Horizon Scanning Series
The Future of Precision Medicine in Australia

Precision Wellness

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1. Wellness

The techniques of Precision Medicine are also relevant to disease prevention - this might be called "Precision Wellness".

Precision Wellness can be used for delaying onset of chronic diseases, prevention and generally keeping people healthy longer. It is heavily (albeit not exclusively) dependent on knowledge of individual genetic circumstances influencing disease, e.g., cancer, stroke or cardiovascular disease risk, adverse reactions to particular types of medications and metabolic pathways.

Given our aging population and the impact of lifestyle caused chronic diseases, new ways of looking at wellness are increasingly important. The messages of healthy eating and exercise are not getting through to everyone- there are always comments regarding distant relatives, who lived long lives as heavy smokers or drinkers. The use of genetic analyses gives us the opportunity to fine-tune those messages and provide personal interventions based on the individual's genes. It is possible to change expression of pathways with nutritional, exercise and supplement interventions.

Genomics can determine responses to food, exercise and lifestyle choices and consequently can have a major impact on health, such as weight management and the risk of obesity.

There is data to show that knowing that an intervention program is specific and personal, positively affects compliance. Arkadianos et al 2007; Nielsen et al 2014; Meisel et al 2012; Grant et al (2009) reported a survey that concluded that physicians as well as patients thought it more likely that diabetic patients would adopt behavioural changes as a response to precise genetic information.

Genetic SNP testing is being utilised by Practitioners, including integrative GPs, specialist and natural health practitioners, to provide targeted programs to address the needs of their clients. Some applications include:

- increasing the chances of a successful pregnancy by treating both parents with nutritional, dietary and lifestyle interventions – often in patients, who have failed IVF.
- Obesity and overweight patients, who have tried many options
- Fitness and sport applications
- General wellness and desire to remain healthy
- Detoxification programs
- Corporate wellness programs

There are a number of companies in this field, most supplying kits and information to Allied Health professionals, as well as medical practitioners. Direct to consumer tests have been growing with the

increased awareness of DNA by the general public. 23andMe was an early entrant, which faced some issues with the regulatory agencies and had to retract its offering back to ancestry but has now relaunched.

Many of the direct to consumer (DTC) tests, particularly those in the USA, have been developed by the IT industry and the founders of these companies were often not aware of regulatory issues. 23andMe did not provide advice but a risk analysis and the FDA asserted that tests needed to have regulation or advice be provided by a clinical practitioner. This has recently changed with FDA engagement by the company and 23andMe is now providing health tests again. https://www.23andme.com/

2. Consumer demand for more preventative solutions

Consumers are now far more informed, rely on the internet to find medical and health information, have higher expectations of what constitutes best practice healthcare and are demanding better health outcomes, when they visit their providers. This is leading to a growing demand for proactive health and longevity solutions which, when combined with new genomic science and technologies, is changing the way health services are being delivered.

Personalised healthcare requires information that is specific to the individual. Since the human genome was elucidated in 2000, there has been a general expectation that genetic testing would provide the answers to a lot of medical questions. To date, it has largely failed to deliver on this. However, now that the research community has begun to understand what some genes do and how their expression can be modified, there is an opportunity to translate this knowledge into service solutions.

The ability to look at genetic changes is not limited to disease, however, and there is now an increased use of genetic information by allied health practitioners, in particular, to link genomic testing with preventative healthcare solutions. In “tech” parlance, these are the “early adopters”. The medical profession is traditionally slower to adopt new technology or research. One of the biggest hurdles for all practitioners, though, is how to deal with the vast amount of data available from the genome and other testing and translate it into clinical practice. Companies are now beginning to emerge that are focussed on in-depth, rapid, medical data analysis and traditional technology investors are moving into funding of these health applications.

Healthcare and wellness practitioners are still, however, struggling with the science of genomics and their ability to use it in their clinics. The challenge facing the healthcare industry is that point of care decision making is growing in complexity as the number of health diagnostic markers being assessed and correlated per patient increases. There is also hope that these technologies can be applied to understanding dementias at the personal level, so that remedial strategies can be applied early to reduce the propensity of disease and/or ameliorate the rate of deterioration.

Genetics is the common denominator required to deliver preventive, multi-disciplinary and truly personalised healthcare, however practitioners must also be provided with the requisite tools, training and support. To make it work in a national system also requires a functioning, easy to use, electronic database of patient data that is used by all practitioners and that can be controlled by the patients themselves.