

Chapter 2

Ageing, health and innovation: Policy reforms to facilitate healthy and active ageing in OECD countries

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While all OECD countries are experiencing unprecedented demographic change, which has the potential to unravel health and social care systems, a negative outcome is not inevitable. This chapter presents some of the policies and measures that can be implemented to support and facilitate healthy and active ageing. These policies have the potential to mitigate the impact of demographic change on society as well as helping older people to continue to be active and productive citizens whether as workers, consumers, volunteers or care givers.

Introduction

Across the OECD, countries are experiencing unprecedented demographic change resulting in increased longevity, an older population that is growing in size and a falling birth rate (OECD, 2010a; UN, 2008; Bloom and Canning, 2008). A larger older population and a comparatively smaller working age population can put a strain on publicly-funded health and social services including health care, social care and pensions (Stauner, 2008; Holmes, 2011; Fendrich and Hoffman, 2007; Christensen *et al.*, 2009; Bloom and Canning, 2008), which demands a policy response from OECD governments.

There are two schools of thought regarding demographic change. The first is to see it as a burden for society or a “silver tsunami” (Fried and Hall, 2008), which will require radical overhaul of health and social care systems (Rajoy, 2008) possibly to the point that they may no longer resemble what they were envisaged to be (Stauner, 2008). For example, providing universal health care for an ageing population will lead to higher costs that will not easily be met by merely increasing contributions (Stauner, 2008; Stabile and Greenblatt, 2010), so we may see an increasing tendency to reduce publicly-funded health care services to a basic minimum, so that those with the means may choose to opt for private health care, thus undermining the public system further (Stauner, 2008).

This approach questions the solidarity-based approach that many social welfare models, particularly in Europe, where the sustainability of pension and other social protection schemes are in danger (Stauner, 2008; Rajoy, 2008). It also pits different generations against each other, as generally working age people are net producers while many older people are net consumers of societal goods and services (Bloom and Canning, 2008). Young workers in particular may resent paying high taxes and social security contributions to fund what are seen as generous pensions, health and social care for the older generation (Stauner, 2008; Stabile and Greenblatt, 2010). We are calling this approach the “zero sum approach”.

The second way to look at demographic change is to acknowledge that while it presents many challenges, it can also bring many opportunities. For example, increased longevity and increased healthy life years (Christensen *et al.*, 2009) can enable older people to continue being workers, volunteers and consumers for much longer than in the past, which can benefit employers, younger workers, working families, businesses and third sector organisations who rely on volunteers (Sinclair, 2010; Kuhn, 2010; Holmes, 2011). The International Longevity Centre works on the basis that different

generations can make useful, albeit different, contributions to society; this is known as the life course approach.

OECD countries are now addressing the challenges of demographic change in a variety of policy responses. Almost all countries have made changes to their pension systems including among others increasing the state pension age (OECD, 2006; 2007a; 2007b). Many have also increased the contributions that fund health care services while increasing user cost-sharing in the form of higher co-payments, reduced reimbursement or in some cases are no longer publicly funding or providing some services (Folland *et al.*, 2009; Santerre and Neun, 2010; Docteur and Oxley, 2003). A shrinking workforce in many OECD countries means that policies that enable flexible working to allow older workers and those with caring responsibilities (for children or older relatives) to participate in the labour market are being introduced in many countries (Stauner, 2008; Relationships Foundation, 2011).

However, alongside these traditional policy responses there are also innovative solutions which include new ways addressing ageing that may involve new technology and new processes. In the area of health, a life course approach includes an increased focus on prevention and the promotion of healthy lifestyles at all stages of life to keep people active and prevent or mitigate chronic disease (Rajoy, 2008; Chappell and Hollander, 2011; Christensen *et al.*, 2009) as well as a focus on keeping people independent and out of institutional care (Martin, 2010).

Changing demographics

In all OECD countries over the last 50 years, life expectancy has increased dramatically and birth rates have fallen significantly in some countries (OECD, 2010a). This is due to substantial improvements in health care, nutrition and other factors (Costa-Font *et al.*, 2008). This is changing the structure of society and raising questions about the sustainability of health, social care and pensions systems that were created with a very differently structured society in mind (Stauner, 2008).

Even in the wealthiest OECD countries life expectancy has increased by approximately ten years (OECD, 2010a). For example, in Germany, life expectancy increased from 69.1 years in 1960 to 80 years by 2007, and in Australia from 70.9 years to 81.4 years over the same period (OECD, 2010a). Less wealthy OECD countries have seen even larger increases in life expectancy, for example, Turkey has seen life expectancy increase from 48.3 years to 73.4 years from 1960 to 2007; during the same period Korea's life expectancy increased from 52.4 years to 79.4 years (OECD, 2010a).

Birth rates have fallen in all OECD countries and in many, in particular the EU member states that belong to the OECD, it has fallen below replacement level of 2.1 children per woman of child bearing age assuming no immigration (Rajoy, 2008; Mann, 2008). Many European countries therefore face depopulation (Rajoy, 2008; Stauner 2008). Falling birth rates have been particularly marked in those countries which had previously had very high birth rates, such as Mexico, where the number of children born to women aged 15-49 was 6.77 in 1970, but only 2.17 by 2006 (OECD, 2010a).

In the European Union, fertility decline has been higher in southern and eastern Europe than in northern and western Europe, with some studies suggesting that higher decline is linked to the strength of the male breadwinner model and low female labour market participation (Costa-Font *et al.*, 2008). It is also important to note that smaller families and increased female labour participation affect the availability of future informal care givers (Costa-Font *et al.*, 2008; Stauner, 2008). Meanwhile, in those countries that have had low birth rates for many decades, including the Czech Republic, the birth rate has fallen further from 1.91 children per woman in 1970 to only 1.33 children per woman by 2006 (OECD, 2010a).

Migration is already playing a role in the population characteristics of some OECD countries (Costa-Font *et al.*, 2008). For example those who emigrated to the United Kingdom and Germany in the 1960s and 1970s are now becoming part of the older retired population (Costa-Font *et al.*, 2008) and in many countries, for example Italy and Austria, the care workforce is being bolstered by formal and informal migration mostly from poorer EU countries (Kuhn, 2010). Mann (2008) points out that many EU member states may only be able to maintain their population through immigration if birth rates remain low.

However, in the European Union, even assuming that current levels of migration stay the same, the size of the working population will fall from 277 million in 2005 to 183 million in 2040 (Stauner, 2008). Migration could help some OECD countries to temporarily ease the pressures of demographic change in the short term, for example pressure on publicly-funded pensions may be eased when immigrants pay taxes and social security contributions, but in the long term those economically active migrants will build their own pension rights, so reform is still needed, even if there may be more time to implement it (Rajoy, 2008; Mann, 2008).

This population decline is leading to a growing older population, which is not only living longer, but is also making up a larger proportion of the population than ever before leading to changes in what is called the dependency ratio or the old age support ratio (the ratio of working age

people to people of non-working age) (Bloom and Canning, 2008). In 1950, the OECD average dependency ratio was 7.21, but by 2000 it had fallen to 4.17 and is predicted to fall to 3.34 by 2020 and 2.08 by 2050 (UN, 2008). The United Nations predicted in 2008 that by 2010, the average dependency ratio in the OECD would be 4.12, but this hides differences amongst countries, which sees Turkey with a dependency ratio of 9.83 in 2010 compared to 2.63 in Japan and 2.96 in Italy (UN, 2008). However, looking at the predicted 2050 figures reveals a great deal of convergence with dependency ratios varying from 1.24 in Japan to 3.15 in Turkey, although the majority (20/34 countries) falling between 1.7 and 2.5.

At the same time, there has been both compression and expansion of morbidity (Costa-Font *et al.*, 2008), in what is known as the “epidemiological transition”, where people no longer die from infectious diseases due to advances in medical science, but instead are more likely to suffer from chronic and degenerative diseases including cardiovascular disease, diabetes and dementia (CDC, 2003). In the United States, around 80% of people over 65 have one chronic conditions and 50% have two (CDC, 2003).

With regard to dementia, the developed world is facing a “tsunami” as demographic change leads to more people reaching an age where they are likely to develop dementia (Bamford, 2010). The *World Alzheimer Report 2009* states that there are currently 35.6 million people with dementia with the numbers set to double every 20 years to 65.7 million in 2030 and 115.4 million in 2050 (Alzheimer’s Disease International, 2009). Around 7.3 million Europeans (EU27) had some form of dementia in 2006 (Bamford, 2010). Dementia predominantly affects the over 65s and the risk of developing dementia doubles every five years after the age of 65 (Bamford and Taylor, 2011).

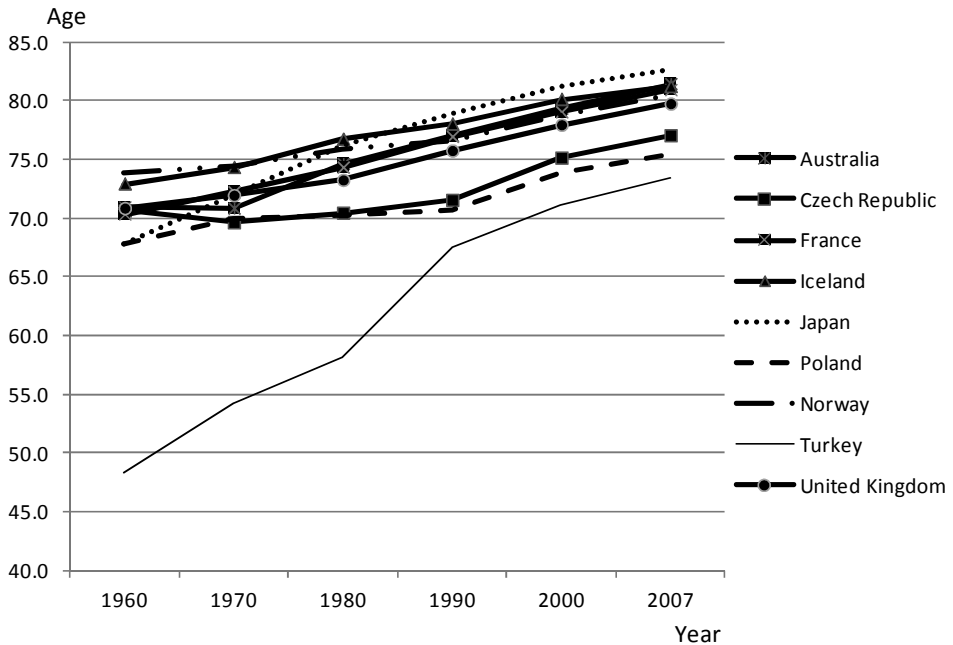
The most common form of dementia is Alzheimer’s disease (OECD, 2004; Royal College of Psychiatrists, 2009), which is also the fourth most common cause of disease burden in high income countries (Alzheimer’s Disease International, 2009). Dementia rarely occurs alone and is often accompanied by cardiovascular disease and mental health problems such as depression (Bamford and Taylor, 2011). There is evidence from England and the US State of Wisconsin that early diagnosis and intervention (social and psychological as well as pharmacological) can delay admission to care homes (Bamford, 2010).

Chronic diseases are both age and lifestyle related. For example, type II diabetes is linked to obesity and the likelihood of developing chronic diseases including cancer (now often considered as a chronic disease due to advances in medical science) increases with age (WHO, 2003). The lifestyle

element of chronic disease means that preventative strategies, particularly those that improve diet and increase physical exercise can help older people reduce the risk of chronic disease and cancer and/or manage chronic diseases more effectively (Rajoy, 2008; WHO, 2003; WCRF, 1997).

What does this mean for OECD countries? Many predictions say it means that countries will have to devote more of their GDP to funding health care, social care and pensions. For example, Costa-Font *et al.* (2008) point to a 2006 study suggesting that European countries will need to increase their expenditure on long-term care by 1.7 percentage points of GDP from 2004 to 2050 due to an increase in the number of older citizens with care needs. Stauner (2008) cites estimates that public expenditure on health care will increase by 1.5% to 2% of GDP by 2050 for most EU countries. Robson (2009) writes that demographic change threatens to push the cost of Canadian government programmes for health, education, families and older people from 15% to 19.4% of GDP over the next 50 years.

Figure 2.1. Life expectancy in different OECD countries, 1960-2007



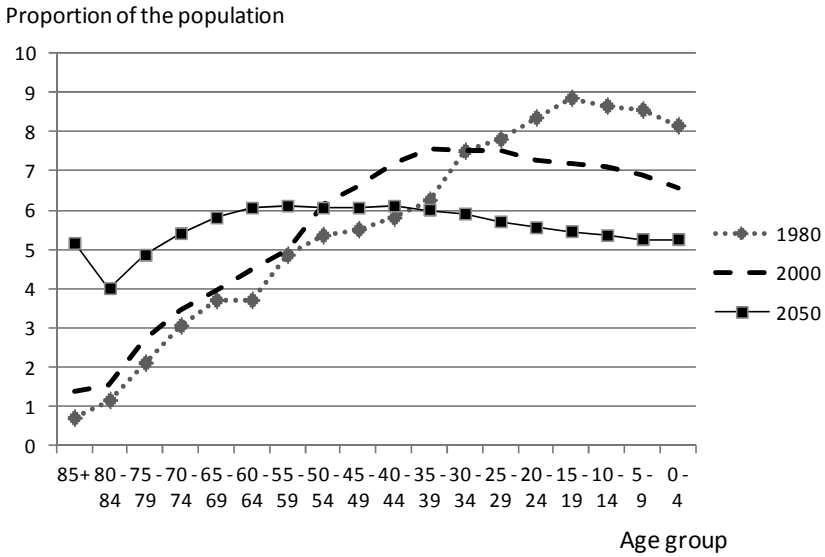
Source: OECD Health Data 2010.

Table 2.1. Life expectancy in the OECD, 1960-2007

	1960	1970	1980	1990	2000	2007
Australia	70.9	70.8	74.6	77.0	79.3	81.4
Austria	68.7	70.0	72.6	75.6	78.2	80.3
Belgium	69.8	71.1	73.3	76.1	77.8	79.8
Canada			75.3	77.6	79.0	80.7
Chile				72.9	76.8	77.8
Czech Republic	70.6	69.6	70.4	71.5	75.1	77.0
Denmark	72.4	73.3	74.3	74.9	76.8	78.4
Estonia				69.6	70.6	72.9
Finland	69.0	70.8	73.6	75.0	77.7	79.5
France	70.3	72.2	74.3	76.9	79.0	80.9
Germany	69.1	70.6	72.9	75.3	78.2	80.0
Greece	69.9	72.0	74.5	77.1	78.0	79.5
Hungary	68.0	69.2	69.1	69.4	71.7	73.3
Iceland	72.9	74.3	76.7	78.0	80.1	81.2
Ireland	70.0	71.2	72.9	74.9	76.6	79.7
Israel			73.9	76.7	78.8	80.6
Italy			74.0	77.1	79.8	81.5
Japan	67.8	72.0	76.1	78.9	81.2	82.6
Korea	52.4	62.2	65.9	71.4	76.0	79.4
Luxembourg	69.4		72.8	75.6	78.0	79.4
Mexico	57.5	60.9	67.2	70.6	73.9	75.0
Netherlands	73.5	73.7	75.9	77.0	78.0	80.2
New Zealand		71.5	73.2	75.5	78.4	80.2
Norway	73.8	74.4	75.9	76.6	78.7	80.5
Poland	67.8	70.0	70.2	70.7	73.9	75.4
Portugal	63.9	66.7	71.4	74.1	76.7	79.1
Slovak Republic	70.6	69.8	70.6	71.0	73.3	74.3
Slovenia				73.3	75.5	78.2
Spain	69.8	72.0	75.4	77.0	79.4	81.1
Sweden	73.1	74.7	75.8	77.6	79.7	81.0
Switzerland	71.4	73.1	75.6	77.5	79.9	81.9
Turkey	48.3	54.2	58.1	67.5	71.1	73.4
United Kingdom	70.8	71.9	73.2	75.7	77.9	79.7
United States	69.9	70.9	73.7	75.3	76.7	77.9

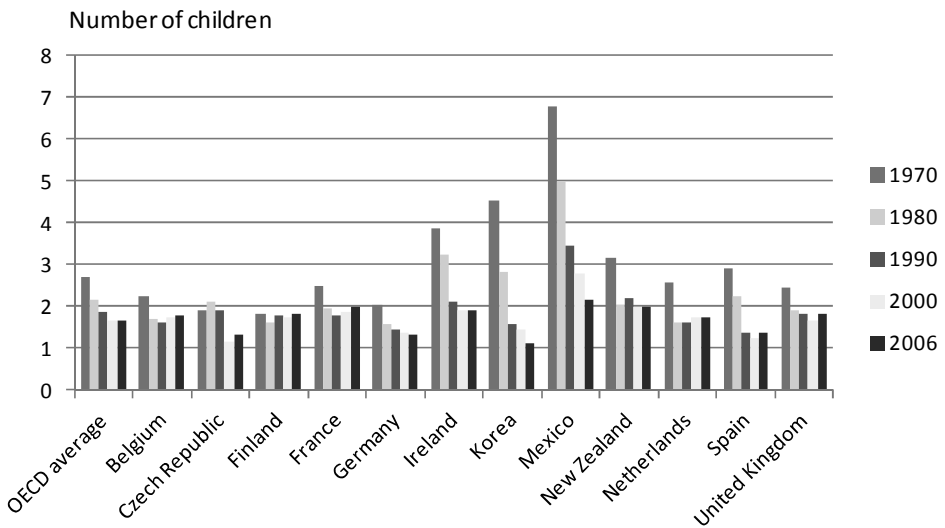
Source: OECD Health Data 2010.

Figure 2.2. OECD population by age groups

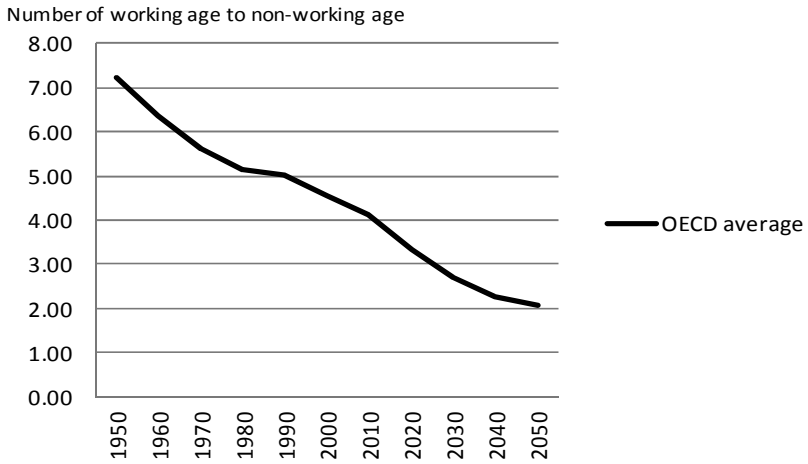


Source: OECD population pyramids (2000 & 2005).

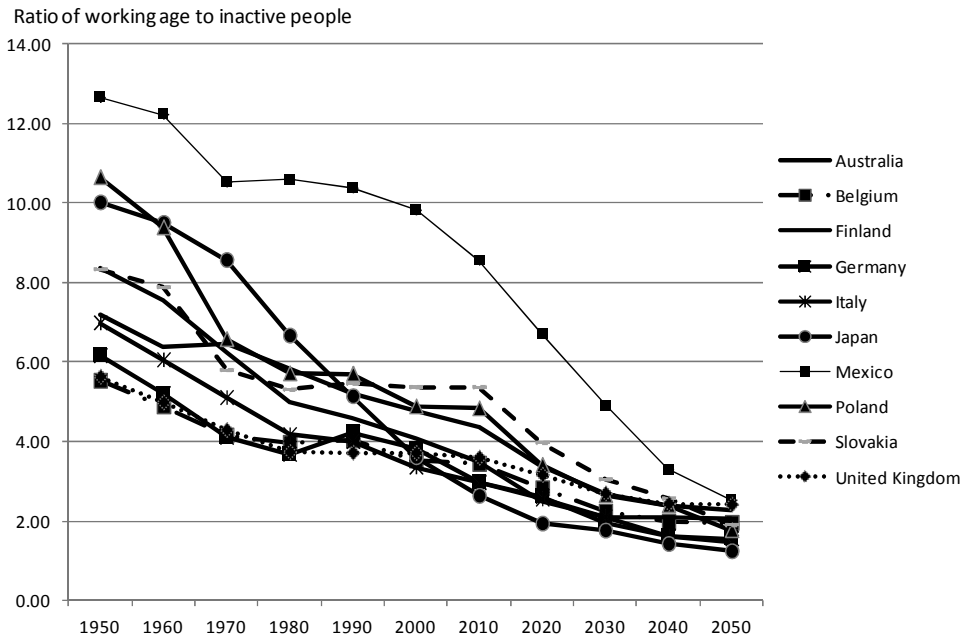
Figure 2.3. Number of children per woman aged 15-49



Source: OECD Factbook 2010, "Economic, Environmental and Social Statistics".

Figure 2.4. OECD average dependency ratio

Source: UN (2008).

Figure 2.5. Dependency ratio in selected OECD countries

Source: UN (2008).

The zero-sum approach

Across OECD countries changing demographics are putting pressure on pensions and public services such as health and social care to the extent that funding cannot keep up with spending and the principle of solidarity in social systems is being called into question.

This approach sees older people as burdens on society with their demands on health care and other social welfare service and the solution to the problem being radical reform of social systems (Rajoy, 2008; Mann, 2008). While, no OECD government has yet suggested abandoning solidarity-based social systems leaving people to take care of themselves, some including Stauner (2008), fear that some policy solutions in this area could inadvertently start countries on this path.

Radical overhaul means increasing contributions while cutting public spending on health care, social services and pensions (Stauner, 2008). However, in many OECD countries people are currently facing escalating living costs at the same time as their wages are falling because of pay freezes, inflation or sometimes simply lower wage rates (Kelly, 2011; Semuels, 2011; Mes, 2010). In such a climate, there may be a limit to how much more tax and contributions people are willing and able to pay.

In health care, longevity would be seen as allowing people to live longer in order to be ill or disabled for longer because the rise of chronic disease and functional disability means expanded rather than compressed morbidity (Parker and Thorslund, 2007). Rather than investing in the health of older people to promote healthy ageing, this approach would seek to either reduce services provided or ask older people to contribute more via cost-sharing for health care (Parker and Thorslund, 2007; Stauner, 2008).

There is also a greater risk of damaging the fabric of social welfare systems and their solidarity-based models (Stauner 2008). For example, in health care, Stauner (2008) envisages a “worst case scenario” future of reduced publicly-funded health care services providing only the basics, being abandoned by those with the means to opt out, leaving them further undermined and attacking the principle of social solidarity.

The zero sum approach also pits different age groups against one another, potentially resulting in intergenerational conflict as described in *The Pinch – How the Baby Boomers Took their Children’s Future and Why They should Give It Back* (Willetts, 2010). The current UK Universities Minister believes that the so-called baby boomers are bringing massive health and social care costs, which are being paid for by smaller younger cohorts, many of whom face debts from their education, job insecurity, higher taxes and overpriced housing (Willetts, 2010).

In a similar book entitled *Jilted Generation: How Britain Has Bankrupted its Youth*, two young journalists write about the struggle of their generation including large student loans, endless unpaid internships to try and find that elusive secure job while having to live in poky overpriced housing (Howker and Malik, 2010.) The authors lay the blame squarely at the door of the baby boomers and the errors in policy they have made over the last 25 years, which have disproportionately benefitted the old at the expense of the young (Howker and Malik, 2010).

The zero-sum approach would view older workers working longer as blocking jobs for the young (Kuhn, 2010). While older workers aged over 50 who lose their jobs still find it very hard to find new employment (TAEN, 2011), employers have generally preferred to retain middle to late age workers rather than recruit younger ones in the current economic crisis (Muller-Camen *et al.*, 2011). It is therefore true to say that the financial crisis has hit the young (under 25) hardest in terms of unemployment in all OECD countries although there are also significant differences amongst different members (OECD, 2010b). Unemployment among those aged 16-24 was around 20% in the OECD area as a whole in 2010, with around 21.1% in Europe, 18.2% in the United States, but only 8.8% in Japan (OECD, 2010b).

There has also been conflict between public sector and private sector workers, based on the idea that public sector workers can retire earlier on better more stable pensions than their private sector counterparts (BBC News, 2010a). Most public sector pension schemes in the OECD are unfunded comprising of pension contributions from existing employees as well as funding from general taxation (OECD, 2006). For example in the United Kingdom, the public sector pensions commission calculated that around half the public sector pension liability was covered by contributions from employees and employers (BBC News, 2010a). In the United Kingdom, most public sector workers are now required to retire at 65 and even those who can retire earlier such as fire-fighters have seen their minimum age for retirement rise (Muller-Camen *et al.*, 2011).

Attempts to reform public sector pensions have provoked angry responses in some OECD countries, for example Greece is currently witnessing demonstrations against the government's austerity package which include significant changes to public sector pensions (Smith, 2011). In France an estimated 2 million demonstrators took to the streets to show their opposition to proposals to reform public sector pensions, but the government still succeeded in passing the plans (*Le Point*, 2010). In Ireland, plans are currently underway to remove tax relief from private sector pensions in order to help fund public sector pensions, a move which is seen as another attack on the private sector, although previous government

borrowing and bank bailouts are being blamed more than demographic change (Fitzsimmons, 2011).

Life course approach

There is however another side to this debate, which does not see demographic change as a burden on society, but rather an achievement to be celebrated and the path to opening new opportunities. The life course approach adopted by the International Longevity Centre does not see younger people as productive and older people as burdens, but envisages that people of all ages have positive contributions to make to society, albeit those contributions may change over time.

Living longer is also about living better and that means being able to be an active member of society far longer than in the past, be that through working, volunteering or being consumers. Living better while living longer is not however automatic and requires appropriately supportive environments and policies, which will be further discussed in the policy reforms section of this chapter.

Employers can benefit from the skills and experience of older workers, as can their younger colleagues on both a formal and informal basis (Kuhn, 2010). Formally capitalising on the skills and experience of older workers is particularly important in sectors or organisations where the workforce is ageing, as this can prevent workforce de-skilling as the older workers retire and prevent early retirement at a time of a shrinking overall workforce (Kuhn, 2010; Mann, 2008). Capitalising on older workers requires flexible working, flexible pensions and flexible retirement (van Vuuren, 2011).

There are those who would posit that older workers are contributing to youth unemployment treat the labour market as rigid and unable to respond to change, when historical evidence *e.g.* large increases in female labour market participation during the last 50 years, has shown this to be false (Mann, 2008; Siba and Sinclair, 2010). This view also ignores the fact that age discrimination in the workplace generally disadvantages older workers and favours younger workers, especially when it comes to training and career progression (Kuhn, 2010; Billet and Van Woerkum, 2008; Holmes, 2011).

If older people can continue working, either because they want to or because financially they need to, this can enable them to further build up pensions and other retirement savings (Berry, 2010; Kuhn, 2010). Better off older people can provide new markets for consumer goods and services, although in general businesses have been slow to react to this new market,

which as far back as the 1970s was recognised as being potentially bigger than the youth market (Sinclair, 2010a).

Sinclair's research undertaken in the United Kingdom revealed that there was no such thing as "the older consumer", but many sub-groups of older consumers, whose heterogeneity was not purely linked to age, but related to different factors including wealth, geographic location, personal mobility and digital savvy (Sinclair, 2010a). Older consumers encountered barriers including product design, the retail environment, public transport and poor quality marketing, indeed Sinclair (2010a) even found that some wealthier older consumers said they consumed less than they would like to because of various barriers.

Research in other countries has shown similar problems; Dixon (2008) reported that although the over 50s are the main group of restaurant diners in many European cities and therefore a key target market for restaurants, many find reading menus by candlelight in restaurants difficult without reading glasses.

The larger the older population becomes, the more important it will become as a consumer market for existing products and services as well as for new innovations to meet the needs of specific groups of older consumers, such as the market for personal health technology, which has barely got off the ground, except in Japan (Sinclair, 2010b).

A life course approach to health is particularly valuable when one considers that chronic disease rather than age *per se*, which uses up vast amounts of health care resources. Chronic disease prevention is a life course endeavour, but changing to a healthier lifestyle even in later life can reduce the risk of developing chronic disease (WHO, 2003; Chernoff, 2003).

There is evidence that lifestyle habits can reduce and compress serious illness and disability into a shorter period at the end of life (Hubert *et al.*, 2002; Fries, 2003) and evidence showing that it is cost effective to invest in policies to prevent chronic diseases (Chappell and Hollander, 2011).

In respect of cardiovascular disease, a study by Lloyd-Jones *et al.* (2006) found that the absence of the five key risk factors of overweight/obesity (measured by BMI), smoking, high blood pressure, high LDL cholesterol levels and diabetes (measured by fasting blood glucose), resulted in a very low lifetime risk for cardiovascular disease (CVD) and markedly longer survival.

Table 2.2. Lifetime risk for CVD and median survival for men and women by aggregate risk factor status at 50 years old

	Men			Women		
	Lifetime risk of CVD to 75 years old	Lifetime risk of CVD to 95 years old	Median survival (IQR)	Lifetime risk of CVD to 75 years old	Lifetime risk of CVD to 95 years old	Median survival (IQR)
Overall	35%	51.7%	30	19.2%	39.2%	36
Absence of major risk factors	5.2%	5.2%	>39	8.2%	8.2%	>39
Two or more major risk factors	53.2%	68.9%	28	37.8%	50.2%	31

Note: Lifetime risk at the 95% confidence interval, CVD: cardiovascular disease; IQR = interquartile range.

Source: Lloyd-Jones *et al.* (2006).

The difference between those with no major risk factors at 50 years old and those with two major risk factors, is startling. What is particularly interesting is that the risk of lifetime CVD for those without major risk factors is the same at 95 as at 75, whereas for those with two or more risk factors, their lifetime risk increases significantly from 75 to 95 (Lloyd-Jones *et al.*, 2006). While the difference in median survival are less stark; typically the “healthy” 50-year-old will live an additional 8-10 years than those with two risk factors (*op. cit.*), presumably the quality of life of those who do not develop CVD is better than those who do, although the study does not investigate this.

In addition, many diseases that caused serious disability or mortality in the past can now be managed far as a result of advances in medical science (Christensen *et al.*, 2009; Holmes, 2011). Chronic conditions such as type II diabetes and hypertension are diagnosed earlier and treated more effectively than in the past (Christensen *et al.*, 2009). The treatment of some diseases can be revolutionised. For example, people with rheumatoid arthritis, an autoimmune chronic disease characterised by inflammation and pain in the synovial joints, used to expect long-term disability as standard treatment was able to manage symptoms, but not prevent disease progression including joint damage that led to disability (Emery, 2006; Smolen *et al.*, 2007). However, today, there are innovative biotech medicines to treat rheumatoid arthritis sometimes used in combination with other traditional

disease modifying antirheumatic drugs (DMARDs) (Emery, 2006; Smolen *et al.*, 2007). Clinical trials using this approach to treat early stage moderate to severe rheumatoid arthritis have demonstrated the ability to manage symptoms and prevent disease progression (measured radiographically), which can result in the patient leading a normal life with minimal or no disability (Emery *et al.*, 2008; Smolen *et al.*, 2007). This indicates the continued need for a dual approach to chronic diseases, namely encouraging innovation in biomedical science as well as better prevention and disease management strategies.

Policy reforms in ageing health and innovation in OECD countries

Non-health related

Pension reform

One very common policy response to increased longevity is pension reform to ensure the future sustainability of pension systems while ensuring that older people receive adequate retirement income (OECD, 2009). The most common measures taken are raising the state pension age, scrapping or limiting the possibility of early retirement and encouraging personal (individual/employer) pension provision (OECD, 2006 and 2009).

Almost all OECD countries have made changes to state pension age; those with a state pension age below 65 are in the process of raising it such as Japan, Korea and the Czech Republic, whereas countries such as the United Kingdom, Germany, Denmark and the Netherlands that already have a state pension age of 65 are increasing it (OECD, 2009; *The Guardian*, 2010). However, it is important to note that most while the state pension age guides retirement, many people retire before reaching it, while others choose to continue working (Berry, 2010; see Table 2.3).

Many countries including Portugal, Turkey, France, Germany, Italy, Japan and Sweden have cut future benefits, although many have targeted cuts so that poorer people are not adversely affected (OECD, 2007). A number of OECD countries, such as France, Hungary, Poland, Portugal and Germany have made personal pension provision more attractive through favourable tax treatment, while other countries such as New Zealand and the United Kingdom have introduced or are introducing opt-out personal pension schemes for people without access to employer-based schemes (OECD, 2009).

Table 2.3. State pension age in OECD countries

	Male	Female	About to change?	Notes
Australia	65	63	Yes	Women's pension age will gradually rise to 65 by 2014 and both will increase to 67 in stages between 2017 and 2023.
Austria	65	60	No	
Belgium	65	65	No	
Canada	65	65	No	The normal pension eligibility is age 65 but an early pension can be claimed from age 60.
Chile	65	60	No	
Czech Republic	62	61	Yes	Retirement age will be increased for men to 63 years from 2016 and for women without children from 2019 and to age 59 to 62 for women with children (depending on number of children they have raised).
Denmark	65	65	Yes	Government propose to raise the age to 67 over an eight year period starting in 2017.
Finland	63	63	No	Under the Employees' Pension Act (TYEL) the retirement age is 63 to 68 years.
France	60	60	Yes	Will be raised to 62 over the next eight years.
Germany	65	65	Yes	This will increase to age 67 between 2012 and 2029. It is possible in some circumstances to retire at 63 years.
Greece	65	60	Yes	There are plans to increase women's age to 65 years.
Hungary	62	62	Yes	Retirement age will increase to age 65 for men from 2018 and for women from 2020.
Iceland	65	65	No	This is for the public sector. The legal retirement age for private sector employees is 67.
Ireland	65	65	No	There is no fixed retirement age for employees. There is a statutory retirement age of generally 65 for some public servants.
Italy	65	60	No	
Japan	60	60	Yes	The pension age is gradually being increased to 65, between 2001 and 2013 for men and between 2006 and 2018 for women.
Korea (Rep. of)	60	60	Yes	The pension age is being increased gradually and will reach age 65 by 2033.
Luxembourg	65	65	No	Normal retirement age is 65 but early retirement at 57 is possible.
Mexico	65	65	No	Normal retirement age is 65 years but early retirement is available from age 60.
Netherlands	65	65	Yes	There are plans to increase the retirement age to 67.
New Zealand	65	65	No	
Norway	67	67	No	60% of employees are entitled to early retirement from the age of 62 years under the early retirement plan.
Poland	65	60	No	There are some professions that are entitled to earlier retirement such as teachers and armed forces.
Portugal	65	65	No	Early retirement is possible in some circumstances from the age of 55 years.
Slovakia	62	57	Yes	The retirement age for women is currently increasing to 62 years by 2014 so that both sexes will be equalised
Spain	65	65	No	
Sweden	61	61	No	The retirement age is flexible, state pensions can be claimed from age of 61 years.
Switzerland	65	64	No	
Turkey	60	58	Yes	There are plans to increase the retirement age in stages from 2035 to age 65 for both men and women.
United Kingdom	65	60	Yes	The retirement age for women is being increased between 2010-20 to 65 years. State pension will rise to age 66 in 2024, age 67 in 2034 and age 68 in 2044.
United States	66	66	Yes	Increasing to age 67 in stages.

Source: *The Guardian* (2010).

When it comes to incentivising early or later retirement, there are differences (OECD, 2009). Countries can however take different options; for example Germany retains state-funded early retirement which acts as an incentive, whereas the United Kingdom abolished it a long time ago and incentivises people to retire later by improving pension entitlements for those who defer their state pension (Muller-Camen *et al.*, 2011).

While some OECD countries such as the United States do not have a default retirement age, many do. Until recently, the United Kingdom had a default retirement age of 65, which meant that an employee could be forced to retire at 65 even if they did not want to (BIS, 2011). The scrapping of the default retirement age was warmly welcomed by older people's organisations and trade unions and cautiously welcomed by employers; retirement will now become the subject of negotiation between employee and employer (BBC News, 2010a).

Flexible working, gradual retirement and lifelong learning

One of the reasons that older workers retire when they are capable of continuing to work is that they face a rather inflexible workplace that gives them the stark choice between continuing to work full-time or stopping work altogether (Berry, 2010; Kuhn, 2010). An ILC-UK discussion paper on the future of retirement finds that many older people favour the idea of gradual retirement, but that gradual retirement options are only available to highly skilled workers (Berry, 2010).

Older workers who wish to continue working, but work fewer hours, may wish to spend their free time pursuing other interests that may include volunteering or looking after grandchildren (Holmes, 2011; Kuhn, 2010, Berry, 2010). Flexible working does not just refer to working hours, but to opportunities for older people to adapt their work to their stage in life through job-redesign and lifelong learning (Kuhn, 2010; Siba and Sinclair, 2010). Job redesign means adapting a person's role to their capabilities, for example an older person may want a similar role, but one that is less physically demanding (Kuhn, 2010; Siba and Sinclair, 2010).

Despite age-discrimination legislation, many companies exclude older workers from training, which encourage them to retire (Kuhn, 2010; Rajoy, 2008; Mann, 2008; Van Vuuren, 2011). Opening up training possibilities to older workers is not just good for employees, employers can benefit as it may avoid them losing experienced employees who can also help to train and mentor younger colleagues (Kuhn, 2010; Rajoy, 2008; Mann, 2008). In addition, flexible working should not just be for older workers, it can enable parents with children, people with caring responsibilities and people with disabilities or chronic conditions to enter the labour market more easily

(Relationships Foundation, 2011; Stauner, 2008; Rajoy, 2008; Siba and Sinclair, 2010). Kuhn (2010) has a vision of lifetime-oriented working time, which would allow different working patterns during different phases of life *e.g.* family leave for those with young children and reduced working hours for older workers.

As demographic change results in a shrinking workforce in many OECD countries, offering more flexible employment including to keep older workers from retiring while they are still able to contribute, will not be a “nice to have” option, but a necessity (Kuhn, 2010; Rajoy, 2008; Mann, 2008). A tool developed in Germany to help employers plan future workforce needs revealed that some would have no workforce left by 2030 if drastic changes to employment policies were not made (Kuhn, 2010). In addition, some companies have found that workers in their 50s are more reliable and take less sick leave than those in their 20s (Siba and Sinclair, 2010), a feature which could encourage more companies to try harder to recruit and retain older workers. Some large companies, for example B&Q, a DIY store in the United Kingdom have already done this (Siba and Sinclair, 2010). Kuhn (2010) suggests that changes in attitudes and working practices such as job redesign and mixed age teams should also be accompanied by workplace-based health promotion.

Van Vuuren (2011) explains that flexible retirement requires three conditions: possibility to adjust pension starting date at minimal cost, willingness of the older worker to adjust his/her labour supply and labour market institutions and conditions that facilitate later retirement. Most OECD countries fulfil the first condition, the majority of older workers are able to fulfil the second, but the third is still a serious challenge (van Vuuren, 2011), although the Scandinavian countries manage this better than others as they have a more positive attitude towards older workers and appropriate policy and legislation in place (Billett and Van Woerkom, 2008).

Appropriate housing

Quality of housing is a health determinant (*e.g.* damp housing can aggravate respiratory illness) (Scrambler, 2008; Howden-Chapman *et al.*, 1999) and New Zealand research has found that housing tenure impacts mortality, with tenants having higher death rates than owner occupiers (Howden-Chapman *et al.*, 1999). Older people’s health and well-being can be negatively impacted by their housing because it is too difficult or expensive to heat properly in winter (Howden-Chapman *et al.*, 1999), is difficult to navigate due to lots of stairs or inconvenient layout or is badly situated for public amenities (Oswald *et al.*, 2007; Ball *et al.*, 2011). As people age, housing modifications may be needed to compensate for declining functional capacity (Oswald *et al.*, 2007).

A cross-national EU-funded project called ENABLE-AGE, which looked at the relationship between health and housing for older people made a number of key findings including that older people living in an accessible home had better well-being and lower rates of depression than those living in homes with accessibility problems (Oswald *et al.*, 2007). Oswald *et al.* (2007) also found that environmental factors can have negative effects such as increased falls, or positive effects such as independence in daily life and subjective well-being.

Older people are usually driven to move house by push factors such as being unable to manage their house, declining health or mobility, isolation and financial problems (Ball *et al.*, 2011). However, in general, older people are reluctant to move, even if their home starts to present practical problems that impact on their quality of life, particularly if they are owner occupiers (Ball *et al.*, 2011; Howden-Chapman *et al.*, 1999). Owner occupiers can modify their homes to suit their needs (Oswald *et al.*, 2007; Ball *et al.*, 2011), *e.g.* through the addition of hand rails and bathroom modification, but there is a limit to such adaptations and they are not always cost-effective (Ball *et al.*, 2011).

Ball *et al.* (2011) put forward the case of owner occupied retirement housing (OORH), usually specially designed apartment blocks with communal facilities and support staff on site, as a way to improve the independent, health and well-being of older people. It can also be seen as a way in some countries to free up limited housing stock. Ball *et al.* (2011) point to research in the United Kingdom showing that OORH residents feel able to manage their health better after their move, which has the potential to reduce demand for NHS services, although they acknowledge that OORH is an option only available to home owners with sufficient housing wealth. Van Bilsen *et al.* (2008) undertook research in the Netherlands that found that older people living in sheltered housing had a higher perceived quality of life than similar residents of ordinary houses.

Health related

Health care reform

Health care reform in the majority of countries is driven by a desire to control costs, which have been constantly increasing above the rate of inflation due to a number of factors including advances in medical science (drugs, technology and procedures), population demands and demographic change (Docteur and Oxley, 2003; Santerre and Neun, 2010).

The main focus has been on cost-containment through cutting or limiting budgets *e.g.* hospital budgets, increased cost-sharing and much stricter

conditionality for the reimbursement/funding of certain health care services and changes in the way health care providers are reimbursed for services (Santerre and Neun, 2010; Folland *et al.*, 2009; Docteur and Oxley, 2003).

In addition, attention has also been paid in some countries to increasing patient choice, in many to improving quality through evidence-based medicine and guidelines and implementing health technology assessment (Santerre and Neun, 2010; Folland *et al.*, 2009; Docteur and Oxley, 2003), for example the establishment of the National Institute for Health and Clinical Excellence (NICE) in the United Kingdom, the High Authority for Health (Haute Autorité de Santé) in France, and the Institute for Quality and Economics in Healthcare (Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen) in Germany.

Most of these measures have been designed to manage the rising costs of health care today, but not necessarily deal with the health care demands of tomorrow that will arise due to demographic change (Boult *et al.*, 2009). For example, Altenstetter and Busse (2005) are critical of German health care reform noting that has not made any attempt to “reset priorities from curative medicine to prevention and promotion of public health”. There are however, measures designed to refocus health care priorities, examples of which are presented below.

Disease prevention and management

Case study: NHS England Health Checks

The NHS in England is in the process of implementing a programme of health checks for all citizens over 40 to prevent heart disease, stroke, diabetes and kidney disease (NHS Health Check, 2010). Implementation began with pilot projects in 2009 and the programme will be completely rolled out by 2012-13 (*op. cit.*).

Everyone aged between 40 and 74 who has not already been diagnosed with one of the conditions will be invited by their primary care trust¹ for a face to face check-up with a nurse or pharmacist to assess their risk of developing heart disease, stroke, diabetes and kidney disease (NHS Health Check, 2010). If an individual has risk factors, they will then receive advice on how to manage or reduce those risks and be referred on to relevant services *e.g.* weight management, as appropriate (*op. cit.*). If an individual does not show any signs of risk factors, they will be invited for another check in five years time (*op. cit.*).

The Department of Health has undertaken economic modelling to show that the Health Check programme will be cost-effective and clinically effective (*op. cit.*). The DH calculations estimate that the programme will:

- Cost GBP 332 a year, but generate an annual benefit of GBP 3 678 million;
- Cost around GBP 3 500 per QALY (quality adjusted life year) gained;
- Save around 650 lives and prevent 1 600 strokes and heart attacks.

Noting that a programme to identify and manage vascular risks on such a scale has never been done before, some health care professionals are concerned that the assumption of the Department of Health modelling, which is based on 75% uptake, may be overoptimistic judging from the much lower uptake rate in some of the pilot projects (Khunti *et al.*, 2011).

The authors also raise the problem of higher cardiovascular risk in people of South Asian origin, risks which often lead to the onset of cardiovascular disease or diabetes when the person is on their 30s, a decade before the health check programme kicks in (Khunti *et al.*, 2011). Another concern is that implementation of the programme is coming at time when primary care services are overstretched and facing tighter budgets (*op. cit.*).

There is also hope that the programme will help reduce health inequalities by detecting and managing risk factors in people who are less likely to access health services who tend to be those from lower socioeconomic backgrounds (NHS Health Check, 2010; Khunti *et al.*, 2011).

Pharmaceutical care

Due to the fact that many over 65s have one or more chronic condition, they are often taking several prescription medicines concurrently, a state often referred to as “plurimedicated” (PGEU, 2009; Byrne *et al.*, 2011; Holland *et al.*, 2007). The complexity of a plurimedicated medication regimen added to problems with memory, visual acuity and dexterity means that older patients are more likely to suffer drug interactions and adherence problems (PGEU, 2009).

In addition, studies have shown that older patients are commonly using some inappropriately prescribed medicine, for example a study conducted by the National Association of Pharmacies in Portugal found that 20.7% of plurimedicated older patients were using at least one inappropriate medication (PGEU, 2009). A study by Byrne *et al.* (2011) found that this was even higher in nursing home residents with 73% of Republic of Ireland

nursing home residents using one inappropriate medicine and 67% of residents in Northern Ireland nursing homes. The cost of the inappropriate medicines was estimated to be EUR 170 per person in Northern Ireland and EUR 365 in the Republic of Ireland (Byrne *et al.*, 2011).

In order to optimise outcomes and minimise problems related to prescribed medication for older patients, community pharmacy led pharmaceutical care programmes, often comprising medication reviews, have been implemented in many European countries and in the United States (PGEU, 2009). Medication reviews can identify inappropriate medicines and abuse or misuse *e.g.* of sleeping pills (PGEU, 2009). Medication reviews for older people in Sweden reduced the average number of medicines per patient from 12.4 to 10.7 and reduced costs by approximately EUR 160 per patient per year (Jonsson *et al.*, 2007), while similar research in Denmark showed that systematic medication reviews for older people could save EUR 50 million per annum (Danish Medicines Agency, 2004).

There are however conflicting results from trials of pharmaceutical care for older patients. While there are those which show significant improvements in patients receiving pharmaceutical care interventions such as the Danish “improving drug therapy for older people” model which was undertaken in seven European countries as reported by Hughes *et al.* (2001), others such as Richmond *et al.* (2010) found no significant change in the appropriateness of prescribing or quality of life of patients. A meta-analysis of 32 studies of pharmacist led medication reviews found that while interventions improved patient’s knowledge and adherence to their medication, there was no reduction in mortality or hospital admission (Holland *et al.*, 2007).

While the basic premise of pharmaceutical care programmes cannot be called new or innovative, inappropriate medication is still a problem today, as Byrne *et al.* study (2011) of care homes in Ireland has shown. More research needed to understand the success factors of those pharmaceutical care programmes that produce good results and to understand what makes some programmes not work so well. Community pharmacists are already involved with e-prescribing and electronic patient records and such technology will no doubt play more of a role in pharmaceutical care in the future.

Case study: health promotion and chronic disease management in Taiwan

Taiwan has a rapidly ageing population and a very low birth rate which is leading to a larger older population (Kuo, 2010). In recognition of the

challenges of an ageing society, Taiwan is attempting to recapture the traditional Asian virtue of filial piety to become an age friendly society (Ti-Chiou, 2010). In recognition of the challenges facing health and social care systems, the government is implementing a broad reaching healthy ageing strategy called “Healthy People 2020” which focuses on health promotion for older people in order to increase healthy life expectancy and decrease health inequalities (Kuo, 2010).

The older population in Taiwan are now experiencing higher levels of chronic conditions such as heart disease, diabetes and hypertension than in the past (Ti-Chiou, 2010). For example among the over 65s nearly 50% have hypertension, 18% have diabetes and overall 62% have one chronic condition (*op. cit.*). This has the potential to put great pressure on the national health insurance system and highlights the need for better management of chronic diseases, especially to prevent future disability (*op. cit.*).

The “Healthy People 2020” programme includes health promotion for older people in Taiwan with a particular focus on the prevention and management of chronic conditions including diabetes, hypertension and asthma (Ti-Chiou, 2010). Health care providers follow evidence-based guidelines and community-based health promotion covers eight major topics including physical activity, smoking cessation and social participation (*op. cit.*). Community-based health promotion and other services for older people are provided by or co-ordinated by community-based “service stations” which are situated in easily accessible public facilities (*op. cit.*).

Life course vaccination

The International Longevity Centre (United States, France and United Kingdom) published a briefing paper in 2009 on the impact of life course vaccination on an ageing population (Gusmano and Michel, 2009). The paper presented the concept of life course vaccination to support healthy ageing, particularly in the over 50s (*op. cit.*). The paper highlighted that despite evidence for the effectiveness of vaccination against influenza, pneumococcal disease and other vaccine preventable diseases (VPD), there was a considerable gap in Europe between recommendations and take-up of vaccination, particularly in older people (*op. cit.*).

The paper noted that while most European countries had vaccine recommendations for the over 65s and certain risk groups *e.g.* those with chronic diseases such as asthma and diabetes, an opportunity was being missed to promote healthy ageing by expanding routine vaccination, *e.g.* for influenza and pneumococcal diseases to the 50-64 age group (Gusmano and Michel, 2009). Firstly, age-based vaccine recommendations are generally

more effective than risk group recommendations, and secondly a significant proportion (US studies estimate around one third) of this age group have risk factors for common vaccine preventable diseases (*op. cit.*). In addition, many people with risk factors are unaware that they have them (CDC, 2010). From a clinical perspective, given the immune system declines with age leading to a greater susceptibility to infection (immunosenescence), it makes sense to target people in their 50s whose immune systems are generally still robust (Gusmano and Michel, 2009).

From an economic perspective it is equally advantageous, as many 50-64 year-olds are still working and could end up having to take sick leave should they contract a vaccine preventable disease such as influenza, pneumococcal disease or shingles (Gusmano and Michel, 2009). It is notable that long-term sick leave is a common reason for early exit from the workforce (Berry, 2010).

Policy makers are increasingly implementing life course vaccination policies. Last year, the US Centers for Disease Control and Prevention (CDC) for the first time recommended that all people aged 6 months and older should be immunised against influenza for the 2010-11 flu season (CDC, 2010). At an event organised by ILC-UK in March 2011,² vaccine experts expressed support for the concept of life course vaccination.

Keeping people out of hospital/in the community

Case study: reshaping care for older people in Scotland

A problem faced by many OECD countries is the potential for an increasing and unsustainable funding gap for the care of a growing older population. In Scotland, attempts are being made to tackle this problem with the “Reshaping care in Scotland” initiative, which aims not only to make future care financially sustainable, but also seeks to change attitudes and implement a philosophical shift from a culture of “dependence” and “incapacity” to one of “independence” and “capacity” (Martin, 2010).

The key aim of the plan is to optimise the independence of older people in their own homes or in a homely setting, which means a shift away from institutional settings to care at home (COSLA/Scottish Government/NHS Scotland, 2011). Other aims include reducing emergency hospital admissions, avoiding prolonged hospital stays and promoting intermediate care for older people coming out of an acute hospital (COSLA/Scottish Government/NHS Scotland, 2011).

The reshaping care initiative has three core themes:

- Coproduction and community capacity building – a new philosophy of care involving partnerships in a community business model to keep people out of the formal care system;
- Creating the right care services and settings - helping people remain at home using telecare and home adaptation, supporting healthy ageing through diet, exercise and falls prevention, telecare, telehealth, and care planning;
- Creating effective care pathways – aiming for a smooth care pathway for frail older people including anticipatory care plans, managed care networks, reablement, and implementation of the dementia strategy.

There are two supporting themes:

- Finance and analysis – reducing hospital provision to enable reinvestment in community services;
- Workforce – education, training and support to reshape care, integration across primary and social care as well as across statutory, third sector and informal care providers.

The background to this initiative is analysis of the relevant data which shows that if care services for older people in Scotland were to continue as they had been, there would be a 22% rise in costs by 2016, by which time 20% budget cuts are expected and a 74% rise by 2031, which is clearly completely unsustainable (Martin, 2010). Currently, over 60% of health and social care expenditure for older people is spent on institutional care in hospitals and care homes, one third of which is for emergency admissions to hospital (COSLA/Scottish Government/NHS Scotland, 2011). If no changes are made, then providing the same level of care in the future will require a new 600 hospital bed every three years, a new 50 bed care home every two weeks for 20 years and most school leavers would need to work in the care sector (Martin, 2010).

It is important to note that currently most older people (89.5%) do not receive formal care in the form of NHS services, care home or home care organised by social services, although many will receive care via friends and family or purchase it privately (COSLA/Scottish Government/NHS Scotland, 2011). In relation to giving and receiving care, far more people over 65 provide 20 or more hours of informal care per week than receive 20 hours of paid care (*op. cit.*).

Patient hotels in Scandinavia

Patient hotels, the concept of which was first developed in Scandinavia, are designed to offer accommodation for low dependency patients who do not need the full services of a hospital ward, but need to be close by just in case (Pillar Land Securities, 2011a). The cost of accommodating a person in a patient hotel is considerably lower than placing them in hospital (*op. cit.*). Pillar Land Securities (2011b) explain that patient hotels require a specific design features including being easy to clean (for infection control purposes), suitable for people with limited mobility and be appropriately wired to allow direct monitoring and video communication with nurses.

Patient hotels are a form of intermediate care (Pillar Land Securities, 2011a; Skane, 2011). Intermediate care is designed for a patient who is recovering from illness or recuperating after a medical procedure and needs ongoing support, but not the level of medical care provided in a hospital (Stevenson and Spencer, 2002). The NHS defines intermediate care as that which is designed to maximise the independence of a person enabling them to return home following a hospital stay, while the Audit Commission states that its primary function is to build up people's confidence in coping with daily life (Stevenson and Spencer, 2002).

In Scandinavia, patient hotels already exist, for example the one at Skane University Hospital in Lund and the one at Odense University Hospital in Denmark (Skane, 2011; OUH, 2009) In Skane, doctors in the hospital can refer patients for recuperation to the patient hotel, which is also available for hospital visitors and people attending training courses or conferences (Skane, 2011). In Denmark, Odense University Hospital opened its patient hotel in 1997 in the grounds of the hospital and it is still in operation today (OUH, 2009).

The largest patient hotel company in Scandinavia is Norlandia Care, which operates patient hotels in Norway, Sweden and Finland (Norlandia Care, 2011). Norlandia Care's hotels are available to hospital patients needing minimal nursing care and non-patients (*op. cit.*).

Several companies are bringing the concept of patient hotels to the United Kingdom including Well-Tel, which markets its services at NHS and private sector clients as a "cost-effective, patient centred solution to bed-blocking" designed for patients who need minimal or no clinical supervision (Well-Tel, 2011).

Financing care

Case study: refunding health care in Canada

In Canada, the idea of prefunding of health care has been around for some years, being developed in the early 2000s by Robson (2002), who based his ideas on a prefunding system adopted for Canadian pension plans in some provinces such as Quebec. Prefunding is presented as a solution to increased higher costs due to demographic change and the “uneven intergenerational contract” which could see young Canadians being asked to pay a far higher price to sustain publicly-funded health care than the older generation contributed (Robson, 2002; Stabile and Greenblatt, 2010). Prefunding would oblige today’s economically active workers to prepay some of the costs of the care they will need after they retire and could spread the cost of public programmes more equitably across the population and across generations (Robson, 2002; Stabile and Greenblatt, 2010).

For pre-funding of health care to work, Canadians would have to trust that the money they pay in will be use for the designated purpose, projections of future health care costs would have to be as accurate as possible, and a robust tax base is needed (Robson, 2002). Robson (2002) prefers consumption taxes to income tax or payroll tax as being more robust in the face of demographic change and less harmful to economic growth.

Stabile and Greenblatt (2010) propose using prefunding for prescription drugs for Canadians over 65 using a payroll deduction, which would be scaled to income and capped. Prefunding is a partial insurance solution as risks are pooled across the cohort; individual savings accounts are not created (*op. cit.*). Stabile and Greenblatt (2010) simulate their model using the Ontario Drug Benefit for the over 65s based on a payroll tax. The advantages of this model in addition to savings being set aside today to manage anticipated future budget pressures, are that it could help older people faced with high out of pocket prescription drug costs, could help freeze a fast growing part of the health budget, and provide assurance to the current working population that they will not have to pay for the health care costs of the generation that preceded them (*op. cit.*).

Case study: Japan’s long-term care insurance system

Japan introduced mandatory long-term care insurance (known as “Kaigo Hoken”) in 2000, which made long-term care an entitlement for all older people over 65 or those who are 40-65 and have been disabled by Alzheimer’s or stroke (Tsutsui and Muramatsu, 2007; Imai *et al.*, 2008). The system has an inbuilt review mechanism that requires review and if necessary revision every five years (Tsutsui and Muramatsu, 2007).

The system is funded from a variety of sources, including 10% co-payments from service users and the remaining 90% of costs being split between insurance premiums paid by all Japanese people over 40 and local and regional taxes (Tsutsui and Muramatsu, 2007). The long-term care insurance (LTCI) is managed by municipal authorities according to national guidelines (*op. cit.*).

The first review occurred in 2005 and aimed to reduce escalating costs as well as improve services to older people (Tsutsui and Muramatsu, 2007; Imai *et al.*, 2008). The overarching aim was to refocus the LTCI system from institutional to community-based care in recognition of the fact that it originally incentivised people to go into more costly long-term care facilities rather than stay at home and receive community-based services, as the cost of long-term care facilities was highly subsidised for care home residents (*op. cit.*). The key measures of the 2005 reform were to implement “hotel costs” for long-term care facilities and introduce more preventative services for older people living in their own homes (*op. cit.*).

The introduction of “hotel costs” *i.e.* room and board expenses for long-term care residents, was designed to remove the incentive to move into long-term care that had existed before when the cost of long-term care facilities to residents was often less than the cost of rent and utilities for the average apartment (Tsutsui and Muramatsu, 2007). The cost of long-term care facilities to residents rose by around 50% as a result of these “hotel costs” (*op. cit.*).

The expansion of preventative services has the main goal of “maintaining or enhancing the ability to perform daily activities and preventing people from becoming dependent” (Tsutsui and Muramatsu, 2007). Preventative services had existed before but in a more piecemeal fashion and are now particularly targeted towards people with low care needs in order to help them remain healthy and active (*op. cit.*). The preventive services are designed to improve motor skills, maintain mobility and physical strength, and improve nutritional status (*op. cit.*). The services provided include strength training, other physical activities, nutritional management and advice and oral health screening and treatment (*op. cit.*).

The LTCI services are led from community-based support centres established by municipalities which bring public health nurses, social workers and social care managers under one roof in an easily accessible facility (Tsutsui and Muramatsu, 2007). The community-based support centres undertake care needs assessments, implement older people’s rights and protect people from elder abuse, as well as co-ordinating and providing care and prevention services (*op. cit.*).

Pilot projects to evaluate the changes to the LTCI system in terms of costs, the effectiveness of preventative services and whether the system meets the needs of older Japanese residents, are currently underway (Tsutsui and Muramatsu, 2007). One longitudinal study published in 2009 found that 82% of participants with low to moderate care needs who received LTCI assistance in the community or in their own home (home help services) were still living in their own homes one year later (Ohwaki *et al.*, 2009). The study found that having friends was a significant predictor of continuity in home care *i.e.* remaining in one's own home while receiving home-based care, and the authors suggest that the promotion of social engagement may contribute to preventing institutionalisation (*op. cit.*).

Technology

Case study: telecare to support dementia in England

Tunstall health care installed equipment into St Cecilia's a residential care home in North Yorkshire that cares for people with dementia (Lucas, 2010). The telecare system was designed to help staff monitor residents for incontinence and falls and to manage security in the building including access to the garden (*op. cit.*). The main aims were to increase the independence of residents and reduce staff time spent on "just in case" checks of residents, to allow them to spend more quality time with residents (*op. cit.*).

The telecare applications included enuresis sensors for incontinence, bed occupancy sensors to detect falls and wandering, fall detectors (worn by residents) and door exit sensors (Lucas, 2010). The incontinence sensors worked very well as they alerted staff immediately to bed wetting, which improved skin integrity of residents with incontinence problems and avoided the need for staff to disrupt residents' sleep by waking them up to check for incontinence during the night (*op. cit.*). The bed occupancy sensors also worked very well as they could alert staff immediately to residents getting out of bed and allowed residents to choose their own sleeping patterns *i.e.* not having to follow institutional timeframes (*op. cit.*). The falls detection sensors experienced some success, but did not work as well and there were problems with residents being able to remove them (*op. cit.*).

Overall, the telecare tools used in the care home were found to enable residents to be more independent, alerted staff more quickly to problems to which they could then react, thus improving care and resulted in a more efficient use of staff time (Lucas, 2010).

Case study: using Smartphones and Wii to manage chronic diseases in older people – the CAALYX project

The EU-funded Complete Ambient Assisted Living Experiment (CAALYX) project has developed a prototype home-monitoring system using smartphones, television and an adapted version of the Nintendo Wii (*eHealthnews.eu*, 2010). The system is aimed at older people living alone and people with multiple chronic conditions (*op. cit.*).

While mobile phones have been used in health care for some time, for example the use of text message reminders to help improve anti-viral medication compliance for HIV patients in developing countries, the arrival of smartphones with GPS technology has further enlarged possibilities (Boulos *et al.*, 2011). Smartphones have the advantage of having intuitive and tactile user interfaces, portability, continuous uninterrupted data streaming and the capability to support multimedia software applications (Free *et al.*, 2010).

The eCAALYX platform allows the health professional to receive regular reports on the older person's health via the internet (Boulos *et al.*, 2011). The platform has four main components:

1. *Caretaker system*: application that links all users (older people, clinicians, relatives) and all components;
2. *Mobile system*: controls a Body Area Network (BAN) comprised of a set of well-being sensors in “smart” garments which determine well-being through selected physiological parameters and sends alerts when anomalies arise *e.g.* tachycardia or possible respiratory problems;
3. *Home system*: Older people can access the system via their smartphone and interact with their clinician/relatives via the adapted Wii system operated through the TV;
4. *Wearable Light Device (WLD)*: a component combining an ECG instrument, an SpO2 meter, a temperature sensor and a fall and mobility sensor. Anomalies in data form alerts, so for example, the mobility sensor could potentially detect a fall (Rocha *et al.*, 2011; Boulos *et al.*, 2011).

Two main challenges of the eCAALYX platform were how to make the mobile device user friendly for older people and how to maintain and update it at a distance without requiring user input (Boulos *et al.*, 2011). The first was achieved by using a large touchscreen smart phone with virtual buttons as large as needed, navigation reduced to two easily accessible screens, the

use of docking stations to recharge the battery and the ability of the device to run autonomously without mandatory user interaction (*op. cit.*). The last point is particularly important if one considers that in an emergency the older person may be incapacitated and unable to use the device (*op. cit.*). The second challenge was answered through a system of maintenance actions performed remotely, transparently and locally (*op. cit.*).

The eCAALYX prototype technological platform for the user interface is Google Nexus on an Android 2.1 smartphone, the health sensors in the smart garments use Bluetooth technology and the caretaker/clinician interface is a W3C web service (Boulos *et al.*, 2011). Evaluation results of the project are expected after project completion in July 2012.

In relation to further and larger scale use of the eCAALYX platform, a number of issues have been identified including the security and safety of patient data and interoperability with electronic patient records and whether the system could enable on-line consultations with clinicians (Rocha *et al.*, 2011).

Organisation of health care

Case study: establishment of medical care centres and telemedicine care models in Germany

The ageing of the population in the German state (land) of Mecklenburg Pomerania is more advanced than in other German states and thus is already reacting to demographic change in the provision of health care services (Fendrich *et al.*, 2010).

Two examples of adapting health care systems to an older multimorbid population are already underway (Fendrich *et al.*, 2010). The first is the establishment of medical care centres (similar to the polyclinics that existed in the German Democratic Republic), which bring together GPs, specialists and other health care professionals such as pharmacists, physiotherapists and chiropodists under one roof (*op. cit.*). The precise mix of services and professionals should be tailored to the needs of the local population; however the practice of having GPs and specialists working together is a fundamental one (*op. cit.*). In addition, the medical centre can choose its own opening hours, so can open for example in the evening and at weekends in order to better serve the community (*op. cit.*).

A telemedicine supported care model is also under development in Mecklenburg Pomerania. It is designed to target multimorbid patients with limited mobility (Fendrich *et al.*, 2010). The “Integrated Functional Telemedicine” (IFT – Integrierte Funktionsbereich Telemedezin) is run

according to the AGnES (Arztentlastende, Gemeindenahe, E-Healthgestützte, Systemische Intervention, or doctor-based, community-based, e-health supported, systematic intervention) concept (*op. cit.*). The project is being undertaken by the Community Medicine Institute and partially funded by the Regional Ministry of Health and Social Affairs (*op. cit.*). The idea is to link up clinics with each other and with stand-alone GPs as well as using telemedicine tools to monitor people with chronic conditions in their own homes (*op. cit.*).

Improving innovation

European innovation partnership on active and healthy ageing

Within the framework of the Europe 2020 initiative, the European Commission has introduced the concept of European Innovation Partnerships (EIP), the first of which will be on active and healthy ageing (European Commission, 2010).

The aim is to develop a collaborative approach to research and innovation in the area of active and healthy ageing in order to close the gap between research and the market and accelerate the uptake of innovation (European Commission, 2010). The overall goal is to enable citizens to live longer independently in good health by increasing the average number of healthy life years by two (*op. cit.*).

The EIP should:

- Enable citizens to lead healthy active independent lives while ageing;
- Improve the sustainability of health and social care systems;
- Create new opportunities for business.

The European Commission has already suggested three areas for action:

- Innovation in support of people's health and well-being, *e.g.* prevention, diagnostic and treatment of ageing-related chronic diseases;
- Innovation in collaborate care systems for older people;
- Innovation in products and services for active and independent ageing.

The EIP steering group will draw up a strategic implementation plan (SIP) by autumn 2011.

Conclusions

While all OECD countries are experiencing unprecedented demographic change, which has the potential to unravel health and social care systems, a negative outcome is not inevitable. There are policies and measures that can be implemented to support and facilitate healthy and active ageing and this chapter has presented just some of them. These policies have the potential to mitigate the impact of demographic change on society as well as helping older people to continue to be active and productive citizens whether as workers, consumers, volunteers or care givers.

While many of the policies presented in this chapter relate to health care, other issues such as flexible working, gradual retirement and decent housing can have a significant impact on health and well-being greatly and merit consideration as part of a broad approach to demographic change. In addition, although an ageing population does mean more chronic disease, better prevention through public health actions to reduce risks and better treatment through innovation in medical science can both work to keep functional limitations and disability at lower levels than for previous generations.

Three priority areas for reforming health systems deserve particular attention.

First, health systems do not always promote innovation, and even when they do, the gap between development and widespread implementation can be intolerably long.

Second, with funding of health care and long-term care becoming an issue in many countries, new approaches to funding care need to be developed, which seek to ensure long-term sustainable funding solutions that maintain solidarity between generations.

Third, a change in focus in the organisation and delivery of health and social care is needed. A stronger emphasis on promoting healthy but also independent living is needed, with an explicit objective of avoiding or at least delaying the need for resource-intensive institutional care.

Notes

1. Despite current plans to undertake major reform in the NHS in England including the abolition of primary care trusts, no changes have been announced in the planned implementation of the NHS Health Checks programme.
2. Working lunch on “Time for a new adult immunisation strategy”, 24 March 2011, London.

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