Ageing, Health and Innovation: Policy Reforms to Facilitate Healthy and Active Ageing in OECD Countries

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ILC–UK
11 Tufton Street
London
SW1P 3QB
Tel : +44 (0) 20 7340 0440
www.ilcuk.org.uk

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This report was prepared by Rebecca Taylor, Senior Researcher, International Longevity Centre - UK. If you have any comments on this report please email rebeccataylor@ilcuk.org.uk

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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 healthcare, 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 healthcare 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 healthcare services to a basic minimum, so that those with the means may choose to opt for private healthcare, 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; OECD 2007a; OECD 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 healthcare, 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 10 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 EU, 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 UK 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 EU, even assuming that current levels of migration stay the same, the size of 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 UN 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 US, around 80% of people over 65 have one chronic conditions and 50% have two (CDC, 2003).

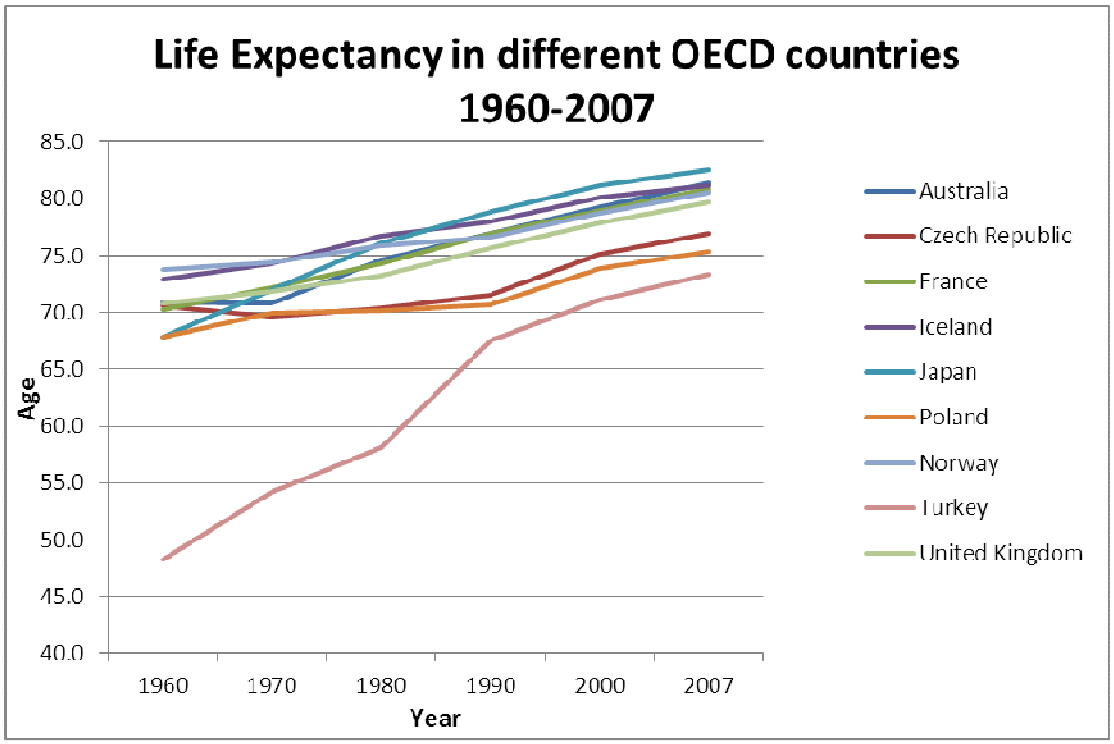
With regard to dementia, the developed world is facing a "tsunami" as demographic change leads to more people reaching an age where they are likely to develop dementia (Bamford, 2010). The World Alzheimer Report 2009 states that there are currently 35.6 million people with dementia with the numbers set 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 (EU 27) 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 healthcare 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.

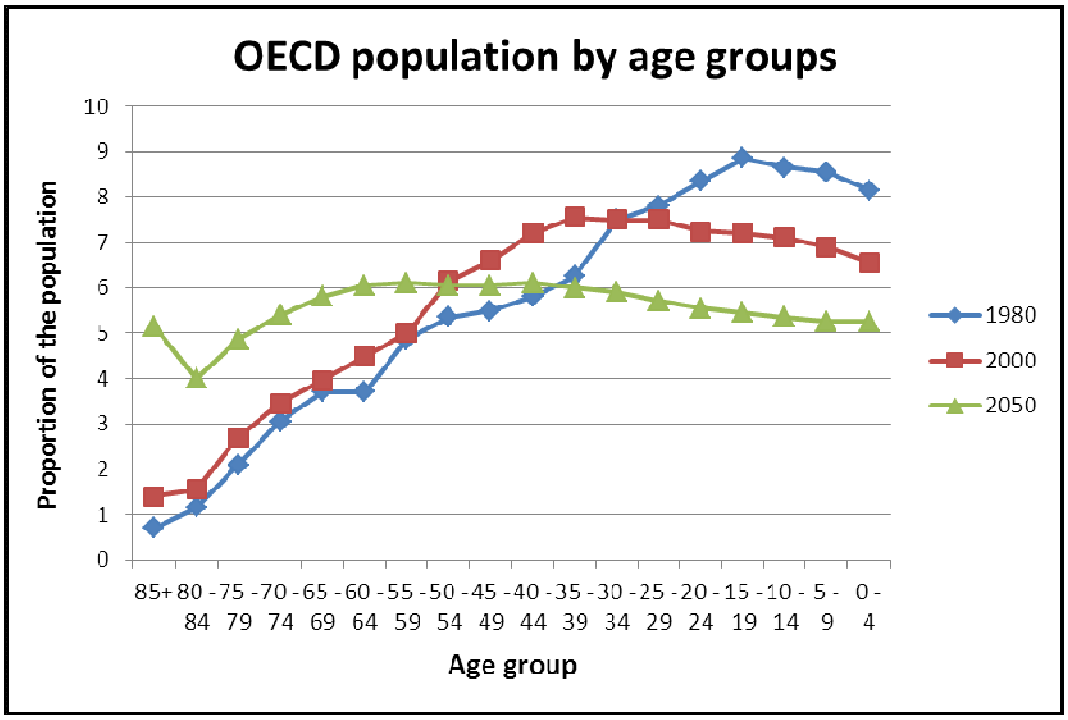


Source: OECD (2010) "OECD Health Data 2010", October, 2010

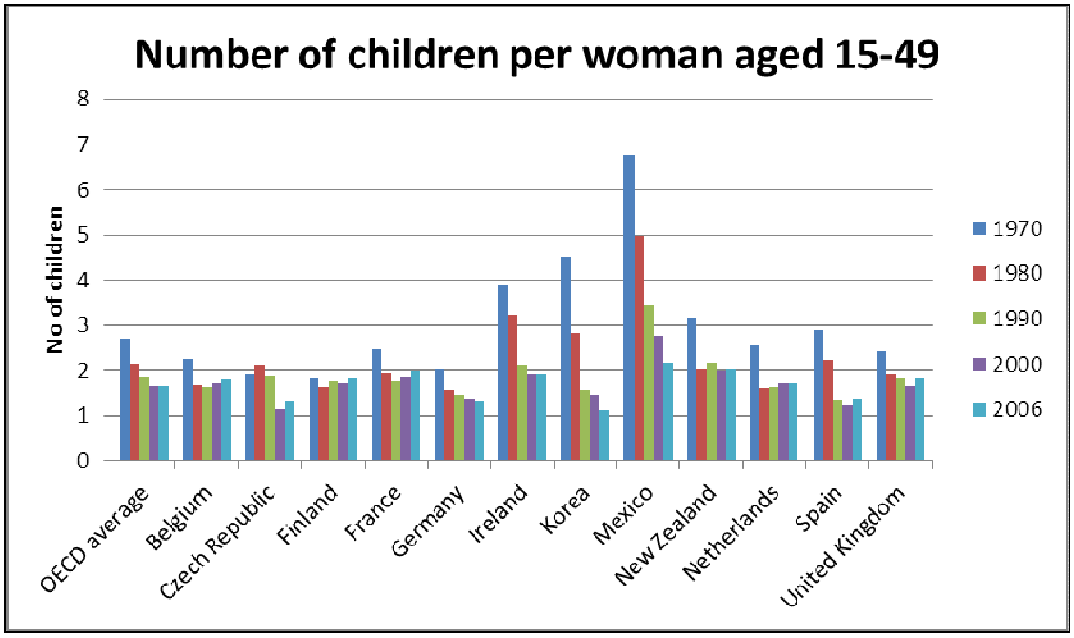
Life expectancy in the OECD 1960-2007

	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

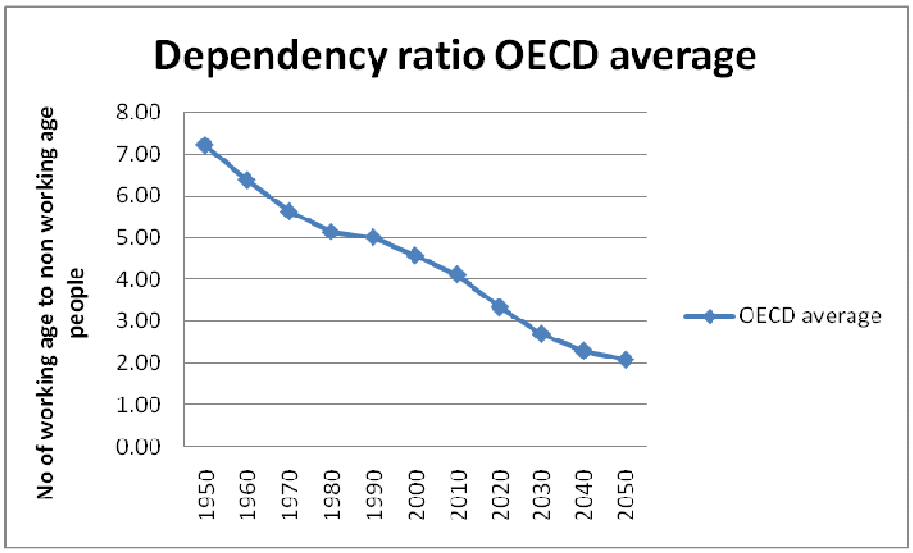
Source: OECD (2010a)



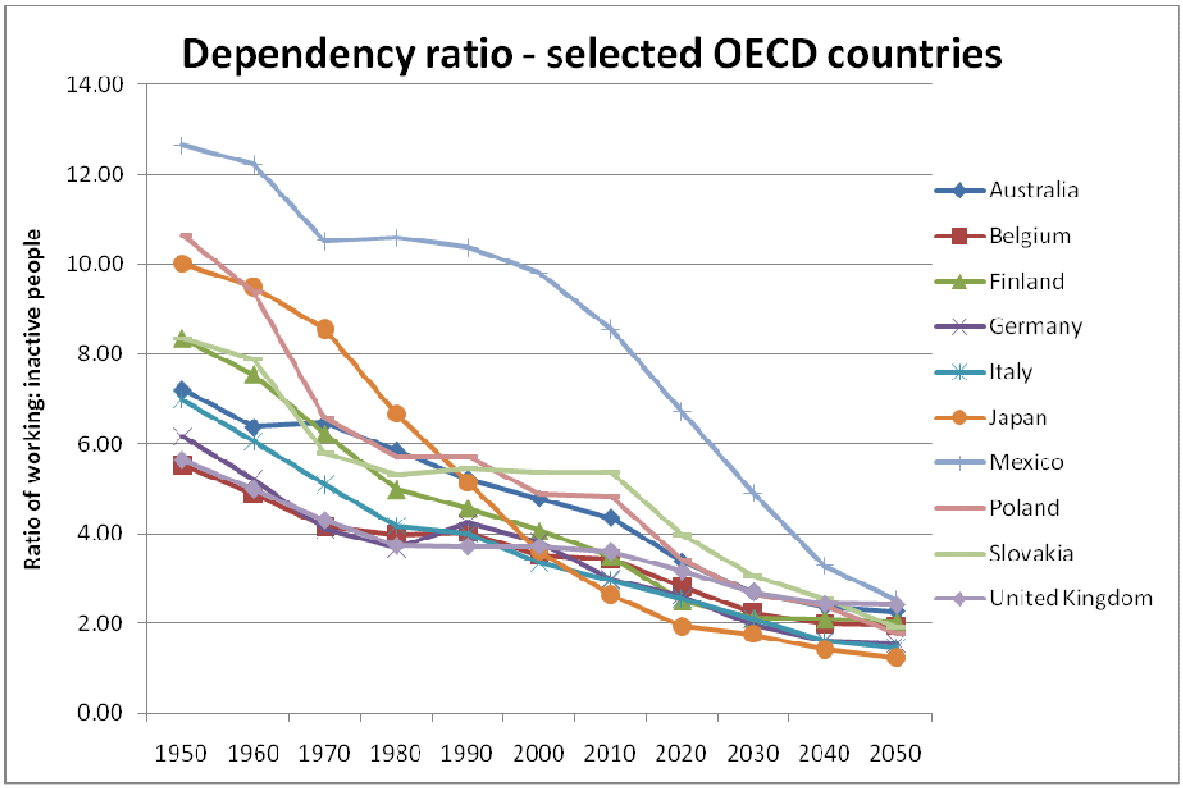
Source: OECD population pyramids (2000 & 2005)



Source: OECD (2010c)



Source: UN (2008)



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 healthcare 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 healthcare, 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 healthcare, 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 healthcare (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 healthcare, Stauner (2008) envisages a “worst case scenario” future of reduced publicly funded healthcare 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 “T*he Pinch - How the baby boomers took their children’s future and why they should give it back*” (Willetts, 2010) 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 USA, 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 UK, 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 UK, 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 paper.

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 (2010a)'s research undertaken in the UK 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. 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 healthcare 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 CVD and markedly longer survival.

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 95 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
2 or more major risk factors	53.2%	68.9%	28	37.8%	50.2%	31

Notes: Lifetime risk at the 95% confidence interval, 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 (Lloyd-Jones, 2006), 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, 2009; OECD, 2006).

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 UK, Germany, Denmark and the Netherlands that already have a state pension age of 65 are increasing it (OECD, 2009; 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).

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 UK have introduced or are introducing opt-out personal pension schemes for people without access to employer based schemes (OECD, 2009).

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 UK 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 USA do not have a default retirement age, many do. Until recently, the UK 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).

State pension age in OECD countries

Country	Male	Female	Change planned?	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 (Republic 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.

Country	Male	Female	Change planned?	Notes
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 – 2020 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: Guardian (2010)

Flexible working, gradual retirement and life-long 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 life-long learning (Kuhn, 2010; Siba and Sinclair, 2010). Job re-design 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 UK have already done this (Siba and Sinclair, 2010). Kuhn (2010) suggests that changes in attitudes and working practices such as job re-design 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, 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, 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). Ball et al (2011) point to research in the UK 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

Healthcare reform

Healthcare 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 healthcare services and changes in the way healthcare 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 UK, the High Authority for Health (*Haut 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 healthcare today, but not necessarily deal with the healthcare demands of tomorrow that will arise due to demographic change (Boult et al, 2009) For example, Altenstetter and Busse (2005) are critical of German healthcare 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 healthcare 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 (NHS Health Check, 2010).

Everyone aged between 40 and 74 who has not already been diagnosed with one of the conditions will be invited by their primary care trust[1] 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 (NHS Health Check, 2010). If an individual does not show any signs of risk factors, they will be invited for another check in five years time (NHS Health Check, 2010).

The Department of Health has undertaken economic modelling to show that the Health Check programme will be cost-effective and clinically effective (NHS Health Check, 2010). The DH calculations estimate that the programme will:

- cost £332 a year, but generate an annual benefit of £3678 million;
- cost around £3500 per QALY (quality adjusted life year) gained;
- save around 650 lives and prevent 1600 strokes and heart attacks (NHS Health Check, 2010)

Noting that a programme to identify and manage vascular risks on such a scale has never been done before, some healthcare professionals are concerned that the assumption of in the DH 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 (Khunti et al, 2011).

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

[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.

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 €170 per person in Northern Ireland and €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 €160 per patient per year (Jonsson et al, 2007), while similar research in Denmark showed that systematic medication reviews for older people could save €50m 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 (2009) 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’s (2011) study 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 (Ti-Chiou, 2010). 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 (Ti-Chiou, 2010).

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). Healthcare providers follow evidence based guidelines and community based health promotion covers eight major topics including physical activity, smoking cessation and social participation (Ti Chiou, 2010). Community based health promotion and other services for older people are provided by or coordinated by community based "service stations" which are situated in easily accessible public facilities (Ti Chiou, 2010).

Life course vaccination

The International Longevity Centre (US, France and UK) 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 (Gusmano and Michel, 2009). 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 (Gusmano and Michel, 2009).

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 (Gusmano and Michel, 2009). 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 (immunoscenence), 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: Re-shaping 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 optimize 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 hosptial (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;

[2] Working lunch on "Time for a new adult immunisation strategy", 24 March 2011, London, UK.

- Creating effective care pathways – aiming for a smooth care pathway for frail older people including anticipatory care plans, managed care networks, re-ablement, and implementation of the dementia strategy.
- (COSLA/Scottish Government/NHS Scotland, 2011)

There are two supporting themes:

- finance and analysis – reducing hospital provision to enable re-investment 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.
  (COSLA/Scottish Government/NHS Scotland, 2011)

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 et al, 2011). If no changes are made, then providing the same level of care in the future will require a new 600 hospital bed every 3 years, a new 50 bed care home every 2 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 (COSLA/Scottish Government/NHS Scotland, 2011).

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 (Pillar Land Securities, 2011a). 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 (King's Fund, 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 (King's Fund, 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 (Norlandia Care, 2011).

Several companies are bringing the concept of patient hotels to the UK 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: Prefunding healthcare in Canada

In Canada, the idea of prefunding of healthcare 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 healthcare 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 healthcare to work, Canadians would have to trust that the money they pay in will be use for the designated purpose, projections of future healthcare 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 (Stabile and Greenblatt, 2010). 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 (Stabile and Greenblatt, 2010).

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 (Tsutsui and Muramatsu, 2007).

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, 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 (Tsutsui and Muramatsu, 2007; Imai et al, 2008). 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 (Tsutsui and Muramatsu, 2007; Imai et al, 2008).

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" (Tsutsui and Muramatsu, 2007).

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 (Tsutsui and Muramatsu, 2007). The preventive services are designed to improve motor skills, maintain mobility and physical strength, and improve nutritional status (Tsutsui and Muramatsu, 2007). The services provided include strength training, other physical activities, nutritional management and advice and oral health screening and treatment (Tsutsui and Muramatsu, 2007).

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 coordinating and providing care and prevention services (Tsutsui and Muramatsu, 2007).

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 (Ohwaki et al, 2009).

TECHNOLOGY

Case study: Telecare to support dementia in England

Tunstall Healthcare 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 (Lucas, 2010). 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 (Lucas, 2010).

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 (Lucas, 2010). 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 (Lucas, 2010). The falls detection sensors experienced some success, but did not work as well and there were problems with residents being able to remove them (Lucas, 2010).

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 (eHealthnews,eu, 2010).

While mobile phones have been used in healthcare 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:

- Caretaker System: application that links all users (older people, clinicians, relatives) and all components;
- 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;
- 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;

- 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 (Boulos et al, 2011). 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 (Boulos et al, 2011). The second challenge was answered through a system of maintenance actions performed remotely, transparently and locally (Boulos et al, 2011).

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 HEALTHCARE

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 healthcare services (Fendrich et al, 2010).

Two examples of adapting healthcare 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 DDR), which bring together GPs, specialists and other healthcare professionals such as pharmacists, physiotherapists and chiropodists under one roof (Fendrich et al, 2010). 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 (Fendrich et al, 2010). 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 (Fendrich et al, 2010).

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 - *Intergrierte 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 (Fendrich et al, 2010). The project is being undertaken by the Community Medicine Institute and partially funded by the Regional Ministry of Health and Social Affairs (Fendrich et al, 2010). 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 (Fendrich et al, 2010).

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, 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 (European Commission, 2010).

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

(European Commission, 2010)

The 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
- (European Commission, 2011)

The EIP steering group will draw up a strategic implementation plan (SIP) by autumn 2011 (European Commission, 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 paper 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 paper relate to healthcare, 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 previous generations.

In many areas including health and social care, technology is playing a greater role and has the potential to do more, especially if the gap between research and the market can be further closed.

With funding of healthcare and long-term care becoming an issue in many countries, new approaches to funding care are being developed, which seek to ensure long term sustainable funding solutions that maintain solidarity between generations.

New ways of organising and delivering healthcare and social care focus on enabling people to remain independent and healthy for longer and seek to avoid or delay the need for resource intensive institutional care.

References

Altenstatter Christa and Busse Reinhard (2005) "*Health Care Reform in Germany: Patchwork Change within Established Governance Structures*", Journal of Health Politics, Policy and Law, volume 30, no. 1-2, February-April 2005.

Alzheimer's Disease International (2009) *"2009 World Alzheimer Report"*

Ball Michael, Blanchette Robert, Nanda Anupam and Wyatt Peter (2011) "*Housing markets and independence in old age: expanding the opportunities*", Henley Business School, May 2011

Bamford Sally-Marie "*Dementia and diagnosis – the discrepancies in response across Europe*", Paper no 15/2010, European Papers on the New Welfare, http://eng.newwelfare.org/2010/10/11/dementia-and-diagnosis-%E2%80%94-the-discrepancies-in-response-across-europe/ 11 October 2010

Bamford Sally-Marie and Taylor Rebecca (2011) "*The European Dementia Research agenda*", ILC-UK, February 2011

BBC News (2010a) "*Fixed retirement age to be axed*", http://www.bbc.co.uk/news/business-10796718, 29 July 2010

BBC News (2010b) "*Public sector pensions need reform says Commission*", http://www.bbc.co.uk/news/10527621 7 July 2010

Berry Craig (2009) "*The future of retirement*" ILC-UK discussion paper, June 2010

Billett Stephen and Van Woerkom Marianne (2008) "*Personal epistemologies and older workers*",
International Journal of Lifelong Education, volume 27, no 3. Pages 333 — 348

BIS Department for Business, Innovation and Skills (2011) "*Default retirement age to end this year*", http://www.bis.gov.uk/news/topstories/2011/Jan/default-retirement-age-to-end 13 January 2011

Bloom David E and Canning David (2008) "*Global demographic change: Dimensions and economic significance",* Population and Development Review, volume 34, pages 17-51

Boulos Maged N Kamel, Wheeler Steve, Tavares Carlos and Jones Ray (2011) "*How smartphones are changing the face of mobile and participatory healthcare: an overview with example from eCAALYX*", Biomedical Engineering Online, volume 10, no 24

Byrne Stephen, O'Mahoney Denis, Hughes Carmel, Parsons Carole, Patterson Susan, McCormack Brenda, Finn Finola, O'Sullivan David (2011) "*An evaluation of the inappropriate prescribing in older residents in long term care facilities in the greater Cork and Northern Ireland regions using the STOPP and Beers' criteria*", Centre for Ageing Research and Development in Ireland (CARDI) research report, 6 April 2011

Centers for Disease Prevention and Control (2010) "*CDC's Advisory Committee on Immunization Practices (ACIP) Recommends Universal Annual Influenza Vaccination*" Press Release, 24 February 2010

Centers for Disease Prevention and Control (2003) "*Public health and aging: trends in ageing – United States and worldwide*", MMWR weekly, volume 52, no 6, pages 101-106, 14 February 2003

Chapell Neena and Hollander Marcus J (2011) "*An evidence based policy prescription for an aging population*", Healthcarepapers, volume 11, no 1, pages 8-18

Chernoff Ronni (2003) "*Nutrition and Health Promotion in Older Adults*", Journals of Gerontology, volume 56A, special edition II, pages 47-53

Christensen Kaare, Doblhammer Gabriele, Rau Roland, Vaupel James W (2009) "*Ageing populations: the challenges ahead*", The Lancet, volume 374, pages 1196 - 1208

COSLA (Convention of Scottish Local Authorities), Scottish Government and NHS Scotland (2011) "*Re-shaping care for older people: programme for change 2011-2021*" 15 March 2011

Costa-Font Joan, Wittenberg Raphael, Patxot Concepció, Comas-Herrera Adelina, Gori, Cristiano, di Maio Alessandra, Pickard Linda, Pozzi Alessandro and Rothgang Heinz (2008) "*Projecting long-term care expenditure in four European Union member states: the influence of demographic scenarios*" Social indicators research, volume 86, no 2, pages 303-321

Danish Medicines Agency (2004) "*Brug medicinen bedre – Perspektiver I klinisk farmaci (better use of medicines – perspectives in clinical pharmacy)*" June 2004

Dixon Patrick (2008) "*Marketing to Older Consumers*", interview for *Marketeer*, October 2008, www.globalchange.com/marketing-to-older-consumers.htm (accessed 30 May 2011).

Docteur Elisabeth and Oxley Howard (2003) "*Healthcare systems: lessons from reform*", Reference DELSA/ELSA/WD/HEA, OECD, Paris

e-healthnews (2010) "*CAALYX project takes medical innovation to new heights*" www.ehealthnews.eu 15 January 2010, accessed on 31 May 2011

Emery Paul, Breedveld Ferdinand C, Hall Stephen, Durez Patrick, Chang David J, Robertson Deborah, Singh Amitabh, Pedersen Ronald D, Koenig Andrew S and Freundlich Bruce (2008) "*Comparison of methotrexate monotherapy with a combination of methotrexate and etanercept in active early moderate to severe rheumatoid arthritis (COMET): a randomised, double blind parallel treatment trial*", The Lancet, volume 372, pages 375 – 382, July 2009

Emery Paul (2006) "*Treatment of rheumatoid arthritis*", British Medical Journal, volume 332, pages 152 – 155, 21 January 2006

European Commission (2010) "*Turning Europe into a true innovation union*", Memo 10/473, 6 October 2010

European Commission (2011) "*EU wants to steer innovation on active and healthy ageing*", press release IP/11/519, 2 May 2011

Fendrich K, van den Berg N, Siewert U and Hoffman W (2010) "*Demographic change: Demands on healthcare system and solutions using the example of Mecklenburg-Western Pomerania*", Bundesgesundheitsblat, volume 53, pages 479-485

Fenrich Konstanze and Hoffman Wolfgang (2007) "*More than just ageing societies: the demographic change has an impact on actual numbers of patients*", Journal of Public Health, volume 15, pages 345 - 351

Fitzsimmons James (2011) "*Proposed pension levy a new attack on private sector*", Irish Independent, 8 May 2011

Folland S, Goodman AC and Stano M (2009) "*Comparative health care systems*" chapter 22 in 'The Economics of Health and Healthcare', Prentice Hall, 6th edition

Free Caroline, Phillips Gemma, Felix Lambert, Galli Leandro, Patel Vikram and Edwards Philip (2010) "*The effectiveness of M-health technologies for improving health and health services: a systematic review protocol*", BMC Research Notes, volume 3, 6 October 2010

Fried Linda P and Hall William J (2008) "*Leading on behalf of an aging society*", Journal of the American Geriatrics Society, volume 56, pages 1791-1795

Guardian (2010), Data blog, 24 June 2010
http://www.guardian.co.uk/news/datablog/2010/jun/24/retirement-ages-oecd-countries#data

Gusmano Michael K and Michel Jean-Pierre (2009) "*Lifecourse vaccination: Impact of lifecourse vaccination on an ageing population*", Briefing paper, ILC USA, ILC-UK and ILC-France

Holland Richard, Desborough James, Goodyer Larry, Hall Sandra, Wright David and Loke Yoon K (2007) "*Does pharmacist led medication review help to reduce hospital admissions and deaths in older people? A systematic review and meta-analysis*" British Journal of Clinical Pharmacology, volume 65, no 3, pages 303 – 316

Holmes Sir John (2011) "*A note by the director on the Ditchley Foundation conference on 'The impact of ageing on developed economies' 12-14 May 2011*", May 2011

Howden-Chapman Philippa, Signal Louise and Crane Julian (1999) "*Housing and health in older people: ageing in place*", Social Policy Journal of New Zealand, no 13, pages 14-30

Howker Ed and Malik Shiv (2010) "*Jilted generation: how Britain has bankrupted its youth*", Icon Books, September 2010

Hubert HB, Bloch DA, Oehlert JW and Fries JF (2002) "*Lifestyle habits and compression of morbidity*" Journal of Gerontology series A Biological sciences and Medical Sciences, volume 57, no 6, pages M347 – M351

Hughes Carmel, Winterstein A, McElnay J, Magner M, van Mil F, Schaeffer M, Silva S, Søndergaard B, Sturgess I, Tromp Dick, Vivero L, Bernsten C, Björkman I, Caramona M, Crealey G, Frøkjaer B, Grundberger E, Gustafsson T, Henman M and Herborg H (2001) "*Improving the well-being of elderly patients via community pharmacy based provision of pharmaceutical care: a multicentre study in seven European countries*", Drugs and Aging, volume 18, no 1, pages 73 – 77, January 2001

Imai Hirohisa, Fujii Yoshinori, Fukuda Yoshiharu, Nakao Hiroyuki and Yahata Yuichiro (2008) "*Health-related quality of life and beneficiaries of long-term care insurance in Japan*", Health Policy, volume 85, pages 349 - 355

Jonsson J, Renberg-Lindholm E, Ohlen K and Hjertsen E (2007) "*Drug utilization reviews by a pharmacist of elderly people living at home – an open trial in two Primary Health Care Centres in Sweden*" Presented at the World Congress of Pharmacy and Pharma ceutical Sciences, Beijing September 2007,

Le Point (2010) "Strong mobilisation in the stress of France against pension reform" (forte mobilisation dans les rues de France contre la reform des retraites), http://www.lepoint.fr/societe/forte-mobilisation-dans-les-rues-de-france-contre-la-reforme-des-retraites-07-09-2010-1233208_23.php 7 July 2011

Kaur Sukhpreet, Mitchell Geoffrey, Vitetta Luis and Roberts Michael S (2009) "*Interventions that can reduce inappropriate prescribing in the elderly: a systematic review*", Drugs and Aging, volume 26, no 12, pages 1013 – 1028, 1 December 2009

Kelly Gavin (2011) "*Why the squeezed middle is here to stay*", The Guardian, http://www.guardian.co.uk/politics/2011/may/22/squeezed-middle-here-to-stay 22 May 2011

Khunti Kamlesh, Walker Nicola, Sattar Naveed and Davies Melanie (2011) "*Unanswered questions over NHS health checks*", British Medical Journal, volume 342, pages 316 – 318, 5 February 2011

King Abby C and Guralnik Jack M (2010) "*Maximising the potential of an ageing population*", Journal of the American Medical Association, volume 304, no 17, pages 1944-1945

Kuhn Karl (2010) "*Keeping the ageing workforce healthy and productive*" Presentation at workshop on healthy ageing, European Health Forum Gastein, October 20101

Kuo Ken (2010) "*Healthy ageing an introduction*", presentation at parallel forum on healthy ageing at European Health Forum Gastein, October 2010

Lloyd-Jones Donald M, Leip Eric P, Larson Martin G, D'Agostino Ralph B, Beiser Alexa, Wilson Peter WF, Wolf Phillip A, Levy Daniel (2006) "*Prediction of lifetime risk for cardiovascular disease by risk factor burden at 50 years of age",* Circulation, volume 113, pages 791-798

Lucas, Adrienne, (2010) "*Residential homes for dementia: can telecare be part of the solution?",* Report North Yorkshire County Council/ST Cecilia's Residential and Home Care Services
Mann Thomas (2008) "*Modern demographic trends in the EU*", European View, volume 7, pages 187-194

Martin Mike (2010) "*Reshaping care in Scotland*", presentation at Healthy Ageing parallel forum, European Health Forum Gastein 2010,

Mes Chelsea (2010) "*Cost of living increases, but will wages?",* The Daily Telegraph (Australia), http://www.dailytelegraph.com.au/money/money-matters/prices-go-up-the-cost-of-living-at-a-glance/story-fn300aev-1225859344076 29 April 2010

Muller-Camen Michael, Croucher Richard, Flynn Matt and Schröder Heike (2011) "*National institutions and employer's age management practices in Britain and Germany: 'Path dependency' and option exploration*", Human Relations, volume 64, no 4, pages 605-530

NHS Health Check (2010) "*NHS Health Check: Frequently Asked Questions*" March, 2010

Norlandia Care (2011) "*Patient hotel*" http://www.norlandiacare.no/en/pasienthotell, accessed on 1 June 2011

Odense University Hospital (OUH) (2009) "*Patienthotellet*" http://www.sygehusfyn.dk/wm141809 17 July, 2009 accessed on 1 June 2011

OECD (2010a) "*OECD Health Data 2010*", OECD, Paris, October 2010 edition

OECD (2010b) "*Off to a good start? Jobs for youth*", OECD, Paris

OECD (2010c) "*OECD Factbook 2010: Economic, Environmental and Social Statistics"*, OECD, Paris

OECD (2009) "Pensions at a glance: current trends and policy topics in retirement-income provision in OECD countries", OECD, Paris

OECD (2007a) "*Pension reform: unfinished agenda*", Policy Brief, OECD, Paris

OECD (2007b), "*Public Sector Pensions and the Challenge of an Ageing Public Service*", OECD Working Papers on Public Governance, 2007/2, OECD, Paris

OECD (2006) "*Ageing and employment policies: Live longer, work longer*", OECD, Paris

OECD (2004) *"Dementia care in 9 OECD countries; a comparative analysis",* OECD, Paris, 28 July, 2004

Oswald Frank, Wahl Hans-Werner, Schilling Oliver, Nygren Carita, Fänge Agneta, Sixsmith Andrew, Sixsmith Judith, Széman Zsuzsa, Tomsone Signe and Iwarsson Susanne (2007) "*Relationships between housing and healthy ageing in very old age*", The Gerontologist, volume 47, no 1, pages 96 - 107

Ohwaki K, Hashimoto H, Sato M, Tamiya N and Yano E (2009) "*Predictors of continuity in home care for the elderly under public long term care insurance in Japan*", Aging Clinical and Experimental Research, volume 21, no 4-5, pages 323 - 328

Pharmaceutical Group of the EU (PGEU) (2009) "*PGEU statement on medicines and older people*" March, 2009

Pillar Land Securities (2011a) "*Patient hotels*" http://www.pillarlandsecurities.com/pillar-land-securities-patient-hotels.php accessed on 1 June 2011

Pillar Land Securities (2011b) "*Patient hotels: examples*" http://www.pillarlandsecurities.com/patient-hotels-example.php accessed on 1 June 2011

Polton Dominique (2009) "*What is the role of the health care system in reducing health inequalities in France?"* Eurohealth, volume 15, no 3

Rajoy Mariano (2008) "*Demographic trends in Southern Europe: rethinking the welfare state*", European View, volume 7, pages 195-202

Relationships Foundation (2011) "*Flexible working*" http://www.relationshipsfoundation.org/Web/Content/Default.aspx?Content=128 accessed on 27 May 2011

Richmond Stewart, Morton V, Cross B, Chi Kei Wong I, Russell I, Phillips Z, Miles J, Hilton A, Hill G, Farrin A, Coulton S, Chrystyn H and Campion P (2010) "*Effectiveness of shared pharmaceutical care for older patients: RESPECT trial findings*", British Journal of General Practice, volume 59, pages 14-20, January 2010

Rocha Artur, Martins Angelo, Freire Juniora Jose Celso, Boulos Maged N Kamel, Escriche Vicente Manuel, Feld Robert, van de Ven Pepijn, Nelson John, Bourke Alan, O

Laighin Gearoid, Sdogati Claudio, Jobes Angela, Narvaiza Leire and Rodriguez-Molinero Alejandro (2011) "*Innovations in Health Care Services: The CAALYX System*", International Journal of Medical Informatics, 22 February 2011

Robson, William BP (2009) "*Boomer bulge: Dealing with the stress of demographic change on government budgets in Canada*", e-brief, CD Howe Institute, 13 January 2009
Robson, William BP (2002) "*Saving for health: prefunding healthcare for older Canada*", CD Howe Institute Health Papers, no 170, October 2002

Royal College of Psychiatrists (2009) *"Dementia and Alzheimer's Disease",* booklet produced in July 2009

Santerre Rexford E and Neun Stephen P (2010) "*Health care systems and institutions*", chapter four in 'Health economics: Theory, insight and industry studies', Cengage, 5th international edition

Scambler Graham (2008) "*Sociology as applied to medicine*", 6th edition, Saunders, 2008

Semuels Alana (2011) "*Jobs increase but wages have fallen*" LA Times, http://www.kansascity.com/2011/05/31/2915519/jobs-increase-but-wages-have-fallen.html 31 May 2011

Siba Noreen and Sinclair David (2010) "*Older workers, the myths and realities*", report of debate organised by ILC-UK on 11 November 2009, ILC-UK

Sinclair David (2010a) "*The Golden Economy: the consumer marketplace in an ageing society*", ILC-UK/AGE UK, October 2010

Sinclair David (2010b) "*Can the web transform social care?",* ILC-UK think piece, October 2010

Skane (2011) "*Patient hotel*", http://www.skane.se/templates/Page.aspx?id=140104 accessed on 1 June 2011

Smith Helena (2011) "*Greek government faces revolt over second wave of austerity measures*", The Guardian, 6 June 2011

Smolen Josef S, Aletaha Daniel, Koeller Marcus, Weisman Michael H and Emery Paul (2007) "*New therapies for treatment of rheumatoid arthritis*", The Lancet, volume 370, pages 1861 – 1874, June 2007

Stabile Mark and Greenblatt Jaqueline (2010) "*Providing pharmacare for an aging population: is prefunding the solution?",* Institute for Research on Public Policy, IRPP study, no 2, February 2010

Stauner Gabriele (2008) "*The future of social security systems and demographic change*" European View, volume 7, pages 203-208

TAEN (The Age and Employment Network) (2011) "*Easter employment figures are a 'curate's egg' for older workers*", Press Release, 13 April 2011

Ti Chiou Shu (2010) "*Health promotion in the elderly – an Asian perspective*", Presentation at parallel forum on healthy ageing at European Health Forum Gastein, 2010

Tsutsui Takako and Muramatsu Naomi (2007) "*Japan's universal long-term care system reform of 2005: containing costs and realising a vision*", Journal of the American Geriatrics Society, volume 55, pages 1456 – 1463,

United Nations (2008) "*World population prospects, 2008 revision*"

Van Bilsen Pascalle MA, Hamers Jan PH, Groot Wim and Spreeuwenberg Cor (2008) "*Sheltered housing compared to independent housing in the community*", Scandinavian Journal of Caring Science, volume 22, no 2, pages 265 - 274,

Van Vuuren Daniel (2011) "*Flexible retirement*", Netspar Discussion Paper 04/2011, 12 April 2011

Well Tel (2011), Home page, http://www.n-sign.org/welltel/index.html accessed on 1 June 2011

Willets David (2010) "*The Pinch – How the Baby Boomers took their children's future – and why they should give it back*" Atlantic Books, 1 February 2011

World Cancer Research Forum (1997) "*Food, Nutrition, physical activity and the prevention of cancer*"

World Health Organisation (2003) "*Diet, nutrition and the prevention of chronic diseases*", technical report no 916

ILC–UK
11 Tufton Street
London
SW1P 3QB
Tel : +44 (0) 20 7340 0440
www.ilcuk.org.uk