

Overview of megatrends in health and their implications for Australia

Background paper

Executive summary

This background paper provides an overview of Australia's health care system, and identifies four "megatrends" in healthcare and their impact on the Australian health system. It is important to note that this background paper is neither a comprehensive overview of all health care activities in Australia, nor a complete review of all potential trends. Instead, it focuses on summarising major trends and provoking questions for further exploration by the Council and its thought partners. It has been prepared to inform a series of roundtable events being hosted by the Business Council of Australia and Australian Unity, and has been prepared with the assistance of McKinsey & Company.

Australia's impressive gains in lifespan and quality of life have been matched by a sustained rise in costs. Healthcare spending has outpaced the economy for years, increasing from 8.3 percent of GDP in 2003 to 9.4 percent in 2013.¹ In consequence, out-of-pocket spending rose more than two and a half times over the past decade. The long-term financial sustainability of the health system is uncertain.

At the root of this trend lies a clash between supply and demand - the existing supply models have been unable to match the economy's efficiency gains and face a major productivity gap. While other industries have reinvented their delivery models, technological base and value chain, healthcare has remained fundamentally unchanged. Meanwhile, demand for services is being driven by the burden of disease and rising consumer expectations.

We examined four megatrends that are driving supply and demand for healthcare in Australia and internationally. Megatrends are systemic forces that will shape the future of healthcare in Australia. They have the potential to disrupt existing care and business models, posing both challenges and opportunities for the health system. They interact with one another in complex ways, and differ widely in nature – they may manifest as new tools, needs, behaviours, environmental forces, or other forms.

Each of these four megatrends are profiled below, with a more detailed analysis of each following in later chapters.

Four megatrends are reshaping the supply and demand of care

Megatrend	Challenge	Opportunity
 Growing financial imperative to improve productivity	<ul style="list-style-type: none"> Australia's economic slowdown will exert great pressure on public and private health spending; if mismanaged, accessibility and quality of care could be compromised 	<ul style="list-style-type: none"> Use financial pressure as catalyst for reform, driving quality while reducing costs Reconfigure around new delivery models, e.g., routine elective "factories", integrated pathways and low-cost points of care
 Increasing aging and disease prevalence	<ul style="list-style-type: none"> Populations are greying and adopting unhealthy lifestyles, swelling the ranks of the chronically ill. Public purses are doubly strained as retirees contribute less and consume more 	<ul style="list-style-type: none"> Invest for value in chronic disease management; patients with higher needs do not receive more funding Promote self-managed and coordinated care
 Digital health and the new consumer	<ul style="list-style-type: none"> Many technologies are driving costs up, not down; providers have yet to capitalize on automation, connectivity and analysis Consumers are taking a "DIY" approach to wellness promotion and navigating the health system 	<ul style="list-style-type: none"> Open up public data sets and promote use Expand telehealth to address regional supply imbalances Increase health literacy to foster self-care Adjust funding models to reward healthy behaviours
 Precision medicine and personalised care	<ul style="list-style-type: none"> The great promise of precision medicine has only been partly fulfilled; the health system is struggling to translate the rapid pace of scientific progress into improved outcomes 	<ul style="list-style-type: none"> Tailor approval pathways to unique aspects of personalised therapies Adopt value-based reimbursement models to share risk with manufacturers

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- Growing financial imperative to improve productivity.** The long-term rise in healthcare costs is colliding with Australia's current financial headwinds. If mismanaged, this could limit the accessibility and breadth of healthcare services. However, international experience suggests that crises may be the catalyst for reform: many OECD countries responded to the 2008 crunch by driving better quality while taking costs out of the system. With a concerted effort, the health system can evolve toward more efficient delivery models such as elective procedure 'factories' and integrated pathways for specialty areas.
- Increasing aging and disease prevalence.** Health systems worldwide are struggling to adapt to a changing disease mix: populations are greying and lifestyles are growing less healthy, swelling the ranks of chronically ill patients. Public purses will be doubly strained as retirees contribute less and consume more. Promising avenues to manage this trend include improving access to primary care, promoting care coordination and self-management, and enhancing the quality of care for chronic diseases.
- Digital health and the new consumer.** Healthcare is reaching new levels of connectivity, automation and analysis. Leading providers are driving quality and efficiency with common technologies such as remote monitoring and clinical decision support, as well as next-generation innovations in analytics, genetic testing, 3D printing, etc. Consumers are being empowered to manage their own health and navigate the health system more effectively. They are adopting new tools such as online patient communities and fitness

wearables, they are demanding care based on a universe of clinical information, and they are increasingly selective of providers and care plans. This affords new opportunities for innovative funding models to reward healthy behaviours, consumer education, and bottom-up momentum for change. Australia continues to make inroads in digital health, although significant potential remains in several areas such as expanding low-cost telehealth technologies, encouraging use of public-sector data sets, and automating administrative tasks. The value-at-stake in digital health is significant; a recently released McKinsey Global Institute report, *“The Internet of Things: Mapping the value beyond the hype”* (June, 2015) identified potential savings from human health and fitness alone of USD \$170 billion to USD \$1.6 trillion by 2025.²

- **Precision medicine and personalised care.** The great promise of precision medicine has only been partly fulfilled over the past decade, but recent advances in diagnostic technologies and disease heterogeneity may accelerate the impact on clinical practice and health outcomes in coming years. The translation of scientific breakthroughs into improved clinical outcomes depends on more efficient approval pathways, value-based reimbursement models and closer links between genomic research and medical institutions. If Australia succeeds in unlocking the full potential of precision medicine, it can significantly improve survival rates for citizens, while reducing unnecessary spend on “scattershot” treatments and the “diagnostic odyssey”.

The causes and implications of these forces are examined below, as well as the challenges and opportunities they present. Several questions are raised to spark discussion amongst the community of stakeholders within and outside healthcare, in the hopes of building a shared vision for the future of Australia’s health system.

Megatrend 1: Growing financial imperative to improve productivity

1.1 OVERVIEW

The 50 years leading up to the 2008 crisis saw total healthcare expenditures in OECD countries rise 2 percent faster than GDP. This trend was remarkably consistent across the OECD: healthcare spending growth did not remain in line with GDP growth for more than five consecutive years in any country. This long-term trend has led healthcare expenditures to increase from 3.8 to 9.4 percent of GDP across the OECD between 1960 and 2007.³

The inexorable rise of health spending is not necessarily a problem. Health is, in a manner of speaking, the purest form of wealth, and consumers and governments may be well justified in shifting consumption towards health services if the incremental spend yields commensurate benefit. However, the challenges of measuring value in healthcare are notoriously difficult, and there consensus remains weak on the return-on-investment of health systems.

The global financial crisis dramatically redefined the problem for many - justified or not, rising healthcare expenditure was suddenly unaffordable. Cash-strapped governments were hard-pressed to finance public healthcare expenditure, which represents 70 to 85 percent of total healthcare expenditure in two-thirds of OECD countries.⁴ Consumers faced lower levels of personal disposable income and of savings.

Policy-makers who navigate such difficult economic times must choose from a limited set of options. They can do less: costs can be reined in with blunt but effective instruments such as rationing access to care, though this risks compromising accessibility and equity. They can pay more: healthcare can be financed via additional tax revenue or shifting budgets from other sectors, though this risks impairing a country's competitiveness and other social benefits. The most promising avenue lies in a third approach: to increase the health system's productivity by relentlessly measuring and improving its value.

Australian context

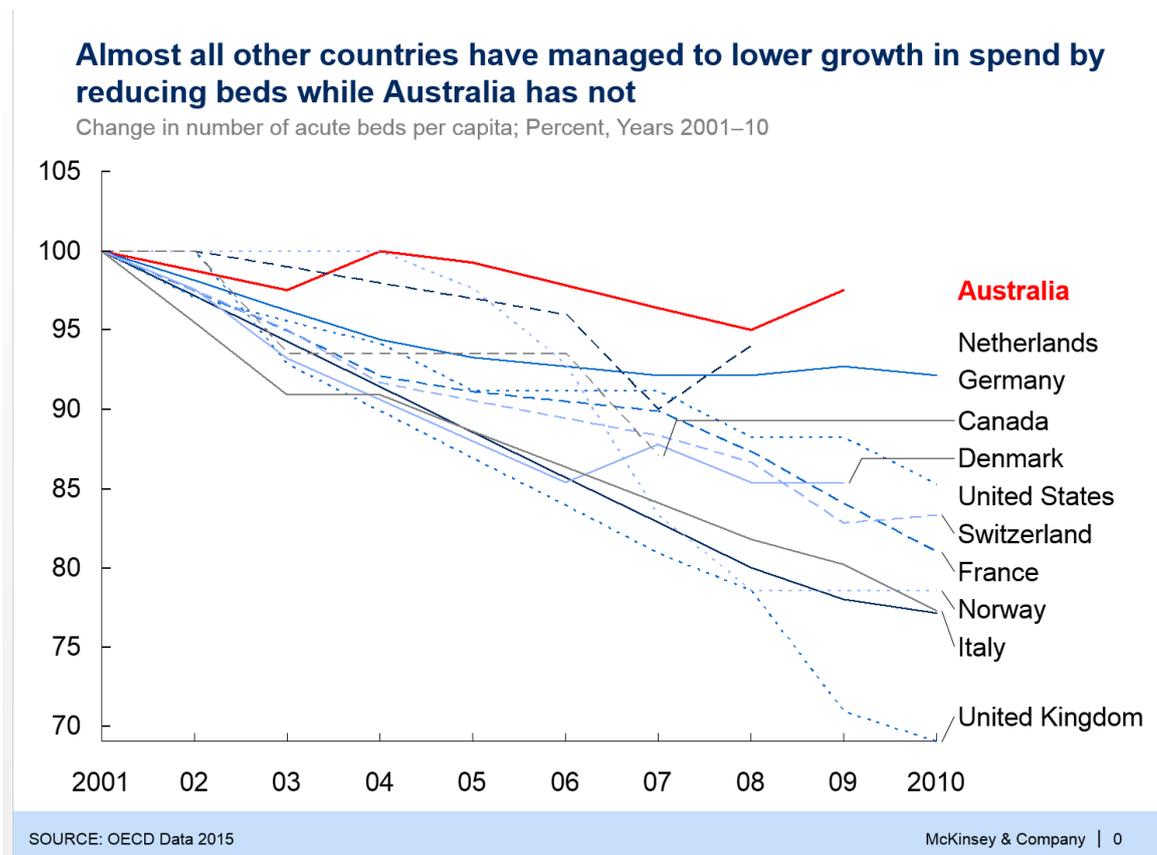
Australia's healthcare costs have outpaced GDP for decades, enabled by healthy growth in disposable income and a positive economic outlook. However, this long-term trend is colliding with a challenging financial context. Key commodity prices such as iron ore have tumbled by more than 50 percent since 2013⁵, and nominal GDP growth was 1.8% in 2014-15, its weakest growth since 1961-62.⁶

Australia now faces its worst cumulative deficit in 60 years, projected to exceed 24 percent of GDP by 2018-19. Net debt has increased from 3 percent of GDP in 2010 to over 15 percent in 2015.

The impact on individuals is equally stark. For the first time in fifty years, personal disposable income has fallen for four quarters in a row.⁵ Debt-to-income ratios have tripled to 152% since the 1990s.⁷ Nominal wages and real disposable income have flattened, forcing many to begin tapping into personal savings to maintain living standards. Faced with these pressures,

Australians must become more value-conscious in their healthcare consumption, or cut deeper into other spend categories.^{8,9}

Financing the health system is also challenged by hospital spending, which has been the fastest-growing segment of government health expenditure for the past decade. Australia is virtually alone in maintaining the number of hospital beds per capita,¹⁰ suggesting a growing mismatch with the shift in demand for care from acute treatment to management of chronic diseases.



Despite this trend, bed occupancy rates are relatively high at 85 percent. However, high usage is due in part to “supply-induced demand”. Research has shown that admission rates increase as more resources become available.¹¹ Hence, the reliance on facility-based care may be driving unnecessary admissions or excess length of stay.

OECD comparisons also indicate room for improvement. In a 2013 review of hip and knee replacement providers, Australians had the longest length of stay among seven peer operators, 60-70 percent longer than average for both procedures. Sevenfold differences in admission rates for procedures such as cardiac catheterisation and knee replacements between Medicare Locals also point to significant variation in practices and opportunities for standardisation.¹²

Some states are taking on major reconfigurations of their health systems. South Australia’s “Transforming Health” program aims to consolidate its hospital network in order to provide “right first time, every time” care. The program’s primary objectives are to improve quality of care by enabling sufficient throughput, to deliver appropriate and timely admissions while

minimising unnecessary hospital stays, removing duplication of assessments among providers, and ensuring staff provide proximate and integrated care management. Ultimately, South Australia will bring its quality outcomes and resourcing levels closer to best-practice.¹³

International context

The global financial crisis was a crucible for many health systems, and demonstrated that these moments of truth hold great potential to catalyze value-creating reforms. Since 2009, real per capita health spending has declined in most EU countries, while the rest of the OECD has seen 2.5 percent growth – substantially lower than the decade leading up to the crisis.¹⁴ The bold reforms of this period hold valuable lessons for Australia.

In the United States, for instance, the Affordable Care Act has sharpened the focus on value-based reimbursement. Innovations such as Accountable Care Organizations, Patient-Centred Medical Homes, and bundled payments for episodes of care, have all incentivised improvements in both total cost of care and quality of outcomes. It has accelerated the adoption rate of high-deductible consumer directed health plans, which increased from 2 to 40 million covered lives between 2004 and 2013.¹⁵

Ireland was among the hardest-hit countries during the global financial crisis; a 20 percent drop in GNP led to cuts of €1 billion in 2009 and €1.5 billion in 2012-14.¹⁶ A series of measures included reducing the number of beds per 1,000 people from 3.2 to 2.9 over three years – a reduction of nearly ten percent – staff reductions of over 6,000 people, and pay reductions within the Public Service Agreement. Nonetheless, quality of outcomes has been preserved, and life expectancy increased by 0.8 years between 2008 and 2012.¹⁷

The Valencia region of Spain undertook a decade-long redesign of its health system, with several bold choices. For instance, five of 21 health systems were privatised, and have achieved 25 percent lower reimbursement levels than the public systems. Patients were given free choice of hospitals to encourage competition, and some health systems now attract 20 percent of their patients from other districts. Capitation financing has created strong incentives for prevention and integration, and wait times are now among the lowest in Spain.¹⁸

The reforms of recent years indicate a growing trend among leading institutions to shift away from the classical generalist hospital towards four innovative delivery models: high-complexity procedures are being consolidated into centres of excellence, routine elective procedures are being streamed into “focus factories” which achieve tremendous scale and throughput, general unscheduled care is being redirected from emergency rooms to reduce cost care and eliminate unnecessary activities, and specialised areas such as mental health and pediatrics are being integrated into care pathways extending beyond the hospital. Below are four case examples which illustrate these delivery models.

The NHS in the United Kingdom has created leading Centres of Excellence for highly-specialised procedures such as Stroke management. By consolidating 31 hyper-acute stroke care units into 8 hubs, thrombolysis rates were increased from 3.5 to 12 percent (the best of any large city worldwide), the in-hospital death rate is now four times lower than the national average, and average length of stay decreased from 15 to 11.5 days. Hence, commissioners improved quality and efficiency of care, while releasing stranded fixed costs and reducing service duplication.¹⁹

The Coxa hospital in Finland illustrates the model for a general elective “focus factory.” Coxa operates exclusively on joint replacement, with impressive results: a one-year infection rate below 1 percent for knees and hips, and an average length of stay of 3.2 and 3.6 days respectively. By pooling five catchment districts to achieve very high patient volumes, Coxa has reduced metrics such as turnaround time by over 75 percent from the generalist hospital it replaced and achieved 95-97 percent theatre utilisation. Key innovations include tying half of surgeon salaries to case-mix adjusted outcomes, publishing surgeon-level performance data, and reimbursing patients for avoidable complications.²⁰

The Polikum Berlin clinic is a GP Super Clinic which provides an alternate point of general unscheduled care. With more than 250,000 outpatient contacts per year, Polikum Berlin provides high-quality primary and secondary care while preventing inappropriate emergency department utilisation. The clinic provides a range of services including on-site radiology and blood testing, direct access to specialists, and EHR linkage to a network of satellite clinics.

The CenterLight Program of All-Inclusive Care for the Elderly (PACE) is the largest elderly care program in the U.S. with over 3,000 enrollees across the greater New York City area. Multidisciplinary teams include PCP, RN care manager, social worker, physical/occupational therapists, personal care attendant, dietician, and other specialists. Via a highly coordinated care program, CenterLight PACE has reduced percent of members permanently residing in nursing homes to 6 percent (versus more than 50 percent for Medicaid), and operational metrics such as annual cost per patient and hospital days are over 25 percent lower than Medicaid.²¹

1.2 OPPORTUNITIES FOR AUSTRALIA

As these examples demonstrate, Australia’s financial challenges can act as a catalyst to shift towards more efficient and effective delivery models. Three enablers of change for the future health system could be considered:

- 1. Engage political leaders in confronting healthcare’s quality and productivity gap.** Given the societal and economic pitfalls of healthcare reform, political leadership can be hesitant to take bold measures towards a higher-quality and more productive system. The current environment may be more conducive to public reform of healthcare delivery.
- 2. Capitalise on increased consumer value-consciousness.** Australians will be more sensitive than ever to the financial impact of healthcare, particularly given the relatively high levels of out-of-pocket spending compared to peer systems. This may afford opportunities for consumers to play a greater role in cost-effectively preventing and treating diseases.
- 3. Realign incentives across the value chain.** Current reimbursement models may not always reward efficiency; for instance, fee-for-service payment encourages physicians to increase volume of care; low price transparency and copayments encourages patients to demand additional treatments; and the secondary-tertiary structure encourages providers to focus on care rather than prevention. Aligning incentives around value creation may help improve outcomes and reduce costs.

These enablers could help Australia shift from traditional facility-based care towards the more innovative models described above. System-level reconfiguration opportunities differ for each of the four major service areas:

- 1. Consolidate high-complexity procedures.** Wherever populations are sufficiently concentrated to preserve access, specialised Centres of Excellence can provide increased economies of skill and more effective 24/7 coverage. This can be implemented at large-scale: for instance, England has avoided up to 600 deaths per year via a national network of 26 major trauma centres.²² A survey of sub-scale practices across each State would be a promising starting point for such a reconfiguration.
- 2. Develop “factories” for routine elective surgeries.** Recent research from Dartmouth confirms that the volume-quality correlation extends to lower-complexity procedures such as knee replacements and cataract surgery²³. Elective procedures should be streamed separately from emergency care, to achieve higher levels of specialisation and throughput.
- 3. Direct general unscheduled patients to lowest-cost point of care.** Progress towards the National Emergency Access Target (NEAT) can be aided by channeling the right patients to phone consultations, walk-in clinics, a telemedicine service or self-care resources. Emergency departments with the highest admissions are often furthest from achieving the NEAT²⁴; avoidable admissions can be forestalled by, for instance, rapid response teams for the elderly and other high-risk populations.
- 4. Establish integrated care pathways for specialised areas.** Several unique clinical groups such as mental health, women’s health and pediatrics, require hand-offs and coordination which drive rework and delays. Hence, their productivity cannot be maximised within the four walls of a hospital; a seamless and efficient patient journey can only be found in a coordinated model which integrates doctors, clinicians, community resources, social workers and other key actors.

Increasing financial pressure holds significant implications for many stakeholders: policymakers and insurers will be hard-pressed to finance current reimbursement levels, and may face tough decisions about which health benefits or other social goods to prioritise. However, financial pressure may be alleviated as new incentives and improved coordination sift waste out of the system.

Providers will be asked to do more with less, and savings timelines will accelerate. New models of care would require updated team structures and activities, and some hospital functions would diminish. New capabilities such as population health management and risk-based pricing would become essential to fulfill their new role.

Manufacturers will increasingly have to justify the value-add of their products, and accept lower margins. Incumbents may be disrupted by new entrants who attack new unmet needs in the value chain, such as population health management and remote monitoring. More consumers will have to choose between paying for medical care and other expenses. However, these stakeholders can all benefit from sharing in the quality and productivity gains enabled by new models of care.

1.3 QUESTIONS AND ISSUES FOR DISCUSSION

In order to adopt the right strategy in response to the uncertain outlook for Australia's economy, stakeholders across the health industry should consider four high-level questions:

- **Financing the future:** What are the likely implications of the economic downturn for financing the Australian health system? Under a range of potential economic scenarios, what would the implications be for hospital financing, out-of-pocket spending, and reimbursement of high-cost procedures?
- **Capitalising on fiscal pressures:** What opportunities for healthcare transformation may be addressable in the current context? How can increased political will and heightened consumer value-consciousness eliminate waste from the system instead of cutting benefits and access?
- **Creating consensus:** Network reconfiguration is a sensitive and far-reaching issue - which bodies would be best-suited to lead a collective search for more cost-efficient and high-quality delivery models?
- **Paying for performance:** How can insurers create stronger incentives to manage volumes of activity and reduce readmission rates? How can insurers manage the health of populations and enable providers to deliver maximum value?

Megatrend 2: Increasing aging and disease prevalence

2.1 OVERVIEW

As worldwide life expectancy has nearly doubled over the past century, aging populations are placing commensurately greater pressure on public finances. Dementia, for instance, is estimated to cost more than \$600Bn USD worldwide.²⁵ Not only do the elderly consume more care, they also have a lower financial contribution – the average dependency ratio across the OECD is expected to nearly double by 2040, meaning that economies may shift from a ratio of four working-age people for every person aged over 65 years to roughly two working-age people.²⁶

Non-communicable diseases (NCDs), which account for more than 80% of the burden of disease in OECD countries²⁷ are driven by lifestyle choices as well as aging. The number of overweight or obese people worldwide has now exceeded 2 billion people (almost 30 percent of the global population), and is on track to comprise almost half of the world's adult population by 2030. Obesity, which should be preventable, is now responsible for about 5 percent of all deaths worldwide.²⁸

Australian context

Demographic forecasts by the Australian Bureau of Statistics reveal the extent of change in the nation's age profile. In 2011, 14% of the Australian population was aged 65 years and over. In the next forty years, this proportion is predicted to rise to between 23% and 25%; by 2040, there will be over 1.1 million Australians over age 85.²⁹ Average life expectancy is also on the rise and currently stands at 83 years.³⁰ It must be noted, however, that life expectancy is 10 years lower for Indigenous Australians than non-Indigenous Australians.³¹

Chronic disease already accounts for over 90 per cent of all deaths and is the leading cause of illness and disability in Australia.³² Today, more than 80 per cent of Australians are estimated to have at least one chronic condition or risk factor,³³ with hypertension identified as most common (affecting 26.3 per cent of Australians.) Australia has the highest prevalence of chronic disease among OECD countries—followed closely by Hungary (70 per cent) and New Zealand (65 per cent)³⁴—and just four chronic diseases account for 36 per cent of all health expenditure in Australia: cardiovascular diseases, oral health, mental disorders and musculoskeletal issues.³⁵

The burden of chronic disease is expected to increase in the coming years, driven by both an ageing population and an increase in risk factors such as obesity and physical inactivity. In 2012, for example, the OECD reported that Australia had an obesity rate of 28 per cent—the fifth highest rate of obesity out of 34 surveyed countries (the United States, Mexico and New Zealand reported higher levels of 30 to 35 per cent, and the OECD average was 18 per cent.³⁶)

International context

Populations are turning greyer worldwide. In 1950, 8% of the world's people were over 65 years old. This grew to 11.2% by 2011 and is forecast to reach 22% by 2050. This means the world will contain more than 2 billion people over the age of 60 years by the year 2050.³⁷ The shift is

particularly marked in emerging countries, where demographic shifts that lasted a century are now taking place within a generation; for instance, China's population aged over 65 is expected to triple to 330 million people by 2050, placing an unprecedented burden on their health system.³⁸

The anticipated economic toll of chronic diseases continues to grow, and was recently estimated to total \$47 trillion by 2030, equivalent to roughly 5 per cent of global GDP each year.³⁹ The direct costs of care are magnified by productivity losses; for instance, an American study showed that men with chronic conditions worked 8 percent fewer hours per year.⁴⁰

2.2 OPPORTUNITIES FOR AUSTRALIA

As the population ages and the prevalence of chronic disease increases, Australia's health care system will need to evolve to meet growing population health needs and address rising health care costs, ensuring evidence-based care is provided at the right time and in the right place. Given this, a number of opportunities exist:

- 1. Improve the quality of care delivered to people with chronic disease.** First, clinical guideline adherence was found to be relatively low in Australia, particularly for people with chronic health conditions.⁴¹ For instance, clinical guidelines were only followed for 63 per cent of people with diabetes, and 38 per cent of people with asthma. Secondly, medication-related hospitalisations accounted for 30 per cent of all hospital admissions among people over the age of 75, of which three quarters were found to be potentially preventable.⁴² Finally, Australia can improve its oversight of care quality by expanding the ACSQHC program, akin to the U.K.'s Quality and Outcomes Framework, and the American ACA reforms on public reporting of performance.⁴³
- 2. Invest for value in managing chronic disease at the primary health level.** MBS chronic disease funding is not targeted at people with higher needs or higher chances of hospitalisation, and it does not sufficiently incentivise long-term follow-up, both of which are critical to reducing cost.⁴⁴ Indeed, a prospective analysis of current chronic disease funding found little to no relationship between the complexity of a person's health care needs and the amount of chronic disease funding they received.⁴⁵ For example, people did not receive substantially more resources if they had high HbA1c levels, systolic blood pressure or cholesterol, or if they had multiple chronic diseases or were more likely to require hospitalisation in the next year.⁴⁶
- 3. Strengthen the links between the acute system and aged care.** Australia has a substantial aged care system (both residential and community), with over 3,000 homes and funding equal to nearly 1.5% of Gross National Income.⁴⁷ However, few of these resources are tightly integrated with acute care: nursing homes, assisted living technologies, and 'concierge' services could all better support the triage and care of the elderly population.
- 4. Improve consumers' experience of primary health care, particularly with respect to care coordination and self-management.** Self-reported engagement levels of Australians with long-term health issues is 48 percent, significantly lower than 69 per cent in the United Kingdom.⁴⁸ One major challenge is care coordination: a 2013 ABS survey found that 14.3 per cent of people who saw three or more health professionals for the same condition reported

issues caused by a lack of communication between health professionals.⁴⁹ The numerous Australian self-management support programs could also benefit from more coordination.⁵⁰ Finally, according to 2014 Commonwealth Fund survey results, Australia ranks seventh (out of 11 countries) on the self-reported availability of chronic health advice, with only 65 per cent of people reporting that they knew how to get advice.⁵¹

- 5. Improve access to primary health care, especially out of hours and in rural and remote areas.** Ready access for the elderly and chronic-condition population fosters utilisation of primary care services and minimises preventable deterioration in their condition. However, the 2013–14 ABS survey found that nearly one in three people living in outer regional, remote or very remote areas waited longer than they felt was acceptable to get an appointment with a GP, compared with just over one in five people in major cities.⁵² In terms of non-emergency department, out-of-hours care, Australia ranks 9th out of 11 OECD nations, with 46 per cent of people reporting access issues.⁵³

The sustained increase in the elderly and chronically ill populations has significant implications for a number of stakeholders. Payers can improve the value for money delivered by MBS chronic disease funding, which includes care plan and team care arrangements. Funding for these items increased at a rate of 25 per cent per annum between 2006 and 2014 and now costs more than \$848 million per year. There is substantial evidence that multidisciplinary care plans, when designed and implemented properly, can improve outcomes for people with chronic disease and can therefore reduce chronic disease expenses in the long term.⁵⁴ Expanding the role of insurers in primary health care could potentially lead to several benefits for consumers, both because it would enable insurers to become more involved in coordinating effective care interventions, and because it would encourage greater preventative care.⁵⁵ This could be particularly beneficial for people with chronic diseases or complex needs, given that insurers have an incentive to use primary health care in innovative ways to avoid more expensive secondary care costs.

Providers will face tremendous pressure due to increased demand for health services; hospital costs are already the main driver of total healthcare costs, which are rising at 8% per year. Australia's relatively weak performance on preventable hospitalisations (13th out of 19 OECD peers) will, if not improved, magnify the burden of these populations. With only 1.9 per cent of health expenditure dedicated to prevention and public health services (19th of 22 OECD peers), it will be imperative for providers to educate and equip consumers to assist with their own disease management.⁵⁶

For consumers, education and self-management programs relating to chronic disease will become increasingly important. Also, Australia has a generally high portion of its health care funding paid for by "out of pocket" expenses incurred by consumers. As the population ages and chronic disease continues to become more prevalent, consumers will be increasingly squeezed by health care costs. This will be problematic for low-income families: in one in 10 of the poorest households that pay out-of-pocket costs, those fees eat up over 20 cents in every dollar of the household budget.

Lastly, if private health insurers are to play a role in creating positive outcomes in primary care, Australian regulators will need to play a supervisory role to ensure the needs of the broader community are met. Due to multiple market failures, health care markets tend to require regulatory assistance from governments in order to protect consumer interests, create effective

competition, and prevent the creation of a two-tiered health system in which privately insured consumers receive privileged access to care.⁵⁷

2.3 QUESTIONS AND ISSUES FOR DISCUSSION

Several open questions will determine how successfully the Australian health system responds to these challenges:

- **Curbing costs:** How can the system reduce the rate at which health care costs are growing, without sacrificing the breadth and quality of services provided for elderly and chronically ill populations? What are the greatest risks to protect against in managing the growth of health expenditures?
- **Prioritising prevention:** What gaps exist in the prevention and public health system? How can stakeholders determine the “return on investment” of these versus other health interventions?
- **Supporting self-care:** How can providers foster uptake of technology-enabled self-management programs, particularly for people with mental disorders?
- **Promoting private sector:** What regulations are needed to accelerate private-sector support for these populations, while protecting consumer interests?

Megatrend 3: Digital health and the new consumer

3.1 OVERVIEW

There are three types of information technology products and systems that constitute digital health, namely those that:

- **Connect** - enhance connectivity so clinicians and patients no longer need to be co-located (for example, telephone and web-based triage, telephone and video consultation, physician web messaging, vital parameter tracking, remote monitoring – including wearables, implantables, injectables, ingestibles and non-wearable measurement devices - and self-care);
- **Analyse** - utilise big data to target care and information and use real time analytics to make best use of labor and resources (for example, tools supporting integrated care, integration of medical records, screening and prevention, or decision aids); and/or
- **Automate** - automate previously manual tasks to both reduce time on administration and reduce variation between practitioners (for example, online booking, booking reminders, barcoding, mobile working, or e-referrals).

Digital health tools are increasingly influencing the way in which health care is provided, ranging from telehealth and mobile health tools, remote monitoring devices, electronic medical records, to team-based software and decision support engines. These systems and electronic tools are shown to improve access and quality of care for consumers, enable clinicians to make more informed decisions, enhance the connectivity between systems of care, and reduce costs for providers and payers.

Empowered consumers are evolving in countless industries, as ecommerce technologies enable greater choice control, price transparency and convenience. Today's consumers are active and informed decision-makers – over 80 percent of shoppers conduct online research before major purchases.⁵⁸ In healthcare, the archetype of the uneducated patient passively following “doctor's orders” is rapidly eroding. Consumers worldwide are changing their behaviours due to a combination of patient-centred health technologies and services, access to vast quantities of clinical information, and stronger incentives putting them ‘on the hook’ for playing an active role in their own health care.

A range of technologies are increasingly available which are allowing consumers to take an active role in the management of their own health, from wearable health technologies (such as fitness wristbands, smart watches) to more advanced technologies such as ingestible “smart pills” allowing real-time information flow back to consumers to support the management of their own care. The fitness wearables market recently exceeded \$1 billion in annual sales, and its five-year compound annual growth rate of nearly 50 percent suggests that the full impact of this technology is yet to come.⁵⁹ New technology players are also targeting consumers directly, bypassing traditional delivery channels with new consumer-centric business models ranging from providing advocacy and advice, to location management for Alzheimer's patients, to self-dialysis for patients with kidney failure.

The advent of digital health technologies in the last decade also makes it possible for people to take a more active role in their care by making it easier to find information, self-monitor a condition, interact with other people with the same condition and receive support to make better decisions. This trend is already well established—a study of 13 developed and developing countries found that nearly 9 out of 10 people have used the internet to find health information and advice⁶⁰—but it is set to accelerate in coming years.

Patients are becoming not only more educated, but also more demanding; healthcare is not immune to the cross-industry rise in consumer expectations, such as the “Amazon effect” of rapid fulfillment, or the convenience and autonomy of mobile banking. Beyond the sea change in expectations, consumers can more easily learn about the full range of treatment options, sparking “me too” demands. This can lead to spiraling growth, as growing demand leads providers to invest in cutting-edge technologies such as proton beam accelerators, thus inducing additional demand in order to fill capacity. Improved outcomes and effectiveness has also been shown to drive greater demand for procedures.⁶¹

New reimbursement models are creating stronger incentives for patients to manage their own health. As insurers and providers increasingly manage the health of entire populations, they engage consumers differently in primary and secondary prevention. Insurers are also looking for ways to pass some of the risk on to consumers, as well as providers and physicians. High-deductible plans are increasingly popular, compelling more value-conscious consumption.

The potential value-of digital health is significant. The recently released McKinsey Global Institute report, *“The Internet of Things: Mapping the value beyond the hype”* (June, 2015) identified potential savings from human health and fitness alone of USD \$170 billion to USD \$1.6 trillion by 2025.⁶²

Australian context

Australia has a long history of investing in digital health and embedding it within the broader health care system, at both the national and the state level. In 1993, the National Health Information Agreement (NHIA) came into effect⁶³, and the Australian Government has since supported primary health care practices in implementing IT systems, electronic medical records and digital health through the Better Practice Program and (from 1998 onwards) the Practice Incentives Payment scheme.

Most recently, in 2011 the Australian Government introduced the specialist telehealth initiative, with the dual aims of improving access to health services and up-skilling health professionals in rural and remote locations. This initiative included incentive payments to join and then use telehealth solutions for consultations as well as additional incentives to eligible residential aged care services to enable participation in telehealth consultations with specialists, consultant physicians or consultant psychiatrists. While the financial incentives ceased in June 2014, health care professionals continue to receive higher Medicare benefits for telehealth services. To date, the Australian Government has not introduced incentives for telepharmacy services or telehealth to the home in the primary health care setting.⁶⁴

In 2015, the Australian Government launched the personally controlled electronic health record (PCEHR, recently renamed My Health Record). Any consumer who has registered for the national My Health Record has access to their health information, including MBS and PBS data,

discharge summaries, event summaries and, in some cases, a shared health summary (if curated by a relevant health professional).⁶⁵ By May 2015, approximately 2.25 million people and over 7,700 health care practices had registered to participate in the system, although utilisation of the records by health care professionals remains variable.

However, despite ongoing advocacy for greater performance transparency from organisations such as the Australian Commission on Safety and Quality in Health Care, providing consumers or providers with transparency on clinical performance and cost has been difficult to achieve in Australia. There are only 4 publicly available metrics on nation-wide hospital performance, compared to 94 in the U.K. and 115 in the United States.⁶⁶ Furthermore, there is almost no publicly available data about primary health care clinical performance.

Finally, the rise of fitness/health trackers and smart watches to monitor exercise, sleep, diet and suggest improvement measures is widespread in Australia: currently 35% of Australians use wearable technology of which 67% report improved health and fitness as a result.⁶⁷

International context

The use of telehealth in the public and private sectors is well advanced in other countries. In Canada, telehealth consultations have been introduced in various primary health care settings. A detailed study of 190,000 clinical sessions found that telehealth consultations led to improved access, quality (for example, improved disease management and health coordination), and productivity. Consumers in rural locations, for example, participated in 94,000 clinical sessions and saved C\$70 million in travel costs, while 25 clinicians saved 496 days of health care professional travel and avoided \$20 million in inpatient costs.⁶⁸

Some providers have invested in integrated health information systems to improve the quality of care and experience for patients. Kaiser Permanente, for instance, has developed a comprehensive IT system which allows patients to access medical records, refill prescriptions, contact clinicians, handle registration and billing, and use decision-support tools. Providers also benefit by ordering tests, manipulating disease registries, and sending complete referrals to specialists. As a result, Kaiser has enabled 30 percent lower cardiovascular mortality rates and 10 percent reductions in visits in some areas. Furthermore, three quarters of patients stated that the portal improves interaction convenience and efficiency of care management.⁶⁹

Further, there are several international examples of health care systems with increased transparency around health care professional performance. In the UK, primary health care statistics are publicly available on the Health and Social Care Information Centre (HSCIC), quality outcomes are published through QOF and consumer feedback is published on the NHS Choices website.⁷⁰ In the US, there are hundreds of individual feedback schemes.⁷¹ In the public sector, which is governed by the Medicaid and Medicare schemes, performance data are provided to both providers and consumers.⁷² Websites such as ZocDoc allow consumers to compare doctors online and book online or in-person appointments, allowing empowered consumers to play a larger role in the management of their own health. These websites are proven to be effective: a recent study on ZocDoc concluded that it played a significant role in the rates at which physicians filled patient appointments.⁷³

Consumer activity patterns are also changing rapidly as wearable monitoring devices become commonplace. Wearable monitoring devices, such as the Lively watch developed in the US, can

reduce the number of consumers who do not recover from a fall (62 per cent of people do not recover if help does not arrive within an hour),⁷⁴ while monitored people incur 75 per cent fewer costs compared with unmonitored people.⁷⁵ The Lively watch also provides an emergency button to call an ambulance and can monitor daily activities including taking medication, using the shower, walking (steps per day), and opening the fridge door.⁷⁶ Quietcare is a similar solution that uses sensors in people's homes, passive monitoring and data analytics to interpret a consumer's daily activity levels, providing notifications to family members or other designated caregivers when those patterns change (e.g., as a result of deteriorating dementia).⁷⁷

Consumers' demand for "anytime, anywhere" service is giving rise to an increasing number of specialist virtual care apps. For instance, Aetna's NeoCare service gives new parents returning home with infants from the ICU on-demand coaching from a neonatal nurse. The US Department of Defense is developing robot-based PTSD screening for returning soldiers, while UK politicians are promising to enable Skype-based interaction between patients and GPs by 2020.⁷⁸

Finally, the exponential pace of growth in technology across many industries suggests that the next wave of disruptive innovations may reach healthcare sooner than expected. For instance, pervasive GPS data can enable drone-based response times of less than 1 minute in major cities, potentially transforming emergency response systems; breakthroughs in artificial intelligence may translate into accurate self-diagnosis; and 'smart' bio-materials and nano-implants could yield a rich stream of real-time biometric data. Healthcare has traditionally been slow to adopt new technologies, but breakthroughs such as these hold great potential to improve outcomes and quality of life.

3.2 OPPORTUNITIES FOR AUSTRALIA

Public and private stakeholders play a vital role in enabling Australia's continued expansion into digital health. Below are three potential opportunities to develop incentives for innovation and uptake of new technologies, and to foster transparent health data.

- 1. Incentivising low cost telehealth technologies:** A wide range of remote monitoring solutions are presently available to patients with long term conditions. The provision of simple low cost remote monitoring devices for patients with health failure and or diabetes can be remotely connected via the web to referring specialist hospital centres. This enables patients to monitor and manage their disease independently, reduce emergency department visits and avoid hospital readmissions.⁷⁹ A four year telehealth programme at Veterans Administration of patients with type 2 diabetes demonstrated a 50% decrease in hospital admissions and a further 11% reduction in emergency department visits.⁸⁰
- 2. Addressing regional supply imbalances in remote areas:** Australia still relies heavily on physical health care, with limited scope for—and uptake of—telehealth and mobile health consultations.^{81,82} This is especially true in rural areas, where educational and administrative uses of telehealth are strong, but the use of telehealth technology for clinical applications has been limited due to bureaucratic and procedural barriers, as well as participant hurdles.⁸³ Expanding the use of telehealth will enable better coverage for consumers in

remote locations and rural Australia, consumers who face mobility challenges, and consumers who are active in leveraging mobile devices to manage their health and wellness.

- 3. Opening up public sector data sets and encouraging private sector use of the data:** Experience from the U.S. Federal open source health data programme has resulted in an explosion of patient and provider focused applications and technologies focused on comparison of outcomes between providers and best practice patient pathways. Over 2,000 new applications have been created, fuelling a 250% surge in venture capital funding to US healthcare companies (\$4.7B in 2014.)⁸⁴ Australia has an opportunity to allow the private sector, education sector and public sector to create consumer valued data insights into quality and access, navigation tools for the provider landscape and provision of evidence based investment in most efficacious treatments.

As consumers adopt new behaviours in managing their health and navigating the health system, three opportunities can shape their role to promote productive and effective healthcare:

- 1. Creating innovations in funding that reward healthy behaviours:** Limited subsidies for remote monitoring devices have restricted consumers' ability to self-manage their chronic conditions. For example, while the MBS funds insulin pumps, continuous glucose monitoring devices and sensors are not currently available for subsidy.⁸⁵ Additionally, although financial incentives have been introduced to encourage practices to use the My Health Record system, actual activity has been limited. Approximately 2.25 million people have registered, but only 1,727 specialist letters have been written, and only 30,300 consumers have viewed their records.⁸⁶ There has also been limited uptake of clinical decision-support tools beyond those integrated into clinical information systems.⁸⁷ Additional policy measures may be needed to encourage consumers and providers to participate in these offerings.
- 2. Educating consumers on sources of information and care management:** Better informed consumers are shown to be empowered consumers more focused on quality of services being received and display greater rates of participation in personal health management. My Health London portal, for example, brings together quality indicators in primary care provision with patient experience and allows patients to make informed decisions on which primary care providers they may wish to access. Provision of easy to access information via mobile platforms and timely reminders via SMS have also shown significant improvement in medication adherence amongst patients.
- 3. Increasing health literacy and consumer self-empowerment:** Opportunities created by the digital world are beginning to transform consumer education and self-management. Digital health technologies through a fully implemented platform can enable consumer education and chronic disease self-management, such as the ability to take online health assessments and access health information remotely. Systems such as Kaiser Permanente's My Health Manager (which is linked to Kaiser's EMR system, HealthConnect) have shown to reduce the number of office based visits by consumers by over 25 per cent between 2004 and 2007.^{88,89}

A number of stakeholders stand to benefit most from these emerging opportunities. For payers, several studies have demonstrated the benefits derived from integrating digital remote monitoring devices into care pathways (for example, a study of people participating in the Alere Heart Failure Program in the United States documented a 69 per cent reduction in hospitalisations and a 60 per cent reduction in costs after only one year⁹⁰). For providers, the

rise of digital health and consumer-driven health outcomes will ensure the capture and analysis of data on quality, patient experience and cost helps providers (e.g., individual practices) to develop an objective understanding of their performance, which encourages self-improvement.⁹¹ Further, consumers increasingly desire and expect to play a larger role in their own care, and increasing information transparency will allow them to better assess health professionals' performance and quality as well as enable them to play an active ongoing role in delivering positive outcomes for their own health care.

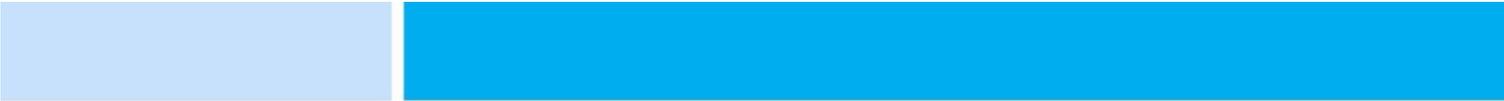
3.3 QUESTIONS AND ISSUES FOR DISCUSSION

The digital revolution in healthcare raises several broad issues and questions for the Australian health system:

- **Transparency** : What information on health system performance and outcomes would, when made public, mobilise market mechanisms to deliver more effective and efficient care? What obstacles limit public access to large de-identified data sets for data mining, analysis and innovation, and what process is needed to agree on the measures to publish?
- **Costs and benefits**: What role should Government, private health insurers and individuals play in funding new technologies and capabilities which deliver better health outcomes and bottom line savings?
- **Flexible funding**: Are the current reimbursement models adopted by Government and private health insurers sufficiently flexible to reward the high-value care likely to be possible via new and emerging technologies?
- **Incentives**: Do reimbursement models exist that feature stronger incentives for patients to co-manage their health? How might they encourage insurers and providers to engage consumers differently in primary and secondary prevention?
- **Appropriate protections**: How should questions of data ownership, access and privacy be addressed? Who will decide how to balance private and public interests in regulating how data is shared and used?

The role of the consumer in healthcare is still emerging. Stakeholders can co-create a vision of tomorrow's consumer by exploring several key questions:

- **Championing consumers**: What bold changes could radically redefine the role of the consumer? For example, how could new Medicare products promote healthy behaviours and value-conscious consumption?
- **Weighing the risks**: What are the greatest pitfalls to be wary of as consumers adopt new behaviours? For instance, will unregulated online resources clash with physician advice? What other misaligned activities are likely to emerge?

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- **My Health Record 2.0:** How can we build on investments in centralised EMRs to place patients squarely in the centre of their own health journeys? What can be done to boost adoption by practitioners and consumers?

Megatrend 4: Precision medicine and personalised care

4.1 OVERVIEW

Beginning with the Human Genome Project (1990-2003), the rapid pace of advancement in genome sciences is moving genetic testing into the medical mainstream. Once the domain of clinical geneticists or other specialists, as advances in precision medicine revolutionise healthcare, genetic testing increasingly spans all areas of medicine, giving rise to a growing need for all health professionals to be informed.

Precision medicine refers to the tailoring of medical treatment to the specific characteristics of each patient. While delivering individualised care is a tenet of modern medicine, precision medicine takes this a step further by offering the possibility to predict predisposition to disease, influence decisions about lifestyle choices and tailor medical practice based on an individual's genetic background. This is achieved through leveraging molecular knowledge (genomics, proteomics, metabolomics) to prevent, diagnose, treat, or monitor disease.

Precision medicine is advancing rapidly, thanks to a variety of factors. Technology is the main driver, having exponentially reduced cost and time: the \$10Bn investment required to sequence the first full genome has given way to desktop sequencers such as NextSeq and MinION which, while they are still improving in their accuracy, can sequence a human genome in 15 minutes for less than \$1,000. This has enabled a far better understanding of disease heterogeneity: for instance, 73% of patient melanomas and 56% of cases of thyroid cancers are caused by now-known genetic mutations. The clinical application of this knowledge has sustained 20 per cent annual growth in FDA approval of biomarkers and pharmacogenomics drugs.⁹²

Australian context

Precision medicine may be on the cusp of broader adoption in Australia. State research is led by bodies such as the Sydney Genomics Collaborative (which recently received AU\$24 million in additional state funding) and the Melbourne Genomics Health Alliance. At the national level, the Australian National Genomic Healthcare Initiative is considering a proposal for national Medicare coverage of genomic testing.⁹³ Medicare funds a range of genetic tests for several MBS items, for example those which diagnose a clinical observation and screen asymptomatic first-degree relatives of ill patients.⁹⁴ However, uptake has remained relatively low with less than 1 in 2,500 GP encounters resulting in a genetic test.⁹⁵

The recent Review of Health Technology Assessment in Australia recognised that codependent technologies, such as biomarker-test-drug combinations in precision medicine, are problematic to assess for reimbursement decisions.⁹⁶ As a consequence, research was undertaken to develop an assessment framework to assist policy makers to make evidence-based decisions about subsidised access to these emerging technologies. The ongoing Senate inquiry into the availability of new cancer drugs may also lead to significant reforms to Pharmaceutical Benefits Scheme.⁹⁷ Changes to existing clinical trial, drug approval and reimbursement processes could increase the success rate of precision medicine initiatives; for instance, the NSW effort to personalise treatment of pancreatic cancer has struggled to succeed in delivering personalised

therapies to patients within the randomised controlled trial methodology, due to challenges in these areas.⁹⁸

Meanwhile, diagnostic companies are increasingly advertising Direct-to-Consumer (DtC) genetic testing, bypassing the medical profession entirely. The health system has yet to reposition itself vis-à-vis this development: there is currently limited evidence-based guidelines on how GPs should use or interpret DtC testing results. Both the Australian Medical Association and National Health & Medical Research Council have advocated for medical practitioner involvement in genetic testing, and enhanced consumer support regarding DtC testing.

International context

Payors and providers alike are recognising value from precision medicine. Aetna, for instance, has placed several precision medicine therapeutics under a “Pre-certification list” to ensure that diagnostic tests are done before approval of the therapeutic. Insurers are mining their claims database to identify members with possibility of an at-risk genetic biomarker (e.g., BRCA) and advising those people to meet with a physician or genetic counselor.⁹⁹

Innovative providers are integrating into the precision medicine space; for instance, the pharmacy benefits manager Express Scripts acquired DNA Direct, a pioneer in consumer genetics, to enhance physicians’ understanding of genetic tests and payers’ understanding of which molecular diagnostics are valuable.

Regulators have struggled to keep up with the rapid pace of change. Only in 2013 did the American Medical Association update reimbursement codes for molecular tests to specify the analyte, or molecule tested (previously, reimbursement only reflected the methodology of the test performed.)¹⁰⁰

Capital markets continue to be optimistic about precision medicine companies. Investment in the Personalised Medicine Index grew 60% between 2012-14, driven by strong leading indicators such as percent of treatments in preclinical trial relying on biomarkers (now over 60 per cent) and FDA approval of companion diagnostics (up from 9 to 19 between 2010 to 2013.)¹⁰¹

4.2 OPPORTUNITIES FOR AUSTRALIA

As technological advances bring us closer than ever to the great promise of precision medicine, Australian public and private stakeholders alike are confronted with new opportunities and challenges:

- 1. Redesign approval pathways for precision medicine.** Traditional pathways with long-term clinical trial outcome requirements are often incompatible with the smaller and more targeted patient populations and many cutting-edge technologies used in this field. Real-time outcome assessment, risk-sharing with pharmaceutical manufacturers, and clinical trial grouping by genetic type, may all be important enablers to faster development and application of personalised treatments.

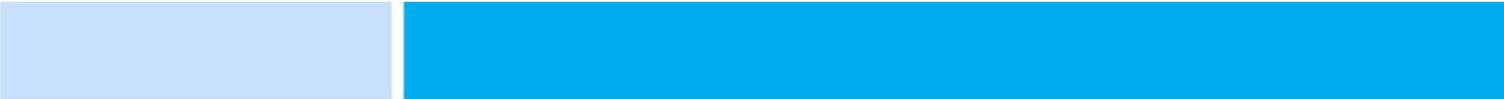
2. **Shift to value-based reimbursement of diagnostics.** The market for high-value diagnostics in oncology alone is expected to reach \$3 billion worldwide by the end of 2018.¹⁰² However, many payors still approach diagnostics on a “cost-plus” basis which covers only cost and activity, rather than reflecting the actual value provided by a diagnostic. While Australia and other countries have models which adjust reimbursement rates, such as DRG-based and fee-for-service, none of them are primarily value-based for innovative diagnostics.
3. **Expand into white space across the precision medicine value chain.** While some areas such as clinical delivery are clearly occupied by hospitals, the market may offer opportunities in complementary fields; for instance, computing platforms are subject to increasingly strict technical and legal requirements. A wave of programs like Intel’s Collaborative Cancer Cloud are racing to support the aggregation of data from multiple sources.¹⁰³ Meanwhile, other innovators, such as 23andMe, are creating new direct-to-consumer models for genetic testing.

Precision medicine has the potential to create significant value for stakeholders across the healthcare system. Consumers will reap the greatest benefits through improved survival and quality of life. Payors can reduce costs significantly by applying markers which predict response and reduce wastage of drugs on non-responders (for instance, the proportion of non-responders in therapeutic areas such as rheumatoid arthritis is greater than 50 percent.)¹⁰⁴ Targeted treatments with higher effectiveness can also reduce adverse events and accelerate recovery, reducing total cost of care. Providers can improve outcome rates, share in cost savings through partnership with payors, and differentiate themselves as leaders in this space.

4.3 QUESTIONS AND ISSUES FOR DISCUSSION

The above overview raises several questions on the implications of precision medicine in Australia, notably:

- **Research rapprochement:** How can tighter links be formed between genomic research and clinical practice? Research bodies such as the Sydney Genomics Collaborative could be further integrated into healthcare delivery (as in best-practice cases such as the 100,000 Genomes Project in the U.K., which is embedded in the NHS). What are the major risks involved in adapting clinical links and approval pathways to precision medicine?
- **Learning the literature:** Physicians are struggling to keep up with the explosion in information and treatments. Precision medicine is adding a multitude of new insights into issues such as the heterogeneity of disease, interdependencies between multiple biomarkers, and new testing modalities such as proteomics, posing a risk of ‘information overload’ for oncologists. As the medical system grapples with the challenge of information diffusion, a new approach may be needed to curate the full range of biomarkers, therapeutics, and clinical trial outcomes, providing oncologists with ready access to the evidence base of precision medicine.
- **Paying for prevention:** While predictive analytics and genetic testing can dramatically improve outcomes, screening and earlier diagnoses can entail higher costs. How should



the health community balance the benefits of predictive analytics with these potential costs?

- **Betting on breakthroughs:** Is Australian research focused on the right mix of specialties? While oncology has been at the forefront of precision medicine, immunology and anti-infectives have increasingly levels of application. In the longer-term, CNS and cardiovascular diseases have tremendous potential for precision medicine – but it may be several years before therapeutics are developed and delivered. Which of these areas will be a focus for Australia?

Implications for each stakeholder's vision of healthcare

As the stakeholder community crafts a vision for the future of Australia's health system, these megatrends can provide valuable insight into how each stakeholder could be impacted by macro forces. The table below illustrates key implications for each major actor in healthcare:

Each megatrend has significant implications for health stakeholders

Stakeholders		Megatrends			
		 Growing financial imperative to improve productivity	 Increasing aging and disease prevalence	 Digital health and the new consumer	 Precision medicine and personalised care
 Providers	<ul style="list-style-type: none"> The next horizon of quality is driving more cost-effective and innovative models of care 	<ul style="list-style-type: none"> Demand will grow for out-of-hospital care with active management of >85-year cohort 	<ul style="list-style-type: none"> Connectivity, analysis and automation can all improve outcomes and drive down cost 	<ul style="list-style-type: none"> The vast array of therapies that can optimize care must be translated to clinical practice 	
 Insurers and policy-makers	<ul style="list-style-type: none"> Aligning incentives around value creation may help avoid trade-offs with access & cost 	<ul style="list-style-type: none"> Insurers' primary-care role may expand, e.g., into prevention and care coordination 	<ul style="list-style-type: none"> Step-changes to products or services could radically redefine the consumer's role 	<ul style="list-style-type: none"> Value-based reimbursements and tailored approval pathways are key enablers 	
 Consumers	<ul style="list-style-type: none"> Decline in disposable income will drive value-conscious consumption 	<ul style="list-style-type: none"> Advent of chronic diseases makes education and self-care programs more important than ever 	<ul style="list-style-type: none"> Transparent data can steer patients toward high-performing providers and empower self-care 	<ul style="list-style-type: none"> New therapies hold great potential to improve survival rates and quality of life 	
 Private enterprise	<ul style="list-style-type: none"> Payers will demand stronger evidence of both clinical and financial impact to approve products 	<ul style="list-style-type: none"> Fast-growing chronic populations will afford market opportunities (e.g., remote monitoring) 	<ul style="list-style-type: none"> Next-generation innovations from other industries are yet to be imported into healthcare 	<ul style="list-style-type: none"> Unmet needs exist in several areas like cloud computing and accessing knowledge 	

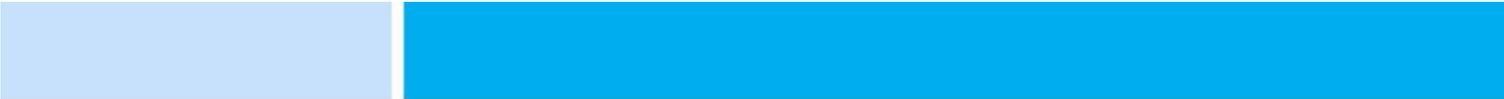
SOURCE: McKinsey

McKinsey & Company | 1

Providers will face new opportunities – and pressures – to more efficiently deliver care to populations with needs extending beyond hospitals. Leading institutions can differentiate themselves through high-quality care models, cost-effective technology and translation of targeted therapies into improved outcomes.

Insurers and policymakers must innovate to support rising demand, for instance by aligning incentives around value creation. Opportunities may exist to “pay for the package, not the piece,” thereby sharing risk with providers and consumers. Regulation can also nudge consumers toward value-conscious consumption, expand consumer choice to foster competition, and revisit approval pathways for new technologies and therapies which fast-track highly cost-effective solutions.

Consumers are increasingly empowered to manage their own health and care. Online resources such as physician performance data and peer-patient communities may spur a migration towards high-performing providers. Value-consciousness is also likely to rise as household



income growth slows and incentives evolve, potentially enabling a decline in the volume of unnecessary procedures.

Manufacturers and businesses will be under increasing pressure to demonstrate value in terms of both clinical efficacy and cost-effectiveness. Evolving supply models and patient sub-populations will afford new opportunities for disruptive entrants to import technologies and business models from adjacent industries.

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While Australia has a strong system of care which contributes to excellent health outcomes overall, significant challenges remain: chronic diseases are increasingly prevalent, health care costs are growing faster than the national economy, and the best possible care is not always delivered. The megatrends reviewed offer numerous paths towards innovative solutions, and can form the basis for a broader discussion across the stakeholder community. With a collective effort, Australia's health systems can evolve towards higher productivity, and meet the emerging health care demands of the 21st century.

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