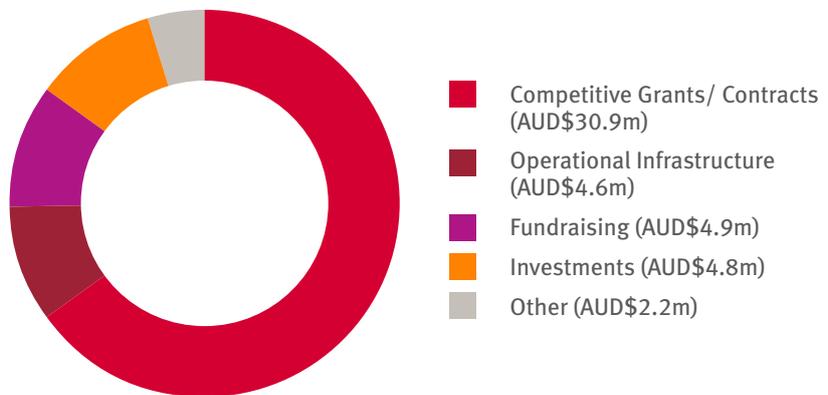
The Statements of Financial Position and Comprehensive Income provided in this section were extracted from the audited general purpose financial statements of the consolidated operations of Burnet Institute. The summary financial information does not include all the information and notes normally included in a statutory financial report.

The statutory financial report (from which the summary financial information has been extracted) was prepared in accordance with Australian Accounting Standards (AASBs) adopted by the Australian Accounting Standards Board (AASB) and the Australian Council for International Development Charities and Not-for-Profit Commission Regulations.

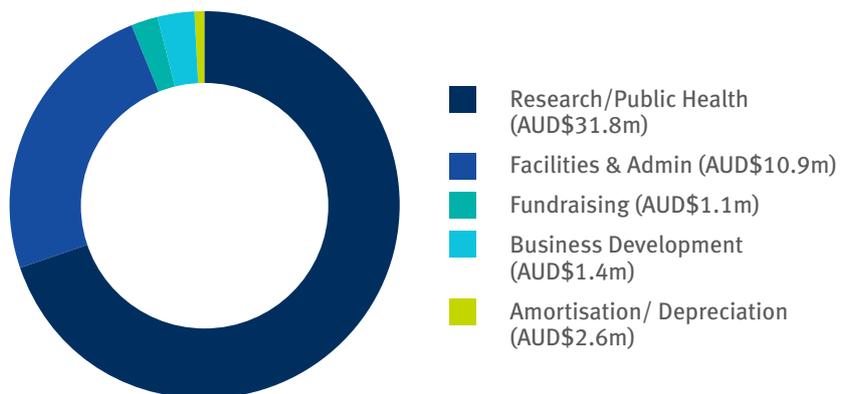
The Group recorded a deficit in the current year of AUD\$385,500 (2017: deficit AUD\$2,295,439). Depreciation and amortisation amounted to AUD\$2,610,472 (2017: AUD\$2,585,971). Income tax is not applicable. The 2018 consolidated result includes a deficit of AUD\$614,872 (2017: \$671,704 deficit) from the BioPoint subsidiary companies.

For a full copy of the 2018 audited general purpose financial report please contact Burnet Institute on +61 3 9282 2111, email info@burnet.edu.au or visit burnet.edu.au.

Income 2018



Expenditure 2018



Consolidated Statement of Comprehensive Income

(FOR THE YEAR ENDED 31 DECEMBER)

	NOTE	2018 \$'000	2017 \$'000
Operating revenue	3	42,535	38,391
Other income	3	4,620	4,553
Research and development laboratory consumables expenses		(5,001)	(5,087)
Personnel expenses	4	(24,344)	(21,358)
Depreciation and amortisation expenses		(1,326)	(1,301)
Depreciation and amortisation expenses – property management		(1,285)	(1,285)
Research and development non-laboratory expenses		(7,815)	(8,673)
Other expenses from ordinary activities	5	(6,864)	(6,060)
Results from operating activities		520	(820)
Financial income	7	220	157
Financial expenses	7	(1,049)	(1,064)
Net finance costs		(829)	(907)
Share of loss in associate		(50)	(551)
Net results of equity accounting		(50)	(551)
Deficit Before Income Tax		(359)	(2,278)
Income tax expense		–	–
Deficit After Income Tax		(359)	(2,278)
Deficit After Income Tax Attributable to:			
Members of the Company		(529)	(2,264)
Non-controlling interests		170	(14)
Deficit After Income Tax		(359)	(2,278)
Other comprehensive income			
Foreign currency translation differences – foreign operations		(27)	(17)
Total Comprehensive Deficit for the Period		(386)	(2,295)
Total Comprehensive Deficit Attributable to:			
Members of the Company		550	(2,277)
Non-controlling interests		(164)	(18)
Total Comprehensive Deficit for the Period		(386)	(2,295)

The Consolidated Statement of Comprehensive Income is to be read in conjunction with the Notes to the Consolidated Financial Statements.

Consolidated Statement of Financial Position

(AS AT 31 DECEMBER)

	NOTE	2018 \$'000	2017 \$'000
Current Assets			
Cash and cash equivalents		19,224	12,329
Trade and other receivables	8	4,914	4,830
Investments	9	–	–
Inventories		27	38
Other Assets – prepayments		344	370
Total Current Assets		24,509	17,567
Non-Current Assets			
Lease receivables		2,061	1,996
Investments	9	2,753	2,803
Property, plant and equipment	10	58,254	59,560
Total Non-Current Assets		63,068	64,359
Total Assets		87,577	81,926
Current Liabilities			
Trade and other payables		3,556	2,992
Borrowings	11	1,095	887
Current tax liabilities		461	35
Provisions	12	3,225	2,968
Deferred income	13	19,173	12,028
Total Current Liabilities		27,510	18,910
Non-Current Liabilities			
Borrowings	11	32,081	32,932
Provisions	12	1,139	1,371
Deferred income	13	6,690	7,519
Derivatives	14	1,216	1,867
Total Non-Current Liabilities		41,126	43,689
Total Liabilities		68,636	62,599
Net Assets		18,941	19,327
Equity			
Retained deficit		(8,418)	(5,801)
Building reserve		27,005	24,917
Foreign Currency Translation Reserve		114	141
Non-controlling interests		240	70
Total Equity		18,941	19,327

The Consolidated Statement of Financial Position is to be read in conjunction with the Notes to the Consolidated Financial Statements.

The Macfarlane Burnet Institute for Medical Research and Public Health Limited is a signatory to the Australian Council for International Development (ACFID) Code of Conduct. The Code requires members to meet high standards of corporate governance, public accountability and financial management. In accordance with the ACFID code of conduct, the Institute had nil balances in the following categories as at the end of the financial year which are required to be disclosed separately:

- Current Assets: assets held for sale, and other financial assets;
- Non-Current Assets: trade and other receivables, other financial assets, investment property, intangibles, and other non-current assets;
- Current Liabilities: other financial liabilities and other current liabilities;
- Non-Current Liabilities: trade and other payables, other financial liabilities and other non-current liabilities.

Burnet Institute International Development Activities Operating Statement

(FOR THE YEAR ENDED 31 DECEMBER)

	2018 \$'000	2017 \$'000
Revenue		
Donations and gifts – monetary	289	679
Donations and gifts – non-monetary	–	–
Bequests and legacies	–	–
Grants:		
• DFAT	5,318	5,386
• Other Australian	1,671	1,305
• Other Overseas	2,148	2,587
Investment Income	–	–
Commercial Activities Income	–	–
Other Income	1,115	1,230
Revenue for international political or religious proselytisation programs	–	–
Total revenue	10,541	11,187
Expenditure		
International aid and development programs expenditure		
International programs:		
• Funds to international programs	9,862	10,515
• Program support costs	1,745	1,103
Community education	–	–
Fundraising costs:		
• Public	–	–
• Government, multilaterals and private	–	–
Accountability and administration	421	249
Non-monetary expenditure	–	–
Total international aid and development programs expenditure	12,028	11,867
Expenditure for international political or religious proselytisation programs	–	–
Domestic programs expenditure	39	164
Commercial activities expenditure	–	–
Other expenditure	–	–
Total expenditure	12,067	12,031
(Shortfall)/Excess of revenue over expenditure	(1,526)	(844)
Other Comprehensive Income	–	–
Total Comprehensive Income	(1,526)	(844)

Notes:

This operating statement represents IFRS financial information and is extracted specifically for the operations of the International Health Programs as required by the ACFID Code of Conduct. The deficit represents the Burnet Institute's additional financial contribution to the program.



www.acfid.asn.au
Tel: (02) 6285 1816
Fax: (02) 6285 1720

The Macfarlane Burnet Institute for Medical Research and Public Health Limited is a signatory to the Australian Council for International Development Code of Conduct. The Code requires members to meet high standards of corporate governance, public accountability and financial management. These financial statements have been prepared in accordance with the requirements set out in the ACFID code of conduct. More information about the ACFID Code of Conduct can be obtained from ACFID.



Independent Auditor's Report

To the members of Macfarlane Burnet Institute for Medical Research and Public Health Ltd

Report on the Summary Financial Statements

Opinion

We report on the **Summary Financial Statements** of Macfarlane Burnet Institute for Medical Research and Public Health Ltd (the **Group**) as at and for the year ended 31 December 2018. The Summary Financial Statements are derived from the audited financial report of the **Group** (the Audited Financial Report).

In our opinion, the accompanying Summary Financial Statements of Macfarlane Burnet Institute for Medical Research and Public Health Ltd are consistent, in all material respects, with the Audited Financial Report, in accordance with the basis of preparation described in notes to the Summary Financial Statements.

The **Summary Financial Statements** comprise:

- Summary consolidated statement of financial position as at 31 December 2018;
- Summary consolidated statement comprehensive income; and
- Burnet Institute International Development Activities Operating Statement.

The Summary Financial Statements are contained in the Annual report on pages 33 to 35.

The **Group** consists of Macfarlane Burnet Institute for Medical Research and Public Health Ltd (the Company) and the entities it controlled at the year-end or from time to time during the financial year.

Scope of the Summary Financial Statements

The Summary Financial Statements do not contain all the disclosures required by Australian Accounting Standards applied in the preparation of the Audited Financial Report. Reading the Summary Financial Statements and this Auditor's Report thereon, therefore, is not a substitute for reading the Audited Financial Report and our auditor's report thereon.

The Audited Financial Report and our auditor's report thereon

We expressed an unmodified audit opinion on the Audited Financial Report in our auditor's report dated 23 April 2019.

Responsibility of the Directors for the Summary Financial Statements

The Directors are responsible for the preparation of the Summary Financial Statements in accordance with the basis of preparation described in notes to the Summary Financial Statements, including their derivation from the Audited Financial Report of the Group as at and for the year ended 31 December 2018.



Auditor's responsibility for the Summary Financial Statements

Our responsibility is to express an opinion on whether the Summary Financial Statements are consistent, in all material respects, with the Audited Financial Report based on our procedures, which were conducted in accordance with *Australian Auditing Standard ASA 810 Engagements to Report on Summary Financial Statements*.

A faint, light blue KPMG logo, identical in design to the one at the top of the page.

KPMG

A handwritten signature in black ink, appearing to read 'Simon Dubois'.

Simon Dubois
Partner

Melbourne
6 May 2019

Australia

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