INTELLIGENT DECISION SUPPORT TO IMPROVE VALUE AND EFFICIENCY

Vision

The vision of this flagship is to design evidence-based decision support tools based on highly accurate models that understand health risks and predict health events for individuals and cohorts. This requires comprehensive data and information across the care continuum that includes primary, acute and post-discharge care, for the purposes of building, calibrating and evaluating the models.

The tools and solutions developed as part of this flagship program will enable providers to use research evidence in real time to inform their decision regarding diagnosis and treatment. This effectively allows consumers and providers to make joint informed decisions about healthcare options.

In addition, the tools will enable funders to plan appropriate resources to optimise value and efficiency of services required at every stage of an individual's health journey and to quantify the impact of care choices. Among other things, the tools will provide deep insights to address potentially preventable emergency presentations, avoidable hospital admissions and hospital acquired complications, thereby offering huge efficiencies to the entire health sector, while simultaneously achieving the expected health outcomes for consumers.

The Consumer Healthcare Journey

Although Australians generally enjoy good health, when viewed from the perspective of connected care, the healthcare data does not naturally follow the healthcare journey of a consumer as it is fragmented with numerous disconnects across primary, acute and post-discharge care.

DHCRC flagship programs are large multi-participant collaborative research programs designed to deliver systemic impact across the health sector by focus on areas of demonstrated industry need.
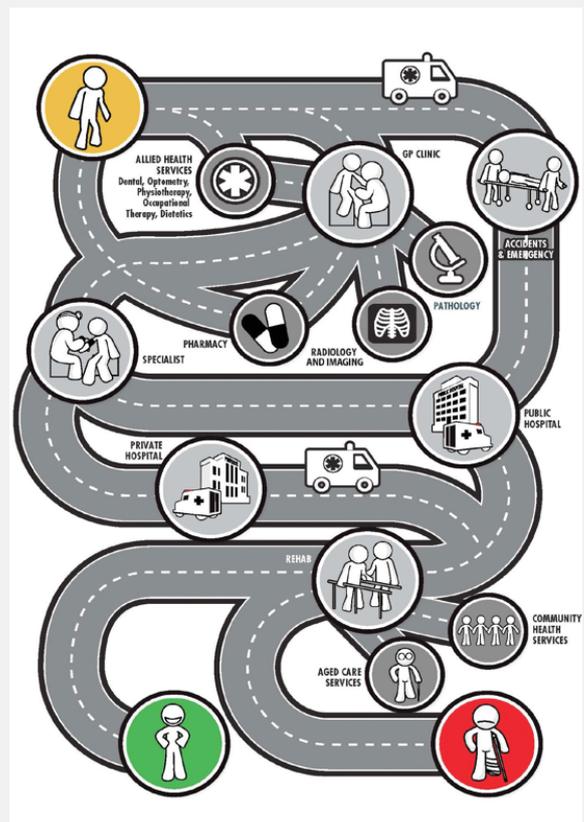

Figure 1. Healthcare Journey Complex

As a consequence, consumers as well as their providers have to navigate a complex healthcare journey (as depicted in the Figure 1) without adequate information to make the best decisions about the type and value of healthcare services required[1].

1. Srinivasan, U., Rao, S., Ramachandran, D., & Jonas, D. 2016, Flying Blind: Australian Consumers and Digital Health, Volume 1: Australian Health Data Series, Health Market Quality Research Program, CMCRC, Sydney. ISBN: 978-0-646-96364-8.

Drivers for Change

We now have an opportunity to take advantage of sophisticated AI solutions, better algorithms and faster computing infrastructure with high levels of built-in security provisions to deliver value and efficiencies in healthcare.

However, the current legislative and regulatory environment is not conducive to the production and use of the kind of data sets needed for our vision[1]. Concurrent efforts, to improve governance and privacy policies are required to take advantage of the current technological advances.

Increasing digitisation of health data, coupled with standardisation efforts, offer us the capacity to design comprehensive models that use the full spectrum of health data to achieve significant efficiencies around cost and value of healthcare services provided throughout the healthcare continuum.

Research and Innovation

A foundational component of this research theme is to build comprehensive longitudinal data sets around consumers at both individual and population levels, and develop systems and dashboard tools to support decision making that links prediction of risk with actual change in practice and care processes. Key to this effort is the ability to interpret the digital data in a reliable and clinically meaningful way.

Development of predictive models and real-time analytics and dashboards offers the opportunity to co-design the provision of healthcare services in such a way that it supports providers through their clinical practice and workflow, enables consumers to improve their health outcomes and provides significant efficiencies for the entire health sector.

Key Innovations

Develop technologies to extract clinically relevant data from complex health information sources

Many IT Systems in clinical settings are structured to address operational requirements rather than provide clinical insights. This innovation is around filling the gap of their primary purpose and the needed insights that are latent in the data.

Develop tools for providers and health agencies to quantify risks, impact of health choices and estimate resource usage

These tools will be applied on:

+ identified data sets to provide real time point of care decision support in primary, acute and post-discharge care

+ de-identified data sets at the population level to support resource planning and health services model development.

Create systems that integrate clinicians, consumers and administrators into risk reduction

The risk stratification models and decision support tools will form the basis for systems that go beyond classification and recommendation systems to support informed collaboration among consumers, providers and funders to enable behaviour changes that lead to risk reduction.

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1   Srinivasan, U., Ramachandran, D., Quilty, C., Rao, S., and Nolan, M. 2018, Flying Blind: Australian Researchers anåd Digital Health, Volume 2: Health Data Series, Digital Health Cooperative Research Centre, Sydney.