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The Misguided War against Medicines 2011

by Brett J. Skinner and Mark Rovere

Highlights

- While all types of drugs (patented and non-patented, prescription and non-prescription) accounted for 16.2% of total government and private-sector health expenditure, prescription drugs (patented and non-patented) accounted for only 9% of government spending on health care in 2010.
- Patented prescription drugs accounted for only 5.2% of total annual government spending on health care in Canada in 2010.
- After adjusting for inflation, prices for patented medicines that are already on the market have declined in real terms in 21 of the last 23 years.
- Patented drug prices in Canada are not excessive compared to median international patented drug prices
- Medical goods and services other than drugs make up 91% of total government health expenditures—confirming that non-drug spending is driving the unsustainable growth in government health care costs.
- There is no statistical link between increased spending on drugs and overall growth rates in total health spending.

Summary

Provincial health spending has grown faster on average than GDP for the last 37 years. Trends show that health spending will consume 50% of total available revenues (including federal transfers) in 6 of 10 provinces by 2017, up from roughly 25% in 1974. Some researchers blame unsustainable growth in government health spending on the cost of prescription drugs, particularly patented medicines. The evidence suggests otherwise. Prescription drugs account for a small percentage (9%) of government health spending; and patented prescription drugs are an even smaller percentage (5.2%). Excluding prescription drugs, all other non-drug categories of health expenditures (hospitals, professionals, etc.) are growing at an unsustainable pace, while accounting for 91% of government spending on health. There is no observable statistical link between the rising share of the health budget spent on drugs and variation in the growth rates in government health spending. Inflation-adjusted, post-market prices for patented drugs in Canada have been declining for 21 years, and introductory prices for patented drugs are at or below international prices.

The real cause of unsustainable growth in health spending is that government socializes too much of the private consumption costs of healthcare. Provinces subsidize 100% of the cost of medical goods and services through a redistributive, tax-funded, single-payer, government-run, insurance monopoly. Coverage is universal for hospital and physician services, but extends to drugs for only one-third of the population. Consumers are disconnected from the costs of the healthcare they personally use. As a result, the system lacks the normal economic incentives that would produce a sustainable balance between the demand for and supply of medical goods and services. Instead, governments constrain costs through central budget rationing, which creates intractable shortages because, while private insurance could cover unmet consumer demands for healthcare, governments effectively prohibit private payment for hospital and physician services.

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Introduction

Since the year 2000, numerous studies by provincial governments, in addition to a federal Senate report, have concluded that growth trends in government spending on health are unsustainable (Bachand, 2010; Clair, 2000; Fyke, 2001; Mazankowski, 2001; Kirby, 2002; Menard, 2005; Taylor, 2006). Likewise, a number of economic research organizations, including the International Monetary Fund [IMF] and the Organisation for Economic Co-operation and Development [OECD], have recently suggested that the current growth in government spending on health care in Canada is not financially sustainable (IMF, 2010; OECD, 2010; CMA, 2010; Dodge and Dion, 2011; TD Economics, 2010).

Canada's Medicare Bubble: Is Government Health Spending Sustainable without User-based Funding? (Skinner and Rovere, 2011) is the Fraser Institute's annual study that uses provincial government data to analyze trends in government health spending. The most recent edition showed that, over the last ten years, in most of the provinces, government spending on health continues to grow faster, on average, than total available revenues from all sources—including federal transfers. This ten-year trend is consistent with long-term data going back to the early 1970s and the result is that health spending is taking up an increasing share of provincial revenue over time, leaving proportionally less money for other government responsibilities. Projecting the most recent ten-year trends in government health spending and provincial revenues into the future, the data suggest that government health spending in 6 of ten provinces is on pace to consume half of total revenue from all sources by the year 2017 (Skinner and Rovere, 2011). In Ontario and Quebec, provincial health spending will consume more than half of total revenues by the end of 2011.

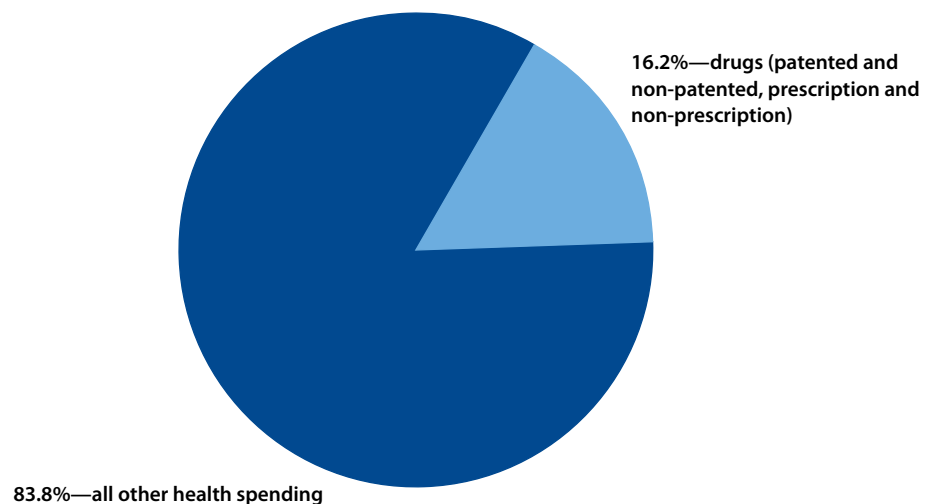
Because new or patented medicines can be more expensive than older drugs and other health treatments, some have mistakenly concluded that patented medicines must be the primary cause of unsustainable health care costs in Canada (Evans et al., 1989; Morgan and Hurley, 2002; Bueckert, 2006, May 11; Lee, 2006; Munro, 2006, May 11; Picard, 2006, May 11; Sanger, 2006; CDM, 2011). There are a number of analytical errors that can lead to such a conclusion, including: incorrect assumptions about the prices of patented drugs in Canada; a failure to make a distinction between total drug spending and government spending on patented prescription medicines in particular; a failure to appreciate the cost-efficiency of medicines as a type of innovative health technology; or, a failure to understand the general economic benefits resulting from improved health related to the use of new drugs. Such analytical errors have resulted in a misguided focus on the cost of the goods and services that make up modern medical care instead of on the fundamental flaws in Canada's government health and drug insurance programs.

The particular impact of new or “patented” drugs on government health care costs

Patented drugs are a small percentage of government health spending

Patented prescription drugs do not have a major impact on overall growth rates in government spending on health because they account for only a small percentage of total health care costs. It is important to analyze government spending on health care separate from private health care expenditures. Spending on all types of drugs (patented and non-patented, prescription and non-prescription) accounted for 16.2% of total health spending by government and the private sector in Canada in 2010 (figure 1a).¹ But, while all types of drugs (patented and non-patented, prescription and non-prescription) accounted for a significant percentage of total government and private-sector health expenditure, prescription drugs (patented and non-patented) accounted for only 9% of government spending on health care (figure 1b), a percentage that has remained essentially unchanged since 2003. And, this share has been much smaller in the past (figure 1c).

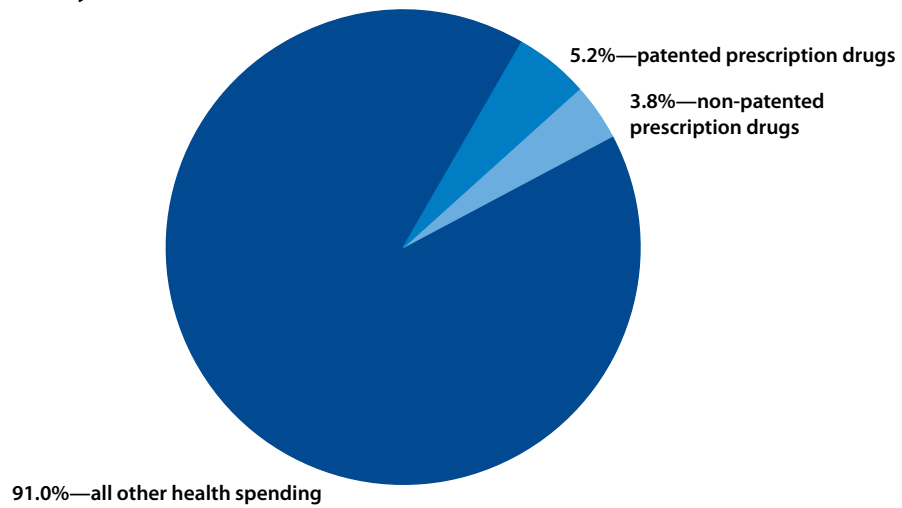
Figure 1a: Percentage of total government and private health spending in Canada, 2010, by use of funds



Source: Canadian Institute for Health Information, 2010a.

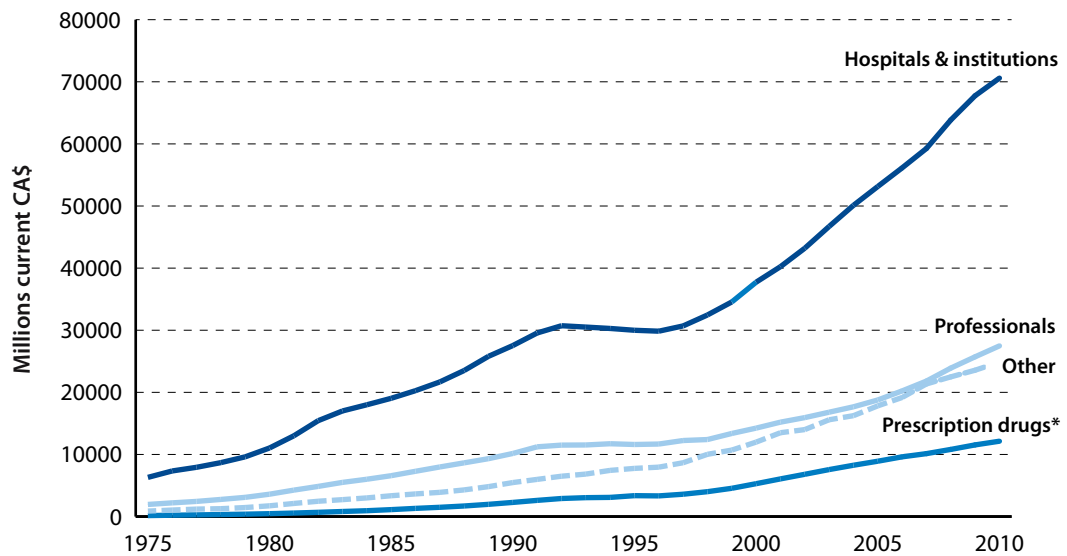
¹ CIHI data for drug expenditures account only for out-patient drugs. Drugs administered in hospitals are counted under hospital expenditures and are not shown separately. However, most drugs administered in hospitals are likely to be for anesthesia or to control pain and infection, which are almost always generic drugs.

Figure 1b: Percentage of government health expenditure (GHEX) in Canada, 2010, by use of funds



Sources: Canadian Institute for Health Information, 2010a; Patented Medicine Prices Review Board, 2011; calculations by authors.

Figure 1c: Government health expenditure (GHEX) in Canada, by use of funds, 1975–2010



Note *: Prescription drugs include both patented and non-patented.
Source: Canadian Institute for Health Information, 2010a.

Table 1: Patented drugs' share of total drug sales in Canada, 1990 to 2009

	Patented drug sales (\$ billions)	Patented drug sales (% of total)		Patented drug sales (\$ billions)	Patented drug sales (% of total)
1990	\$1.7	43.2%	2001	\$7.6	65.0%
1991	\$2.0	43.2%	2002	\$8.9	67.4%
1992	\$2.2	43.8%	2003	\$10.2	72.7%
1993	\$2.4	44.4%	2004	\$11.0	72.2%
1994	\$2.4	40.7%	2005	\$11.5	70.6%
1995	\$2.6	43.9%	2006	\$11.9	67.8%
1996	\$3.0	45.0%	2007	\$12.3	63.2%
1997	\$3.7	52.3%	2008	\$12.9	64.7%
1998	\$4.3	55.1%	2009	\$13.3	65.5%
1999	\$5.4	61.0%	2010	\$12.9	58.0%
2000	\$6.3	63.0%			

Source: Patented Medicine Prices Review Board, 2011.

Furthermore, patented prescription drugs account for an even smaller share of government expenditure on health. The Canadian Institute for Health Information (CIHI) publishes data separating total private from total government spending on prescription drug products, but does not publish data that would allow a precise calculation of the percentage of government expenditures on drugs that are patented, separate from non-patented drugs. However, the Patented Medicine Prices Review Board (PMPRB), Canada's federal drug-price regulator, publishes data (table 1) showing that patented drugs accounted for 58% of total national drug sales in Canada in 2010, up from 43.2% in 1990 (PMPRB, 2011). Assuming that patented drugs account for the same percentage of government drug spending as for total drug spending means that patented prescription drugs accounted for only 5.2% (calculation 1) of total annual government spending on health care in Canada in 2010 (figure 1b). Therefore, even high growth rates for spending on patented drugs would not have had a large statistical effect on the overall growth rate for total government health expenditure between 1975 and 2010.

Calculation 1: Patented (IP) prescription (R_x) drugs as a percentage of government (G) health expenditure (HEX), 2010

2010 GHEX = 135,069.4 (\$millions)

2010 GR_x = 12,132.8 (\$millions)

2010 IP % of total drug sales = 58%

2010 IPR_x % of GHEX = $12,132.8 (\$millions) \times 58\% = 7,037.02 / 135,069.4 = 5.2\%$

Sources: Canadian Institute for Health Information, 2010a; Patented Medicine Prices Review Board, 2011; calculations by authors.

Inflation-adjusted prices declining for patented drugs already on the market

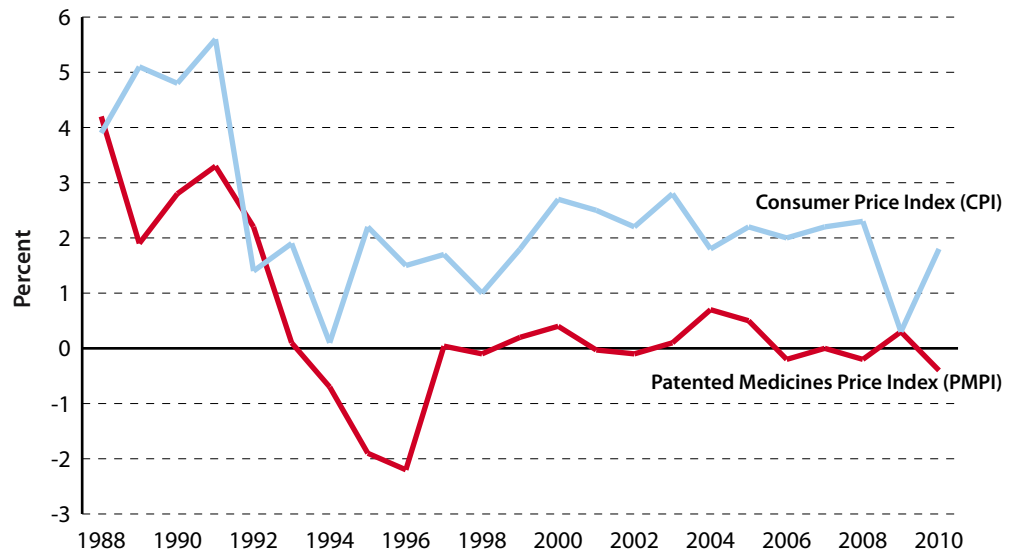
Price inflation for patented drugs that are already on the market is also not to blame for unsustainable growth rates in government spending on health. The Patented Medicine Prices Review Board (PMPRB), Canada's federal drug-price regulator, confirms that, on average, post-market prices for patented drugs are not growing over time. The PMPRB uses the Patented Medicine Price Index (PMPI) to monitor the price trends of patented drugs in Canada. Since 1988, the PMPI has been used to measure the average annual change in the prices of patented drugs, using a basket of products already on the market (PMPRB, 2011).

The most recent data available from the PMPI are current to the year 2010. The PMPRB's data show that post-market prices for patented drugs in Canada have been stable or declining over the last 23 years (figure 2). The largest annual increase in average prices between 1988 and 2010 occurred the period from 1988 to 1992, the first five years after the PMPRB began measuring patented drug prices in Canada. Yet, even during this five-year period, prices for patented drugs increased by only 2.9% annually, on average. After 1992, prices grew at a much slower rate and even declined in some years. Overall, the average annual growth in prices for the entire 23-year period was only 0.5%.

The Patented Medicine Prices Review Board (PMPRB) also compares the Patented Medicine Price Index (PMPI) to the Consumer Price Index (CPI) to determine the year-to-year changes in the prices of patented drugs already on the market in comparison to changes in general inflation for other goods and services (PMPRB, 2011). Figure 2 shows the year-to-year changes in the PMPI compared to the CPI between 1988 and 2010. The only year in which the average annual growth in the prices of patented drugs exceeded general price inflation was 1992. This means that the general inflation rate exceeded the average growth in the price of patented drugs that were already on the market 96% of the time between 1988 and 2010. Over the entire period, the annual percentage growth in the CPI (2.3%) exceeded the annual percentage growth in the PMPI (0.5%) by 1.8 percentage points.

The Canadian government's data show that average prices for patented prescription drugs already on the market in Canada have declined in nominal terms in nine of the last 23 years. Patented drug prices have also grown at a slower annual pace than the general rate of inflation for 21 of the last 23 years. By implication, this means that prices for patented drugs already on the market are increasing at an even slower rate than they are allowed to grow under federal price controls that permit annual price increases matching the general rate of inflation (PMPRB, 2011). It also means that, after adjusting for inflation, prices for these patented medicines have declined in real terms in 21 of the last 23 years.

Figure 2: Annual percentage change in the Patented Medicines Price Index (PMPI) and the Consumer Price Index (CPI), Canada, 1988–2010



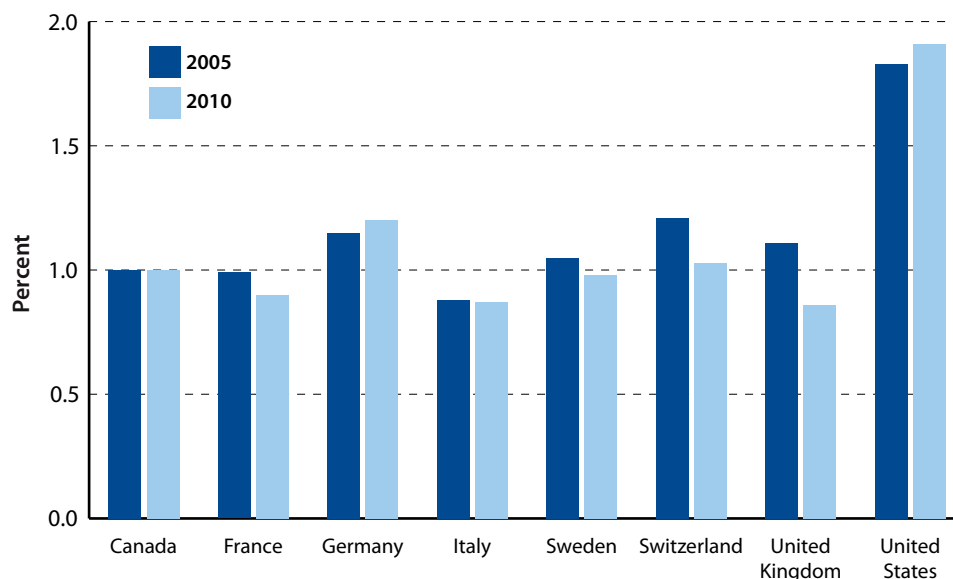
Source: Statistics Canada, 2011b; Patented Medicine Prices Review Board, 2011.

Introductory prices for new patented drugs are at or below international prices

The Patented Medicine Price Index (PMPI) only measures average annual price changes for a basket of patented drugs already on the market and, therefore, does not capture the impact on health budgets of introductory prices for new drugs (PMPRB, 2011). In order to measure whether introductory prices for new drugs are to be considered “excessive,”² the Patented Medicine Prices Review Board compares the average price of patented drugs in Canada to prices for the same drugs in a selected group of other countries. Figure 3 shows the difference between average prices for patented drugs in Canada (shown as a constant) and the average prices (at market exchange rates for each particular year) for the same patented drugs for the years 2005 and 2010 in France, Germany, Italy, Sweden, Switzerland, the United Kingdom, and the United States (PMPRB, 2011). As figure 3 shows, the average price (at market exchange rate) of Canadian patented drugs in 2005 was lower than that in

2 “Excessive” is the word used in the Patented Medicine Prices Review Board’s legal mandate. The authors of this publication do not endorse the idea that it is socially or economically beneficial for government to regulate prices at all. The purchase of prescription drugs is a voluntary transaction between patients (and their insurers) and drug manufacturers in which patients are informed by physicians acting as expert agents on behalf of the patient. What constitutes an “excessive” price should be determined by supply and demand and is not best determined by arbitrary government decisions.

Figure 3: Ratio of average international prices to average Canadian prices for patented prescription drugs, 2005 and 2010



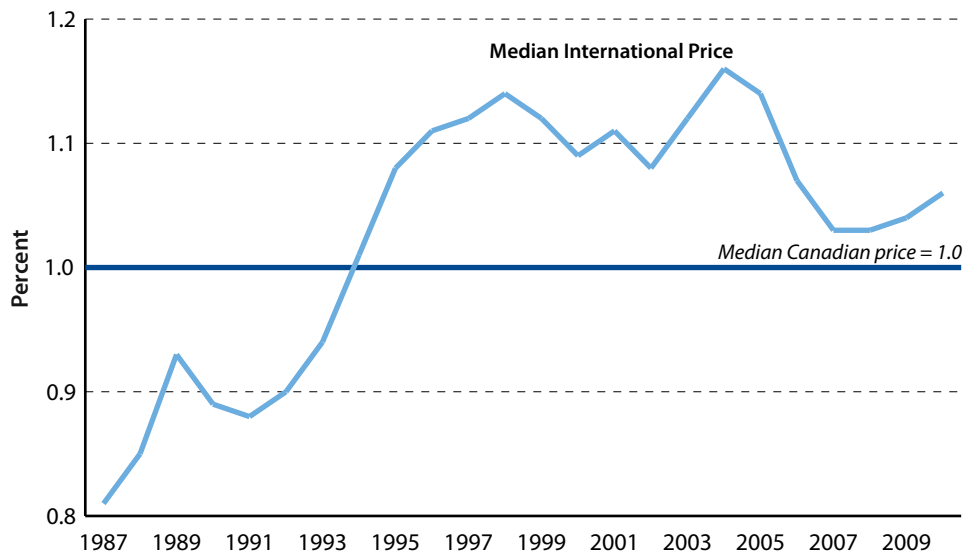
Source: Replicated from Patented Medicine Prices Review Board, 2011.

every other country of the selected group except for France and Italy. However, in 2010, the average Canadian price for patented drugs was higher than average patented drug prices in every country except for Germany, Switzerland, and the United States.

The PMPRB also monitors the median international price (MIP), which is calculated from the median prices observed among the comparator countries (PMPRB, 2011). Figure 4 shows the average ratio of the MIP to the Canadian price for patented drugs between 1987 and 2010. Over this 24-year period, median Canadian prices for patented drugs were lower than their international counterparts 71% of the time. In 1987, MIPs were 19% lower than Canadian prices and, in 1998, MIPs were 14% higher than Canadian prices. In 2010, Canadian drug prices remained slightly below the international median (.06%).

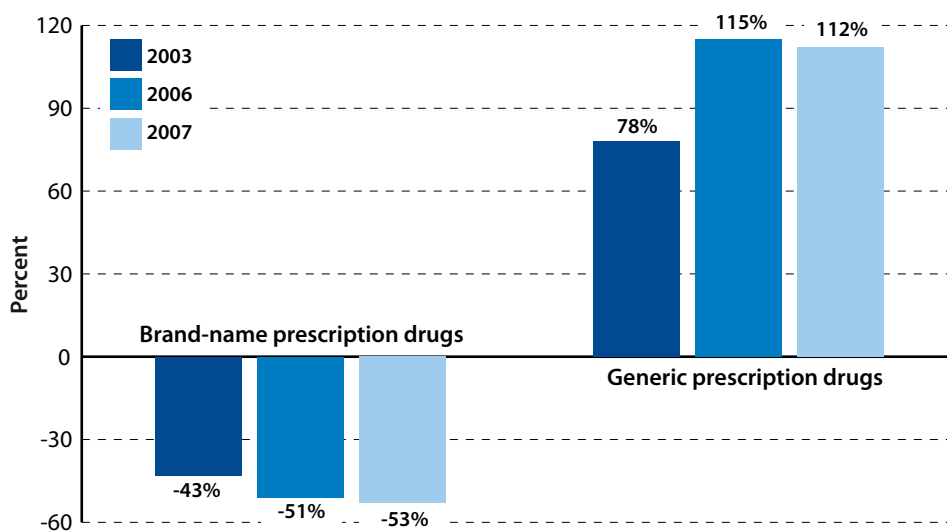
The Fraser Institute's research comparing Canadian and American drug prices has also confirmed that the prices of patented drugs are much lower in Canada. Skinner and Rovere (2008) looked at a sample of the 100 most commonly prescribed, brand-name (mostly patented) drugs in Canada in 2003, 2006, and 2007 and compared the prices of these drugs to prices for the same drugs in the United States. The analysis showed that Canadian prices for patented, brand-name drugs were significantly lower in every year observed; and 53% lower on average than American prices for the same drugs in 2007 (the most recent year observed), measured in US dollars at purchasing power parity (figure 5).

Figure 4: Ratio of average median international price (MIP) to median Canadian price, patented drugs, 1987–2010



Source: Replicated from Patented Medicine Prices Review Board, 2011.

Figure 5: Differences in Canadian and US prices for the 100 most commonly prescribed *brand name* and 100 most commonly prescribed *generic* prescription drugs, 2003, 2006, and 2007, as a percentage of the US price, in US dollars at PPP



Source: Skinner and Rovere, 2008, 2010.

The PMPRB's analysis of average international prices and median international prices suggests that patented drug prices in Canada are not "excessive" compared to prices in similar countries.³ Moreover, the Fraser Institute's research confirms that Canadian prices for patented medicines are far below US prices for identical drugs. These findings show that Canadian Medicare is not uniquely affected by high prices for new drugs.

New drugs, small patient populations, and high research and development costs mean a high price per patient but a small impact on budgets

The introductory prices of some new drugs are much higher now than what they were in the past. This is because the cost of drug development remains high but the market for some new drugs is very small. Research indicates that, on a risk-adjusted basis, it costs nearly \$900 million (adjusted to 2002 US dollars) on average to develop a new drug (Adams and Brantner, 2006; DiMasi et al., 2003; DiMasi, 2001). Many of the new, expensive drugs are being used to treat very small patient populations. As the market for these drugs is extremely small, a higher price per unit must be charged in order to recover the total costs of research and development. However, because many new drugs treat small patient populations, the overall impact of new drugs on budgets is often smaller than what might be expected.

For instance, the new biological drug *Soliris*, which was approved by Health Canada in 2009 for the treatment of Paroxysmal Nocturnal Hemoglobinuria (PNH), costs \$500,000 per patient annually (CBC News, 2011a, April 10). PNH is an extremely rare degenerative and chronic autoimmune blood disorder; and although a bone marrow transplant is the only cure for PNH, *Soliris* has been shown to significantly reduce symptoms associated with the rare syndrome (Canadian Association of PNH patients, 2011). Notably, PNH is so rare that only 90 people across Canada suffer from the disease (CNEWS, 2010, Dec. 22). Thus, the total cost of *Soliris* represents only about 0.4% (\$45 million) of the \$12.1 billion spent by governments on prescription drugs in Canada in 2010, and only 0.03% of the \$135 billion spent on total government health expenditures in the same year (CIHI, 2010). Similarly, the drug *Herceptin* is also an expensive drug that is used to treat a small patient population. *Herceptin* is widely believed to be effective in reducing the recurrence of breast cancer in women. *Herceptin*'s price is reported to be over \$40,000 per patient for a full course of treatment but, because the number of patients the drug is meant to treat is so small (about 5,000 Canadian

3 Five of the seven countries used for comparison by the PMPRB also apply price controls to patented drugs. Thus, in these cases, Canadian prices are not being compared to market prices but to prices held below market rates by arbitrary rules imposed by governments in those countries.

women), the annual total cost of the treatment represents an estimated \$200 million (CBC News, 2011b, Mar. 21). Therefore, in 2010 the total cost of this drug represented only about 1.6% of the \$12.1 billion spent by governments in Canada on prescription drugs, and only 0.15% of total government health expenditures (CIHI, 2010).

The story is the same for patients suffering from Fabry's Disease, which affects less than 1 in 200,000 Canadians, or 165 patients in all. The disease causes the lack of a vital enzyme in the body, which leads to kidney failure, heart disease, strokes, and premature death. The new enzyme-replacement therapy drug, *Fabrazyme* (agalsidase beta), which was approved by Health Canada in early 2004 costs as much as \$300,000 per patient annually (Siversides, 2009). The total estimated potential annual impact on government drug budgets from *Fabrazyme* in 2010 was \$49.5 million, or approximately 0.4% of the amount spent by governments in Canada on drugs in 2010, and only 0.04% of total government health expenditures in the same year (CIHI, 2010).

Thus, these drugs represent small additional spending when compared to existing levels of spending on prescription drugs by governments and the cost of these drugs is even more miniscule when compared to overall health expenditures by governments. Taken together, the \$294.5 million cost of funding these three drugs would add only 0.2% (calculation 2) to total overall government health care expenditures in Canada in 2010.

Calculation 2: Cost of three expensive new drugs with small patient populations relative to overall total government (G) health expenditures (HEX), and government spending on prescription (R_x) drugs

2010 GHEX= 135,069.4 (\$millions)	(Source: CIHI, 2010)
2005 GR _x = 12,132.8 (\$millions)	(Source: CIHI, 2010)
2010: 3 new drugs cost = 294.5 (\$millions)	(Sources: various above)
2010: 3 new drugs cost % of GR _x = 294.5 / 12,132.8 = 2.4%	(Source: Authors)
2010: 3 new drugs cost % of GHEX = 294.5 / 135,069.4 = 0.2%	(Source: Authors)

The impact of all types of drugs on government health care costs

Government spending on other components of health care growing at an unsustainable pace

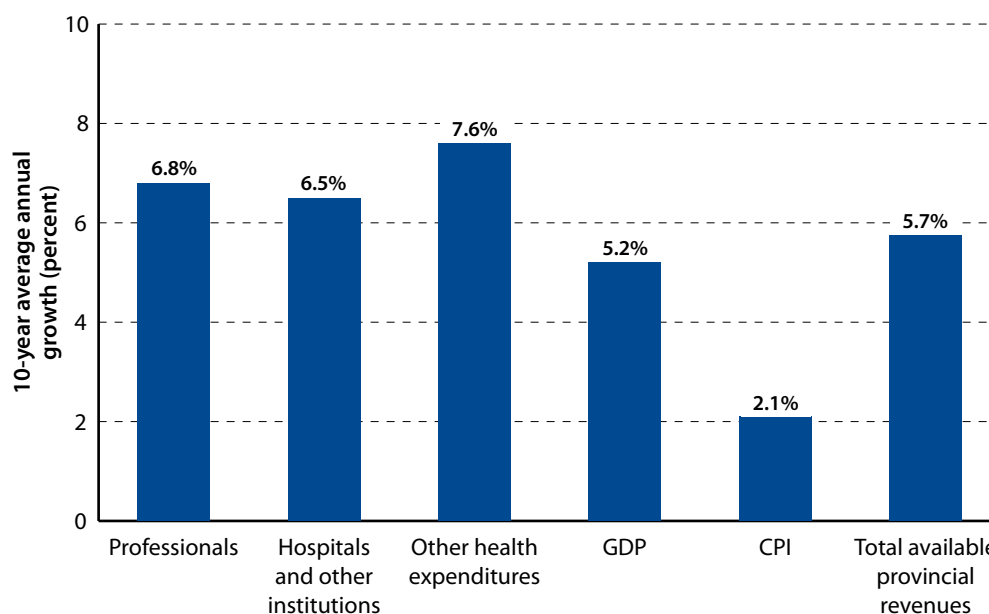
If it were possible to eliminate government spending on drugs altogether, government expenditures on the remaining components of health care would still be growing at an unsustainable pace. When health spending is analyzed according to the use of funds spent, spending between 2001 and 2010 on components of health care other than drugs has consistently grown at an unsustainable rate (figure 6), and did so while the share of total government spending on health attributable to components other than drugs remained unchanged at 91.0%. On average, spending on health professionals grew by 6.8% annually; spending on hospitals and institutions grew by 6.5% per year; and spending on public health, administration, research, and other areas together grew by 7.6% annually (CIHI, 2010). These annual growth rates are between 1.3 and 1.5 times higher than the average annual growth in Canada's gross domestic product (GDP) of 5.2% (Statistics Canada, 2011a); and between 3.1 and 3.6 times higher than the average annual growth in general inflation (CPI) of 2.1% (Statistics Canada, 2011b). Furthermore, these annual growth rates are between 1.1 and 1.3 times higher than the average annual growth in total available provincial revenues of 5.7% (averaged across provinces) over the same period.

This means that, even if governments did not spend anything on drugs, government spending on all other medical goods and services would still be rising at an unsustainable rate. The fact that medical goods and services other than drugs make up over 90% of government expenditure on health strongly suggests that efforts to contain health care costs by targeting drugs are misguided.

No statistical link between rising share of health budget spent on drugs and overall growth rates in total health spending

We tested the claim that spending on drugs is a primary cause of the unsustainable rate of growth in government health spending using another analysis. If such a claim were true, then, as prescription drugs have increased as a percentage of government health budgets over time, we should expect to observe accelerating inflation-adjusted rates of growth in government health spending over the same period. But this is not observed.

Figure 6: Average annual growth (percent) in government health expenditure (GHEX), non-drug uses of funds only, and total available provincial revenues, compared to GDP and CPI, 2001–2010.



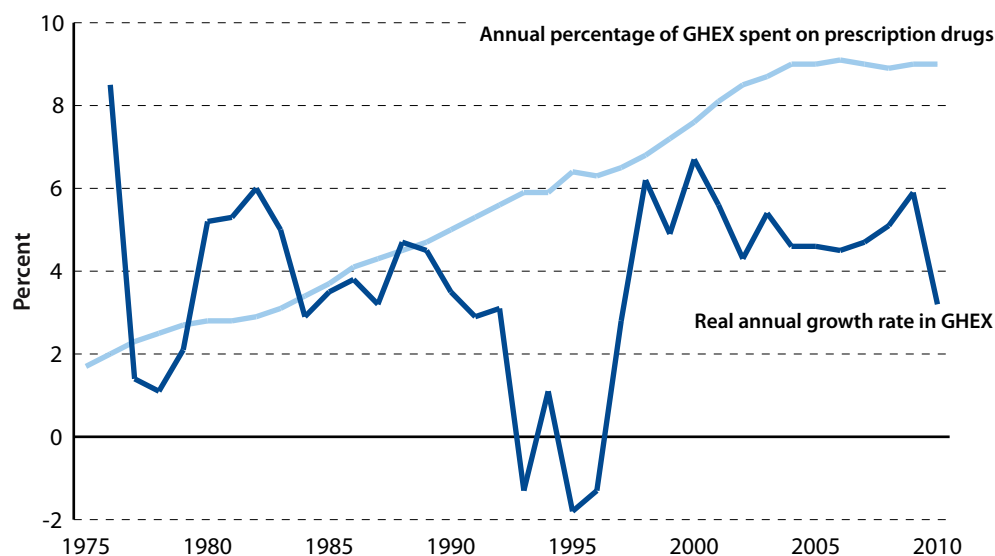
Sources: Canada, Department of Finance, 2010; Canadian Institute for Health Information, 2010a; Statistics Canada, 2011a, 2011b.

Data from 1975 to 2010 show that, on a national basis, the annual inflation-adjusted growth rate for overall government health expenditures varies, and is not in a linear relationship with the constantly increasing percentage of government spending on drugs (figure 7). The proportion of government spending on drugs relative to total spending on health has increased consistently over the period studied, suggesting that spending on drugs has replaced spending on other health care areas.

Increasing use explains the rising proportion spent on drugs

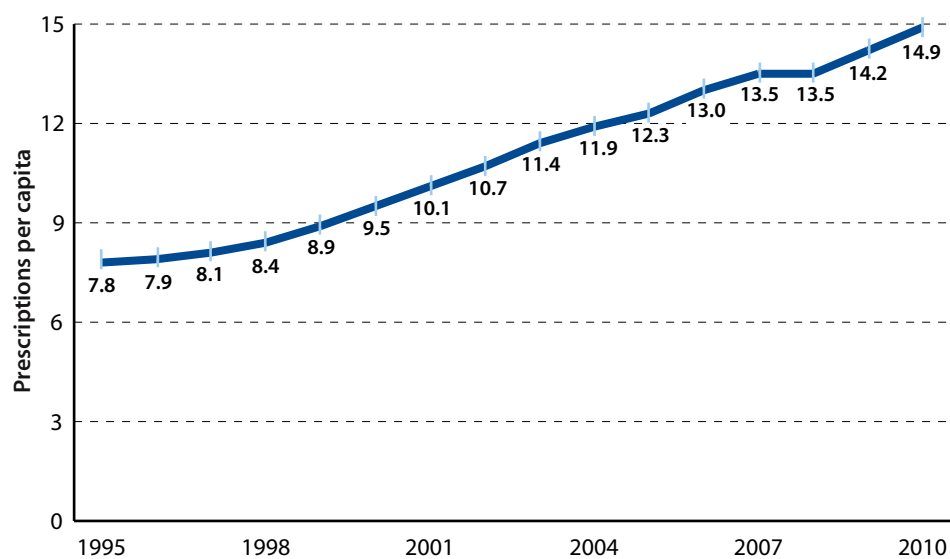
The rising percentage of the health budget spent on drugs is a direct result of the development of new drug therapies and the increasing use of drugs to replace other medical treatments (CIHI, 2005). Figure 8 shows the rising per-capita use of drugs between 1995 and 2010 (the only period for which data were available). In this context, “use” is defined as the number of retail prescriptions dispensed per person annually. The number of prescriptions dispensed has risen, even when adjusted for growth in the population. This is the main reason that drugs have risen as a percentage of total government spending on health.

Figure 7: Annual percentage change in inflation-adjusted government health expenditure (GHEX) and in the percentage of GHEX spent on prescription drugs in Canada, 1975–2010



Sources: Canadian Institute for Health Information, 2010a; Statistics Canada, 2011b.

Figure 8: Number of retail prescriptions dispensed per capita in Canada, 1995–2010



Sources: IMS Health Inc. Canada, 2007, 2010; authors' calculations.

Drugs are a cost-efficient and cost-saving medical technology

How can spending on drugs be increasing as a percentage of government spending on health and not be the primary cause of unsustainable growth rates in government expenditure on health? Research shows drugs to be a medical technology that can be a cost-effective, cost-efficient, and cost-saving. A cost-effective drug produces a marginal benefit that is equal to, or better than, any alternative treatment at a fixed cost (Weimer and Vining, 1999: 274). A cost-efficient drug produces a marginal benefit that is equal to, or greater than, its own marginal cost (Danzon, 1993). A cost-saving drug is one that, when used, substitutes for alternative medical treatments, leading to overall spending lower than would have occurred if it had not been used (Han and Wang, 2005).

Drugs, one of the most effective forms of medical technology, are being used more than ever because they are an excellent substitute for older, less effective, or less efficient ways of treating illness. Previous research has recognized that there is a strong statistical relationship between drug spending and health outcomes. An analysis of health outcomes among Canadian provinces found that the two provinces with the highest levels of expenditure on drugs averaged 584 fewer infant mortalities annually and showed a six-month increase in life expectancy at birth, compared to other provinces (Cremieux et al., 2005). In addition, that study's results indicate that there was a significant increase in health benefits in Canada corresponding to an increase in pharmaceutical spending between 1981 and 1998. The study concluded that there is a quantifiable positive relationship between drug spending and health outcomes.⁴

Another study found similar results when comparing the use of drugs at the international level. The research discovered that pharmaceutical spending has a positive and significant effect (both statistically and economically) on remaining life expectancy at age 40 and at age 60, whereas non-pharmaceutical health care spending appears to have no measurable effect on life expectancy, either at birth, at age 40, or at age 60 (Frech and Miller, 1999). Drugs can also have a cost-saving effect on overall health expenditures because they can be a substitute for invasive surgery or lengthy courses of treatment in the hospital. In this way, drugs can reduce risks, pain, and discomfort to patients, improve recovery times, and reduce more costly expenditures on other forms of medical treatment. Research has estimated that, for every dollar spent on new drugs, between \$3.95 and \$7.00 is saved on non-drug spending elsewhere (Lichtenberg and Virabhak, 2002). Additional research suggests that, if we spent less on new drug technologies

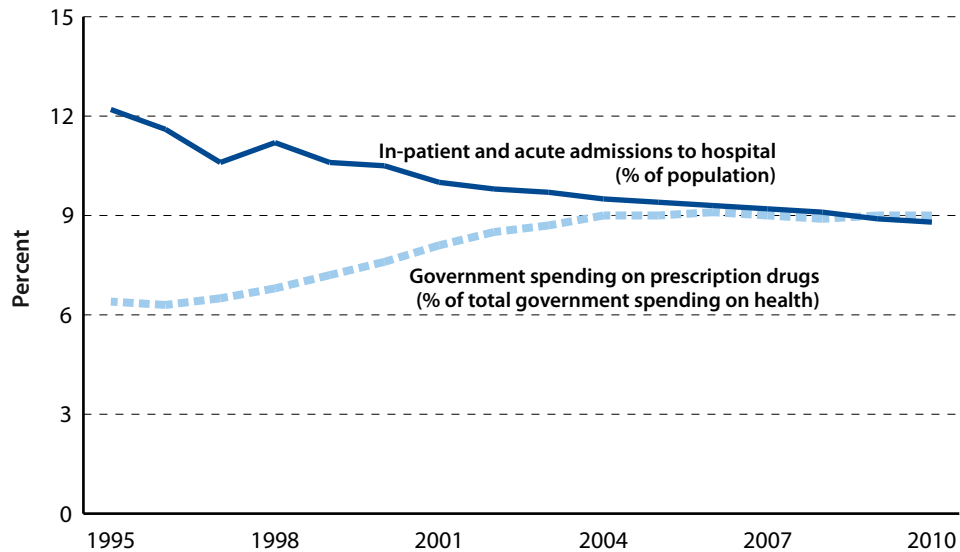
4 The results of a study by Cremieux and Ouellette indicate that "the observed increase from 1981 spending levels has already saved over 15,000 lives" (2002: 115).

and relied instead on older, less efficient types of medical treatment, we could end up with even higher overall health care costs than we have right now.⁵

In order to test the substitution effect of drugs for other types of health care at the macro-level, we compared changes in the rate of hospitalization with changes in the percentage of government spending on health on drugs between 1995 and 2010 (the only period for which there were available comparable data). The data show (figure 9) that while drug spending increased as a percentage of total government health expenditure, hospitalization rates have declined. Although this finding does not indicate a definitive causal relationship, the results are generally consistent with other research that indicates that drugs are a cost-efficient and often a cost-saving substitute for alternative treatments not using drugs.⁶

-
- 5 In contrast to Lichtenberg's findings on the cost-saving benefits of newer drugs, there is opposing research that suggests that drugs—and, specifically, new drugs—do not present a reduction in costs for non-drug expenditures. Miller and his colleagues (2005) argue that the number or mix of drugs used is an important indicator in determining the association between the age of the drugs used and non-drug expenditure. Miller et al. first replicated Lichtenberg's work and confirmed the validity of Lichtenberg's findings. Afterward, using a different method, they analyzed only patterns of use for new cardiovascular drugs and the association of this with non-drug health expenditures. They controlled for the drug quantity and the mix of newer and older drugs as a proxy for controlling severity of illness. They found, unsurprisingly, that the net cost-savings effect of cardiovascular drugs did not apply to the sickest patients. In a study similar to that of Miller et al., Duggan (2005) investigated the effects of new drugs, focusing solely on one therapeutic class. His objective was to determine if new antipsychotics reduce spending on other types of medical care such as hospitalization and other health care services. Duggan's study suggested that new antipsychotic drugs increase the prevalence of diabetes and related illnesses among schizophrenia patients and, thus, have a negative effect on health outcomes. However, he also found that, while antipsychotics increased the prevalence of diabetes among schizophrenia patients, the drugs reduced the occurrence of extra-pyramidal symptoms, but he failed to estimate the savings from this. The studies by Miller et al. and Duggan are interesting but are not useful for analyzing the overall impact of drugs on health budgets. Despite claims to the contrary, these studies do not contradict Lichtenberg, who analyzed the effects of new drugs averaged across all patients and all illness conditions. The conclusions of the study by Miller et al., in particular, were skewed because the study focused on the sickest group of patients only, instead of on all patients. Also, while specific illnesses such as cardiovascular-related diseases and antipsychotic ailments may cover a large portion of pharmaceutical spending, drug expenditures are fairly divided among other therapeutic classes. The Patented Medicine Price Review Board's annual report for 2010 indicates that, in Canada, there is not one therapeutic class that represents more than 20.8% of the share of sales for patented drugs (PMPRB, 2011). Therefore, a general analysis of all medical conditions and all drugs related to those conditions should be included in order to analyze the effects of overall pharmaceutical spending effectively.
 - 6 Other changes that will affect hospitalization include advances in out-patient treatment and day surgery. Many of these advances are complemented by drug therapies that make them possible.

Figure 9: Percentage of government spending allocated to prescription drugs compared to hospitalization rates in Canada, 1995–2010



Sources: Canadian Institute for Health Information, 2010, 2011.

Some new drugs represent net new costs but also bring net new health benefits

Although new drugs tend to be expensive, we should not forget the invaluable health improvements that new drugs can bring. Naturally, because some medicines are new treatments that did not previously exist, they can represent net additional expenditures to existing health care budgets. However, new treatments can also bring additional health benefits that did not exist previously and, thus, represent net improvements—a reduction of mortality, morbidity, and pain—in the health of patients. For instance, the increase in the life expectancy and health status of patients with heart disease, cancer, pre-term birth, and acquired immunodeficiency syndrome (AIDS) is a direct result of major pharmaceutical breakthroughs in the 1990s (Kleinke, 2001; Lichtenberg, 2003).

The value of new health benefits associated with innovative medicines can also be quantified in broader economic terms. For example, new medicine may lead to fewer in-patient admissions to hospitals or to faster overall recovery times for treatment populations (Lichtenberg, 2009; Civan and Koksall, 2010) and economic evidence indicates that these types of health gains result in reduced productivity losses associated with illness. If productivity losses are taken into account, new drugs provide net socioeconomic benefits because, as research indicates, newer drugs decrease morbidity and, thus, reduce losses in productivity. One study suggests that there is a direct correlation between absenteeism and harmful effects on the economy. The

authors estimate that absenteeism in Canada costs approximately \$2,012 per worker annually (Han and Wang, 2005). They find that depression, which is the second most prevalent condition next to hypertension, is one of the most common reasons for missed work. The authors claim that pharmacotherapy is essential to reducing the societal and economic burden of depression. Furthermore, their research suggests that newer drugs are even more effective at reducing absenteeism than older ones. In a study of 200,000 individuals with 47 major chronic conditions (over a 15-year period), Lichtenberg (2005) finds that the value derived from the increase in ability to work attributable to new drugs is 2.5 times more than expenditures on new drugs. Likewise, other research has found that people who were treated with newer drugs were significantly less likely to experience absenteeism than people who took older drugs (Lichtenberg, 2001). Thus, while it is true that medicine generally reduces the rate of morbidity, research also indicates that newer drugs significantly reduce absenteeism in the workplace. Therefore, the indirect economic benefits associated with expensive new drugs must not be overlooked.

The real cause of unsustainable growth in government health spending is the socialization of private costs

The cost of government health insurance in Canada is financed through a redistributive tax system. In effect, this means that the private costs of individual consumption of medical goods and services are publicly funded or “socialized.” Government-run health-insurance programs are subject to egalitarian political pressures that create powerful incentives for policy-makers to reduce any out-of-pocket expenses for their constituents and to base premiums on heavy cross-subsidization according to income. The resulting absence of consumer price signals removes the necessary economic incentives that encourage a sustainable balance between the supply of, and demand for, goods and services. Exposure to price helps to control price inflation and creates incentives for the efficient allocation of resources matching the individual needs and preferences of patients (Herrick, 2006). All available evidence strongly suggests that private-payment health systems (a combination of private insurance and out-of-pocket spending) are better at encouraging the economically efficient allocation of medical goods and services because they expose health care users to prices (Danzon, 1993; Newhouse and the Insurance Experiment Group, 1993). Publicly subsidized health insurance must expose users of health care to prices in order to achieve some of the efficiencies associated with private payment.

Where there are no prices, demand will tend to exceed supply, which leads to cost-control problems. Instead of introducing prices, government insurance programs tend to use centrally rationed access to medical care in an attempt to control costs. Rationing inevitably targets first the more expensive and less commonly used medical goods and services, which are usually the latest and most advanced technologies. This produces a socially detrimental result. The burden of rationing falls most heavily on the sickest patient populations who have greater need of expensive medical goods and services leaving them exposed to catastrophic costs, while publicly subsidizing access to individually affordable types of healthcare for everyone else—the opposite of what insurance is supposed to achieve. Private payment for hospital and physician services is prohibited in Canada—a prohibition that prevents private insurance from covering treatments that are inadequately provided by public health insurance. The result is that many patients go without necessary health care.

Government health insurance is also divided into “silos” in Canada. Government insurance covers 100% of the cost of medical services delivered by hospitals and physicians but generally does not cover the cost of out-patient goods and services, except in the case of certain sub-populations like seniors, the disabled, and social-welfare recipients. And, when government insurance does cover out-patient health care, it does not pay for 100% of the costs. This lack of comprehensive coverage makes the out-of-pocket cost of alternative treatment options much different and, as a result, can create inappropriate incentives to consume inefficient medical care (because it receives a government subsidy) rather than more efficient care (because it does not receive a subsidy or, at least, a full subsidy). Drugs are the primary example of a medical technology that is demonstrably more efficient at improving health outcomes but which, due to the lack of comprehensive insurance coverage offered under government programs, is made comparatively more expensive, thus creating a disincentive for consumers (patients and physicians) to substitute it for less efficient treatment technologies.

Conclusion

At various times throughout the history of Canadian Medicare, the unsustainable growth in government health care spending has been blamed on the cost of paying for physicians, hospitals, and medicines. This misguided focus on the components of health spending has led governments to rely on central planning to cap the supply of physicians (Esmail, 2005) and hold their wages below market rates (Mullins, 2004); to constrain hospital operating and capital resources (OHA, 2003); and to restrict access to new technologies and treatments, leaving Canadian patients without the most advanced medical care available (Esmail and Walker, 2008; Skinner, 2005; Rovere and Skinner, 2011).

It is a mistake for policy makers to engage in cost-containment strategies targeting the individual components of health care spending. Unsustainable growth in health spending is a function of the design of government health insurance programs, not the cost of medical treatment or the introduction of new medical technologies.

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