IS BC'S HEALTH CARE SYSTEM SUSTAINABLE?

A CLOSER LOOK AT THE COSTS OF AGING AND TECHNOLOGY

By Marc Lee

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Any errors and opinions in this paper are those of the author, and do not necessarily reflect the views of the Canadian Centre for Policy Alternatives.

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Summary

A popular myth is that an aging population will render the public health care system unsustainable. Indeed, such a presumption seems to underscore the premier's current "conversation" with British Columbians. This paper contributes to the conversation by providing a better understanding of cost pressures in the health care system and what they mean for the future in terms of sustainability.

This paper finds that population aging, in and of itself, is but a small contributor to rising cost pressures in the health care system. Based on current projections there is little to suggest a demographic time-bomb about to go off. Instead, the real challenge for financing the health care system is advances in technological possibilities, broadly defined to include pharmaceutical drugs, new surgical techniques, new diagnostic and imaging technologies, and end-of-life care. These challenges can be addressed most efficiently and equitably in the context of a public system.

In terms of overall sustainability, Finance Minister Carole Taylor's assertion that by 2017 health care will consume over 70% of the provincial budget is extremely misleading:

- Taylor assumes health care expenditure increases far in excess of recent history, while greatly understating potential revenue growth.
- Health care spending is consuming a larger portion of the budget because other areas of the budget have not had sufficient funding increases in recent years. Education funding has been held to very small annual increases, while social services and other areas of the budget have seen devastating cuts.
- Taylor is measuring the wrong thing – what matters is the share of our total income (GDP) we spend on health care, not the share of the provincial budget.

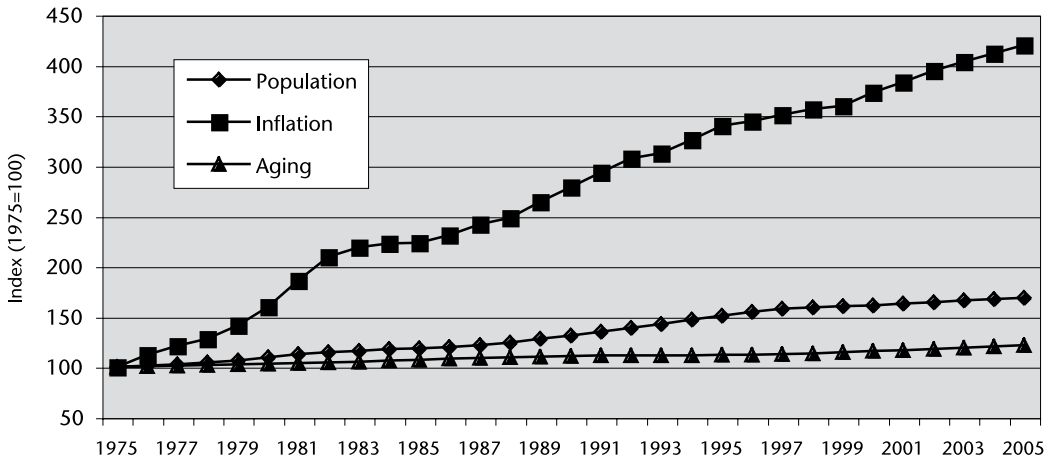
This paper undertakes a detailed analysis of cost pressures in the health care system. It finds that:

- Population aging has been a cost driver in the system, but a very small one compared to other sources. The impact of population aging was 0.9% per year over the 1995 to 2005 period. This is consistent with other studies of population aging.
- Inflation (as reflected in salary increases and higher cost of supplies) has been the biggest cost driver over the 1995 to 2005 period, with increases averaging 2.4% per year, followed by population growth at 1.2% per year.
- The expansion (or "enrichment") of health care services over time (such as new technologies, long-term care, home care and pharmaceutical drugs) is also an important factor. The average British Columbian receives one and a half times more health care services as his or her equivalent 30 years ago.
- Research shows that the cost of dying is very high – one-third to one-half of a typical person's health care expenditures happen in the final year of life.

The paper then projects future health care costs and situates those estimates in the context of economic growth. To accommodate future population increases, aging and inflation, health care expenditures must rise by just under 5% per year simply to stay at the same level of services. These pressures are all manageable if BC experiences reasonable rates of economic growth:

- In a high-growth scenario (6% nominal GDP growth per year), public health expenditures fall from 7.1% of GDP in 2006 to 4.9% in 2031.
- In a medium-growth scenario (5% annual growth), they fall to 6.3% of GDP by 2031.
- Even if the economy were to fare poorly by historical standards (4% annual growth), existing levels of service could be maintained with only a small increase in health care expenditures relative to GDP (to 8.1% by 2031).

Comparison of Cost Drivers, 1975 to 2005



Sources: Author's calculations based on CIHI, National Health Expenditure Trends, 1975–2005, Tables B.4.1, B.4.7, E.1.6, and BC Stats, BC Population by Age: Estimated (1971–2004) and Forecast (2005–2031), Fourth quarter 2005.

By simply dedicating the *same proportio*n of new economic output to health care – even after accounting for population growth, aging and health care inflation – we would have scope for some modest expansion of services. Put differently, if economic growth rates in the future are consistent with those over the past quarter-century (5.7% per year) they will lead to health care expenditures falling as a share of GDP.

The paper models two additional scenarios where the suite of health care services is enriched in the context of medium economic growth (5% annual growth in nominal GDP). The historical average enrichment rate is 1.6% per year over the 1975 to 2005 period. After the same adjustments for population growth, aging and inflation, the paper finds:

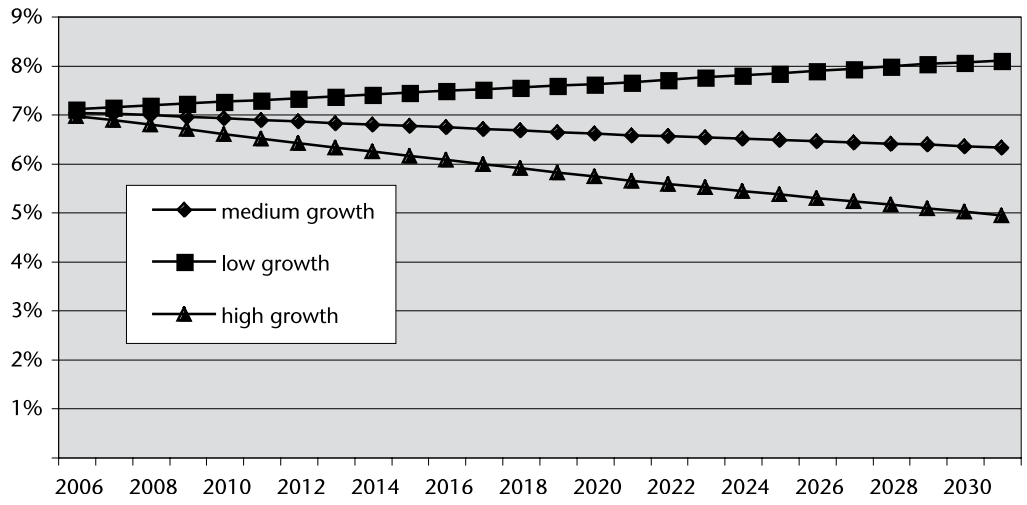
- A 1% annual enrichment rate would require an increase in public health care expenditures from 7.1% of GDP in 2006 to 8.1% by 2031. It would enable the average British Columbian to enjoy 28% more health care services by 2031.
- A 2% annual enrichment rate would require public health care expenditures to grow to 10.3% of GDP by 2031, and would provide 64% more health care services per person.

Thus, greater expansion or enrichment of public health care in the future is possible, but depends on societal willingness to pay more for better services and care. Interestingly, Carole Taylor's estimate of future cost increases (8% per year) implicitly assumes a 3% enrichment rate, almost double the historical rate.

The real challenge for future health care expenditures comes not from an aging population but the costs associated with a wide range of new technological interventions:

- Despite a major increase in surgeries, waiting lists are still an issue because technology has increased the number of people who can avail themselves of such surgeries. Compared to 1990/91, an 80-year-old today is twice as likely to have a knee replacement, cataract surgery, or coronary bypass.

Public Health Care Expenditures Relative to GDP, Three Scenarios



Sources: Author's calculations based on CIHI, National Health Expenditure Trends, 1975–2005, Tables B.4.1, B.4.7, E.1.6, and BC Stats, BC Population by Age: Estimated (1971–2004) and Forecast (2005–2031), Fourth quarter 2005, and BC Stats, BC Economic Accounts, May 2006 update.

- Increases in the price of prescription drugs and shifts toward more expensive drugs are a large part of the growth of drug expenditures, but have not necessarily been accompanied by improved health care outcomes. Cost efficiencies could be gained through a national pharmacare program.
- Expensive end-of-life treatments raise ethical dilemmas, particularly when they prolong life by days or weeks, but do little to restore health or enhance quality of life. Greater use of palliative care and "advanced health directives" (that allow older people and their families to choose a suitable level of medical intervention if serious illness develops) may point to a future where the health care costs of dying are less than today.
- A thorough process of health technology assessment is required to ensure that new technologies provide benefits in accordance with their costs.

The good news is that the challenges facing public health care are not demographic factors beyond our control, but technological issues that, while profound, are suitable to a public process that is well within our control. In other words, like every other policy area, we need to make choices, and to do that we need a healthy democratic debate.

Introduction

A popular myth is that the public health care system is unsustainable. The health care apocalypse goes something like this: Health care costs are already spiraling out of control, and when those in the baby boom generation start to hit their senior years *en masse* the costs of providing health care will surely lead to the collapse of the public system. The alternative, we are told, is to allow much greater private provision of services and private health insurance.

This doomsday scenario sounds plausible because it is indeed the case that the population is getting older. In 2006 there are about 21 seniors for every 100 working age (18 to 64 years old) people; by 2031 this will rise to 39 seniors per 100 working age people.[1] However, it should be noted that this change will happen gradually over time, that 2031 is the approximate peak and the proportion of seniors will be declining thereafter, and that the number of children relative to the working age population will decline modestly over this period (thereby reducing pressures on education and related children's expenditures).

But while the demographic bulge is very real, does this in fact mean that public health care is unsustainable? This paper considers the evidence by reviewing the relative impacts of population aging and other cost drivers, and projecting health care expenditures forward based on the latest demographic estimates. The focus is exclusively on BC, an interesting case study because of its higher-than-average share of seniors, but its findings are broadly applicable to other provinces as well. It finds that population aging is a cost driver in the system, but a very small one compared to other sources, and is easily manageable assuming reasonable economic growth.

The paper argues that the real challenge for financing the health care system is advances in technological possibilities, broadly defined to include pharmaceutical drugs (the fastest growing component of health care expenditures), new surgical techniques, new diagnostic and imaging technologies, and end-of-life care. Over the medium- to long-term, health care faces the prospect of numerous new innovations related to genetics and biotechnology.

These developments may or may not lead to better health outcomes, but they do tend to make health care more expensive. For example, technology applied at the end of life can add substantially to costs with minimal improvements in either length or quality of life. Technological possibilities thus raise some important questions about how a (largely) public system sets priorities when the sky is the limit for any particular ailment. These questions are ultimately ethical in nature and deserve a full democratic discussion, using evidence to evaluate the benefits of certain interventions relative to their costs.

The good news is that the challenges facing public health care are not demographic time bombs beyond our control, but technological issues that, while profound, are suitable to a public process that is well within our control. It is not the number of seniors that is the problem but finding a rational framework to ensure that spending per senior is the most effective it can be.

Health Care and the BC Budget: Deceptive Statistics

Perhaps the most misleading charge that public health care is unsustainable has been Finance Minister Carole Taylor's assertion that by 2017 health care will consume over 70% of the provincial budget. This statistic is driven entirely by a rigged estimation of future expenditures on health care and other aspects of the provincial budget. And ultimately, it is measuring the wrong thing – what matters is the share of our total income we spend on health care, not the share of the provincial budget.

It is important to note that Minister Taylor's message parrots the ultra-conservative Fraser Institute, which has issued an annual report that claims health care is unsustainable because it is growing as a share of provincial budgets. In its 2006 update the Fraser Institute reports that health care will consume the entire provincial budget by 2050.[2] Thus, the framing of the Premier's "conversation" on health care is remarkably similar to that of the Fraser Institute, which has long argued for privatization of public health care.

Both Minister Taylor and the Fraser Institute are able to derive their results by virtue of the fact that in recent years health care spending has increased due to several new federal-provincial agreements to "save" health care after cutbacks in the mid-1990s. The Fraser Institute takes this as its starting point, then projects in linear fashion what would happen if such a trend continued.

While the Fraser Institute's methodology is questionable, the numbers presented by Minister Taylor are even more incredible because they assume health care spending increases that are larger than those of recent history, and that revenue growth in the future will be much lower than recent history. The Finance Minister assumes the system is unsustainable, and then concludes that it is unsustainable.

The other part of the equation is that education, social services, and other policy areas have not had sufficient funding increases. Education funding has been held to very small annual increases (with the exception of just before the 2005 election), while social services and other areas of the budget have seen devastating cuts.

Thus, a good way of addressing this alleged concern about health care spending rising as a share of provincial budgets would be for the BC government to better fund other aspects of those budgets. Given large federal and provincial surpluses, it is imperative that funding be increased to fight poverty, build affordable housing, address urban infrastructure issues, and strengthen the education system. For the Minister to hold back funding in these areas while preaching that health care will soon consume the lion's share of the BC budget is disingenuous.

Population Aging and Health Expenditures

In 2003, we spent an average of $2,656 per person on public health care in BC, including costs of physician and hospital services, nursing home care, home support services, public health measures, and administration. But as Figure 1 shows, the amount varies depending on age group. Per person expenditures rise from youth to old age, but are still below average for those under age 60 (one exception is infants under age one). Above age 60 expenditures increase sharply, up to just over $22,000 per person for those over age 90. Another way of looking at this is the share of total expenditures going to seniors. In 2003, BC seniors over age 65 accounted for 13.5% of the population, but were responsible for 44% of the total public health care budget.[3]

But does this mean that the aging of BC's population will bring the system to its artificial knees? Some caution is urged because this age-utilization pattern may be explained by the fact that one-third to one-half of a typical person's health care expenditures happen in the final year of life. That is, the pattern is not entirely due to population aging ("the cost of living"), but due to higher rates of mortality among older age groups ("the cost of dying").[4]

Research is not conclusive on this point: both factors are likely at play. If we exclude people not in their last year of life, health care expenditures rise from an average of $362 per year for men and $429 for women under age 65 to an average of $666 for men and $545 for women over age 65 (with little variation within each group). But costs for all ages *in the final year of life* are $29,181 for men and

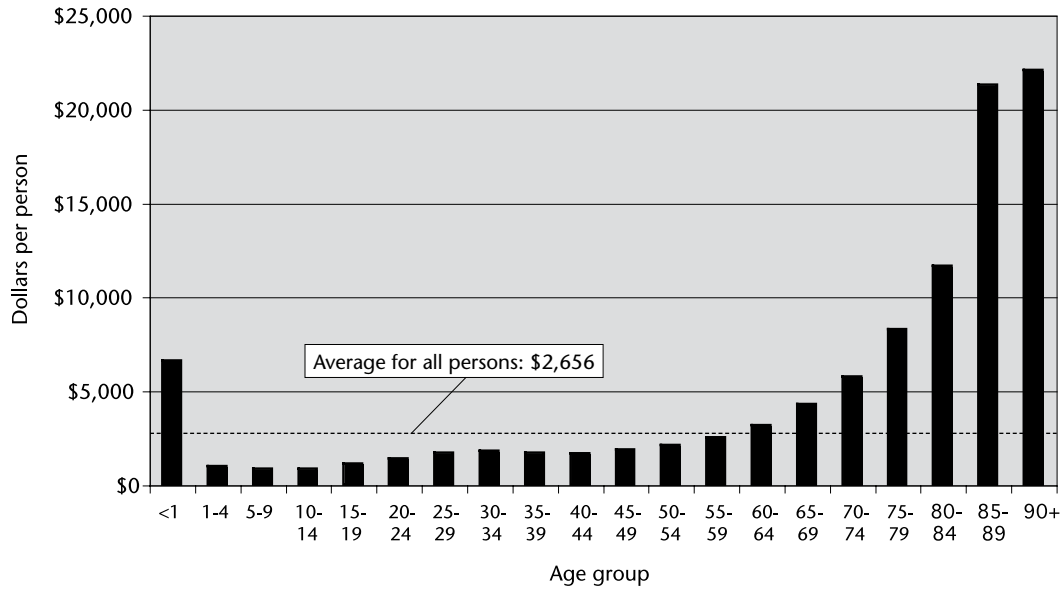
$50,956 for women – or between 50 and 100 times more than expenditures on those who are not in their final year of life.[5]

The implication for future health care expenditures is different if high costs of dying are predominant. If expenditures increase as a matter of course as people get older, there will be upward cost pressures associated with an aging population. But if people live longer and healthier lives, and the big costs are really associated with dying, the real issues relate to end-of-life care options. Indeed, there are research findings that the baby boom generation has a lower prevalence of certain health conditions than previous generations, so they are likely to be healthier seniors as well.[6] We return to this topic later in the context of expensive end-of-life technologies.

Population aging must be viewed as one of several factors behind rising health care expenditures. Other key factors include:

- *Inflation in health care costs*, the ongoing rise in the "price" of purchasing the same level of health care services. This includes the rising salaries of professionals and other workers, higher costs for supplies and equipment, and so on.
- *Increases in population size*, since the health care budget will rise in accordance with a bigger population. If the population doubles, we should expect health care expenditures to roughly double in order to maintain the same level of service.
- *The "enrichment" or expansion of health care services*, such as the addition of new surgical procedures or new pharmaceuticals, or the expansion of public coverage to additional health care sectors.[7]

Figure 1: Expenditures Per Capita By Age Group

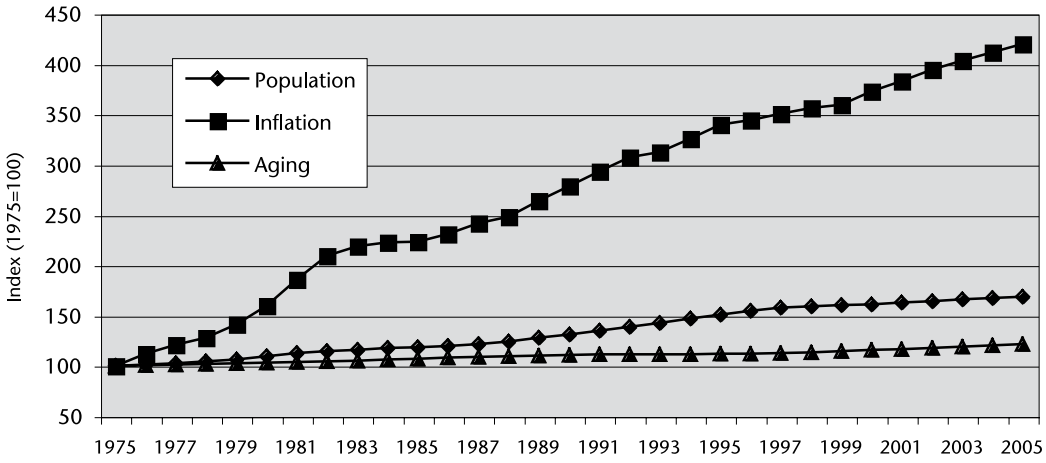


Notes: Data are for 2003, the last available data year for this series, and are for provincial health care expenditures only (i.e. federal expenditures in BC are not included). Data are drawn from supplemental tables that have more detailed breakdowns than the equivalent table in the National Health Expenditure Trends report.

Source: CIHI, National Health Expenditure Trends, 1975–2005, Table E.1.6.

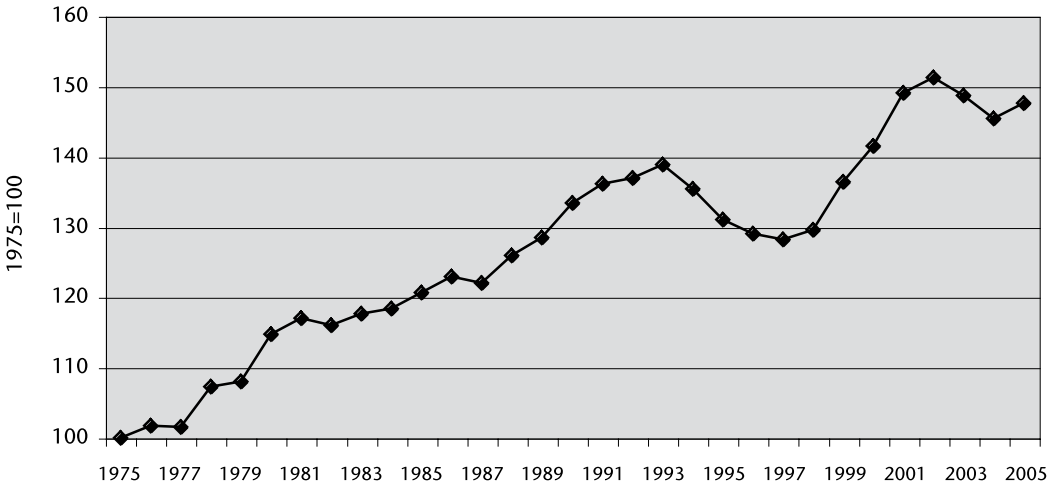
Figures 2 and 3 show these factors visually. Leaving enrichment aside for the moment, Figure 2 isolates the impact of inflation, population growth, and aging for the 1975 to 2005 period. The biggest cost driver is inflation, with increases averaging 10.7% per year (i.e. the figure shows that due to inflation it would cost over 400% more in 2005 to provide the same level of service as 1975).[8] This covers a period of high inflation from the mid-1970s to mid-1980s. If we look just at the 1995 to 2005 period, the impact of inflation is less, at 2.4% per year.

Figure 2: Comparison of Cost Drivers, 1975 to 2005



Sources: Author's calculations based on CIHI, National Health Expenditure Trends, 1975–2005, Tables B.4.1, B.4.7, E.1.6, and BC Stats, BC Population by Age: Estimated (1971–2004) and Forecast (2005–2031), Fourth quarter 2005.

Figure 3: Public Health Care Enrichment Index



Note: Index derived by adjusting total provincial health care expenditures for inflation, population growth and aging.

Sources: Author's calculations based on CIHI, National Health Expenditure Trends, 1975–2005, Tables B.4.1, B.4.7, E.1.6, and BC Stats, BC Population by Age: Estimated (1971–2004) and Forecast (2005–2031), Fourth quarter 2005.

Population growth is responsible for increases of 2.3% per year over the 1975 to 2005 period, and 1.2% per year over the 1995 to 2005 period. However, it is notable that increases in population are generally offset by increases in economic activity, and thus increases in tax revenues to fund services.

Population aging is the smallest factor of the three, responsible for increases of only 0.7% per year between 1975 and 2005, rising to 0.9% per year for 1995 to 2005. Projecting cost pressures forward, aging adds 1.1% per year to the cost of maintaining the status quo of health care services. These numbers are reassuring in that the magnitude is quite small. This result is consistent with a number of studies on the fiscal implications of population aging.[9]

If public health expenditures are adjusted for population growth, aging, and inflation, what is left is "enrichment." Figure 3 shows the enrichment of health care services going back to 1975.[10] There is a nearly continual expansion of health care services in British Columbia over the past three decades, albeit with some ebbs and flows in the mid-1990s and early-2000s. The total increase in spending due to enrichment in 2005 is 48% above 1975 levels – that is, the average British Columbian receives almost one and a half times more health care services as his or her equivalent 30 years ago.

There is a nearly continual expansion of health care services in British Columbia over the past three decades, albeit with some ebbs and flows in the mid-1990s and early-2000s. The average British Columbian receives almost one and a half times more health care services as his or her equivalent 30 years ago.

A caution on interpretation: enrichment is beneficial in the sense of more nursing homes, more comprehensive drug coverage, and new technologies. But health care services are not a typical economic good; rather, they are a response to ill health. Thus, more health care services are only better to the extent that they lead to improved health outcomes. Health analysts have developed a concept of quality-adjusted life years (QALY) as an objective measure of health gains.

In the late 1970s and 1980s, the expansion of public coverage of health care was in nursing homes and public provision of home support services. This built on the 1960s advent of public health insurance for hospitals and then doctor services. Since the early 1990s, however, there has been relatively little change in the scope of coverage; in fact, there has been some contraction in BC, such as elimination of most coverage for alternative providers, and a net reduction in long-term care beds and home support services since 2001.[11] This suggests that enrichment seen in the late-1980s and late-1990s was about changes in the mix of services provided, and most likely represents the introduction of new surgical techniques, new pharmaceutical drugs, and other technological developments.

Apocalypse 2031?

Looking back, population aging has not been much of a concern. But the future challenge is the aging of the baby boom cohort. Using projections from BC Stats about population growth and aging, and estimates of health care inflation,[12] we can forecast health care costs in the future (assuming status quo service levels, meaning neither expansion nor contraction of health care services).

The combination of population growth, aging, and inflation amount to an annual increase in health care budgets of just under 5% per year in order to stay at the same level of health services (i.e. all 85-year-olds in the future, though larger in numbers, are serviced at the same expenditure levels as today's 85-year-olds). Based on these projections, we can expect total public health care spending to rise by more than three times current levels by 2031. This is a convenient end-point as this represents approximately the peak year of seniors as a share of the population – long-run demographic projections suggest a period of declining share of the population over 65 after 2031 (i.e. after the bulge of baby boomers has passed on).[13]

To put these numbers into context, we also estimate changes in provincial GDP to see what proportion of the total economy health care will compose. BC's nominal GDP growth rate averaged 5.7% from 1982 to 2005 and 5.1% over the 1991 to 2005 period.[14] In real terms (adjusting for inflation), BC's growth rate averaged 2.5% from 1982 to 2005 and 2.8% over the 1991 to 2005 period. During the 1960s and 1970s, both real and nominal growth rates were respectively higher.[15]

For future projections, three scenarios of GDP growth are considered: low growth (real GDP growth of 2% per year, plus 2% annual inflation, the middle of the Bank of Canada's target range), medium growth (3% annual growth plus 2% inflation) and high growth (4% annual growth plus 2% inflation).

Thus, our high-growth scenario is slightly higher than the average back to 1982, and the medium-growth scenario is slightly lower than the average back to 1991.

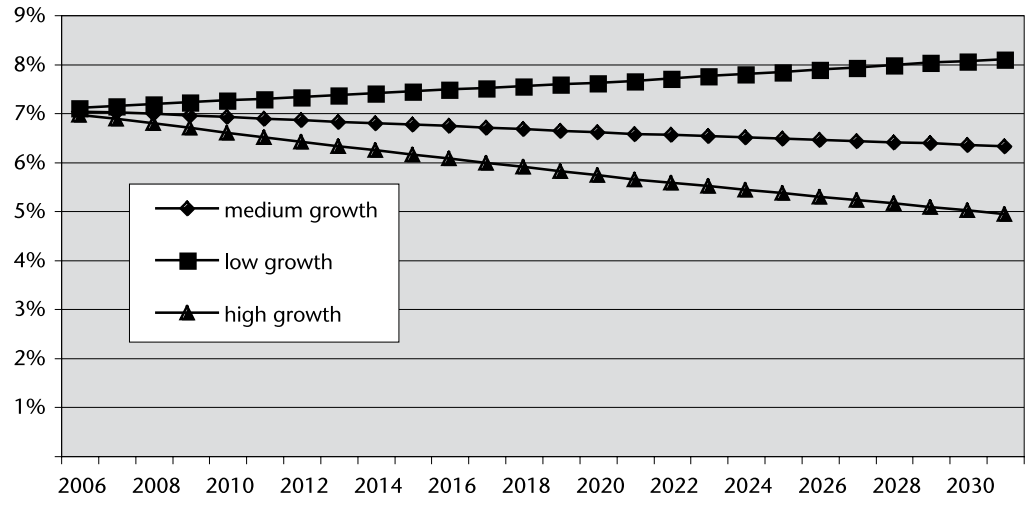
Figure 4 presents the results. In the high growth scenario, public health care expenditures-to-GDP falls from the 2006 level of 7.1% to 4.9% by 2031.[16] In the middle scenario, health care expenditures-to-GDP also falls, to 6.3% by 2031. Only in the low-growth scenario does the expenditure-to-GDP ratio rise, to 8.1%, an increase of one percentage point of GDP. Thus, even if the economy were to fare poorly by historical standards, existing levels of service could be maintained without much difficulty even though the population is growing and aging.

By simply dedicating the *same proportio*n of new economic output to health care – even after accounting for population growth, aging and health care inflation – we would have scope for some modest expansion of services. Put differently, if economic growth rates in the future are consistent with those over the past quarter-century (5.7% per year) they will lead to health care expenditures falling as a share of GDP.

In both the medium- and high-growth scenarios, there is also scope to further expand the coverage of public health care. Examples include expanding long-term care services significantly, adding dental coverage to the public system, paying for new surgical procedures yet to be invented, or providing universal, "first-dollar" public drug coverage. It is also reasonable to expect that health care resources will shift to reflect a more efficient allocation relative to the needs of an older population (such as more home care services, estimated to cost one-fifth as much as acute care services, and residential care facilities[17]).

Two additional scenarios are worth considering, each assuming medium economic growth plus enrichment of health care services of 1% and 2% per year. To put these rates in context, the historical average enrichment is 1.6% per year over the 1975 to 2005 period, and 1.3% per year over the 1995 to 2005 period. At a 1% annual enrichment rate, the average British Columbian would enjoy 28% more

Figure 4: Public Health Care Expenditures Relative to GDP, Three Scenarios



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health care services by 2031, and under a 2% annual rate, 64% more health care services by 2031. Even though such annual changes seem small, because of compounded growth, they accumulate to large changes over a quarter-century.

There is a price to pay for expanding or enriching of services in these two scenarios. At a 1% annual rate, health expenditures rise as a share of GDP, though very gradually, from the current 7.1% to 8.1% by 2031. The challenge is greater with an enrichment rate of 2%, as expenditures increase to 10.3% of GDP by 2031. However, this enrichment growth rate is much larger than the historical experience of the past 30 years. Interestingly, Finance Minister Carole Taylor's estimate of 8% annual increases is effectively a 3% annual enrichment rate, almost double the historical rate.

Demographic trends are not the looming disaster they are often made out to be in the media. We have lots of time to gradually respond to the challenges posed by an aging population. We can maintain existing levels of service without any difficulty, and can handle modest enrichment of services.

Nonetheless, these thought experiments enable us to have a more rational sense of what is possible at what cost. To meet the 1% enrichment objective would require an additional penny per dollar of new income generated in BC. A 2% enrichment rate might be dismissed for its cost but ultimately is simply a question of whether we are willing to pay to expand the scope of health care services. Much of this would simply shift health care costs from individuals to the public sector. Finally, it is worth reiterating that the share of seniors relative to the working age population is expected to decline after 2031, a fact that will tend to reduce pressures on the health care system.

The key conclusion is that demographic trends are not the looming disaster they are often made out to be in the media. We have lots of time to gradually respond to the challenges posed by an aging population, including a restructuring of health care services (such as home care and residential care) more consistent with an older population, and ideally a stronger emphasis on prevention and population health that will reduce the overall incidence of ill health. We can maintain existing levels of service without any difficulty, and can handle modest enrichment of services. Higher levels of enrichment are possible, but would likely depend on societal willingness to pay more for better services and care.

The Realm of the Possible

The real challenge for future health care expenditures comes not from an aging population, but the amount of spending per person as represented by a wide range of new technological interventions. Health care, as a discipline, is intimately intertwined with issues of technology and knowledge. In its modern form, health care is at most a hundred years old, built upon advances in knowledge in biology and related fields. As scientific know-how increases, there are likely to be more and more new possibilities available to treat medical conditions.

Key areas of technological development include: diagnostic imaging; telehealth; biotechnology; vaccines; pharmaceuticals; medical implants and external devices; genetic screening and gene therapy; surgical techniques; and organ transplants and grafts. While it is plausible that some of these innovations will save money, the universe of innovation that is possible in health care, together with a persistent demand for cures among the population, suggest that technology will be a cost driver.

Health economist Shelly Glied argues that the introduction and diffusion of new technology in health care is the main determinant of cost increases over the long term. There are two reasons cited:

> *First, improvements in the health outcomes produced by a medical service mean that more patients can expect to obtain health benefits from the technology. ... Second, innovations in medical care, especially cost-reducing innovations, often reduce the invasiveness and intensity of the treatment itself and thus reduce the pain, discomfort or time associated with treating a particular condition, even when outcomes do not improve ... [which] also expands the size of the market.*[18]

If budgets were unlimited and merely reflected the decisions by practitioners to use technology, the cost implications could be in excess of enrichment estimates made in the previous section. It is also very likely that new innovations would have diminishing returns in terms of improvement of health outcomes per dollar of new spending. In a constrained budget environment, there is a risk that new technological innovations will crowd out other services. We return to the issue of how we address these challenges in the context of a public system, but first a few illustrations in the BC context are worth exploring.[19]

New Surgical Techniques

Lengthy waiting lists tend to be concentrated in a few procedures, such as orthopaedics (especially, knee and hip replacements) and cataracts, where the demand for these procedures has increased at a rate far beyond that of other surgical areas, and far beyond what would be expected from population growth and aging alone.[20] Due to less invasive surgical techniques, knee and hip replacements that were more problematic in the past are now routine and relieve chronic suffering on the part of patients.

The BC Ministry of Health reports that, compared to 1990/91, an 80-year-old today is twice as likely to have a knee replacement, cataract surgery, or a coronary bypass, and eight times as likely to have an angioplasty. Across a number of key areas, the BC health care system is performing substantially more surgeries than would result from population growth or aging alone. Between 2000/01 and 2005/06:

- total angioplasties performed are up 62%;
- knee replacements up 84%;
- hip replacements up 47%; and,
- cataract surgeries up 33%.

Population growth over this timeframe was just under 5%. In the case of knee surgeries, BC now performs almost three times as many surgeries as in 1990/91 (3,600 in 2003/04 and 1,300 in 1990/91), and most of this is due to performing more surgeries per capita compared to population growth or aging.[21] Yet, despite the increase in surgeries, waiting lists are still an issue because technology has increased demand, or the number of people who can avail themselves of such surgeries.

In response to these technology-driven outcomes, the above areas are precisely those where private services are making an incursion. Less invasive surgeries can be performed on a day-surgery basis, and do not require all of the overhead associated with a hospital. Private clinics have sprung up, such as the noted Cambie Surgery Clinic (run by new Canadian Medical Association President Brian Day), along with much rhetoric about how much more efficient private clinics are. However, as experience in Alberta suggests, specialized day surgery clinics may make good financial sense, but the same efficiencies and cost savings can also be realized in the public sector, rather than private surgery clinics.[22]

Diagnostics and Imaging

According to the Ministry of Health, between 2001/02 and 2005/06, the number of diagnostic machines in BC has increased: from 31 to 41 Computed Tomography (CT) scanners; from 9 to 19 Magnetic Resonance Imaging (MRI) scanners; and a Positron Emission Tomography (PET) scanner has recently been purchased. Accordingly, the number of diagnostic scans has also increased – by 22% for CT exams and by 50% for MRI exams – again, at paces much faster than population growth or aging would require.[23]

While greater availability of MRI machines or PET scanners opens up new possibilities in assessing disease, a positive development, it is also another case of technology driving demand for services previously unavailable or much harder to access. The potential for a whole new suite of genetic testing and screening technologies raises additional ethical as well as economic and health issues about how the public system needs to address technological advances. A caution is that while such technological developments will almost surely be more costly, they may not provide more information that older technologies, and may be used more widely than specific cases that would actually benefit most from the technology.

A related innovation in this area is the development of 3-D ultrasound technology that produces higher resolution images for monitoring fetal development (among other possibilities). Most parents would presumably want a high-resolution, 3-D image of their baby-to-be over a traditional ultrasound, but it is not self-evident that, in most situations, 3-D imaging would provide sufficient additional information to justify the higher cost.

An 80-year-old today is twice as likely to have a knee replacement, cataract surgery, or a coronary bypass, and eight times as likely to have an angioplasty. Across a number of key areas, the BC health care system is performing substantially more surgeries than would result from population growth or aging alone.

Pharmaceutical Drugs

Drugs are the fastest growing part of health care budgets, both public and private. Public coverage in 2004 paid for 49% of total prescription drug spending in BC.[24] The rising cost of drugs overall is accounted for by both increased utilization of drugs – drug therapies are more prevalent and new developments can treat ailments that could not previously be treated – as well as the increasing cost of the drugs themselves due to new drugs under patent entering the market. Increases in the price of prescription drugs and changes toward more expensive drugs are a large part of the growth of drug expenditures, but have not necessarily been accompanied by improved health care outcomes.[25] Another culprit could be over-prescriptions and inappropriate prescriptions on the part of doctors, the latter of which is one source of costly hospital admissions.[26]

Nation-wide, drugs and medical supplies have been increasing as a share of hospital budgets.[27] In the case of drugs this is considerably less than the increase in drugs as a share of public health expenditures overall. This latter point may be the result of much lower costs of acquiring and dispensing drugs in hospitals compared to pharmacies. CIHI's 2005 report on drug expenditures estimates that drugs

accounted for $192 million, or 4.3%, of BC hospital expenditures in 2002 (cost of drugs only, not including associated hospital pharmacy costs).

The combination of higher drug costs and technology costs overall may mean hospitals are being squeezed in other aspects of their budgets by more than is evident from hospital spending numbers. Maurice McGregor and James Brophy make the case that these new technological possibilities have enabled enhanced services to be provided in hospitals, and this has come at the expense of other aspects of hospital budgets. While this is a compelling explanation, macro data on the impact of technology on hospital budgets are hard to come by.

Moving to first-dollar public coverage through a national Pharmacare program would deepen incentives for cost-control. Dr Joel Lexchin estimates that a national Pharmacare program would cost between $3 billion and $4 billion more than existing public expenditures.[28] A recent report for Health Ministers under the National Pharmaceutical Strategy set additional costs to the public sector for a catastrophic drug coverage plan as ranging between $1 billion and $4 billion depending on the formula used.[29]

The rising cost of drugs overall is accounted for by both increased utilization of drugs and the increasing cost of the drugs themselves. Increases in the price of prescription drugs and changes toward more expensive drugs are a large part of the growth of drug expenditures, but have not necessarily been accompanied by improved health care outcomes.

As part of a coordinated national plan, numerous policy initiatives could be implemented to better control drug costs. The federal government could restore compulsory licensing to enable greater generic drug production for the Canadian market, enhance funding for new drug development that would be put in the public domain, engage in bulk purchasing, and determine a common formulary that would be covered in all provinces. It could also limit the challenges posed by direct-to-consumer advertising of drugs.[30]

In the BC context, it is worth noting that the provincial reference drug program has been successful in containing costs for a very limited number of drug categories by paying only for the lowest cost drug that is therapeutically equivalent. Annual savings as a result of the program are in the $24 million to $42 million range from the time the program was introduced in 1995 up to the end of the decade.[31]

End-of-Life Care

As pointed out earlier, a large proportion of health care expenditures occur in the last year of life. What is important is the impact on the margin of additional health care dollars spent. For example, billions could disappear into extremely expensive end-of-life treatments that prolong life by days or weeks, but do little to restore health or enhance quality of life.

This raises some deep ethical questions about opportunity costs. This money might be better spent, from a population perspective, on prevention and public health measures, or on public dental and eye care, or expanding public coverage of pharmaceuticals or home support services.

It is not obvious that expensive end-of-life treatments are what are desired by dying seniors nor that such interventions improve quality of life. In contrast, palliative care options have been suggested that assist people to die with dignity at home or in a home-like setting rather than in hospital. The Canadian Hospice Palliative Care Association comments:

> *Experience shows, however, that when people die within a system that provides good hospice palliative care, the patient, family members and health professionals express a high degree of satisfaction. Leading research … found that patients experienced significant improvements in their physical and psychological well-being within one week of being admitted to a palliative care unit. Despite approaching death, improved quality of life was experienced.*

This, in combination with "advanced health care directives" that allow older people and their families to choose a suitable level of medical intervention if serious illness develops, may point to a future where the health care costs of dying are less than they are today.[32]

Technology: Who Decides?

The increasing cost of new technological interventions must be weighed against their benefits. Not every new technology will be justified, and there may be significantly diminishing returns to advances in technology. This discussion quickly becomes one of ethics: How much does society expend on an individual's care when the sky is the limit? This paper cannot answer that important question, one deserving of thorough public discussion and debate.

On this issue, US economist Paul Krugman wonders:

> *Consider what happens when a new drug or other therapy becomes available. Let's assume that the new therapy is more effective ... than existing therapies ... but that the advantage isn't overwhelming. On the other hand, it's a lot more expensive than current treatments. Who decides whether patients receive the new therapy?*
>
> *We've traditionally relied on doctors to make such decisions. But the rise of medical technology ... makes ... medicine ... in which doctors call for every procedure that might be of medical benefit, increasingly expensive. Moreover, the high-technology nature of modern medical spending has given rise to a powerful medical-industrial complex that seeks to influence doctors' decisions. ...[D]rug companies in particular spend more marketing their products to doctors than they do developing those products ... They wouldn't do that if doctors were immune to persuasion.*
>
> *So if costs are to be controlled, someone has to act as a referee on doctors' medical decisions.*[33]

As Krugman alludes to, the context into which technology enters the health care system is important, including the position of care providers and "consumers." UBC's Robert Evans cautions against idealizing technology, noting that doctors have a bias towards the use of new technology for a number of reasons, such as appearing to be doing something in the face of an ailment. As such they may resist efforts to evaluate outcomes or questionable practices.[34]

A review of new technology for the Romanow Commission argued for enhanced health technology assessment and a renewed federal role in technology regulation to ensure the appropriate application of new technologies and to shape the development of new technologies at an early stage.[35] This approach is common in European health care systems.[36]

There are also important ethical and social considerations with regard to new technology that must be considered (for example, in cloning, stem cell research, genetic screening, and end-of-life interventions). This context will be important in the future in order to balance innovation with cost-containment (ultimately, whether a new technology should be covered by public health insurance), and ensure that new technologies provide benefits in accordance with their costs. McGregor and Brophy argue for health technology assessment processes at the hospital level, not just by senior governments distanced from professionals making decisions.

The Romanow report concludes that:

> *Health technology assessment is a comprehensive and systematic assessment of the conditions for and the consequences of using health care technology. It provides relevant information to managers, decision makers, and health care providers on the safety, economic efficiency, clinical effectiveness, as well as the social, legal and ethical implications of using new and existing technologies. Indeed, health technology assessment should be about what is best for the patient – medically and economically – and not about technology for technology's sake. The assessment is intended to help health policymakers, providers, and especially, health organization managers make decisions about whether to purchase and use new technologies, whether to replace old technologies with new ones, and what benefits they can expect to see.*[37]

Having these decisions made in a public context is important. In addition, technology changes the boundary between publicly insured services and private services. As a research team from the University of Toronto notes:

> *Canada's distinctive way of defining the boundary between public and private finance has had its own particular vulnerability. As technological changes have shifted services out of hospital, care has migrated from a world of universal, first-dollar coverage to a world in which private finance plays a much larger role.*[38]

Health researcher Marcy Cohen argues for increased democratic participation in health care based on more participatory models from other countries that could be applicable to health care in BC.[39] In the context of technology, an attractive option could be public representation on technology assessment committees, and greater participation in establishing formularies for drugs to be publicly covered. At any rate, greater public involvement will make a more transparent connection between tax dollars collected and how money is spent in the health care system.

Conclusion

This paper finds that population aging, in and of itself, is a contributor to rising cost pressures in the health care system, but a relatively small one. Based on current projections there is little to suggest a demographic time-bomb about to go off. In the context of reasonable economic growth, the health care system can accommodate increases in population and an older population while preserving, and even increasing, the existing level of services (including new technological options).

That said, the health care system is providing a broader suite of services than it did in the past. The possibilities offered by new technology have to date been accommodated by the public system. While some cracks are apparent, such as with surgical waiting lists for certain procedures, it is important to note that the health care system has expanded a great deal from its early days.

The challenge will be to ensure that new money in the system is directed to areas with the highest marginal benefit. While new technologies are sexy, in many cases we have little empirical data on whether they are effective or whether they justify their cost. The capacity to come up with new technological innovations may be limitless, although only a few may prove worthwhile additions. The opportunity cost of spending more on the latest technology may be increased expenditure on measures such as improvements in population health, community care or the expansion of public coverage to include dental care services.

In other words, like every other policy area, we need to make choices, and to do that we need a democratic public debate. This is the essential benefit of a public health care system: we pay collectively and must decide collectively on the available choices.

Notes

1 BC Stats, British Columbia Population Forecast 05/04: Summary Statistics.

2 Skinner, 2006.

3 Data cited are from CIHI, 2005, Table E.1.6 (the detail in the figure is from supplemental electronic tables rather than the published report). All BC data in this report are based on BC government expenditures. CIHI additionally presents data on total "public" expenditures, which includes federal spending in BC, e.g. on reserves and the military.

4 Hogan and Pollock, 2001. The authors find one-half of expenditures occur in the last year of life, but note that other studies set estimates closer to one-third.

5 Pollock, 2001. Another study relevant in the BC context is McGrail et al. (2000), who find that costs of care do rise with age, but that proximity to death is a more important determinant of cost.

6 Summarized in Hogan and Hogan, 2002.

7 Finance Canada researchers Jackson and McDermott (2004) use the term "enrichment." This paper follows their methodology for determining enrichment as a residual after adjusting for other cost drivers. The term "enrichment" arguably better captures the notion of changes in the nature of health care services and technology over time, in addition to quantitative expansion of services.

8 Inflation in the context of health care raises some methodological issues. According to CIHI (2001): "The National Health Expenditure (NHEX) database uses separate price indexes to calculate public and private sector expenditure at constant prices. The indexes are the GDP implicit price indexes (IPI) for government current expenditure on goods and services in the public sector and the health component of the consumer price index (CPI) in the private sector." A comparison of indices in this report found that that health inflation (a weighted composite of the two indices above) was slightly higher than GDP inflation between 1975 and 1990, but since then the two have increased at almost identical rates.

9 For reviews of this literature, see Evans et al (2001) and Hogan and Hogan (2002).

10 Presented as an index to show the percentage change over time.

11 Cohen et al., 2005.

12 The estimate of inflation assumes the 1997 to 2004 average annual inflation rate projected forward to 2031.

13 Given the discussion in the previous section on the cost of dying as opposed to aging-driven cost increases, this estimate should be considered an upper bound that overstates the impact of population aging. For instance, Evans et al. (2001:169) comment: "A projection of hospital use made in 1969 based on assumed constant age-specific use rates would have been not merely erroneous but wildly so – triple the actual value for the BC population at the end of the century."

14 Derived from BC Stats, BC Economic Accounts, April 2006 release.

15 The impact of an aging population on GDP growth is ambiguous. GDP growth will be lower to the extent that labour force participation declines, and higher if productivity rates can be improved.

16 See Hogan and Hogan, 2002.

17 Based on estimates from the BC Ministry of Health, cited in Evans et al., 2001. Such shifts are not considered in the scenarios of future costs.

18 Glied, 2003, pp.134-5.

19 These examples are principally related to seniors. Expensive technological interventions also occur at the beginning of life, such as treatments for increasingly premature babies.

20 McFarlane, 2005.

21 Figures from BC Ministry of Health, 2005 and 2006.

22 Rachlis, 2005.

23 BC Ministry of Health, 2005 and 2006.

24 CIHI, *Drug Expenditure in Canada 2003* and *Drug Expenditure in Canada 2005*.

25 Evans et al., 2001.

26 See Canadian Association on Gerontology, 1999. Among other things, it reports that 19 to 36% of drug-related hospital admissions are the result of prescribing errors.

27 CIHI, *Hospital Trends in Canada 2005*.

28 Lexchin, 2001. He cites the additional cost at $3.2 billion. In this paper, the figure has been altered to between $3 billion and $4 billion because original figures were derived from 1996 drug cost data and were not adjusted for inflation.

29 Federal/Provincial/Territorial Ministers Task Force, 2006, p. 32.

30 Morgan and Hurley (2002) argue that direct-to-consumer marketing of technology developments, particularly to the aging baby boomer cohort, will be an important cost-driver. Research by Barbara Mintzes et al. (2003) suggests direct-to-consumer advertising is having detrimental impacts on the nature of treatment.

31 As surveyed by Cassels, 2002.

32 National Advisory Council on Aging, 2000.

33 Krugman, 2005.

34 Evans, 2003, p. 20.

35 Lehoux, 2002.

36 According to Glied, 2003.

37 Romanow Commission, 2002, p. 83.

38 Flood et al, 2004.

39 Cohen, 2005.

References

BC Ministry of Health. 2005. *Achieving Timely Access: Improving Wait Times for Surgery in British Columbia*. March 31.

_____. 2006. *What Affects the Delivery of Health Services*. Backgrounder, September 28.

BC Stats. *BC Population by Age and Sex*. October 2004 update.

_____. *Population Forecast 04/01*.

Canadian Association on Gerontology. 1999. Policy Statement: Seniors and Prescription Drugs. Approved by CAG Board, November 4. Accessed at: www.cagagc.ca/english/551_e.php

Canadian Hospice Palliative Care Association. 2001. *Submission to the Commission on the Future of Health Care in Canada*. November.

Canadian Institute for Health Information. Various years. *Drug Expenditures in Canada*. Ottawa.

_____. 2005. *Hospital Trends in Canada*. Ottawa.

_____. 2005. *National Health Expenditure Trends 1975-2005*. Ottawa.

_____. 2001. *Price Indexes Used in National Health Expenditures*. Ottawa.

Cassels, Alan. 2002. *Paying for What Works: BC's Experience with the Reference Drug Program as a Model for Rational Policy Making*. Vancouver: Canadian Centre for Policy Alternatives. March.

Cohen, Marcy. 2005. *Democratizing Public Services: Lessons from other jurisdictions and implications for health care reform in BC*. Vancouver: Canadian Centre for Policy Alternatives. March.

_____, Janice Murphy, Kelsey Nutland and Aleck Ostry. 2005. *Continuing Care Renewal or Retreat? BC Residential and Home Health Care Restructuring 2001-2004*. Vancouver: Canadian Centre for Policy Alternatives. April.

Commission on the Future of Health Care in Canada (Romanow Commission). 2002. *Building on Values: The Future of Health Care in Canada*. Ottawa.

Evans, Robert. 2003. *Political Wolves and Economic Sheep: The Sustainability of Public Health Insurance in Canada*. Center for Health Services and Policy Research, working paper 03:16W.

Evans, Robert, Kimberlyn McGrail, Steven Morgan, Morris Barer and Clyde Hertzman. 2001. "Apocalypse No: Population Aging and the Future of Health Care Systems" In *Canadian Journal on Aging*, 20:1, pp. 160-191.

Federal/Provincial/Territorial Ministerial Task Force. 2006. *National Pharmaceuticals Strategy Progress Report*. June.

Flood, Colleen, Mark Stabile and Carolyn Tuohy. 2004. "How Does Private Finance Affect Public Health Care Systems? Marshalling the Evidence from OECD Nations" in *Journal of Health Politics, Policy, and Law*, 29(3), pp. 359-396.

Hogan, Seamus and Sarah Hogan. 2002. *How will the Ageing of the Population affect Health Care Needs and Costs in the Foreseeable Future?* Discussion Paper No. 25 for the Commission on the Future of Health Care in Canada. October.

Hogan, Seamus and Allan Pollock. 2001. *Why Does Health Care Utilization Increase with Age: The Cost of Living or the Cost of Dying?* Paper presented to the Canadian Economics Association Annual Meetings. June 2001.

Jackson, Harriet and Alison McDermott. 2004. *Health-care Spending: Prospect and Retrospect.* Analytical note 2004-01, Economic and Fiscal Policy Branch, Fiscal Policy Division, Department of Finance. January.

Krugman, Paul. 2005. "Medicine: Who Decides?" in *The New York Times*. December 26.

Lehoux, Pascale. 2002. *Could New Regulatory Mechanisms be Designed after a Critical Assessment of the Value of Health Innovations?* Discussion Paper no. 37 for the Commission on the Future of Health Care in Canada. November.

Lexchin, Joel. 2001. *A National Pharmacare Plan: Combining Efficiency with Equity*. Ottawa: Canadian Centre for Policy Alternatives.

McFarlane. Lawrie. 2005. "Supreme Court slaps for-sale sign on medicare" in *Canadian Medical Association Journal*, 173(3), 269-70, August 2.

McGrail, Kimberlyn, Bo Green, Morris Barer, Robert Evans, Clyde Hertzman and Charles Normand. 2000. "Age, costs of acute and long-term care and proximity to death: evidence for 1987-88 and 1994-95 in British Columbia" in *Age and Ageing*, 29: 249-253.

McGregor, Maurice and James Brophy. 2005. "End-user Involvement in Health Technology Assessment (HTA) Development: A Way to Increase Impact" in *International Journal of Technology Assessment in Health Care*, 21:263-67, April.

Mintzes B, Barer ML, Kravitz RL, Bassett K, Lexchin J, Kazanjian A, Evans RG, Pan R, and Marion SA. 2003. "How Does Direct-to-Consumer Advertising Affect Prescribing? A Survey in Primary Care Environments With and Without Legal DTCA" in *Canadian Medical Association Journal,* September 2;169(5):405-412.

Morgan, Steve and Jeremiah Hurley. 2002. *Influences on the 'Health Care Technology Cost-Driver.'* Discussion Paper no. 14 for the Commission on the Future of Health Care in Canada. August.

National Advisory Council on Aging. 2000. "Modernizing Medicare for the Next Generation" in *Expression: Bulletin of the National Advisory Council on Aging*, 14(1), Winter.

National Forum on Health. 1997. *Canada Health Action: Building on the Legacy*, Synthesis Reports and Issues Papers. Paper titled "Creating a Culture of Evidence-based Decision-Making" by Evidence-Based Decision Making Working Group.

Pollock, Allan. 2001. "Compression of Health Expenditures" in *Health Policy Research Bulletin*, Vol.1, no.1, http://www.hc-sc.gc.ca/iacb-dgiac/araddraa/english/rmdd/bulletin/aging02.html.

Rachlis, Michael. 2005. *Public Solutions to Health Care Wait Lists*. Ottawa: Canadian Centre for Policy Alternatives. December.

Skinner, Brent. 2006. *Paying More, Getting Less 2006: Measuring the Sustainability of Provincial Public Health Expenditure in Canada*. The Fraser Institue.

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