CONFERENCE ABSTRACT

Precision Driven Health: A New Zealand Research Partnership

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Future healthcare will be driven by individuals expecting personalized treatment based on their own biological, social and environmental profiles. We have launched an ambitious project with an integrated partnership model across government, commercial, health care providers and researchers in New Zealand.

The aim of the Precision Driven Health Research Partnership is to create the capability to optimize the health of each individual and their whanau (family) by combining and learning from all available data. Currently there are insights in electronic health records that are unused, as well as valuable information in untapped data sources, such as data from smart devices and environmental data. When these sources are combined with future sources such as genome sequencing, the data involved in health delivery will grow exponentially.

The partners are currently Orion Health, Waitemata District Health Board and the Universities. Orion Health is a company that builds software to improve clinical workflow, decision-making and patient care for the more than 102 million patients in their systems. The Waitemata District Health Board delivers health care to a community of more than 580,000 people. The Universities have expertise ranging from data analytics to medicine.

New Zealand is an ideal place to carry out this research, since we have a small but diverse population, and consistent health offerings across the country. We established a National Health Index more than 20 years ago, allowing clinical information to be transferred between agencies and linked for monitoring, research and reporting. More recently, systems to allow fast, secure sharing of medical information between individuals and agencies have been introduced.

The research partnership addresses four key themes to enable precision health to become a reality:

- Broaden the scope of precise, patient-centred healthcare by making (new data sources available).

- Utilise a variety of big data sources for (predictive modelling) in a healthcare setting.

- Utilise disparate data sources, analyses, and technologies to enable more (precise and timely healthcare).

- Leverage technology to (empower patients) to self-manage their health.

Challenges: The siloed and emerging nature of data make for a significant challenge. Health data comes in different types (text, structured, audio, image) of different forms (large, streaming) and of variable availability and reliability. A small but growing segment of the population is collecting genome information and in future this may add microbiome, metabolome, epigenetic, proteome and

transciptome data. For a full record of a person, data from sensor devices and environmental factors must also be linked with their other data.

Other challenges we face include evolving personal views on data privacy, a change in perspective from clinical-driven to consumer-driven services, analytical techniques that have not been designed to combine all of these features, and the challenge of how the information can best be presented.

Conclusion: The Precision Driven Health Partnership provides the opportunity to develop new science, and innovate in a small and fairly homogeneous environment. While the results will be transferable, the culture and make up of the population may provide unique insights not commonly found elsewhere.