# New Zealand Ministry of Health: leveraging digital health to improve care

New Zealand ranks as one of the highest-performing countries in the Organisation for Economic Cooperation and Development's (OECD) Better Life Index, scoring 7.3 on general life satisfaction on a scale from 0 to 10, higher than the OECD average of 6.5.[1] A big reason for such a high quality of life is a high-quality healthcare system in which 88% of people in New Zealand report good health—one of the top scores across the OECD and far better than the average of 69%.

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What sets the country apart? Overall, New Zealand produces good health outcomes for the level of investment in the system, notes Ann-Marie Cavanagh, acting deputy director general, data and digital at New Zealand's Ministry of Health. In particular, the nation has strong policies and frameworks in place, including the 2016 New Zealand Health Strategy, a ten-year plan that views strong investment in healthcare as a necessary means to improving the overall wellbeing of New Zealanders.

The health ministry's "Triple Aim Framework"[2] is one way in which the government hopes to accomplish this goal by 2026. The framework acts as a three-pronged approach to delivering high-performance and value in healthcare. It seeks to provide:
1.  Improved quality, safety and experience of care for the individual;
2.  improved health and equity for all populations; and
3.  the best value for public health system resources.

The ministry's emphasis on value acknowledges that, in order to deliver an improved healthcare service, an array of factors ranging from economic means to users' experience determine the quality of care. Moreover, it recognises that value must be dispersed equally. Population groups such as Māori and Pacific peoples often receive a reduced form of healthcare services in New Zealand. The ministry is clear that improving the health of such groups may involve tailoring services to be more accessible, or that services are provided bearing cultural distinctions in mind.

The ten-year plan also emphasises the use of data and technology in delivering better value and care. Smart System, a theme within the ministry's roadmap, highlights how data and smart information systems can help to boost the availability of accurate information at the point of care, develop individual online health records that people can access and contribute to, and enhance decision-making and management reporting. Data collection and progress tracking in particular are two core components of how a smart healthcare system can advance the value of national healthcare provision. In order to implement this type of system, the Ministry of Health also established Digital Health 2020 to guide investments in digital across the health and disability sector in 2016-20.

"We're in the business of creating positive outcomes for patients and populations. Why not measure it and put this information in front of decision-makers so we can get more for your healthcare dollars," says Marc ter Beek, chief data officer at the Waikato District Health Board (DHB), one of New Zealand's 20 regional health boards.

## Digital Health 2020

New Zealand's digital strategy aims to connect technological investment with value delivery. Featuring five central components, it intends to create:
1.  An electronic health record for New Zealanders;
2.  a health and wellness dataset;
3.  preventative health IT capability;
4.  digital hospitals; and
5.  regional IT foundations.

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As each of these initiatives advance at different stages, monthly reports by the Ministry provide updates on key milestones. The September 2018 report, for instance, noted that 61% of general practices have implemented patient portals to offer their patients online access to their health information, and that New Zealand's ePrescription Service is on the upswing, used by approximately one-tenth of GPs.[3] In addition to information on progress, each report sets out details on upcoming milestones and the key risk factors involved.

The creation of a health and wellness dataset requires IT infrastructure that can securely share data between social sector government agencies and some non-government organisations. The National Patient Flow service is an example of a platform that provides information on patient referrals for specialist services, the outcome of these referrals and the time it takes patients to access care.

"New Zealand is developing a digital health strategy that is focused on enablers such as interoperability of systems, technical standards and creating a digital ecosystem that ensures appropriate data can be shared. One of the foundational principles is that digital services should be both consumer and life centred," explains Ms Cavanagh.

## The power of crowdsourcing

New Zealand is also working to improve healthcare through the use of crowdsourced data to tackle common problems. For example, in 2018 the Ministry of Health announced that it would work together with Australia to establish its FluTracking initiative[4] in New Zealand. The tracking initiative, an online health monitoring system designed to track flu-like symptoms across the country, was originally established in Australia in 2006. It consists of a simple online survey that takes less than ten seconds to complete each week during the flu season. The data are compiled into a report that discloses respondent numbers by jurisdiction, the types of symptoms experienced and the number of those vaccinated and unvaccinated.

Having this data helps inform healthcare practitioners, citizens and other stakeholders on important yet simple matters such as the prevalence of influenza strains in a given season. Should one particular area of New Zealand experience worse cases of flu compared with others, the tracking system could be used as a basis to analyse external factors contributing to health problems such as the environment, housing and economic means. And the basis of this initiative has the potential to be used throughout the healthcare sector. For example, crowdsourced data could be used to understand other common patient trends such as the use of primary care and emergency services and how those correlate with external factors such as geography and economic status.

## A service for all

Another element adding to New Zealand's digital capabilities is its Integrated Data Infrastructure (IDI). The research database, developed by Statistics New Zealand, collates information about people and households with input from numerous government agencies as well as non-governmental organisations. The data mainly centre around issues such as education, income, benefits, migration, justice and health. That information is linked together to form the IDI with the purpose of giving researchers insight into New Zealand's economy and society. The Ministry of Health can then provide information that underpins broad societal topics such as mental health and addiction, maternity care, and cancer, among others.

For example, one study, called "Improving rates of overweight, obesity and extreme obesity in New Zealand 4-year-old children in 2010–2016", involved collecting height and weight data. The results showed that the prevalence of overweight, obesity and extreme obesity decreased by 2.2%, 2.0% and 0.6% respectively between 2010/11 and 2015/16. These downward trends remained after adjustments for sex, ethnicity, deprivation, and urban and rural residence.[5] Such studies add considerable context, which then allows for the assessment of aspects of societal behaviour ranging from eating patterns and nutrition education levels, to trends in population groups in both rural and urban environments.

In addition to strong data collection, healthcare professionals in New Zealand are also making strides in data analysis. For example, says Mr ter Beek, his DHB has been making use of Qlik, a data analytics platform, to look at large quantities of data such as on trauma incidents. With Qlik, the analysts can create data visualisations and examine correlations such as between data on motorbike accidents and road conditions to start predicting where accidents might occur and what type of patient they may need to treat.

## Setting an example

New Zealand's 2016 Health Strategy is an effective example of how countries can benefit from the resourceful use of data and technology to improve value in their healthcare systems. And interactive communication between people and healthcare providers not only helps governments make evidence-based decisions regarding policy, but also provides a wealth of information that can be used to assess socio-economic evolvement and wellbeing.

Still, while being a sound strategy, the plan needs proper investment and an implementation approach to meet its full potential, notes Mr ter Beek. Currently, the system is in the early days of realising the promise of the Health Strategy. For example, many healthcare professionals are still keeping a lot of paper records, says Mr ter Beek, so implementing a move toward standardised and patient accessible electronic health records would help operationally and significantly enrich analysis. He would also like to see more standardisation and a unified effort across the country to track health outcomes data and costing data that fully account for provider time and other costs, in order to get a more holistic and specific view of value.

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"Agreeing and capturing standard health outcomes measures, developing a single electronic health record and other IT initiatives, and attracting and retaining the required population health and data analytics talent are all challenges in a fragmented DHB environment," adds Mr ter Beek. "I would advocate for centralisation of population health, funding, IT and business intelligence as a start." This will enable clear evidence-based decision-making about funded services, considering the trade-offs between prevention, early intervention and hospital-based interventions for all health funds available for the population.

But the country appears to be trending in the right direction. The use of agile technology and accessible social platforms in New Zealand will enable the Ministry of Health to frequently examine the success of its initiatives and assess what can be improved. And DHBs theoretically have the flexibility to experiment with value-based healthcare models, although New Zealand's single-payer system tends to prioritise volume, including population size, in allocating to DHBs.

"Whilst there is population-based funding, the current funding contracts are still very much volume based, and there exist many other volume-based performance targets for DHBs," says Mr ter Beek. "I call them 'misincentives' as they create, as a minimum, a perception that DHBs do not receive all their funding if they do not hit certain volume targets, specifically for electives. In primary care, co-payments for patients have a similar effect. Our DHB is on a journey to create more outcome-focused contracting models through a commissioning approach."

Mr ter Beek also advocates for keeping improvement capability and capacity decentralised to allow organisations and other decision-makers (clinicians, funders and managers) to review their own performance and make better value-based decisions at the local level. Value-based healthcare decision-making should be promoted and enabled at all levels in the system.

Footnotes

1. OECD; Better Life Index; New Zealand; http://www.oecdbetterlifeindex.org/countries/new-zealand/
2. Ministry of Health; New Zealand Health Strategy; Value and High Performance;
   https://www.health.govt.nz/new-zealand-health-system/new-zealand-health-strategy-future-direction/five-strategic-themes/value-and-high-performance
3. Ministry of Health; Monthly reports on digital health initiatives; https://www.health.govt.nz/system/files/documents/pages/digital-health-portfolio-report-sept2018.pdf
4. Flutracking; https://info.flutracking.net/
5. Statistics New Zealand; Improving rates of overweight, obesity and extreme obesity in New Zealand 4-year-old children in 2010–2016; 2017;
   https://cdm20045.contentdm.oclc.org/digital/collection/p20045coll17/id/715/rec/19