

IMPACT

SUMMER 2021



PROUDLY
SUPPORTING
THE GLOBAL
RESPONSE
COVID-19

VACCINES
WHY NO-ONE
SHOULD BE
LEFT BEHIND



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Medical Research. Practical Action.

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Burnet Institute is a leading Australian medical research and public health organisation focused on achieving better health for vulnerable communities in Australia and internationally by accelerating the translation of research, discovery and evidence into sustainable health solutions.

Front cover: Burnet Papua New Guinea team leader Pele Melepia at her COVID-19 vaccination

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DIRECTOR'S REPORT



Welcome to the SUMMER issue of IMPACT.

What a challenging time it's been for us all. Given the enormous impact of COVID-19 on our community and globally, we decided to focus our attention in this issue on some of the key aspects of the

pandemic and how Burnet is helping guide some of the decision-making around the response. Since the onset of COVID-19, the Institute has initiated more than 50 new projects across the spectrum of research and public health, including work on vaccines, antivirals, rapid diagnostics, public health, modelling and international development. We've also been very active in providing strategic and modelling advice to both State and Federal governments and in the provision of up-to-date information to help in their decision-making, and to a range of other stakeholders through our Know-C19 Knowledge Hub. A number of Burnet staff have been very active with media engagements, which has highlighted the critical importance of medical research and public health in the response to COVID-19, and other infectious diseases, and in preventing spread, managing the response and in the prevention of future pandemics.

If you haven't already taken the opportunity, I highly recommend listening to the *How Science Matters* podcasts created by our talented communications team and produced by Written & Recorded. The 8-part podcast series gives a terrific insight into our work, a great overview of COVID-19, and how science is playing a leading role in shaping our response. To listen, go to Burnet's website burnet.edu.au or wherever you get your podcasts.

We've been able to refocus much of our work onto COVID-19 with the support of a number of government grants and through philanthropic support, as well as the application of resources obtained through the sale of some of our assets last year, which has given us the capacity to plough funds back into our research. This will be helped even further with the recent sale of Burnet's majority-owned laboratory facility, 360biolabs. This has been a tremendous science success story where we identified a need for laboratory support for clinical trials, especially in the area of immunology and virology. Formed in 2015, 360biolabs has developed into a world-class facility and become even more in demand as a result of the COVID-19 pandemic. The sale has placed Burnet in a very strong financial position, secured our long-term future, and will enable us to significantly invest in our research, public health and international development programs for the benefit of all.

As we approach the end of the year, please keep an eye out for our Appeal which is focused on safe birthing in the time of COVID-19, an important aspect and a critical period for many, particularly among vulnerable communities. Your support is critical in enabling us to continue our work and very much appreciated.

"I do hope that you and your family keep safe and well and have a happy holiday season. I look forward to keeping you up-to-date with Burnet's activities over the coming months."

Best wishes,

Professor Brendan Crabb AC
Director and CEO

A new finger prick rapid test that can quickly measure levels of neutralising antibodies to COVID-19 is being developed by Burnet Institute together with the Peter Doherty Institute for Infection and Immunity. The test will indicate a person's immunity to new and emerging variants of the virus.



INNOVATIVE COVID-19 TEST: A BURNET COLLABORATION

In less than 20 minutes, the COVID-19 NAb-Test can analyse a person's current level of immunity to the virus, making it a valuable addition to the COVID-19 diagnostic toolkit.

The development of such tests is part of the Burnet Diagnostic Initiative (BDI) which is translating research and technologies into solutions for unmet global health needs.

"The COVID-19 pandemic has highlighted the need for innovative point-of-care tests," Associate Professor David Anderson, Chief Scientific Officer, BDI, said.

"This test is an example of the solutions we are working on, with a focus on maximising their accessibility to vulnerable populations where laboratory systems are less developed."

The development of the COVID-19 NAb-Test received funding through a Victorian Government grant.

Congratulations

Burnet researchers in national board appointment and prestigious awards

Professor Caroline Homer AO was named Deputy Chair and a new member of the Australian Medical Research Advisory Board which will chart the nation's research strategy and investments for the next five years. She has decades of experience as a midwife in practice, maternal and perinatal health research, midwifery education and international development. She continues to work on maternal and child health programs including Burnet's initiatives in Papua New Guinea.

Associate Professor Joshua Vogel was recognised for his leadership and excellence in improving health outcomes of preterm newborns in low- and middle-income countries. At the NHMRC Awards, he was presented with the 2020 NHMRC Peter Doherty Investigator Grant Award (Emerging Leadership), and the 2021 Commonwealth Health Minister's Award for Excellence in Health and Medical Research. The awards are given annually to the top-ranked recipient of NHMRC Investigator Grants in the Emerging Leadership category following peer review of applications.



ARE VACCINES THE SILVER BULLET?

People have been rolling up their sleeves for community vaccine programs for more than a century. Vaccination has helped to reduce the global burden of smallpox, polio and measles, and now it's the COVID-19 pandemic we urgently need to bring under control.

Vaccines are the key to this goal, as the national benchmark – based on the Peter Doherty Institute for Infection and Immunity modelling – for 70 to 80 per cent of eligible Australians to be fully vaccinated as a precondition to ‘opening up’ would indicate.

However, vaccines alone will not be enough – we'll need a ‘vaccines-plus’ approach. That's vaccines plus testing and tracing, fit-for-purpose quarantine, effective ventilation, ongoing requirements around the wearing of masks, and social distancing.

But at the centre of the response are vaccines.

“Vaccines are the silver bullet, for sure,” Professor Heidi Drummer, Burnet Institute Program Director for Disease Elimination, and Head of Burnet's Diagnostics Initiative, said.



Dr Andy Poubourios and Professor Heidi Drummer are Co-Heads of Burnet's Viral Entry and Vaccines Laboratory.

“We've got to get everyone vaccinated, or as many people as we can. The risk of infection is massively reduced once you've been vaccinated.”

Professor Drummer said it's been “an incredible journey” seeing so many vaccines going from phase one through to registration over the past year.

Given the difficult history of vaccine development for diseases such as malaria, hepatitis C, and HIV, there was scepticism about the prospect of a timely and effective vaccine for SARS-CoV-2, the virus that causes COVID-19.

“When SARS-CoV-2 came along, we were cautious about over promising and under delivering on what could happen when these vaccines went into humans,” Professor Drummer said.

“It's all turned out beautifully really, and we couldn't have hoped for better, not just to have one vaccine registered for use in humans, but a whole plethora of them.”

Clinical trials are expensive and often recruitment is difficult, but the global spread of SARS-CoV-2 meant there's been no shortage of new cases. Vaccine manufacturers were well prepared with novel approaches, in particular, for mRNA vaccines which teach our cells how to make a protein that triggers an immune response. Their platforms had been in use for more than 20 years but never licensed for use in humans.

“The Pfizer and Moderna vaccines are examples where the manufacturers were able to swap the gene for the spike protein of SARS-CoV-2 and hit the ground running by getting it into humans



very quickly,” Professor Drummer said. “Investment in vaccines is a huge part of the equation.”

To control the pandemic post-vaccination, Professor Drummer stressed ongoing monitoring of emerging strains and adapting existing vaccines will be vital. And we will all need a booster shot in the next year to strengthen our immunity against COVID-19 as the effect of initial vaccination wanes.

While Australia has achieved more than 80 per cent double vaccination rate, Professor Drummer said it’s also vital that

no-one is left behind and that virus replication is suppressed globally as much as possible.

“We need at least 80 per cent of people fully vaccinated to start thinking about whether we can reach the goal of herd immunity. We’ve seen how quickly this virus spreads and can find those people who are unvaccinated,” she said.

“The whole idea is to suppress replication so that the vaccines we’ve got today will work tomorrow – we can’t keep chasing the virus.

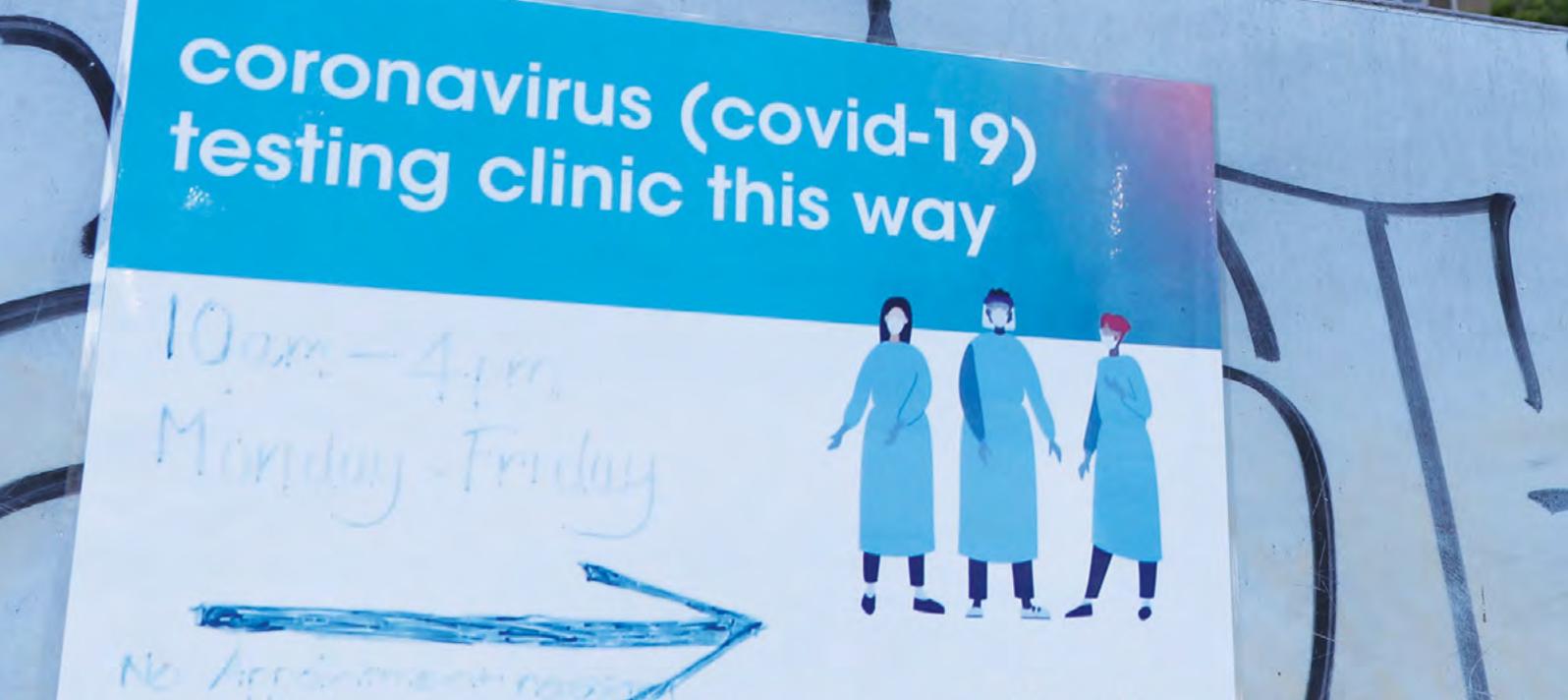
“The variants are a concern and the lack of vaccines going to low- and middle-income countries is a big concern. We’ve got to think about how we’re going to get Africa and the rest of Asia vaccinated.

“Wherever you’ve got high rates of transmission, that’s where variants could emerge, so getting everyone vaccinated is essential.”

Hear more from Professor Heidi Drummer in Episode 2 of Burnet’s new podcast series, *How Science Matters*. www.burnet.edu.au/how-science-matters



Allan Kuma, lead counsellor in Burnet PNG, receiving his COVID-19 vaccination.



LET EVERY VOICE BE HEARD

The Optimise Study gives Victoria's non-English speaking communities the opportunity to contribute to policy.

While Afaf Mohamed was in and out of a Melbourne ICU with COVID-19 in mid-2020, she wasn't aware that her family had also contracted the virus.

"I was in hospital for 37 days so I didn't know what was happening outside, but when I came back my family had all been infected," Ms Mohamed said.

Ms Mohamed contracted the virus from a family member, who was working at a hospital in the city's inner suburbs. Fortunately, no-one else in her family was admitted to hospital, but lockdowns made it difficult for the close-knit South Sudanese community to rally around them in the way they normally would.

At the start of the pandemic, many culturally and linguistically diverse (CALD) communities in Melbourne struggled to access reliable and clear information about the virus in their language.

"Last year people didn't have any information about COVID-19, but this year is not bad," Ms Mohamed said.

The pandemic has underlined the complexity of developing and implementing public health messaging for diverse communities during a crisis.

Issues go beyond tailoring and translating information on getting tested, quarantining or getting vaccinated.

Since mid-2020, the Burnet and Doherty Institutes-led Optimise Study has gathered valuable insights from subsets of Victoria's community who are at greater risk of COVID-19 and its effects, to inform government policies and strategies.

This has included CALD communities, who face language barriers, discrimination and difficulties accessing support services. Language and cultural barriers also make it difficult for researchers, but Optimise Study Coordinator Dr Stephanie Fletcher-Lartey says her team is overcoming this by employing five bilingual data collectors.

"By allowing someone from the community to lead the recruitment and capture that data, they can understand the nuances in the language," she said.

Dr Fletcher-Lartey, a public health epidemiologist, said she and colleagues worked with Victoria's Department of Health and the Centre for Culture, Ethnicity and Health to identify three priority languages: Arabic, Mandarin and Dinka.

"Arabic is the fifth most common language spoken in Victoria and is spoken by people from quite a diverse group of countries," she said.

Mandarin is widely spoken in Victoria, but the Optimise team is also assessing the continuing impact of negative social media perceptions of Chinese communities due to the first cases of the COVID-19 virus emerging in Wuhan, China.

"The Dinka-speaking community is nowhere near as big. However South Sudanese in Victoria actually form part of very extensive family networks," Dr Fletcher-Lartey said. "It can be difficult to limit social engagement, because that's a very important part of their cultural setting."

Dr Fletcher-Lartey says she is proud to work with the bilingual data collection staff.

"This now gives us the opportunity to genuinely say that we have captured information on a diverse group of participants from across Victoria," she said.

Deng Malith, a member of Melbourne's South Sudanese community, is one of the Optimise data collectors. His role is to recruit Dinka-speaking people into the study, and gather



information from them and their networks. Mr Malith says having researchers from the community underlines to members of the community that they are being heard.

“It helps people understand that they have to take a role in it, their participation is important,” he said. “The way it has been designed is really helpful. The research will bring up information and data we have not seen.”

Part of this involves asking the right questions, and in the right way.

“When we trained our bilingual staff, one identified an issue in a response option in our survey: ‘prefer not to say’,” Dr Fletcher-Lartey said. “This doesn’t make sense in Arabic, it actually implies something offensive. We reworded it to ‘I would not like to answer’ which is more respectful. We would not have otherwise picked up on that very small nuance.”

CALD study participants have already reported more severe impacts on their employment and mental health, and having smaller networks to rely on when isolating.

“Some of those things are crucial for us to pay attention to,” Dr Fletcher-Lartey said. “When we feed this back into our report to the [Victorian] government they will not just hear the voice of the ‘mainstream’, they’ll hear the voice of our broader diverse community.”

Find out more about The Optimise Study at burnet.edu.au



The Optimise Study is a partnership between Burnet Institute and the Peter Doherty Institute for Infection and Immunity, in collaboration with other organisations. [Read more at burnet.edu.au/optimise](http://burnet.edu.au/optimise)



In July 2021, The Optimise Study led by Burnet and Doherty Institutes found that more than 86 per cent of Victorians in the study were ‘definitely’ intending to be vaccinated or already vaccinated for COVID-19, with significant increases reported among healthcare workers and people aged 35–44 years. This compares to November 2020 when 61 per cent of participants indicated their intention to be vaccinated.

KEY RESEARCH FINDINGS FROM JULY 2021



High level of understanding that people require two jabs to be fully vaccinated against COVID-19



Mixed understanding about catching COVID-19, getting sick from the virus and transmission after vaccination



73 per cent agreed vaccines should be required for international travel to and from Australia



21 per cent were unsure about their children getting the vaccine

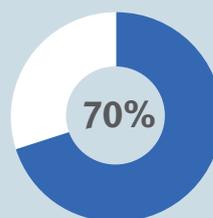


95 per cent of healthcare workers reported either being already vaccinated or would definitely get vaccinated

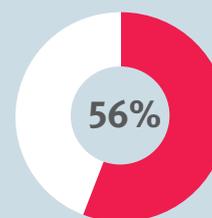


3 per cent strongly disagreed with mandatory vaccinations

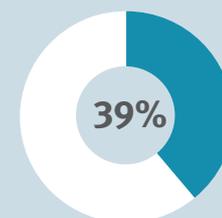
KEY TRUSTED SOURCES FOR VACCINE ADVICE



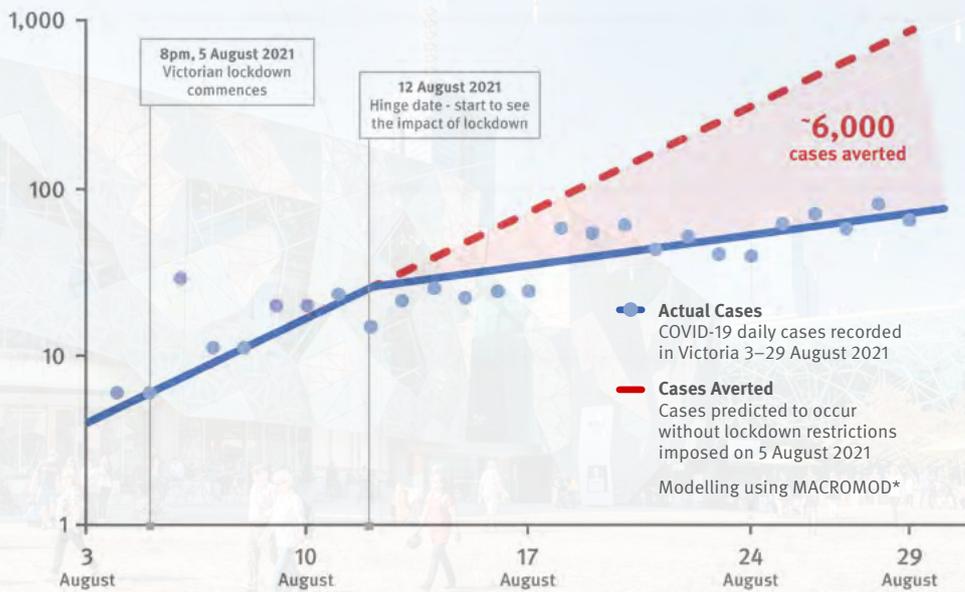
Strongly agreed they would get vaccinated if **recommended by a healthcare professional**



Strongly agreed they would get vaccinated if **recommended by the government**



Strongly agreed they would get vaccinated if **recommended by their employer**



Burnet modelling shows Victoria's community effort helps avert around 6,000 COVID-19 cases.

MODELLING COVID-19:

Can we predict the future?

Modelling a safe way out of the COVID-19 pandemic has been some of Burnet's most prominent work in 2021.

Burnet Institute has played a key role in helping Australia's decision-makers strike a balance between COVID-19 and its effects, and the restrictions imposed on the community to counter the virus.

Head of Modelling, Dr Nick Scott, says scientific models are not developed to provide certainty; instead, they are created to show the likelihood of different outcomes occurring, and how this can change as a result of different decisions.

Burnet's modelling has projected the likelihood of cases, hospitalisations and deaths from COVID-19 exceeding different thresholds, based on what public health restrictions are implemented to prevent community transmission.

This has helped guide the Victorian and NSW Governments as they make difficult decisions on which public health measures to enact or ease, and which population cohorts should be targeted for testing.

"You can run scenarios in the model to just test things before you do them in real life. You can ask 'what if' questions," Dr Scott said.

Professor Margaret Hellard AM, Burnet Deputy Director and infectious

diseases clinician said, as the situation changes, so too must the models.

Behind the projections are underlying assumptions based on emerging data on a wide variety of factors. This comes from other research such as The Optimise Study, which Professor Hellard co-leads, to gather information on people's social contact.

"Early in the pandemic, we had to use data from studies 10 years ago. But now we use recent data from our own work as well as new data from other studies to inform the models," Professor Hellard said.

Different vaccines and new strains of SARS-CoV-2 (the COVID-19 virus) – with differing levels of infectiousness, virulence and resistance to vaccines – all need to be taken into account in models.

While Australia gets closer to vaccinating most of its population, Dr Scott said COVID-19 and its variants will be a fact of life for some time in low-income countries with limited vaccine supplies.

"We're adapting the (COVASIM*) model so that it can simulate multiple strains at the

same time and the way they interact with one another," he said.

Ongoing, updated Burnet modelling is providing guidance for the Victorian and NSW Governments in their 'roadmaps' out of Delta COVID-19 outbreaks.

"This is where modelling groups work really well with other public health teams to get a series of options on the table," Dr Scott said.

Professor Hellard is quick to point out where the modelling team's work starts and where it ends – they present options to governments and policymakers, and possible consequences of those options based on the prevailing information.

"You're trying to say in the future, what are reasonable likely scenarios that will occur?" she said. "Questions like – do we want just light restrictions being held, or do we go in and out of lockdowns – they're decisions for government. These are conversations that they will know far better than us, what they think is the trade off."

Models present options to governments and policymakers, and possible consequences of those options based on the prevailing information.

ENSURING MODELS DON'T COME TRUE

Dr Scott says criticism of models which make predictions and then don't pan out are misguided.

"You can be in a situation where you have 10 options available, so you run 10 scenario analyses looking at what happens if we did any of these," he said.

"By definition, nine of them are going to be wrong in the sense that they won't match the data, because that scenario never actually happened in the real world.

"This was the case with the early models that were saying we were going to have tens of thousands of deaths (in Australia in 2020). And it's not that those models were wrong, it's just that they ran a scenario where we didn't do lockdowns and didn't have those responses."

Modelling other infectious diseases

Dr Scott and his team have worked on mathematical models for many years and have helped governments around the world enact change to maximise the impact of available resources.

"The work Nick has done on hepatitis C elimination has had a global impact, as it has with hepatitis B and vaccination globally," Professor Margaret Hellard AM said.

This was recognised with Dr Scott winning a National Health and Medical Research Council (NHMRC) Emerging Leadership Grant, which he will dedicate to modelling solutions to emerging problems in Australia's effort to eliminate hepatitis C.

"Australia is at a critical juncture in its elimination program where 'easy-to-reach' individuals have already been treated, and the focus

will need to shift to ensure that no-one is left behind," Dr Scott said.

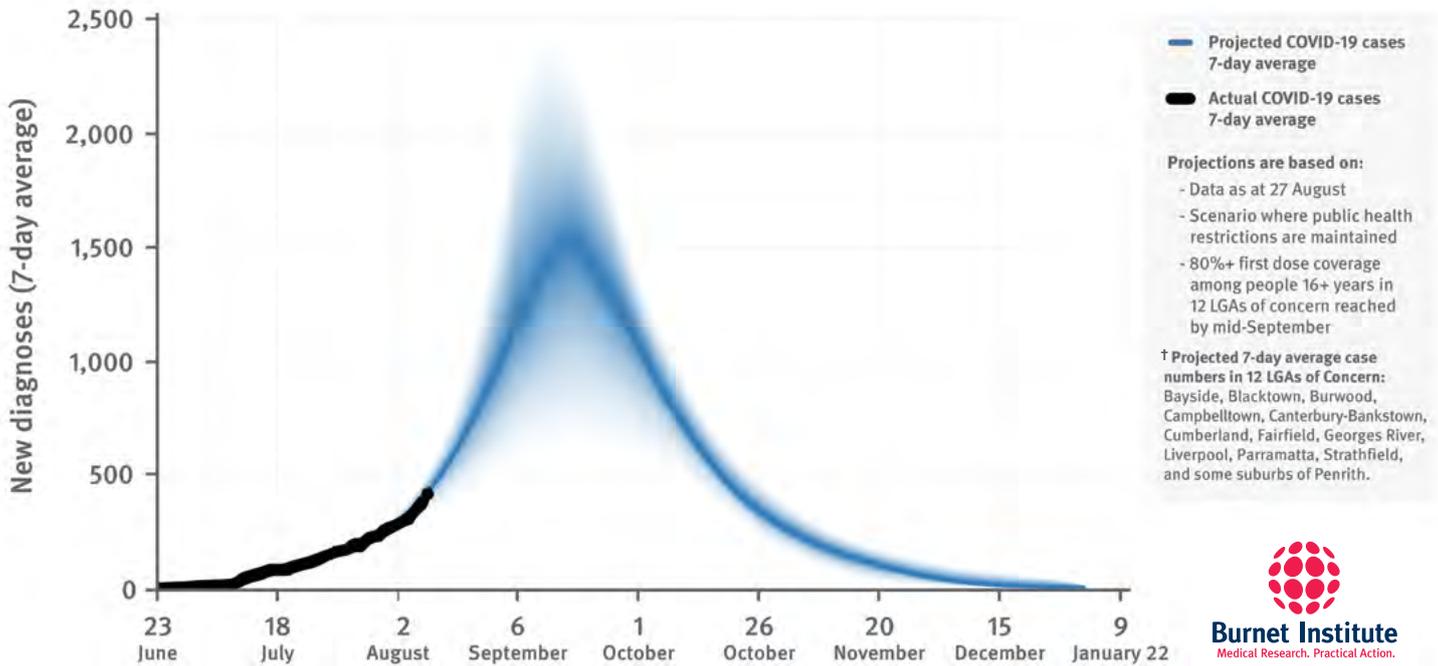
"Modelling can provide vital evidence for how testing, linkage to care and treatment pathways can be targeted and optimised at the local level to meet national and global targets in the most cost-effective way."

Dr Scott said hepatitis C elimination strategies are also being developed for low- and middle-income countries, and modelling could identify the best way to achieve these with existing health system and funding constraints.

"A critical window of opportunity exists for ensuring that country-level responses to hepatitis C are evidence-based, cost-effective, and maximise the impact achieved with available resources," he said.

NSW's 12 LGAs of Concern† : Projected 7-Day Average COVID-19 Cases

7-day average could reach between 1,100 to 2,000 per day in mid-September 2021



Burnet's modelling was used to simulate the greater Sydney population in the 12 Local Government Areas (LGAs) of concern. It showed the 7-day average could reach between 1,100 to 2,000 per day in September 2021. Responses implemented by the NSW Government are estimated to have averted a substantive number of infections and deaths.

*SCIENTIFIC MODELS USED BY BURNET INSTITUTE

COVASIM is an individual-based model that can assess the impact of easing COVID-19 restrictions. Developed by Burnet Institute and the Institute for Disease Modelling in the USA, COVASIM provides governments with more specific and precise data to inform their COVID-19 responses.

MACROMOD is an approach to measure the impact of control measures on COVID-19 in the population. It estimates this impact by the change in the epidemic growth rates. By projecting the growth rates before and after Melbourne's lockdown in early August 2021, MACROMOD showed that about 6,000 cases of COVID-19 were averted in the following three weeks.

Safe Delivery App

PUT LIFE-SAVING INFORMATION IN THE HANDS OF MIDWIVES AND NURSES IN PAPUA NEW GUINEA (PNG).



Health outcomes for mothers and babies in PNG are poorer than in all countries in the Pacific region. Significantly high numbers of mothers die in childbirth and many babies are stillborn or die in the first days after birth.

"We know that more than 5,000 babies don't reach their first year of life, and we've seen the deaths of mothers and babies first-hand in PNG," Professor Caroline Homer AO, Burnet's Co-Program Director, Maternal, Child and Adolescent Health, said. "The majority of these deaths are preventable with quality

maternal and newborn care, especially with access to a healthcare worker who has ongoing education and support."

We know midwives make a difference, but they need accurate up-to-date information on hand.

Burnet Institute has been working in PNG for more than 20 years and has completed many hundreds of projects in that time. One thing we know for certain is that midwives make a significant difference.

"In 2020 we did a study with the United Nations Population Fund, World Health Organization and the International Confederation of Midwives, looking at the impact of midwives," Professor Homer said. "The study found that with 95 per cent midwife coverage, you would

reduce numbers of maternal deaths in a low- to middle-income country by 60 per cent. If you only had 25 per cent coverage, it's still going to be about a 50 per cent reduction in maternal deaths, newborn deaths, and stillbirths."

Ensuring midwife coverage is one thing, but in PNG, giving midwives and other healthcare workers access to ongoing education, especially up-to-date and current information, is another. Understaffing in health facilities can also mean that professional support is not available, and staff often work in isolation without on-the-spot guidance.

ADAPTING THE SAFE DELIVERY APP FOR USE IN PNG

The app is currently used in more than 40 countries and has been shown in countries such as Ethiopia to improve health outcomes for mothers and babies.

It has not been used widely in the Pacific region, but there is huge interest and enthusiasm in using it in PNG with the support of the United Nations Population Fund.

There is now a real need to adapt it for PNG. Your donation today will enable Burnet to undertake a study with healthcare workers to adapt the Safe Delivery App specifically for use across PNG.

Your donation today will enable Burnet Institute to adapt the innovative Safe Delivery App for use in Papua New Guinea (PNG). The app will provide up-to-date information and guidance to midwives and healthcare workers – literally putting life-saving information in their hands.



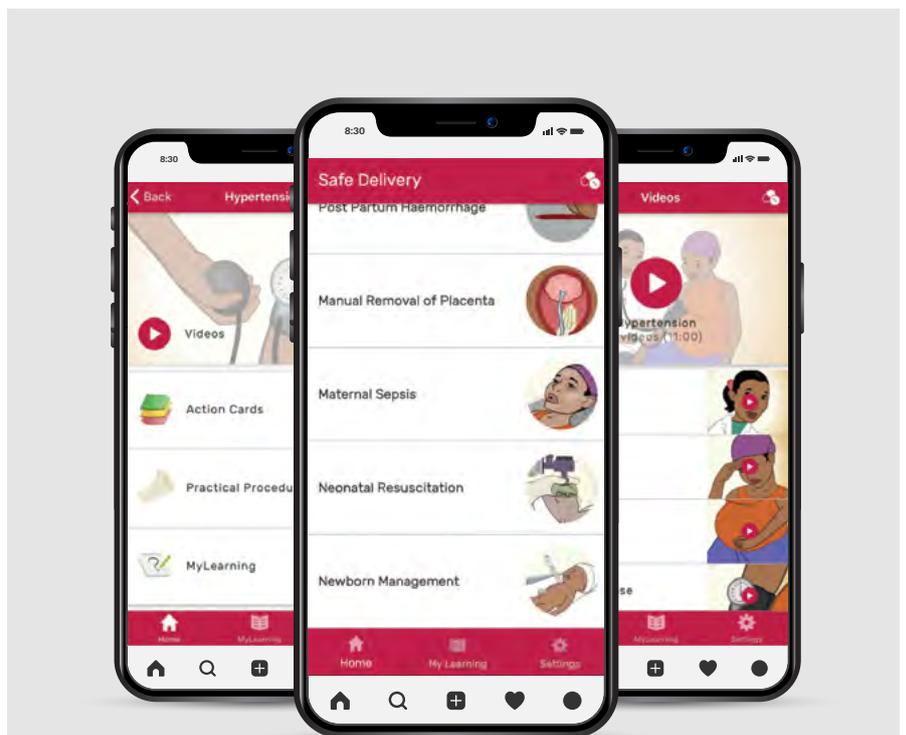
SO, WHAT IS THE SAFE DELIVERY APP AND HOW CAN IT HELP?

The Safe Delivery App, developed by Maternity Foundation (Denmark), is a smartphone application that provides skilled birth attendants with direct and instant access to evidence-based, up-to-date, clinical guidelines on Basic Emergency Obstetric and Newborn Care.

The app has easy-to-understand animated videos, action cards and drug lists, and is designed to be used as both a training resource for professional development and as a reference in emergency situations. It includes critical information such as how to resuscitate a newborn, how to handle a breach birth situation, and information about essential obstetric drugs and equipment.

In 2020, the app was updated to include a module on COVID-19, addressing transmission in pregnant women, care during labour and birth, and infection prevention and control.

"Our work is risky – we have the lives of mothers and their babies in our hands every day."



VIEW THE SAFE DELIVERY APP

www.safedelivery.org

The project to adapt the Safe Delivery App is a collaboration between Burnet Institute, United Nations Population Fund (UNFPA) and Lisa Valley from Kirby Institute.

“You might think that using mobile phone technology in PNG could be problematic but that’s not the case. Nearly everyone in PNG has a mobile phone. And if they don’t, we can provide them with one.

With small-scale power systems throughout rural PNG, even in the remotest areas, charging devices is also not a problem. And once downloaded, the Safe Delivery App doesn’t need connection to the internet to function – this is really important in PNG where internet access is patchy and expensive.”

– PROFESSOR CAROLINE HOMER AO



Sister Jennifer Bata, Nursing Officer-in-Charge at a health centre, and Professor Caroline Homer looking through the birth register in East New Britain, PNG.

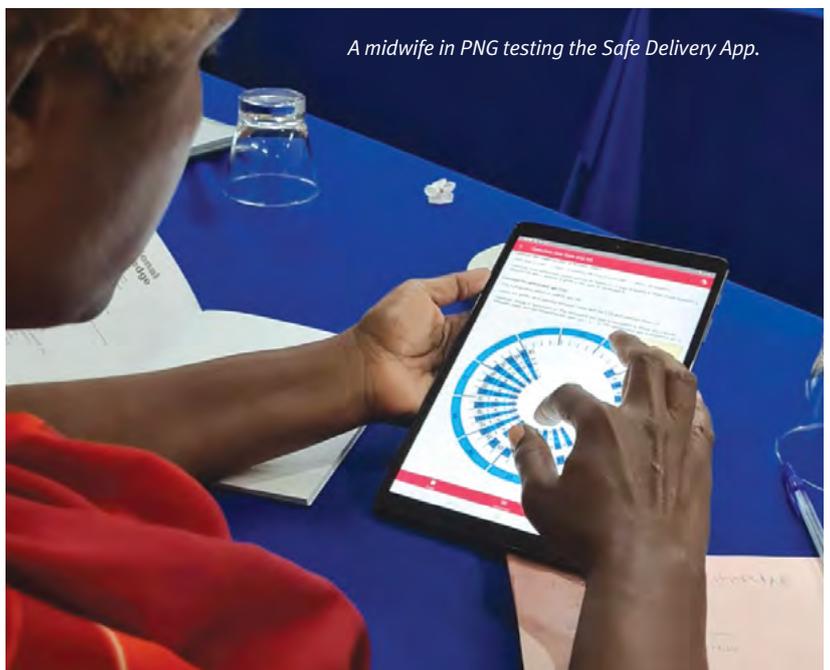
So, using the technology is not a hurdle, but adapting the app for in-country use is absolutely critical to making it a useful resource that can be more widely used.

The Burnet-led study will:

- Review the clinical content and adapt it based on the current PNG Obstetrics and Gynaecology Guidelines.
- Revise content based on advice with key expert colleagues from the PNG Obstetrics and Gynaecology Society, the PNG Midwifery Society and the PNG Paediatric Society and the National Department of Health.
- Translate audio recordings into Tok Pisin (the local language) and ensure the images and videos have PNG faces and stories.
- Publish the PNG-specific app on Google Play and App store.

The Burnet-led project will provide smartphones with the adapted Safe Delivery App uploaded to a test group of midwives and other healthcare professionals.

We will then monitor use of the app for three months, determining how the app was used, which modules were most accessed, and a focus group exercise at the end of the process will gather in-person experiences and suggestions for improvements, with a broader rollout to follow.



A midwife in PNG testing the Safe Delivery App.

“I think about all those midwives out there in really tough circumstances, frightened for themselves with COVID-19 and for their families, but also really trying to do the best for the women who come to them. I think putting the Safe Delivery App in their hands is one really important thing we can do to support them, grow capacity, and save the lives of mums and babies in PNG.”

– PROFESSOR CAROLINE HOMER AO

Hepatitis B

HOPE AND HURDLES

Addressing barriers while preparing for a cure

There is renewed hope and anticipation that researchers will discover a cure for chronic hepatitis B, a life-threatening infection that affects more than 296 million people globally.

But for now, the focus is on overcoming multiple barriers hindering timely testing and diagnosis, monitoring, and treatment to prevent 17 million hepatitis B-related deaths and 63 million new infections by 2030.

For people living with hepatitis B, these barriers include a general lack of awareness about their condition and access to culturally appropriate health services. Often there is significant stigma and discrimination, not helped by some cultural beliefs on how hepatitis B infection is transmitted.

There is also the problem of retaining people with hepatitis B in clinical care¹ – the nature of infection means there may not be symptoms throughout its course.

But hepatitis B activity and related liver damage can change rapidly, so it is vital that it is monitored regularly over time, and treatment started at the right time to prevent liver damage and reduce the risk of liver cancer.

“Hepatitis B is a chronic disease experienced in different ways across the lifespan, requiring retention in

care, which is a major challenge,” Dr Jess Howell, Burnet researcher and a consultant gastroenterologist, said.

“There are some big questions we all need to address. These include when, who and how should we treat hepatitis B, and how can we effectively address the stigma and discrimination that people face and increase their demand for hepatitis B services and diagnosis,” Dr Howell said.

A priority group in Australia is the estimated 40 per cent of people living with hepatitis B who were born in Asia, acquired the infection at birth or childhood, and are not linked to care. A Burnet research study identified ‘enablers’ that motivated ethnic Chinese people in Australia who live with chronic hepatitis B to attend regular clinical care. Led by Burnet’s Drs Yinzong Xiao and Jack Wallace, the study explored these enablers that include:

- receiving clear and accurate messages from health professionals that chronic hepatitis B increases their risks of advanced liver disease and liver cancer, but that effective and affordable treatment is available
- understanding that long-term care reduces their risk of advanced disease
- good communication and interaction between patient and doctor, increasing trust in medical professional advice
- support from family, peer groups, environments and the health system, including subsidised healthcare

service and the availability of interpreters or multilingual doctors.

“Several participants in our research mentioned they were diagnosed 20 years ago, when they were told there was no effective [hepatitis B] treatment,” Dr Xiao said. “What brought people back to care is the critical information they received, for example, a doctor telling them there is a treatment, and their belief that it is beneficial to attend regular monitoring.”

Increasing the community’s knowledge about hepatitis B is important, especially with misinformation coming from different sources such as the internet as well as beliefs passed down from one generation to another – adding to stigma.

Dr Wallace, who looks at how hepatitis affects communities and shapes social practices, said: “Success in delivering the hepatitis B cure will not only relate to medicines but also in responding to the cultural and social contexts in which they’re made available.”

“The impact of a cure will be profound in reducing liver disease and cancer and in the significant social impacts among individuals.”

“A hepatitis B cure will change the fortunes of whole families by reducing uncertainty and social marginalisation.”

– DR JACK WALLACE, BURNET RESEARCHER

¹ Hepatitis care teams include doctors, nurses, specialists and other health professionals, some of whom focus exclusively on caring for people living with hepatitis infection.



The Lost Voice

HOW COVID-19 IS AFFECTING GLOBAL EFFORTS TO ELIMINATE MALARIA

The epidemiology of COVID-19 is complicated. We've worked out the virus spreads through the air, so instead of wiping things down as was first recommended in 2020 we are now looking to masks and ventilation as key public health tools to prevent community transmission.

But for a disease such as malaria which is spread by a vector (in this case a mosquito), stopping transmission presents a whole different set of challenges.

Burnet Institute malaria vaccine researcher, Dr Herbert Opi, understands the difficulties of eliminating the disease.

"If a mosquito bit me and I had malaria, it would have to develop for several days in the mosquito first before it could infect another person. It's quite complex," Dr Opi said.

This complexity is part of the reason some areas of Kenya, Dr Opi's home country, are badly affected by malaria while other areas rarely see a case. Compare this to COVID-19, which has affected all parts of Kenya in four waves since mid-2020.

"COVID-19 just adds another layer of complexity to what people are already finding difficult to deal with," Dr Opi said.

Significant gains have been made towards eliminating malaria since 2000, but the coronavirus pandemic threatens to disrupt



Dr Herbert Opi is researching the immune responses that provide protection against malaria, particularly in children. Understanding this can point to specific targets for designing more effective malaria vaccines.

gains in Asia-Pacific, South America and across Africa, including Kenya.

Burnet Institute Deputy Director and a malaria specialist, Professor James Beeson said history tells us malaria is quick to come back once society takes its foot off the elimination pedal.

“Countries and national departments of health have had to divert a lot of resources into combating the COVID-19 emergency and to dealing with that,” he said.

Professor Beeson, who heads up Burnet’s Malaria Immunity and Vaccines Group, said this isn’t the first time that progress in combating the burden of malaria has stalled.

“There are many examples of countries that got malaria right down in the 1950s, ‘60s and ‘70s, and then resources were diverted away and malaria bounced back rapidly,” he said. “In some countries the numbers went higher than they were before the elimination campaign started.”

Now, as countries direct resources to stop COVID-19, Professor Beeson hopes malaria elimination efforts aren’t lost.

A COMPLEX PROBLEM: DEVELOPING AN EFFECTIVE MALARIA VACCINE

Drug resistance and insecticide resistance present significant hurdles, but Professor Beeson says one elusive tool could make a significant difference: an effective vaccine.

“The recent World Health Organization approval for using the RTS,S malaria vaccine in children is an incredibly important milestone. Many deaths from malaria are in young children under five years of age,” Professor Beeson said.

“There are two elements to achieving malaria elimination. One is commitment from governments to implement interventions that we know work,” he said. “But there are still missing elements

Professor Beeson has worked in malaria research in Africa and Asia for more than 25 years. At Burnet, he heads our malaria vaccine laboratory and development of new tools and preventative public health strategies to reduce the global burden of the disease.

“Malaria continues to be a huge problem in Papua New Guinea, and there are more than 1.3 million episodes of malaria each year. A more effective malaria vaccine that has longer lasting protection will be key to preventing this burden, along with continued support for effective treatment and stronger health systems in malaria endemic countries.”

that we need research to provide answers for. A really effective vaccine could be a silver bullet. RTS,S is good but it could be a lot better.”

Developing a vaccine against a simple virus organism is exponentially easier than creating one against a parasite like malaria. “For COVID-19, the vaccine targets one protein of the virus. The solution to getting a vaccine based on that protein was relatively straightforward using concepts that have been around for a long time,” Professor Beeson said.

“For malaria, we don’t have that simple starting point. There are about 5,000 proteins that make up the malaria parasite organism. We have 50 to 100 possible proteins that we could target with a vaccine. Which one do we target? Or do we need a combination?”

The complexity of the science is only part of the problem for researchers.

“It’s incredibly hard to get funding for malaria,” Professor Beeson said.

He’s not deterred, and he hopes countries can translate lessons from COVID-19 responses to malaria elimination. More than 400,000 people die each year from malaria.

“We can sit here, passionate about malaria, but we need partnerships from global leaders and funding organisations. We need communities to demand their rights, to malaria treatment, diagnosis, prevention and to a solution.”



A mum in East New Britain province, PNG, speaks to Professor James Beeson about the impact of malaria.

Supporting people living with HIV to age well

| Leighton



| David



Ageing with HIV is different

Advances in science have changed the prognosis of being diagnosed HIV-positive into a chronic manageable condition. The focus now is helping people living with HIV to manage their health and wellbeing as they get older.

When Sam, 64, was diagnosed with HIV in the early 1980s, he never thought he would live to this age. The virus that caused rare infections and cancers had just been named human immunodeficiency virus (HIV). It would be a few more years for the first HIV treatment to be introduced.

Fast forward to 2021, Sam is among a cohort of people who have outlived their initial prognosis thanks to research that brought about effective treatments that have saved lives and enabled many to live longer.

A GROWING POPULATION

In Australia, the ageing HIV population is growing. Approximately half of people living with HIV (PLHIV) are now over 50 years.¹ New challenges have since emerged for this cohort.

There is growing evidence that age-related conditions such as heart disease, osteoporosis and diabetes are more common among them, compared to those without the infection.²

Add to that the unique experiences of older PLHIV – ageism alongside HIV stigma, isolation due to the loss of loved ones and social connections, and the need to access services earlier than their HIV-negative peers. As they grow older, they require specialist and community support to address these needs and ensure their quality of life.

AIMING TO INFLUENCE HEALTH AND WELLBEING OUTCOMES

Ageing Well with HIV is an initiative involving Burnet Institute, Thorne Harbour Health, Living Positive Victoria and Alfred Health. Since 2018 the project has aimed to address the psychosocial and health needs of older PLHIV through an online platform that expands the reach and sustainability of existing programs that were delivered face-to-face.

That platform, Well Beyond 50, brings together health information, resources across social support for PLHIV, personal stories and access to a robust service directory listing Victorian providers.³

“The website opens lots of possibilities,” Living Positive Victoria CEO, Richard Keane, said.

“I’m hoping that over the months and years ahead, we’ll be providing a whole range of information, not just on direct service delivery but on research into HIV and ageing and other really, really important issues about social connectedness and mental health.”

THE IMPORTANCE OF REAL PEOPLE’S EXPERIENCES

Burnet researcher Dean Cassano shared insights on the development of Well Beyond 50.

“The platform reflects the community needs. The focus group feedback showed concerns about navigating the health system because of their more complex care requirements and around isolation

Leighton, David and Susan are community members who were actively involved in the Well Beyond 50 project.

| Susan



and loneliness as they aged,” he said. “People also wanted to hear positive stories from those in their community, stories about resilience and coping with difficult times.”

One of those stories is that of journalist and founder of Living Positive Victoria, David Menadue.

“Ageing well with HIV for me, is paying attention to areas that possibly your average 50-year-old doesn’t think enough of,” he shared. “The chances we’re going to get comorbidities is a little bit higher now, so we have to be on the ball about being preventive.”

“Ageing well with HIV, for me, is paying attention to areas that possibly your average 50-year-old doesn’t think enough of.”

DAVID MENADUE, 68

Some of the preventive strategies David talks about are daily exercise such as weights to reduce muscle loss, activities such as crosswords for the brain, and socialising and mixing in peer support groups. These help in maintaining a positive outlook.

Such groups have also been helping Sam maintain a positive outlook.

“For people that have lost most of their friends, it’s a great way of getting back involved and meeting new people that are all in the same boat as you,” Sam, who has lived with HIV for 39 years, said.

“Community has given me self-purpose and a reason to keep on fighting and to keep on living.”

¹ Kirby Institute, *HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2017*, Kirby Institute, UNSW, Sydney. 2017.

² Woods R, ‘*HIV and Ageing in Australia – The New Frontier*’, National Association of People with HIV Australia, Melbourne. 2019.

³ The Well Beyond 50 platform was developed as a partnership between Burnet Institute, Living Positive Victoria, Thorne Harbour Health, and Alfred Health, and with collaboration from Bolton Clarke and Positive Women Victoria.

ENDING THE HIV EPIDEMIC IS A REAL POSSIBILITY

Australia’s HIV management is regarded as among the best in the world.

However, there is work to do if HIV is to be eliminated as a public health threat.

Burnet’s research uses a multifaceted approach and focuses on four pillars towards eliminating HIV:

- Prevention and vaccines
- Testing
- Modelling and surveillance
- Treatment and quality of life.

OUR CURRENT RESEARCH INCLUDES:

- Identifying compounds that can lead to a novel class of drugs for use in treatment and prevention. This addresses the real threat that drug resistance and intolerance will eventually lead to exhaustion of antiretroviral drug options for treatment and prevention.
- Exploring the role of HIV self-testing including developing and implementing interventions to improve HIV self-testing coverage.
- Determining the direct anti-HIV mechanism of vaginal microbiota and their composition that can lead to strategies to treat and prevent genital inflammation which increases women’s susceptibility to HIV and adversely affects their reproductive health.

In Australia,
29,000+
people are estimated
to be living with HIV¹.

More than
1 in 10
Australians are unaware of
their HIV-positive status¹.

Globally, almost
38 million
people live with
HIV infection².

¹ HIV in Australia 2021, from www.afao.org.au

² Global HIV & AIDS statistics, from www.unaids.org



The SuperMIX team:

Connecting in COVID-times with people who inject drugs

With more than 1,300 participants, Burnet's ongoing study – SuperMIX – is Australia's largest and longest-running cohort study of people who inject drugs. Since 2008, SuperMIX has focused on participants' drug use including periods of cessation and relapse to inform the design of new services and interventions. One of the SuperMIX fieldwork team, Associate Professor Peter Higgs, writes on the impact of the COVID-19 pandemic on the study, and how researchers and participants have been able to adapt to keep the study not just viable, but thriving.

In non-COVID times we have a fitted-out mobile office, a white van, that we take to health services around Melbourne that people who inject drugs are using. Our researchers go to the same spots every week, so there's continuity and people realise the Burnet team is in the area today. Public health restrictions and lockdowns over the past 18 months have meant there are times when we can't get into the field, and even when we can, people aren't able to come out in the same way that they used to. That's had a real impact. We were very busy for periods just reconnecting with people we hadn't seen for a couple of years, and that opportunity and presence is really important. The interruptions have made us all appreciate the value of our field-based work.

Our participants stay engaged because they feel listened to. Some even refer to it as a kind of therapy session. We ask them about their health and some people use it to reflect on how life is actually going. Even though we're not strictly counsellors or therapists, the trust the participants have in the workers is so important. We also work closely with primary care services that are targeted to that population.

Like so many parts of society, the COVID-19 pandemic has forced us to change how we work. We transitioned to connecting with people by Facebook and over the phone.

The SuperMIX Facebook page has over 500 people connected to it in an

anonymous way so we can see them, but they can't see each other. That's been a crucial way to stay engaged because people can change their phone numbers or addresses, but their Facebook profile often stays the same. Opportunities to connect with people in that way have been really valuable.

We used Facebook pre-COVID-19, but we've upped the ante because we've had to rely on it so much more. We can stay connected in ways that we wouldn't have previously. Some participants find it difficult to navigate that space, but others prefer to get a video call as their way of keeping in touch.

We did about 500 interviews in the first 12 months of COVID-19, mostly over the phone, and we've been trying to average 10 a week, but we do lose contact with some participants. It's just a different way of staying connected.

“Having a really strong field presence for a number of years has been a big advantage for us and made the transition to online easier.”

It would have been very difficult to transition online without it. People know who we are, and they've got that trust. But we're also discovering what a big commitment it takes. You need continuity,

and to be responsive and timely. We've generated lots of momentum and goodwill, but I'm looking forward to when things open up again and we can work face-to-face with the study participants. When that happens, it won't take long to ramp up again, but I'll know that should we need them, we've got new ways to stay connected.

Find out more about the SuperMIX study at burnet.edu.au



Arnis' story

SUPPORT OF BURNET CONTINUES IN RETIREMENT

It is almost a year since Arnis Stonis left Burnet as Key Relationships Manager to spend more time with his wife, Deb, who had been diagnosed with pulmonary fibrosis, a progressive disease of the lungs.

“Deb and I intend to travel (COVID-19 permitting) whilst she remains fit enough to do so. Our first ‘trip’ was to relocate to Canberra, where we have many relatives. Moving to a new environment after decades of living in Melbourne has been both an adventure and a reinvigorating experience. Canberra’s many cultural, scientific, and arts-related institutions have inspired us to increase our community involvement, which already has led to a richer and more active lifestyle.”

Arnis created many strong relationships with Burnet supporters, keeping them updated on our research projects and outcomes, and helping them decide how to make a contribution that was most meaningful for them. It was forging these connections with supporters that he valued most highly.

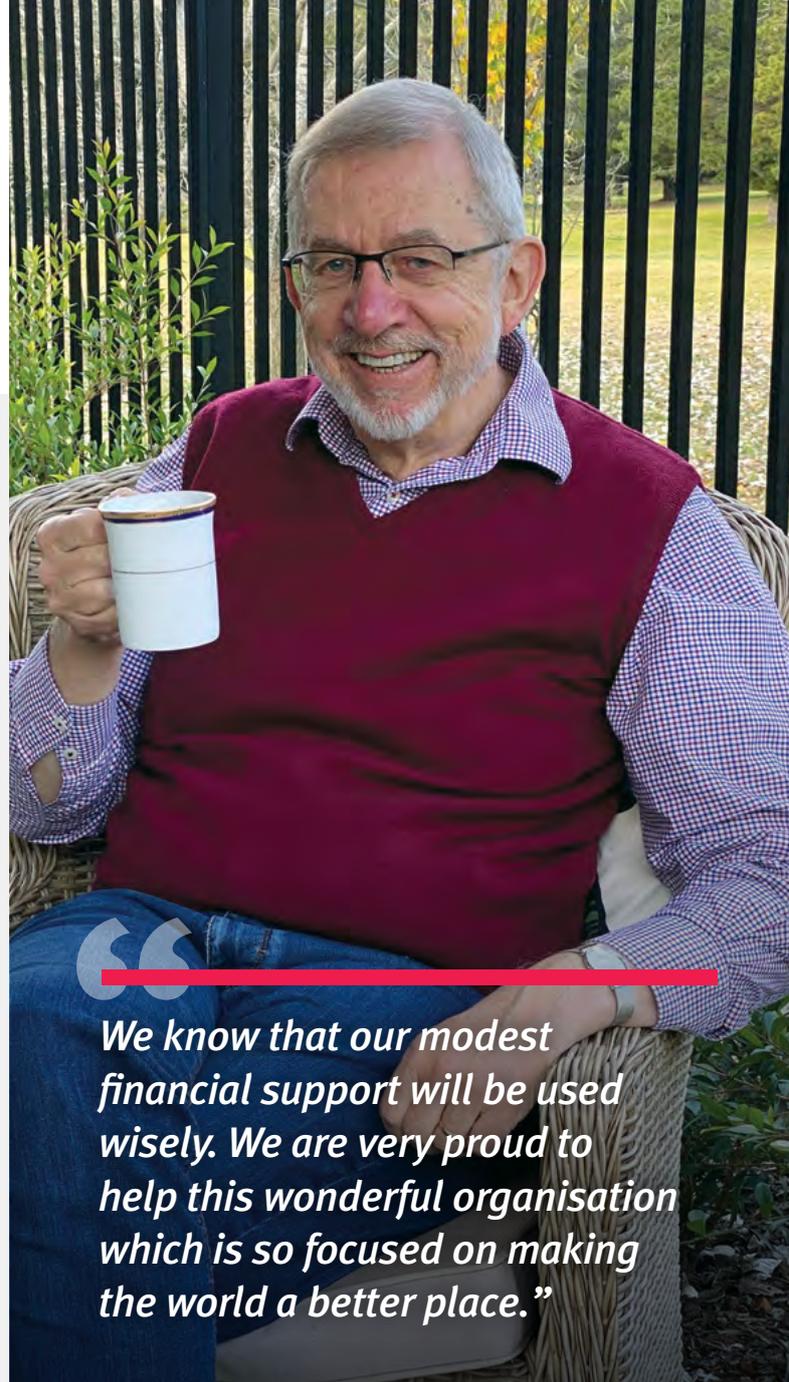
“The best part of my role was interacting with supporters. Many showed a deep interest in Burnet’s work and were keen to provide long-term support – some were donors for over 30 years.”

“Although I can no longer assist Burnet through my work, I am pleased to continue my involvement as a supporter.”

“Deb and I are regular monthly donors and we have also included Burnet in our Wills. Burnet will receive a percentage of our combined estate.”

Arnis remains passionate about Burnet’s research and public health programs, what they mean for the world’s emerging communities, and the very real difference supporters can make through philanthropic gifts.

“I know from personal experience that Burnet scientists are highly skilled, innovative and dedicated, resulting in quality medical research and transformative public health programs. But there is also a passion at Burnet for social justice and equality of opportunity, so the organisational focus is on supporting the vulnerable and under-privileged. Many people in this world (particularly the disadvantaged) would have much less opportunity in life if it were not for the wonderful work of Burnet. This makes Burnet special.



We know that our modest financial support will be used wisely. We are very proud to help this wonderful organisation which is so focused on making the world a better place.”

“Burnet’s vital work and its compassionate ethos must be both enhanced for current benefit and preserved for the benefit of future generations. I encourage everyone to regularly support Burnet with donations and to leave a legacy for future generations by including a gift in your Will for the Institute.

“It was a privilege working for Burnet over the years. The Institute is a very caring and supportive employer. Deb and I have a great deal of trust in the scientists and management of Burnet Institute.”

WE THANK ARNIS AND DEB FOR THEIR ONGOING COMMITMENT AS MONTHLY GIVERS AND BEQUESTORS.

If, like Arnis, you can support Burnet Institute through a gift in your Will, please contact Ms Penny Burke on +61 429 461 661 or penny.burke@burnet.edu.au

HAVE YOU LISTENED TO BURNET'S PODCAST?

Co-hosted by Professor Brendan Crabb AC, one of the best minds in infectious diseases and global health, and former ABC Radio journalist Tracy Parish. Hear stories from some of Australia's visionary scientific thinkers to help make sense of the pandemic and give us hope.

EPISODE 1

A year like no other, the pandemic continues

EPISODE 2

Are vaccines the silver bullet?

EPISODE 3

No-one is safe, until everyone is safe

EPISODE 4

Everyone's an epidemiologist!

EPISODE 5

Is COVID-normal really possible?

EPISODE 6

Motherhood in a time of pandemic

EPISODE 7

Modelling COVID-19 –
Can we predict the future?

EPISODE 8

Lost Voice – COVID's impact
on eliminating malaria

Produced by Written & Recorded

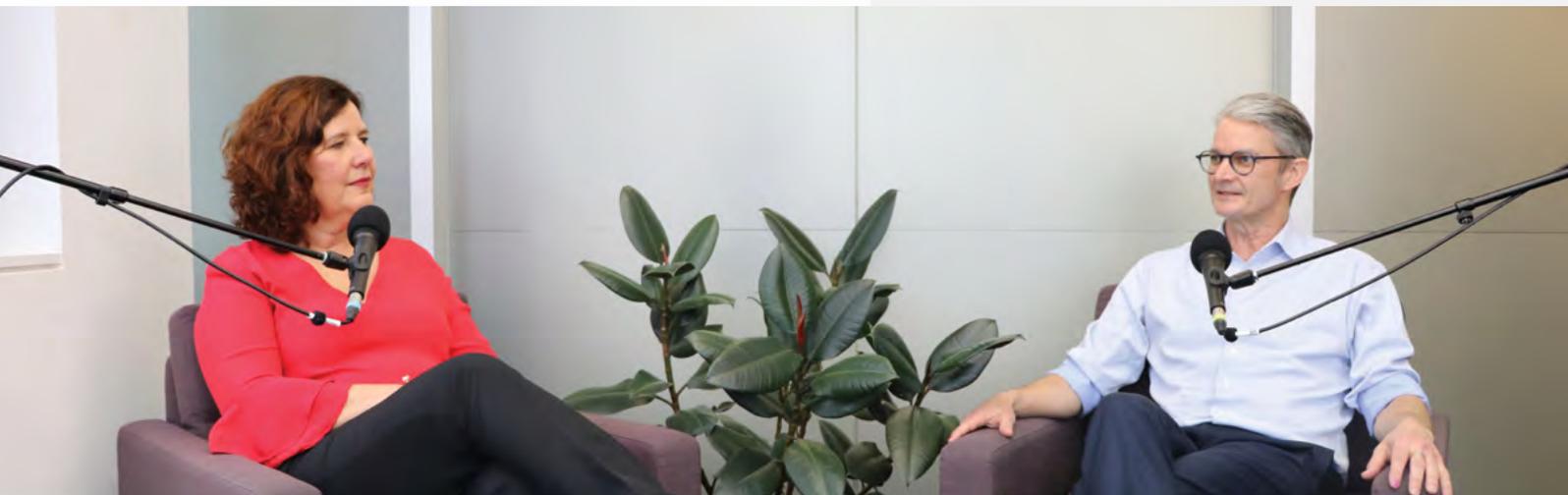
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