



Research Platform 08

# Population health, systems and services

## Defining population health, systems and services

Population health researchers investigate how everyday factors such as age, sex, socioeconomic status and where someone lives affects their health. These researchers work with the general public and health care providers to optimise the provision of care to communities across Victoria, Australia and the Asia-Pacific region. They also explore and assess how smart policy and targeted preventative measures can help people avoid ill health before they attend their GP or hospital emergency room. Healthy public policy initiatives informed by population health research, such as mandatory seat belts, immunisation programs, anti-smoking policies and educational programs have already saved more lives than the efforts of all hospitals combined.

By understanding and addressing the complex causes of disease, we can promote smart policies that help keep people healthy, productive and out of hospital. This will improve the wellbeing of Victorians and reduce the burden of disease on the healthcare system.

The next two decades will see Victoria face new health challenges that require an optimised response. For example, obesity is on the rise, with over one-third of the adult population and nearly a quarter of a million children being overweight or obese. These individuals are more likely to suffer from type 2 diabetes, heart disease, cancer, osteoarthritis and sleep apnoea, as well as experience the stigma that comes with obesity. Without a concerted effort to combat obesity, experts predict that nearly three-quarters of adults and one-third of children will be overweight or obese by 2025, putting strain on the health care system and economy.

Addressing obesity requires focus on a range of population health approaches, including promoting healthy eating through GPs, maternal and child health nurses, as well as healthy policies and interventions through platforms such as schools and sporting clubs. These are aided by innovative interventions such as 'nudge' approaches that move sugary food away from supermarket checkouts and encourage families to use smaller plates.

As the Victorian population ages, there will be increasing challenges for the Victorian health care system. Changing demographics mean that the number of Victorians aged over 65 years will rise significantly in coming years, with the latest data suggesting that children born in 2013 can expect to live to an age of 84 for females and 80 for males. This means we need to prepare the health system to handle the changing responses needed to keep an older population healthy and well.

Mental illness is expected to be the greatest contributor to the global burden of disease by 2030. It is therefore a growing priority for the Victorian Government, with estimates showing that nearly half of Victorians will experience mental illness at some point in their life. The Victorian Government's

10-year Mental Health Plan, released in November 2015, will provide long-term solutions to improve mental health across the state, with population health approaches key to success.

Population health insights will also benefit the health and wellbeing of Victorians in rural and regional areas, as well as Aboriginal Australians and those from lower socioeconomic backgrounds.

Big data and genomics are in the process of transforming population health research by providing vast amounts of data that can be analysed to reveal insights on the causes of disease. One example is Generation Victoria, which aims to follow 100,000 Victorian children from cradle to grave, learning how their life circumstances affect their health. More importantly, the insights derived from Generation Victoria will lead to disease prevention through early intervention and inform the health, education and social care sector and policymakers on how to best promote healthy living from early childhood.

## **Current strengths and opportunities**

### **Expertise in population and global health across the lifespan**

Melbourne Biomedical Precinct researchers have demonstrated strengths in population health data and analytics, including on the global burden of disease and expertise across the entire life course from pregnancy through to ageing. Through a range of institutions including The University of Melbourne's School of Population and Global Health, The University of Melbourne's Nossal Institute for Global Health and the National Ageing Research Institute (NARI), the Melbourne Biomedical Precinct is developing strong collaborative links with global bodies, including the World Health Organisation (WHO), the Bill & Melinda Gates Foundation and the Bloomberg Initiative. Forming alliances out of these collaborations will help translate new knowledge into improved outcomes for Victorian patients and services.

### **Growing collaboration**

Population health research is interdisciplinary by nature and requires collaboration among a wide range of experts and organisations, including researchers, clinicians, government departments, privacy law experts and non government organisations. By learning from other models across the world and developing the existing workforce in Clinical and Health Informatics, the Melbourne Biomedical Precinct can take a leading role in turning the data into useful population level information.

## **Future opportunities**

### **Accelerated implementation in health systems and policy through the digital revolution**

Big data and genomics technologies are opening up new avenues for developing models for preventing and treating disease at the population and individual level. Big data and genomics are producing vast amounts of data that need to be linked to other data sets, such as socioeconomic and demographic, to gain valuable insights.

### **Accurate models for disease prediction to reduce burden of disease**

New models that predict disease and reduce the reliance on hospital-delivered care will be able to be developed and tested in a controlled environment to optimise their implementation and practice. This will increasingly draw on an expert clinical and population health informatics workforce.

### **Regional focus**

There is great interest across the Asia-Pacific in infectious diseases, non-communicable diseases and preventative programs such as tobacco control, transport safety and HIV prevention. The Melbourne Biomedical Precinct is well-placed to take a leadership role across the rapidly growing Asia-Pacific region, building on existing links in a number of emerging countries.