

## Research Themes

Based on the health challenges in Singapore, five research themes were identified - (1) nutrition, (2) physical activity, (3) primary care (& community care), (4) chronic disease management, (5) reducing infectious disease spread. Each theme will adopt a practical approach of building on existing research and understanding the problem in the local context, to ultimately cumulate in actionable insights to address our population needs.



### Theme 1: Nutrition

The social, physical and macro-environment can all affect dietary behaviour. Improving dietary habits has proven to be challenging in 'obesogenic' environments where highly palatable, energy-dense, nutrient-poor foods are readily available, inexpensive and aggressively marketed. Hence, better understanding of individual motivations for lifestyle changes and the environmental factors related to the food, built, social, and economic/political environment are required to develop effective interventions and strategies.

This theme aims to (i) enhance understanding of the determinants of dietary behaviour, (ii) design and evaluate the effect of dietary interventions, and (iii) evaluate the impact of national interventions.

### Theme 2: Physical Activity

Efforts to promote physical activity and reduce sedentary behaviour have traditionally been based on providing information to the public to increase awareness and motivation to adopt healthier behaviours. However, the effectiveness of such interventions has generally been limited. Potential reasons for their lack of effectiveness include insufficient personalisation, a predominant focus on individual level factors, and the limitations of traditional behaviour change theories.

This theme aims to (i) investigate the role of environmental influence on physical activity and sedentary behaviour, (ii) assess real time activity and interactions of individuals with contextual environmental factors, and (iii) develop and evaluate dynamically tailored real-time interventions to improve physical activity and sedentary behaviour.

### **Theme 3: Primary Care (& Community Care)**

A robust and well-functioning primary care system acts as the crucial gateway between health services and population health, providing a strong anchor for both the control of infectious disease as well as the long-term management of patients with chronic, non-communicable diseases. With rapid aging and the increasing prevalence of multi-morbidity, the role of the primary care sector is becoming increasingly important and complex. Worldwide, primary care providers face the pressure of the need to enhance their own capacity while also committing to the coordination of care with other external partners. Strengthening primary care has become a high priority for many health systems, with reforms aiming towards ensuring equitable access to affordable, comprehensive, high-quality primary care services through better health technology and improved management practices.

The primary care theme aims to (i) assess the strengths and weaknesses of the current primary care sector, (ii) evaluate the current impact of primary care on population health, (iii) evaluate the implementation, impact and cost-effectiveness of new models of care and innovations to clinical practice, and (iv) propose innovations to clinical practice or models of care.

### **Theme 4: Chronic Disease Management**

There is consensus that better management of patients with chronic conditions requires a person-centred approach, rather than one centred on the diagnosed disease. Active participation is crucial for achieving any kind of disease control and their personal needs and preferences must be taken into account in clinical decision making. Such tailored care, while important for those chronically ill, is particularly relevant for persons with Type 2 diabetes. There is no 'typical' diabetic patient and standardised management is likely to yield differential effects. Large scale clinical trials have pointed towards characteristics such as patient age, disease duration, co-morbidities, and patient attitude, as possible modifiers.

The chronic disease management theme aims to (i) identify health system level facilitators and barriers that impact the effective prevention, treatment and control of chronic conditions and factors that affect patients' experience, (ii) understand factors leading to poor adherence among the target populations and develop tools to improve efficacy of healthcare intervention, and (iii) evaluate programmes to improve chronic disease management.

### **Theme 5: Reducing Infectious Disease Spread**

Interventions to prevent infectious diseases ought to be simpler than interventions to prevent complex lifestyle-related diseases such as diabetes, but substantial barriers remain that hinder our progress in reducing the impact of infectious diseases at the population level. These include imperfect hand hygiene and practices while sick, inappropriate antibiotic usage, low uptake of non-compulsory vaccination, high risk sexual behaviour, and failure to remove breeding sites around homes and other locations.

This theme aims to (i) ascertain the population level determinants for effective control of specific infectious diseases, (ii) study and model the effect of specific interventions in reducing the spread of these diseases, understand the knowledge, attitudes and practices on, as well as barriers to population level interventions for reducing the spread of infectious diseases, and (iii) determine the

social and economic impact of specific infectious diseases in the absence of and with the successful implementation of population level interventions.

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