

AN INTEGRATED PROGRAM IN GENOMICS BEHAVIOUR CHANGE AND DIGITAL HEALTH FOR CHRONIC DISEASE PREVENTION AND MANAGEMENT

Overview

The Healthy Regions InterVENTion (THRIVE) is a program of applied research focusing on the prevention and management of chronic illnesses. The targeted illnesses are specific cardiovascular conditions, diabetes and selected mental health disorders.

The program is academically located at Federation University, the University of Melbourne and involves outstanding collaborating clinical scholars from the United Kingdom and United States. It also involves a range of clinical agencies and digital health providers. There are five senior professors involved with the program including Professor Shane Thomas, Professor Colette Bowring, Professor Fadi Charchar, Professor Britt Klein and Professor Louise Burrell supported by a strong team of Research Fellows including Dr Priscilla Prestes, Dr Amanda Young, Dr Huy Nguyen, complemented by strong international teams. The program is funded by the participating universities and the Regional Research Collaboration of the Australian Commonwealth Government.

Program Logic

The basic logic of our program is as follows;

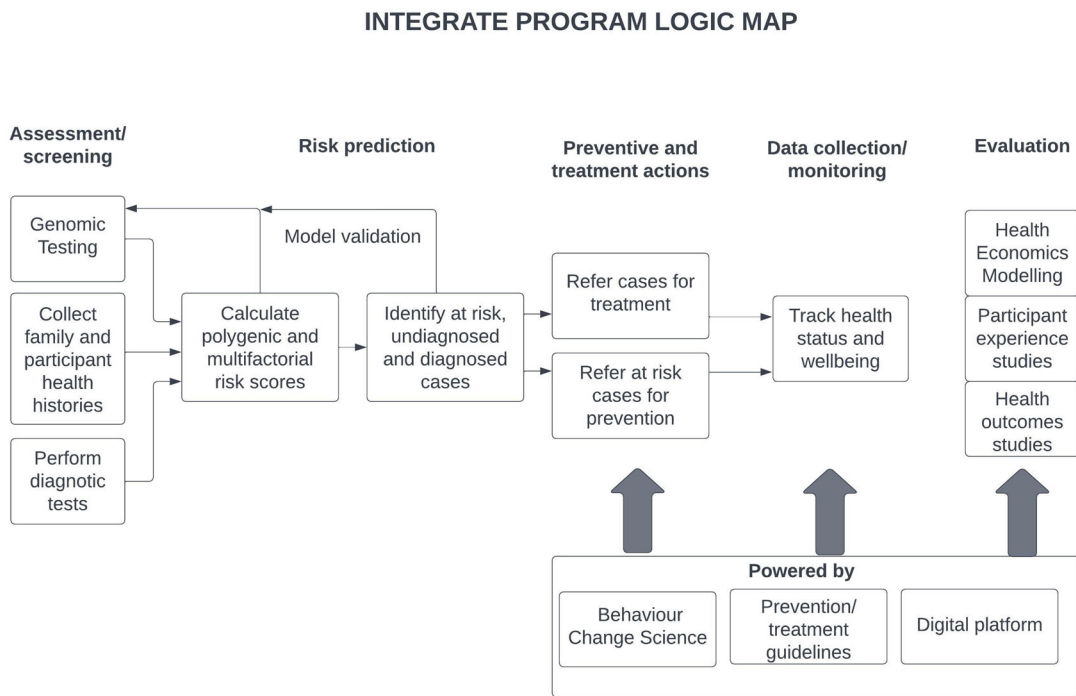
Chronic illnesses are a major threat to global population health through the lifespan into older age. Despite world-wide public health goals, there has been steady increases in chronic and non-communicable diseases (e.g., cancer, cardiovascular and metabolic disorders) and strong growth in mental health disorders. In 2010, 67% of deaths worldwide were due to chronic diseases and this has increased to 74% in 2019, with accelerated growth in the COVID-19 era and its aftermath. Ageing and wellbeing across the lifespan are directly impacted by the effective prevention and management of chronic illness. We are concerned with how what the World Health Organization has termed the “tsunami of chronic diseases” may be better addressed. Essentially we are proposing that effective chronic disease prevention and management ought involve the following program elements:

1. Polygenic and multifactorial risk prediction tools to screen for those at future risk of chronic disease and those with undiagnosed chronic diseases.
2. Advanced preventive, behaviour change and chronic disease management to address the targeted diseases.
3. Enhancement of the organisation of prevention and clinical care using digital health platforms.

Each of these actions individually has a convincing evidence base. However, there has been limited work concerning the combined population level health effects of their integration in coordinated program delivery. This is a multidisciplinary program of work that involves close collaboration between different scientific and clinical

disciplines. Based on extensive literature search and analyses and our extensive former work in these areas, we have devised a logic model of how chronic disease prevention and management could be organised. We have called this model "INTEGRATE".

Figure 1



As the name suggests the model involves integration of the full sequence of assessment, prevention and management of chronic diseases driven by behaviour change science, genomics testing and risk prediction supported by digital platforms.

This work is a direct response to the "tsunami" of chronic disease that is besetting humanity and the many challenges we have in its management including skilled workforce shortages, late diagnosis of conditions where health is compromised because of the lengthy undiagnosed and delays in treatment for many chronic disease conditions.

Our objectives

1. To improve risk prediction of chronic diseases using techniques such as polygenic and multifactorial risk prediction for key chronic diseases that enable earlier prevention and interventions and consequently to:
2. Improve clinical outcomes for chronic disease
3. To train clinicians in the use of advanced behaviour change science to improve clinical efficacy and efficiency
4. Augment clinician capabilities in the prevention, detection and management of chronic diseases using digital health technology

5. Assist people with chronic disease(s) to more effectively participate in their condition management

We are multidisciplinary in orientation because we believe that this integration is how the pressing burden of chronic disease will be most effectively addressed

Dissemination and implementation of research findings

We are strongly committed to very high-quality publication and public dissemination of our results and the use of implementation science principles to ensure that our findings inform system improvement in clinical settings.

Ethical principles

We work to the highest possible ethical principles to “improve the human condition”.