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To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

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Executive Summary

In this report, the Canadian Institute for Health Information (CIHI) presents the results of its analysis of physician cost drivers, concentrating on the most recent 10 years for which comprehensive data is available (1998 to 2008). Total public-sector expenditure for physicians’ services was $22.5 billion in 2008 and is expected to have increased to $26.0 billion in 2010. Physician expenditure as a percentage of gross domestic product (GDP) has fluctuated within a fairly narrow range of 1.0% to 1.5% during most years since the introduction of medicare in Canada, and is expected to have reached a high point of 1.6% during 2010.

The analysis of cost drivers uses an analytical framework that consists of

- Price effects;
- Population growth;
- Aging;
- Volume and mix of health care services; and
- Technology.

Price, Population Growth and Aging

Price effects are measured by a physician compensation index that has been developed by CIHI. The compensation index has a fee-for-service (FFS) index for specialties contained in the National Physician Database. A comprehensive index that includes alternative payment plans and benefit programs is being developed. The FFS index is used throughout the report.

Physician compensation rate increases followed trends in government-sector inflation until 1998. In the 10 years since then, physician fees have increased more rapidly than inflation. The growth in physician compensation rates since 1998 has outpaced the rates of growth in health and social services sector wages as well as rates of increase in the industrial composite wage rates.

Utilization, defined as expenditure deflated for increases in physician compensation, increased at relatively modest rates during the latter part of the 1990s but at higher rates during the last two five-year periods. Utilization per capita increased at less than 1% per year from 1993 to 1998 but grew at increasing rates during the next two five-year periods; the rate of growth from 2003 to 2008 was 2.8% per year.

Population growth accounted for increases in expenditure averaging 1% per year, while population aging accounted for 0.6%. These effects varied by jurisdiction. Based on population projections by Statistics Canada, the effects of population aging on health expenditure were expected to have stayed in the range of 0.6% per year until 2010 and then fall to 0.4% by 2036, if all other factors remained unchanged.
During the 10 years from 1998 to 2008, physician compensation accounted for 3.5% to 3.6% per year in expenditure growth. Population growth and aging accounted for 1.6% per year, leaving unexplained utilization (volume and mix of services) of 0.8% per year from 1998 to 2003 and 2.1% per year from 2003 to 2008.

Relative Fees by Age Group and Mix of Services

Although the analysis of aging shows a relatively modest effect on expenditure, a comparison of rates of increase in expenditure per capita over the 10-year period shows higher rates of increase for age groups over 65. An analysis of rates of increase in fees and relative rates of service by age group showed that higher rates of fee increases for elderly patients explained the higher rates of increase in per capita expenditure. Higher fee increases were focused on visit services. They appear to be an attempt to address the concern that physician visits by elderly patients tend to take longer and may involve monitoring of multiple conditions.

Relative rates of services per 1,000 for elderly and non-elderly persons changed only slightly between 1998 and 2008 and do not appear to have had a significant effect on expenditure increases.

The mix of services changed, with notable increases in consultations and diagnostic/therapeutic services in the case of medical specialists and increases for these categories, plus major surgery, for surgical specialists. Diagnostic/therapeutic services showed the largest increases (48.5% and 28.4%, respectively, for medical and surgical specialists). The average annual increase in FFS expenditure from the changing mix of services was 0.19%. This modest increase was due largely to relative fees; for example, average fees for diagnostic/therapeutic services are approximately one-half of average fees for consultations. Increases in these services had a greater effect on expenditure increases from volume of services.

Mix of Specialties

An analysis of the effects of changes in the mix of specialties was carried out using British Columbia data. During the 10-year period ending in 2008–2009, the share of expenditure for general practitioners/family physicians (GPs/FPs) dropped from 56.5% to 51.8%, while the shares for medical and surgical specialties increased. Increases in total expenditure due to mix of specialties are estimated to have been 0.74% per year.

Summary of Increases

When the results of the analysis of changing mix of services and specialties are included, only 0.5% of overall expenditure growth in B.C., between 1998 and 2008, remains unexplained. Fee increases account for more than half the average annual increase during those 10 years (3.6%), followed by population growth (1.0%), mix of specialties (0.7%), aging (0.6%) and mix of services (0.2%).
Physician Supply

Trends in physician supply since 1988 have shown a cyclical pattern, with physicians per 1,000 population decreasing between 1993 and 1997, then increasing. Rates of increase have accelerated since 2003.

Trends in utilization have been similar, in terms of direction, to trends in the number of physicians. The magnitude of utilization increases exceeded the magnitude of physician increases, however, resulting in an increase in expenditure per physician.

Despite vigorous growth in physician supply and increasing utilization, there are widespread perceptions of physician shortage. These perceptions appear to be due to three factors: a decline in GPs/FPs per 1,000 population after 1993, which was not fully reversed until 2009; the greater concentration of physicians in urban areas; and the growth of closed practices (those that do not accept or limit acceptance of new patients). In the case of specialist care, limits on operating room time could have contributed to longer wait times, leading to perceptions of a shortage.

Conversion to Alternative Payment Plans

There has been a tendency to think of alternative payment plans (APPs) as an alternative to FFS, replacing FFS payments with other forms of compensation. While this was the case in the early years of APPs in Canada, there has been an increasing tendency in recent years to use APPs as a supplement to FFS compensation. Examples are blended funding, in which physicians are paid a salary or daily stipend and bill FFS and/or primary care plans that pay capitation for rostering patients plus FFS for insured services. There is also a move to pay incentive fees for certain types of care and pay for performance (P4P) for meeting defined standards of service.

APP has often been used as a means to provide higher incomes to physicians in certain specialties or those practising in settings where patient volume is low or unpredictable. Examples are discussed in which a conversion to APP provided a considerable increase in incomes to physicians who participated in the conversion.

International Comparisons

This report includes a selection of comparative statistics from the Organisation for Economic Co-operation and Development (OECD). International comparisons have limited utility in a study of physician cost drivers due to differences in the organization of health systems, degrees of urbanization, medical culture and the effectiveness and efficiency of the usage of health care resources.

The comparisons in the report indicate that physician supply in Canada is relatively low but that supply grew more rapidly in Canada during the last half of the 10-year period. Canada appears to have a relatively strong supply of GPs/FPs and nurses, however, which could provide an advantage in efforts to strengthen primary care, which are almost universally recognized as priorities.
Introduction

The Canadian Institute for Health Information (CIHI) has undertaken a project to analyze the cost drivers of health expenditure in Canada. The project consists of the following components: macroeconomic factors that influence health care expenditure and cost drivers for physician expenditure, hospital expenditure, drug expenditure and other components of health expenditure. CIHI’s National Health Expenditure Trends and National Health Expenditure Database (NHEX) document health expenditure in Canada. NHEX’s framework of definitions guided the data analysis in the cost driver project.

A standard conceptual framework for the cost drivers project focuses on five elements, which can be measured through Canadian data. Most of these elements are on the supply side of economic analysis; those on the demand side include population growth and aging. All elements in the framework can be measured objectively, eliminating the requirement for speculative assumptions or conclusions. The elements of the framework are

- Price effects;
- Population growth;
- Aging;
- Volume and mix of health care services; and
- Technology.

This technical report is focused on physician expenditures by the public sector, which accounts for 98.8% of physician expenditure in Canada. The first section describes price effects in order to separate price and volume in subsequent analysis. The next section estimates the effects of population growth and aging on physician expenditure. Subsequent sections provide data on volume of services (utilization) standardized for changes in price and for population growth. Mix of services is analyzed for broad specialty groups. Following that is an analysis of the percentage contributions of cost drivers in the conceptual framework to expenditure growth in the 10-year period 1998 to 2008. The next sections deal with physician supply trends and the growth of alternative payment programs. International comparisons are addressed in the final section.
Physician Expenditure Cost Drivers

Physician expenditure increased steadily, with the exception of a few years during the 1990s. Total public-sector expenditure for physicians’ services in national health expenditures was $22.5 billion in 2008 and is expected to have increased to $26.0 billion in 2010 (Figure 1). Physician expenditure as a percentage of gross domestic product (GDP) has fluctuated within a fairly narrow range of 1.0% to 1.5%. The greater variation in the trend line for expenditure as a percentage of GDP is caused by the denominator effect, in which trends in GDP have varied more than trends in physician expenditure. Physician expenditure is affected by utilization of physician services and by fee agreements between provincial medicare agencies and physician associations. Utilization of health services that do not have user fees normally will not decrease or increase with cyclical changes in GDP. Multi-year fee agreements tend to make fee levels inflexible during the relatively short terms in which the economy experiences recessions. As a result of these characteristics, the ratio of expenditure to GDP will normally increase during times of low or negative growth in GDP. Conversely, if physician expenditure is restrained during periods of economic growth (as happened in Canada during the early to mid-1990s), the ratio of physician expenditure to GDP will drop.

Growth in physician expenditure was relatively strong during the first decade of the new millennium. Between 2000 and 2008, the share of physician expenditure in GDP increased from 1.2% to 1.4%. Forecast data indicates that the physician share increased to 1.6% during the 2009 recession and remained at that level during 2010 as GDP resumed a trend to positive growth.

Figure 1: Public-Sector Physician Expenditure in Canada, 1975 to 2010

Note
f = forecast.

Source
National Health Expenditure Database, Canadian Institute for Health Information.
Price Effects

It is necessary to separate price and volume effects in order to understand the reasons for growth in expenditures. CIHI has developed a physician compensation index (PCI) to track price changes and to deflate expenditure to constant dollar values. The index has a fee-for-service (FFS) component that includes all specialties reported in the National Physician Database (NPDB). A comprehensive PCI for all forms of physician compensation is under development.

The discussion of price and volume trends has important implications for federal provincial financing and for provincial health human resources (HHR) administrative policy. For example, government stakeholders might wish to consider whether increases in health care funding under the Health Accord have been used disproportionately to increase physician fees and incomes (a concern of the 2000 Romanow commission). From a provincial perspective, higher-than-normal rates of inflation in physician remuneration may be related to perceptions of a physician shortage and competition among provinces to recruit physicians.

National Physician Database Physician Compensation Indices

CIHI has developed an FFS compensation index using data on price increases by specialty submitted by provinces and territories: the National Physician Database Physician Compensation Index (NPDB PCI). A comprehensive PCI for all forms of physician compensation is under development.

About the NPDB PCI

Provincial/territorial percentage increases are calculated by each jurisdiction for each specialty. The methodology is equivalent to a Laspeyres index.

1. The number of services in a base year for each fee item is multiplied by its fee in the base year and in the current year and/or future years covered by the fee agreements.
2. The results are aggregated in the base year and current year for each specialty and the percentage change from base year to current year is calculated.
3. This percentage change must equal the percentage increase allocated to the specialty in fee negotiations.

CIHI creates a provincial FFS index by combining the increases for each specialty.

4. Expenditure weights consist of expenditure for each specialty reported in the previous year by CIHI’s National Grouping System divided by total expenditure that year for the 18 specialties reported in NPDB.
5. A national index is created by multiplying each jurisdiction’s index by provincial expenditure weights.

Since the index is created for the 18 specialties reported in NPDB, it is called the NPDB PCI. This index can be used to deflate expenditure to constant dollars for comparison of FFS utilization through time and across jurisdictions. Although FFS represents a declining proportion of total physician remuneration since the late 1990s, the FFS index still reflects changes from 90% to 70% of overall remuneration over the 10-year period 1998 to 2008; however, it may underestimate increases in total remuneration if negotiated increases in alternative payment programs (APPs, called “alternative relationship programs” in Alberta) have been greater than those for FFS. Changes in APPs are currently difficult to measure, because only aggregate expenditures on these programs are generally available and not the services or payments per physician necessary to calculate an index such as the NPDB PCI.

In future, CIHI plans to expand the index to all specialties, including diagnostic specialties that are paid on an FFS basis in some jurisdictions. CIHI is also exploring methodologies to integrate measures that include the negotiated increases in, for example, APP, as well as on-call and benefit programs to create a more comprehensive index reflecting all physician compensation.
FFS price trends can be divided into four distinct periods (see Figure 2):
1. Annual increases of 7% or higher from 1976 to 1983;
2. Declining rates of increase from 1984 to 1992;
3. Stable prices with annual increases of 0% to 1% from 1993 to 1998; and

Physician services compensation has followed trends in national inflation (Figure 3). From 1975 to 1998, rates of inflation, as measured by the implicit price index (IPI) for government current expenditure, were relatively high. Rates of physician FFS price increases were less than those for government current expenditure. Declining rates of increase from 1984 to 1992 followed a trend to lower inflation in the economy. Stable or decreasing prices from 1993 to 1998 resulted from fiscal restraint throughout the public sector in Canada during that time. Since 1998, physician FFS price increases have exceeded rates of inflation.

**Figure 2: Annual Rates of Physician Fee Increase, 1976 to 2008**

Source
National Physician Database, Canadian Institute for Health Information.

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i. The IPI for government current expenditure is used as the measure of general inflation since it reflects price increases in public-sector purchasing. This IPI includes current expenditures by federal, provincial and municipal governments.
Figure 3: Average Annual Rates of Increase, 1975 to 2008

Sources
National Physician Database, Canadian Institute for Health Information; Statistics Canada.
Increases in Physician Compensation and Industrial Wages

The NPDB PCI has increased more rapidly than indices of weekly industrial wage increases (Figure 4). Within the series of industrial wage increases maintained by Statistics Canada, the index for health and social service workers has increased more rapidly than the industrial composite.

![Figure 4: Indices of Growth in Industrial Wages and Physician Compensation, 1998 to 2008](image)

**Sources**
National Physician Database, Canadian Institute for Health Information; Statistics Canada.
Price and Utilization

Expenditure can be broken down into price and utilization by using the NPDB PCI as a deflator, in order to measure trends with a common price level. This technique is often referred to as measuring in constant dollars. Increases measured in constant dollars are often referred to as real increases to indicate that volume has increased after eliminating price effects. Figure 5 compares movements in price and utilization over two decades.

- Average annual utilization increases between 1993 and 1998 were only one-half the rate of annual increases in the previous five years. They were the lowest experienced since the introduction of medicare.
- Rates of increase in both price and utilization accelerated during the 10 years from 1998 to 2008.

Figure 5: Average Annual Rates of Change in Price and Utilization, 1975 to 2008

Source
National Physician Database, Canadian Institute for Health Information.
Expenditure and utilization are often measured relative to population. In Figure 6, utilization growth rates are broken down into components of population and utilization per capita. Rates of population growth from 1993 to 2008 were lower than they were during the previous periods (population growth trends are discussed further in the next section). Utilization per capita was relatively low from 1993 to 1998 when strong rates of population growth during that period are taken into account. Rates of increase from 2003 to 2008 are well above those between 1983 and 1993.

**Figure 6: Components of Utilization Growth, 1975 to 2008**

![Figure 6: Components of Utilization Growth, 1975 to 2008](image)

**Source**
National Physician Database, Canadian Institute for Health Information.
Population Growth and Aging

Estimates of the contribution of population growth to health expenditures assume that expenditure will increase at least as rapidly as population. The effects of population aging can be analyzed by comparing actual expenditure per capita with expenditure that would be expected as the result of changes in the distribution of the population by age and sex.

The contribution of these demographic effects between 1998 and 2008 has been analyzed by applying the average per capita expenditure within the current population, for males and females stratified by 5-year age groups, to the population distribution of the previous 10-year period. The results of this analysis are presented below, together with projections of the effects of population growth and aging from 2010 to 2036. Analysis of the effects of population growth and aging is especially relevant given current concerns about the impact of an aging population on future health expenditures.

The importance of analyzing changes in the population age profile are illustrated in Figure 7, which shows the distribution of physician expenditure per capita in 2008 by age and sex. Expenditure per capita for women is greater than expenditure per capita for men in most age groups, with a temporary peak at ages 30 to 34. Between ages 40 and 65, expenditure differences between the sexes narrow. After age 65, men have higher expenditure per capita than women. Life cycle expenditure peaks for both sexes between ages 85 and 89 and then drops for those 90 and older.

Figure 7: Physician Expenditure per Capita, by Age and Sex, 2008

Source
National Physician Database, Canadian Institute for Health Information.
The effects of population growth and aging on physician expenditure between 1998 and 2008 are illustrated in Figure 8. Expenditure calculated using the 1998 population and 2008 expenditure per capita would have been $18.7 billion. Actual expenditure in 2008 was $22.1 billion—an increase of 18%, equivalent to an average annual increase of 1.65%. Population growth averaged 1.01% per year during that time. Assuming that population growth would have a proportional percentage effect on expenditure, population aging would have accounted for an increase of 0.64% per year.

Population growth and aging had different effects across jurisdictions (Figure 9):

- Newfoundland and Labrador experienced negative population growth and the highest rate of growth due to aging.
- Alberta had the highest rate of population growth and a relatively low rate of growth due to aging.

**Figure 8: Simulated Physician Expenditure With 2008 Expenditure per Capita ($ Thousands) and 1998 Population**

Sources
National Physician Database, Canadian Institute for Health Information; Statistics Canada.
Figure 9: Average Annual Physician Expenditure Increase From Demographic Factors, 1998 to 2008

Sources
National Physician Database, Canadian Institute for Health Information; Statistics Canada.
Outlook for Future Years

Statistics Canada forecast that, in 2010, the population would grow by 1.18%. Thereafter, population growth rates were forecast to decline but remain above the average of the period 1998 to 2008 until the early years of the 2020 decade (medium growth estimate). The effect of aging on expenditure during that time is expected to stay in the range of 0.6%, then fall to 0.41% over the next 15 years to 2036 as the age profile becomes more stable (Figure 10). The combined annual effects of population growth and aging are expected to be less than historic rates of growth in GDP, suggesting that population aging will not threaten sustainability of medicare funding.

![Figure 10: Projected Annual Effects of Population Growth and Aging on Physician Expenditure, 2010 to 2036](image)

Sources

National Physician Database, Canadian Institute for Health Information; Statistics Canada.
Methodology for Calculating the Effects of Population Growth and Aging

The population for 1998, broken down by province, sex and five-year age groups, was multiplied by expenditure per capita for each of the corresponding age–sex cells for 2008. The results are summed to separate totals for males and females. These totals are added for the 1998 population totals.

A 10-year increase is calculated by dividing the 2008 actual expenditure by the 1998 estimates of expenditure at 2008 rates per capita. An average annual increase is then calculated.

Population growth in each province is calculated from population data, which is sourced from Statistics Canada and is available in CIHI’s National Health Expenditures Trends reports in Appendix C. Ten-year and annual increases were calculated for each province.

Population aging is calculated by dividing the 10-year increase by (1 + the population growth rate).

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Summary of Price, Utilization and Population Demographics as Cost Drivers

The effects on expenditure growth of price changes, population growth, aging and utilization resulting from other factors are summarized for 1998 to 2008 in Figure 11. Key points from the analysis in the preceding sections are included and summarized below:

1. Rates of increase in physician compensation followed rates of increase in the government current expenditure IPI prior to 1998. Since 1998, rates of increase in physician compensation have exceeded rates of increase in the government expenditure IPI.

2. Physician compensation has grown faster than wages for other health and social services workers.

3. Physician compensation increases have been the main cost driver during this period, accounting for approximately one-half of annual growth in expenditure.

4. Population growth and aging have accounted for combined average annual increases of 1.6% per year in expenditure. The effects of population growth and aging are projected to decrease in the future.

5. Utilization per capita (volume and mix of services) was relatively modest from 1998 to 2003 but became more prominent from 2003 to 2008.
The next sections of this report focus on utilization, first examining trends in expenditure per capita across age groups, then considering how the mix of services and physician specialties has changed during the 10-year period 1998 to 2008.

**Figure 11: Annual Effects of Major Cost Drivers, 1998 to 2008**

![Figure 11: Annual Effects of Major Cost Drivers, 1998 to 2008](image)

**Sources**
National Health Expenditures Database, National Physician Database, Canadian Institute for Health Information; Statistics Canada.
Relative Fees and Rates of Utilization by Elderly Persons and Those Under 65

While changes in expenditure due to aging effects were shown to be modest, there is also a question of whether or not expenditure for the elderly is increasing more rapidly than for other age groups due to increased demand for services or greater possibilities for treatment. Figure 12 shows rates of increase in expenditure per capita from 1998 to 2008. Increases in physician expenditure for both sexes show a definite gradient by age, with all categories age 65 and older experiencing increases that were above average. Rates of increase for infants less than one year old and for people age 30 to 40 were also above the trend line. Reasons for the variations among younger populations have not been analyzed; they could reflect treatment possibilities for infants. In the case of persons age 30 to 40, the bulge in the expenditure curve could reflect increasing amounts of treatment for obesity and related illnesses. Interestingly, there is no similar bulge among the baby boom generation (ages 45 to 64 in 2008), which is considered by some commentators as a potential source of above-average demand for health care. Other analyses have found that the current generation of baby boomers and seniors appears to be aging in relatively good health.

Figure 12: Annual Rate of Increase in Physician Expenditure per Capita, by Age Group, 1998 to 2008

Sources
National Physician Database, Canadian Institute for Health Information; Statistics Canada.
The remainder of this section examines the higher rates of expenditure increase among the elderly population. In particular, do higher rates for elderly persons mean they are receiving more care, or is it a price effect, resulting from provinces implementing higher fees for physician visits by the elderly? Figure 13 compares increases in FFS rates paid by provinces for ambulatory visits by GPs/FPs between 1998–1999 and 2008–2009. During this time, all provinces implemented higher fees for treating elderly patients or, where differences existed in 1998–1999, jurisdictions increased fees for the elderly more rapidly than for the younger population.

**Figure 13: Rates of Increase in GP/FP Ambulatory Visit Fees, by Age of Patient, 1998–1999 to 2008–2009**

![Bar chart showing rates of increase in GP/FP ambulatory visit fees, by age of patient, 1998–1999 to 2008–2009.](chart)

Source
National Physician Database, Canadian Institute for Health Information.
The age ranges that qualify for higher fees, the types of service that were affected and the implementation dates vary across provinces. Ontario implemented an age premium (presently 20%) for family practice visits. The Ontario premiums are not included in FFS claims data, but their effects on average fees have been estimated in Figure 13. British Columbia was one of the first provinces to implement higher fees for the elderly, with fee differences related to age introduced before 1998–1999. Although B.C.'s rates of increase during the 10-year span were lower than those of most other provinces, actual rates paid for ambulatory visits by both the elderly and younger populations in B.C. during 2008–2009 were approximately equal to the median among the 10 provinces.

Figures 14 and 15 compare the ratio of visits per 1,000 population by persons over 65 to those under 65. The ratios are compared for 2002–2003 (the first year for which data by age was available by National Grouping System categories) and 2008–2009. The visit ratio was used rather than actual number of visits because the conversion of a number of physician practices to APP over those 10 years caused utilization rates in the NPDB database to decrease for both the elderly and younger populations in most provinces.

**Figure 14: GP/FP Ambulatory Visits per 1,000 Population—Ratio of Visits by Elderly Population to Population Younger Than 65, 2002–2003 and 2008–2009**

Source
National Physician Database, Canadian Institute for Health Information.

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ii. A description of the National Grouping System appears on page 20.
In almost all provinces, the ratio of GP/FP ambulatory visits by the elderly to visits by those under 65 was almost identical for the two years analyzed. The exception is Ontario, where the introduction of primary care groups between these periods may have affected the data. The ratios for medical and surgical specialists increased, but the amount of the increase was relatively small and not indicative of a trend to greater levels of service for the elderly over time.

Key points emerging from the analysis of fee and utilization trends for the elderly and for those under age 65 are as follows:

1. Higher rates of increase in expenditure per capita for the elderly between 1998 and 2008 have been due to higher rates of increase in visit fees for the elderly relative to the non-elderly population.

2. Relative rates of services per 1,000 for the elderly and non-elderly have changed only slightly and do not appear to have had a significant effect on expenditure increases.
Mix of Services

The effects of a changing mix of services were analyzed with NPDB service and payment data classified within the National Grouping System (NGS). In order to minimize any distorting effects from different rates of migration of specialties from FFS to APP, separate calculations were made for each of three specialty groups: family practice, medical specialists and surgical specialists. Within each specialty group

2. Average paid per service for each stratum in 2008–2009 was calculated.
3. Total services in 2008–2009 were multiplied by the percentage distribution of services in 1998–1999; the effect was to redistribute 2008–2009 services according to the 1998–1999 practice profile for each specialty group.
4. The redistributed services were multiplied by the 2008–2009 average price per service.

The effect of these calculations was to hold prices (amount paid per service) constant and also to hold total services constant while allowing the mix of services to change from the 2008–2009 distribution to the 1998–1999 distribution.

Expenditure per capita for GPs/FPs was not affected by changes in the mix of services (Figure 16). Medical and surgical specialists’ expenditure per capita increased due to changes in the mix of services within each specialty group. Estimated expenditure increases during the 10-year period of analysis resulting from mix of services defined in this way was 1.9%, and the annual average increase was 0.19%. The relatively modest effect of service mix is not surprising. Expenditure is quite heavily concentrated within the NGS strata and total expenditure is not highly sensitive to changes in the mix of services within specific strata.

A second explanation for the relatively small effects of changes in the mix of services can be found in the average amounts paid for different types of service. Among medical specialties, consultations and diagnostic/therapeutic services together accounted for 50% of services provided in 1998–1999 and 55.2% of services in 2008–2009. Diagnostic/therapeutic services increased more rapidly than consultations but the average amount paid for diagnostic/therapeutic services is about half the average amount paid for consultations. Consequently, the changing mix of consultations and diagnostic/therapeutic services would not raise expenditure per capita. Volume effects from increases in each type of service were substantial, however (Figure 17).

Among surgical specialties, substantial increases occurred in consultations, major surgery and diagnostic/therapeutic services (Figure 18). Diagnostic/therapeutic services per capita increased by 48.5% for medical specialties and by 28.4% for surgical specialties. These services could have increased as a result of new technology and a growing emphasis on diagnostic testing.
National Physician Database

The NPDB is maintained by CIHI’s Health Human Resources department. The NPDB is the largest and most extensive database of information on physicians and insured medical services in Canada. The NPDB contains information on the demographics of the medical workforce and practice characteristics of physicians. Insured services and payments through FFS are summarized by provincial fee code and by age and sex of patients. Aggregate-level data on alternative payments for all provinces and two territories is included in the NPDB. CIHI has recently expanded efforts to obtain physician-level data on APPs and now receives physician-level APP data from five provinces. More provinces expect to be able to provide it in the near future.

National Grouping System

CIHI’s NGS provides a methodology to group physicians’ services listed in provincial and territorial fee schedules in order to facilitate interprovincial comparisons of service utilization. The NGS follows a structure that includes 14 strata, or major service groupings (for example, consultations and major and minor surgery), and 120 categories of service. The number of categories included in strata varies from 2 in the consultations stratum to 38 in the major surgery stratum. Any new services added to provincial and territorial fee schedules are assigned to the appropriate stratum by CIHI.

More detailed information on the NPDB and the NGS is available in the Methodological Notes section in the series of annual reports generated from the NPDB, available through CIHI’s eStore (https://secure.cihi.ca/estore/productFamily.htm?locale=en&pf=PFC1678).

Figure 16: FFS Expenditure per Capita (in 2008 Dollars), by Mix of Insured Services, 1998–1999 and 2008–2009

Source
National Physician Database, Canadian Institute for Health Information.
Figure 17: FFS Services per 100,000 Population—Medical Specialists, 1998–1999 and 2008–2009

Source
National Physician Database, Canadian Institute for Health Information.

Figure 18: FFS Services per 100,000 Population—Surgical Specialists, 1998–1999 and 2008–2009

Source
National Physician Database, Canadian Institute for Health Information.
Mix of Specialties

Differences in the prevalence of APP among specialties complicate attempts to estimate cost increases resulting from a change in the mix of specialties providing care. In order to develop estimates of the effects of changes in the mix of specialties, NGS data from British Columbia was analyzed. B.C. uses APP in three well-defined programs: service contracts, sessional and salary. B.C. also has a primary health care program with blended remuneration. Although the use of service contracts has been growing, the sessional and salary plans have been relatively stable in terms of practices funded through salary and hours funded through sessional arrangements. The primary health care program has served the same group of practices since 2001. When expenditures for on-call stipends and lump sum payments under the rural retention program are removed from estimates of APP expenditure, APP as a percentage of insured payments in B.C. ranged from 9.5% in 1999–2000 to 13% in 2007–2008—an increase of only 3.5 percentage points. Thus, B.C. provides the most stable distribution of insured payments between FFS and APP among the provinces and is the most appropriate jurisdiction in which to attempt to measure the effects of changing specialty mix on FFS expenditure.

Figure 19 shows 10-year rates of FFS expenditure among the three specialty groups in B.C. broken down to show rates of increase in utilization per capita and rates of increase in fees. Fee increases have been quite similar for the specialty groups, ranging from 26.2% to 33.3% between 1998 and 2008. Utilization per capita increased more rapidly for specialists than for family medicine. As a result of these changes, the share of family medicine in total FFS expenditure decreased, while the shares of medical and surgical specialists increased (Figure 20). The shift from FP to specialist services has been noted in a study by analysts at the Centre for Health Services and Policy Research.10

In the 10-province data discussed earlier, consultations and diagnostic/therapeutic services increased for both medical and surgical specialties. This pattern was also evident in B.C., although the magnitude of the increases was greater. Diagnostic/therapeutic services increased by 66.9% for medical specialists and 46% for surgical specialists (compared with 48.5% and 28.4%, respectively, for the 10 provinces overall). Diagnostic/therapeutic services also increased for family medicine in B.C., by 43%.
Figure 19: Rates of Increase in Expenditure per Capita, by Specialty Group, British Columbia, 1998–1999 to 2008–2009

Source
National Physician Database, Canadian Institute for Health Information.

Figure 20: Distribution of Expenditure by Specialty Group, British Columbia, 1998–1999 and 2008–2009

Source
National Physician Database, Canadian Institute for Health Information.
Simulations of the Effects of Changing Service Mix and Specialty Mix

The effects of a changing mix of services on FFS expenditure per capita were calculated for B.C. using the same methodology described earlier to estimate the effects of a changing mix of services for the 10 provinces. In B.C., all three specialty groups experienced an increase in average expenditure per capita as a result of changing service mix (Figure 21). The annual increase due to a changing mix of services was 0.19%, virtually identical to the annual increase in all 10 provinces.

In order to estimate increases in expenditure due to the changing shares of specialty groups, the 1998–1999 expenditure per capita for each specialty group was increased by the 6.6% rate in expenditure per capita at constant prices for FPs. The results were then multiplied by the rate of fee increases for each group. This calculation provides an estimate, at constant prices, of what the expenditure for each group would have been in 2008–2009 had there been no change in the relative shares of expenditure among the specialty groups. It should be noted that the results of this type of analysis are sensitive to the rate of utilization increase used in the first step described above.

The changing mix of specialties is estimated to have accounted for an increase of 7.4% during the 10 years, or approximately 0.72% per year.

Figure 21: FFS Expenditure per Capita (in 2008 Dollars), by Mix of Insured Services, British Columbia, 1998–1999 and 2008–2009

Source
National Physician Database, Canadian Institute for Health Information.
Summary of Cost Drivers—Canada

A summary of cost drivers is shown in Figure 22. It expands on the estimates in Figure 11 by including the effects of mix of services and mix of specialties. The B.C. coefficients for mix of specialties and services were used to redistribute the average annual increase over 10 years for the category Other Volume in Figure 11 to the three categories shown in Figure 22. Estimates have been rounded to one decimal.

Figure 22: Average Annual Rates of Expenditure Growth, Canada, 1998 to 2008

Source
National Physician Database, Canadian Institute for Health Information.

Key Points

1. Fee increases were the main cost driver for physician expenditure between 1998 and 2008.
2. Population growth was the second most important cost driver.
3. Changes in the mix of specialties and population aging were the third and fourth most important cost drivers.
4. Changes in the mix of services were relatively modest but accounted for measurable increases in cost.
5. Other utilization effects, which are unexplained by this analysis, were responsible for approximately 0.5% in average annual growth of expenditure.
Physician Supply

Historically, the number of physicians per capita increased rapidly from 1978 to 1989. Between 1989 and 1993, physician supply increased modestly then declined for four years before resuming growth in 1997 (Figure 23). Growth rates since 2003 have been relatively strong.\footnote{11}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{physicians_supply.png}
\caption{Physicians per 100,000 Population, Canada, 1988 to 2009}
\end{figure}

\textbf{Source}
Scott's Medical Database, Canadian Institute for Health Information.

\begin{shaded}
Scott's Medical Database

Scott's Medical Database (SMDB), which is maintained by CIHI, includes professional and demographic information for all active physicians in Canada, including interns and residents. The SMDB includes indicators of type of activity or employment.

CIHI’s reports from the SMDB include active civilian physicians classified as general/family practice, medical specialists, surgical specialists, technical specialists and medical scientists. Billings by technical specialists and medical scientists are not included in the NPDB.
\end{shaded}
Physician Supply and Utilization

Trends in utilization have been similar, in terms of direction, to trends in the number of physicians (Figure 24). The magnitude of utilization increases has exceeded the magnitude of physician increases, however. Trends in Figure 24 are indexed to 1978. Physician supply is defined as all active civilian physicians in the SMDB, including technical specialists, and utilization is measured as total physician expenditure recorded in NHEX at 1997 price levels, with price levels measured by CIHI’s physician compensation index (NPDB version).

Both physician supply and utilization decreased during the early 1990s, with utilization beginning to trend downward in 1992 and physician supply trending downward in 1993. Growth in both variables began again in 1997 and has continued since then. Reasons for the decline in physicians per capita have been documented in Chan.¹² Reasons included a move to a two-year family medicine residency (from one year). The number of first-year medical school positions decreased in the early 1990s, but this would not have affected physician supply until later in the decade. The reasons for the decline in utilization have not been documented, although this trend was well-known to analysts in provincial medical care plans. This was a period of cost restraint by the federal and provincial governments and it is probable that some of the measures introduced to restrain expenditure growth had a dampening effect on utilization. Potential influencing factors could have included global budgets and fee rollbacks, which might have removed incentives to provide non-essential services in FFS remuneration. The closing of hospital beds would have restrained access to hospital-based treatment. The resumption of growth in both physician supply and utilization in 1997 coincided with a cessation of financial restraint measures in most provinces and reinvestment in both ambulatory and institutional care.

Sources
Scott’s Medical Database and National Health Expenditure Database, Canadian Institute for Health Information.
Relatively high increases in expenditure per capita at constant prices since 2003 have led to an impressive growth in expenditure per physician at constant price levels.

Conversion to Alternative Payment Plans

This section explores issues in physician APPs and discusses their role as cost drivers in physician expenditure. The three key issues to be explored are

- FFS and APP growth trends;
- Types of APP in Canada; and
- APP as a supplement to other payments for insured services.

Fee-for-Service and Alternative Payment Growth Trends

FFS payments are available in the NPDB beginning in 1989–1990. Alternative payments in aggregate have been available since 1999–2000. Both forms of payment have shown steady increases since 1998–1999, with FFS and APP showing greater rates of growth (Figure 25). Between 2003–2004 and 2008–2009,

- FFS payments grew by 1.5% per year in constant 1997 dollars; and
- FFS plus APP grew by 3.6% per year in constant 1997 dollars.

There has been a tendency to think of APP as, literally, an alternative to FFS, replacing FFS payments with other forms of compensation. While this was the case in the early years of APPs in Canada, there has been an increasing tendency in recent years to use APP as a supplement to FFS compensation. The scope of APP in Canada and the distribution of expenditure between each type of APP are shown in Figure 26.

**Figure 25: NPDB Expenditure, 1989 to 2008**

![Chart showing NPDB Expenditure, 1989 to 2008]

Source
National Physician Database, Canadian Institute for Health Information.
Figure 26: NPDB Alternative Payments, 2008–2009

Note
NA: distribution of APP payments was not reported (Manitoba).
Source
National Physician Database, Canadian Institute for Health Information.

Types of Alternative Payment Plans in Canada
1. Block funding is used by specialty groups in academic health sciences centres and is prevalent in Ontario and Nova Scotia.
2. Blended funding is prevalent in Quebec where many specialists receive a combination of salary and FFS.
3. On-call stipends are additional to FFS or APP remuneration for services provided while on call.
4. Capitation is concentrated in Ontario, where it is used in the Primary Health Care program.
5. Contract is concentrated in B.C., which uses service contracts as the main form of APP.
6. Sessional or hourly remuneration is often used for programs where community physicians work part time.
7. Salary is used in rural areas of some jurisdictions (for example, Newfoundland and Labrador and the Northwest Territories).
8. Northern incentive programs are concentrated in Ontario and British Columbia.
Blended funding\textsuperscript{iii} and on-call stipends do not replace FFS as a primary mode of compensation. In capitation, physician groups are paid a monthly fee for patients who are rostered (registered as patients) with the practice. Traditionally, capitation has been seen as an alternative to FFS, but in the Ontario primary care groups that have the highest rate of participation, capitation is paid for rostering patients while physicians bill FFS for most services. Northern incentive programs in B.C. feature lump sum amounts as well as higher rates of FFS payment. These four forms of APP account for 47\% of total APP payments (Figure 26).

Since 2004, growth has been highest in block funding, blended funding and capitation (Figure 27).\textsuperscript{iv} Sessional and salary payments, which were prominent in the initial years of APP, now account for less than 20\% of APP payments and grew only modestly between 2004–2005 and 2008–2009. These trends illustrate the evolving nature of physician compensation in Canada.

\textbf{Incentive Fees and Pay for Performance}

The rapid introduction of incentive fees for specific types of care and pay-for-performance (P4P) represent other significant developments in physician payment programs. Examples include

- Fees for chronic care;
- Fees for continuity of care;
- Fees for accepting new patients; and
- Fees for collaborative practice, with physicians and other health providers working as a team.

In this model, non-physician health professionals are often employed by RHAs while physicians are free to choose between FFS or APP.

Incentives such as fees for chronic care and continuity of care appear to represent efforts to address weaknesses of the FFS system through special fees—in effect, an attempt to find solutions within the FFS system rather than through a conversion to APP. A similar initiative, in the form of higher fees for the elderly (who often require chronic care and have multiple conditions) was discussed in the section on mix of services. P4P incentives are paid either through lump sum APP payments or FFS fee codes. Practices vary across jurisdictions and types of P4P payment.

\textsuperscript{iii} Blended funding is often used generically to refer to participation in more than one mode of payment. Blended (pondéré–mixte) is a specific program in Quebec.

\textsuperscript{iv} 2004–2005 is the first year in which most provinces reported data within the APP payment modes used in this analysis.
APP and the Comprehensiveness of the National Physician Database

The degree of data loss in the NPDB as a result of using APP as a primary form of payment has been an ongoing concern. The actual degree of data loss from APP is much less than percentage distributions of FFS and APP imply.

- Types of APP that supplement FFS do not cause data loss.
- Block funding, sessional, salary and a minority of capitation plans now represent the main areas of data loss from APP.
- Additional studies are necessary to document the degree of data loss to the NPDB in a rapidly evolving payment environment.
- A number of jurisdictions provide percentage payments to APP physicians for reporting encounters through shadow billing (for example, 10% of the FFS fee).
- Most jurisdictions are studying the possibility of reporting physician-specific or encounter-specific data to CIHI for APPs that replace FFS.

Source
National Physician Database, Canadian Institute for Health Information.
APP as a Cost Driver

APPs in Canada have usually been introduced in circumstances that increase costs relative to FFS. Examples include the following:

- APP as the main form of remuneration is most prevalent among specialties that typically have lower-than-average FFS incomes (for example, GPs/FPs, pediatricians).
- APP is often used as primary remuneration in areas where service volumes are low or unpredictable (for example, rural or urban underserviced areas and emergency rooms).
- APP is often used for time-intensive care (for example, psychiatric care or counselling).
- Provinces report that funds from FFS pools transferred to APP are typically less than the amount of funding a practice will receive after a transfer to APP.

The added costs of converting from FFS to APP are not well documented. Examples do exist, however.

1. British Columbia has standard service contract rates for GPs/FPs and specialists. A rate was established for emergency department (ED) physicians with a specialty in emergency medicine in 2005. Before converting to service contracts, a study was carried out to estimate increases in expenditure that would result from converting 12 EDs from FFS to the service contract rates. The value of the service contracts was $33.8 million and the amount transferred from the FFS pool (that is, amounts that had been billed in FFS during the previous year) was $21.0 million, or 61.8%.13

2. Physicians in the Academic Health Sciences Centres (AHSC) program in Ontario continue to receive either FFS or APP for insured services. A program guide for the AHSC plan describes funding as follows: “The 2000 and 2004 Physician Services Agreements between the Ontario Medical Association (OMA) and the Ministry of Health and Long-Term Care (MOHLTC) together provide more than $225 million in new annual funding to support AHSC physicians.”14 Of the annual total, $140 million was allocated to a Clinical Competitiveness pool that provides funding to AHSC physicians to supplement their incomes from FFS billings or APP.

3. FPs in the Ontario Primary Health Care program may choose between plans that provide capitation in place of FFS for most services or plans that provide capitation for rostering patients and FFS for insured services.15

- The Family Health Network (FHN), which is the largest type of plan that has capitation as the main form of payment, would provide a capitation income of $328,000 to physicians who have 2,400 patients enrolled, assuming the patients received all their GP/FP care from the FHN.v Physicians are also eligible for a number of incentive and P4P payments.
- Physicians in Family Health Groups, the largest type of plan with FFS as the main form of payment, would receive annual capitation payments of approximately $62,000 for 2,400 rostered patients in addition to FFS billings, incentive payments and P4P payments.
- The average gross FFS income per full-time-equivalent FP in Ontario during 2008–2009 was $226,200.16

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v. Capitation payments average $113 per patient annually plus an additional 21% that can be reduced if patients seek primary care from another practice.
4. On-call stipends, which were discussed earlier, added $586 million to physician FFS and APP payments in 2008–2009.

Most of the Ontario payments were documented in fee agreements, and their effects on physician payments would be included in estimates of fee increases. Consequently, it is not feasible to estimate an amount for APP in the cost drivers framework.

Discussion

The examples above illustrate that APP has often been introduced with a view to providing enhanced income to physicians. There is also a more ambiguous dimension to the cost implications of specific payment modalities. FFS has been criticized for providing an incentive to provide more services than necessary. APP has been favoured by some health analysts as a way to reduce unnecessary services. On the other hand, costs could increase in APP models if physicians see fewer patients, requiring more physicians to serve a given patient population. The evidence on this issue appears to be mixed. For example, Glazier et al. (2009)\textsuperscript{17} found that patients in an Ontario blended capitation model had fewer after-hours visits and more visits to an ED than patients in an enhanced FFS model. Patients in the capitation model had lower morbidity and comorbidity indices, however, and patients in the two types of model received similar levels of comprehensiveness and continuity of care. Physicians in the capitation model treated fewer patients, but the authors concluded that this was due to pre-existing characteristics and not to the payment model. A study of patients in Quebec Family Medicine Groups (Tourigny et al., 2009)\textsuperscript{18} found that patients reported improved continuity of care but that accessibility and responsiveness did not change. Devlin et al. (2008)\textsuperscript{19} found that family physicians in FFS practice provide more visits than physicians in other forms of remuneration. They concluded that physicians tended to select forms of remuneration that matched their preferences. These studies suggest that APP tends to attract physicians who are predisposed to certain types of practice rather than change physician practice behaviour through economic incentives.

The study of financial incentives in payment modalities produced a large body of literature between 1998–1999 and 2008–2009. Chaix-Couturier et al. (2000)\textsuperscript{20} did a systematic review of the effects of financial incentives on medical practice, reviewing results from 89 published articles. They found that systematic differences in practice could be associated with financial incentives. A more recent study, based on 48 published articles (most dealing with U.S. experience), concluded the following: “There is clear evidence that medical service utilisation differs under different provider payment arrangements. It is reasonable to conclude that provider behaviour in the patient-provider decision-making process can be influenced by financial incentives” (Christianson et al., 2007).\textsuperscript{21} Both of these studies qualified their conclusions with statements that the literature did not provide compelling evidence that responses could be predicted from financial incentives in isolation from other determinants of practice behaviour.
International Comparisons

International comparisons have limited utility in an analysis of cost drivers, except at levels that show the relationship between macroeconomic financial variables and health expenditures, which is not the focus of this analysis. Nonetheless, many wish to compare characteristics of the health care system in Canada with that of other countries. The OECD collects data from all member countries and publishes an extensive series of comparative data.22, 23 This section briefly considers OECD data on the supply of physicians and nurses.

The OECD advises caution in interpreting international comparisons. This advice is well-founded. Macroeconomic variables such as GDP and total health spending are concepts that are likely to be consistently reported by most countries. More disaggregated variables, such as physician supply, may not be systematically collected or reported across countries. The OECD has developed a set of definitions for reporting that are not always consistent with national reporting standards. For example, the OECD requests physician supply counts that include interns and residents, which is not consistent with the definition of an active civilian physician in Canada. The requirement for countries to compile data according to OECD definitions could complicate reporting in countries that, unlike Canada, do not have a strong national data system on physician supply.

Other factors that lead to caution in interpreting international comparisons include the following:

- Geographic, cultural and organizational characteristics influence physician supply, utilization and productivity in health systems.
- Many OECD countries are highly urbanized, with population densities much greater than Canada’s. Physician supply tends to be stronger in urban areas.
- Reporting by many countries is uneven and some data series are puzzling or seem inconsistent. For example, Japan, which ranks low in terms of physicians per capita, has the highest number of doctors’ visits per capita.
- The OECD tendency to compare against the OECD average is disconcerting given that many countries do not report consistently and that the available data shows considerable variability.
- Most importantly, supply is not an indicator of effectiveness. The ways in which the health system is organized and the extent to which patterns of care follow best practice guidelines are key determinants of the effectiveness of health workforces.
Bearing in mind the caveats noted above, the following OECD graphs suggest that the number of physicians per capita in Canada is comparatively low (an observation that also applies to the U.S., the U.K. and Japan). Canada appears to have a relatively strong supply of GPs/FPs and nurses, however, which could provide an advantage in efforts to strengthen primary care, a universally recognized priority. The supply of physicians in Canada has been growing more rapidly during the most recent five years for which data is available than physician supply in a number of comparator countries, including the U.S.

**Figure 28: Professionally Active or Practising Physicians per 1,000, 2007**

<table>
<thead>
<tr>
<th>Country</th>
<th>Physicians per 1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>3.9</td>
</tr>
<tr>
<td>Switzerland</td>
<td>3.9</td>
</tr>
<tr>
<td>Italy</td>
<td>3.8</td>
</tr>
<tr>
<td>Germany</td>
<td>3.8</td>
</tr>
<tr>
<td>Sweden P (2006)</td>
<td>3.6</td>
</tr>
<tr>
<td>France</td>
<td>3.4</td>
</tr>
<tr>
<td>Australia</td>
<td>3.2</td>
</tr>
<tr>
<td>United States</td>
<td>2.6</td>
</tr>
<tr>
<td>United Kingdom P</td>
<td>2.5</td>
</tr>
<tr>
<td>CANADA</td>
<td>2.2</td>
</tr>
<tr>
<td>Japan (2006)</td>
<td>2.2</td>
</tr>
</tbody>
</table>

**Notes**
- Professionally active physicians include residents, interns and physicians in research or administration.
- Practising physicians do not include those in research or administration.
- Countries showing only practising physicians are identified by "P" following the country name.
- Countries that did not report in 2007 have reporting years in brackets.

**Source**
- OECD Health Data 2010.
Figure 29: Percentage of GPs/FPs of All Professionally Active or Practising Physicians, 2007

Australia P 50.3%
France 48.8%
Canada 47.7%
United Kingdom P 29.2%
Spain P 10.3%
Germany P 18.9%
Sweden P (2006) 16.9%
Switzerland 13.8%
United States P 12.4%

Notes
Professionally active physicians include residents, interns and physicians in research or administration.
Practising physicians do not include those in research or administration.
Countries showing only practising physicians are identified by “P” following the country name.
Countries that did not report in 2007 have reporting years in brackets.

Source
OECD Health Data 2010.
Figure 30: Average Annual Growth Rates, Physicians per 1,000, 1998 to 2003 and 2003 to 2008

Source
OECD Health Data 2010.

Figure 31: Nurse-to-Physician Ratio, 2007

Notes
Professionally active physicians include residents, interns and physicians in research or administration.
Practising physicians do not include those in research or administration.
Countries showing only practising physicians are identified by “P” following the country name.
Countries that did not report in 2007 have reporting years in brackets.
Source
OECD Health Data 2010.
Future Issues to Monitor

A number of issues identified in this project have the potential to affect future trends in expenditure for physicians’ services.

1. Compensation increases for physicians have been above rates of inflation. Many provinces have multi-year contracts with physicians. Some of these provinces are also coping with budget deficits. The effects of economic circumstances on multi-year contracts are not clear.

2. Population growth rates have increased after a temporary period of low growth rates. These growth rates can be expected to increase expenditure for the population of infants (where expenditure per capita is relatively high) and children. The effects are expected to be modest overall.

3. Utilization increased at accelerated rates between 2003 and 2008. Higher expenditure per physician combined with an increasing physician supply could add to these rates of growth in the few years following 2008.

4. Growth rates in the number of medical and surgical specialists have exceeded rates of growth for general and family practitioners. Rates of growth in expenditure for specialists’ services have also exceeded rates of growth in GP/FP services. These trends have implications for the balance of primary, secondary and tertiary care.

5. Scopes of practice of physicians and other health professionals have the potential to affect future costs. Expanded scopes of practice for nurse practitioners and collaborative practices involving physicians and other professionals may result in greater efficiency from a societal perspective, but they have the potential to increase the costs of care in the short term.

6. Population health risks have been exacerbated by declining rates of physical activity. Increasing rates of obesity and high blood pressure have been noted as especially serious risk factors for diabetes and heart diseases. Increasing prevalence rates for these conditions have the potential to add to the costs of chronic care and adversely affect the income and wealth of families.
References


2. Ibid


24. CIHI. Health Care in Canada 2010. (Ottawa Ont.: CIHI, 2010). Pg. 43, 44.
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