

Briefing Paper for the incoming Ministers of Health and Science, Research and Innovation

Ka Whakarauoratia te Hunga e te Rangahau Hauora Health Research Saves Lives

20th November 2020

Section 1: Summary of recommendations

1. Health research must be embedded as a key enabler of the best possible health outcomes in any design or redesign of New Zealand’s health and disability system. To this end:
 2. The Ministry of Health must hold all publicly funded health service providers accountable through its contracting and commissioning processes for both engaging with health and medical research and demonstrably translating results into policy and practice
 3. The agencies responsible for implementing the New Zealand Health Research Strategy (Ministry of Health, MBIE and the Health Research Council) must be required, and fully resourced to enable them to achieve, implementation by 2027
 4. Prior to their implementation the recommendations of the final report of the review of the New Zealand Health and Disability System must, with the assistance of external expert review, be thoroughly and formally reviewed by Cabinet, preferably through the Health Committee, to ensure among other things that its recommendations will result in better health for all New Zealanders (as required by the Review’s terms of reference), and that health research is explicitly embedded within the health system as a key enabler of improved health outcomes (including reduced premature amenable and non-amenable mortality)
5. Government ringfenced investment in health research must be increased by 21% per year to achieve a target of 2.4% of publicly funded health service delivery costs by 2027. In particular:
 6. The legally required and overdue triennial review of the Health Research Council’s government funding must occur in 2020 and be reflected in substantial multi-year funding allocations in the government’s 2021 Budget
 7. The \$1.9b four-year allocation to improve mental health outcomes must be increased by \$140m to \$2.04b to provide for sufficient provision (ie 2.4% of mental health service costs) to carry out much needed, life-saving, mental health research
 8. The financial returns on government and other sources of health research investment must be quantified in order to inform future health research funding decisions and investment strategies, and to give the New Zealand public confidence that health research is both impacting positively on health care costs and contributing to the country’s economic growth
9. Incentivisation of commercial investment in health and medical R&D must be migrated from relying principally on the government’s R&D tax incentive scheme to a set of specifically targeted strategies (detailed in Section 5 of this document)

Section 2: Introduction

New Zealanders for Health Research (NZHR) was established in November 2015 to bring about increased investment in health research from government, industry and philanthropy. We maintain that the application of knowledge gained from health research saves and improve peoples' lives. We are therefore committed to ensuring that the results of health research are translated into policy, practice and individual decision making, and for there to be a level of investment in health research to enable this to happen as optimally as possible. We demonstrate this commitment by consistently advocating for increased valuing of health research, as exemplified in our 2020 Annual Report.¹

We are led by a board of representatives of selected member organisations comprising University of Otago, Victoria University, Malaghan Institute of Medical Research, Cure Kids, MSD (Merck, Sharp and Dohme), AUT, Douglas Pharmaceuticals and Research Australia. Our complete set of member organisations - from which NZHR receives 100% of its funding - is presented in Section 6. NZHR has consulted with its members in the production of this paper.

NZHR believes that political and government commitment to health research investment has been weak. Echoing sentiments once expressed in a 2008 editorial in *The Lancet*², and noting that the factors identified in the editorial remain largely unchanged twelve years later³, we believed that it was time that health research became an election issue. Although despite NZHR's best endeavours we were not able to achieve this for the 2020 General Election, prior to the election we did publish a report card⁴ in which we awarded Labour a C+.

This grade acknowledged the Labour led government for adopting as policy the previous government's Health Research Strategy and for setting a generic aspirational target for R&D to increase from 1.3% to 2.00% of GDP. Furthermore, in response to NZHR's pre-election request for information Labour expressed a commitment to:

- “ensuring that groups who have not been as well-served by our health system in the past are prioritised in health research”
- recognising “the importance of research and innovation in keeping New Zealanders healthy and preventing premature deaths”
- “sustainably increasing Research, Science and innovation funds, including the Endeavour Fund, the Marsden Fund and the Health Research Council”
- “achieving equitable health outcomes informed by high quality research”

However, we were not enamoured with the following failures and omissions which have either occurred or been perpetuated on Labour's watch:

- Failure to undertake the legally required triennial review of Health Research Council funding
- Government health research investment fell from 0.82% to 0.76% of health care costs
- No commitment to establishing a health research investment target
- Failure of commissioning arrangements to require publicly funded health services to be accountable for commitment to health research
- Tacit acceptance of the Health and Disability System Review report's declining to recommend that health research be embedded as a core component of the health system

¹ NZHR. June 2020. Annual Report. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/10/NZHR-2020-Annual-Report-PV.pdf>

² *The Lancet* Vol 372 August 2008 <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2808%2961284-2>

³ <https://www.linkedin.com/pulse/time-add-health-research-new-zealands-election-agenda-chris-higgins/>

⁴ NZHR. <https://www.nz4healthresearch.org.nz/political-parties-score-poorly-on-health-research-policies/>. September 2020

Prior to the election NZHR released the results of its 2020 opinion poll⁵, which demonstrates the high value that New Zealanders place on health research. Because this value is not well reflected in current policy and investment settings the poll report is subtitled *“health research system fails the team of five million”*.

The remainder of this paper elaborates on each of the nine recommendations set out in Section 1.

⁵ NZHR. 2020. New Zealand Speaks! 2020 Kantar NZHR Opinion Poll. https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/08/NZHR-Report-2020-GENERAL-EDITION-PRINT_newlogos-final.pdf

Section 3: Embedding health research as an essential component of the health system and key enabler of best possible health outcomes

NZHR's vision is improvement in New Zealanders' health and prosperity through health research. We believe that an all-pervasive commitment to health and medical research is fundamental to achieving the best possible health outcomes. The impact that New Zealand health research has had on New Zealanders' health and well-being is well set out by the Health Research Council (HRC) in its publication *Research to Action: Improving the lives of New Zealanders through health research*,⁶ which NZHR commends as a companion document to this paper.

Health Research Saves and Improves New Zealanders' Lives

Life Expectancy and premature mortality

Treasury's Living Standards Framework (LSF) and Dashboard⁷, which has been used to underpin the government's wellbeing budgets, recognises life expectancy as a headline measure of the extent to which the New Zealand population is experiencing best possible health. It is defined as the "number of years that a person under 1 year old can expect to live in good health, taking into account mortality and disability". Increasing life expectancy would be regarded as a positive indicator of an effective health system.

NZHR broadly supports life expectancy as a directly relevant indicator of New Zealanders' health outcomes, and we agree with the inference that the LSF's focus should be on not only merely extending the lives of those who are already elderly. We argue therefore that it is more useful to focus on measures of amenable and non-amenable premature mortality rather than life expectancy per se, noting that if these two indicators improve life expectancy overall should also improve.

Amenable premature mortality refers to the number of New Zealanders under the age of 75 who die unnecessarily as a result of people and/or their clinicians and/or others not making and implementing evidence based decisions which would enable them to live to an age consistent with other New Zealanders' life expectancy (ie "a ripe old age"). In other words amenable premature mortality occurs when there has been a failure to translate evidence based knowledge (ie the results of health research) into policy, practice and individual actions.

NZHR estimates that the number of people who died prematurely and unnecessarily in 2019 was approximately 5000⁸. This represents both a failure both on the part of the health system to perform and the health research system to identify and recommend effective interventions that would see this figure fall significantly. NZHR believes that this is an unacceptably high number, and worse, there appears to be a significant degree of systemic complacency as reflected in both the tacit acceptance of miniscule rates of improvement and extraordinary difficulties in identifying accurate and up to date statistics, as represented in Graph 1 on the following page⁹. (The blue line in this and Graph 2 represents NZHR's internal impact targets)

⁶ Health Research Council. 2015c. *Research to Action: Improving the lives of New Zealanders through health research*, HRC Investment Impact Report for the Ministry of Business, Innovation and Employment. Auckland: Health Research Council of New Zealand. <http://www.hrc.govt.nz/sites/default/files/Research%20to%20Action%20-%20HRC%20IIR%202015.pdf>

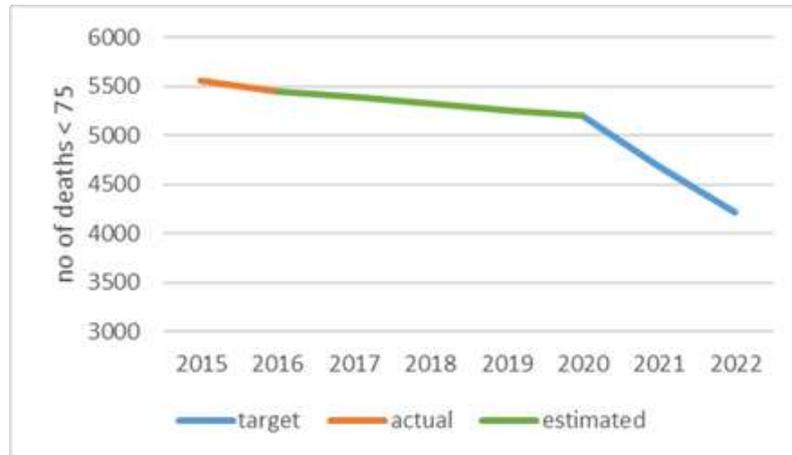
⁷ <https://treasury.govt.nz/sites/default/files/2019-12/lsf-dashboard-update-dec19.pdf>

⁸ <https://nsfl.health.govt.nz/dhb-planning-package/system-level-measures-framework/data-support-system-level-measures/amenable>. The 2019 estimate was arrived at by applying the average annual rate of improvement in amenable mortality rates from 2012 to 2016 to the number of amenable deaths recorded in 2016. See draft amenable DHB Mortality Summary Table 2016, sheets SUMM 3 and SUMM 4.

⁹ NZHR. October 2020. *Health Research Saves Lives: Ka Whakarauratia te Hunga e te Rangahau Hauora*. NZHR Annual Report 30th June 2020. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/10/NZHR-2020-Annual-Report-PV.pdf>

In any other context the premature and unnecessary deaths of five thousand New Zealanders per year would be considered to be utterly egregious and be accompanied by vocal calls for immediate inquiries and action. Yet this by-product of New Zealand’s dysfunctional health and health research systems has persistently been allowed to sail under the radar.

Graph 1: Premature amenable mortality 2015 - 2022¹⁰



NZHR maintains that to address amenable mortality there should be investment in health research which will provide an understanding of how to effectively address barriers to translating knowledge into practice. This new knowledge could then support, for example, commissioning agencies to contractually require health service providers, public health and health promotion agencies, and other organisations to deliver services in accordance with national evidence based best practice standards. Furthermore, the commissioning agencies themselves could be required to meet amenable premature mortality targets (as opposed to being permitted to continue to passively rely on the historical, but in NZHR’s view unimpressive, annual improvement rate of 1.2%)¹¹. The NZHR graph above posits reductions of 10% per annum.

Non-amenable premature mortality refers to the number of New Zealanders under the age of 75 who die as the result of conditions and circumstances for which life-saving treatments, cures or preventative strategies are yet to be researched and discovered. NZHR estimates that the non-amenable premature mortality in 2019 was approximately 7000¹². As presented in Graph 2¹³ there is evidence that this figure has been increasing.

Looking back over the sweep of medical and health history people have died prematurely from all manner of illnesses that at one time would not have been considered amenable to treatment or prevention. Advances in knowledge, resulting from health research, have changed and are changing this. For example, although the New Zealand prevalence of non-treatable Mendelian conditions (which are arguably among the least amenable to prevention and treatment) currently

¹⁰ <https://nsfl.health.govt.nz/dhb-planning-package/system-level-measures-framework/data-support-system-level-measures/amenable>.

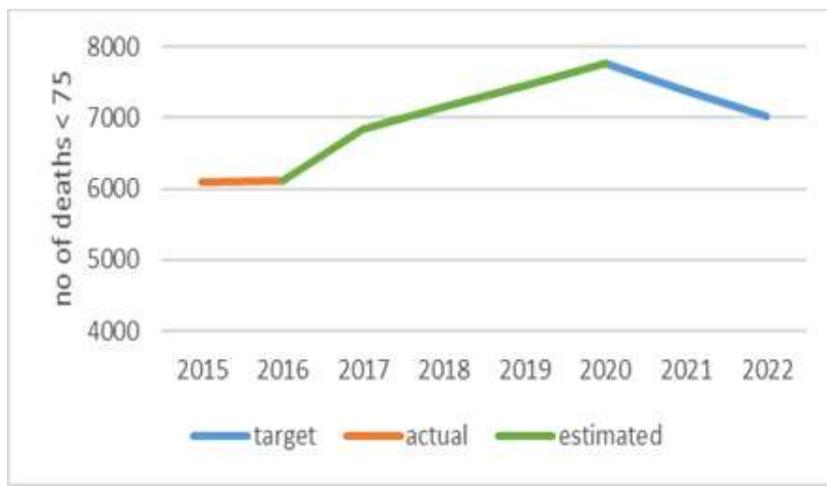
¹¹ Ibid.

¹² <https://www.health.govt.nz/publication/mortality-2017-data-tables> . See Chart 01. Total no. of deaths < 75 = 12225. No of amenable deaths = approx. 5000. No of non-amenable deaths = approx. 7000.

¹³ NZHR. October 2020. Health Research Saves Lives: Ka Whakarauoratia te Hunga e te Rangahau Hauora. NZHR Annual Report 30th June 2020. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/10/NZHR-2020-Annual-Report-PV.pdf>

stands at about 200,000^{14 15}, recent rapid advances in health (ie genetic) research are likely to result in many of these conditions becoming amenable to prevention and treatment in the future¹⁶. Similarly, health research focusing on T-cell based immunotherapy is already in the process of rendering treatable many hitherto incurable cancers¹⁷.

Graph 2: Premature non-amenable mortality 2015 - 2022¹⁸



Failure to include health research as a key enabler of achieving improved health outcomes compromises the ability to offer hope and treatment to people and their whanau/families for whom the only current alternatives are at best palliative.

In addition to focusing on amenable premature mortality NZHR believes therefore that the New Zealand health system should also be actively addressing the country’s non-amenable premature mortality figures, and we recommend that the health system aims initially to achieve reductions of 5% per annum. Given that historical levels of health research investment have failed to yield improvements in this key indicator of health system outcomes, NZHR recommends that government health research investment be increased to 2.4% of health care costs¹⁹ within the timeframe of the government’s Health Research Strategy, with targeted investment to address causes of non-amenable mortality.

Finally we point out that it is not open to New Zealand to defend its premature mortality figures on the basis that our figures are better than other countries. We compare well with some countries, but not with others, as indicated for example in Graph 3 on the following page.

¹⁴ RDNZ estimates that 300,000 New Zealanders have a rare disorder (<https://rareorders.org.nz/about-rare-disorders/rare-disease-day/rare-disease-day-2020/>), 72% of which are genetic in origin (<https://rareorders.org.nz/about-rare-disorders/facts-and-figures/>)

¹⁵ Treatments exist for about 5% of Mendelian conditions. Metz, J. Hacking Darwin. Genetic Engineering and the Future of Humanity. 2019. Sourcebooks. Illinois

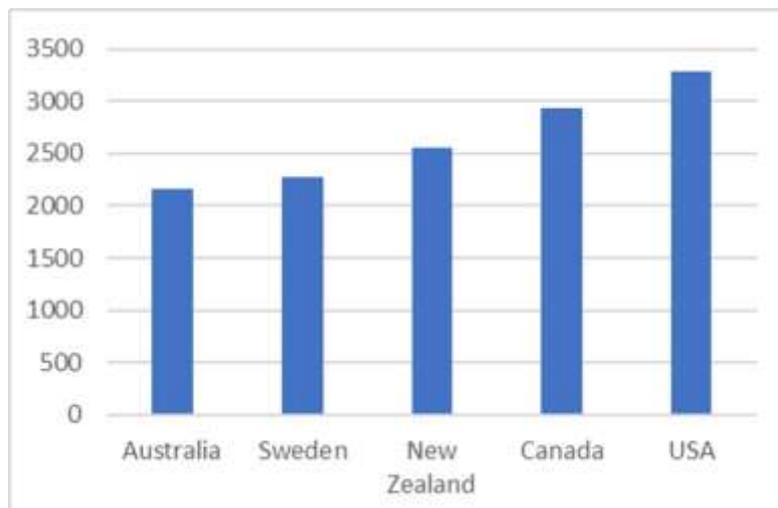
¹⁶ Ibid.

¹⁷ <https://www.bbc.com/news/health-51182451>

¹⁸ <https://www.health.govt.nz/publication/mortality-2017-data-tables> and earlier tables

¹⁹ See Section 4 below for the justification for this figure

Graph 3: Premature mortality deaths < age 75 per million total population²⁰



Living in “good health”

A significant component of Treasury’s Living Standards Framework life expectancy indicator is living “in good health”. The most recently available metrics suggest that this is not being achieved well, and that New Zealand has been even less successful in preventing or ameliorating ill health and disability than it has been in preventing premature mortality. The Ministry of Health has acknowledged that New Zealanders are “living longer in poor health” and that *“only 70-80% of the years of life gained over the past quarter century have been years lived in good health: our health system and wider society have proved more adept at preventing early death than at avoiding or ameliorating morbidity. A greater focus on addressing the impact of non-fatal disabling conditions, whether through prevention or improved management, will enable people to live more of their ‘extra’ years of life in full health”.*²¹

This failure to prevent or ameliorate ill health is attributable both to not applying the knowledge that health and other agencies, clinicians and individuals already have and to not having the required knowledge in the first place. Again, health research assists in better application of existing knowledge and is fundamental to the acquisition of translatable new knowledge.

Impact of Health Research

Under ideal circumstances NZHR would have been able to present an overall summary of how New Zealand health research has directly contributed to lives saved, improved health outcomes, improved quality of life in New Zealand, and increased number of quality adjusted life years. Such a study appears not to have been attempted however.

Health research can be expensive, and its explicit social, health and economic impacts are hard to define. There are many challenges and assumptions in defining specific returns on investment in health research, and there is no common approach to tracking health research impacts (Frank and Nason, 2009)²². As a corollary it has been anecdotally suggested that because New Zealand is a very small part of the global community it should be sufficient to draw upon and translate

²⁰ NZHR. October 2020. Health Research: A Public Health Imperative. Poster presentation to the 16th World Congress on Public Health. Rome 2020. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/10/Rome-public-health-conference-presentation-260920.pdf>

²¹ <https://www.health.govt.nz/publication/health-loss-new-zealand-1990-2013>

²² Health research: measuring the social, health and economic benefits. Frank C and Nason E. CMAJ. 2009 Mar 3; 180(5): 528-534. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2645444/>

the results of health and medical research undertaken internationally, rather than invest in our own health research domestically.

Such a perspective is not supported by either NZHR, or New Zealand's Health Research Strategy (HRS)²³ which regards the importance of New Zealand investing in its own health research as being self-evident, requiring little if anything by way of justification. Indeed, the HRS simply asserts, without any direct evidential references, that the health research and innovation system improves the health and well being of all New Zealanders including equity of health outcomes, improved quality of life, disabled people having the highest possible standards of health and wellbeing, improved social outcomes, a healthier population, a more effective and efficient health system and a thriving medical technology environment.

To demonstrate the HRS's point this paper details a small selection of initiatives where New Zealand based health research has directly led to improvements in health outcomes for New Zealanders.

Examples cited by the New Zealand Health Research Strategy (2016) include:

- Research in the 1980s proved that the asthma drug fenoterol was the cause of increased asthma mortality and ends the epidemic of asthma deaths in New Zealand.
- The New Zealand Cot Death Prevention Programme in the 1990s changed the way New Zealanders understand safe sleep for babies, with the result that mortality rates from sudden infant death syndrome halve within two years
- A powerful new test to detect heart failure was developed in 1995. A 2006 meta-analysis of 10 studies worldwide showed that the test reduced mortality in 35% of patients under 75 years of age.
- In 2003 a device for cooling the brain of premature babies - the CoolCap - is shown to prevent brain damage after international clinical trials.
- The 2010 "sugar babies" study identifies the benefits of using dextrose gel on at-risk hypoglycaemic babies
- Computer models of physiological processes with real-time bedside clinical data to personalise diagnosis, monitoring and care reduce the number of deaths in adult intensive care patients. To date, this research has saved approximately 300 lives and at least \$5 million in health care costs in Christchurch alone

Examples of HRC investment leading to positive health outcomes include²⁴:

- The 2000 He Kainga Oranga Programme that proved the link between meningococcal disease and household overcrowding. This provided the evidence to support the NZ Healthy Housing Initiative between Housing NZ, Auckland Regional Public Health Institute and NZ Institute of Architects.

²³ New Zealand Health Research Strategy 2017 - 2027. Ministry of Health and Ministry of Business Innovation and Employment. 2017 <https://www.health.govt.nz/system/files/documents/publications/nz-health-research-strategy-jun17.pdf>

²⁴ Health Research Council. 2015c. Research to Action: Improving the lives of New Zealanders through health research, HRC Investment Impact Report for the Ministry of Business, Innovation and Employment. Auckland: Health Research Council of New Zealand. <http://www.hrc.govt.nz/sites/default/files/Research%20to%20Action%20-%20HRC%20IIR%202015.pdf>

- Over the last 15 years, the Otago University team have further proved the link between housing and health (showing that uninsulated houses negatively impact on school attendance, sickness and hospitalisation). They have achieved major policy impact in New Zealand and internationally. Notably, their work resulted in the Warm-Up New Zealand: Heat Smart initiative and they have developed a Rental Property Warrant of Fitness
- The Christchurch Health and Development Study proved the link between passive smoking and respiratory illness; provided evidence for the Family Start programme, and proved the health impact of lead in petrol, resulting in its removal. The findings on the link between early conduct problems and later difficulties, including crime, mental health problems, substance abuse and suicide, have been used by government agencies to develop policies and interventions (e.g. Early Start and Family Start).
- The Otago University Public Health Institute has undertaken several innovative ‘big data’ studies that provided vital cancer survival trend information. They are now working closely with the Ministry of Health and others to build a tool for rapid assessment, health impact and cost-effectiveness, of cancer prevention and control interventions.
- The development of the wireless heart pump which uses magnetic fields instead of wire cables to transfer power. Conventional heart pumps had to be powered by electricity which meant passing cords directly through the patient’s chest wall. These make the patient vulnerable to infections, which are fatal in forty per cent of cases. With the wireless heart pump patients can be mobile again, and the technology generates no heat, a major problem with previous models.
- Research on understanding novel peptides discovered in heart failure has led to clinical tests that identify the existence and severity of heart failure much earlier, to guide fast and appropriate treatment.
- A new fast-track cardiac diagnostic tool provides clinicians with the means to halve the number of unnecessary hospital admissions for chest pain. The number of patients discharged early can be safely increased from 10 to 20 per cent. One in five patients can be discharged within 2 hours.
- NZ is the only country in the world able to quantify the impact of earthquakes on health. When the Christchurch earthquakes hit, roughly half of the participants in the Christchurch Health and Development Study were elsewhere, making them the perfect control group to assess the health effects of the earthquake on the other half - who lived through it. Canterbury DHB, the Mental Health Foundation and researchers are able to understand how health and other services can work with communities after a disaster and prepare for future disasters.
- The LiLACS NZ longitudinal study aims to determine the predictors of successful advanced ageing and understand the trajectories of health and wellbeing in advanced age. The goals are to help people to plan better for their own health and wellbeing in later life, to allow older New Zealanders to share their wisdom with future generations, and to inform the development of local and national policies to benefit older people. The Ministry of Health and the Ministry of Social Development have used the results of the study to inform policy in areas such as transitions in care, balancing formal and informal care, falls and injuries and service inequalities.
- The Bone Research Group have worked with major pharmaceutical companies - Merck and Novartis - to develop Zoledronate, a drug used to reduce bone loss that is 10,000 times more potent than the agents that first became available in the 1960s. This new drug has

revolutionised the treatment of osteoporosis and effects a cure in 98 per cent of patients with Padgett's disease.

A further example from one of NZHR's own publications²⁵ is the clinical trials work led by Professor Ed Gane to develop a new class of anti-viral therapy to treat Hepatitis C. During the trial phase alone 3000 people have been cured, with a 99% success rate, no side effects, and an estimated savings of \$200m in drug costs alone when compared with previous therapies.²⁶

Holding the health system accountable for engaging with and translating the results of health and medical research

The above examples notwithstanding NZHR believes that the pathways for translating health research findings into better health outcomes are loose, ad hoc and dependent on local health service delivery leadership. We acknowledge and support the HRC's recently announced initiative introducing 2-year and 5-year post-contract surveys to help capture research impacts, and we also support the application of MBIE's generic position paper on the impact of research²⁷

However, despite best intentions health researchers themselves sometimes appear to struggle to articulate how the results of their research save and improve lives. For example of the eight excellent case studies presented in a recent University of Otago "Impacts of Research" publication²⁸ only one²⁹ was able to articulate impact in terms of improvements in health outcomes and saved lives.

Another illustrative example is provided by the University of Otago led development of new testing criteria for stomach cancer, which has considerable life saving potential, particularly for Māori.³⁰ In a personal communication³¹ to NZHR, principal investigator Professor Parry Guildford said:

"the guidelines were produced on behalf of the International Gastric Cancer Linkage Consortium (IGCLC) [with] our....version [being] the latest in this sequence. These guidelines are considered the official word in the management of this form of cancer internationally -although we are really just a self-appointed expert group. As far as I know, hospitals are not required to follow these guidelines, but given their utility and highly reputable etiology, our recommendations do make it into clinical practice as the gold standard worldwide. This time, we have had input from several senior NZ genetic counsellors and clinicians, hence our ability to include a genetic testing recommendation for Maori. So, I guess the DHBs here would consider these guidelines to be 'informal', but they fill a need and will be largely adopted".

NZHR believes that current arrangements for translating health research into practice need to be tightened so that there is an obligation on health service providers to implement evidence based best practice and to quantify the subsequent impact on health outcomes. NZHR recommends that:

²⁵ NZHR. Clinical Trials in New Zealand: a discussion paper. March 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/02/Clinical-trials-in-New-Zealand-NZHR-op-ed-130319-V2.pdf>

²⁶ Gane *et al.*, *Lancet Gastroenterol Hepatol*, 2: 805-13 (2017), also Gane *et al.*, *Gastroenterology*, 151: 902-909 (2016)

²⁷ MBIE. October 2019. The Impact of Research. <https://www.mbie.govt.nz/dmsdocument/6983-the-impact-of-research-position-paper-october-2019-pdf>

²⁸ University of Otago Division of Health Sciences. Undated but understood to be mid-2020. Impacts of Research

²⁹ Case study 6. Cardiac Biomarkers used in Heart Failure Diagnosis, Prognosis and Treatment. University of Otago Division of Health Sciences. Impacts of Research

³⁰ University of Otago. August 2020. Research team hopes Māori lives will be saved with new testing criteria for stomach cancer. <https://www.otago.ac.nz/news/news/otago741855.html>

³¹ Prof. Parry Guildford PhD FRSNZ. Director, Centre for Translational Cancer Research. Cancer Genetics Laboratory Department of Biochemistry. University of Otago. 24th August 2020. Personal email.

- An agency be created to identify and promulgate up to date evidence based best practice standards and guidelines for clinical care and service delivery (similar in concept to the now disestablished Clinical Guidelines Group)
- Publicly funded health service providers be contractually required through health commissioning arrangements to deliver services in accordance with best practice standards and guidelines, to be involved in undertaking health research, and to have demonstrable processes for translating the results of health research into policy and practice
- Workforce development strategies be implemented which would see research fellows, clinical research specialists etc being routinely deployed as key members of clinical and health care teams, responsible for ensuring that clinical decisions are supported by the best evidence
- Clinical training and continuing clinical education and registration agencies be reviewed to ensure that their processes ensure that emerging and current clinicians are required to practice according to best evidence based standards of care
- Health commissioning agencies be required to meet premature amenable mortality targets and be given the ability to purchase evidence based best practice services from whoever is best placed to help meet those targets, including individuals and whanau/family.

NZHR recognises that implementing the above recommendations will require additional resources. We maintain that health research in New Zealand is significantly under-resourced as set out in section 4, and that addressing the overall under-resourcing issue will allow health research resources to flow through to the health system.

The last recommendation recognises that individuals who make everyday health related decisions are part of the health system, and that one of the drivers of premature amenable mortality is preventable lifestyle related conditions.

NZHR polling^{32 33} indicates very high levels of agreement that exercise and diet (including reduced sugar and salt intake) are safe and effective ways of staying healthy. This suggests that rather than merely continuing to tell people what they already know there should be an emphasis on supporting them and their family/whanau to make and act upon lifestyle decisions consistent with that knowledge. This can include things like diet and exercise, but also extends to supporting people to live in healthy homes, be unburdened by poverty, to have meaningful social connections and valued social roles etc.

Implementing the New Zealand Health Research Strategy

The agencies responsible for implementing the New Zealand Health Research Strategy (Ministry of Health, MBIE and the Health Research Council) must be required, and fully resourced to enable them to achieve, implementation by 2027.

NZHR's recommendations for translating health research into policy and practice give substance to the New Zealand Health Research Strategy (HRS) requirement for a vibrant research environment to be created in the health sector by strengthening both health sector participation

³² NZHR. 2019. New Zealand Speaks! 2019 Roy Morgan NZHR Opinion Poll. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/09/NZHR-Report-2019-GENERAL-EDITION.pdf>

³³ NZHR. 2020. New Zealand Speaks! 2020 Kantar NZHR Opinion Poll. https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/08/NZHR-Report-2020-GENERAL-EDITION-PRINT_newlogos-final.pdf

in research and innovation, and the clinical research environment and health services research. (See the HRS Strategic Priorities 2 and 3)

Strategic Priority 3 in particular says:

To translate research effectively, the health sector and the research sector need to work together seamlessly. In particular, translation needs to be part of the strategic frameworks of health delivery agencies and health research organisations, and in the everyday work of those involved in health research. The Government will ensure that:

- *relevant entities understand their role in translating research*
- *work is well-coordinated across relevant institutions*
- *mechanisms for translating knowledge from offshore work well*
- *data assets are linked, accessible and well-governed*
- *investment plans for funding agencies reflect the importance of translation*
- *policies support open access to research findings*
- *a clearinghouse for health research is established and maintained.*

The New Zealand Health Research Strategy sets out the following four strategic priorities which set the direction for the health research and innovation system and which, it is asserted, will collectively increase the impact of health research:

1. Invest in excellent health research that addresses the health needs of all New Zealanders. The Health Research Council (HRC) will lead this work with support from the Ministry of Health and the Ministry of Business, Innovation and Employment (MBIE).
2. Create a vibrant research environment in the health sector. The Ministry of Health will lead this work with support from MBIE and the HRC.
3. Build and strengthen pathways for translating research findings into policy and practice. The Ministry of Health will lead this work with support from MBIE and the HRC.
4. Advance innovative ideas and commercial opportunities. MBIE will lead this work with support from the Ministry of Health and the HRC.

NZHR submits that realisation of all four of these strategic priorities will be an essential component of any future health and disability system and recommends that agencies responsible for their implementation be required and fully resourced to enable them to achieve implementation by 2027

Clinical trials

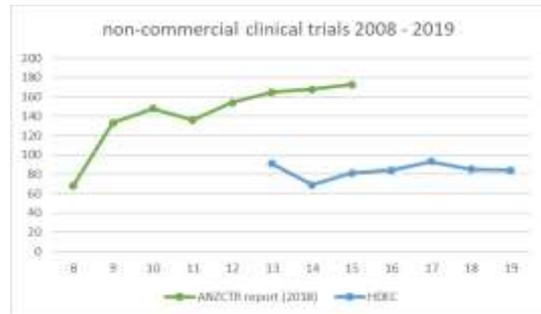
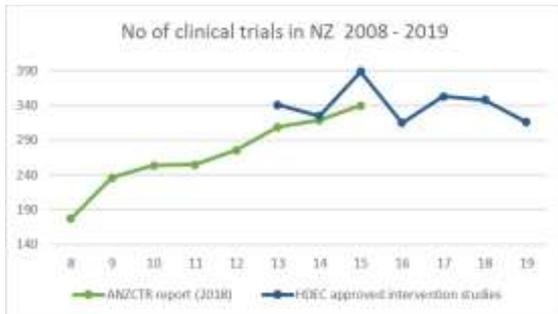
One way that publicly funded health services can become engaged with health research is through sponsorship and support of clinical trials. The graphs below indicate overall growth in the clinical trials sector from 2008 to 2015, followed by a decline over the last five years. Even though the information is inconsistent it does seem that growth in non-commercial trials has been flat, suggesting that the decline is attributable to commercial trials (which we corroborate and discuss further in Section 5 below).

Furthermore, NZHR's opinion polling³⁴ suggests despite a high (albeit latterly falling) level of public support for clinical trials, there is a big difference between what people say they would be willing to do and what actually occurs, suggesting considerable potential for growth (the blue lines in the graphs below represent NZHR's internal impact targets). It would appear that one of the reasons for the gap between what could be achieved and current reality is that potential

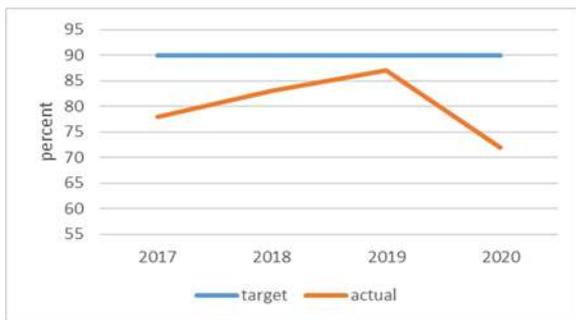
³⁴ NZHR. New Zealand Speaks! Opinion polls 2017 - 2020

clinical trial participants are not routinely being given information about the existence of potentially helpful trials. NZHR has therefore recommended to the Medical Council of New Zealand that its informed consent protocols make it mandatory for information about potentially beneficial clinical trials to be routinely provided to patients.³⁵

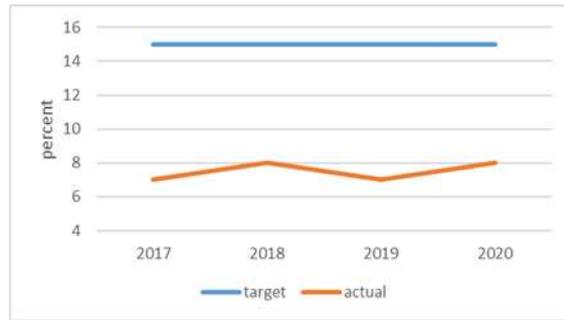
Graphs 4 - 7: Engagement with clinical trials



Percentage willing to participate in clinical trials



Percentage who have participated in a clinical trial



NZHR stakeholders report that the public hospital system is not well set up to take advantage of the clinical and financial opportunities presented by commercially funded trials and NZHR is concerned that Medsafe has recently discontinued its customary practice of waiving its fees for “public good” clinical trials³⁶ (which typically take place in public hospital settings).

Nevertheless, advancing clinical trials has been a focus of all three agencies which are party to the Health Research Strategy and while we commend them for the work they have been undertaking in the “public good” sector there is still much to be done in incentivising commercial investment in clinical trials, as we outline in Section 5 below. The reality is that the systemic issues associated with developing the clinical trials sector within the public health system also apply to commercially funded trials, and this paper’s recommendations therefore are grouped together following its discussion of commercially funded trials in Section 5.

As a footnote to this discussion NZHR has made a number of attempts to drill down into the information available on clinical trials registers, with limited success due to the following factors: inconsistencies between the ANZCTR and clinicaltrials.gov fields and register structures; no requirement for trials being undertaken in New Zealand to be registered with either the ANZCTR or a single comprehensive New Zealand register (they merely have to be registered on

³⁵ NZHR. May 2019. Submission on the Medical Council of New Zealand draft statement on informed consent. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/05/NZHR-submission-re-MCNZ-statement-on-informed-consent-final-280519.pdf>

³⁶ <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/12/public-good-clinical-trials-fees-waiver-NZHR-051219.pdf>

a WHO approved register); inconsistent and ambiguous use of fields by those registering trials with ANZCTR; and no requirement for trials to be registered as inactive after the conclusion or discontinuation of the trial³⁷.

We would expect that addressing these issues will be included in the scope of works of those agencies responsible for implementing the clinical trials components of the Health Research Strategy

Health and Disability System Review Report

NZHR believes the Health and Disability System Review Final Report³⁸ is deeply flawed and strongly recommend that the incoming government does not rush into uncritically implementing its recommendations without first subjecting it to expert independent objective analysis and review, preferably through Parliament's Health Committee. In addition to its almost total disregard for the value of health research NZHR is also concerned that the report appears to have cherry picked from the review's terms of reference, and has confused the "health system" with publicly funded health service providers.

Given that NZHR's mandate is to focus on its advocacy for health research we are not offering a full critique of the report but would welcome an opportunity to contribute to any independent review that may be undertaken. However, we do wish to headline the following concerns of relevance to NZHR's mahi.

Insufficient focus on better health and wellness outcomes for all

We find it extraordinary that a report which purports to represent "*probably the most comprehensive integrated look at the New Zealand Health and Disability System in a generation*", and which is required by its terms of reference to make recommendations to "*achieve better health and wellness outcomes for all New Zealanders*" doesn't have as its starting point the quest to improve that most basic measure of health outcomes - premature mortality - and further does not attempt to distinguish between amenable and non-amenable premature mortality.

We surmise that the reason for this is that the Report's authors have substituted achievement of "*better health and wellness outcomes for all New Zealanders*" with "*improving the equity of the health outcomes achieved in New Zealand*" and ensuring "*the health and disability system becomes more determined to operate differently so that inequities are addressed*".

NZHR fully endorses the Review's attention to achieving improved equity of outcomes, and fully acknowledge that such improvements will have a significant impact on rates of premature mortality, particularly amenable premature mortality. We also agree that there are systemic issues that contribute to current inequities, that this should be seen as a performance issue for the health system per se, and support, for example, the application of the Te Arawhiti *Capability Framework for the Public Service*³⁹ to the health system (including the health research system)

However we are concerned that this important focus on equity may have detracted from also focusing on achieving better health outcomes for all New Zealanders overall, as required by the Review's terms of reference.

³⁷ NZHR. April 2020. An analysis of currently active clinical trials registered on the Australia New Zealand Clinical Trials Register (ANZCTR) as at 28th February 2020, and the US clinicaltrials.gov register as at 17th March 2020.

<https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/04/Analysis-of-active-NZ-ANZCTR-and-CTG-trials-210420.pdf>

³⁸ Health and Disability System Review. Final Report - Pūrongo Whakamutunga. March 2020.

<https://systemreview.health.govt.nz/assets/Uploads/hdsr/health-disability-system-review-final-report.pdf>

³⁹ Te Arawhiti Office for Māori Crown Relations. Capability Framework for the Public Service - Organisational Capability Component

This is important in the light of the premature mortality graphs 1 and 2 presented above. While a focus on equity of outcomes can be expected to have an impact on amenable premature mortality it is difficult to understand how it could impact on the estimated 7000 New Zealanders per year who are dying prematurely from non-amenable causes.

As we've argued above amenable premature mortality can be addressed by focussing on both health system performance and research which will help to better understand causes and prevention, while non-amenable mortality can best be addressed in the first instance through health research. We speculate that the Review report's shifting its focus to equity alone may have contributed to its overlooking the need for health research to be embedded within the health system as a key enabler of improved health outcomes overall.

Failure to recommend that health research be embedded in the health system and be recognised as a key enable of improved health outcomes

Despite NZHR formally submitting a case to the Review Panel for health research to be recognised as a key enabler of improved health outcomes⁴⁰, the Review's interim report⁴¹ failed to give any recognition to the role of health research, and, astonishingly, completely failed to include in its 468 citations any reference the Government's Health Research Strategy. Given the composition of the Review Panel, including a number of respected health researchers, we can only speculate as to the dynamics which permitted this to occur.

In our response to the Interim Report NZHR expressed its shock and disbelief both to panel members (including its Chair) and publicly⁴², which resulted in the final report acknowledging the key components of the Health Research Strategy, but still declining to recognise health research as a key enable of improved outcomes which should be embedded in the health system. NZHR's public response⁴³ to the Final Report noted the following:

"The problem now is that although the report suggests that health research should be actively facilitated and engage all parts of the workforce; that collecting evidence and making improvements should be core activities throughout the system; and that concerted leadership and culture change would be required to achieve a really effective ecosystem for research and development, not one of these sentiments is directly reflected in any of the Report's recommendations."

"It feels like health research, which should be seen as a fundamental enabler of improved health outcomes, is instead being thought of as an afterthought worthy only of lip service".

"The Government's 2020 budget has allocated just 0.76% of health care costs to health research, a figure which is forecast to decline over the next few years. To pull our weight internationally and to serve New Zealanders well we should be investing at least 2.4%"

"About 5000 New Zealanders per year are dying prematurely and unnecessarily, a figure that has been improving by a meagre 3% per year. In addition, a further 7000 kiwis per year are dying prematurely because we haven't done the research to know how to effectively treat them."

"The Review report doesn't provide any compelling evidence that its recommendations will address these most fundamental measures of outcomes, and in any case NZHR wouldn't expect it to be able to do so given the absence of recommendations for both increasing government

⁴⁰ NZHR. Submission on the Review of the New Zealand Health and Disability System. May 2019.

<https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/05/NZHR-submission-Health-System-Review-final-280519-Final.pdf>

⁴¹ Health and Disability System Review. Interim Report - Pūrongo mō Tēnei Wā. August 2019.

<https://systemreview.health.govt.nz/assets/HDSR-interim-report/5b33db77f5/H-and-D-full-interim-report-August-2019.pdf>

⁴² <https://www.nz4healthresearch.org.nz/health-and-disability-system-review-ignores-health-research/>

⁴³ <https://www.nz4healthresearch.org.nz/media-release-health-system-review-pays-lip-service-to-health-research/>

investment in health research and embedding health research as a key component of the health and disability system.”

“We saw the astounding health results of adopting an overt health research led response to the threat presented by the Covid 19 pandemic. Imagine how much more effective the New Zealand health and disability system could be if it were to be similarly led.”

Pharmaceuticals

The Review’s terms of reference specify that the Pharmaceutical Management Agency (PHARMAC) is outside the scope of the review, although the relationship between the health and disability system and PHARMAC is in scope.

The Review report appears to have interpreted this as licence to not address access to pharmaceuticals (or devices) at all. Given the key role of pharmaceuticals in improving and saving lives, and the role of collaboration between publicly funded health services and pharmaceutical companies in researching, developing, trialling and creating access to new and improved medicines NZHR is surprised at the Review report’s silence on this issue.

“Health system” and publicly funded health service providers

The overall tenor of the Review report assumes that the health system comprises the totality of public health service providers. It gives some lip service to the role of private providers but makes no recommendations as to how the public and private sectors should intersect in order to bring about improved health outcomes.

Furthermore, NZHR believes that the health system includes every single New Zealander, and every New Zealand family/whanau, who every day make decisions which impact positively and/or negatively on their health and wellbeing. Although the Review report states that population health should be the foundational element for the entire health system and that the system should be focused on and engage with communities it’s recommendations are largely institutional and confined to more planning and better formulas.

NZHR’s opinion polling indicates that most New Zealanders know (ie believe in the health research which is evidence of) what they need to do be healthy, yet New Zealand’s health outcome statistics are not good. Once again, NZHR believes that the Review report’s failure to include everyday New Zealanders as part of the health system and to make recommendations as to how they can be better engaged and supported to make and sustain healthy decisions is a serious oversight.

Concluding recommendations

1. Health research must be enshrined as a key enabler of the best possible health outcomes in any design or redesign of New Zealand’s health and disability system. To this end:
2. The Ministry of Health must hold all publicly funded health agencies accountable through its commissioning and contracting processes for both engaging with health and medical research and demonstrably translating results into policy and practice
3. The agencies responsible for implementing the New Zealand Health Research Strategy (Ministry of Health, MBIE and the Health Research Council) must be required, and fully resourced to enable them, to achieve implementation by 2027

4. Prior to its implementation the final report of the review of the New Zealand Health and Disability System must with the assistance of external expert review, be thoroughly and formally reviewed by Cabinet, preferably through the Health Committee, to ensure among other things that its recommendations will result in better health for all New Zealanders (as required by the Review's terms of reference), and that health research is explicitly embedded within the health system as a key enable of improved health outcomes (including reduced premature amenable and non-amenable mortality)

Section 4: Health Research Investment

Government investment

Government ringfenced investment in health research must be increased by 21.4% per year to achieve a target of 2.4% of publicly funded health service delivery costs by 2027.

MBIE, the Ministry of Health and the Health Research Council collectively acknowledge that New Zealand underinvests in health research⁴⁴, and 57% of the 2020 Kantar NZHR opinion poll respondents said that the 2020/21 budgeted allocation of \$140m was too low⁴⁵.

NZHR's position is that the government should actively seek to achieve an investment target of 2.4% of direct health care costs by 2027, which reflects the time timeframe of the government's Health Research Strategy⁴⁶.

We have taken our cues from OECD statistics which indicate that global average gross domestic spending on R&D as a percentage of GDP is just under 2.4%⁴⁷ and from an analysis of data presented by Reid et al (2014)⁴⁸ which indicates that a four-fold increase in per capita government expenditure on health research in 2012 would have been required to bring New Zealand up to parity with Australia and the UK (this would have equated to 2.7% of health costs for that year).

NZHR's position is supported by a comparison of New Zealand's performance with four other countries where the health research communities of those countries believe that there is insufficient health research investment. Out of all five such countries New Zealand's performance is the lowest, as indicated in Graph 8 on the following page.

We believe therefore that 2.4% is a reasonable, albeit somewhat conservative, advocacy position.

Our analysis of Treasury estimates of appropriations for both the health and economic development and infrastructure sectors illustrates that for every one of the last ten years government health research investment has been less than 1% of government health care expenditure. The worst year was 2014/15 when the figure stood at just 0.57%, falling from a previous high point of 0.8% in 2010/11. The increased funding to the Health Research Council from 2017/18 had the effect of restoring investment to its previous levels, with the result that figure peaked at 0.82% in 2017/18.

Our analysis of subsequent estimates suggests that the investment level then fell to 0.70%, increase again to 0.81% in 2019/20, dropped to 0.76% in 2020/21 and is likely to gradually fall away to 0.56% by 2024/25, similar to the earlier 2014/15 nadir⁴⁹. Details of our analysis are presented in Graphs 9 and 10 and in Appendix A.

⁴⁴ The New Zealand Health Research Prioritisation Framework. Dec 2019. p 19. https://www.hrc.govt.nz/sites/default/files/2020-01/NZ%20Prioritisation-Framework-FA-web_0.pdf

⁴⁵ NZHR. 2020. New Zealand Speaks! 2020 Kantar NZHR Opinion Poll. https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/08/NZHR-Report-2020-GENERAL-EDITION-PRINT_newlogos-final.pdf

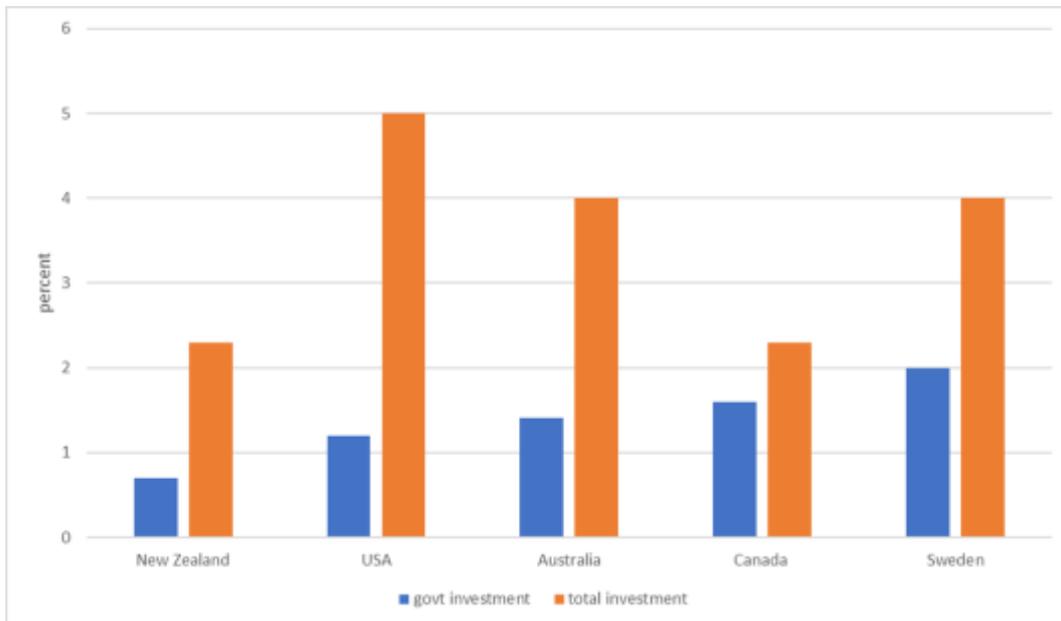
⁴⁶ New Zealand Health Research Strategy 2017 - 2027. Ministry of Health and Ministry of Business Innovation and Employment. June 2017. <https://www.health.govt.nz/system/files/documents/publications/nz-health-research-strategy-jun17.pdf>

⁴⁷ <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

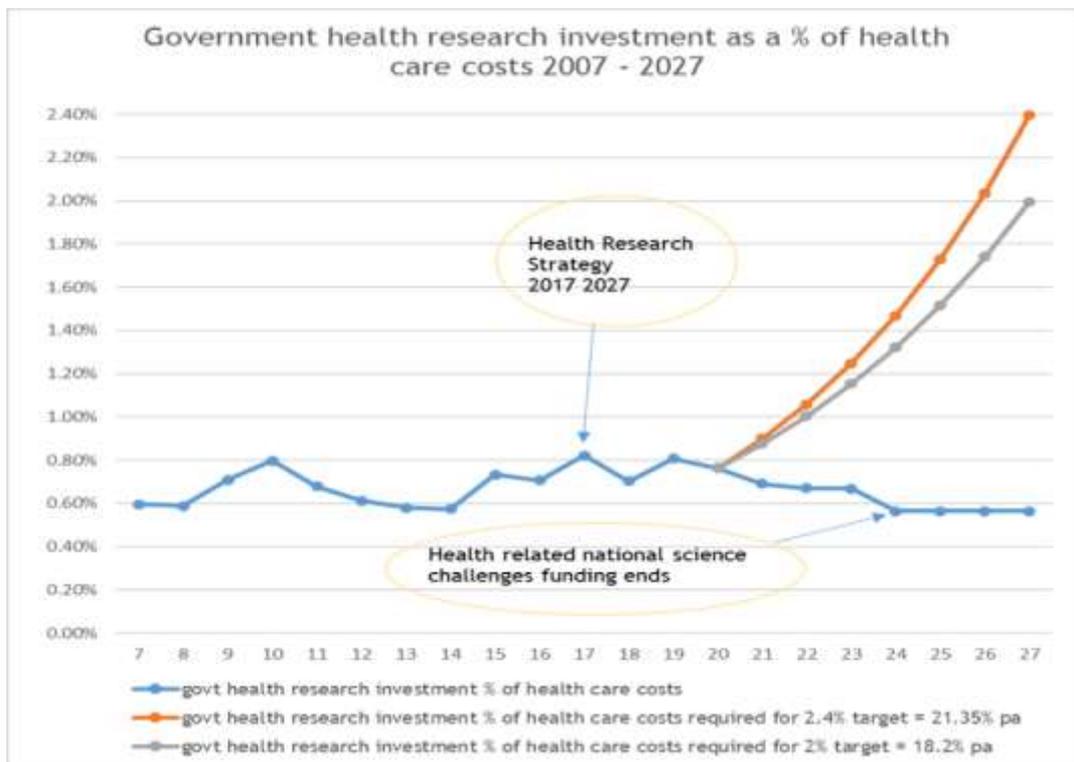
⁴⁸ Reid I et al. Government funding of health research in New Zealand. NZMJ. Vol 127 No 1389: 14 Feb 2014. <https://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2014/vol-127-no.-1389/5992>

⁴⁹ NZHR. September 2019. Submission on MBIE's consultation paper: New Zealand's Research, Science & Innovation Strategy. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/11/NZHR-submission-re-MBIE-RSI-strategy-101119.pdf>

Graph 8: Government and total investment in health research as a percentage of health care costs⁵⁰

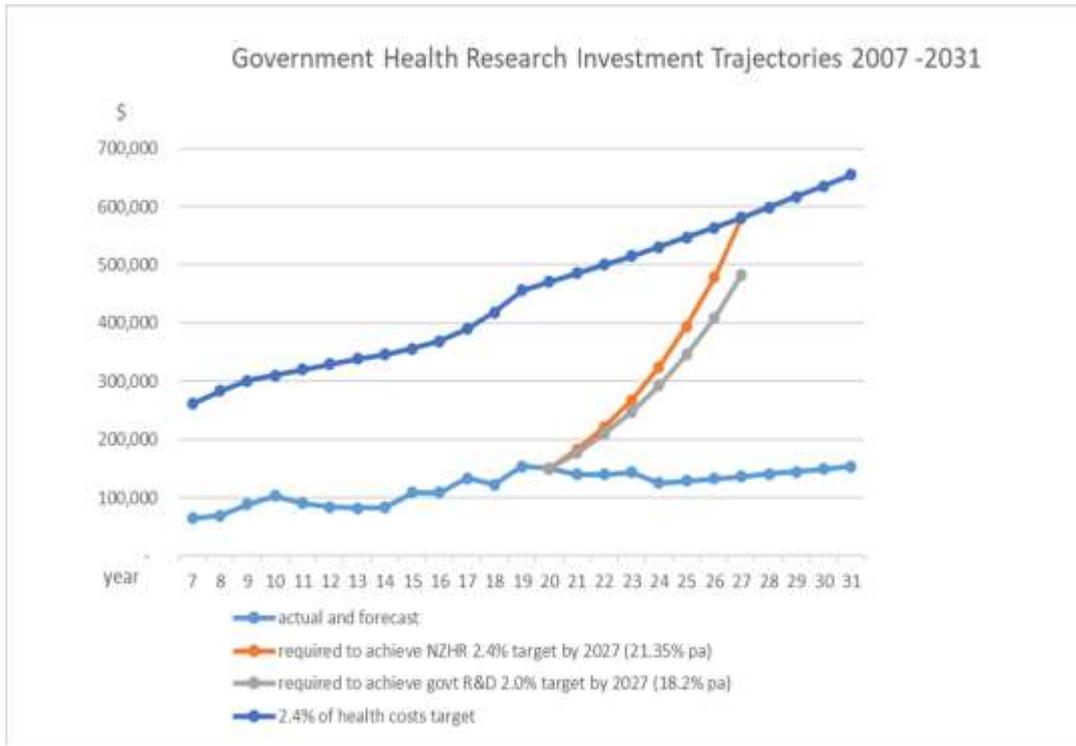


Graph 9: Government health research investment as a % of health care costs 2007 - 2027



⁵⁰ NZHR. October 2020. Health Research: A Public Health Imperative. Poster presentation to the 16th World Congress on Public Health. Rome 2020. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/10/Rome-public-health-conference-presentation-260920.pdf>

Graph 10: Government Health Research Investment Trajectories 2007 - 2031



Graphs 9 and 10 also illustrate that achievement of the 2.4% target by 2027 requires investment increases of 21.4% p.a.⁵¹ (or 18.2% p.a. if we default to the government’s aspirational overall R&D 2.0% target⁵²). This starkly contrasts with the government’s 2020 budget which is silent on future forecasts for further increases in health research investment⁵³, despite the fact that the HRC Act legally required triennial funding review was due to have occurred twelve months prior⁵⁴.

Total Investment

NZHR acknowledges that its approach to establishing the 2.4% government investment target could be viewed as being overly narrow. Costs of ill health are born by government agencies other than the Ministry of Health, non-government entities, and also by society at large. Furthermore, government investment in health research is not confined to allocations to the Health Research Council and the health related national science challenges, and both the commercial and philanthropic sectors also invest in health research. To test the continuing appropriateness of the 2.4% investment target NZHR has undertaken an additional “snapshot” analysis as presented in Tables 1 and 2.

⁵¹ NZHR. June 2019. Government health research investment trajectories 2007 - 2031. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/06/government-health-research-investment-trajectories-090619.pdf>

⁵² MBIE. Fuelling Innovation to Transform Our Economy. April 2018. <https://www.mbie.govt.nz/dmsdocument/3104-fuelling-innovation-to-transform-our-economy-discussion-paper-pdf>

⁵³ Treasury. May 2020. Economic Development and Infrastructure Sector - Estimates of Appropriations for the Government of New Zealand for the Year Ending 30 June 2021 <https://www.budget.govt.nz/budget/2020/estimates/v1/index.htm> .

⁵⁴ MBIE and Ministry of Health. Strategic Refresh of the Health Research Council. Circa 2015. http://www.hrc.govt.nz/sites/default/files/HRC%20refresh%20report_1_0.pdf

Table 1: Investment in health research vs costs of addressing/mitigating ill health

		code	2018/19 \$000
Govt health care costs	Ministry of health (direct health care)	A	17,441,284 ⁵⁵
	Ministry of Health (other)	B	784,000 ⁵⁶
	ACC	C	1,466,782 ⁵⁷
	Supported living payments ⁵⁸	D	1,562,611 ⁵⁹
	Total govt	E	21,254,677
Societal health care costs	Business costs of workplace absence	F	1,790,000 ⁶⁰
	Health insurance claims paid	G	1,263,000 ⁶¹
	Personal costs of accessing primary health care	H	600,000 ⁶²
	Personal indirect costs of ill health	I	14,900,000 ^{63 64}
	Total costs of ill health	J	39,807,677
Investment in health research	Direct govt	K	122,726 ⁶⁵
	Tertiary	L	43,500 ⁶⁶
	Other govt	M	90,218 ⁶⁷
	Commercial	N	172,000 ⁶⁸
	Philanthropic	O	65,000 ⁶⁹
	Total health research investment (sum of the above)	P	493,444

⁵⁵ NZHR. June 2019. Government health research investment trajectories 2007 - 2031. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/06/government-health-research-investment-trajectories-090619.pdf>

⁵⁶ Total vote health (\$18.225b) - vote health direct health care costs (\$17.441b). <https://treasury.govt.nz/sites/default/files/2018-05/est18-v6-health.pdf>

⁵⁷ <https://www.budget.govt.nz/budget/pdfs/suppestimates/suppest19labmar.pdf>

⁵⁸ Supported Living Payment is a weekly payment to help those who have, or are caring for someone with, a health condition, injury or disability. <https://www.workandincome.govt.nz/products/a-z-benefits/supported-living-payment.html>

⁵⁹ <https://www.budget.govt.nz/budget/pdfs/suppestimates/suppest19socdev.pdf>

⁶⁰ <https://www.businessnz.org.nz/resources/surveys-and-statistics/wellness-in-the-workplace-survey/2019-Workplace-Wellness-Report.pdf>

⁶¹ https://8d5ef558-ae1a-42c1-93af-345704802d5e.filesusr.com/ugd/606d2f_af8e5a86e4d74c9889578199fc495955.pdf

⁶² Estimate. (Pop = 5m) x (combined gp fee for service and prescription cost = \$40) x (no of visits per year = 3)

https://www.procare.co.nz/media/1717/our_picture_of_health_18mayfinal.pdf

⁶³ 4.9% of GDP. Treasury. 2010. The Cost of Ill Health. <https://treasury.govt.nz/sites/default/files/2010-11/twp10-04.pdf>

⁶⁴ Sept 2019 GDP = \$305b https://www.stats.govt.nz/indicators/gross-domestic-product-gdp?eclid=CjwKCAiA35rxBRAWEiwADqB378ZIHAM9UwYze8Wl872W44p41rIOBilmd4WbhPfoMSpa5cO_u2JLQBoC4nkQAvD_BwE

⁶⁵ NZHR. June 2019. Government health research investment trajectories 2007 - 2031. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/06/government-health-research-investment-trajectories-090619.pdf>

⁶⁶ Three health related CoREs (Maurice Wilkins Centre: \$7.1m [http://www.mauricewilkinscentre.org/sub-pages/highlights/maurice-wilkins-centre-funding-renewed-\(2014\).aspx?tag=2014](http://www.mauricewilkinscentre.org/sub-pages/highlights/maurice-wilkins-centre-funding-renewed-(2014).aspx?tag=2014); Brain Research NZ: \$4.97m <file:///C:/Users/Dell/Downloads/BRNZ+Annual+Report+2018+Final+ONLINE.pdf>; MedTech CoRE: \$2m guess) + Performance Based Research Funding \$29.43 (estimated based on health research 9.3% share of total \$316.5m.

<https://www.tec.govt.nz/assets/Reports/TEC-Annual-Report-2018-2019.pdf>; 9.3% = NZ health expenditure as a % of GDP

https://www.oecd-ilibrary.org/sites/4dd50c09-en/1/2/7/2/index.html?itemId=/content/publication/4dd50c09-en&_csp_82587932df7c06a6a3f9dab95304095d&itemID=oeecd&itemContentType=book#figure-d1e179). Figure likely to be an underestimate as it does not include tertiary institutions' own net costs funded from other sources.

⁶⁷ 9.3% of MBIE generic R&D funding channels. Vote Business, Science and Innovation - Economic Development and Infrastructure Sector - Estimates 2018/2019. <https://treasury.govt.nz/publications/estimates/vote-business-science-and-innovation-economic-development-and-infrastructure-sector-estimates-2018-2019>. See Appendix B.

⁶⁸ <https://www.stats.govt.nz/reports/research-and-development-in-new-zealand-2018>. Table 3. Business expenditure on health R&D = \$252,038k; estimated 68% sourced from own or other businesses (based on unpublished Statistics NZ data,)

⁶⁹ NZHR. New Zealand Speaks! 2019 Roy Morgan NZHR opinion poll. P8. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/09/NZHR-Report-2019-GENERAL-EDITION.pdf>. Figure based on 35% of population aged 18+ donating, say, \$50 pa to health research. 35% of poll respondents confirmed they donated to health research, 74% of whom said the amount was < \$100 pa. Likely to be an underestimate as figure does not include the value of bequests.

		code	2018/19 \$000
	Total health research investment (Dept of Statistics)	Q	528,000 ⁷⁰
	Total health research investment (MBIE/MoH/HRC estimate)	R	320,000 ^{71 72}

Table 2: Health Research Investment Ratios

Descriptor	Investment ratio	Formula
Ringfenced govt health research investment vs direct health care costs	0.72%	K/A
Ringfenced govt health research investment vs total govt costs of addressing ill health	0.59%	K/E
Ringfenced govt health research investment vs total govt and society costs of addressing ill health	0.31%	K/J
Total govt health research investment vs total govt costs of addressing ill health	1.2%	(K+L+M)/E
Total govt health research investment vs total govt and society costs of addressing ill health	0.65%	(K+L+M)/J
Total health research investment vs total govt and society costs of addressing ill health	1.2%	P/J
Total health research investment, with ringfenced govt health research investment at 2.4% target, vs total govt and society costs of addressing ill health	2.0%	((K*3.3)+(L+M+N+O))/J

The above analysis supports NZHR's strategy of focusing on increasing direct ringfenced investment in health research to 2.4% of health care costs, while also continuing to focus on lifting other sources of government investment, together with commercial and philanthropic investment.

Mental Health Research

Improving New Zealanders' mental health has been a significant focus for the government in both 2019 and 2020, including the report of the government inquiry into mental health and addiction⁷³, the Mental Health and Wellbeing Commission Bill⁷⁴ and the government's response in the 2020 Budget Policy Statement (BPS)⁷⁵. NZHR has made submissions^{76 77} in respect of the latter two

⁷⁰ Table 11. <https://www.stats.govt.nz/reports/research-and-development-in-new-zealand-2018>.

⁷¹ The New Zealand Health Research Prioritisation Framework. Dec 2019. p 19. https://www.hrc.govt.nz/sites/default/files/2020-01/NZ%20Prioritisation-Framework-FA-web_0.pdf

⁷² Estimate based on 2014 figures = \$299m. Minister of Science and Innovation and Minister of Health. 2016. New Zealand Health Research Strategy: Public discussion document. Wellington: Ministry of Health. May 2016. <https://www.health.govt.nz/system/files/documents/publications/nz-health-research-strategy-discussion-document-may16-v2.pdf>

⁷³ He Ara Oranga: Report of the Government Inquiry into Mental Health and Addiction. November 2018.

<https://mentalhealth.inquiry.govt.nz/inquiry-report/he-ara-oranga/>

⁷⁴ Mental Health and Wellbeing Commission Bill. November 2019.

<http://legislation.govt.nz/bill/government/2019/0188/latest/LMS281163.html>

⁷⁵ <https://treasury.govt.nz/system/files/2019-12/bps2020.pdf>

⁷⁶ Submission on Mental Health and Wellbeing Commission Bill. NZHR. December 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/12/NZHR-submission-re-mental-health-and-well-being-commission-bill-111219.pdf>

⁷⁷ Submission on Budget Policy Statement 2020. NZHR. January 2020. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/01/NZHR-submission-re-budget-policy-statement-240120.pdf>

documents, which are summarised in this paper as an illustration of the paucity of government health research investment.

He Ara Oranga: Report of the Government Inquiry into Mental Health and Addiction states that public spending on mental health and addiction services in the last year amounted to \$1.4b. The report also indicates that the Health Research Council had allocated an average of \$7m per year to mental health and addiction research over the past twelve years, or about 0.5% of mental health care costs.

NZHR also notes that most of the He Ara Oranga recommendations lack a clearly researched evidential base which demonstrate that they will result in better mental health outcomes. We surmise that this is because the research simply isn't available either internationally or here in New Zealand. This underscores the imperative for mental health and addictions research investment levels to be significantly lifted.

The above figures indicate that investment in mental health research is inadequate both relatively (compared with research investment in the health sector as a whole) and absolutely when compared to NZHR's recommended 2.4% target. In light of this we maintain that the government's 0.5% investment in mental health research is about 20% of what it should be (ie 2.4%), and that the \$1.9b allocation to mental health services should be increased by \$140m to \$2.04b thereby creating sufficient provision to carry out much needed, life-saving, mental health research.

Attracting and retaining high calibre clinicians and health researchers

Reid et al (2014)⁷⁸ “look back on a decade of diminishing investment in health research in New Zealand. During this time, investment in our hospitals has substantially increased, as have the number of academic staff working in medicine and public health. As a result, an increasing number of would-be researchers have been pursuing a progressively diminishing pool of resource to support research, resulting in funding rates in HRC grant rounds which are among the lowest in the world, and one-third of those in Australia.”

“Such low rates of grant success discourage individuals from submitting grants, but also discourage academics from working in New Zealand. The medical faculties in both Otago and Auckland suffer a steady loss of academics disgruntled by the research funding environment, who move overseas, most commonly to Australia”.

“We also face a continual battle to recruit academics, including expatriate New Zealanders, because there is the perception that moving to New Zealand necessitates abandonment of serious medical research activity”.

“The current crisis has arisen because there has been no indexing of research funding to the cost of research, nor to the size of the workforce that should be research-active. Structural changes need to be put in place to ensure that these parameters guide future levels of funding”.

In 2014 investment in health research was at a particularly low level, and although there have been some gains since then NZHR maintains that the issues identified by Reid et al continue to be pertinent in 2020. If New Zealand is to sustain a world class health research workforce the government's health research investment has to be significantly lifted.

⁷⁸ Reid I et al. Government funding of health research in New Zealand. NZMJ. Vol 127 No 1389: 14 Feb 2014.
<https://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2014/vol-127-no.-1389/5992>

Financial returns on investing in health research

Kantar NZHR opinion polling reports that 61% of respondents believe that research to improve health will help to reduce rising health care costs.⁷⁹

Frank and Nason (2009) cite a number of papers which demonstrate the importance of investing in health research, including a 2008 Australian Access Economics paper⁸⁰ which demonstrated that each dollar invested in Australian health research and development returned \$2.17 in health benefits on average, and a US study⁸¹ which found that a \$25b investment contributed \$500b in estimated health improvement. A 2018 Australian KPMG paper⁸² states that medical research from 1990 to 2004 has delivered net present gains of \$78 billion from a net present cost of \$20 billion, returning a benefit cost ratio of 3.9.

Furthermore, it has been recently reported that clinical trials involving Irish patients have saved the health service thirteen million euros over two years, according to Clinical Research Development Ireland (CRDI). According to the report, each patient participating in a clinical trial, on average, will generate a benefit of €13,500 to the economy as well as health service benefits from medicines worth an average of €5,899 per patient for those participating in trials.⁸³

The value of clinical research to the NHS, the UK economy and jobs market has been valued at £383.6 million in a report⁸⁴, produced by KPMG UK, which provides an assessment of the economic impact of the National Institute for Health Research Clinical Research Network's activities to support clinical research in England.

We were unable to identify similar New Zealand based studies. However we believe that it is important that the financial benefits of the government's investment in health research are quantified, noting that the HRC, MBIE and the Ministry of Health have developed a prioritisation vehicle⁸⁵ to assist in ensuring that its investment decisions will result in positive impact. Government annual ring-fenced investment in health research currently stands at about \$150m and we recommend that Treasury be tasked with quantifying the financial returns on this investment in order to inform future health research funding decisions locally and health research investment strategies nationally, and to give the New Zealand public confidence that health research is impacting positively on health care costs.

In summary NZHR maintains that:

1. Government ringfenced investment in health research must be increased by 21.4% per year to achieve a target of 2.4% of publicly funded health service delivery costs by 2027. In particular:

⁷⁹ NZHR. 2020. New Zealand Speaks! 2020 Kantar NZHR Opinion Poll. https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/08/NZHR-Report-2020-GENERAL-EDITION-PRINT_newlogos-final.pdf

⁸⁰ Access Economics. Exceptional returns: The value of investing in health R&D in Australia II. Canberra (Australia): Australian Society for Medical Research; 2008.

⁸¹ Funding First. *Exceptional returns: the economic value of America's investment in medical research*. New York (NY): The Lasker Foundation; 2000.

⁸² KPMG. Economic Impact of Medical Research in Australia: A report prepared for the Association of Australian Medical research Institutes. October 2018.

⁸³ <https://www.thejournal.ie/clinical-trials-4643965-May2019/?amp=1>

⁸⁴ KPMG UK. July 2019. Impact and value of the NIHR Clinical Research Network. https://www.nihr.ac.uk/documents/partners-and-industry/NIHR_Impact_and_Value_report_ACCESSIBLE_VERSION.pdf

⁸⁵ Health Research Council. Final consultation on New Zealand's first prioritisation vehicle for health research. 2019. http://www.hrc.govt.nz/sites/default/files/Consultation%20Document%20-%20March%202019_0.pdf

2. The \$1.9b four-year allocation to improve mental health outcomes must be increased by \$140m to \$2.04b to ensure that there is sufficient provision to carry out much needed, life-saving, mental health research
3. The financial returns on government and other sources of health research investment must be quantified in order to inform future health research funding decisions and investment strategies, and to give the New Zealand public confidence that health research is impacting positively on health care costs

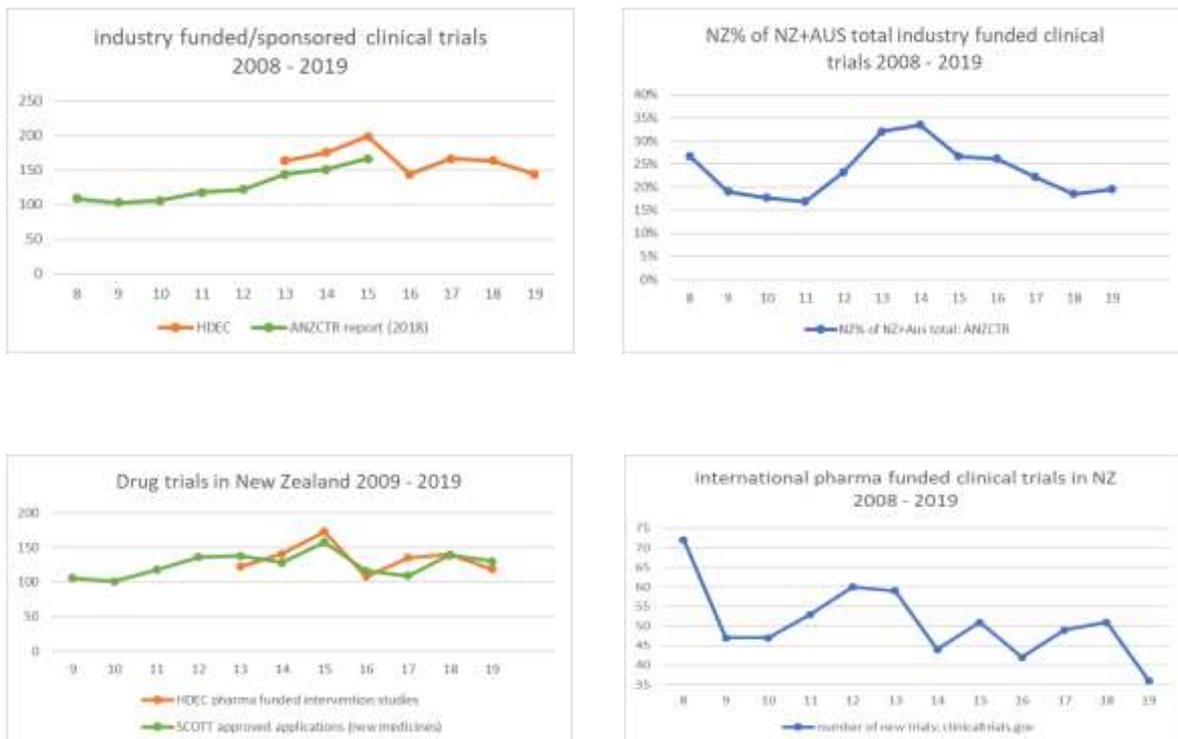
Section 5: Commercial investment in health and medical R&D

Incentivisation of commercial investment in health and medical R&D must be migrated from reliance on the government’s R&D tax incentive scheme to an eclectic range of specifically targeted strategies.

Commercial investment in health and medical research and development typically involves clinical trials for new therapies, medicines and devices. NZHR’s analysis of ANZCTR, US and European clinical trials registry data⁸⁶, together with information produced by the ANZCTR itself⁸⁷, suggest that there is much room for further commercial investment in the sector.

The graphs below⁸⁸ indicate that although there has been limited overall but latterly declining growth in the number of commercially funded clinical trials undertaken in New Zealand (fuelled by offshore companies contracting with New Zealand based clinical trials organisations), drug trials are showing no growth, the number of trials funded by international pharmaceutical companies which operate in New Zealand has fallen significantly, and New Zealand has been losing its share of the combined Australia New Zealand market.

Graphs 11 - 14: Commercially funded clinical trials



It remains to be seen whether the government’s recently introduced R&D tax incentive scheme will have any impact on these patterns, given that they will replace rather than be applied in addition to growth grants which were available prior to the scheme being introduced. NZHR’s

⁸⁶ Clinical Trials in New Zealand: a discussion paper. NZHR. March 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/02/Clinical-trials-in-New-Zealand-NZHR-op-ed-130319-V2.pdf>

⁸⁷ The clinical trials landscape in New Zealand 2006-2015. ANZCTR. 2018. http://www.anzctr.org.au/docs/NZ_Report_2006-2015

⁸⁸ NZHR. 2020. New Zealand Speaks! 2020 Kantar NZHR Opinion Poll. https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/08/NZHR-Report-2020-GENERAL-EDITION-PRINT_newlogos-final.pdf

submissions^{89 90} in response to the government’s R&D tax incentive discussion document⁹¹ and draft Research Science and Innovation Strategy⁹² was that the proposed rate was too low, and that it would need to be set at 35% if it was to have any impact on commercial investment in health research.

Statistics New Zealand is to repeat its R&D survey in 2020 and 2021⁹³, and NZHR will take a keen interest in whether there has been any movement in the estimated \$172m referred to in Table 1 above.

Some NZHR stakeholders have expressed the view that Australia’s R&D tax incentive scheme is more generous than New Zealand’s 15% tax offset rate, and that this will make it more difficult to compete against Australia and maintain, if not grow, market share in an internationally competitive clinical trials market. However, the tax offset rate in Australia for companies with over \$20m turnover averages 8.5%, and for smaller companies averages 16% (and in both cases proposals are currently before the Australian parliament to reduce these rates)⁹⁴. In this respect, and many other respects, the two schemes are broadly similar.

The key difference between the two schemes however is with the entity requirements. The New Zealand scheme requires entities to be in business in New Zealand, whereas the Australian scheme requires the entity to be an incorporated for profit company without a requirement to be “in business”, providing the IP flows back into Australia. This has the effect of incentivising offshore companies to do business in Australia, including contracting with Australian based clinical trials organisations (CTOs) (noting that in both Australia and New Zealand CTO’s are not generally able to claim the tax credits, but the companies they do business with can)⁹⁵. For there to be a level playing field with Australia New Zealand would need to relax its entity requirements.

NZHR’s reservations about the sufficiency of the 15% incentive notwithstanding this could have the effect of incentivising overall growth in clinical trials numbers, have a positive impact on the declining number of pharmaceutical company funded trials, and improve New Zealand’s share of the combined Australia New Zealand clinical trials market.

NZHR further notes that New Zealand businesses which are public entity controlled subsidiaries are excluded from benefitting from New Zealand’s R&D incentive scheme. We do not understand the justification for this and believe that they, and therefore the health research that they undertake, should be able to benefit from the scheme in the same way as any commercial entity.

Given that NZHR is not persuaded that the government’s R&D tax incentive scheme will have anything other than a partial impact at best on the growth of commercial investment in health

⁸⁹ NZHR. June 2018. A Research and Development Tax Incentive for New Zealand Discussion Paper April 2018. Submission by New Zealanders for Health Research.

⁹⁰ NZHR. Submission on MBIE’s consultation paper: New Zealand’s Research, Science & Innovation Strategy. September 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/11/NZHR-submission-re-MBIE-RSI-strategy-101119.pdf>

⁹¹ MBIE. Fuelling Innovation to Transform Our Economy. April 2018. <https://www.mbie.govt.nz/dmsdocument/3104-fuelling-innovation-to-transform-our-economy-discussion-paper-pdf>

⁹² MBIE. New Zealand’s Research, Science & Innovation Strategy. Draft for Consultation. September 2019. <https://www.mbie.govt.nz/dmsdocument/6935-new-zealands-research-science-and-innovation-strategy-draft-for-consultation>.

⁹³ More frequently than the usual biennial frequency, specifically to monitor the impact of the R&D tax incentive scheme. Personal communication from Statistics NZ, December 2019

⁹⁴ Personal communication. January 2020. Tim Benbow. EY R&D and Incentives Partner and Research and Development Advisory Group member (an independent group curated by the Government’s R&D policy team to provide advice to Government officials on the administration and policy settings for the R&D Tax Incentive)

⁹⁵ Tim Benbow. Ibid.

research in New Zealand, our position is that there should be a political commitment to implementing the following^{96 97}:

- Systematic implementation of all outstanding recommendations from the Health Committee’s 2011 clinical trials review⁹⁸
- Establishment of a national framework for clinical trial research at district health boards, PHOs and other publicly funded health service entities
- Development of clinical trials investment strategies which will enable New Zealand to be competitive with Australia (and other countries) as a place to conduct clinical trials
- Setting targets and developing strategies which will result in public health providers, including DHBs, attracting increased industry investment in clinical trials, especially drug trials
- Funding district health boards and other publicly funded health service providers to undertake clinical research as a front-line activity
- Establishment and maintenance of a single accessible register of clinical trials in New Zealand, with sufficient utility, including fields, to enable key elements of clinical trials trends to be reliably analysed and monitored
- Promotion of participation in clinical trials through public and physician awareness raising strategies, including requiring that physicians discuss the availability of any relevant clinical trials as part seeking patients’ informed consent⁹⁹
- Streamlining of Environmental Protection Agency processes for approving clinical trials of GMO based therapies
- Amelioration of the disincentivising impact that Pharmac’s reimbursement and rationing practices has on commercial investment in clinical trials
- Extending ACC compensation in the event of harm resulting from clinical trials to commercial trials
- Relaxation of the New Zealand R&D tax incentive scheme requirement that entities must be in business in New Zealand to qualify
- Allowing public entity controlled subsidiary companies to be eligible for tax credits under the New Zealand R&D tax incentive scheme

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⁹⁶ NZHR. Clinical Trials in New Zealand: a discussion paper. March 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/02/Clinical-trials-in-New-Zealand-NZHR-op-ed-130319-V2.pdf>

⁹⁷ NZHR. “Health and Prosperity through Clinical Trials Workshop” 22nd March 2019 summary. April 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/04/NZHR-clinical-trials-workshop-22nd-March-summary-010419-002.pdf>

⁹⁸ Health Committee. Inquiry into improving New Zealand’s environment to support innovation through clinical trials. June 2011. https://www.parliament.nz/resource/en-nz/49DBSCH_SCR5154_1/19f143ece9bbafc1f5970397e5d92a582e003faa

⁹⁹ NZHR. Submission on the Medical Council of New Zealand draft statement on informed consent. May 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/05/NZHR-submission-re-MCNZ-statement-on-informed-consent-final-280519.pdf>

Section 6: NZHR member organisations

Platinum



Gold



Silver



Bronze



Chrome



Foundation



Appendix A:

Table 1: Government health research investment as a percentage of government health expenditure for years ending 30th June 2009/10 - 2026/27

	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Health services (\$b)	12.5	12.9	13.3	13.7	14.1	14.4	14.8	15.4	16.3	17.4	19.0	19.6	20.2	20.8	21.5	22.1	22.8	23.5
Health research (\$m)	88.8	103.1	90.6	83.9	81.9	82.7	96.0	87.2	95.2	100.7	131.2	127.5	117.5	117.5	121.1	124.8	128.5	132.5
HRNSC (\$m) ¹⁰⁰							12.7	21.4	38.2	22.0	22.3	22.3	22.3	22.3	22.3			
Total health research (\$m)	88.8	103.1	90.6	83.9	81.9	82.7	108.7	108.6	133.4	122.7	153.5	149.8	139.8	139.8	143.4	124.8	128.5	132.5
R&D %	0.71	0.80	0.68	0.61	0.58	0.57	0.73	0.71	0.82	0.70	0.81	0.76	0.69	0.67	0.67	0.56	0.56	0.56

¹⁰⁰ Health related national science challenges (high value nutrition; aging well; better start; healthier lives). Based on a ten year funding envelope for health related NSCs of \$184.65m. <https://www.mbie.govt.nz/assets/e7c91ccacc/science-board-decisions-on-second-period-funding-2018.pdf>

Appendix B

Generic sources of MBIE funded health research	total \$000	health research \$000
Endeavour Fund	216,654	20,149
Marsden	70,545	6,561
Partnered Research Fund (M84)	33,846	3,148
Catalyst Fund	10,751	1,000
Regional Research Institutes	9,023	839
Callaghan	24,169	2,248
Callaghan Innovation - Operations MCA	61,064	5,679
Contract Management	31,162	2,898
Strategic Science Investment Fund	263,364	24,493
Talent and Science Promotion	26,519	2,466
Research and Development Growth Grants	158,776	14,766
Targeted Business Research and Development Funding	64,211	5,972
total	970,084	90,218