Nicholas Mays,
John Marney and Erin King

Fiscal Challenges and Changing Patterns of Need for Health and Long-Term Care in New Zealand

New Zealand's health and long-term care system plays an important role in society by improving the length and quality of people's lives and providing dignity for the sick and infirm. It also accounts for a significant proportion of government spending and a rising share of national income. This article discusses some of the challenges that New Zealand faces in managing expenditure growth and repositioning its health and long-term care system to deal more effectively with changing patterns of disease.

Overview of the current system

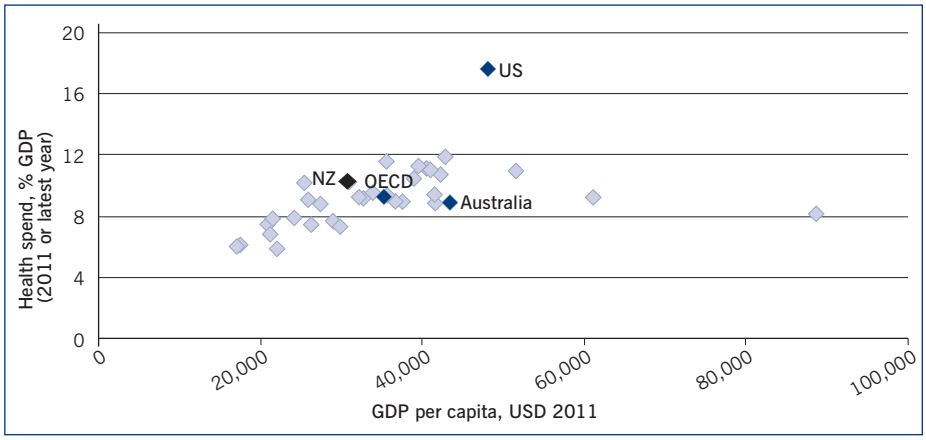
As a proportion of GDP, New Zealand's health expenditure is slightly above average for OECD countries (Figure 1). In 2011, total health expenditure in New Zealand was 10.3% of GDP compared to the OECD average of 9.3%. In dollar terms, New Zealand spends slightly less on health per person than the OECD average, and less than many of the countries we compare ourselves to, such as the United Kingdom and Australia.

A small but significant proportion of health expenditure relates to long-term care. This includes services provided to people with an enduring physical or mental disability who are dependent on assistance with the basic activities of daily living, such as washing, dressing or using the bathroom. It may also include lower-level assistance with activities such as housework, meals or shopping. Long-term care accounts for around 18% of total public spending on health care services, being split about equally between residential care and home care, plus a small proportion spent on day care. Taken together, public and private spending on long-term care in New Zealand stands at approximately 1.4% of GDP, close to the OECD average (Figure 2).

The need for health and long-term care (its timing, duration and intensity) is unpredictable at an individual level, and

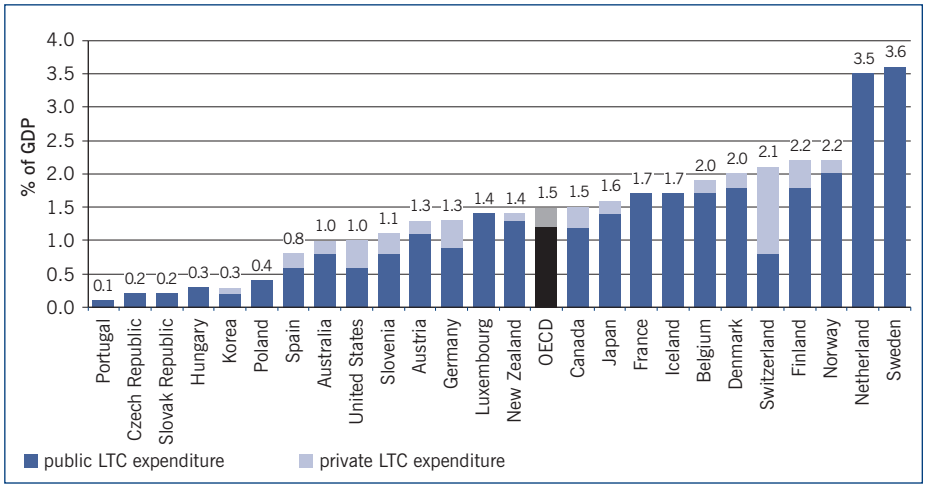
Nicholas Mays is Professor of Health Policy at the London School of Hygiene and Tropical Medicine. **John Marney** is a Principal Advisor and **Erin King** a Senior Analyst at the New Zealand Treasury. The views, opinions, findings, and conclusions or recommendations expressed in this article are strictly those of the authors and do not necessarily reflect the views of any organisation, including the New Zealand Treasury.

Figure 1: Total health spending as a percentage of GDP, and GDP per capita in OECD countries (2011)



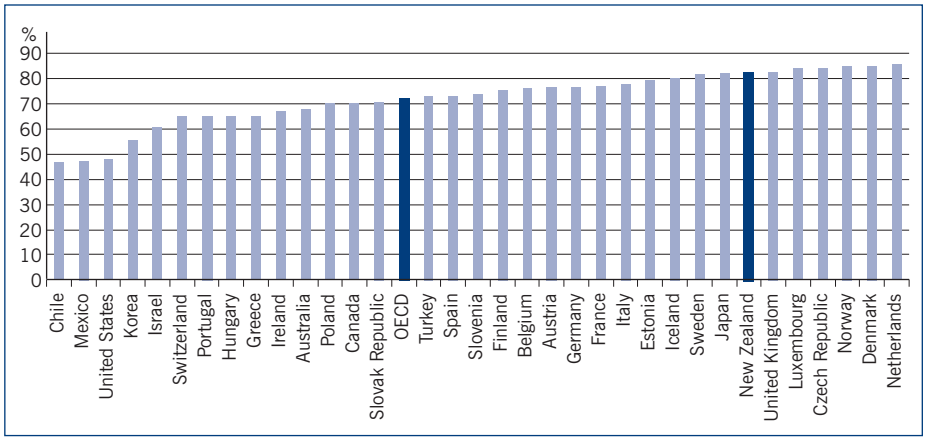
Source: OECD, 2013

Figure 2: Long-term care expenditure in OECD countries (percentage of GDP, 2008)



Source: OECD, 2011

Figure 3: Public expenditure on health, % total expenditure on health (2011 or nearest year)



Source: OECD, 2013

the costs can be very high. Some form of public or private risk pooling is therefore generally considered desirable. Although private insurance can play this role to some extent, the market tends to cater poorly for certain groups, notably the elderly, the chronically ill and those on low incomes. Individuals at greater risk of poor health, who are typically on lower incomes, face higher insurance premiums where insurers are able to identify them. Insurers also tend to restrict eligibility to people with no pre-existing conditions, limiting coverage.

This creates a strong case for government involvement and has led to significant public financing of health and long-term care services in all OECD countries. In New Zealand, public expenditure accounts for 83% of total health spending (Figure 3) and 92% of spending on long-term care (Figure 2), above the OECD average. Even in the United States the government pays around half of all health care costs, and less than 10% of the population aged 65 or over holds private cover for the costs of long-term care.

How the system performs

New Zealand performs well on many commonly-used indicators of overall population health. For example, life expectancy has improved from 71.1 years in 1961 to 81.2 years in 2011, around one year higher than the OECD average (OECD, 2013). However, it is difficult to get an accurate picture of the performance of the health system from these high-level indicators. Health care is just one of a number of factors that influence health status. Tobias and Yeh estimate that health care contributed around one third of the health gains made by the New Zealand population over the 1981–2004 period (Tobias and Yeh, 2009). Other relevant factors include individual characteristics through to wider socio-economic, cultural and environmental conditions (Figure 4).

Certain indicators relate more directly to the performance of the health system. The concept of 'amenable mortality', for example, refers to deaths that should not have occurred given effective and timely care. There is no firm consensus about the list of causes for amenable mortality, so estimated rates vary. According to two recent estimates, age-standardised mortality rates in 31 OECD countries in 2007 ranged from from 59 to 200, or from 62 to 206, deaths per 100,000 people, depending on the list used. In both cases, the amenable mortality rate in New Zealand (85 or 107 deaths) was close to the OECD average (95 or 104 deaths), and had declined by more than the OECD average over the 1997–2007 period (Gay et al., 2011).

Avoidable hospital admissions provide an indication of how well the health system is working. We have low admission rates for uncontrolled diabetes, at less than a

fifth of the OECD average, but high rates for both asthma and chronic obstructive pulmonary disease – in both cases at 1.6 times the OECD average (OECD, 2011). In addition, people with below-average incomes are almost twice as likely to forgo medical care due to cost as those with above-average incomes (Figure 5).

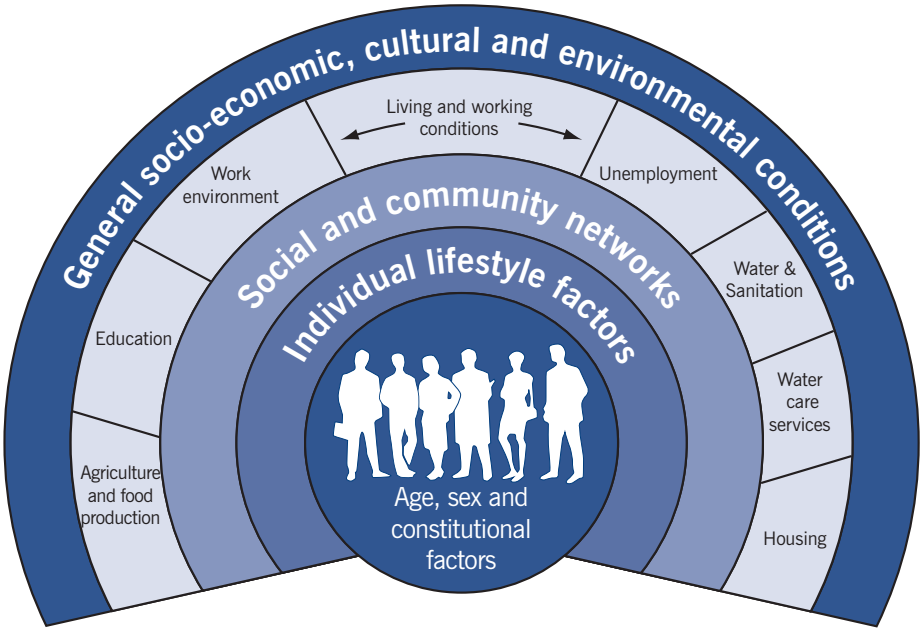
Rates of some infectious diseases are high in New Zealand compared to other developed countries and seem to be increasing. There are clear ethnic and social inequalities in infectious disease rates (Baker et al., 2012). A number of other health indicators also show disparities in health between ethnic groups. The gap between Māori and non-Māori life expectancy at birth is 7.3 years, although this has narrowed from 9.1 years in 1995–97 (Statistics New Zealand, 2013a). Rates of avoidable hospital admission for Māori and Pacific people are significantly higher than the overall rate (about double for Pacific people), suggesting that access barriers are greater for these groups (Ministry of Health, 2012a).

Increases in health care spending

Government spending on health and long-term care is an important part of New Zealand's long-term fiscal challenge because it is both large and growing. Vote Health accounts for more than a fifth of core Crown expenditure, and spending has been increasing faster than national income for most of the last 60 years (Figure 6). The amount spent by government on these services has risen in real terms from $583 per person in 1950 to $2,987 per person in 2011 (2011 dollars). As a share of GDP, that equates to an increase from 3.1% in 1950 to 6.9% in 2011. This reflects an increase in both the volume of services and the benefits provided, as well as higher unit costs.

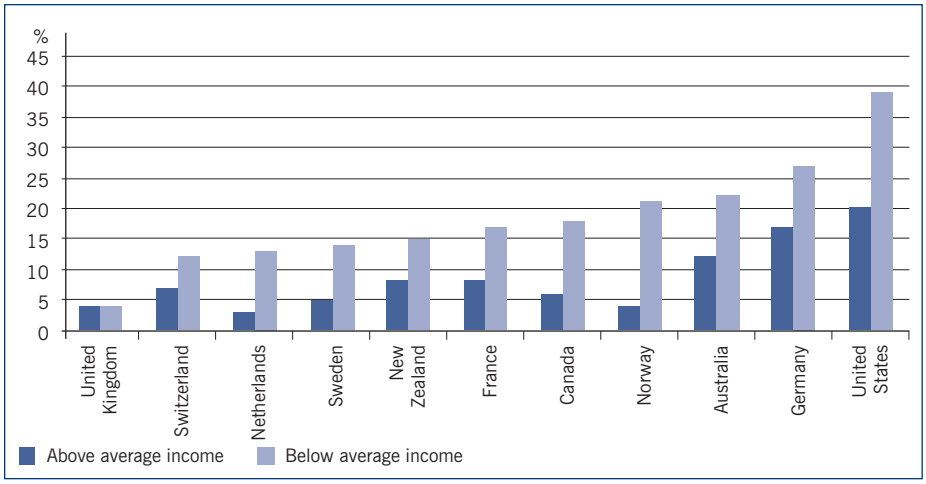
Spending on health and long-term care is driven by a range of interacting demographic and non-demographic factors. Population ageing affects spending, since older people tend to need more care. The contribution of population ageing to past spending growth has, in fact, been quite small: in the international literature, estimates range from 6.5% to 9% of the total over the period 1960–1990 (Dormont, Grignon and Huber, 2006; OECD, 2006; Smith, Newhouse and Freeland, 2009). Figure 7 compares the estimated contribution made by population ageing to total real health expenditure growth (excluding long-term care) in New Zealand with the averages across the OECD and BRIICS countries (Brazil, Russia, In-

Figure 4: The main determinants of health



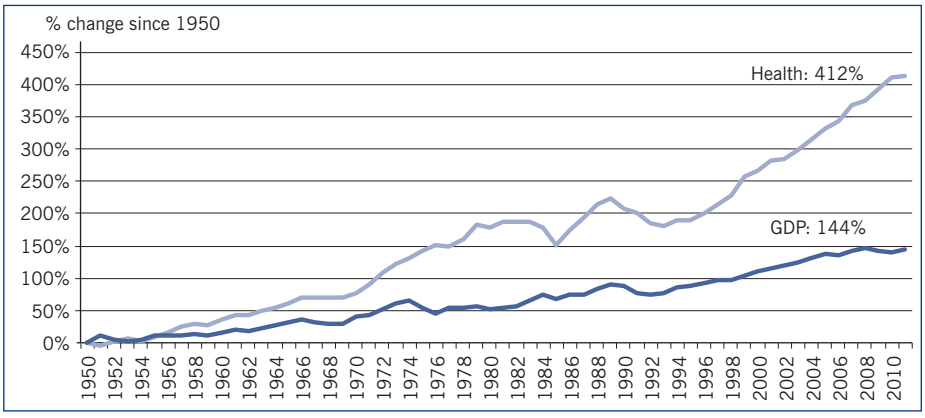
Source: Dahlgren and Whitehead, 1991

Figure 5: Unmet care need due to cost in eleven OECD countries



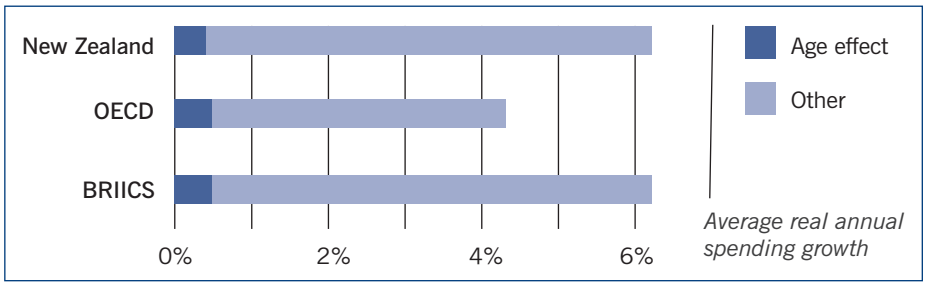
Source: Commonwealth Fund, 2010, included in OECD, 2011

Figure 6: Core Crown health expenditure per capita and GDP per capita, real growth



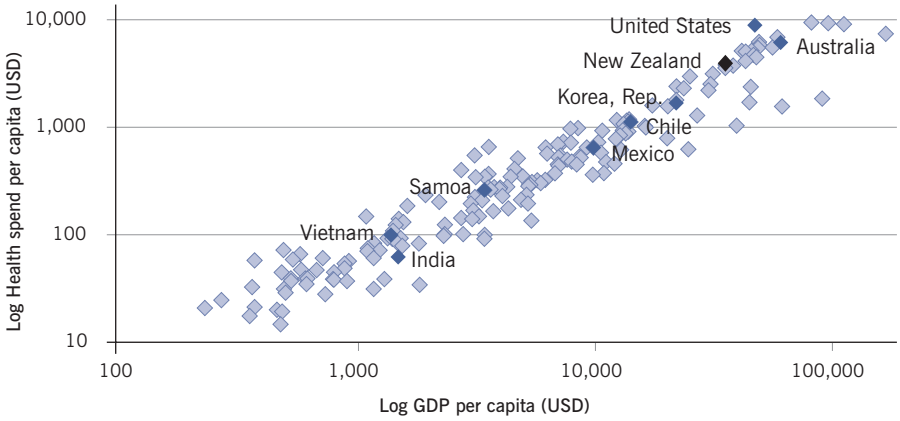
Source: Treasury

Figure 7: Average real annual change in health spending (1995-2009)



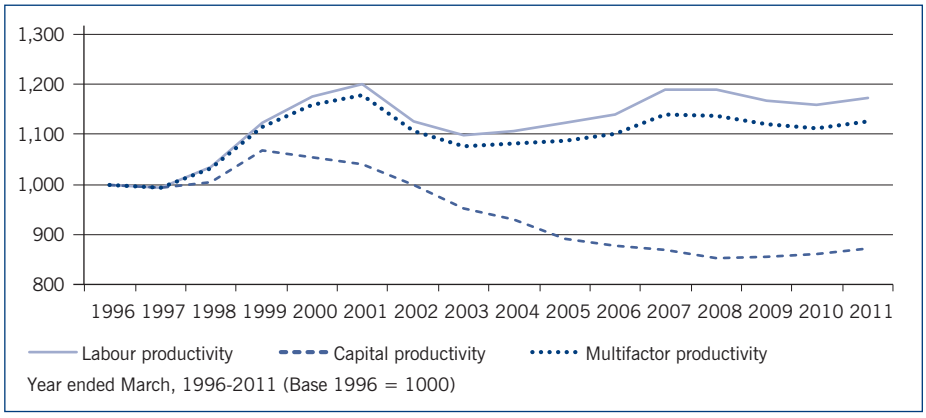
Source: de la Maisonneuve and Martins, 2013 (Table 1); excludes long-term health spending

Figure 8: Health spend per capita and GDP per capita in different countries (2011)



Source: World Bank data

Figure 9: Health care and social assistance productivity indexes



Source: Statistics New Zealand, 2013b

dia, Indonesia and South Africa) over the period 1995–2009.

Ageing is likely to make a larger contribution to future spending increases, particularly in areas such as long-term care, but its overall impact is still expected to be modest. A large proportion of health care costs come at the end of life (costs of dying, rather than from being old per se). In the US, older people generate over a quarter of their Medicare expenditure in the last 12 months of their lives (Riley and Lubitz, 2010), which equates to approximately a third of their lifetime health care costs. These costs are deferred by increased longevity. There is also evidence that the costs of death decline as age at death increases (Bardsley, 2012). These factors will tend to reduce the contribution that population ageing makes to health spending growth.

If increases in longevity are accompanied by an increase in the number of years lived in good health, this should also help to offset demographic cost pressures to some extent. The international evidence for this is mixed, with recent analyses not able clearly to predict whether dependency levels by age will rise, fall or remain constant as life expectancy increases (European Commission, 2012). It may be that increased longevity results, at least partly, from a decline in the rate at which chronic diseases progress, which may also cause the proportion of life spent with serious illness or disease to stabilise or reduce even as the proportion spent with moderate or less severe conditions expands. Under this scenario of 'dynamic equilibrium', the costs associated with providing people with more years of care may be partially offset by a reduction in the average level of support required (Graham et al., 2004).

A country's health spending is statistically highly dependent on its GDP per capita, regardless of institutional or other characteristics (Mendez, Tabish and de Ferranti, 2012). This is shown in Figure 8. One explanation for this is that higher incomes drive higher public expectations of the range and quality of health services that should be available and, in a broad sense, a greater willingness to pay for these. The strength of this relationship is uncertain. Older studies tend to suggest that health care is a luxury good, with demand increasing faster than income (elasticity greater than one). More recent studies have suggested a weaker causal relationship, although one that is nevertheless significant (European Commission, 2012; de la Maisonneuve and Martins, 2013).

As national income rises, so does the cost of labour, which is the major input into health and long-term care services. Productivity gains tend to be relatively low in labour-intensive service industries such as this. The difference between economy-wide productivity (and wage) growth and the anticipated lower rate of productivity growth in the health and long-term care sector is expected to push up unit costs over time. This effect – known as Baumol's cost disease – is a major driver of the Treasury's projections for rising expenditure over the long term (Treasury, 2013).

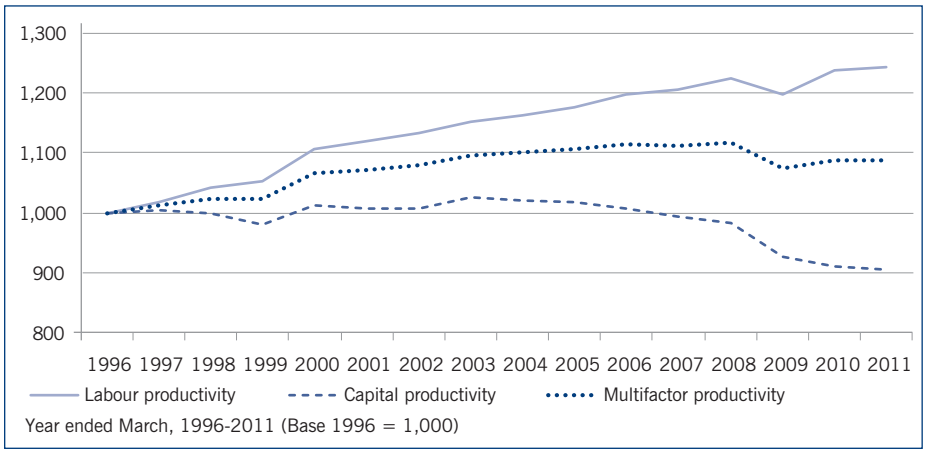
Evidence about the rate of public sector productivity growth is limited. Statistics New Zealand recently released its first productivity series for the 'healthcare and social assistance industry' (Statistics New Zealand, 2013b). Figure 9 shows

changes over time in the productivity for this industry over the period 1996–2011. By way of comparison, Figure 10 shows changes in the productivity index for the whole measured sector (Statistics New Zealand, 2013c). Figure 9 shows strong productivity growth in the health care and social assistance industry between 1997 and 2001 (about 20% over the period, or 3.7% a year). The decline in labour and multi-factor productivity during the period 2001–03 reflects slowing output growth and strong growth in labour input (particularly in hospitals and residential care). Overall, between 2001 and 2011 labour productivity fell by 2.4% (0.24% a year over the period, but with variations in the rate and direction of change over time). The health care and social assistance industry covered by these statistics is broad, including both market and non-market activity in a range of different sectors. Factors affecting productivity will vary across the sector and changes in quality may not be fully captured (Statistics New Zealand, 2013b).

The contribution made by technological change to expenditure growth is complex (Smith, Newhouse and Freeland, 2009; Thomson et al., 2009). New technologies can reduce costs through efficiency gains, or through health improvements that reduce the need for further care. They can also contribute to higher costs by extending the scope and range of possible treatments, making treatment easier and thereby reducing treatment thresholds, or by replacing cheaper technologies. Medical innovations may contribute to rising costs if people live on to develop other health problems which themselves require expensive treatment.

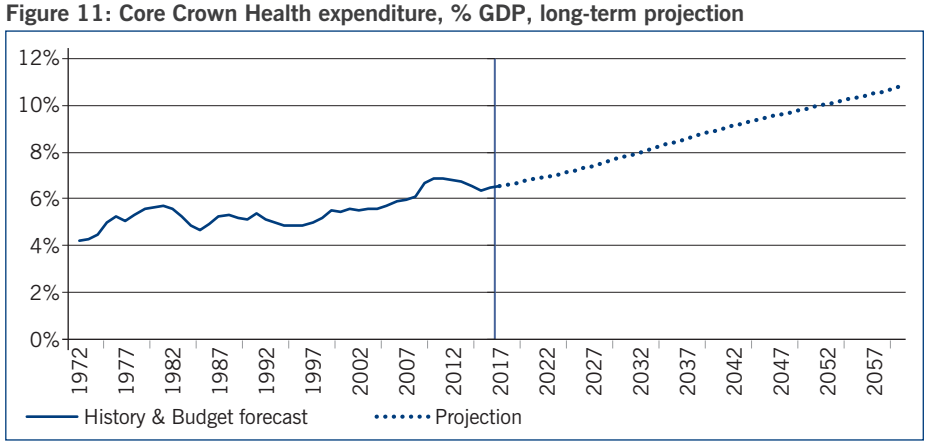
Based on past growth and assumptions about the drivers of future expenditure, the Treasury has projected publicly-financed health and long-term care spending to 2060, using its long-term fiscal model (Treasury, 2013). The projections show spending continuing to rise as a proportion of both national income and government expenditure, to 11.1% of GDP by 2060 (Figure 11), or 31% of all government spending excluding debt financing costs (Figure 12). These are projections, not forecasts or predictions.

Figure 10: Productivity indexes for the measured sector as a whole



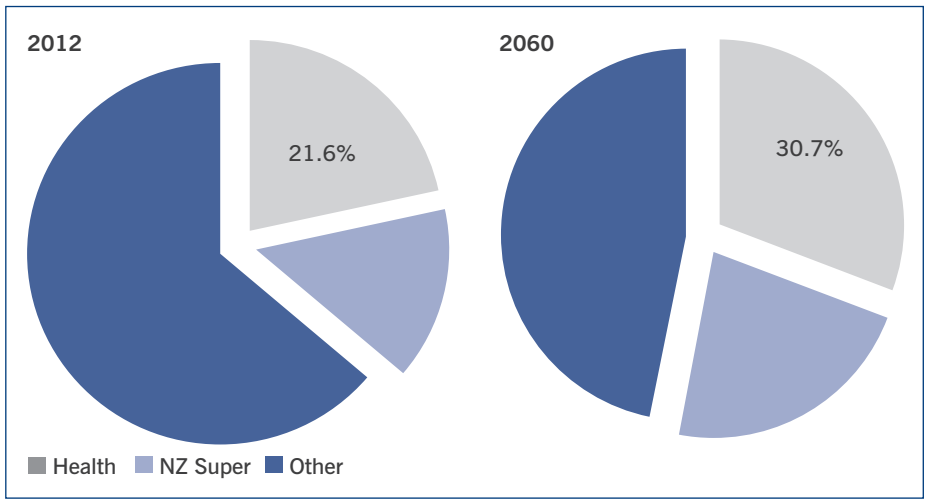
Source: Statistics New Zealand, 2013c

Figure 11: Core Crown Health expenditure, % GDP, long-term projection



Source: Treasury, 2013

Figure 12: Projected change in composition of government expenditure (excl. debt financing costs)



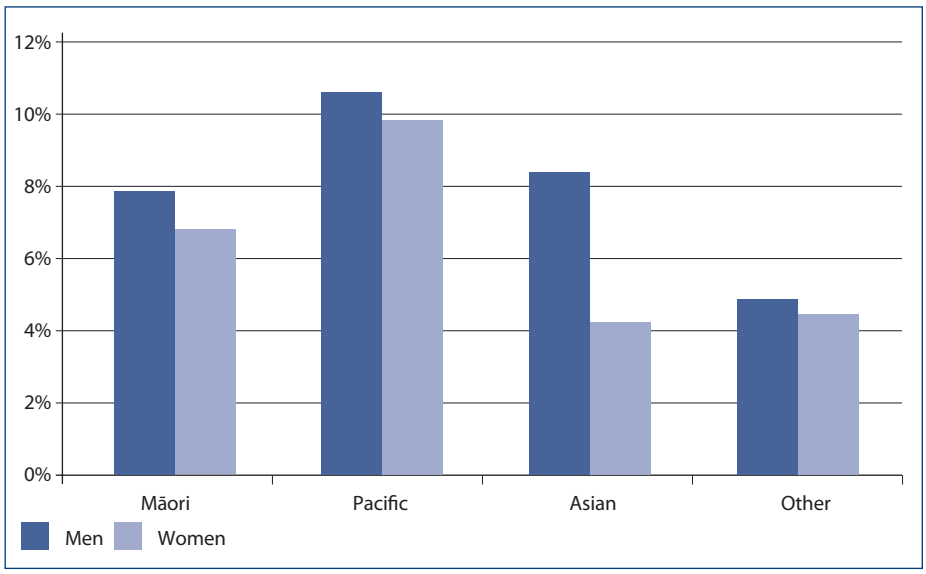
Source: Treasury, 2013

Their purpose is to allow for a better understanding of the scale of the fiscal pressure that future governments may face, as a starting point for thinking about the sustainability of existing arrangements.

Changing patterns of disease

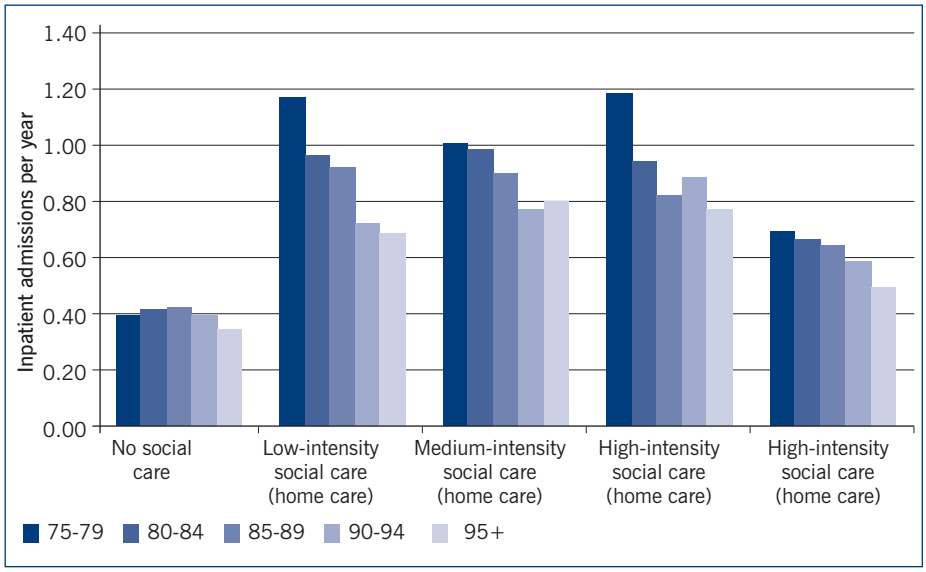
Demands on the health system are changing. While people are living longer and are healthier than their equivalents in earlier decades, many are living with long-term or chronic conditions that are costly to manage. The bulk of these conditions are accounted for by non-communicable diseases (NCDs). These include diabetes, cardiovascular disease, chronic obstructive pulmonary disease,

Figure 13: Prevalence of diabetes in the New Zealand population



Source: Ministry of Health, 2012b

Figure 14: Inpatient admissions per person in England, according to age and intensity of social care



Source: Nuffield Trust

many cancers, dementia and arthritis. Globally, the prevalence of and share of morbidity that is attributable to NCDs is rising as communicable (infectious) diseases decline in importance as causes of death and morbidity.

The 2011/12 New Zealand Health Survey (Ministry of Health, 2012b) provides detailed information about the prevalence of chronic conditions. Arthritis, asthma and chronic pain each affect more than one in ten New Zealand adults (15%, 11% and 16% respectively). Five per cent of adults have been diagnosed with ischaemic heart disease. Sixteen per cent of adults take medication for high blood pressure, and 10% for high cholesterol (in both cases, a higher rate than in 2006/7).

The diabetes rate has increased gradually over the last 15 years, with around 5% of adults now diagnosed with this condition, and a further 2% of adults estimated to have undiagnosed diabetes (Ministry of Health, 2012b; Coppell et al., 2013). Diabetes is more prevalent among overweight and obese people and among Māori, Pacific and Indian ethnic groups (Figure 13). The prevalence of diabetes also increases with deprivation. It is likely that the variation in the prevalence of diabetes among ethnic groups is linked to deprivation and obesity. As well as generating health problems in its own right, diabetes is a risk factor for later strokes and heart disease.

A fact that has only been fully appreciated fairly recently is that many people with long-term conditions suffer from more than one. In a recent Commonwealth Fund international health care survey of adults with complex health care needs, 34% of New Zealand respondents reported two or more conditions (Schoen and Osborn, 2011).

The health systems of developed countries are typically not well adapted to meet the needs of people with long-term conditions effectively and at reasonable cost. They tend to be organised to deal best with acute, life-threatening conditions, based around hospital-focused, doctor-led services. Care tends to be episodic, reactive and delivered by individual professionals working in parallel. Patients tend to be regarded as passive recipients of care, and their contribution to designing and providing their own care tends to be under-valued, along with the role of their informal carers.

Traditionally, health systems have been organised around individual medical specialties and the management of single conditions. There is a growing consensus that health care systems need to be reoriented and rebalanced to respond better to the changing pattern of need, so that they foster professional team-working and closer relationships between provider organisations, support patient self-care, and place greater emphasis on preventing long-term conditions developing in the first place.

Avoidable hospital admissions

The centre of gravity of the New Zealand health system needs to continue to shift away from acute care. Hospitals are costly, and admission is in itself frequently harmful, particularly in the case of older people with complex, multiple conditions. Over a third of older people admitted to hospital leave in a worse functional state than when they were admitted (Edwards, 2012).

It is important to note that simply shifting services from acute hospitals to community settings may not be reliably cost-saving (Sibbald, McDonald and Roland, 2007). In order for such a policy

to be successful, it is critical to select the correct services, retain the right level of hospital provision (which may be difficult to estimate), and avoid simply transferring costs to patients. A number of New Zealand studies show that a substituted primary care-driven service can, on occasion, be as effective as but cost considerably less than the same intervention delivered in a hospital setting (Wellingham et al., 2003; Barker, Bryant and Aish, 2006). Less is understood about how a health system as a whole would perform (in terms of demand for hospital care and in financial terms) if significantly more care was delivered outside a hospital environment.

Most high-income countries have taken some steps in this direction, although experience has shown how hard it is to reduce hospital admissions in practice and hospital care remains an essential element in these systems. In part this is because any freed hospital capacity has to be taken out of use for savings to be realised and this can be politically very difficult. A sustained process of change is required, with less reliance on hospitals and doctors, more specialist nurses working outside hospitals, more flexible staff working practices, and more joint decision-making by primary and secondary (specialist) clinicians.

Integration of health and long-term care

The health and long-term care system needs to be considered as a whole, rather than as two parallel, separate systems. For example, a recent study in England showed (Figure 14) that people in care homes made significantly less use of all forms of hospital care than other social care users, including people using intensive home care (Bardsley et al., 2012). New Zealand shows a comparable pattern of use. Frail people receiving high levels of support in their own homes use hospital services more than those in residential care, although their total costs of care tend to be lower (Grant Thornton, 2010).

The policy implications of this sort of research are not straightforward, but it is clear that the health and long-term care sectors affect one another. This points to the need for these services to be managed as complements and substitutes, with coordinated planning at the service delivery level to promote health and independence at least long-term cost. Those with long-term conditions should be supported by multidisciplinary teams, operating outside hospitals, which include not just health workers but also social care providers.

New Zealand has an advantage in this regard because its health budget at national level covers both acute services and long-term care. Public funding for aged residential care is allocated to district health boards (DHBs) alongside funding for health care and is not ring-fenced. In principle, therefore, it is possible for DHBs to design care packages that include both health and support services, with a view to minimising costly hospital admissions. In many countries this would involve complex negotiations across separate commissioning and delivery organisations. On the other hand, there are coordination issues even in New Zealand, since around half of all long-term care (mainly for disability support services for the under 65s) is managed centrally by the Ministry of Health.

Residential care for the over 65 is subsidised by DHBs, subject to an asset test. The rationale for asset-testing is targeted allocation of resources, particularly as people typically expect to draw down capital during retirement. Since 2005 the asset test has been substantially relaxed, with the threshold for a single person rising from $15,000 to more than $213,000. This relatively generous approach has narrowed the disparity between health services that are 'free' at the point of use and means-tested long-term care. This reduces the incentive for hospital care to be used inappropriately and inefficiently. It also means that tax revenue is being used (up to a point) to protect accumulated capital and, in effect, facilitate future bequests by some people in long-term care.

Purchasing arrangements

DHBs function both as planners and commissioners of services for the population and as owner-operators of district hospitals. This arrangement weakens their incentives in the short to medium term to reduce dependence on hospital care since they would have to manage the consequences for jobs and hospital income. It is notable that the most sustained local efforts to improve care for people with complex long-term conditions have been in places such as south Auckland where the senior clinicians and managers of the local hospital recognise that there is no possibility of continuing to provide an adequate health care system without reducing dependence on the hospital and improving care outside it.

The OECD has suggested that the role of DHBs as purchasers should be strengthened through greater operational separation of their dual functions (OECD, 2009).

The OECD has suggested that the role of DHBs as purchasers should be strengthened through greater operational separation of their dual functions (OECD, 2009). A split between purchasers and providers appears to perform well when there is potential for competition between providers, when providers are not tied to specific purchasers, when uncertainty and complexity are low, and when few economies of scale apply (Figueras, Robinson and Jakubowski, 2005). New Zealand's small size and geographically-dispersed population mean that these conditions will often not be met. Furthermore, good services for people with long-term conditions require coordination of care from a range of different providers and types of professionals, rather than supplier competition for individual services. The

case for a simple separation is stronger for services such as elective surgery, where purchasers can choose between several providers and it is easier to see how encouraging competition could improve quality and efficiency of care.

The potential contribution of primary health organisations as purchasers to improving the allocation of resources may also need to be considered. Their budgets do not include large parts of primary care expenditure, such as primary medical pharmaceuticals and diagnostics. This limits their ability to shape services and means there is a lack of clarity about where responsibility for primary care ultimately resides. General practices continue to operate largely separately from the rest of the public system through a combination of patient co-payments and capitated subsidy. This funding model restricts the extent to which preventive and chronic care programmes can be integrated into mainstream general practice.

In 2009 the Ministry of Health invited expressions of interest for what was termed 'Better, Sooner, More Convenient' (BSMC) health care, with the aim of providing extended primary care closer to where people live and reducing the demand for secondary care (Ministry of Health, 2009). The programme includes initiatives to co-locate a wider range of primary and community health services in the form of integrated family health centres. Nine initiatives were selected by the Ministry of Health and funded as demonstration programmes (Ministry of Health, 2011). The Health Research Council recently awarded a number of partnership grants to evaluate some of the initiatives. At this stage, however, it is difficult to gauge whether progress is being made and in which areas. Although there is some positive anecdotal evidence, so far there has been no independent, national evaluation of the programme.

There are currently 20 DHBs operating as purchasers of health services, as well as the Accident Compensation Corporation and around 30 primary health organisations. There may be scope to rationalise these arrangements, by moving to fewer purchasers with clearer lines of accountability. As well as reducing administrative costs, this would allow for more systematic planning of services and investment, at both national and local level. It would also help to concentrate management expertise within the system. The case for fewer purchasers is further strengthened if governments prefer national consistency in service provision over local variation.

A new requirement for groups of DHBs to develop regional service plans has been introduced to encourage collaboration and service integration, although this has added to rather than streamlined planning and accountability arrangements for DHBs. At a sub-regional level, three DHBs in the lower North Island (Hutt Valley, Wairarapa and Capital and Coast) have gone further and merged their planning and funding functions with a view to improving the financial and clinical sustainability of their operations (CCDHB, 2013).

... the evidence in favour of individual health and long-term care budgets is weak and ... likely to increase inequalities in care by favouring better-off and more educated users.

Patient/user-directed care

User-directed arrangements for long-term care are fairly common overseas. The Netherlands, the United Kingdom and the United States all allow care recipients to directly employ their personal care assistants, while a number of Nordic countries operate voucher systems to promote personal choice in the use of long-term care. In Austria, all support for home-based care is provided in cash, with the recipient being able to decide whether or not to purchase formal care. Germany and Luxembourg give people entitled to long-term care a choice between benefits in kind or a cash payment set at a lower level (OECD, 2005). Small numbers of younger disabled people in New Zealand currently have access to individual care budgets.

These funding models are intended to increase consumer direction and choice. This can have a number of different objectives, including empowerment of care users and a better fit between people's needs and their care packages. Another objective is to stimulate competition amongst providers, based on user choice, with a view to improving quality and/or reducing costs. These arrangements may also raise the visibility of the cost of services and increase public understanding of the need for prioritisation.

Critics argue that the evidence in favour of individual health and long-term care budgets is weak and that they are likely to increase inequalities in care by favouring better-off and more educated users. In the Netherlands there appears to have been a loss of spending control over personal budgets, with claims increasing tenfold and spending more than fivefold between 2002 and 2010 (van Ginneken, Groenewegen and McKee, 2012). This has been attributed to raised expectations of what could be provided and difficulties setting reliable budgets at an individual level (White, 2011).

Studies in some OECD countries have suggested that such arrangements can increase user satisfaction at similar cost to traditional models, provided they are properly targeted, although there seems to have been less impact on the quality of care (Lundsgaard, 2005). The concept has been the subject of a randomised trial in England in relation to social care (disability support). This showed some positive results. Those with budgets seemed to have slightly better outcomes than those without, although relative cost-effectiveness varied by patient sub-group (Glendinning and Moran, 2008).

More recently, evaluations of the use of both personalised care planning and personal budgets in the United Kingdom have been published as part of a series of studies looking at health system reform

under the Labour government of 1997–2010 (Mays, 2013). Care planning was intended to link support and services provided by multiple providers to people with chronic conditions through a process of shared decision-making between the patient and a named professional. Take-up was modest and there was no sign that the level and nature of the planning that took place had any impact on health outcomes after six or 12 months of follow-up (Bower, 2013). Personal health budgets were associated with statistically significant improvements in the quality of life and psychological well-being of recipients, although there did not appear to be an impact on health status or mortality rates over the 12-month follow-up period. The cost of inpatient care was lower for people with personal budgets, but this was offset by higher spending on other services, with no significant impact on overall costs. Budgets were nevertheless assessed as being cost-effective given assumptions made about the value of, in particular, quality of life improvements (Jones et al., 2013).

'Telehealth' involves the remote exchange of information between patient and professional in order to help manage a condition. 'Telecare' is the remote monitoring of changes in a person's physical status using alarms and sensors. Both have been widely promoted as ways of enhancing self-management and improving the quality and cost-effectiveness of care for people with long-term conditions. These technologies have been slow to move into routine use due to a mix of professional and patient resistance. They seem to be viewed ambivalently by patients (Lehoux, Saint-Arnaud and Richard, 2004; McCreadie and Tinker, 2005). Evidence for their cost-effectiveness outside rural areas is also less than compelling (Barlow et al., 2007). In the largest and most robust randomised evaluation undertaken to date, a programme in England has so far shown no significant reduction in hospital costs, still less overall net savings. However, there does appear to have been a reduction in hospital admissions and mortality rates during a 12-month follow-up period among a group of patients with chronic obstructive pulmonary disease, diabetes or heart failure (Steventon et al., 2012).

The health workforce

As noted earlier, productivity gains tend to be relatively low in labour-intensive service industries such as health care. Better use of information technology may provide one way of maximising labour productivity within the health sector. Telehealth and telecare are examples of this, although their impact to date has been limited. Another approach may be to adjust the skill mix of the workforce to ensure that professional skills are put to best use. As doctors are most costly and require the greatest amount of training, allowing other professionals such as nurses and pharmacists to perform some of the tasks previously performed by doctors, or creating new roles, could create efficiencies. The role of physician assistant, for example, has been used in the United States since the 1960s. Physician assistants are trained for a considerably shorter time than doctors and receive lower salaries. However, in primary care settings it has been shown that they have a 'same task' substitution ratio of 0.86 compared with the supervising physician, meaning that they saw the same types of patients and rendered the same care as the physician 86% of the time (Hooker, 2006). New Zealand is currently in the second phase of a physician assistant demonstration project focused on primary care and rural hospital settings.

Workforce issues must be considered in the context of an international labour market in which there is likely to be increased demand for health professionals over the coming decades. New Zealand's health workforce has high levels of inward and outward migration. In 2005/06, foreign-born doctors and nurses made up 25% and 29% of the workforce respectively (Zurn and Dumont, 2008).

Prevention

Government programmes for health promotion and disease prevention currently represent around 6.4% of health care spending in New Zealand, compared to an average of less than 3% for OECD countries. There are many different kinds of preventive measure and they vary in cost-effectiveness. Some programmes – such as vaccination against communicable diseases – are highly effective (OECD, 2010) and can even be cost-saving (Maciosek et al., 2006). Others, especially those requiring behavioural change, can be difficult to implement and costly. Even when preventive measures are effective in terms of improving health outcomes (and may therefore be worthwhile), they may not necessarily save money for government in the long run. There is no guarantee that programmes delivered across broad population groups will be less expensive than subsequent targeted care, and people who live longer as a result may also develop other conditions, generating further costs.

Government programmes for health promotion and disease prevention currently represent around 6.4% of health care spending in New Zealand, compared to an average of less than 3% for OECD countries.

Another approach to secondary prevention and cost containment involves risk-profiling. The basic idea is simple: to identify and intervene pre-emptively with those in the population who are at greatest risk of developing or exacerbating an existing long-term condition such as diabetes. While such approaches may seem common sense, only a small minority of preventable, unplanned hospital admissions are of people who are at high risk based on their previous behaviour

and characteristics. As a result, risk profiling may not be cost-effective unless the intervention triggered is low-cost. More work needs to be done to investigate the effectiveness of risk-profiling followed by different interventions for patients at different levels of risk of admission or readmission.

As noted above, health care is just one of a number of factors that influence health status. This means that in some cases it may be that the most effective interventions to keep the population healthy and out of hospital are found outside the health system. For example, New Zealand has relatively poor-quality housing. More efficient heating (in particular, through better insulation) can reduce cold and damp, improving health by reducing infectious and non-infectious disease and related hospitalisations. Two randomised controlled trials in New Zealand have shown that retrofitting insulation and installing non-polluting heaters in homes are potentially effective ways of improving the health of occupants, thereby reducing the number of GP visits and hospitalisations, days off school or work, and premature deaths (Howden-Chapman et al., 2007; Howden-Chapman et al., 2008; Chapman et al., 2009).

New Zealand achieves good health indicators at a level of spending per person that is slightly below the OECD average, although there are some areas of concern, including infectious disease rates and ethnic disparities in health.

The scope of the public system

Greater efficiency and better prevention are important, but fiscal pressures will remain. As discussed earlier, wages are the main cost input for health and long-term care services, and they tend to rise as the economy grows. Scope for productivity gains is limited in service sectors and typically will not compensate entirely for these higher wage costs. This means that the cost of delivering a given amount of care tends to rise over time.

This does not mean that good-quality care will become unaffordable, since 'productivity growth makes a society wealthier, not poorer, and able to afford more of all things' (Baumol, 2012). However, the extent to which spending continues to rise as a proportion of GDP depends on the choices we make as health and long-term care services become relatively more expensive. If we do decide to devote a greater proportion of our future income to buying these services, they will form a larger part of the national economy. We will thus need to consider how much of this enlarged activity should remain within the public sector, and how far it can or should be funded by government through taxation.

Governments make decisions about the coverage of the public health system that influence spending growth. Health services in New Zealand (as in many OECD countries) are mostly provided free at the point of need, although there are co-payments for GP visits and prescription medicines. The cost of certain services, including optometry and most adult dental care, has to be met privately. The scope of the public system is also defined, less directly, through centrally-imposed budget constraints, which may lead to rationing of services through waiting lists, and perhaps to reductions in quality. These parameters may be adjusted over time.

Health technology assessment is a process by which health purchasers decide which new health technologies are worth investing in and is now widely used by OECD countries (OECD, 2010). It is most well developed in the pharmaceutical sector. New Zealand's Pharmaceutical Management Agency (PHARMAC) is a highly successful example of what can be achieved through good prioritisation. PHARMAC decides which GP-prescribed medicines, hospital medicines and vaccinations are to be subsidised by government, assessing them against a range of economic and clinical criteria. This approach aims to ensure that New Zealanders get the maximum health benefits from a given pharmaceutical budget. PHARMAC estimates that its activities saved DHBs more than $5 billion from 2000 to 2013. It is currently in the process of expanding its operations to cover medical devices, which will yield further savings to DHBs.

Changes to the coverage of the public system, including decisions about prioritisation, may involve difficult trade-offs in terms of fairness and efficiency. For example, co-payments may lower the cost to government of a particular service and, through price signals, reduce overconsumption. However, because individual contributions are not related to income or ability to pay, except perhaps at the margins, they tend to be regressive and may deter people from accessing services when they need them. They may also contribute to inefficiency. In New Zealand, co-payments do not apply to hospital services (a previous attempt to introduce them having been strongly resisted). This difference may cause some patients to forgo primary care in favour of accident and emergency services, with a higher cost to government and no better outcomes. Patient co-payments have also been identified as an important barrier to refocusing the health system so that chronic conditions are effectively managed in the primary care sector (Mays and Blick, 2008). People who do not access care initially because of cost may eventually require more costly inventions that could otherwise have been avoided.

Restricted coverage for the public system would lead to an increased reliance on out-of-pocket payments or private insurance, with more people choosing to purchase additional health care or faster access. While this happens now to some extent, concerns about equity and access could be expected to increase if the types of services available to people on different incomes, or with different risk profiles, started to diverge significantly.

Growth in the private insurance market may generate fiscal pressures of its own. Policies which cover co-payments can increase demand by insulating people from the cost of services, and have been found to increase public expenditure in the United States, France and Spain (OECD, 2004; WHO, 2004). Private insurance may also create new incentives for providers to use the public system to stimulate demand for private services (Thomson et al., 2009). This has led to a regulatory response in a number of countries. Canada, Sweden, Luxembourg, Greece and Italy all prohibit doctors from practising in both the public and private sectors.

Other countries have tried to manage financial pressures by introducing compulsory insurance schemes, particularly in relation to long-term care. These generally involve publicly-managed social insurance arrangements rather than compulsory private insurance. The accident compensation scheme provides an analogous model in New Zealand. Compulsory insurance and other hypothecated taxes may have presentational advantages relative to other forms of taxation, but they also conflate decisions about tax and spending. A hypothecated levy is still effectively a tax, funding current or future expenditure, and may be a less efficient and more complicated way of raising revenue than other forms of taxation.

Concluding remarks

Health and long-term care spending is projected to grow considerably over the next 50 years, driven upwards by a combination of factors. All OECD countries are facing similar pressures, so this is not an indication of system failure in New Zealand. New Zealand achieves good health indicators at a level of spending per person that is slightly below the OECD average, although there are some areas of concern, including infectious disease rates and ethnic disparities in health. Nevertheless, it seems likely that rising expenditure on health and long-term care will constitute a significant fiscal and political management issue for future governments. The demands on the system are changing, with chronic and long-term conditions increasingly important as a source of morbidity. This has important implications for the organisation and delivery of care. The system needs to continue to be rebalanced away from acute care, with a greater emphasis on reducing hospital admissions and managing conditions in primary care. Even if this is achieved, there will still be difficult choices about how much of New Zealand's future income is devoted to health and long-term care, what proportion of total spending is financed from taxation, and how to adjust the contours of the public system in response to fiscal pressure. Action will be needed on a range of fronts to ensure that New Zealanders get the greatest health gains from every dollar spent and that health spending growth is sustainable for future generations.

References

Barker, G., L. Bryant and H. Aish (2006) 'Primary options for acute care: cellulitis management in Counties Manukau DHB', *New Zealand Family Physician*, 33, pp.39-45

Baker, M.G., L.T. Barnard, A. Kvalsvig, A. Verrall, J. Zhang, M. Keall, N. Wilson, T. Wall and P. Howden-Chapman (2012) 'Increasing incidence of serious infectious diseases and inequalities in New Zealand: a national epidemiological study', *Lancet*, 379 (9821), pp.1112-19

Bardsley, M. (2012) 'Predictive modelling and data linkage', presentation at Nuffield Trust seminar Linking Disease Registry Information and Predictive Modelling to Improve Quality and Efficiency: a pioneering approach in Sweden, London: Nuffield Trust, www.nuffieldtrust.org.uk/talks/slideshows/martin-bardsley-predictive-modelling-and-data-linkage

Bardsley, M., T. Georghiou, L. Chassin, G. Lewis, A. Steventon and J. Dixon (2012) 'Overlap of hospital use and social care in older people in England', *Journal of Health Services Research and Policy*, 17, pp.133-9, doi: 10.1258/jhsrp.2011.010171

Barlow, J., D. Singh, S. Bayer and R. Curry (2007) 'A systematic review of the benefits of home telecare for frail elderly people and those with long-term conditions', *Journal of Telemedicine and Telecare*, 13, pp.172-9

Baumol, W.J. (2012) *The Cost Disease: why computers get cheaper and health care doesn't*, New Haven: Yale University Press

Bower, P. (2013) 'Multi-morbidity and care for long term conditions in the English NHS: baseline data from a cohort study', *Journal of Health Service Research and Policy*, 18 (supplement 2), forthcoming

CCDHB (2013) *Annual Plan 2013–14*, Wellington: Capital and Coast District Health Board

Chapman, R., P. Howden-Chapman, H. Viggers, D. O'Dea, and M. Kennedy (2009) 'Retrofitting houses with insulation: a cost-benefit analysis of a randomised community trial', *Journal of Epidemiology & Community Health*, 63, pp.271-7, doi: 10.1136/jech.2007.070037

Coppell, K.J., J.J Mann, S.M. Williams, E. Jo, P.L. Drury, J. Miller and W.R. Parnell (2013) 'Prevalence of diagnosed and undiagnosed diabetes and prediabetes in New Zealand: findings from the 2008/09 Adult Nutrition Survey', *Journal of the New Zealand Medical Association*, 126 (1370), pp.23-42

Dahlgren, G. and M. Whitehead (1991) *Policies and Strategies to Promote Social Equity in Health: background document to WHO – strategy paper for Europe*, Arbetsrapport, 2007 (14), Stockholm: Institute for Futures Studies

de la Maisonneuve, C. and J.O. Martins (2013) *Public Spending on Health and Long-Term Care: a new set of projections,* economic policy paper, 6 Paris: OECD

Dormont, B., M. Grignon and H. Huber (2006) 'Health expenditure growth: reassessing the threat of ageing', *Health Economics*, 15, pp.947-63

Edwards, N. (2012) 'Managing ACSCs: how can avoidable hospital admissions be reduced?', accessed 14 October 2012 from http://www.kingsfund.org.uk/blog/2012/04/managing-acscs-how-can-avoidable-hospital-admissions-be-reduced

European Commission (2012) The 2012 Ageing Report, Brussels: European Commission

Figueras, J., R. Robinson and E. Jakubowski (2005) 'Purchasing to improve health systems performance: drawing the lessons', in J. Figueras, R. Robinson and E. Jakubowski (eds), *Purchasing to Improve Health Systems Performance*, England: Open University Press

Gay, J.G., V. Paris, M. Devaux and M. de Looper (2011) 'Mortality amenable to health care in 31 OECD countries: estimates and methodological issues', health working paper 55, Paris: OECD

Glendinning, C. and N. Moran (2009) *Reformed Long-Term Care: recent lessons from other countries*, York: Social Policy Research Unit, University of York

Graham, P., T. Blakely, P. Davis, A. Sporle and N. Pearce (2004) 'Compression, expansion, or dynamic equilibrium? The evolution of health expectancy in New Zealand', *Journal of Epidemiology and Community Health*, 58 (8), pp.659-66

Grant Thornton (2010) *Aged Residential Care Service Review*, Grant Thornton New Zealand

Hooker, R.S. (2006) 'Physician assistants and nurse practitioners: the United States experience', *Medical Journal of Australia*, 185 (1), pp.4-7

Howden-Chapman, P., N. Pierse, S. Nicholls, J. Gillespie-Bennett, H. Viggers, M. Cunningham, S. Free, B. Lloyd, K. Wickens, D. Shields, M. Baker, C. Cunningham and J. Crane (2008) 'Effects of improved home heating on asthma in community dwelling children: randomised controlled trial', *BMJ*, 337, pp.852-5, doi: 10.1136/bmj.a1411

Howden-Chapman, P., A. Matheson, J. Crane, H. Viggers, M. Cunningham, T. Blakely, D. O'Dea, M. Kennedy, M. Baker and G. Davie (2007) 'Effect of insulating existing houses on health inequality: cluster randomised study in the community', BMJ, 334, p.460, doi: 10.1136/bmj.39070.573032.80

Jones, K., J. Forder, J. Caiels, E. Welch, C. Glendinning and, K. Windle (2013) 'Personalisation in the health care system: do personal health budgets impact on outcomes and cost?', *Journal of Health Services Research and Policy*, 18 (supplement 2), forthcoming

Lehoux, P., J. Saint-Arnaud and L. Richard (2004) 'The use of technology at home: what patient manuals say and sell vs. what patients face and fear', *Sociology of Health and Illness*, 26, pp.617-44

Lundsgaard, J. (2005) *Consumer Direction and Choice in Long-Term Care for Older Persons, Including Payments for Informal Care: how can it help improve care outcomes, employment and fiscal sustainability?*, Paris: OECD

McCreadie C. and A. Tinker (2005) 'The acceptability of assistance technology to older people', *Ageing and Society*, 25, pp.91–110

Maciosek, M.V., A.B. Coffield, N.M. Edwards, T.J. Flottemesch, M.J. Goodman and L.I. Solberg (2006) 'Priorities among effective clinical preventive services: results of a systematic review and analysis', *American Journal of Preventive Medicine*, 21 (1), pp.52-61

Mays, N. (2013) 'Evaluating the Labour government's English NHS health system reforms: the 2008 Darzi reforms', *Journal of Health Services Research and Policy*, 18 (supplement 2), forthcoming

Mays, N. and G. Blick (2008) 'How can primary health care contribute better to health system sustainability? A Treasury perspective', discussion document, Wellington: Treasury http://www.treasury.govt.nz/publications/informationreleases/health/primaryhealthcare/ddd-primhealthcare-may08.pdf

Mendez, A.P., H. Tabish and D. de Ferranti (2012) 'The cost disease and global health', in W.J. Baumol, *The Cost Disease: why computers get cheaper and health care doesn't*, New Haven: Yale University Press

Ministry of Health (2009) 'Request for expression of interest (EOI) for the delivery of Better, Sooner, More Convenient Primary Health Care', Wellington: Ministry of Health

Ministry of Health (2011) *Better, Sooner, More Convenient Health Care in the Community*, Wellington: Ministry of Health

Ministry of Health (2012a) *Annual Report for the Year ended 30 June 2012*, Wellington: Ministry of Health

Ministry of Health (2012b) *The Health of New Zealand Adults 2011/12: key findings of the New Zealand Health Survey*, Wellington: Ministry of Health

OECD (2004) *Private Health Insurance in OECD Countries*, Paris: OECD

OECD (2005) *Long-Term Care for Older People*, Paris: OECD

OECD (2006) Projecting OECD *Health and Long-Term Care Expenditures: what are the main drivers?*, Economics Department working paper 477, Paris: OECD

OECD (2009) *Economic Surveys: New Zealand*, Paris: OECD

OECD (2010) *Value for Money in Health Spending*, Paris: OECD

OECD (2011) *Health at a Glance*, Paris: OECD

OECD (2013) OECD *Health Data 2013*, Paris: OECD

Riley, G.F. and J.D Lubitz (2010) 'Long-term trends in Medicare payments in the last year of life', *Health Services Research*, 45, pp.565-76, doi: 10.1111/j.1475-6773.2010.01082.x

Schoen, C. and R. Osborn (2011) *The Commonwealth Fund 2011 International Health Policy Survey of Sicker Adults in Eleven Countries: chart pack*, New York: Commonwealth Fund

Sibbald, B., R. McDonald and M. Roland (2007) 'Shifting care from hospitals to the community: a review of the evidence on quality and efficiency', *Journal of Health Services Research and Policy*, 12, pp.110-7

Smith, S., J.P. Newhouse and M.S. Freeland (2009) 'Income, insurance and technology: why does health spending outpace economic growth?', *Health Affairs*, 28 (5), pp.1276-84

Statistics New Zealand (2013a) *New Zealand Period Life Tables 2010–12*, Wellington: Statistics New Zealand

Statistics New Zealand (2013b) *Education and Health Industry Productivity 1996–2011*, Wellington: Statistics New Zealand

Statistics New Zealand (2013c) *Productivity Statistics: 1978–2012*, Wellington: Statistics New Zealand

Steventon, A., M. Bardsley, J. Billings, J. Dixon, H. Doll, S. Hirani, M. Cartwright, L. Rixon, M. Knapp, C. Henderson, A. Rogers, R. Fitzpatrick, J. Hendy and S. Newman (2012) 'Effect of telehealth on use of secondary care and mortality: findings from the Whole System Demonstrator cluster randomised trial', *BMJ*, 344, doi: 10.1136/bmj.e3874

Thomson, S., T. Foubister, J. Figueras, J. Kutzin, G. Permanand and L. Bryndova (2009) *Policy Summary 1: addressing financial sustainability in health systems*, Copenhagen: World Health Organization Regional Office for Europe

Tobias, M. and L. Yeh (2009) 'How much does health care contribute to health gain and to health inequality? Trends in amenable Mortality in New Zealand 1981-2004', *Australian and New Zealand Journal of Public Health*, 33 (1), pp.70-8

Treasury (2013) *Health Projections and Policy Options*, Wellington: Treasury

van Ginneken, E., P. Groenewegen and M. McKee (2012) 'Personal healthcare budgets: what can England learn from the Netherlands?', *BMJ*, 344: e1383 doi: 10.1136/bmj.e1383

Wellingham, J., J. Tracey, H. Rea and B. Gribben (2003) 'The development and implementation of the Chronic Care Management Programme in Counties Manukau', *New Zealand Medical Journal*, 116 (1169)

White, C. (2011) *The Personal Touch: the Dutch experience of personal health budgets*, London: Health Foundation

WHO (2004) *What Are the Equity, Efficiency, Cost-containment and Choice Implications of Private Health-Care Funding in Western Europe?*, Copenhagen: World Health Organization Regional Office for Europe

Zurn, P. and J.C. Dumont (2008) *Health Workforce and International Migration: Can New Zealand compete?*, OECD health working paper 33, Paris: OECD