MEDIA RELEASE

2020 Prime Minister's Science Communication Prize

An Epidemiologist behind New Zealand's eliminate Covid-19 strategy wins Prime Minister's Science Communication Prize

Professor Michael Baker MNZM, an epidemiologist with the University of Otago, Wellington has won the 2020 Prime Minister's Science Communication Prize.

He is a Professor of Public Health, Director of the Health Environment Infection Research Unit, and Leader of Co-Search, a Health Research Council funded group conducting multi-disciplinary research to support the Covid-19 response.

Michael has been New Zealand's go-to science expert since the start of the pandemic. He has done more than 2,000 interviews since January 2020, contributing over 30% of the total science outputs recorded for the 70 commentators tracked by the Science Media Centre.

Michael describes the period at the start of March 2020 just before New Zealand went into lockdown as the "the most intense period of my working life". He says he had developed the concept of Covid-19 elimination and concluded that it was the optimal response strategy. He also concluded that New Zealand needed an intense lockdown to stamp out the virus and give the country time to build the capacity to manage the pandemic. Michael promoted these ideas actively through multiple forms of science communication in early March and was hugely relieved when they were adopted by the Government.

"With this pandemic I felt absolutely compelled to communicate because at some points I thought New Zealand was heading off a cliff, particularly a year ago when we were at a real crossroads on whether we would continue following the rest of the Western world—which seemed to me absolutely the wrong direction—or would forge a different direction which has become the Asia Pacific approach to eliminating this virus, so that's one of the things that drove me.

For Michael, the first priority with science communication has been to get the science right. Michael has been one of New Zealand's most prolific researchers on Covid-19. He has published more than 25 peer-reviewed publications on this disease, including papers in the world's highest impact medical journals (NEJM, Lancet, and BMJ). Michael was lead author of the world's first published Covid-19 elimination strategy (published in the New Zealand Medical Journal on 3 April 2020).

Over this period Michael, along with colleagues Prof Nick Wilson and Dr Amanda Kvalsvig, produced around 50 science blogs and features, some published on their own Public Health Expert blog, some on The Conversation and others in the Guardian and in NZ newspapers and websites.

Michael says the benefits of writing science blogs and features are two-fold.

"Firstly, writing for a non-specialist audience is one of the best ways of sharpening up your messages. Secondly, these blogs and features are picked up widely by policy makers and media in New Zealand and internationally."

Michael's communication has increasingly had an international focus with more than 100 interviews with international media. His research, showing that the elimination strategy protected public health and also supported better economic recovery than alternative suppression and mitigation

approaches, was published in the high impact BMJ just before Christmas 2020. The paper has had more than 90,000 views. Following this publication Michael was invited to give evidence to the United Kingdom and Scottish Parliaments about how best to manage the pandemic.

The Prime Minister's Science Prize comes with $75,000 and much of this money will go to support the establishment of a Public Health Communication Centre to be based in the Department of Public Health at the University of Otago, Wellington. The new Centre will aim to communicate evidence to the public and decision-makers about opportunities to improve public health, equity, and sustainability.

Michael says that science communication is just one part of New Zealand's successful Covid-19 response.

"In New Zealand's case we had a courageous Government that was prepared to act decisively to protect public health. We also had a highly effective public service and health sector that could implement the elimination strategy, and trusted communicators in the Ministry of Health like fellow public health medicine specialist Dr Ashley Bloomfield who fronted the response day after day. And finally, the media in New Zealand have performed exceptionally well in communicating the science. The collective work of all these people has built a high level of public support and social license for the Covid-19 response."

Michael is hugely appreciative of his supportive whānau at home and work who have allowed him to devote so much time to his Covid-19 work over the last 15 months.

Michael has been an active science communicator throughout much of his 30-year career in public health. He has actively engaged in a wide range of issues, from healthy housing, to the need to reduce campylobacter contamination of chicken, and the importance of greater investment in public health.

Michael says science communication has three important functions.

"For me the first one is the translational aspect. You have scientific knowledge, evidence if you like, that needs to be translated into policy responses. This has been my single biggest goal with science communication during Covid-19 but also during my previous 30 years as a doctor and scientist.

"A second important function is communicating health promotion information to the public about the kind of behaviours they can adopt to protect their health and the health of their whānau and communities.

"And the third area is around science literacy and that's really strengthening trust in science and understanding evidence. I think that helps the public, helps everyone, take control of their lives and gives them skills to make good decisions instead of being easily swayed by misinformation. These skills will also improve the resilience of communities.

"This public understanding of the reasons for taking action also gives Governments the social licence to act. And I think one of the benefits of our successful response to Covid-19 is the public has gained a greater understanding of using evidence in constructive ways."

"I do have a sense of idealism that we can actually do much better in New Zealand and globally at combatting the huge threats and challenges that we face. And I love the idea that government can actually pick up these ideas and it can make a difference in people's lives."

“My greatest hope as we emerge from the current pandemic is that we can use this newfound sense of agency to tackle the many other environmental, social and health challenges we face. Hopefully there is the will and confidence to build a more equitable and sustainable society.”

Michael was appointed a Member of the New Zealand Order of Merit at the start of the year for his services to public health science and was also recently announced as Wellingtonian of the Year. In 2020 Michael received the Critic and Conscience of Society Award (from Universities New Zealand), and the Public Health Champion Award (Public Health Association) for his contributions to public health in New Zealand, notably his work on the Cocid-19 response.

Expanded content:

Go-to science commentator

Michael became the go-to national expert during the pandemic. Since January 2020 he has done more than 2,000 media interviews on Covid-19, far more than any other science commentator in New Zealand. According to the Science Media Centre data there were some months when he did more interviews than all the other 70 identified science commentators combined.

Michael jokes that as an epidemiologist he is “paid to worry” and he recalls first seeing accounts of a novel coronavirus outbreak in China in early January 2020. He did his first media briefing for New Zealand’s Science Media Centre in mid-January and it has just gone from there: “I have done more than 2,000 interviews since the start of 2020 through every media I could think of and even a few I didn’t know existed.”

Michael’s media communication included the full range of live and pre-recorded television, radio, print, and social media. He was a regular guest on Jim Mora’s Sunday programme for several months and did weekly spells on Nights with Bryan Crump and regular slots on Lately with Karyn Hay.

“These interviews often involved responding to questions sent in from listeners. They were a real reminder about how worried people were about the pandemic, particularly in its early stages. It was a real pleasure to be able to reassure people about how they could protect themselves from infection and humbling to admit sometimes that the science was not always clear or I did not have an answer”.

Michael says that he had three lightbulb moments about Covid-19 during early 2020.

“The first was realising in January it was going to be a truly global pandemic. Strangely the World Health Organisation did not describe it as a pandemic until 11 March 2020.”

The second realisation came at the end of February after reading the Report of the World Health Organization-China Joint Mission on Coronavirus Disease that demonstrated China had contained the pandemic in Wuhan. “That had never been done before and convinced me that we should treat this more like a SARS virus and less like influenza so I began advocating very strongly for containment, which became the elimination strategy in March of 2020.”

“And then, the third lightbulb moment for me was in early March when it was clear that we did not have the infrastructure to stop the pandemic, so we needed to lockdown. So that became the other message I started to convey.”

Michael describes the period at the start of March 2020 just before New Zealand went into lockdown as the “the most intense period of my working life”.

Communication in a crisis

The focus of Michael's public health work has been to analyse the evidence and then translate that into policy advice. Ordinarily the end user of that advice may be a small number of people. "Sometimes it's an n of 1 that you have to reach, or it might be just a cabinet committee in the end who are making a decision."

But, with the usual communication channels breaking down with the crisis, Michael saw the need to approach mainstream media.

"Everyone in the system was listening to the media or watching the media regularly to try and work out what was happening globally and locally, so that became the main channel I had at that point to share what I thought was an informed view on how we should respond."

And then, Michael recalls, over one weekend (21-22 March 2020) New Zealand pivoted from its mitigation approach to an elimination approach.

"At that point we left the rest of the western world behind and we followed the Asian model, which is very much around containment.

"It's turned out to be the most effective response to the Covid-19 pandemic, both for protecting public health and supporting economic recovery."

Reasons for science communication

Michael says science communication is important for several reasons.

"For me the first one is the translational aspect, you have scientific knowledge, evidence if you like, that needs to be translated into policy responses. It's been my single biggest goal with science communication during Covid-19 but also the previous 30 years or so as a scientist.

"A second important function is communicating health promotion information to the public about the kind of behaviours they can adopt to protect their health and the health of their whanau and communities.

"And the third area is around science literacy and that's really strengthening trust in science and understanding evidence. I think that helps the public, helps everyone, take control of their lives and gives them skills to make good decisions instead of being easily swayed by misinformation. These skills will also improve the resilience of communities.

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"One thing you realise is there's this rich ecology of science communicators in New Zealand and of course you can't do everything, in fact, it would be wrong to try.

"I am not the person to communicate to some groups. People need communicators who are like them. So they need people who reflect the diverse mix of ages and ethnic groups that make up Aotearoa. That's why it's important to nurture a whole generation of science communicators from many different backgrounds.

"We also have some very good science journalists in New Zealand that often write better than we do as scientists and can take the information to a much wider audience. And that dissemination has, I think, helped to shift government thinking and knowledge and has also taken the public with us.

"By the time we are doing these almost unthinkable things–the whole country going home and staying home for seven weeks– I think the public gets it because they have listened to this communication and its hopefully been picked up by people in their communities and translated into language they understand.

"It's an imperfect process, but you get this feeling that the whole country almost turned on its axis a year ago and said 'Yes, we do want to go home and stay home for several weeks' which was an absolutely unthinkable thing that everyone did."

Getting the science and messages right

Rather than a science communicator, Michael sees himself as a scientist who communicates, and thinks it's important to identify what your communication goals are at each point.

Michael also recognised the need for active research on the Covid-19 pandemic. With close colleagues Prof Nick Wilson and Dr Amanda Kvalsvig and others (including Cheryl Davies from Kokiri Marae) he established a Covid-19 research group (Co-Search) which has been highly productive

Michael has been one of New Zealand's most prolific researchers on Covid-19. He has published more than 25 peer-reviewed publications on this disease, including papers in the world's highest impact medical journals, including New England Journal of Medicine, Lancet, and BMJ.

Michael's largest contribution to global scientific thinking about responding to Covid-19 was he says to be the first scientist to apply the term "elimination" to Covid-19. He was also the lead author of the world's first published Covid-19 elimination strategy, which appeared in the New Zealand Medical Journal on 3 April 2020.

His communication goals have evolved with the science and have aimed to keep New Zealand ahead of the pandemic. These goals have included:

- Encouraging NZ to take a vigorous response to the emerging pandemic (January to March 2020)
- Encouraging adoption of an elimination strategy and lockdown (March to April 2020)
- Encouraging mass mask use as a key control measure along with treating Covid-19 as spread by respiratory droplets and aerosols (April onwards)
- Encouraging the adoption of systematic improvements to strengthen managed isolation and quarantine (MIQ) facilities (July onwards)
- Encouraging a shift from a reactive to strategic response to the pandemic, including creation of a dedicated public health agency and more investment in research and evaluation (Sept onwards)
- Encouraging a more strategic approach to borders, including a traffic lights system and improved pre-departure controls (Nov onwards)
- Promoting public awareness and countering disinformation (throughout)

Since the start of the pandemic, Michael and his colleagues have produced around 50 science blogs and features on Covid-19, some published on their own Public Health Expert blog, some on The Conversation and others in the Guardian and in NZ newspapers and websites.

Michael says the benefits of this activity have been two-fold.

“Firstly, writing blogs for a non-specialist audience is one of the best ways of sharpening up your messages. You crystallise your ideas, so they are clear and concise. Secondly, these blogs and features are picked up widely by policy makers and media in New Zealand and internationally”.

One article he wrote for *The Conversation* had more than a million reads in just a few weeks. “That’s unheard of for most science outputs,” he says.

Michael says he has sometimes chosen to actively respond to Covid-19 misinformation and disinformation. He has countered erroneous statements in the science literature suggesting that Covid-19 is no worse than the flu. Michael took a successful complaint to the Advertising Standards Authority about blatantly misleading Covid-19 claims published by Advance NZ in the lead -up to the last election. He has also responded to incorrect claims by ‘influencers’ in social media and found NZ journalists have been very willing to help in correcting such misinformation. Michael has occasionally debated Covid-19 deniers openly but has generally avoided doing that as it may just serve to amplify their false claims.

“My main strategy in countering misinformation is to use every possible media opportunity to communicate strong, clear, science-based messages about Covid-19 and how to combat this threat and continue to build trust and support for our evidence-informed response.”

Communicating to a global audience

Michael’s communication has increasingly had an international focus with more than 100 interviews with international media. These include live interviews with CNN, BBC, and Al Jazeera. He has also done interviews on Russian and Chinese TV, and channels in places as widespread as Brazil and Kazakhstan.

Michael has done multiple interviews with international newspapers and magazines including the New York Times, Washington Post, the Atlantic, Guardian, New Scientist, The Economist, and Time.

“I’ve noticed a huge global focus on New Zealand because we have taken a different approach to Covid-19 compared with other countries in the western world. There’s huge interest in our response and the elimination strategy here.”

One of his more memorable interviews was with Piers Morgan on *Good Morning Britain* alongside Sweden’s former state epidemiologist Dr Johan Giesecke, who was a proponent of the herd immunity approach.

“One of the strange ironies was that Professor Giesecke had hosted me when I visited Stockholm on sabbatical in 2015 and I regard him as a friend. It felt very strange to be on the other side of the debate with him about the best way to respond to the pandemic”.

Michael has also done several TV interviews in Australia, where his twin brother is a practicing GP. This confused some of his brother’s patients, surprised to see ‘their GP’ on the news.

One of Michael’s communication goals was to take the elimination message to a global audience. His research demonstrated that this strategy was highly protective of public health and supported better economic recovery than alternative suppression and mitigation approaches. He published his findings in the high impact British Medical Journal just before Christmas 2020. (“Elimination could be the optimal response strategy for Covid-19 and other emerging pandemic diseases”). The paper has had more than 90,000 views and an exceptionally high level of attention (its Altmetric score put it among the top 0.01% of papers published internationally). It was also selected as the cover story for the BMJ print edition.

Following publication of this paper Michael was invited to give evidence to the United Kingdom Parliament (U.K. All Party Parliamentary Group on Covid) and Scottish Parliaments (Covid-19 Committee of the Scottish Parliament) about the benefits of elimination or zero Covid as it is also called.

Use of the Prime Minister's Science Prize and future plans

The Prime Minister's Science Prize comes with $75,000 and the majority of this money will go to support the establishment of a Public Health Communication Centre to be based in the Department of Public Health at the University of Otago, Wellington. The new Centre will aim to communicate evidence to the public and decision-makers about opportunities to improve public health, equity, and sustainability.

Michael says one of the first things the Centre will do is follow up with key decision makers about the lessons we can learn from Covid-19 on how they would like to receive information on public health and sustainability issues. The project will also interview active journalists and public health scientists to better understand how scientific and policy information can be communicated more effectively. The project will help to shape the new Centre. Michael will also aim to publish its findings as a case study in science communication during a public health emergency.

When asked how he kept going despite all the demands on him over the Covid-19 response, he said:

"With this pandemic I felt absolutely compelled to communicate because at some points I thought New Zealand was heading off a cliff, particularly a year ago when we were at a real crossroads on whether we would continue following the rest of the Western world—which seemed to me absolutely the wrong direction—or would we forge a different direction which has become the Asia Pacific approach to eliminating this virus, so that's one of the things that drove me.

"But also, I do have a sense of idealism that we can actually do much better in New Zealand and globally at combatting huge threats and challenges that we face. And I love the idea that government can actually pick up these ideas and it can make a difference in people's lives."

Michael is hoping to continue his work to improve the science media environment. He has been a member of the Science Medical Centre Advisory Board for the last five years and hopes to continue that strategic role through his involvement setting up the new Public Health Communication Centre.

Part of a team

Michael says that science communication is only one part of New Zealanders Covid-19 response. It can only succeed in partnership with other key groups, notably Government leaders, the public service, a highly effective media, and ultimately with public support.

"In New Zealand's case we had a courageous Government that was prepared to act decisively to protect public health. We also had an effective public service and health sector that could implement the elimination strategy, and trusted communicators in the Ministry of Health like fellow public health medicine specialist Dr Ashley Bloomfield who had to front the response day after day. And finally, the media in New Zealand have performed exceptionally well in communicating the science. The collective work of all these people has built a high level of public support and social license for the Covid-19 response."

Michael is hugely appreciative of his supportive whānau who have allowed him to devote so much time to his Covid-19 work over the last 15 months. There is his home whānau of wife Katie, son George and daughter Euphemia.

There is also his work whānau in the Department of Public Health at the University of Otago, Wellington, including regular collaborators Professor Nick Wilson and Dr Amanda Kvalsvig, as well as many other supportive colleagues.

Public Health Summer School

One of Michael's other major science communication activities has been leading the University of Otago's Public Health Summer School. Each February there are typically 30 courses covering public health topics such as epidemiology, Hauora Māori, Pacific health, public health law, tobacco control, housing and health, and sustainable cities. The Summer School is well attended, with about 800 course attendances each year.

Under Michael's leadership, over the last 15 years, this summer school has expanded to become one of the largest events of its kind in the world. During Michael's time as co-convenor it has run more than 400 courses with more than 9,000 course attendances.

The 2021 Summer School in February 2021 was opened by the Rt Hon Helen Clark who talked about her work reviewing the WHO response to Covid-19. Courses included one on Covid-19, and a 2-day course focussed on the post-Covid-19 reset and opportunities to improve health and sustainability.

Additional notes on Michael Baker's professional work

Professor Michael Baker is a public health physician and epidemiologist in the Department of Public Health at the University of Otago, Wellington.

He has worked full-time at the University of Otago, Wellington since 2003 and became a professor there in 2013. He was acting Head of Department at the start of 2020 (a position he subsequently relinquished because of work pressure of supporting the Covid-19 response).

He has a wide range of public health research interests, including infectious diseases, environmental health, housing and health and social inequalities. Michael's previous work has focussed on several goals, including the following:

- Reducing the burden of infectious diseases in NZ - Michael has spent more than 25 years researching the epidemiology and control of infectious diseases in NZ, including time at ESR establishing many of New Zealand's surveillance systems. During that time, he has researched and written about virtually every serious infectious disease in NZ. He has received research funding from local and international sources including the US Centres for Disease Control and Prevention. He leads a research programme 'SYMBIOTIC' which received a $5million Health Research Council grant in 2020 to identify better ways of reducing a range of infectious diseases including *H. pylori* infection, which is the leading cause of stomach cancer in NZ.
- Improving food safety in NZ - Michael has carried out ongoing research and advocacy to reduce the allowable levels of campylobacter in fresh chicken. This work contributed to a strong regulatory response in 2007 that resulted in a halving of the incidence of campylobacter infections in NZ preventing tens of thousands of cases and several hundred deaths.
- Improving housing conditions and health in NZ - Michael led research on the role of household crowding in driving NZ's prolonged meningococcal disease epidemic in the 1990s and worked with Professor Philippa-Howden Chapman and others to form He Kainga

Oranga/Housing and Health Research Group in 2000. Research by this group has supported major improvements in housing policy in NZ, including the requirement to insulate houses.

- Improving environmental quality in NZ - Michael established and directs the Health Environment Infection Unit (HEIRU) at the University of Otago, Wellington. This group has a current research focus on improving water quality and reducing climate change effects (mitigation and adaptation). The group is currently publishing its research on the role of nitrates in drinking water as a potential cause of bowel cancer.
- Working to end rheumatic fever in NZ - Michael established and leads the Rheumatic Fever Endgame project supported by the Health Research Council and Cure Kids. This project is seeking to identify interventions to reduce rheumatic fever and rheumatic heart disease which cause particularly high and inequitable disease rates for Māori and Pasifika in NZ.
- Promoting a harm minimisation approach to drug policy – Michael's first project in public health led to establishment of the New Zealand Needle Exchange Programme in 1988, becoming the first national programme of its type in the world and contributing to keeping HIV infection at very low levels in the NZ Injecting Drug User (IDU) population. He has continued science-based advocacy for a harm minimisation approach to drug policy.
- Improving training of the health workforce in NZ – In addition to his role of leading the University of Otago Public Health Summer School since 2008, he was also Director of Continuing Professional Development for the Australasian Faculty of Public Health Medicine (AFPHM) and then the New Zealand College of Public Health Medicine (NZCPHM) from 2002-19.
- Improving public health capacity in NZ - Michael has been a long-term advocate for strengthening public health capacity in NZ. He has used multiple opportunities to highlight this need for effective agencies to promote health, prevent disease, and prepare for future outbreaks, pandemic and other public health threats (see for example: https://m.youtube.com/watch?v=wF6BPIekuPE).
- Contributing to improved international health - Michael has carried out international work with the World Health Organisation, including time in the Western Pacific Region Office in Manila and Headquarters in Geneva. Major projects include working on the design and roll out of the International Health Regulations (IHR 2005) and acting as a member of World Health Organisation Regional Verification Commission for Measles and Rubella Elimination since 2014. Michael has active collaborations with researchers across the globe, particularly on the Covid-19 response, influenza prevention, and rheumatic fever.

Michael's positions include:

- Director, Health Environment Infection Research Unit (HEIRU)
- Co-Director, He Kainga Oranga / Housing and Health Research Programme
- Co-Director, University of Otago Public Health Summer School
- Principal Investigator, Co-Search Programme (HRC funded)
- Principal Investigator, Rheumatic Fever Endgame Project (HRC funded)
- Principal Investigator, SYMBIOTIC Programme (HRC funded)
- Member of the Ministry of Health's Covid-19 Technical Advisory Group (TAG)
- Member of the Advisory Board of the Science Media Centre (SMC)
- Member of the World Health Organisation (WHO) Regional Verification Commission for Measles and Rubella Elimination
- Convenor, University of Otago Health Protection paper (PUBH734)

Previous awards:

- 2021 Member of the New Zealand Order of Merit (MNZM) for services to public health science
- 2020 Wellingtonian of the Year Award and winner of the Science and Technology category for his work on informing the Covid-19 response
- 2020 Critic and Conscience of Society Award, from Universities New Zealand, for his contributions to public health in New Zealand, notably his work on the Covid-19 response.
- 2020 Public Health Champion Award, from the Public Health Association, for his contributions to public health in New Zealand, notably his work on the Covid-19 response.
- 2019 Shortland Medal, from the NZ Association of Scientists, joint award for work to establish the SHIVERS (Southern Hemisphere Influenza Vaccine Effectiveness Research & Surveillance) Project programme with ESR
- 2015 NZ-UK Link Foundation Visiting Professor at the School of Advanced Study (SAS), University of London.
- 2014 Prime Minister's Science Prize as a member of He Kainga Oranga / Housing and Health Research Programme.
- 2013 Liley Medal from the Health Research Council of New Zealand for his contribution to the health and medical sciences.