Ageing and Health Care Costs

STEPHANE JACOBZONE
HOWARD OXLEY

Total health care and long-term care for the elderly represent around nine per cent of GDP averaged over some twenty OECD countries and around three-quarters of this is financed through the public sector. The process of ageing in OECD countries will begin to accelerate in virtually all OECD countries starting in about ten years time as the baby-boom generation begins to enter retirement. With forty to fifty per cent of health care spending being currently directed towards the elderly and with per-capita health care costs for those over 65 being three to five times higher than for those under 65, upward pressure on health and long-term care costs is likely to ensue. The extent of this increase in spending will, however, depend on a range of factors in addition to ageing. Technology and its diffusion appear to be important elements. At the same time the progressive declines in fertility rates experienced since the late 1960s will depress the growth of labor supply. The consequent slower growth in GDP will make these additional costs more difficult to finance.

The Relative Importance of Medical Technology, Incentives and Ageing

For the purposes here, total care costs can be broken down into those associated with health care and those related to long-term care for the frail elderly. The first of these includes pharmaceuticals, ambulatory care and intensive hospital care and represented just over eight per cent of GDP in the late 1990s averaged over some 24 OECD countries with around six per cent of this financed by the public sector (Table 1, columns 1 and 2). The second item includes a wide range of services, from home help for older individuals still living on their own to long-term institutional care for people who are completely dependent. While this includes only publicly financed long-term care and is often poorly mea-

Health and Long-term Care Expenditures, 1997 (percentage of GDP)

	Total health expenditure	*Public health expenditure*	*Public long-term care*
Australia	8.3	5.7	0.7
Austria	7.9	5.7	0.5
Belgium	8.6	6.1	0.4
Canada	9.0	6.3	N/A
Czech Republic	7.1	6.5	0.5
Denmark	8.2	6.8	1.9
Finland	7.3	5.6	1.6
France	9.4	7.3	0.7
Germany	10.5	8.0	0.7
Greece	8.7	4.8	0.3
Hungary	6.8	5.2	N/A
Iceland	8.0	6.7	2.0
Ireland	6.9	5.3	0.4
Italy	8.3	5.6	0.2
Japan	7.4	5.9	0.3
Korea	5.0	2.1	0.2
Luxembourg	5.9	5.5	0.4
Mexico	5.3	2.3	N/A
Netherlands	8.7	5.9	0.4
New Zealand	7.6	6.0	N/A
Norway	8.0	6.7	3.0
Poland	6.1	4.4	0.3
Portugal	7.5	5.0	0.2
Spain	7.0	5.4	0.3
Sweden	8.1	6.8	3.8
Switzerland	10.2	7.6	0.3
Turkey	4.2	3.0	0.1
United Kingdom	6.7	5.6	0.6
United States	13.0	5.9	N/A

Source: OECD Health Data 2001 and OECD SOCX Database for long term care (services for the elderly and disabled people). Public long-term care may in some cases be partly included in health expenditure, also as the boundary between health and long term care services is often blurred.

sured, it averages around one per cent of GDP but with wide variation across countries (column 3).[1] The distinction is important because increases in spending on these two categories of expenditure are driven by somewhat different sets of factors. Nonetheless, the borders between these services are blurred: for example, because long-term care for the very dependent merges with hospital care and various kinds of ambulatory care may also help in keeping the elderly independent as long as possible Table 1.

Health-care Expenditure

Health care costs have increased substantially as a share of GDP over the post-war period. After an increase of around two percentage points in the 1970s and a further point in the 1980s, health care spending (averaged over some 24 OECD countries) has stabilized just over eight per cent for most of the past decade. A number of factors are thought to have influenced the increases up to the early 1990s. Key elements include:
▶ the changing age structure of the population;
▶ morbidity;[2]
▶ rapid introduction of new technologies;
▶ strong incentives to supply (and, possibly, to over-supply) health services accompanied by significant increases in the number of hospitals and in medical personnel;
▶ increased demand for health care among the population as incomes and education rose and, to a much lesser degree, coverage of medical insurance increased;
▶ public policies governing the health-care system and the overall level of public health-care spending.

1. This is the category »Services for the elderly« in the OECD Social Expenditure (SOCX) File. It therefore does not include private spending on these services which may be important in some countries.
2. The development of morbidity (the prevalence of disease) on health care costs is indeterminate. Improvements in the underlying health of the population – for example, due to better nutrition and improved working conditions – may have lowered health care costs, population structure held constant. However, changes in the prevalence of certain illnesses can increase expenditure, particularly where they are costly to treat. In this context, the prevalence of cancer has increased in many countries while the appearance of AIDS has also placed upward pressure on health-care budgets.

Unfortunately, econometric research on the sources of past increases in spending provides little help in isolating the relative importance of each of these elements over the period up to the 1980s. In general, they have been able to account for only about half of the total increase in costs over the past decades, partly because many of the factors mentioned above (e.g. technology and institutional features) are difficult to measure and to model. These studies generally find that the change in the age structure of the population has had little effect.[3] However, this may reflect the relatively modest changes in the age structure over the period in question and measurable effects from this source may have been swamped by other, more important, factors, such as the effects of institutional arrangements and incentives, administrative or political decisions governing supply and demand and policies regarding technology.

> Increasing longevity may delay important medical costs which are normally associated with the last years or months of life.

Despite this uncertainty, the introduction and diffusion of medical technologies has probably played a central role (Weisbrod, 1991). The impact of technology during this period has been highly dependent upon the institutional and economic incentives in the U.S. health care system: technological change has been fostered by a number of policies (such as property-right legislation[4]) and tight links between academic and government-financed research and the private sector (Ronchi 1998). Once available, technology has been rapidly introduced in the United States and then in other OECD countries (although the pace varied from country to country) as governments and private insurers have accepted to pay for them. The introduction has often taken place before the marginal benefits have been assessed. As availability of the technology has increased, their use has been progressively extended to aspects of care where alternative and less expensive procedures already existed, and for which the marginal effectiveness was relatively low (Phelps 1994, McCllellan 1996). Indeed, many OECD countries face decreasing marginal returns from the use of many medical technologies. This may not

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3. See Newhouse 1992, L'Horty Quinet Rupprecht 1997, Gerdtham et al. 1998.
4. The ease of obtaining patents, the strong patent protection and virtually no price controls by the state has encouraged innovation (for example in new drugs).

have harmed patients, and may even have produced some marginal improvements in the quality of life. However, it has increased costs, which, in turn, has required higher medical insurance premiums or taxes to pay for them.

The second most important factor has been the incentives built into the payment systems for health care and the increasing supply of health care. Governments promoted or allowed a rapid expansion in the number of hospitals over this period. At the same time, there were significant increases in the numbers of doctors and health-care professionals in most OECD countries. In some cases this was combined with payment systems that encouraged hospitalisation and long hospital stays (e.g. where hospitals were paid on the basis of the numbers of bed days filled) or excessive numbers of medical interventions (e.g. where doctors are paid on a fee-for-service basis). Widening health-care cover may have had a small impact in a few countries (Newhouse 1992). In addition, since much of technology is embedded in new investment and in human capital, the rapid increase in supply of both hospitals and of specialist doctors also encouraged its introduction and spread.

Against this background, the subsequent slowdown in health-care costs as a share of GDP over the 1990s reflects both more rapid GDP growth in a number of OECD countries, combined with the introduction of measures by the payers (either private or public »insurers«) aimed at containing costs per patient, supply and demand. For example, the »managed-care« revolution, which has transformed the U.S. health-care system in the recent years, has attempted to constrain the use of technology where it is only marginally effective. Nonetheless, most countries have had difficulty in controlling the cost of health care. Over the decade, the stability in costs has been achieved by the successive introduction of new policy measures, each one put in place as the effects of preceding reforms wear off. This suggests strong underlying pressure which governments will continue to have difficulty in curtailing.

Which of these factors affecting health-care expenditure is likely to be dominant over the future? The sharp increase in old-age dependency ratios (Figure 1) suggests that the shifts in population structure are likely to take on a larger role than they have in the past. Demand among the elderly is likely to be enhanced by rising incomes, particularly as the elderly as a group have become wealthier over recent decades (OECD, 2001b). Technological change and diffusion will also remain critically important and, as discussed below, will depend on government policies

Figure 1:
Trends in Old-age Dependency Ratio (fast ageing countries)
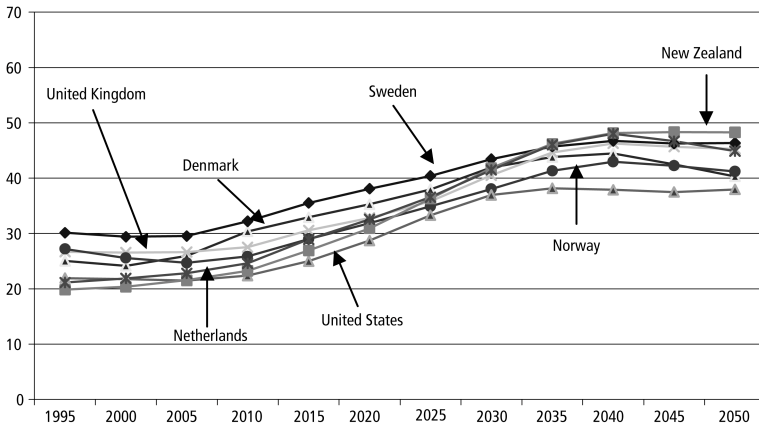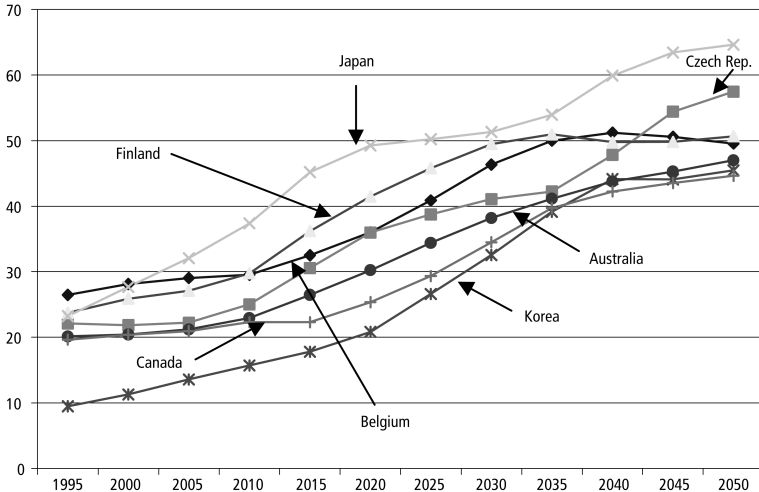
in this area. With a rising demand for health care, the relative prices of health-care services can also be expected to rise. Uncertainty in projecting cost remains particularly high: for example, the appearance of new »pathologies« (AIDS and antibiotic-resistant bacteriae being prime examples) can change the outlook considerably.

The various factors discussed above need not always lead to higher health-care spending. For example, if government policy could achieve a shift in the mix of research away from curative medicine towards preventive medicine or encourage cost-reducing technologies, technology could well contribute to falls in expenditure over time. Similarly, as is shown below, increasing longevity may delay important medical costs which are normally associated with the last years or months of life (assuming that longer lives are accompanied by better health and reduced disability.

Long-term Care

Significant differences exist across countries in public spending on long-term care (Table 1). This variation is a reflection (or consequence) of very different levels of public supply or subsidization of formal care. Most of these services are provided by the state in the Nordic countries (long-term care expenditure represented 3.8 per cent of GDP in Sweden in 1997). In contrast, the older people have, traditionally, been cared for within the immediate family in countries such as Spain, Italy and Greece. In these countries, spending is estimated to be less than half a percentage point of GDP.

Several factors are likely to affect the development of public expenditure on long-term care in the future. The first is the degree of disability among the elderly. The good news in this regard is that levels of disability among the elderly appear to be falling in a number of countries, permitting them to live independently longer. This has dampened the need for long-term care, particularly long-term care provided in higher-cost nursing homes (Jacobzone 1999, Jacobzone et al. 2000). A second factor affecting demand concerns the capacity of the family to provide direct support and care for their parents. Much here will depend on the development of female participation rates in paid labor markets and the effective age of retirement. Later retirement can also be expected as individuals adapt to new rules on pensions and other programs that used to permit early withdrawal from the labor force. In addition, the strong

preference for independent living will be reinforced by the increased financial autonomy of older persons in OECD countries (OECD, 2001b). Such developments, if they occur, will reduce the scope for – and interest in – caring for the elderly within households.

Past experience suggests that the public sector will probably provide – or at least finance – a substantial part of the additional supply. Once again, there is clearly nothing inevitable about this. For example, it may be possible to finance some part of these costs by drawing on the income and assets of the dependent persons who, on average, are likely to be better off than the elderly in the past.[5] Costs will also depend on how countries structure public supply. Governments have already been shifting supply away from institutional care (particularly of a nursing-care nature) towards arrangements in an ambulatory environment aimed at permitting the elderly to live in their own homes as long as possible.

The Future Impact of Ageing on Health Care Costs

As noted above, OECD countries will experience, over the coming decades, a sharp increase in the share of the elderly in the population. Given the importance of these developments for public expenditure and public finances, the OECD has recently presented a set of projections for age-related expenditure (OECD, 2001a and Dang Antolin and Oxley, 2001). The estimates are based on results generated by Member countries, using the models of national administrations or research institutes. This helps ensure that better account is taken of institutional detail affecting expenditures than has been possible in previous OECD work.[6] At the same time, consistency and comparability across countries have been strengthened by using a set of population projections and common assumptions – agreed between countries and the OECD Secretariat – for establishing underlying GDP growth and other key macroeconomic variables.

A widely-used indicator of the importance of ageing for public finances over the next half century is the old-age dependency ratio – defined as the share of individuals aged 65 and over in the population aged 20 to 64 (Figure 1). This captures two features:

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5. Some analysts would argue that the true beneficiaries of the subsidies for long-term care are the heirs to the patient rather than the patients themselves.
6. Leibfritz et al. (1995), Roseveare et al. (1996), OECD (1998).

▶ First, the increase in the number of the elderly, largely reflecting the entry of the post-war baby boom generation into retirement, but also the increase in life expectancy at age 65. Taken by itself, this is certain to lead to an increase in age-related expenditure both for health and long-term care and for old-age pensions;

▶ Second, the impact of the decline in fertility over the last few decades on the growth of the working-age population, the labour force and on GDP. The slower increase in aggregate income and output as the rate of growth of the labour force weakens will make these increases in expenditure harder to finance and lead to either higher tax rates or widening government deficit and increasing public debt and debt-interest payments.[7]

> Most of the increase in expenditures at older ages is due to the more intensive use of high-cost technology

On the basis of Eurostat and national population projections, the old-age dependency ratio about doubles over the next fifty years in OECD countries.

The projections cover public (or publicly-financed) health care and long-term care combined (Table 2). This broadly corresponds to the sum of the second and third columns of Table 1. For most countries, projections of health- and long-term care expenditure are based on projected *per-capita* health-care expenditures by age group (which rise with age). These *per-capita* costs were assumed to trend upwards over time on the basis of (mainly ad hoc) assumptions made by countries about other factors affecting health-care expenditure (e.g. technology, relative costs of health care supply, and increased demand). Per-capita costs by age group in each subsequent age group period was then multiplied by the number of people in each age group, summed and then expressed as a share of GDP.[8] This process was carried out for the end of each five-

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7. However, the projections included a progressive rise in participation rates of women, which partially offset these effects. The average annual increase in GDP growth over the period for the 14 countries is 1.8 per cent.

8. For examples of previous work of this type see Schneider Guralnik 1990 and Franco Munzi 1997, Commonwealth Department of Health and Aged Care 1999.

Health Care and Long-term Care Projections, 2000-50
(public expenditure, levels in per cent of GDP, changes in percentage points)

	Level 2000	*Change 2000-peak* [a]	*Change 2000-50*
Australia	6.8	6.2	6.2
Belgium	6.2	3.0	3.0
Canada	6.3	4.2	4.2
Czech Republic	7.5	2.0	2.0
Denmark	6.6	2.7	2.7
Finland	8.1	3.8	3.8
Japan	5.8	2.4	2.4
Korea	0.7	0.8	0.5
Netherlands	7.2	4.8	4.8
New Zealand	6.7	4.0	4.0
Norway	5.2	3.5	3.2
Sweden	8.1	3.2	3.2
United Kingdom	5.6	1.8	1.7
United States	2.6	4.4	4.4
Average	**6.0**	**3.3**	**3.3**

a) The peak values are in 2050 except for Denmark and Korea (2035), Norway and the United Kingdom (2040).

Note: In practice, most countries projecting health care have taken the impact of ageing into account by weighting per-capita care costs by age/sex groups by the population structure for each five year period. Among countries using an approach based on per-capita costs per age group weighted by the importance of each age group, the results can differ considerably. This depends on the following factors. The United Kingdom does not appear to have included long-term-care costs. The fineness of the breakdown of costs by age group and by sex varies across countries. The Japanese health-care projections only distinguish between persons aged over and under seventy, while the Belgian projections are based on a breakdown by five-year age groups and by sex. The pattern of costs per capita across age groups varies, some times considerably, across countries (e.g. the ratio of health and long-term care costs of the over-65 age group relative to the under 65s is around 5.5 in Canada and the Netherlands while for Belgium it is around four). Countries have taken very different approaches to take into account trends in income, relative prices or technology. Finally the Netherlands allows for »costs of death« in calculating the trends over time in health-care costs (see footnote in text).
Source: OECD

year period. Figures 2 and 3 provide two illustrative examples of the rising per capita health care costs by age group.[9]

There appears to be considerable scope in many countries for policy to limit the spending increases and/or to improve the effectiveness of medical systems.

On this basis, the average increase in expenditure over the 2000–2050 period is 3 to 3½ percentage points of GDP – for the fourteen countries where this information is available. But for five countries (Australia, Canada, the Netherlands, New Zealand and the United States) increases of four percentage points or more are projected (OECD, 2001a, Dang, Antolin and Oxley, 2001). Some of the cross-country variation arises from differing movements in the dependency ratio – e.g. the smaller projected increase in spending in Denmark, Sweden and the United Kingdom reflects slower ageing than in the other countries. Country results also vary depending on the fineness of the breakdown of cost estimates by age group (ranging from five-year age groups in Belgium to only two age groups in Japan). But the key difference probably arises from the assumptions about the other factors affecting health and long-term spending (i.e. the »trend increases« in per-capita costs assumed by each country) as small differences in growth rates can have large cumulated effects on the ratio of expenditure to GDP over periods as long as fifty years.[10] Thus, while these rather mechanical projections indicate that ageing will undoubtedly put upward pressure on government budgets, the results need to be taken with a great deal of caution.

Four factors not included in these calculations are likely to be very important in determining final outcomes.

9. Note that the profiles presented here are for illustrative purposes and are not necessarily those underlying the country projections (see Jacobzone 2001).
10. Several countries only allowed per-capita costs to rise in line with productivity and wage rates (Canada, Denmark, and Sweden). The Netherlands set the annual increase at 1.75 per cent with 0.4 per cent added to the growth rate over the period to 2020. The Czech Republic allows per capita health-care costs to rise by three per cent per annum to 2015 and then by two per cent thereafter (but only 1.5 per cent growth for long-term care). The United Kingdom assumes that both current and capital costs rise in line with real GDP.

United States – Health Expenditure Per Capita by Age-group
(as a percentage of GDP per capita)
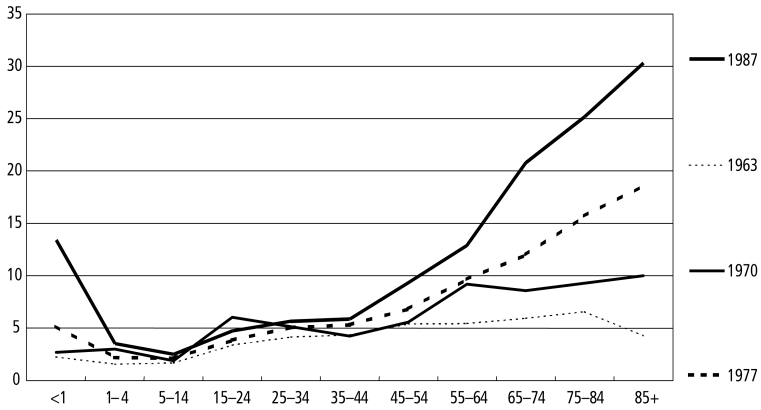
Source: The medical costs of the young and old: a forty year pespective (David Cutler an Ellen Meara, June 1997).

Figure 3:
France – Health Expenditure Per Capita by Age-group
(as a percentage of GDP per capita)
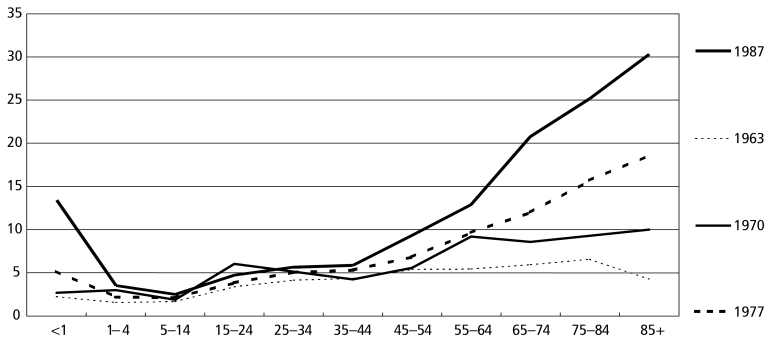
Source: The medical costs of the young and old: a forty year pespective (David Cutler an Ellen Meara, June 1997).

First, increases in longevity may prove to be underestimated such that the number of elderly may be higher than in these projections (Lee Tuljapurkar, 1998, Schieber Hewitt, 2000).

Second, a few countries provide the per-capita costs of care by age group for different years (Figures 2 and 3). These data indicate that the increase in per-capita care costs over time has been concentrated in expenditures related to birth (relatively minor) and, most importantly, for the elderly. This phenomenon is certainly most pronounced in the United States (Cutler Meara 1999). More detailed U.S. studies have shown that most of the increase in expenditures at older ages is due to the more intensive use of high-cost technology (Fuchs 1998). For example, the number of older persons receiving procedures such as angioplasty, coronary artery bypass graft, carotid endarterectomy or hip replacement has been multiplied by from three to ten for the oldest age groups in the U.S. between 1987 and 1995. Since countries did not include the possible effects of such shifts in their calculations, the increase in spending could be much higher if such trends continue. Therefore, these projections could well underestimate the total increase. But much will depend on public policy regarding technology and its use, and also on future increases in GDP and GDP per capita. Different national attitudes to diffusion and treatment may already explain the fact that the progressive increase in per-capita costs for the elderly is less marked in countries outside of the United States. However, as health-care needs to be financed, it is likely that at the end of the day, the relative use of technology, and the implied increase in health-care spending, will also reflect the increase in GDP per capita and the capacity to finance the increased spending.

Third, with the exception of the Netherlands, estimates of likely trends in health and long-term care spending, do not take into account – in any formal way – the impact of lengthening lifetimes and falling mortality at higher ages. As noted above, a significant part of health-care spending and long-term care is concentrated in the last few years of life. Population projections used in this study assume a further increase in life expectancy at birth of around 4½ years (men and women combined). Assuming that recent downward trends in mortality continue, these »death-related« costs may be delayed and overall health care-expenditures could grow more slowly over time than indicated here. (Cutler Sheiner 1998, Zweifel 1999). These projections do not factor in the impact of decreasing severe disability among the elderly, which may

dampen the demand for formal long-term care. Estimates at the OECD suggest that, if recent downward trends in disability among the elderly continue, this could affect the growth in the costs of long-term care, particularly of institutional long-term care (Jacobzone 2001).

Fourth, there may be upward pressure on the relative cost of labor in the health-care sector. As the health-care sector expands, demand for labor will increase and the cost of labor may be bid up in order to draw new workers into the health-care sector. This may be all the more the case as this type of work is increasingly seen as »difficult« or »physically and emotionally taxing«, requiring shift- and weekend-work, which disrupts family life. Budget tightening has also led to an impression among health-care workers in many countries of a worsening in work conditions. Women make up a large share of health-care workers and in some countries the gender discrimination may have led to lower wage rates than otherwise for some segments of health-care workers. With weakening gender segregation in work and pay, women now have a wider choice of activities to choose from, making it more difficult to draw in labor unless wages adjust. Indeed, some countries are currently finding it difficult to recruit nurses and other medical personnel. At the level of doctors, the impact of constraints on the number of places in medical schools in recent years may also have the result of an increase in their bargaining power vis à vis the payers/insurers. The extent of any substitution between capital and labor is severely limited by the fact that much of care (and its quality) depends on human intervention – particularly for long-term care.

Health-care Policy, Technology and the Growth of Health-care Spending

In sum, while there is great uncertainty surrounding the increase in health-care spending, cost pressures are likely to increase. The easy response to this is to allow health-care spending to increase. Indeed, it is sometimes argued that, if higher health-care spending is desired by electorates, then these increases should be allowed. However, the uncomfortable fact is that such increases very rarely come at the price of reductions in other types of budget spending. This apparent difficulty in making budgetary choices has partly contributed to a progressive increase in overall public spending and tax pressure (or deficits), which can have its

own efficiency costs in terms of overall economic performance. Further increases in health-care spending will come on top of the expected rise in other age-related spending, such as old-age pensions (OECD, 2001a).

On the other hand, as adumbrated above, there appears to be considerable scope in many countries for policy to limit the spending increases and/or to improve the effectiveness of medical-care systems. Indeed, governments have a responsibility to their electorates to ensure that the public funds are being spent in the most efficient and cost-effective way. Increased government spending on health care needs to be conditional on making progress in this area. The following paragraphs suggest some of the aspects of health-care policy that governments may need to examine.

> Preventing injuries and casualties or even increasing education levels could prove to be the best method of improving health outcomes over the longer haul.

In the short to medium term, governments can influence spending by modifying the incentives embedded in the way health-care services are provided and paid for (Oxley and MacFarlan 1995). For example, there is some evidence that health care spending is lower and has grown less rapidly in countries with general-practitioner gatekeeper systems (where »family doctors« oversee access to specialists and hospital care) (Gerdtham et al, 1998) and higher where doctors are paid on a fee-for-service basis.[11] Evidence in the United States shows that the move to managed care systems – in particular Health Maintenance Organisations – can reduce health care costs by as much as thirty to forty percent (Cutler et al. 2000), with spill-over effects and overall reductions in expenditure (Baker 1997) without having a measurable impact on health outcomes). Thus, there may be some difficult choices between the degree of individual choice over doctor and treatment and control of costs. These changes can lead to important one-off gains in spending (although spread over a number of years). Indeed, costs have begun rising again in the United States after several years of stability.

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11. Gatekeeper systems come at a cost of reduced choice by the patient. However, such sytems can also lead to an improvement in the overall quality of care as the gp centralises all the information on the patient.

There are also political limits to cost-containment policies, particularly where they had been taken very far. For example, there has been a seeming »revolt« of the general public in the United Kingdom (where spending as a share of GDP was, until recently, lower than average) against long waiting times and the difficulty in accessing certain medical technology despite reforms to the health-care system aimed at improving efficiency.

Going beyond these short- to medium-term efficiency gains to achieve longer-term containment of health-care costs will require getting a better grip on underlying factors affecting the growth of costs. In this context, governments may well need to consider the overall policy framework for health care, reconsider the share of overall health-care spending financed by the state and how technology can best be used to provide a combination of better health outcomes and reduced costs.

> Greater emphasis needs to be placed on evaluation of the benefits.

At a first level, governments will need to pay increasing attention to what public spending on health is intended to achieve. Up to now, the bulk of spending has been on funding curative medicine, while less attention has been paid to the impact of this spending on health outcomes and whether there are alternative means of improving population health at lower cost. Much of health care is now becoming focused on treating chronic conditions most often among the elderly rather than on communicable diseases as in the past. Such care certainly leads to improvements in the quality of life. But it would certainly be better if these chronic conditions could be prevented or delayed as long as possible, thereby eliminating the associated health-care costs or delaying them into the future. Policy makers need to evaluate whether such outcomes can be achieved at lower cost by other policies, such as population-based interventions, or interventions on preventing injuries and casualties, or even increasing education levels. However, changes in these areas are notoriously difficult to introduce and may depend on other background factors. Indeed, recent trends in disability over the past twenty years in the United States may be related to increases in education levels which took place fifty to sixty years ago (Freedman Martin 1999). But they could prove to be the best long-term method of improving health outcomes over the longer haul.

A second area where governments can act to constrain net costs is to reduce the share of overall health- and long-term care costs paid for by the government. While careful attention needs to be paid to the implications of policies for access to health care, there may be some scope for increasing private share of costs:

▶ Reducing insurance cover for high-cost treatments with little proven therapeutic value.

▶ Increasing co-payments for certain services with high private value and a strong price elasticity. Demand for health care is closely linked to income and this effect is all the stronger where the services are largely free. Without some brake on individual demand, cost control can only be achieved by rationing, leading amongst other things, to longer waiting lists.

▶ Asking individuals to pay for a larger share of the cost of long-term care (which is expected to increase with the ageing of the population).

Finally the authorities will need to focus on how policies can best ensure that technological change is cost decreasing rather than cost increasing and/or has a significant positive impact on health outcomes and the quality of life. Health-care suppliers need to find a balance between too little medical technology (which may unnecessarily limit individual well-being), and extensive use in areas where marginal benefit are low and costs high. This contrasts with the past circumstances in the United States where, as mentioned, insurers willingly accepted new innovation as it appeared. Greater emphasis needs to be placed on evaluation of the benefits: technologies need to be screened, and only those yielding significant health-care improvements should be fully funded from the public purse.

In addition, there is a responsibility for the larger countries to take steps to influence the development of medical technology upstream in a way that favors the development of more cost-effective technology. This requires achieving an appropriate degree of control of the supply of technologies and their diffusion within health-care systems. However, it needs to be recognized that the the relation between technology, health outcomes and the quality of life is complex. For example, a number of studies of reductions in disability in the United States indicate that more effective medical interventions have played a role. While this reduces the need for (and cost of) long-term care, such improvements may, in fact, be very costly to achieve. Thus, there may be tradeoffs between different aspects of care.

Such policies to ensure that research leads to more effective outcomes and/or lower costs may create some risk that private-sector incentives to innovate could be reduced. Government policies which indicate priority areas of research with the broader view of improving health outcomes may help researchers to focus on areas where the social benefits are high and where the markets are assured.

For such evaluations to take place, better information is needed. Indicators such as life expectancy, cause of death, or even prevalence of disease help better understand where research needs to focus and where data collection on health outcomes is necessary. In addition, longitudinal data on the income, health and wealth of older persons is absolutely critical in obtaining a fuller understanding of the overall links between technology, outcomes and social systems within the context of an ageing population. In this context, building cross-country data sets with common definitions and possibly longitudinal data is extremely important, permitting policy makers to benefit better from the experience in other countries (National Research Council 2001).

There will be continuing pressure on health systems in the future, as a result of population ageing and other underlying factors. Most recent estimates presented here suggest that costs as a share of GDP could rise overall by between three and four percentage points of GDP for an »average« OECD country. This will come on top of an equivalent amount as a result of increased old-age pension transfers to the retired. Therefore, the need for priority setting and evidenced-based medical decision making will remain high on the agenda. The policy dilemma can then only be addressed through an increased productivity of health-care systems, searching out value for money in improving quality of life.

References

Baker L. (1997) »The Effect of HMOs on Fee-for-Service Health Care Expenditures: Evidence from Medicare«, *Journal of Health Economics*, 16(4), pp. 453–481.

Commonwealth Department of Health and Aged Care (1999) »The Ageing Australian Population and Future Health Costs: 1996–2051«.

Cutler D. Meara E. (1999) »The Concentration of Medical Spending: an Update«, NBER Working Paper n° 7279.

Cutler D., McClellan, M. Newhouse, J. (2000) »How Does Managed Care Do It?« *RAND-Journal of Economics* Vol. 31 n° 3, pp. 526–48.

Cutler D., Sheiner L. (1998) »Demographics and Medical Care Spending: Standard and Non-Standard Effects«, NBER Working Paper n° 6866.

Dang T., Antolin P., Oxley H. (2001), »Fiscal implications of ageing: projections of age-related spending«, OECD Economics Department Working Paper n° 305.

Franco D., Munzi T. (1997) »Ageing and Fiscal Policies in the European Union«, *European Economy,* n° 4, 1997, pp. 239–358.

Freedman V., Martin L. (1999) »The role of education in explaining and forecasting trends in functional limitations among older Americans«, *Demography* Vol. 36, pp. 461–473.

Fuchs V. (1998) »Health Care for the Elderly: How Much? Who will pay for It?« NBER Working Paper n° 6755.

Gerdtham, U., Jonsson, B., Macfarlan, M. and Oxley, H. (1998), »The determinates of health expenditure in OECD countries.«, in P. Zweifel (ed.), *Health, the Medical Profession, and Regulation,* Dordrecht, Klewer.

Leibfritz, W, D. Rosaveare, D. Fore and E. Wurtzel (1995), »Ageing populations, pension systems and government budgets: how they affect savings?«, OECD Economics Department Working Paper n° 156.

Jacobzone, S. (1999), »An Overview of International Perspectives in the Field of Ageing and Care for Frail Elderly Persons«, Labour Market and Social Policy Occasional Papers n° 38, OECD, Paris.

Jacobzone, S. (2001) »Healthy ageing and the challenges of new technologies, Can OECD Social and Health Care Systems provide for the future?« Proceedings of the OECD workshop on Healthy Ageing and Biotechnology held in Tokyo in November 2000.

Jacobzone, S., Cambois E., Robine, J.M. (2000), »Is the Health of Older Persons in OECD Countries Improving Fast Enough to Compensate for Population Ageing?« *OECD Economic Studies*, pp. 149–190.

Lee, R.D. and S. Tuljapurkar (1998), »Population Forecasting for Fiscal Planning: Issues and Innovations«. Available: http://www.demog.berkeley.edu, [28 February, 2001].

L'Horty, Y., Quinet A., Rupprecht F. (1997) »Expliquer la croissance des dépenses de santé: le rôle du niveau de vie et du progrès technique«, *Economie et Prévision*, n° 129–130, pp. 255–266.

McClellan M. (1996) »Are the returns to technological change in health care declining?« *Proceedings of the National Academy of Science* 93: 12701–12708.

National Research Council (2001), *Data Needs for an ageing World*, National Academy Press, Washington, DC.

Newhouse J.P. (1992). Medical Care costs: how much welfare loss? *Journal of Economic Perspectives*, Vol. 6, n° 3, pp. 3–23.

OECD (1998) *Maintaining Prosperity in an Ageing Society*, Paris.

OECD (2000), *Reforms for an Ageing Society*, Paris.

OECD (2001a), *Economic Outlook*, June.

OECD (2001b), *Retirement Income Study*, Paris, forthcoming.

Oxley, H., MacFarlan, M. (1995), »Health care reform: controlling spending and increasing efficiency«, *OECD Economic Studies*, n° 24, Paris.

Phelps C.E. (1997) »Good Technologies Gone Bad: How and Why the Cost Effectiveness of Medical Interventions Changes for Different Populations«, NBER Conference on Cost Effectiveness Analysis. University of Rochester, NY.

Ronchi E. (1998) *The Cycle of innovation, in Economic Aspects of Biotechnologies related to human Health*, OECD.

Rosaveare, D., Leibfritz, W., Fore, D. and Wurtzel, E. (1995), »Ageing populations, pension systems and government budgets: simulations for 20 countries?«, OECD Economics Department Working Papers n° 168.

Schieber, S. and Hewitt, P. (2000) »Demographic risk in industrial societies, independent population forecasts for the G7 countries«, *World Economics*, Vol. 1, n° 4.

Schneider E., Guralnik J. (1990) »The ageing of America, Impact on Health Care Costs«, *JAMA*, Vol. 263, n° 17.

Weisbrod B. (1991) »The health care quadrilemma: an essay on technological change, insurance, quality of care, and cost containment«, *Journal of Economic Literature*, June, Vol. 24, pp. 523–552.

Zweifel P. (1999) »Ageing of Population and Health Care Expenditure: A Red Herring«, *Health Economics*, Vol. 8, n° 6, pp. 485–496.