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Small countries cannot do everything in science: they have to make choices and choices are hard. That is why small countries must take a strategic approach to investing public dollars in research. In recent years we have seen this play out with the National Statement of Science Investment, the research roadmaps in the primary sector and in the conservation and environment sectors, and now with today's release the evolution of a strategic approach.

The first question one might ask is why should a strategy for the HRC involve more than the HRC itself? The answers become very clear as one reads the well-drafted strategic plan.

There are many stakeholders, all of whom have differing but valid and important expectations of our taxpayer funded health research system. Among these are the multiple ministries, agencies, the HRC itself, other funders, universities and hospitals, the research community and indeed our multiple publics. Concepts of co-design and co-production and extended peer review in how we produce knowledge may sound foreign to many researchers. However the pace of change now demands this. We are living in world which is moving fast with technologies ranging from data-mining, machine learning and artificial intelligence to the many genomic, robotic, implantable, and molecular therapeutic approaches such as gene editing and immunotherapies. Science cannot and must not take society for granted. Of all the disciplines, health research generally has been among the first to understand this, but the challenges of today and the broader range of disciplines now involving problem-driven science require deep understanding of socially robust approaches for knowledge production and application. Vision Maturanga might be argued to be an example of progressive practice in this complex area.

In this sense, a holistically owned strategy creates a template for common understandings. Foremost is the understanding that NZ must do world class health research, extending from the fundamental science to the most applied. In some areas we have demonstrated we not only add to global knowledge for social good but we actually have led the world. I may be biased but look at perinatology from Liggins and Liley to Harding. One city has more than led the way in a key field over 50 years. And we can say the same in a number of other areas. Sometimes we have not only led the world for public good but also for commercial benefit – the success of Fisher and Paykel Healthcare originates in science undertaken in the public sector.

But have we exploited this to national benefit? Not always. Our hospitals have not always wanted to be involved in research or teaching; they have been slow to understand the role of public procurement to promote domestic entrepreneurship. Our agencies have sometimes not been ambitious enough in what could be done. I think back 10 years to a discussion when a senior official in a previous ministry told me that we should not bother doing work in pharmaceutical development in NZ because, unless the drugs are also manufactured here, we cannot get a rate of return. In a world of global value chains, however, this is illogical and of course our science can add real economic value. In addition, the spill-over benefits of health research to other areas of our biological economy have been often underestimated.

The new Health Research Strategy addresses these and many other issues. It makes it clear that health research is a multi-stakeholder investment. It establishes a ministerial advisory board which I think is critical to ensure proper linkage to other parts of the science and innovation and policy systems. By way of an example, think of current challenges in mental health. These will not be solved uniquely by psychiatry; education, many social sciences, data science and others also play a role. Similarly, the policy response involves multiple agencies. Another example is in the opportunities created by the social investment model and the unique citizen-based data system being developed as a policy and academic research tool. This is world-leading, but wouldn't be possible without engaging multiple agencies and skillsets.

The new strategy informs a very meaningful prioritization logic: on one hand we will do world class work in areas of health research where we can genuinely be world class; and on the other we will do the research we must do because of our unique populations, ensuring that it is of a world class standard. Second rate research is a waste of money and, as technologies in research change, the range of scientists and skills needed will evolve. Data scientists of many kinds will become instrumental. So too will there be rapid change in clinical practice with tools like AI and many new individualised and expensive therapeutics emerging. Clear strategic choices will have to be made and this plan sets out the basis for doing so. Choices will have to be made around what funding tools to use – mission led or investigator led? How will health research link to other parts of the science system? And, as the strategy rightly points, how can we better mobilise the knowledge we produce to ensure its uptake? This is a challenge in every health system.

The Crown spends 15 billion dollars a year on health services. Even with this very significant increase in expenditure we are spending less than 1% of the health budget on R&D primarily to create and apply new knowledge. This investment in knowledge production must not obviate the need for the health system (DHBs etc.) to invest in their own operational research to improve decision-making and performance. Any business of this size would be spending at least 1% on its own operational research, independent of technical R&D. So while this strategy is

important, with necessary increase in funding and great strategic potential, the challenge on the MoH, DHBs, ACC, Pharmac etc. must be that they too must increase investment in client-focused operational research to match the knowledge creation support that the Government has now provided.

In all of this, we must not become insular. Indeed, we must move in the other direction with much of our research part of international consortia and partnerships. These structures are critical if we are to get the most bang for our taxpayer dollar through knowledge mobilisation to benefit our populations and to ensure that, where commercial translation is possible, it is expedited.

Health research in NZ is of a high quality but it has been under stress. Together with the increase in funding now provided, this strategy will assist greatly. However, it will need on-going stakeholder commitment, alignment and engagement at every level of the science and health systems. This must be a commitment to quality, but also a commitment to engagement with the various publics, the private sector and broader range of scientific disciplines. This strategy creates a great opportunity to do this. But strategies are only as good as their implementation.