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Tēnā koe,

Re: Precision health: Exploring opportunities and challenges to predict, prevent, diagnose, and treat disease more precisely in Aotearoa New Zealand.

Thank you for the opportunity to provide feedback on the proposed topic for the Long-term Insights Briefing, Precision health: Exploring opportunities and challenges to predict, prevent, diagnose, and treat disease more precisely in Aotearoa New Zealand.

The Royal Australasian College of Surgeons (RACS) is the leading advocate for surgical standards, professionalism and surgical education in Aotearoa New Zealand and Australia. RACS is a not-for-profit organisation that represents more than 7000 surgeons and 1300 surgical trainees and International Medical Graduates across Aotearoa New Zealand and Australia. It also supports healthcare and surgical education in the Asia-Pacific region and is a substantial funder of surgical research. RACS trains in nine surgical specialties, being Cardiothoracic Surgery, General Surgery, Neurosurgery, Orthopaedic Surgery, Otolaryngology Head and Neck Surgery, Paediatric Surgery, Plastic and Reconstructive Surgery, Urology and Vascular Surgery.

Do you think precision health is a worthwhile topic to explore in our Long-term Insights Briefing? Why or why not?

We feel that precision health is a worthwhile topic to explore in the long-term insights briefing but think that it needs to be done in a culturally safe manner. We think that any precision health applications need to consider the broader picture of population health rather than focusing on individual genomics. Individual genomics won't consider social determinates of health which are hugely responsible for driving much of the inequity in health outcomes seen in Aotearoa.

Secondly, we are concerned that there is a finite financial resource for health care and are considered that precision health may be considered at the expense of funding other essential health interventions. Currently there are huge gaps in the healthcare that we do and can deliver to our population due to lack of funding and infrastructure.

What opportunities does precision health create for more effective health care in the future (more than 10 years ahead)?

This is really challenging – it would have been very difficult to predict the global pandemic brought by the COVID-19 variants. Although consideration of precision health may help for the future it is important that any tools developed are broad and adaptable and have utility for any situations to enable them to be applicable. For example, strengthening digital health may have greater utility in Aotearoa in our rural environment than individual genomics. Again, application of any innovations



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Indigenous health

needs to be done as a true partnership with Māori to ensure that developments are accessible and acceptable to Māori patients and include their whanau.

We need to do better regarding climate change and our contribution to the carbon dioxide. Healthcare's climate footprint is equivalent to 4.4% of global net emissions (2 gigatons of carbon dioxide equivalent)¹. Put another way, the global healthcare climate footprint is equivalent to the annual greenhouse gas emissions of 514 coal-fired power plants. If the health sector were a country, it would be the fifth-largest emitter on the planet.

Surgery is one of the most resource-intensive areas of a hospital. It uses 3-6 times more energy than the rest of the hospital and creates a lot of waste. The carbon footprint of a single operation has been calculated as ranging from 6 to 814 kg carbon dioxide equivalents² – between 22 and 2,907 miles in an average petrol family car.

We need to consider how precision health can be used to reduce our carbon footprint.

What barriers or restrictions do you see in the health system that might hold it back from adapting future precision health advancements?

Cost – lack of financial capacity in the system. Work force issues – there are major lacks in many areas which decrease our capacity to provide for the health of our nation. Our Senior Medical Officer workforce is aging, and we are failing to provide the numbers needed to sustain it. We can particularly speak to a lack of ENT, Vascular and Neurosurgeons, with our workforce being propped up by SIMGs. There are also significant shortages of allied health care professionals – nurses, theatre staff, anaesthetic technicians that are leading to theatre lists being cancelled in all specialities.

Our current infrastructure is worn out, where new builds have been provided these are too small for the capacity needed. We don't have enough beds in our hospitals. Currently we are unable to provide level of care we should and could be currently let alone looking at the future to optimise care. There are also issues with IT infrastructure failing to meet the needs of the healthcare system and our patients, with many systems that fail to communicate with each other, resulting in much duplication of effort and failure of good patient care.

What concerns or issues do you have with precision health, or how we may adapt it in Aotearoa in the future?

A major concern held is related to issues around cultural safety and ethics. It is important that precision health is used wisely and has the back-up of appropriate counselling. It is vital that it is not misused, we are concerned about segue into eugenics – who decides what is good or not, what is cost effective and cost saving? There is a huge potential for the misuse of genomic technology and a need to protect our population base from this potential misuse. Great consideration must be given to the ethics involved with moving in this direction and the potential negative effects of such a proposal.

Which case study areas do you think the briefing should explore? Why?

We consider that Digital health and Pharmacogenetics have the greatest utility within Aotearoa. Though we would consider these beyond providing the individual with information. Any intervention considered should have a broader base – be community orientated and focused on improving the health outcomes off all within that community. Focusing on communities with the greatest healthcare needs and health inequities.

¹ https://noharm.global.org/sites/default/files/documentsfiles/5961/HealthCaresClimateFootprint_092319.pdf

² Rizan C, Steinbach I, Nicholson R, Lillywhite R, Reed M, Bhutta MF. The Carbon Footprint of Surgical Operations: A Systematic Review. *Ann Surg.* 2020 Dec;272(6):986-995. doi: 10.1097/SLA.0000000000003951. PMID: 32516230.

Thank you again for the opportunity to give feedback on the proposed topic of Precision health: Exploring opportunities and challenges to predict, prevent, diagnose, and treat disease more precisely in Aotearoa New Zealand.

Nāku noa, nā

**Associate Professor Andrew MacCormick, FRACS
Chair, Aotearoa New Zealand National Committee**