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Investment Impact Report

The Health Research Council of New Zealand
Te Kaunihera Rangahau Hauora o Aotearoa

April 2022

Contents

From our Chief Executive

Throughout this report we have provided evidence to showcase the incredible research we have funded and the impact it has had for Aotearoa New Zealand and globally. Since 1990 we have invested more than $1.7 billion in health research spanning biomedical, clinical, public health and health service delivery.

Health equity represents the greatest challenge and the greatest opportunity in determining the future wellbeing and prosperity of our country and our people. It is also a key goal of the HRC on our journey to becoming a Tiriti-led organisation. The HRC has a mandate to fund research that will advance the health of Māori and Pacific people as well as other groups who experience health inequity, and we are pursuing it with vigour. We are particularly proud of our commitment to Māori and Pacific health researchers whose work over the past three decades has helped shape and influence health policies while addressing inequities and social disparities.

We've also made strides in strengthening system-wide participation in health research. The health sector has a critical role in connecting research with its end-users, speeding up translation, and ensuring research addresses the most important questions. From life-saving research to halt an epidemic of asthma deaths in Aotearoa New Zealand to the work of researchers preventing brain damage in newborns, HRC funding has supported multiple breakthroughs and changed services and practice in almost every area of health. Most recently the HRC has supported some of Aotearoa New Zealand's most distinguished scientists, academics and clinicians, to guide our country's response to the COVID-19 pandemic with world-leading strategies that have kept our infection rates low and deaths to a minimum.

We know that impact comes not just from what we do, but how we do it – so we are reporting openly on our Tiriti o Waitangi commitments, our contribution to equity and diversity in health research practices and outcomes, supporting a vibrant research environment in the health system and our rapid and agile response to COVID-19.

We hope this report provides not only a snapshot of the impact of the HRC's investment in health research and health researchers, but also a sense of our track record and our future plans.

I'd like to acknowledge our diverse, talented and committed research community for their dedication to improving health and equity outcomes for New Zealanders, through the conduct and communication of their excellent research. The quality of the work is supported by our committee chairs and members, drawn from the research community and broader sector experts. Their participation and leadership are helping to progress our shared goals.

Lastly, I also acknowledge our terrific staff. We are a small organisation with a big heart and huge ambition. I am humbled by their commitment to our mission.

Professor Sunny Collings

Tāhuhu Rangapū | Chief Executive

The Impact the HRC Delivers

The Health Research Council of New Zealand (HRC) is the principal funder of health research in Aotearoa New Zealand.

Excellent research must be at the heart of tackling the challenges that face our society now and in the future. The HRC delivers research that that enhances wellbeing for individuals, whānau and communities; that informs policy and practice to improve the quality and equity of the healthcare system; and that powers a thriving, collaborative health innovation ecosystem. The HRC generates knowledge and discoveries to bring a healthier future for all New Zealanders and secures Aotearoa New Zealand as a leader in high-impact, high-value health research.

Our three strategic drivers guide all elements of our work:

- ***E morimori ana i te kounga me te auaha*: Fostering excellence and innovation**
  We invest in the best ideas and innovations proposed by New Zealand's brightest researchers, designed to improve equitable outcomes, and make a tangible difference to the health and wellbeing of New Zealanders.
- ***Mā te mahi tahi e hua nui ai*: Connecting for greater impact**
  We align and connect funders, providers, and users of health research in New Zealand; we form strategic research partnerships to address priority health issues; and build strong links to international research efforts.
- ***E whakapakari ana I ngā pūkenga me ngā pūnaha*: Strengthening skills and systems**
  We develop and sustain the people, processes and systems required to deliver the ethical, excellent, innovative, and impactful health research New Zealand needs.

Throughout this report we will demonstrate how we have advanced these three goals within key government priorities of:

- Te Tiriti o Waitangi commitments
- Equity and diversity
- Creating a vibrant research environment in the health sector
- Responding to COVID-19

Alongside these priority areas, the final chapter of this report offers a snapshot of the impact of HRC investment between 2019-2021.

This report responds to section C3 of the Crown Funding and RCM Services Agreement (2020-2023) between the HRC and the Ministry of Business, Innovation and Employment (MBIE). It demonstrates the impact the HRC has delivered through responsive and long-running initiatives that characterise our contribution to the health and science sector.

Te Tiriti o Waitangi Commitments

As a Crown agency, we are committed to honouring Te Tiriti o Waitangi and strengthening Crown-Māori relationships. Te Tiriti informs our goals and vision for excellent health research that benefits all New Zealanders, and its implementation is a priority of the government driven by government policy and public sector legislation.

Central to fulfilling our commitment to Te Tiriti o Waitangi is supporting health research that values Māori worldviews and builds Māori research capacity and leadership.

Fostering excellence and innovation

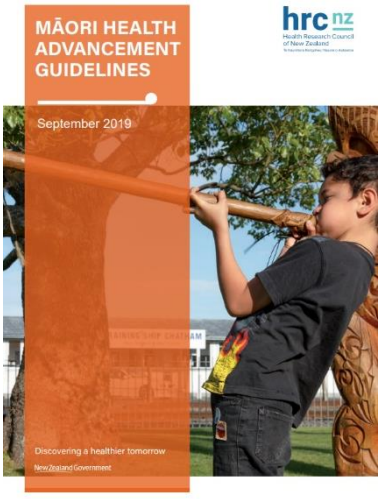
The Māori Health Committee is a statutory committee of the HRC and is responsible for advising the HRC Council on health research into issues that affect Māori. The committee is responsible for distributing funds dedicated to Māori health research and career development.

The HRC's ring-fenced **Rangahau Hauora Māori research investment stream** supports high-quality Māori health research within its Māori-led, Māori-governed assessment processes to advance Māori knowledge and Māori health gains.

In 2019-2021, **$116 million of HRC investment** was committed to research advancing Māori health across the whole portfolio. This includes our major investigator-initiated grant types (programmes and projects), as well as our Māori health research career development awards and Rangahau Hauora Māori funding for Māori-led explorer grants, feasibility studies and emerging researcher first grants. **$41 million** of this investment was specifically recommended through the Māori Health Committee.

Strengthening skills and systems

The HRC considers that all health research in Aotearoa New Zealand can advance Māori health and address inequity. The introduction of the **Māori Health Advancement** (MHA) assessment criterion (seen first in the 2020 programmes round) sent a strong message about our expectations for positive contributions to, and improvements for, Māori health and wellbeing, from HRC-funded research[1].



Discipline-specific science assessing committees have commended the use of the MHA criterion and have noted that this allows distinction between those who have designed research with a clear objective to advance Māori health, and those who have given superficial consideration and therefore run the risk of exacerbating existing inequity.

[1] Details of the MHA announcement and videos featuring researchers discussing the criterion are available from https://www.hrc.govt.nz/maori-health/maori-health-advancement

Research impact showcase: Developing the knowledge for a health system shift towards equity

2021 saw the first HRC Rangahau Hauora Māori programme grant awarded to an iwi-owned health research centre – Whakauae Research Services – owned and mandated by Ngāti Hauiti in the southern Rangitīkei district.

The HRC awarded Whakauae a $5 million programme grant led by Dr Amohia Boulton (Ngāti Ranginui, Ngai te Rangi, Ngāti Mutunga, Te Āti Awa o te Waka a Māui) for research to explore the change that can occur when Māori have greater influence over health decisions and the opportunity to work in authentic partnership models.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TE AO MĀORI / LOCAL DEMOCRACY REPORTING

Iwi research centre awarded $5m to support better Māori health

8:07 pm on 27 July 2021

Share this

Moana Ellis, Local Democracy reporter

moana@awatm.co.nz

An iwi-owned research institute in Whanganui has received $5 million in health research funding for a five-year programme to drive better health outcomes for Māori.

Example impact reports

Whakauae's research programme draws directly on the priorities outlined by the Ministry of Health's vision of Pae Ora (healthy futures for Māori) and builds on the outcomes and priority areas outlined in the recently released Whakamaua: Māori Health Action Plan 2020-2025.

Through previous HRC Independent Research Organisation (IRO) capability funding, Whakauae has worked with community and Iwi-based providers to determine the future health and social service needs of Ngāti Hauiti whānau. Using Kaupapa Māori research methods and co-design processes, Whakauae developed a novel model of service delivery and secured a cross-government funding approach and outcome measurement tool in partnership with their local DHB, the Ministry of Social Development and Te Puni Kōkiri. This is an exciting innovation in health service contracting, with implications for Iwi-based health services provision more widely.

Recognising the need to build research capacity in the community, Whakauae has pioneered an approach to nurturing community research champions through the creation of a community-based research kaimahi position to sit within their local health and social services provider. Whakauae will provide academic support, mentoring and training in the skills and techniques required to undertake community-based research and to embed a research culture within the local service provider.

Supporting and celebrating a Māori health research pioneer

The HRC awarded Dr Boulton the **2021 Te Tohu Rapuora Medal** in recognition of her outstanding leadership and a research career that has helped to advance Māori health services and nurture the next generation of young and emerging Māori health researchers.

The HRC has supported Dr Boulton on her career path starting with a HRC training fellowship, then a Māori Health Research Postdoctoral Fellowship, followed by Project funding, and now the HRC's most prestigious and highest-value grant.

Research impact showcase: Māori-led, community-driven research

Ngā Kanohi Kitea (NKK) community research grants provide an opportunity for iwi, hapū and community groups to investigate a well-defined area of Māori health need or gain, while supporting the development of Māori research capability.

Te Rūnanga o Ōtākou (Ōtākou Marae), based on the Otago peninsula, identified a gap in fall prevention services for Māori living in the takiwa (district). Initial research funded through HRC NKK development and project grants, directly addressed concerns of Rūnaka Upoko, Edward Ellison, that kaumātua Māori were not receiving targeted falls prevention. Kaupapa Māori research and participatory action research principles were applied to address needs identified within rūnaka (iwi authority), consulting with kaumātua (Rōpu Kaiārahi) throughout the research process.

Developed through the research process, Taurite Tū is an exercise programme especially designed for Māori aged 50 plus and their whānau.

Taurite – meaning the balance of everything, and Tū – to stand; refers to standing strong as all the elements of wellbeing are balanced, and of course balanced standing.

Members of Te Rūnanga o Ōtākou have designed this programme with physiotherapists and Māori movement experts to make a safe, engaging programme for older Māori. They run weekly classes at Te Rūnanga o Ōtākou and further afield in Dunedin. The exercises are a combination of exercises from community evidence falls prevention programmes with Te Ao Māori adaptations: te reo Māori, karakia, waiata, mihimihi, whakawhanaukataka, and Mātauraka Māori (kaumātua engagement, exercise, and movement).

Taurite Tū research outcomes demonstrated statistically **significant improvement in falls risk** and **positive engagement of Māori community with attendance and retention rates over 85%**.

The research team has gone on to secure further funding through the HRC-ACC funding partnership for research to achieve equity for ageing Māori.

Providing falls prevention and rehabilitation services in a culturally appropriate way is a key to improving inequitable access issues for Māori and aligns with core ACC goals.

Based on the research team's initial success with engaging and reducing falls risk for older Māori through their HRC NKK funding, they are well poised to assess applying the Taurite Tū template within other rūnaka and address barriers for Māori to service access.

Otago Daily Times

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Monday, **1 March 2021**

Programme for elders celebrated

By John Gibb

News > Dunedin

Dunedin kaumatua (elders, from left) Anne Robertson, Otakou upoko (head) Edward Ellison, project leader Katrina Bryant, Eva Ruru and Mere Montgomery at Toitu Otago Settlers Museum recently. PHOTO: LINDA ROBERTSON

Connecting for greater impact

Looking ahead: Redesign of the Ngā Kanohi Kitea Community Advancement Fund

The HRC is making research funding more accessible to Māori communities, with the upcoming launch of the redesigned **Ngā Kanohi Kitea (NKK) Community Advancement Fund**, supported through MBIE's Vision Mātauranga Capability Fund (VMCF).

Over 2020-2021 the HRC worked with MBIE colleagues to revise our NKK fund to better align with MBIE's VMCF objectives.

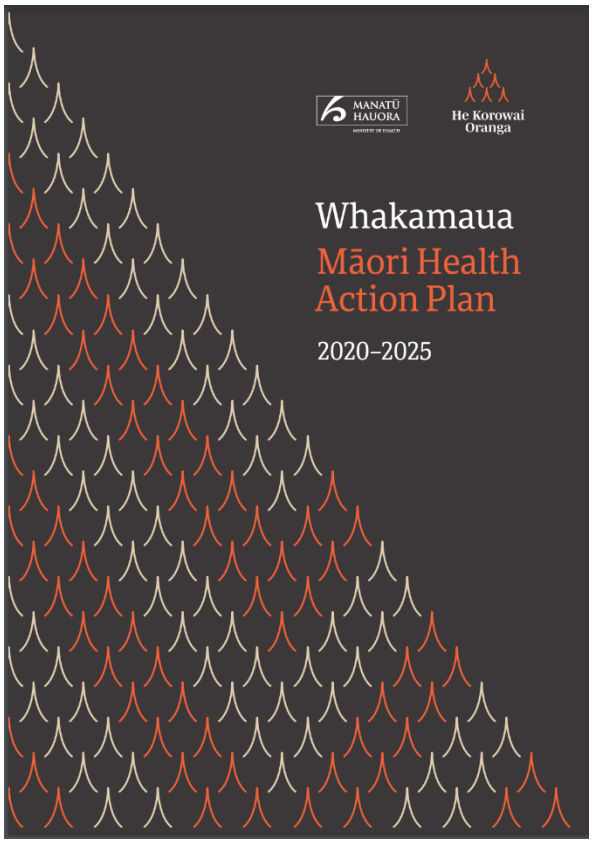
The fund will enable iwi, hapū, and other Māori community groups to undertake research that improves hauora/health outcomes for their communities. The revised fund is more responsive by providing greater scope and opportunity to nurture research skills and prepare communities to identify and investigate issues that matter to them most.

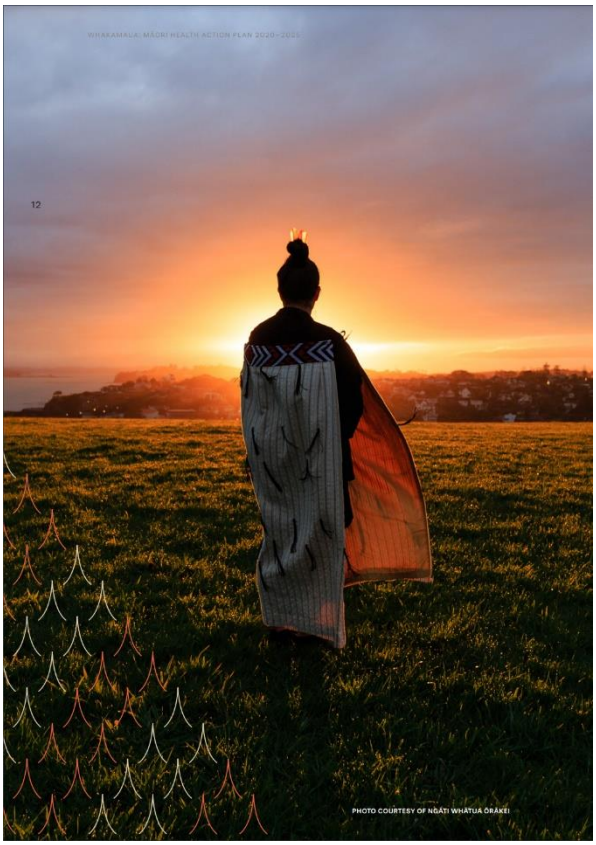
Funding will be available to match different stages of the research journey, depending on a community's research ability and readiness to undertake research.

The new look NKK investment round will open in June 2022.

Looking ahead: Partnering for impact on the Whakamaua Māori Health Action Plan

In late 2021 the HRC and Ministry of Health partnered to invest in high-quality, independent implementation research centered on the Ministry of Health's *Whakamaua: Māori Health Action plan 2020-2025* (Whakamaua). The research will inform the implementation, progress, and direction of Whakamaua, and support pae ora for Māori. Māori-led research is sought to advance Māori insights and evidence within the health and disability sector.





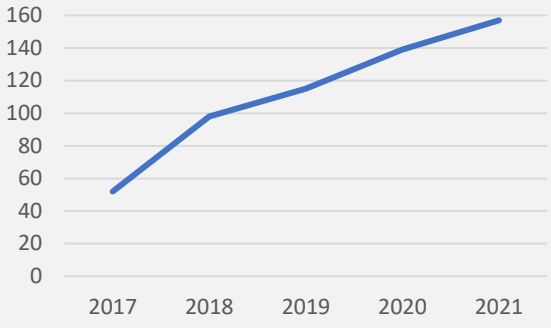
Equity and Diversity

Building towards health equity is an underlying goal across all three of the HRC's strategic drivers. A strong focus on health equity is at the heart of how the HRC makes a difference.

Fostering excellence and innovation

For many years the HRC has been tracking the extent to which our investments have the potential to contribute to evidence that service-providers and policymakers can draw on to improve equity[2]. We report this equity performance measure in our annual reports. As can be seen in figure 1, the number of contracts with a focus on understanding and building equity in health outcomes has continued to grow.

Figure 1: Number of contracts with a focus on understanding and building equity in health outcomes



In 2019-2021, the HRC Council approved programme and project funding of **$167 million** for research that included **a focus on improving health equity**.

Research funding was directed to improving health equity for many groups and for those who experience inequity on multiple levels. This includes health equity for Māori, Pasifika, and other ethnic groups, and health inequity based on disability, gender, sexuality, socio-economic status, or geographic location.

Pasifika Research Spotlight

The HRC supports Pacific health research that contributes towards achieving better health outcomes for Pacific peoples, families, and communities.

The HRC introduced a dedicated funding mechanism for Pacific Health Research projects in 2017.

Investment has continued to grow, with **a record number of Pacific projects** funded in 2020, and **a record total investment ($5.8 million) into Pacific projects** in 2021.

Sixteen per cent ($36 million) of our major investigator-initiated grant types (programmes and projects) funded in 2019-2021 were classified as **Pacific-led** or including **Pacific partnership**. This investment grows to **$44 million** when looking across the full portfolio, including our Pacific health research career development awards and Pacific emerging researcher first grants.

[2] Definition of equity in the New Zealand Health Research Prioritisation Framework, based on the Ministry of Health: "*In Aotearoa New Zealand, people have differences in health that are not only avoidable but unfair and unjust. Equity recognises different people with different levels of advantage require different approaches and resources to get equitable health outcomes*."

Research impact showcase: Following the life-course of Pacific Island children and their families

The HRC has part-funded the Pacific Islands Families (PIF) longitudinal study since it began at Middlemore Hospital 20 years ago. The study follows a cohort of almost 1,400 Pacific children and their parents over their lives and within their family environment.

The study has helped shape and influence health policies and practice around physical activity, food patterns, diabetes risk factors and the physical, social, built and family environment. The study has also informed the curriculum to train those who work in the health sector of the Pacific community and helped address social disparities faced by Pacific peoples in Aotearoa New Zealand.

In supporting a strong platform for Pacific Island health research in Aotearoa New Zealand, the HRC has created a thriving hub for building capacity and capability of Pacific researchers.

Supporting and recognising a Pacific health research leader

The PIF study provides a model for how to support and nurture researchers throughout their career and create a space for researchers to grow and belong. The PIF study's current Director, Dr El-Shadan Tautolo first received HRC funding in 2004 with an HRC summer studentship. With continued HRC support, Dr Tautolo has cultivated his academic career within the PIF study, through PhD and post-doctoral research grants and onwards to leading HRC project grants before becoming PIF Director. In **2021 Dr Tautolo was appointed Chair of HRC Pacific Health Research Committee**. Dr Tautolo is a passionate advocate for developing and mentoring young Pacific health researchers. The HRC is very grateful for his continued service.

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PACIFIC

Pacific Islands Family Study reveals the importance of cultural connection

From Summer Times 2021/2022, 9:13 am on 5 January 2018 Share this

Dr Dan Tautolo is following the lives of nearly 1,400 Pacific Island babies born at Middlemore Hospital in South Auckland in the year 2000.

He's the director of AUT's Pacific Islands Family Study – the only study in the world tracking the health and development of Pacific children.

The kids in the study are now 17 and starting life away from school, and Dan says he's hopeful for their futures.

Dr Dan Tautolo, director of the Pacific Islands Family study in NZ Photo: Supplied / AUT

Strengthening skills and systems

The HRC develops and sustains a strong and diverse health research workforce with the skills required to deliver the equitable, excellent, innovative, and impactful health research.

The HRC are the only agency in Aotearoa New Zealand funding dedicated training programmes across the career spectrum for Māori and Pacific health researchers.

Between 2019-2021, the HRC supported 57 Māori health researchers through the Māori Health Research career development awards, and two emerging researchers through the Rangahau Hauora Māori research stream.

Sixty-nine Pacific researchers were granted studentships, scholarships, and fellowships, with more than 50% of proposals received through the 2020-21 Pacific Health Research career development awards and Pacific emerging researcher first grants successfully funded.

Across the portfolio, the HRC supported **614 Māori researchers** and **263 Pacific researchers** in 2019-2021 (this represents 17% and 7% respectively, of all researchers named as investigators on HRC contracts).

From historic graduation to policy impact

In 2019 HRC-funded researcher Chanel Phillips (Ngāti Hine) became the first doctoral graduate of Te Koronga, the Māori postgraduate research excellence group at The University of Otago. Dr Phillips was awarded the prestigious 'exceptional thesis' status in sciences for her research. Dr Phillips was supported by a HRC Māori PhD scholarship and progressed to a named investigator on a 2019 HRC project grant.

Dr Phillips' Wai Puna mātauranga Māori theory of water safety, developed using HRC funding support, formed the basis of *Wai ora Aotearoa: Navigating to a safer future. New Zealand Water Safety Sector Strategy 2025*. **It is the first time a sector-wide water safety strategy has been underpinned by a Māori worldview.**

Connecting for greater impact

The HRC's Partnership Programme offers our most responsive and collaborative research opportunities to meet the evidence needs of communities, policymakers and those involved in healthcare delivery. The HRC ran **25 partnership funding rounds** across 2019-2021.

A number of partnerships across 2019-2021 were health equity focused, run in partnership with other government agencies to address key areas of need, that align to Domain 2 of the *New Zealand Health Research Prioritisation Framework*[3]. Detailed insight into some of these partnerships is provided on the following page.

[3] The scope of domain 2 includes a people-centred healthcare system that ensures that all members of society have equitable access to health and disability services that are appropriate, deliver to their needs and empower them to achieve and maintain good health

Equity and diversity: connecting for greater impact

Evaluation of primary health care

The HRC and the Ministry of Health co-funded the first comprehensive evaluation of general practice models of care since primary health organisations (PHOs) were introduced in 2001. The research, led by Professor Nicolette Sheridan (*Massey University*), explored the complexities of access to care, and continuity of care, as experienced by patients and whānau. The findings form the **largest-ever collection of primary care data in Aotearoa New Zealand** and come at a time when significant health reforms are in motion. Evidence from this study will inform ongoing selection and refinement of Aotearoa New Zealand's general practice models of care.

The research found that Māori providers and Pacific providers of general practice had a clear focus on the social needs of their enrolled population. There were a higher proportion of nurses working in these practices. Nurses were found to be responsible for much of the systematic work that the researchers suggest underlies better performance by practice types in the research findings, such as immunisations and screening. However, a large proportion of nurse work was not attributed in practice records and therefore remained 'invisible'.

Towards a national, equitable and sustainable clinical trial system in Aotearoa New Zealand

The HRC and the Ministry of Health co-funded a collaborative research team to deliver evidence-based recommendations to develop a sustainable, nationally coordinated, and equitable clinical trials system in Aotearoa New Zealand.

The results will directly inform what a new operating model for public sector clinical trials data and systems looks like in Aotearoa New Zealand, in line with leading international approaches to ensure more New Zealanders – particularly those living in rural communities and Māori and Pacific people – have equitable access to the latest and most cutting-edge healthcare.

The research team will be providing a **road map of critical success factors** for clinical trial infrastructure, data systems and curation, equity and consumer engagement, workforce capability, and knowledge translation and implementation.

The Ministry of Health see the outcomes of this clinical trials research as a case-study to inform the health reform work programme, with the goal of **fostering a learning health care system** where research is embedded in practice to ensure continual improvement in health care delivery.

Research to inform trans, non-binary and takatāpui-inclusive maternity care

The HRC and the Ministry of Health co-funded research to directly inform the development of policy and practice for Aotearoa New Zealand's maternity services to **achieve equitable maternal and infant health outcomes** and support a quality improvement culture within maternity services.

One research project, led by Dr George Parker (*Victoria University of Wellington*) will fill the current evidence gap for how trans, non-binary and takatāpui people and whānau experience Aotearoa New Zealand's maternity services within our unique midwife-led care model.

The research findings will inform future policy direction and educate health professionals to provide **clinically and culturally competent care**.

Optimising lung cancer screening for Māori

University of Otago senior Māori health researcher Professor Sue Crengle (Kāi Tahu, Kāti Māmoe, Waitaha), a GP, public health medicine specialist and member of the Māori Health Authority, is leading the **first trial of lung cancer screening in Aotearoa New Zealand**. Funded by the HRC through our membership with the Global Alliance on Chronic Diseases, the trial focuses on developing a lung cancer screening process that will reduce the stark inequities in lung cancer incidence and survival rates between Māori and non-Māori.

The trial is hosted at Waitematā District Health Board, in collaboration with Auckland District Health Board, and includes key clinicians from primary care, respiratory, radiology and oncology services. This trial will provide some **critical early information to help inform what a national, equitable and clinically safe lung cancer screening programme** should look like in Aotearoa New Zealand.

Ensuring our processes match our equity goals

The HRC's investment profile changes from year to year based on the variable nature of the applications received through our largest investigator-initiated funding rounds. To ensure we are investing in the best research to meet diverse needs and achieve improved and equitable health outcomes for all New Zealanders, we engage a wide and diverse range of expertise through our research assessment and review processes.

There are a variety of needs that drive our Science Assessing Committee (SAC) membership selection. Expertise is the main driver of membership, with additional considerations including location, institutional spread, international balance, member turnover, and gender balance.

Tiriti-led and pro-equity goals to elevate Māori voice in decision-making will see the HRC further gowing Māori members' contribution throughout the assessment processes.

Across 2019-2021 the HRC **engaged 769 experts in the HRC assessment processes**. On average one third of the committees' members in the annual funding round were based outside of Aotearoa New Zealand and every committee included Māori or Pacific members. We have also increased the gender balance to 50:50, up from only 35% women in 2015.

During the same timeframe the HRC also **engaged 1651 experts as external reviewers** in the research peer review process. Forty-four percent of our external reviewers were women, and 75% were based outside of Aotearoa New Zealand.

Creating a vibrant research environment in the health sector

Fostering excellence and innovation

The redesigned HRC **Health Delivery Research investment round** was launched in 2020. The redesign included:

- a portfolio of opportunities focused around both people and project pipelines,
- new research activation grants to establish evidence needs and scope research opportunities,
- building new capability and providing research placements, and
- the piloting of a negotiated funding pathway specifically for health care or health service delivery organisations.

The stand-alone Health Delivery Research round exceeded expectations, enabling the HRC to invest **$21 million in health delivery research in 2020**, more than double that of both 2018 ($8.1 million) and 2019 ($7.4 million). The redesign achieves the HRC's goal to increase investment in health delivery research and contributes towards our successful implementation of the *New Zealand Health Research Strategy (NZHRS)* priorities.

The HRC worked with the Ministry of Health and MBIE throughout the redesign process to ensure our changes supported *NZHRS* actions to strengthen health sector participation in research and innovation.

The redesigned funding pathways greatly improve access to funding and strengthen health sector participation in research. In 2018 and 2019 only one DHB host per year was successful in securing health delivery research funding. In 2020 and 2021, this number increased to six DHB hosts per year through the contestable portion of the funding round. The HRC is also working with twelve DHB's through the new **Health Sector Research Collaboration** protected funding pathway, focused on upskilling and empowering health delivery organisations to engage in research that directly responds to health sector and community needs.

The HRC will continue to work with the health and disability sector as the Health Reforms are rolled out to try and ensure that research is considered and embedded as a core function within the changing system.

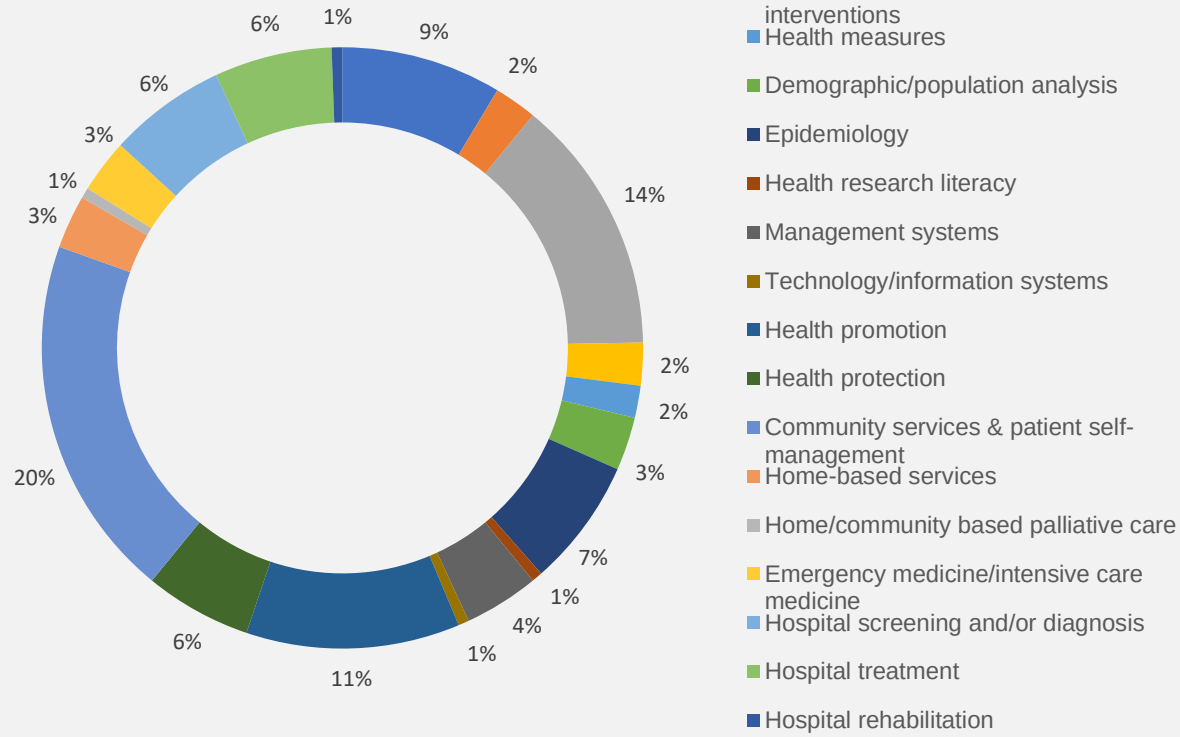
The potential to advance Māori health and improve health equity are a key part of the redesigned health delivery assessment process. The redesign saw an increase in the number of Māori and Pacific-led health delivery research applications, and the proportion funded was higher than the proportion received through the round.

Looking ahead, from 2022 onwards, the HRC have introduced **Māori health clinical research training** fellowships for Māori clinicians looking to advance their research careers. Inaugural awardees include Ms Cara Meredith, Clinical Lead for a Kaupapa Māori maternal mental health pilot at Te Puawaitanga ki Ōtautahi Trust, a kaupapa Māori provider of a range of health, education and social services that are available for whānau and are delivered in their homes.

Improving the way we organise our health system and deliver care

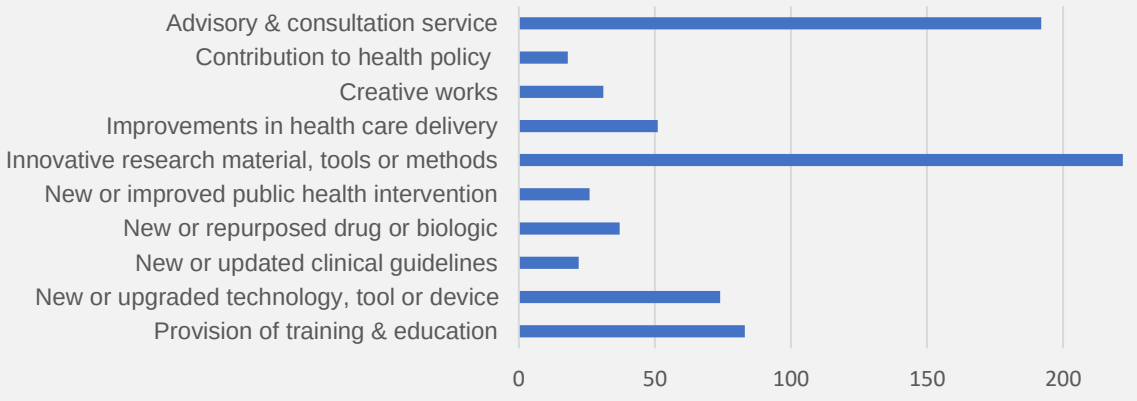
A significant proportion of the research that the HRC funds contributes to improving the way we organise our health systems or deliver care. Figure 2 highlights how HRC investment in our major investigator-initiated grant types (programmes and projects) across the whole portfolio, flows into health research across the entire spectrum of health care delivery.

Figure 2: Proportion of programmes & projects funded in 2019-2021 focusing on different areas of the health system



The metrics shown in figure 3 represent research outputs reported across all HRC-funded research contracts that completed over 2019-2021. This highlights some of the routes through which HRC investment is changing health policy and practice.

Figure 3: Products and processes HRC-funded researchers are using to change policy and practice 2019-2021



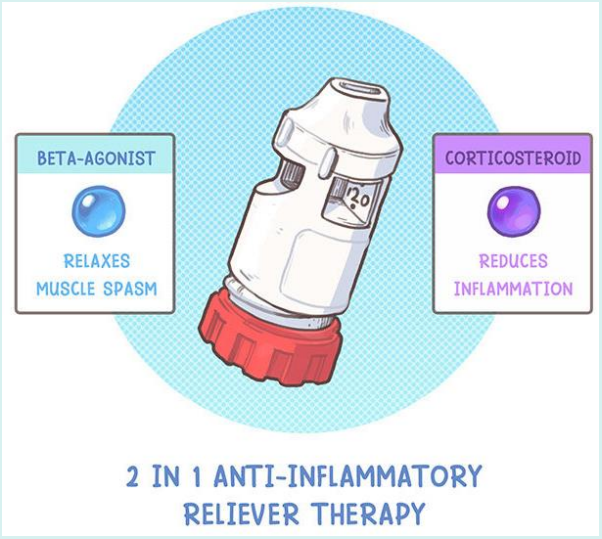
Research impact showcase: Game-changing asthma research

Over the past 30 years, HRC-funded research has changed the way the world manages asthma. Asthma is the world's most common respiratory illness and affects 1 in 6 adult New Zealanders – over 830,000 Kiwis. The cost of asthma to Aotearoa New Zealand is over $1 billion per year.

A multi-disciplinary and multi-talented collaboration of researchers and clinicians, spanning many years of HRC funding have changed the way the world manages asthma, saving hundreds of thousands of lives. In 2019-2021 the HRC presented:

- the **2019 Beaven Medal** to **Professor Richard Beasley** (FRSNZ; the *Medical Research Institute of New Zealand*) for excellence in translational health research,
- the **2019 Te Tohu Rapuora Medal** to **Associate Professor Matire Harwood** (Ngāpuhi; *University of Auckland* and GP at the Papakura Marae Health Clinic) for her outstanding leadership and contribution to Māori health, and,
- the **2020 Liley Medal** jointly to **Professor Mark Weatherall** (*University of Otago*) and Mr Mark Holliday (*MRINZ*) for an outstanding contribution to the health and medical sciences.

Most recently this group of researchers found using a combined 2-in-1 preventative/ reliever inhaler reduced the risk of a severe asthma attack by half in high-risk patients and in those with mild asthma, including for Māori and Pacific asthma sufferers. Given that asthma (and death or illness from asthma) is 30-40% higher in Māori and Pacific patients, this finding will radically change outcomes for Māori and Pacific asthma sufferers.



International asthma recommendations are following Aotearoa New Zealand's lead. The Global Initiative for Asthma guidelines have stated that **the study's findings are the most significant paradigm change in asthma management over the past 30 years**. Following the 2020 update for the Asthma and Respiratory Foundation NZ led by Professor Beasley, 'Anti-Inflammatory Reliever' (AIR) therapy[4] is now recommended by international asthma guidelines as the preferred treatment for mild to severe asthma.

[4] Image created by Dr Ciléin Kearns https://artibiotics.com/medical-illustration

Research impact showcase: Preventing neonatal hypoglycaemia

Hypoglycaemia (low blood sugar) is the commonest metabolic condition of the newborn. It affects up to 15% of babies, and the incidence is increasing as risk factors such as maternal diabetes and preterm birth are becoming more common. Neonatal hypoglycaemia frequently leads to neonatal intensive care unit (NICU) admission and may cause long-term brain damage. Despite neonatal hypoglycaemia having been recognised as the only known common preventable cause of brain damage in newborn babies since the 1970's, the best approach to diagnosis and management of this condition remains unclear. Distinguished Professor Jane Harding and her team (University of Auckland) is working towards changing that.

A randomised clinical trial, conducted in 18 Australian and Aotearoa New Zealand hospitals from January 2015 to May 2019, has already made a particularly important contribution to neonatal care, in its advocacy for fit-for-purpose, accurate blood glucose measurement in neonates.

As a result of this trial and the associated economic analyses, many of the hospitals in Aotearoa New Zealand and Australia have been able to change their practice to use accurate rather than older inaccurate blood glucose monitoring methods. **This will result in improved care for the affected babies, more reliable detection of hypoglycaemia, fewer blood tests and cost savings from reduced laboratory testing.**

Economic analyses[5] estimated that the lifetime hospital and later healthcare costs of a person who experiences neonatal hypoglycaemia are NZ$66,000 greater than those of somebody who does not experience neonatal hypoglycaemia. The net monetary benefit lost due to neonatal hypoglycaemia was NZ$180,000 over an 80-year time horizon. Even under the most conservative of estimates, these findings starkly illustrate the potential benefit of preventing this common condition, which contributes a significant financial burden to the health system both during childhood and over a lifetime.

It is also estimated the potential cost benefit of use of dextrose gel for prevention of hypoglycaemia, based on data from the pre-hPOD dosage trial. The researchers estimated that preventative dextrose gel would save approximately NZ$5,000 per person, while also resulting in improved quality of life. Research into this prophylactic strategy was originally funded by the HRC nearly 10 years ago and found that that an inexpensive ($2) and easy to administer dextrose gel massaged into the inside of a baby’s cheek is more effective than feeding alone for treating low blood sugar.

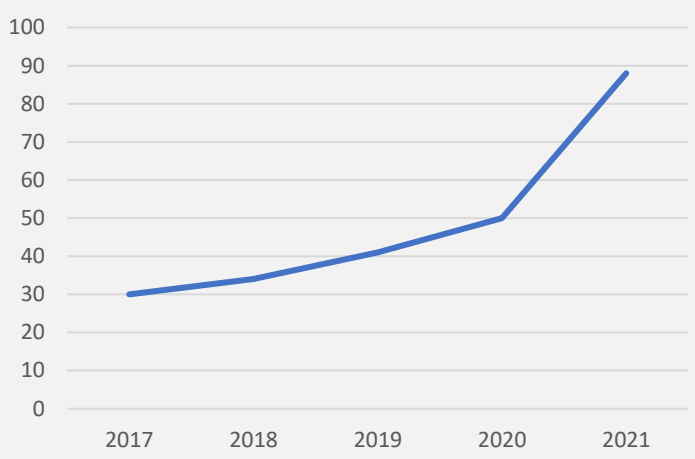
[5] Cost burden and net monetary benefit loss of neonatal hypoglycaemia – BMC Health Services Research, available from https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06098-9

Strengthening skills and systems

A success factor for embedding research within the healthcare system is the interaction between research and clinical practice.

The HRC has invested considerable effort to encourage clinicians to engage in research, as they bridge the gap between discovery and delivery. The HRC has been tracking the extend to which our career development awards contribute to strengthening the clinical research environment. We report this workforce measure in our annual reports. As can be seen in figure 4, the number of career development contracts awarded to practicing clinicians has continued to grow.

Figure 4: Number of career development contracts awarded to practising clinicians.



Redesign of Health Delivery Research investment saw an **increase of nearly 400% in the number of practising clinicians leading health delivery research** grants[6], and an increase of over 300% in the number of practising clinicians supported to undertake health delivery research[7]. Looking across the broader research portfolio for 2019-2021, **39% of all HRC-funded research positions were held by practising clinicians**.

Connecting for greater impact

To ensure the provision of timely, relevant, and responsive evidence, research next- or end-users need to be involved from the outset, whether that be other researchers, community members, policy and decision-makers, health professionals or future commercial investors.

Since the introduction of the HRC's pathway to impact criterion in 2019 there has been an improvement in how research teams target context-appropriate actions within their direct influence to maximise the potential impact of their HRC-funded research. Analysis of applications shows that elements such as:

- generating new relationships and collaborations beyond the immediate research group, and
- embedded or formalised input from research users

are elements that are more frequently present in successful proposals, and in a greater proportion, than in those not funded.

Over a third of local research collaborators were based in public healthcare organisations. Twenty per cent were based in the private sector, including charitable or community organisations, industry, or private practice. Fifteen per cent of research collaborators sat within a broad range of Government agencies, including ACC, Pharmac, Te Puni Kōkiri, Sport New Zealand, Callaghan Innovation, and the NZ Transport Agency.

[6] First named investigator on an HRC health delivery research grant, 2020 compared to 2019.
[7] Named investigator on an HRC health delivery research grant, 2020 compared to 2019.

International connectivity drives global research impact

An analysis of a subset of contracts awarded funding across 2019-2021[8] showed that **163 proposals generated 1190 individual collaborations.**[9] **Sixty per cent of these contracts featured international collaborations**, visualised on the map below.

International connectivity improves our ability to address complex, global health research problems. It also improves our ability to implement an internationally competitive healthcare system.

See detailed research impact showcases on the following pages that highlight international recognition of Aotearoa New Zealand's health research leadership and expertise.

[8] Programmes, Projects, and COVID-19 rounds.

[9] Collaborations defined as a named individual on the research application based outside of the research host organisation.

Research impact showcase: Revolutionising intensive care globally

An example of the global impact that clinician-led research can have is evident in work funded by the HRC and led by the Australia and New Zealand Intensive Care Society Clinical Trials Group (ANZICS CTG).

ANZICS CTG recognises that adequately powered, definitive clinical trials to answer important clinical questions for the treatment of the critically ill can only be undertaken collaboratively, as part of multi-national, multi-centre trial teams. Their milestone patient trials have transformed worldwide clinical guidelines, contributed major financial savings to healthcare systems and significantly improved outcomes for patients being treated for critical conditions.

The estimated saving for the Aotearoa New Zealand health care system is well over **$150 million per year over the past 10 years**, with hundreds of people admitted to Aotearoa New Zealand's ICUs every year now surviving because of the practice changes that have occurred in response to the groups' trial findings.

ANZICS CTG has made a substantial contribution to worldwide clinical practice through research in fluid therapy. IV fluids are one of the most common treatments for patients who are acutely ill. Saline, a low-cost salt and water solution, is among the most used IV fluids. Today more than a million litres of IV saline will be given to patients worldwide. Balanced crystalloids, an alternative to saline used in hospitals worldwide, are salt-based solutions with an electrolyte composition that mimics human plasma.

- Findings from the SAFE study (Saline versus Albumin Fluid Evaluation) based on a clinical trial involving 16 ICUs in Aotearoa New Zealand and Australia between 2001 and 2003, have influenced ICU practice around the world. They showed that the expensive albumin fluid ($332/litre) was not better than more affordable saline fluid ($1.60/litre), and that it was harmful in patients with traumatic brain injury, increasing their risk of disability and death. Saline is now preferred to albumin in ICUs, leading to better health outcomes for patients and an estimated cost savings of ~$137 million per year for the NZ health system.
- More recently, findings from the landmark PLUS study and associated meta-analyses are of major significance for global public health and set to further change clinical practice worldwide. Combined evidence from research in 53 ICUs in Australia and Aotearoa New Zealand, alongside that from a collective of ICU specialists from the United Kingdom, and Brazil, provided compelling proof that for most people who are critically ill, using balanced crystalloids for intravenous fluid therapy rather than saline saves lives. The team are engaged in a focused campaign to ensure the findings are incorporated into practice. The study ranks in the 97th percentile in terms of social media engagement of all New England Journal of Medicine (NEJM) papers published. Compared to papers published in all journals, it is in 99th percentile. NEJM metric data show that the primary manuscript has been viewed by users from almost every country in the world.[10]

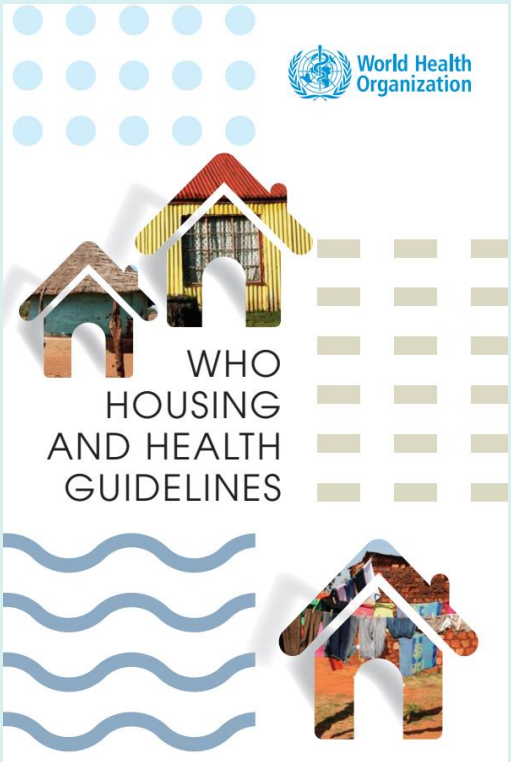
[10] Balanced multielectrolyte solution versus saline in critically ill adults – the New England Journal of Medicine, available from https://www.nejm.org/doi/metrics/10.1056/NEJMoa2114464

Research impact showcase: Healthy homes for all New Zealanders

Aotearoa New Zealand's poor housing quality has created a large health burden, with 28,000 children and 54,000 adults experiencing potentially-avoidable hospitalisations each year linked to poor quality housing. For more than two decades, researchers funded by the HRC have investigated how the condition of houses can impact Aotearoa New Zealanders' health.

The research undertaken by the He Kāinga Oranga / Housing & Health Research Programme team has led to major changes to Aotearoa New Zealand's housing policy, including the Winter Fuel Payment and the Healthy Homes Guarantee Act. As a direct result of their work, questions on dwelling dampness and mould were included in the 2018 NZ Census, a world first. Their evidence base supported the remediation of over 300,000 homes in programmes funded by the Energy Efficiency and Conservation Authority. This is estimated to have **saved the health sector approximately $4 billion and prevented around 80,000 hospitalisations**. An analysis of the impacts of these large programmes has shown an overall 4:1 benefit to cost ratio and a 6:1 benefit-cost ratio for two vulnerable populations, children, and older people.

The quality of this groups' science is well recognised. Research findings from He Kāinga Oranga haven't just had an impact in Aotearoa New Zealand – they have helped shape guidelines internationally, with Distinguished Professor Philippa Howden-Chapman, Director of He Kāinga Oranga and Chair of the WHO International Housing and Health Committee taking a lead role in developing the World Health Organization (WHO) International Guidelines on Housing and Health, which have changed housing policy in Australia, Scotland, the UK, and Canada.

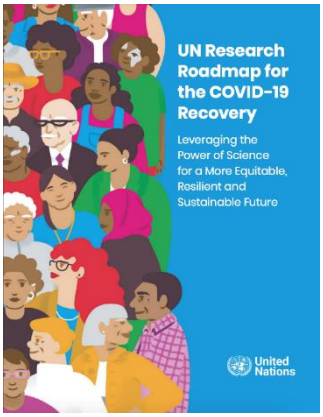


In 2021 He Kāinga Oranga became a WHO Collaborating Centre for Housing and Wellbeing. Distinguished Professor Howden-Chapman is now a director of Kāinga Ora-Homes and Communities, Aotearoa New Zealand's largest Crown Company, tasked with improving the quantity, quality and sustainability of public housing and creating communities.

The team holds a current HRC Programme grant aimed at scaling up improvements to deliver change at a wider population level as despite such significant progress, there are specific gaps that require evidence and action. The team will analyse why some of the interventions included in the WHO guidelines were left out of Aotearoa New Zealand's new mandatory Healthy Homes Standards for rental properties. They will work closely with the Ministry of Business, Innovation and Employment to measure the impact that the Healthy Homes Standards are having on housing quality, including indoor temperatures, air quality, physical and mental health, and mortality.

Responding to COVID-19

The COVID-19 pandemic called upon the HRC and the strong, skilled research workforce that we support, to respond to the urgent and on-going need for health research evidence.



The HRC was at the forefront of Aotearoa New Zealand's research response. Our chief executive, Professor Sunny Collings, participated the World Health Organization's first COVID-19 forum to discuss the international research response. Professor Collings was also part of a large and diverse international team who provided input into the United Nations Research Roadmap for the COVID-19 recovery. The report highlights the choice between returning to business as usual, or opting for transformative change focused on equity, resilience, and sustainability.

The HRC played a leading role in collaborative national research efforts launching four distinct research funding opportunities in response to the emerging threat of COVID-19.

Fostering excellence and innovation

In responding to COVID-19, the HRC recognised the unique opportunity to not only generate knowledge that will help Aotearoa New Zealand recover better from this pandemic, but also future pandemics and other major public health challenges that will arise. The two COVID-19 heath research funding rounds supported solely through the HRC were:

1. The **COVID-19 and Emerging Infectious Diseases** grant focused on research that would provide evidence to strengthen Aotearoa New Zealand's research capacity and response to emerging infectious disease threats.
2. The **HRC COVID-19 Equity Response** initiative aimed to ensure that equity in health and wellbeing is at the centre of Aotearoa New Zealand's preparedness for, and response to, current and future infectious disease threats.

Connecting for greater impact

The HRC also ran two health research funding rounds in partnership with other funders:

3. The **COVID-19 Rapid Research Response** round, jointly funded by the HRC and the Ministry of Health, responded to the immediate outbreak threat and funded projects providing actionable evidence to inform the all-government response.
4. The **NZ and China (NSFC) COVID-19 Collaboration Fund** is a partnership with the National Natural Science Foundation of China providing research funding to address the global threat of COVID-19 and to support the development of collaborative research relationships between the two countries.

Through these four rounds, we awarded **26 grants** to the value of **$10.8 million**, across **13 different research providers**, including several organisations new to the HRC with a strong community focus, alongside DHBs and universities.

This funding enabled research teams across the country to develop a range of solutions (see detail on the next page). Subsequently it has enhanced Aotearoa New Zealand's workforce capability in managing this current pandemic and future infectious diseases.

Responding to COVID-19: impact of HRC-funded research

The HRC funded a data-driven innovation project led by Professor Colin Simpson (*Victoria University of Wellington*) in collaboration with the Institute of Environmental Science and Research (ESR), to undertake forecast modelling to understand COVID-19 public health interventions and therapies and the effect on the Aotearoa New Zealand population and outcomes.

The work done in this grant helped interpret genomic sequencing in real time to rapidly inform the Ministry of Health's public health response. The tools and techniques developed are being used in the ongoing fight against COVID-19 and can be applied to other virus infections such as influenza.

Their findings were published in Nature Communications[11] and The Lancet Regional Health Journal[12]. These are listed as some of the most-read articles in both journals.

The HRC funded the Aotearoa New Zealand arm of the international multi-centre REMAP-CAP COVID trial, coordinated locally by the *Medical Research Institute of New Zealand*. This trial contributed to findings showing that corticosteroids were beneficial for patients in ICU – and that the effect was consistent for those receiving either hydrocortisone or dexamethasone.

These significant findings informed new World Health Organization guidelines which changed how doctors treat COVID-19 patients in ICU.

A further finding from this trial showed that the arthritis drug tocilizumab reduced time spent on organ support for critically ill patients with severe COVID-19.[13]

The HRC funded a project led by Professor Michael Baker (*University of Otago*) aimed at guiding an effective and equitable pandemic response in Aotearoa New Zealand. The team has communicated their insights to decision-makers at the Ministry of Health, service providers, communities, and the public in the form of practical recommendations.

In December 2020, they published a paper in the British Medical Journal (BMJ) which made the case for the elimination strategy being probably the optimal response to Covid-19 as well as other emerging pandemic diseases.[14] Based on the attention it generated and high altimetric score, **the paper was among the top 0.01% of papers published internationally, and 0.1% of papers that have appeared in the BMJ**.

Professor Baker has been a **steadfast expert voice in the media**; and given evidence to two parliamentary groups in the United Kingdom that were reviewing their country's response to the pandemic and how it can be enhanced.

The HRC funded Dr Olin Silander's team (*Massey University*) to develop a faster, lower cost and more robust way to undertake genome sequencing and track the evolution of the virus among people who test positive. The team **helped the Ministry of Health and ESR sequence, validate and track where new cases were coming from by providing emergency sequencing services** with a 24-hour turnaround or less.

"The Midnight Method" [15] **is now one of the key methods used globally for whole genome sequencing of the virus that causes COVID-19.**

Success stemmed from the research team developing two new international partnerships. One with IDT (Integrated DNA Technologies), which makes one of the custom components necessary for this technique, and the other with the world's second largest DNA sequencing company Oxford Nanopore Technologies (ONT) to scale and distribute the Midnight method globally.

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[11] Genomic epidemiology reveals transmission patterns and dynamics of SARS-CoV-2 in Aotearoa New Zealand – Nature Communications, available from https://www.nature.com/articles/s41467-020-20235-8

[12] COVID-19 vaccine strategies for Aotearoa New Zealand: a mathematical modelling study - The Lancet Regional Health – Western Pacific, available from https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(21)00165-6/fulltext

[13] Arthritis drugs improve survival in intensive care patients – BMJ, available from https://www.bmj.com/content/372/bmj.n61

[14] Elimination could be the optimal response strategy for covid-19 and other emerging pandemic diseases – BMJ, available from https://www.bmj.com/content/371/bmj.m4907

[15] Rapid and inexpensive whole-genome sequencing of SARS-CoV-2 – Biology Methods and Protocols, available from https://academic.oup.com/biomethods/article/5/1/bpaa014/5873518

Strengthening skills and systems

COVID-19 has had a huge impact on the research sector, while also demonstrating how critical it is for Aotearoa New Zealand to have resilient and adaptable health research capability available to respond to health crises.

The impact on researchers has been significant:

- limited access to their workplace,
- restricted travel around Aotearoa New Zealand and internationally,
- activation of quarantine protocols,
- doubtful availability of research supplies, and
- limitations to working with research participants.

A particular threat was the retention of critical capability among emerging researchers. Due to often precarious employment situations, research outcomes and careers for emerging researchers are particularly vulnerable to unfunded extensions.

To show support for the research leaders of the future, the HRC contributed approximately **$7 million in additional funding to emerging researchers** supported by existing HRC grants. To date **160 emerging researchers** have received this extra funding.

The HRC also made a range of assessment and investment process changes to support increased flexibility and minimise burden for the health research workforce, while at the same time maintaining robust, fair, and transparent procedures.

This included extensions on all reports due, minimised administrative requirements for contract variations related to COVID-19, funding round closing date extensions, and delaying of assessment for some rounds to ensure those involved on the assessing committee could concentrate their efforts on frontline work or community and public health initiatives.

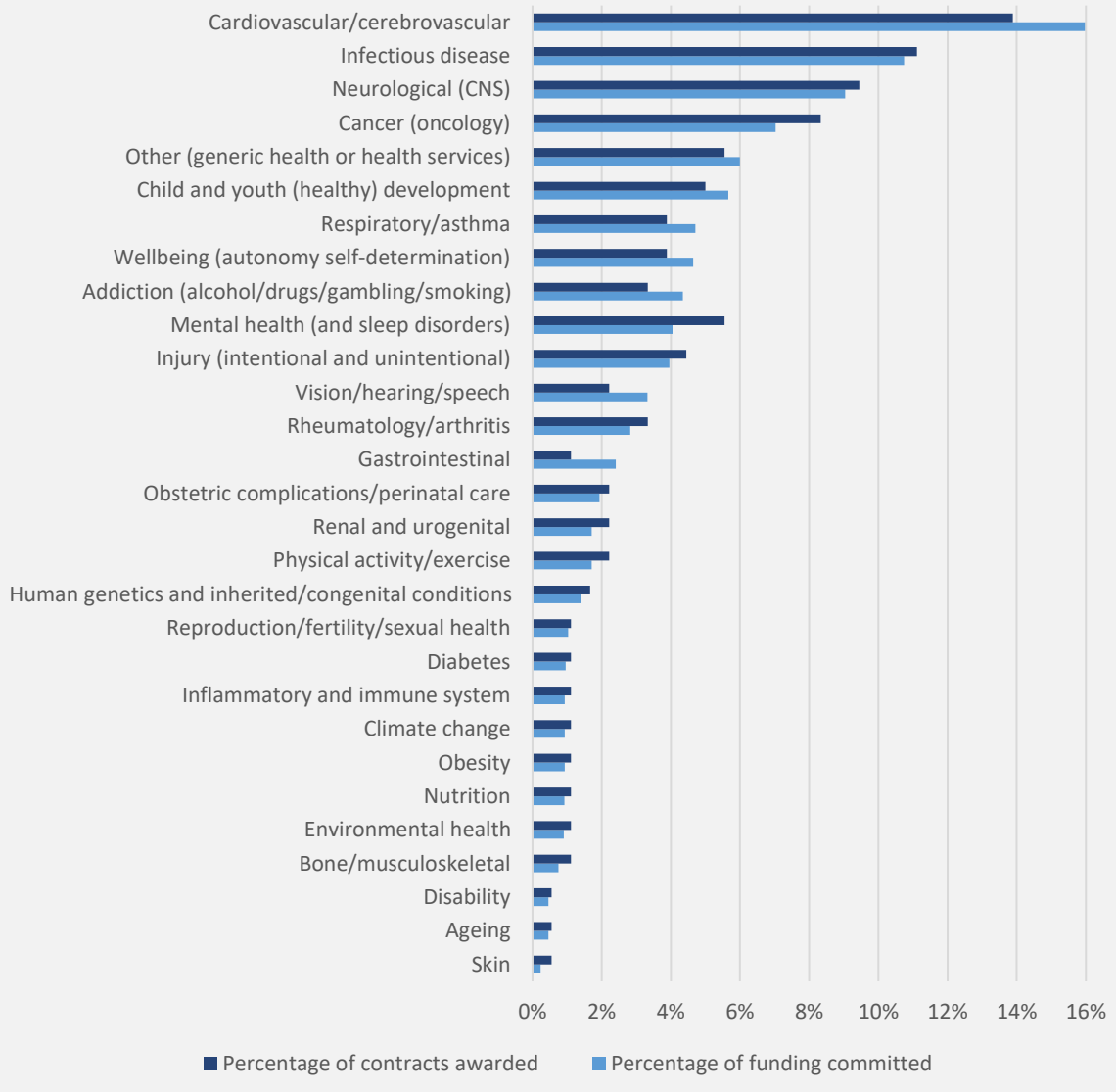
HRC funding snapshot 2019-2021

Since 1990 we have invested more than **$1.7 billion in funding of high-impact health research** which has contributed to saving thousands of lives in Aotearoa New Zealand and across the globe. Our investment spans biomedical, clinical, public health and health service delivery research that addresses the health needs of Aotearoa New Zealand.

According to estimates from the 2017 Global Burden of Disease Study, the main conditions affecting the wellbeing of New Zealanders are cardiovascular disease (CVD), cancer, and dementia. Figure 5 demonstrates how the HRC investment responds to Aotearoa New Zealand's health needs when focusing specifically on the primary health issue of the research. CVD, neurological conditions (including dementia), cancer and infectiousness disease (including COVID-19) featured highly in HRC funded research. We've also invested considerable funding in research on child and youth development, and mental health, wellbeing and addiction research.

The following pages highlight HRC-funded research focused in these key areas.

Figure 5: Proportion of investment by primary health issue for programmes and projects 2019-2021



Research impact showcase: Large and linked health data for targeted treatment

The HRC has invested over a decade of funding into the development of algorithms and software to be used to prevent cardiovascular disease (CVD). The risk prediction tool, developed by Professor Rod Jackson and his team at the School of Population Health, the University of Auckland (also received funding from Heart Foundation and Healthier Lives NSC) places Aotearoa New Zealand at the forefront of web-based clinical decision support systems.

Risk prediction tools allow clinicians and hospitals to target limited resources to the right patients, preventing 30 per cent of cardiac events occurring compared to standard practice. Previous prediction equations used prior to this tool substantially over-predicted the risk of cardiovascular disease in Aotearoa New Zealand leading to unnecessary distress and overtreatment of the healthy majority.

- The web-based tool is now used by one-third of Aotearoa New Zealand primary care practices, and the algorithms have been utilised by others ensuring that almost all primary care practices now capture the same set of CVD risk factors electronically.
- The Ministry of Health published updated recommendations in 2018 for CVD risk assessment and risk management based specifically on the Aotearoa New Zealand population using the HRC-funded study cohort data.
- The tool has led to a significant reduction in healthcare costs, including hospital and post-hospital care. **Auckland DHB estimate cost savings of between $10M and $20M a year**. Extrapolated across all the DHBs, this could **save our health system $300M a year**.
- 2018 saw the research team publish their landmark study in the prestigious medical journal The Lancet with findings based on over 400,000 primary care patients in NZ.[16]
- The research team has established a nationwide quality improvement programme for patients admitted to hospital with acute coronary syndrome (ACS). They have also produced CVD risk management maps for the NZ Health Quality and Safety Commission's Atlas of Healthcare Variation.

The expansion of their tool in primary care and hospitals now means that they have a considerable national cohort that will have the largest numbers of Māori, Pacific, and South Asian participants of any Aotearoa New Zealand study. This will be further enhanced through linking with Statistics NZ Integrated Data Infrastructure to better measure socioeconomic risk factors. The increased depth and breadth of the data ecosystem has allowed the research team to secure a current HRC programme grant to investigate the significant inequities in vascular disease burden in Aotearoa New Zealand related to both ethnicity and deprivation.

The research team continues to facilitate a change in global clinical thinking and practice to support personalised risk stratification and treatment. To support a learning healthcare environment, the team also aim to demonstrate how individual patient measures required by algorithms can be captured and linked to interventions and outcomes to improve both the algorithms and inform on-going clinical practice improvement.

[16] Cardiovascular disease risk prediction equations in 400,000 primary care patients in New Zealand: a derivation and validation study – The Lancet, available from https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(18)30664-0.pdf

Research impact showcase: Working with whānau to prevent cancer

Gastric (stomach) cancer is the second greatest cause of cancer death worldwide. In Aotearoa New Zealand, its incidence is three times greater in Māori and Pacific people than in non-Māori, non-Pacific people.

Aotearoa New Zealand was the first country in the world to identify a gene mutation responsible for fatal gastric cancer. Thanks to life-saving research led by Professor Parry Guilford and funded by the HRC, members of families with a history of stomach cancer can now undergo a simple genetic test to determine their individual risk. Those who test positive can undergo a total gastrectomy – complete removal of the stomach.

Before this discovery, the death rate for carriers of the fatal CDH1 gene mutation was 70 per cent. The genetic discovery has been made famous by the likes of Stan Walker, who had his stomach removed in 2017, after losing 25 members of his family to gastric cancer.

Since the ground-breaking research, many families in Aotearoa New Zealand have been identified as carriers of the fatal gene mutation. Internationally, it is estimated that over 500 families have been identified and over a thousand gastrectomy surgeries have been performed worldwide.

Because of this research, whānau with hereditary diffuse gastric cancer met with genetic researchers, pathologists, gastroenterologists, surgeons, clinical geneticists and genetic counsellors and pharmacists in Wānaka in 2019 to update the International Gastric Cancer Linkage Consortium clinical management guidelines.

The next step for the researchers will be identifying a drug treatment to inhibit cancer growth so that in the future, those affected have choices other than preventative stomach removal surgery. **Development of an innovative stomach-specific drug delivery system is progressing with further HRC funding support**. It is hoped this will enable effective treatment or prevention of pre-malignant gastric lesions and early-stage gastric cancers without the substantial side-effects of debilitating toxicity to the patient.

Research impact showcase: The impact of managing the rising osteoarthritis burden

As the leading cause of disability in New Zealand, musculoskeletal (MSK) conditions generate health, social, and economic strains on individual quality of life and health system costs.

In Budget 2015 the Government allocated $6 million of new funding over three years to help improve care for people with musculoskeletal health conditions. This includes increasing access to early community-based advice, treatment, education to improve self-management, and rehabilitation to improve function and participation in activities that are important to them.

The Mobility Action Programme (MAP) was developed by the Ministry as part of this $6 million investment. The MAP was designed to align with best practice approaches to early intervention programmes for MSK conditions aimed to deliver evidence informed, community-based, multidisciplinary interventions for adults with MSK conditions. The key objectives of the MAP were to improve the holistic well-being of adults who experience MSK conditions, reduce demand on secondary healthcare services, and address health inequity. It also aimed to provide evidence on the effectiveness of early intervention programmes targeting MSK conditions in the Aotearoa New Zealand context.

In 2020-2021 the Ministry of Health commissioned an evaluation of the MAP programme. The evaluation utilised a new research tool developed through HRC-funded research: the NZ-MOA Model, a state-transition computer simulation model of osteoarthritis disease course and economic evaluation of interventions and intervention strategies.

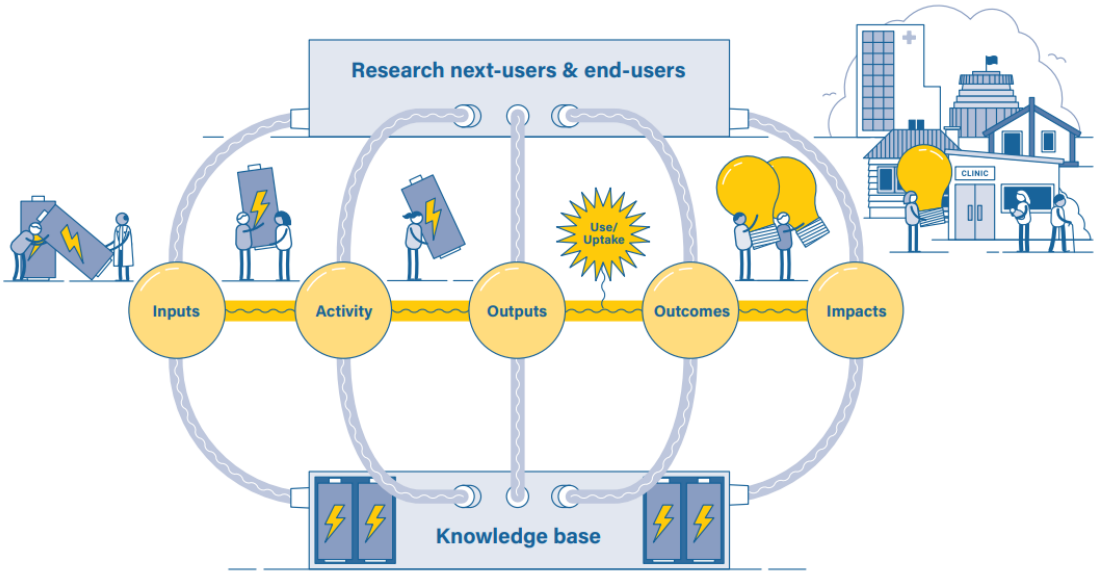
Using this model, the key findings of the Ministry of Health evaluation[17] are directly linked to the initial HRC-funded research outcomes, concluding that Community and primary care early intervention programmes in the MAP:

1) are **effective** – MAP has resulted in health outcome gains for its participants,
2) are a **highly cost-effective** investment – achieving estimated health gains of 155 QALYs in the MAP cohort, and incremental net monetary benefit of $5.4 million,
3) represent **value-for-money**, and the specific focus on priority groups **contribute to health equity** for Māori, Pasifika and those living in areas of higher derivation.

The evaluation recommends an expanded roll out of the MAP, this will lead to policy and practice changes based on the use of the HRC-funded NZ-MOA research tool, and health-service level impacts in accessibility, safety, effectiveness, and efficiency.

[17] Evaluation of the Mobility Action Programme (MAP) 2016-2019, available from: https://www.health.govt.nz/our-work/preventative-health-wellness/mobility-action-programme

Pathways to impact



Research impact is not created by researchers alone; but rather, requires communication, relationships and actions that connects the research to external people, communities and organisations[18].

The first step along the pathway to realising the collective benefits and impact from research is how new knowledge resulting from research is shared and disseminated.

Sharing the knowledge gained through research drives the evidence into the hands of the people and organisations that can use it.

Figure 6: Dissemination routes reported in HRC-funded research contracts that completed between 2019-2021.

Figure 6 illustrates how outputs generated by HRC-funded researchers and reported over 2019-2021, were disseminated.

The primary routes through which HRC-funded researchers share knowledge is via publication of peer-reviewed journal articles and making presentations at conferences.

Increasing investment in the health research system

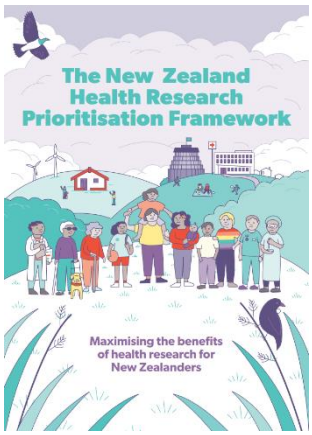
Almost half **(45%)** of HRC-funded research contracts that completed over 2019-2021 reported **leveraging the success of their research to secure further health research**

[18] Research impact is defined in MBIE's 2019 Impact of Research position paper as "*a change to the economy, society or environment, beyond contribution to knowledge and skills in research organisations*" and defined in the 2019 New Zealand Health Research Prioritisation Framework as "*a change in individual, societal, economic or environmental wellbeing, beyond contributions to knowledge and skills*"

funding. As well as the HRC and other Aotearoa New Zealand Government agencies, additional sources of follow-on research funding reported include:

- local and international philanthropic sources such as charities and community trusts, and
- large international funders such as,
    - the US National Institutes of Health (NIH),
    - Australia's National Health and Medical Research Council (NHMRC),
    - the Canadian Institutes of Health Research (CIHR),
    - the UK's Medical Research Council (MRC), and
    - the Wellcome Trust.

Alignment with the New Zealand Health Research Prioritisation Framework



The **NZ Health Research Prioritisation Framework** was launched as Government policy on 2 December 2019. The HRC led the development process, bringing together an independent group of some of Aotearoa New Zealand's leading health researchers, innovators, advisors, and health delivery experts to develop Aotearoa New Zealand's first set of national health research priorities.

The framework prioritises how and why health research needs to be done in Aotearoa New Zealand to drive high-level health and social outcomes and ensure maximum impact from the Government's investment in health research.

Under the new framework, researchers applying for government funding need to:

- address **why** their research is important to **Aotearoa New Zealand**,
- consider **mana tāngata** and advancing Māori health,
- meet the criteria of **excellence**,
- ensure their research has the best chance of delivering **impact**, and
- include measures to improve health **equity**.

All government funders of health research are required to implement the framework. The HRC's implementation of the Prioritisation Framework is underway, across all funding investments and processes. Phase one has focused on Prioritisation Framework-informed redesign of the HRC investment into:

- Health Delivery Research – *launched in 2020*
- Independent Research Organisations (IRO) – *launched in 2021*
- Partnerships and investment in strategic, mission-led research – *to be launched in 2022*, and
- Ngā Kanohi Kitea community advancement fund – *launched in 2022*.

The next phase of Prioritisation Framework implementation will focus on our broader investment processes for funding investigator-initiated opportunities and our investment in people.

Looking ahead

Through the ongoing contributions delivered by our excellent and diverse health research workforce, the HRC will continue to support high-impact research that responds to the health and equity needs of Aotearoa New Zealand.

We will continue our journey to becoming a Tiriti-led organisation. We are exploring how to elevate the role of Māori in HRC decision-making and governance, including consolidating our investment in Māori-led research into a stronger platform that offers greater flexibility and opportunities for self-determination. Bold health equity goals will continue to drive how we invest in health research for Aotearoa New Zealand.

We are proud of the role we play in building and sustaining a strong and diverse health research workforce. We will continue to strengthen our support for people and communities across our investments.

As the health reforms take shape, the HRC looks forward to working with new and existing health agencies to elevate the role of research within the reformed system and help achieve its aspirations.

Recent years have been particularly challenging for the health research community. We are proud of the way in which they have responded to meet some of the research needs that arose from the COVID-19 pandemic. We are indebted to those who contributed their valuable expertise over this time.

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Health Research Council
of New Zealand

Te Kaunihera Rangahau Hauora o Aotearoa