



Facts about the cost of patented drugs in Canada

2018 Edition

CHPI Canadian
Health
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Institute

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2018 Edition

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ACCESS TO INNOVATIVE MEDICINES RESEARCH PROGRAM

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REVISED

This paper was revised in April 2019 solely to add an additional analysis under "SUPPLEMENTAL: NATIONAL HEALTH EXPENDITURES SILOS".

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SUMMARY

Objective

The purpose of this annual study is to correct common misconceptions about the cost of patented pharmaceuticals in Canada. The analysis uses publicly available data to:

- ✓ identify the actual aggregate net direct cost of patented drugs in Canada.
- ✓ assess affordability relative to population, general price inflation, GDP and other healthcare costs.
- ✓ discuss the costs of patented drugs in the context of the health-economic benefits of pharmaceutical innovation.

Highlights

- The actual costs attributable directly to patented drugs are only a fraction of the total “drugs” costs published by CIHI. In 2017 CIHI reported \$38.2 Billion was spent on all “drugs” and \$32.3 Billion on “prescribed drugs”. According to PMPRB, the total direct cost from gross sales of patented drugs was \$16.8 Billion in 2017, which accounts for 44% of the “drugs” total reported by CIHI for the same year.
- Ontario's Auditor General reported that the province's public drug plan received rebates of close to 30% on brand name drugs in the fiscal year 2016/17. After accounting for a national average rebate of 30% applied to the public drug plan share of sales, net national sales of patented drugs were estimated to be \$14.7 Billion in 2017 – only 38% of the “drugs” total reported by CIHI.
- Measured in current dollars, the per capita cost of patented drugs was \$458 in 2017. Historical data from 1990 to 2017 were available for population and the CPI that allowed for a conversion of gross national sales of patented medicines into per capita costs measured in constant 1990 dollars to remove the effect of general price inflation. Adjusting for national population growth and inflation over time reveals that patented drugs have experienced near zero real average annual cost growth for the last 12 years. Measured in constant 1990 dollars, the gross per capita cost of patented drugs was \$275 in 2017, growing at an average annual rate of only 0.55% from \$258 in 2006. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, the net national per capita cost of patented drugs was only \$241 (constant 1990 \$) in 2017.

- Gross sales of patented drugs have accounted for less than 1% of GDP for the last 28 years. Patented drugs were the same percentage of GDP in 2017 (0.78%) as in 2003 (0.78%), a 15-year period of zero average annual growth relative to GDP. Accounting for public drug plan rebates, the net national cost of patented drugs was only 0.68% of GDP in 2017.
- Gross sales of patented drugs accounted for only 6.9% of the \$243.4 Billion reported by CIHI for total health spending in Canada in 2017. Patented drugs accounted for a smaller percentage of total health spending in 2017 (6.9%) than in the year 2001 (7.1%), a 17-year period of near zero average annual relative cost growth. Accounting for public drug plan rebates, the net national cost of patented drugs was only 6.0% of total health spending in 2017.
- Public drug plan spending on the direct costs of patented drugs at factory list prices was roughly \$7.0 Billion in 2017, representing only 4.2% of the \$165.7 Billion in total health spending by Federal, Provincial and Territorial governments in the same year. Gross sales of patented drugs were the same percentage of government health costs in 2017 (4.2%) as in 2000 (4.2%), an 18-year period of zero average annual growth relative to total government health expenditure. Accounting for rebates, net national spending on patented drugs by public drug plans was only \$4.9 Billion or 3.0% of all government health spending reported by CIHI in 2017.
- PMPRB defines high-cost patented drugs as medicines with annual treatment costs of more than \$10,000. According to PMPRB there were 144 patented medicines defined as high-cost drugs in 2017 accounting for \$6.3 Billion in gross sales. Gross sales of all high-cost patented drugs represented only 0.29% of GDP and 2.6% of total health expenditures in 2017. Gross national sales of high-cost patented drugs have accounted for less than 0.35% of GDP and less than 3% of total health expenditures for the last 12 years. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, net national spending on high-cost patented drugs was only \$5.5 Billion representing 0.26% of GDP and 2.3% of total health expenditures in 2017.
- Measured in current dollars, gross national per capita spending on high-cost patented drugs was \$172 in 2017. Historical data from 2006 to 2017 were available for population and the CPI that allowed for a conversion of gross national sales of high-cost patented medicines into per capita costs measured in constant 2006 dollars to remove the effect of general price inflation. Measured in constant 2006 dollars, gross national per capita spending on high-cost patented drugs was \$144 in 2017. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, net national per capita spending on high-cost patented drugs was only \$126 (constant 2006 \$) in 2017.

- Gross national expenditures on high-cost patented medicines by public drug plans were \$2.6 Billion in 2017 representing 0.12% of GDP and 1.6% of government health expenditures. Gross national public drug plan spending on high-cost patented medicines accounted for less than 2% of government health expenditures over the entire 12-year period 2006 to 2017. Accounting for a national average rebate of 30%, the net national public drug plan spending on high-cost patented medicines was only \$1 .9 Billion or 0.09% of GDP and 1.1% of government health spending in 2017.
- PMPRB data show that the net prices of patented drugs in Canada have grown slower than the Consumer Price Index (CPI) in 28 of the 30 years from 1988 to 2017.
- PMPRB data show that, adjusted for the market exchange rates of currencies, gross median international prices have been higher than Canadian prices for the last 11 years, as much as 26% higher in 2017. When the PMPRB used the gross mean (or average) prices, and adjusted currencies at purchasing power parities, international prices for patented drugs were 53% higher than Canadian prices in 2017, and the gap has widened from 4% higher in 2007.
- The cost of patented drugs must be weighed against the health and economic benefits. Pharmaceutical innovation improves patient health outcomes, reduces potential health system costs and reduces indirect societal costs like economic productivity losses from untreated or under-treated illness.

Conclusion

The facts show that there is no spending crisis regarding patented medicines in Canada. The actual cost attributable directly to patented medicines is only a fraction of the total “drugs” related costs published by CIHI. Other components of the healthcare system account for much larger shares of spending than patented medicines. Adjusting for factors like population, CPI and GDP, the total direct cost burden from patented medicines is stable and moderate. Prices are also stable and moderate relative to CPI or comparable countries. These findings raise serious questions about whether it is economical for governments to allocate more administrative resources to controlling the cost of patented medicines. The very small percentage of health spending accounted for by patented medicines means even the most extreme cost-containment efforts will not return significant overall savings. Cost-containment efforts that reduce access to new medicines are counter-productive. Research shows that improving access to new medicines will return health and economic gains that far outweigh the upfront costs.

INTRODUCTION

The federal government is introducing two major health policy changes that will have significant unintended consequences for patients and taxpayers. The government is changing the regulatory guidelines used by the Patented Medicine Prices Review Board (PMPRB). The new rules are rigged to force down maximum allowable prices of patented medicines to levels far below current legally mandated ceilings. At the same time, Ottawa is studying ways to implement National Pharmacare. The primary option being considered is a federal program that would replace all employment-based drug benefits in both the private and public sector, as well as replacing existing federal, provincial and territorial government-run drug plans.

Pharmaceutical costs are cited as an official justification for both PMPRB regulatory reform and National Pharmacare **[Table 1]**. But, the findings of this study strongly suggest that policymakers are not fully informed about pharmaceutical costs - particularly regarding patented medicines.

The federal government's healthcare statistics agency contributes to the confusion. The drugs expenditure numbers published annually by the Canadian Institute for Health Information (CIHI) artificially inflate the costs that are directly attributable to the prices of prescription drugs. Indirect supply-chain costs, professional fees, non-drug costs, drug plan administration, drug development research and even sales taxes – are aggregated under the “drugs” expenditures label. CIHI's aggregate expenditures are commonly misunderstood to mean the same as “direct” cost.

Exaggerating the cost of drugs raises alarmist concerns about the impact of prices on the sustainability of Canada's healthcare system. Indeed, CIHI's public messaging frames the discussion of aggregate “drugs” expenditures as a crisis caused by manufacturers' prices.¹

The confusion is most acute regarding the cost of patented medicines. CIHI's “drugs” expenditures are falsely equated with manufacturers' sales of patented drugs, and then cited as a reason to justify government intervention to control prices. Policy responses include price regulation, public monopsony drug purchasing, restricting coverage for new medicines in public drug plan formularies, nationalizing drug insurance and rejecting international trade standards for the protection of pharmaceutical related intellectual property rights.

¹ Canadian Institute for Health Information. November 20, 2018. “Canada's drug spending growth outpaces that for hospitals and doctors.” <https://www.cihi.ca/en/canadas-drug-spending-growth-outpaces-that-for-hospitals-and-doctors>.

This study shows that the cost crisis rationale offered for such policies is not supported by the evidence. The findings suggest that the PMPRB reforms and National Pharmacare are misguided because they are driven by false assumptions about the cost of prescription drugs, particularly patented medicines. The potential unintended consequences are significant. Previous research suggests that these policies will reduce access to new medicines for patients and impose massive new costs on taxpayers - and still won't fix the problems they are intended to solve.^{2,3,4,5,6,7} Policymakers need to be better informed before imposing such extreme regulatory regimes and disruptive, expensive government programs.

Table 1. Cost justifications: PMPRB, National Pharmacare.

<i>"Canada's spending on prescription drugs is unsustainable..."⁸</i>
<i>"Drugs are now the second-largest category of spending in health care..."⁹</i>
<i>"Canadians spend \$926 per person on prescriptions per year..."¹⁰</i>
<i>"Drug spending in Canada has grown significantly over the past few decades, from \$2.6 Billion in 1985 to \$33.8 Billion in 2017, and the share of GDP spent on drugs has more than tripled from 0.5% to 1.6% over this period."¹¹</i>
<i>"Since 2000, Canada's growth in patented drug expenditures as a share of GDP has increased by 184%."¹²</i>
<i>"Canada is paying higher prices for prescription drugs than most other developed countries..."¹³</i>
<i>"Canadian patented drug prices have been steadily rising relative to prices in the seven countries to which Canada compares itself under its regulations..."¹⁴</i>

² Skinner, Brett J (2017). Does Canada need a Patented Medicine Prices Review Board? *Canadian Health Policy*, October 26, 2017. URL: www.canadianhealthpolicy.com

³ Skinner, Brett J (2017). Consequences of over-regulating the prices of new drugs in Canada. *Canadian Health Policy*, March 27, 2018.

⁴ Skinner, Brett J (2018). Prescription drug plan coverage 2016: how many Canadians were insured, under-insured or uninsured? *Canadian Health Policy*, June 18, 2018.

⁵ Canadian Health Policy Institute (2018). Out-of-pocket prescription drug costs: What are the implications for National Pharmacare? *Canadian Health Policy*, October 2018.

⁶ Canadian Health Policy Institute (2018). Taxpayer Cost of National Pharmacare: Disputing the Parliamentary Budget Officer's Estimate. *Canadian Health Policy*, October 2018.

⁷ Canadian Health Policy Institute (2018). Coverage of new medicines in public versus private drug plans in Canada 2008-2017. *Canadian Health Policy*, August 20, 2018.

⁸ Government of Canada (2018). Towards Implementation of National Pharmacare: Discussion Paper. Page 5.

⁹ Health Canada (2017). Protecting Canadians from Excessive Drug Prices: Consulting on Proposed Amendments to the Patented Medicines Regulations. Page 3.

¹⁰ Government of Canada (2018). Towards Implementation of National Pharmacare: Discussion Paper. Page 5.

¹¹ Government of Canada (2018). Towards Implementation of National Pharmacare: Discussion Paper. Page 5.

¹² PMPRB (2016). PMPRB Guidelines Modernization: Discussion Paper. Page 6.

¹³ Health Canada (2017). Protecting Canadians from Excessive Drug Prices: Consulting on Proposed Amendments to the Patented Medicines Regulations. Page 3.

¹⁴ PMPRB (2016). PMPRB Guidelines Modernization: Discussion Paper. Page 6.

DATA

The analysis uses the most recently published historical and comparable data from the Patented Medicine Prices Review Board (PMPRB), the Canadian Institute for Health Information (CIHI), and Statistics Canada. For reasons explained below, PMPRB data availability determined the time frame of the analysis. Annual national sales data for patented drugs were available from 1990 to 2017. Annual national sales data for patented medicines defined by PMPRB as “high-cost” drugs were available from 2006 to 2017. Price indices data were available from 1988 to 2017. Foreign-to-Canadian price ratios data were available from 2007 to 2017. The following section explains important definitional differences between the PMPRB and CIHI numbers.

PMPRB “patented” drugs definition¹⁵

PMPRB is the only source of national comprehensive data for direct spending on patented drugs in Canada. PMPRB does not publish separate public sector and private sector or sub-national data.

The data for “patented drugs” sales reported by PMPRB **includes**:

- total national manufacturer sales of patented drugs.
- at manufacturer (*ex factory*) gross ‘list’ prices.
- prescribed and non-prescribed drugs.

The data for “patented drugs” spending reported by PMPRB **excludes**:

- confidential price rebates (discounts) negotiated between manufacturers and public-sector and private-sector drug plans, wholesalers, retailers and hospitals.

CIHI “drugs” definition¹⁶

CIHI defines “drugs” cost much differently than PMPRB. CIHI does not publish data that are specific to spending on patented drugs. CIHI publishes health spending separately by category (hospitals, physicians, drugs, etc.); by Federal, Provincial, and Territorial jurisdiction; and by public sector (government and social security funds) and private sector (private insurance and individuals).

The data for total expenditure on “drugs” spending reported by CIHI encompasses expenditures by all payers, counting total supply-chain and other costs, **including**:

- patented and non-patented (i.e. off-patent brands and generics) drugs.
- prescribed and non-prescribed drugs (except where reported separately).
- non-drugs “personal health supplies” (included with non-prescribed drugs).

¹⁵ Patented Medicine Prices Review Board (November 2018). Annual Report 2017. Ottawa: PMPRB.

¹⁶ Canadian Institute for Health Information. *National Health Expenditure Trends, 1975 to 2018 — Methodology Notes*. Ottawa, ON: CIHI; 2018. Page 8 “Drugs”.

- at final prices (manufacturer prices, plus wholesale and retail price markups, pharmacy dispensing fees and sales taxes).
- administrative costs of public drug plans.¹⁷
- spending by pharmaceutical companies on drug research.¹⁸

The data for “drugs” spending reported by CIHI **excludes**:

- hospital spending on drugs and drug research, which is included in the “hospital” spending category.

Metrics Glossary

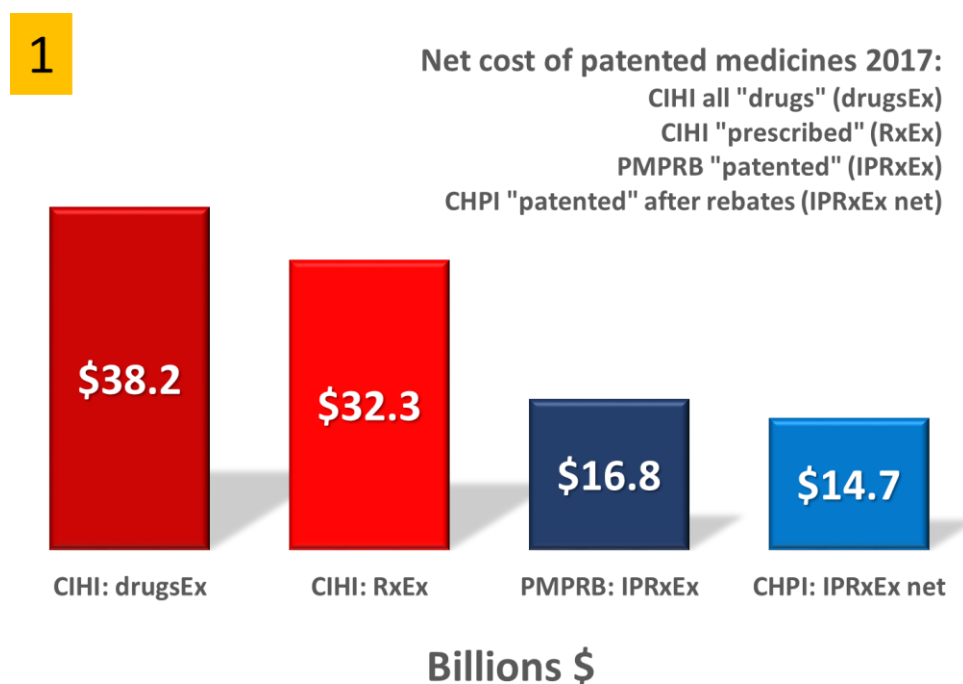
LABEL	DEFINITION	SOURCE
drugsEx	See above CIHI.	CIHI. NHEX Database, 1975 to 2018. Table G.14.1.
RxEx	Same as above, prescribed drugs only.	CIHI NHEX Database, 1975 to 2018. Table G.14.1.
IPRxEx	See above PMPRB.	PMPRB (November 2018). Annual Report 2017.
H\$IPRxEx	“High-cost” patented drugs: annual treatment costs > \$10k.	PMPRB (November 2018). Annual Report 2017.
gross	At manufacturer (ex factory) “list” prices.	PMPRB (November 2018). Annual Report 2017.
net	Accounting for confidential rebates negotiated between manufacturers and public drug plans.	Office of the Auditor General of Ontario. Annual Report 2017. Section 3.09 Ontario Public Drug Programs. Page 491.
THEx	Total national health expenditures all payers.	CIHI NHEX Database, 1975 to 2018. Table A.3.1.1.
GHEX	Total health expenditures by Provincial, Territorial and Federal government payers, including Drug Insurance Funds premiums.	CIHI NHEX Database, 1975 to 2018. Tables C.4.1, C.6.1, G.14.1.
PUBDP	Public Drug Plans: Provincial, Territorial and Federal government, including Drug Insurance Funds premiums.	CIHI NHEX Database, 1975 to 2018. Table G.14.1.
POP	Total national population.	CIHI NHEX Database, 1975 to 2018. Appendix D.1.
GDP	Gross Domestic Product.	CIHI NHEX 1975 to 2018
CPI	Consumer Price Index.	Statistics Canada. Table 18-10-0005-01.
PMPI	Patented Medicines Price Index.	PMPRB Annual Report 2017.

¹⁷ Canadian Institute for Health Information. *National Health Expenditure Trends, 1975 to 2018 — Methodology Notes*. Ottawa, ON: CIHI; 2018. Page 9, definition of “Administration” expenditure: “The administrative costs of operating hospitals, drug programs, long-term care programs and other non-insured health services are not included under the category Administration, but rather are included under the category of service, for example, Hospitals, Other Institutions and Drugs.”

¹⁸ Canadian Institute for Health Information. *National Health Expenditure Trends, 1975 to 2018 — Methodology Notes*. Ottawa, ON: CIHI; 2018. Page 9, definition of “Other Health Spending” - “Health Research” expenditure: “The category does not include research carried out by hospitals or drug companies in the course of product development. These amounts would be included with either the Hospitals or Drugs category.”

DIRECT GROSS/NET COST

The actual costs attributable directly to patented drugs are only a fraction of the total “drugs” costs published by CIHI. In 2017 CIHI reported \$38.2 Billion was spent on all “drugs” and \$32.3 Billion on “prescribed drugs”. According to PMPRB, the total direct cost from gross national sales of patented drugs was \$16.8 Billion in 2017, which accounts for 44% of the “drugs” total reported by CIHI for the same year.^{19,20} CHPI calculated that net national sales of patented drugs were 38% of the “drugs” total reported by CIHI after accounting for confidential rebates negotiated between manufacturers and public drug plans. There is no published source of national historical data on the size of these rebates, but Ontario's Auditor General reported that the province's public drug plan received rebates of close to 30% on brand name drugs in the fiscal year 2016/17.²¹ Net national sales of patented drugs were estimated to be \$14.7 Billion in 2017 after accounting for a national average rebate of 30% applied to the public drug plan share of sales.



¹⁹ PMPRB (2018). Annual Report 2017. Table 19. Sales of Patented Drug Products, 1990–2017.

²⁰ CIHI (2018). National Health Expenditure Database, 1975 to 2018. Table A.3.1.1 Total health expenditure by use of funds, in millions of current dollars, Canada, 1975 to 2018. Canadian Institute for Health Information.

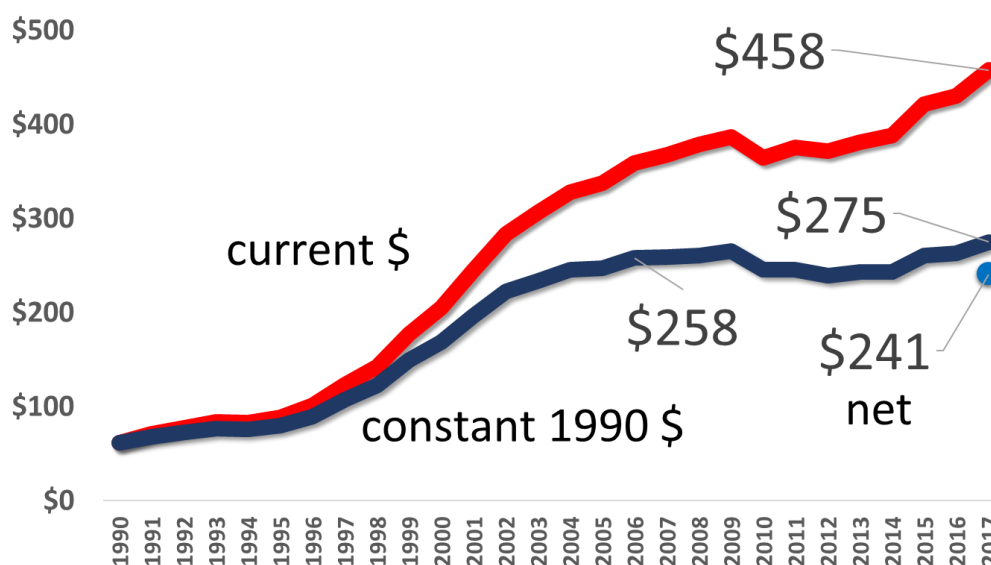
²¹ Office of the Auditor General of Ontario. Annual Report 2017. Section 3.09 Ontario Public Drug Programs. Page 491.

PER CAPITA, INFLATION-ADJUSTED COST

Measured in current dollars, the per capita cost of patented drugs was \$458 in 2017. Historical data from 1990 to 2017 were available for population and the CPI that allowed for a conversion of gross national sales of patented medicines into per capita costs measured in constant 1990 dollars to remove the effect of general price inflation.²² Adjusting for national population growth and inflation over time reveals that patented drugs have experienced near zero *real* average annual cost growth for the last 12 years. Measured in constant 1990 dollars, the gross per capita cost of patented drugs was \$275 in 2017, growing at an average annual rate of only 0.55% from \$258 in 2006. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, the net national per capita cost of patented drugs was only \$241 (constant 1990 \$) in 2017.

2

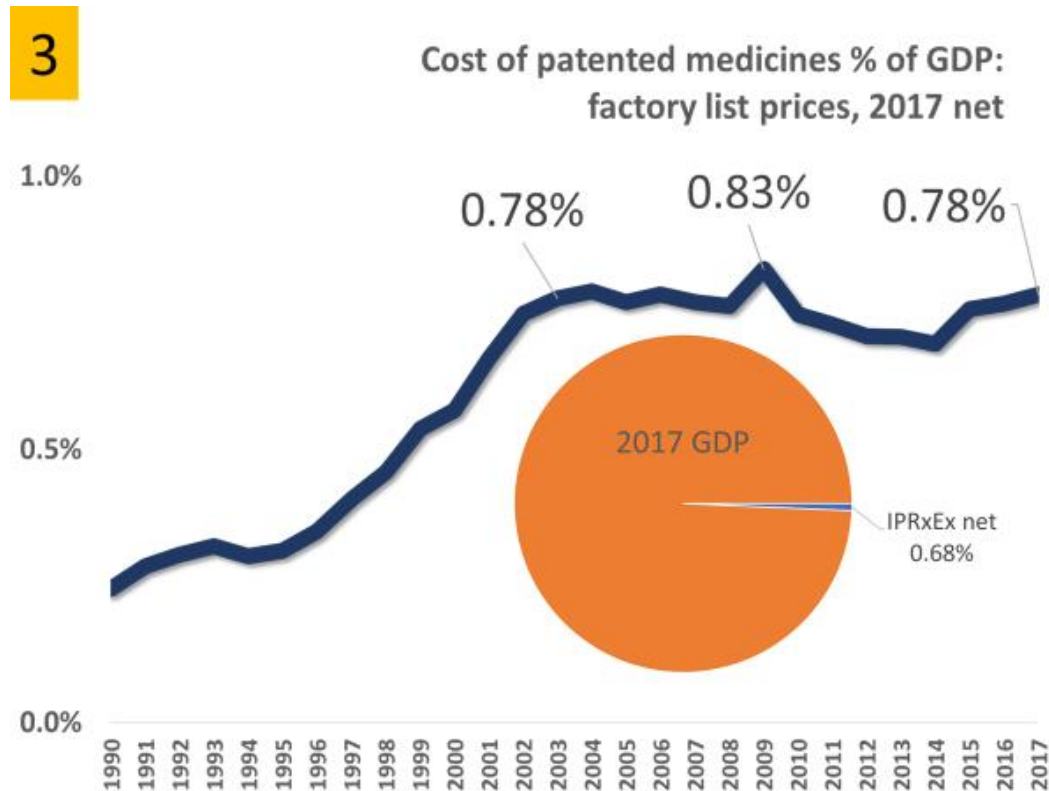
Per capita cost of patented medicines:
current \$ v constant 1990 \$
gross factory list prices v 2017 net



²² Deflating costs from the beginning of the period (constant 1990 \$) shows the impact of general price inflation over the study period (1990 to 2017) starting from a common cost point versus the current dollar baseline.

% GDP

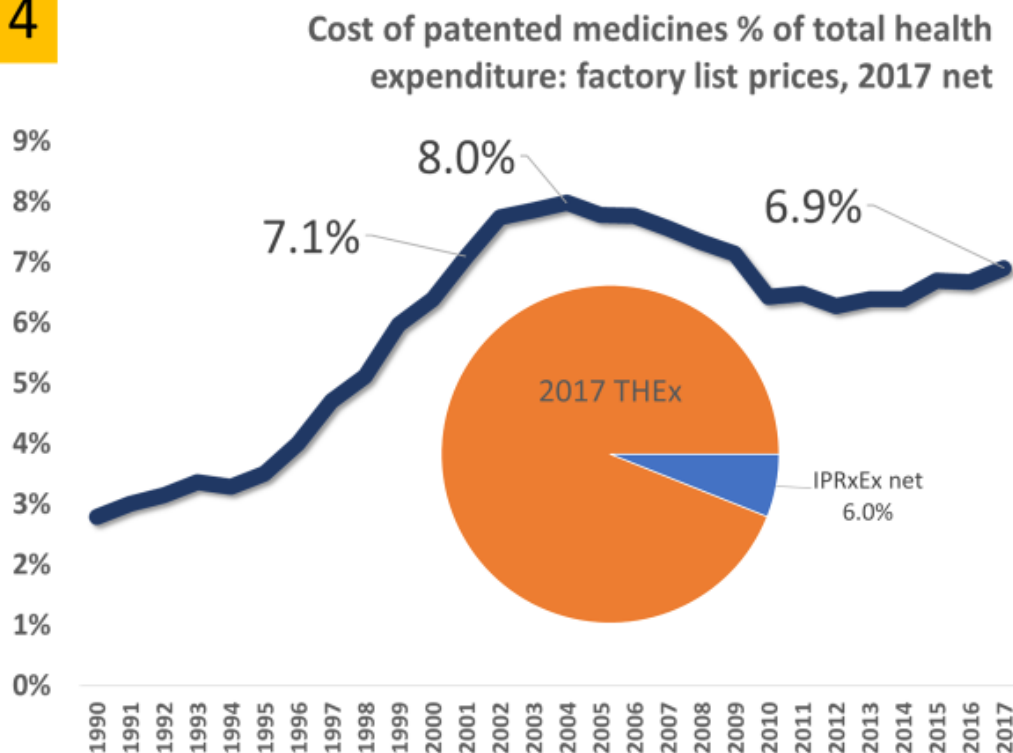
Gross national sales of patented drugs have accounted for less than 1% of GDP for the last 28 years. Patented drugs were the same percentage of GDP in 2017 (0.78%) as in 2003 (0.78%), a 15-year period of zero average annual growth relative to GDP. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, the net national cost of patented drugs was only 0.68% of GDP in 2017.



% TOTAL HEALTH COSTS

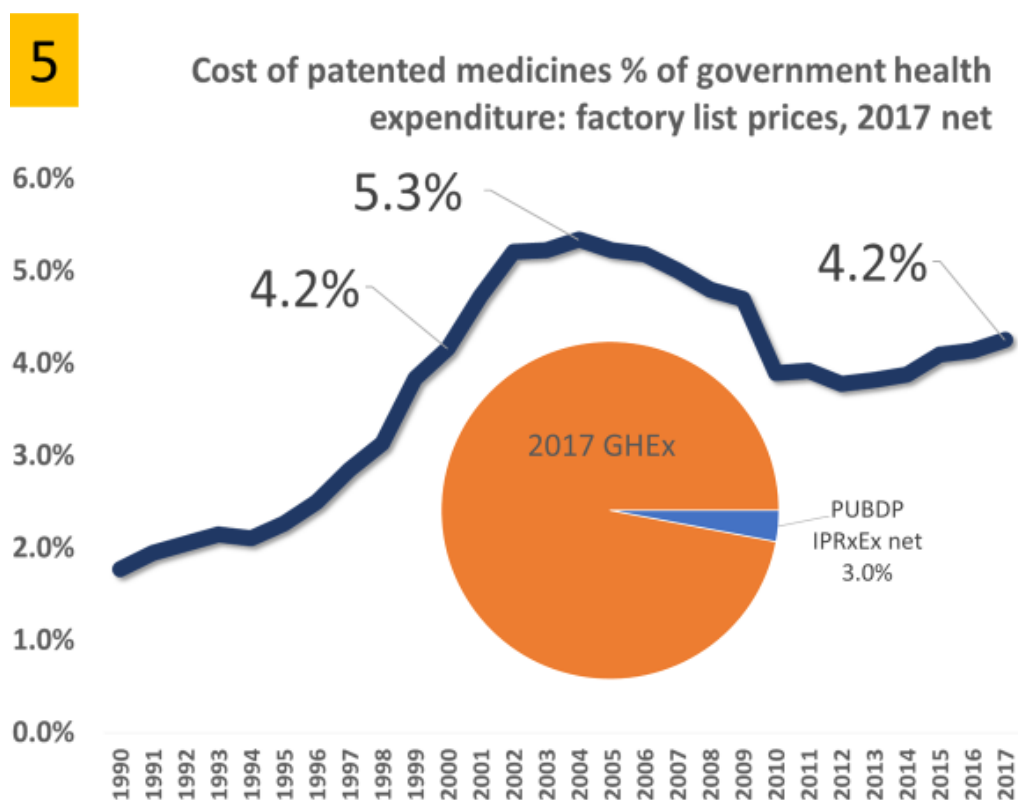
At \$16.8 Billion, gross national sales of patented drugs accounted for only 6.9% of the \$243.4 Billion reported by CIHI for total health spending in Canada in 2017. Patented drugs accounted for a smaller percentage of total health spending in 2017 (6.9%) than in the year 2001 (7.1%), a 17-year period of near zero average annual relative cost growth. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, the net national cost of patented drugs was \$14.7 Billion or only 6.0% of total health spending in 2017.

4



% GOVERNMENT HEALTH COSTS

PMPRB does not publish historical data specifically for government spending on patented drugs. CHPI estimated public drug plan expenditures on patented drugs by first using CIHI data to calculate the percentage share of total prescribed drug expenditures attributable to Provincial, Territorial and Federal governments plus public Drug Insurance Fund premiums in each year.²³ This percentage was applied historically to the PMPRB data for gross national patented drug sales.²⁴ Public drug plan spending on the direct costs of patented drugs at factory list prices was roughly \$7.0 Billion in 2017, representing only 4.2% of the \$165.7 Billion in all health spending by Federal, Provincial and Territorial governments in the same year. Gross sales of patented drugs were the same percentage of government health costs in 2017 (4.2%) as in 2000 (4.2%), an 18-year period of flat average annual growth relative to total government health expenditure. Accounting for a national average rebate of 30%, the net national public drug plan cost of patented drugs was only \$4.9 Billion or 3.0% of all government health spending reported by CIHI in 2017.



²³ This is by definition equivalent to expenditures by all public drug plans.

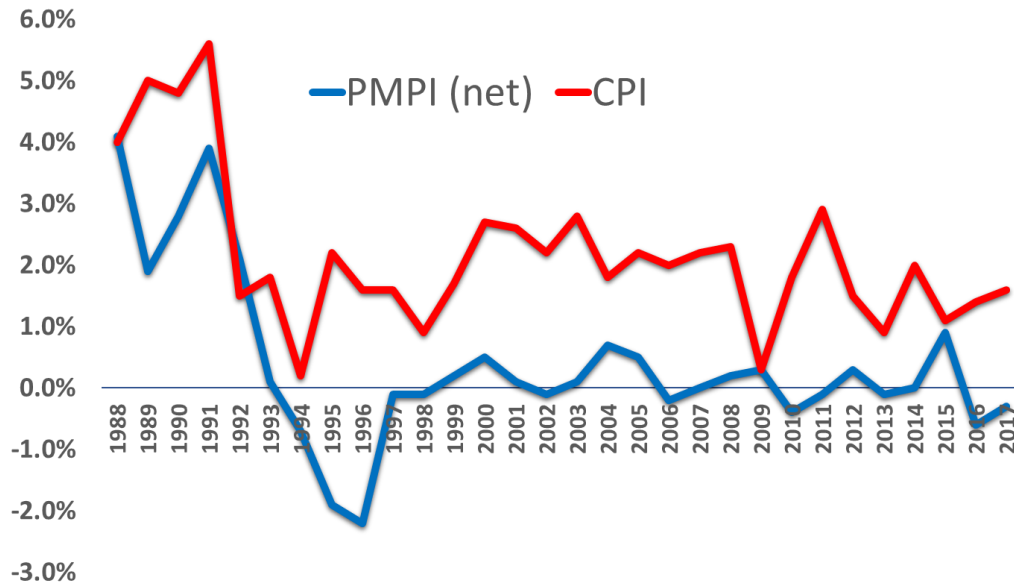
²⁴ This method is a change from previous editions. It was necessary to accommodate the lack of historical data from any other source.

PMPI VERSUS CPI

Data were available from PMPRB annual reports showing its Patented Medicines Price Index (PMPI), which measures the annual change in the prices of patented medicines sold in Canada from 1988 to 2017 against comparable data from Statistics Canada's Consumer Price Index (CPI), which measures the annual change in the prices of a basket of goods and services representative of general inflation across the total economy.²⁵ PMPRB data show that the net prices of patented drugs in Canada have grown slower than the rate of general inflation in 28 of the 30 years from 1988 to 2017.²⁶

6

Annual % change:
Patented Medicines Price Index (net) v
Consumer Price Index



²⁵ PMPRB's 2017 annual report contained both gross and net prices in separate PMPI's for the first time. PMPI gross data were only available from 2003 to 2017. PMPI gross price data were excluded for consistency with earlier presentations of this data.

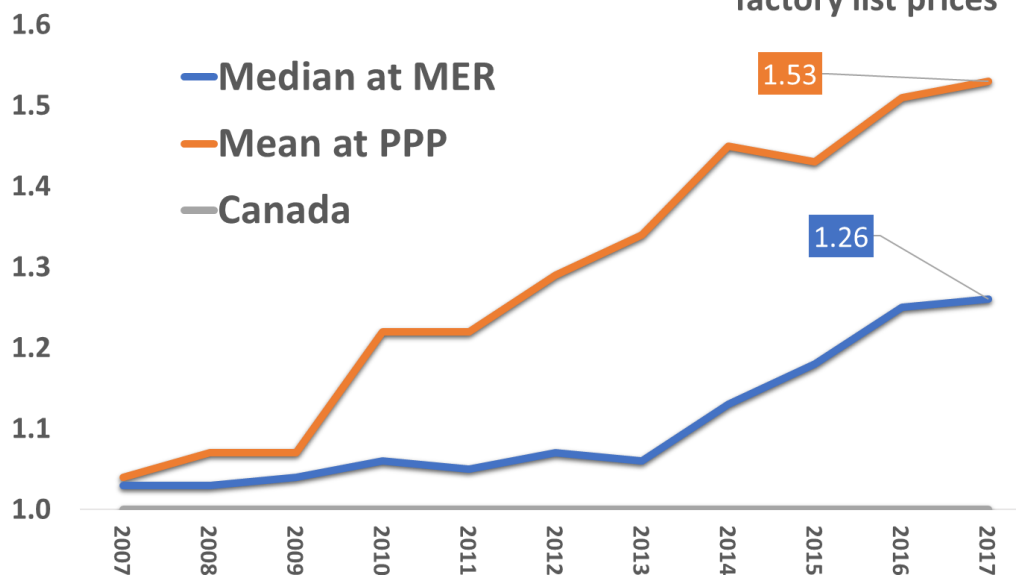
²⁶ Reproduced from PMPRB 2017 and 2016 Annual Reports.

FOREIGN-TO-CANADIAN PRICES

Data published in the PMPRB's annual reports from 2007 to 2017 confirm that, adjusted for the market exchange rates (MER) of currencies, gross median international prices have been higher than Canadian prices for the last 11 years, as much as 26% (ratio 1.26) higher in 2017. When the PMPRB used the gross mean (or average) prices, and adjusted currencies at purchasing power parities (PPP), international prices for patented drugs were 53% (ratio 1.53) higher than Canadian prices in 2017, and the gap has widened from 4% (ratio 1.04) higher in 2007.

7

**Foreign-to-Canadian price ratios patented medicines:
Market Exchange Rates v Purchasing Power Parities,
factory list prices**



HIGH-COST DRUGS

PMPRB publishes data for total national expenditure on high-cost patented drugs covering the period from 2006 to 2017. PMPRB defines high-cost patented drugs as medicines with annual treatment costs of more than \$10,000. According to PMPRB there were 144 patented medicines defined as high-cost drugs in 2017 accounting for \$6.3 Billion in gross sales. Gross sales of all high-cost patented drugs represented only 0.29% of GDP and 2.6% of total health expenditures in the same year. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, the net national spending on high-cost patented drugs was only \$5.5 Billion representing 0.26% of GDP and 2.3% of total health expenditures in 2017.

Gross national expenditures on high-cost patented medicines by public drug plans were \$2.6 Billion in 2017 representing 0.12% of GDP and 1.6% of government health expenditures. Accounting for a national average rebate of 30%, the net national public drug plan spending on high-cost patented medicines was only \$1.9 Billion or 0.09% of GDP and 1.1% of government health spending in 2017.

8

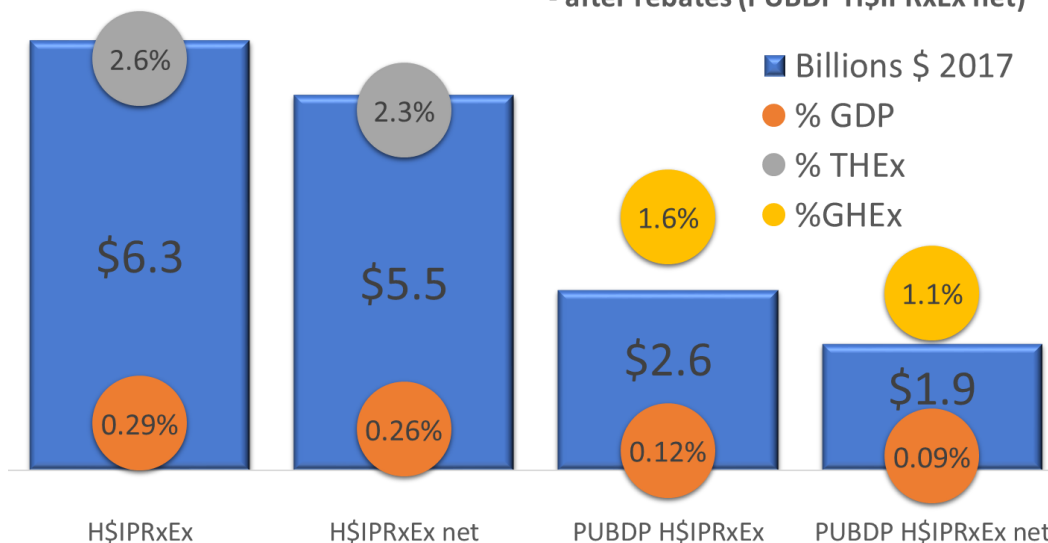
High-cost patented medicines expenditure 2017:

All payers, gross factory "list" prices (H\$IPRxE_x)

- after rebates (H\$IPRxE_x net)

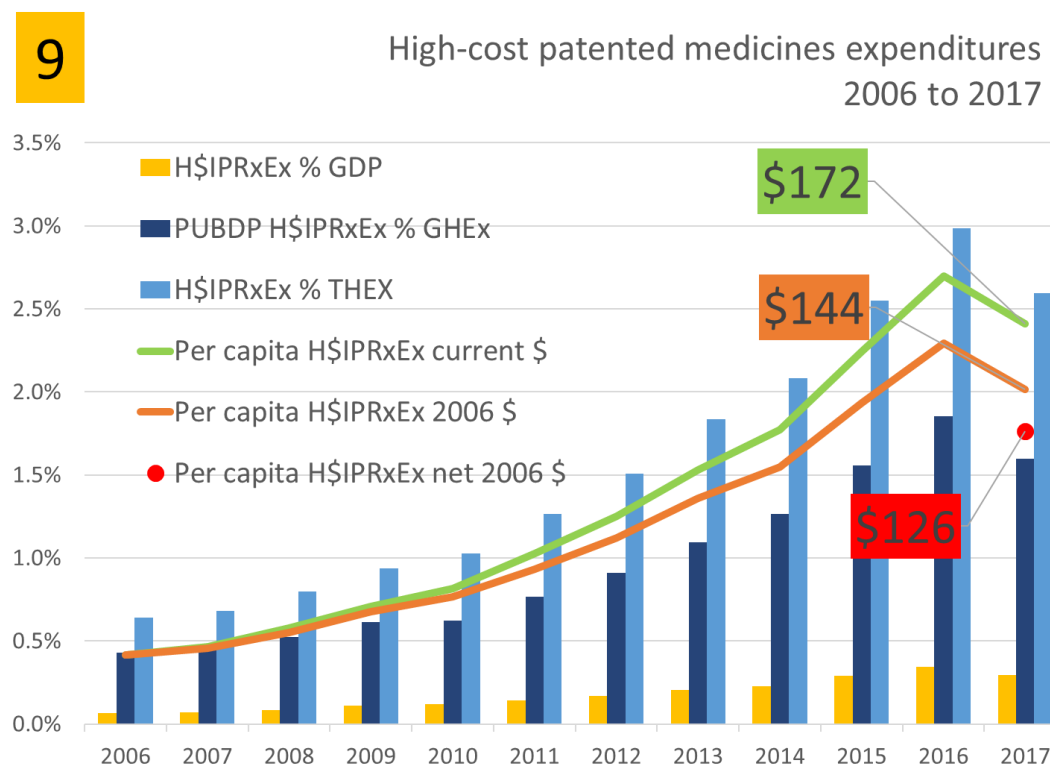
Public drug plans (PUBDP H\$IPRxE_x)

- after rebates (PUBDP H\$IPRxE_x net)



Measured in current dollars, gross national per capita spending on high-cost patented drugs was \$172 in 2017. Historical data from 2006 to 2017 were available for population and the CPI that allowed for a conversion of gross national sales of high-cost patented medicines into per capita costs measured in constant 2006 dollars to remove the effect of general price inflation.²⁷ Measured in constant 2006 dollars, gross national per capita spending on high-cost patented drugs was \$144 in 2017. Accounting for a national average rebate of 30% applied to the public drug plan share of sales, net national per capita spending on high-cost patented drugs was only \$126 (constant 2006 \$) in 2017.

Gross national sales of high-cost patented drugs have accounted for less than 0.35% of GDP and less than 3% of total health expenditures for the last 12 years. Public drug plan spending on high-cost patented medicines accounted for less than 2% of government health expenditures over the same period.



²⁷ Deflating costs from the beginning of the period (constant 2006 \$) shows the impact of general price inflation over the study period (2006 to 2017) starting from a common cost point versus the current dollar baseline.

COST VERSUS BENEFITS

The cost of patented drugs must be weighed against the health-economic benefits. Pharmaceutical innovation improves patient health outcomes, reduces potential health system costs and reduces indirect societal costs like economic productivity losses from untreated or under-treated illness.

A 2016 study investigated the impact that pharmaceutical innovation had on utilization of hospital care by cancer patients in Canada from 1995 to 2012. During this period, the number of cancer patient hospital days declined by 23%, even though the number of new cancer cases diagnosed increased by 46%. The study showed that the types of cancer (breast, prostate, lung, etc.) that experienced more innovation in pharmaceutical treatments had larger declines in utilization of hospital care. If no new drugs had been registered during the 1980-1997 period, there would have been 1.72 million additional cancer patient hospital days in 2012, at a cost of \$4.7 Billion in hospital expenditure, whereas total spending on cancer drugs (old and new) in 2012 was an estimated \$3.8 Billion.²⁸

A 2015 study found that in Canada the types of cancer that experienced greater innovation in pharmaceutical treatments had larger declines in the premature mortality rate, controlling for changes in the incidence rate. The study found that, in the absence of pharmaceutical innovation during the period 1985-1996, the premature cancer mortality rate would have increased about 12% during the period 2000-2011. Most of the innovative drugs were off-patent by 2011, but evidence suggests that, even if these drugs had been sold at branded rather than generic prices, the cost per life-year gained would have been below US\$5000, a figure well below even the lowest estimates of the value of a life-year gained.²⁹

A 2013 study examined the health-economic benefits associated with spending on pharmaceuticals in Ontario from 2007 to 2012. The study found that the added costs associated with the use of innovative pharmaceuticals were offset by reductions in the use of other types of health care resources and a reduction in the productivity losses associated with disease because of improved health outcomes. In particular, the \$1.2 Billion spent on six classes of pharmaceutical drugs in 2012 generated offsetting health and societal benefits of nearly \$2.4 Billion in the same year.³⁰

A 2012 study examined the impact of access to innovative pharmaceuticals on life expectancy using data on 30 countries during the period 2000-2009, finding that life

²⁸ Lichtenberg, Frank R (2016). The Benefits of Pharmaceutical Innovation: Health, Longevity, and Savings. Montreal Economic Institute. June 2016.

²⁹ Lichtenberg FR (2015). The impact of pharmaceutical innovation on premature cancer mortality in Canada, 2000–2011. International Journal of Health Economics and Management. September 2015, Volume 15, Issue 3, pp 339-359.

³⁰ Hermus G, Stonebridge C, Dinh T, Didic S, Theriault L (2013). Reducing the Health Care and Societal Costs of Disease: The Role of Pharmaceuticals. The Conference Board of Canada, July 2013.

expectancy increased faster in countries using newer drugs. In fact, pharmaceutical innovation explained 73% of the observed increase in life expectancy.³¹

A 2009 study evaluated the impact of access to new medicines on patient survival in a study population of 102,743 subjects using Quebec's provincial health plan data. The study found that the use of newer medications was associated with a statistically significant mortality risk reduction relative to older medications and concluded that drug innovation had a significant beneficial impact on the longevity of elderly patients.³²

A 2005 study found a strong statistical relationship between drug spending and health outcomes, especially for infant mortality and life expectancy at 65. The analysis showed that substantially better health outcomes are observed in provinces where higher drug spending occurs. Simulations showed that if all provinces increased per capita drug spending to the levels observed in the two provinces with the highest spending level, an average of 584 fewer infant deaths per year and over 6 months of increased life expectancy at birth would result.³³

A 2002 study using data on the entire U.S. population from 1996 to 1998 found that the use of newer drugs reduced non-drug spending by 7.2 times as much as it increased drug spending.³⁴

³¹ Lichtenberg FR (2012). Pharmaceutical Innovation and Longevity Growth in 30 Developing and High-income Countries, 2000-2009. National Bureau of Economic Research (NBER), Working Paper No. 18235. July 2012.

³² Frank R. Lichtenberg, Paul Grootendorst, Marc Van Audenrode, Dominick Latremouille-Viau, Patrick Lefebvre (2009). The Impact of Drug Vintage on Patient Survival: A Patient-Level Analysis Using Quebec's Provincial Health Plan Data. *Value in Health*, Volume 12, Number 6, 2009.

³³ Pierre-Yves Crémieux et al (2005). Public and Private Pharmaceutical Spending as Determinants of Health Outcomes in Canada. *Health Economics*, Vol. 14, No. 2, February 2005, pp. 107-116.

³⁴ Lichtenberg FR (2002). Benefits and Costs of Newer Drugs: An Update. National Bureau of Economic Research (NBER), Working Paper No. 8996. June 2002.

CONCLUSION

The facts show that there is no spending crisis regarding patented medicines in Canada. The actual cost attributable directly to patented medicines is only a fraction of the total “drugs” related costs published by CIHI. Other components of the healthcare system account for much larger shares of spending than patented medicines. Adjusting for factors like population, CPI and GDP, the total direct cost burden from patented medicines is stable and moderate. Prices are also stable and moderate relative to CPI or comparable countries.

These findings raise serious questions about whether it is economical for governments to allocate more administrative resources to controlling the cost of patented medicines. The very small percentage of health spending accounted for by patented medicines means even the most extreme cost-containment efforts will not return significant overall savings. Cost-containment efforts that reduce access to new medicines are counter-productive. Research shows that improving access to new medicines will return health and economic gains that far outweigh the upfront costs.

SUPPLEMENTAL: NATIONAL HEALTH EXPENDITURE SILOS

CIHI publishes national health expenditure data separately by category according to “use of funds”. The 13 spending silos reported include: Hospitals, Other institutions, Physicians, Dental services, Vision care services, Other professionals, Prescribed drugs, Non-prescribed drugs, Capital, Public health, Administration, Health research and Other health spending.³⁵ CIHI does not report separate data for patented drugs. CIHI separates Other institutions and Capital expenditures from Hospitals expenditures even though almost all capital spending is directed toward hospitals. CIHI also does not separately report health professional expenditures related to Nurses, instead reporting this as part of the operating expenditures of hospitals.

In Charts 10, 11 and 12 CHPI presents separate data for patented drugs (at gross ex factory prices before rebates) reported by PMPRB, and a calculated remainder for non-patented prescribed drugs and non-prescribed drugs identifying other components of the “drugs” expenditure data reported by CIHI.³⁶ CHPI grouped hospitals, other institutions and capital expenditures together as comprehensive of all costs for institutions involved in health care delivery. Nurses are identified as a component of hospitals and other institutions expenditures. Dental, vision care and other professionals are grouped.

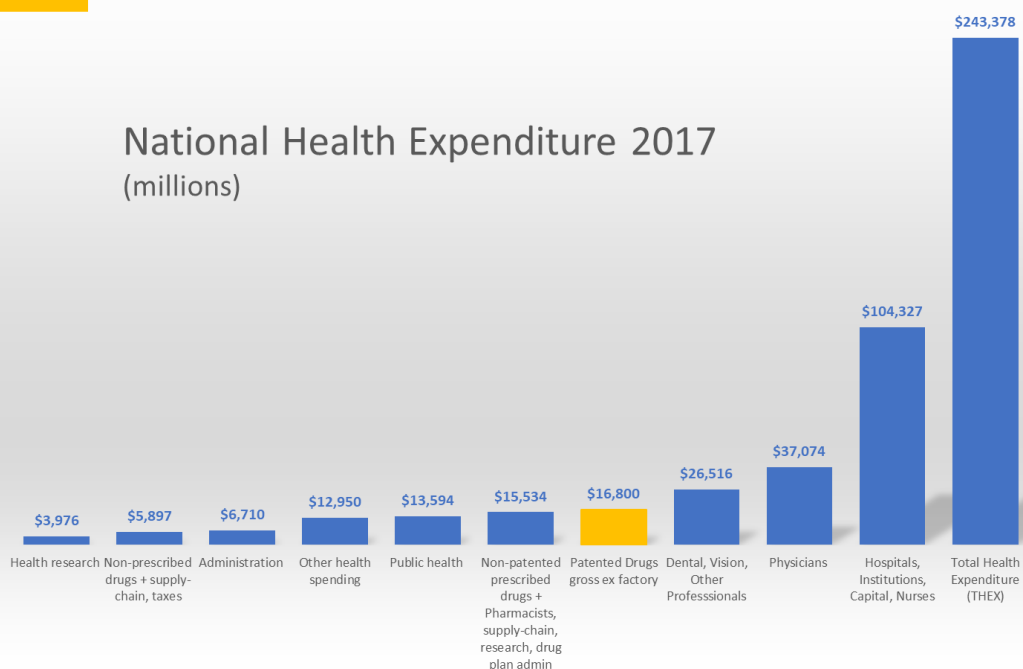
Chart 10 displays CHPI’s regrouped national health expenditure silos for 2017. Chart 11 shows the data from 1990 to 2017. Chart 12 shows the total percentage change in annual expenditure by silo over the most recent 10-year period from 2007 to 2017. Each chart is ranked from highest to lowest (fastest to slowest). The data clearly show that the gross direct cost of patented medicines in Canada are a small part of overall health spending ranking far below hospitals and institutions, as well as physicians and other professionals. The historical data confirm that this has been the case for the last 28 years. Data from the last 10 years show that gross direct expenditure on patented medicines has grown slower than Other health spending, physicians, non-patented prescribed drugs, dental-vision-other health professionals, public health and hospitals-institutions.

³⁵ Canadian Institute for Health Information. National Health Expenditure Data Tables. Table A.3.1.1 Total health expenditure by use of funds, in millions of current dollars, Canada, 1975 to 2018.

³⁶ Patented Medicine Prices Review Board Annual Report 2017. Table 19. Sales of Patented Medicines, 1990 to 2017. Page 68.

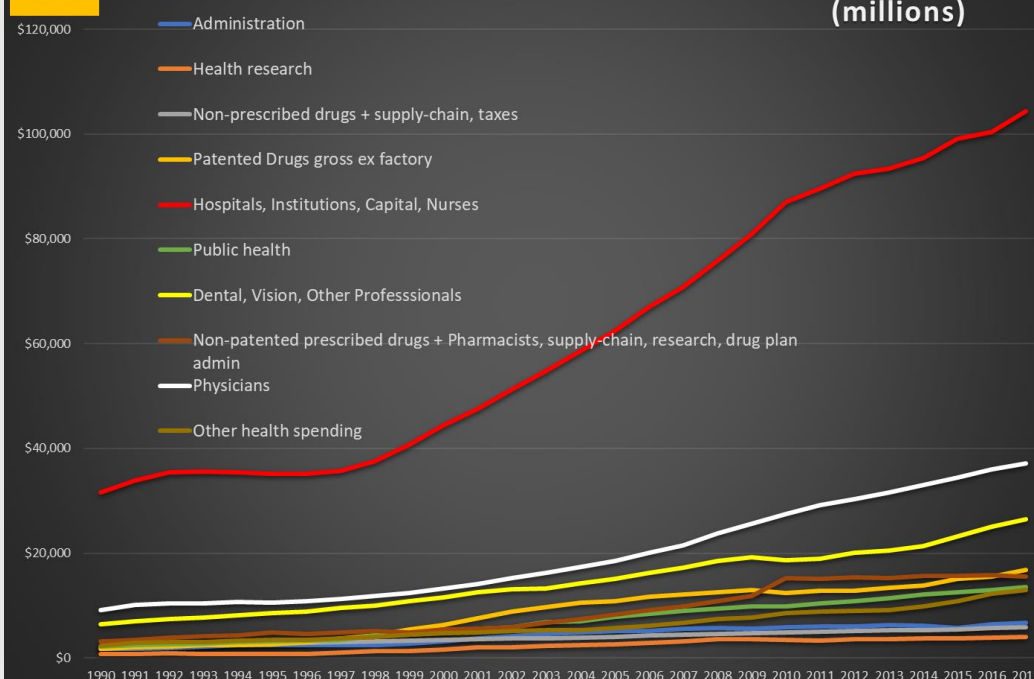
10

National Health Expenditure 2017 (millions)



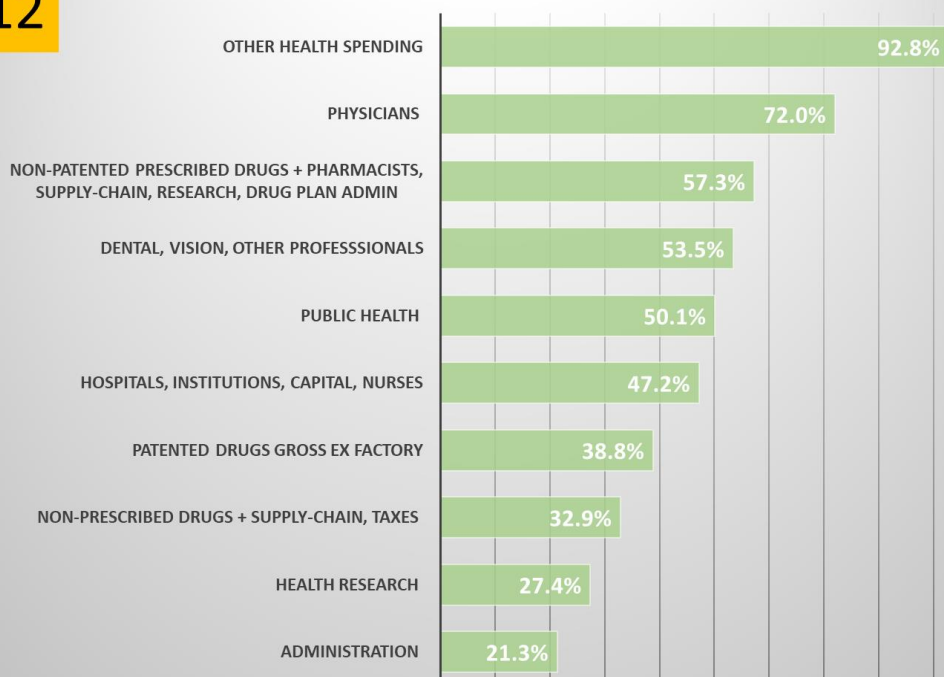
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National Health Expenditure 1990 to 2017 (millions)



12

NATIONAL HEALTH EXPENDITURE % CHANGE 2007-2017



APPENDIX³⁷

Table A. Total and government health expenditure, total and government prescribed and non-prescribed drugs, patented medicines and high-cost drugs, GDP, population, and CPI.

38,39,40,41,42,43

SOURCE DATA										
	Billions	Billions	Billions	Billions	Billions	Billions	Billions	Billions	Billions	Index
Year	THEX	GHEX	drugsEx	RxEx	PUBDP RxEx	IPRxEx (gross)	H\$IPRxEx	GDP	POP	CPI 2002 = 100
1990	\$61.1	\$44.5	\$6.9	\$4.9	\$2.3	\$1.7		\$693.0	0.0277	78.4
1991	\$66.4	\$48.4	\$7.7	\$5.5	\$2.6	\$2.0		\$699.3	0.0280	82.8
1992	\$69.9	\$50.6	\$8.5	\$6.1	\$2.9	\$2.2		\$716.0	0.0284	84.0
1993	\$71.5	\$50.9	\$9.2	\$6.6	\$3.0	\$2.4		\$744.6	0.0287	85.6
1994	\$73.2	\$51.5	\$9.5	\$6.8	\$3.1	\$2.4		\$789.5	0.0290	85.7
1995	\$74.2	\$51.8	\$10.2	\$7.4	\$3.3	\$2.6		\$829.0	0.0293	87.6
1996	\$75.1	\$52.1	\$10.5	\$7.6	\$3.3	\$3.0		\$857.0	0.0296	88.9
1997	\$78.7	\$54.1	\$11.5	\$8.5	\$3.6	\$3.7		\$903.9	0.0299	90.4
1998	\$84.1	\$57.6	\$12.6	\$9.5	\$4.0	\$4.3		\$937.3	0.0302	91.3
1999	\$90.5	\$61.9	\$13.6	\$10.2	\$4.5	\$5.4		\$1,004.5	0.0304	92.9
2000	\$98.6	\$67.6	\$15.1	\$11.7	\$5.2	\$6.3		\$1,102.4	0.0307	95.4
2001	\$107.2	\$73.2	\$16.7	\$13.2	\$6.0	\$7.6		\$1,140.5	0.0310	97.8
2002	\$115.1	\$78.0	\$18.4	\$14.8	\$6.7	\$8.9		\$1,189.5	0.0314	100.0
2003	\$123.6	\$84.5	\$20.2	\$16.4	\$7.5	\$9.7		\$1,250.3	0.0317	102.8
2004	\$131.6	\$89.8	\$21.8	\$17.9	\$8.2	\$10.5		\$1,331.2	0.0320	104.7
2005	\$140.2	\$95.9	\$23.2	\$19.1	\$8.8	\$10.9		\$1,417.0	0.0323	107.0
2006	\$150.6	\$102.5	\$25.1	\$20.8	\$9.4	\$11.7	\$1.0	\$1,492.2	0.0326	109.1
2007	\$160.1	\$109.9	\$26.4	\$22.0	\$10.0	\$12.1	\$1.1	\$1,573.5	0.0329	111.5
2008	\$171.9	\$118.8	\$27.9	\$23.4	\$10.6	\$12.6	\$1.4	\$1,652.9	0.0332	114.1
2009	\$182.0	\$126.5	\$29.5	\$24.8	\$11.3	\$13.0	\$1.7	\$1,567.4	0.0336	114.4
2010	\$193.1	\$133.5	\$32.4	\$27.6	\$11.5	\$12.4	\$2.0	\$1,662.1	0.0340	116.5
2011	\$199.2	\$138.5	\$33.1	\$28.1	\$11.8	\$12.9	\$2.5	\$1,769.9	0.0343	119.9
2012	\$205.7	\$142.6	\$33.5	\$28.3	\$11.8	\$12.9	\$3.1	\$1,822.8	0.0348	121.7
2013	\$209.7	\$145.7	\$33.9	\$28.6	\$11.9	\$13.4	\$3.8	\$1,897.5	0.0352	122.8
2014	\$216.2	\$149.5	\$34.7	\$29.4	\$12.4	\$13.8	\$4.5	\$1,990.2	0.0355	125.2
2015	\$225.5	\$156.0	\$36.3	\$30.8	\$13.0	\$15.1	\$5.7	\$1,994.9	0.0358	126.6
2016	\$234.0	\$159.9	\$37.1	\$31.4	\$13.3	\$15.6	\$7.0	\$2,035.5	0.0363	128.4
2017	\$243.4	\$165.7	\$38.2	\$32.3	\$13.5	\$16.8	\$6.3	\$2,144.4	0.0367	130.4

³⁷ Totals might not sum due to rounding.

³⁸ CIHI (2018). National Health Expenditure Database, 1975 to 2018. Table A.3.1.1 Total health expenditure by use of funds, in millions of current dollars, Canada, 1975 to 2018.

³⁹ PMPRB (2018). Annual Report 2017. Table 19. Sales of Patented Medicines, 1990 to 2017. Page 68.

⁴⁰ PMPRB (2018). Annual Report 2017. Figure 10. Share of sales for High-Cost Patented Medicines, 2006 to 2017. Page 31.

⁴¹ CIHI (2018). National Health Expenditure Database, 1975 to 2018. Appendix A.1 Gross domestic product at market prices by province/territory and Canada, in millions of current dollars, by year, 1975 to 2018.

⁴² CIHI (2018). National Health Expenditure Database, 1975 to 2018. Appendix D.1 Population by province/territory and Canada, in thousands, by year, 1975 to 2018.

⁴³ Statistics Canada. Table 18-10-0005-01 Consumer Price Index, annual average, not seasonally adjusted.

Table B. Provincial, Territorial, Federal government health and prescribed drugs expenditure, public Drug Insurance Fund premiums. ^{44,45,46}

SOURCE DATA								
Year	Billions PROV + TERR PUBDP RxEx	Billions FED PUBDP RxEx	Billions PUBDIF premiums RxEx	Billions Total PUBDP RxEx	Billions PROV + TERR GHEX	Billions FED GHEX	Billions PUBDIF premiums	Billions TOTAL GHEX
1990	\$2.1	\$0.1	\$0.0	\$2.3	\$42.5	\$2.0	\$0.0	\$44.5
1991	\$2.4	\$0.1	\$0.0	\$2.6	\$46.3	\$2.1	\$0.0	\$48.4
1992	\$2.7	\$0.2	\$0.0	\$2.9	\$48.4	\$2.2	\$0.0	\$50.6
1993	\$2.8	\$0.2	\$0.0	\$3.0	\$48.6	\$2.3	\$0.0	\$50.9
1994	\$2.8	\$0.2	\$0.0	\$3.1	\$48.9	\$2.5	\$0.0	\$51.5
1995	\$3.1	\$0.2	\$0.0	\$3.3	\$49.1	\$2.7	\$0.0	\$51.8
1996	\$3.1	\$0.2	\$0.0	\$3.3	\$49.4	\$2.6	\$0.0	\$52.1
1997	\$3.1	\$0.3	\$0.2	\$3.6	\$51.2	\$2.8	\$0.2	\$54.1
1998	\$3.5	\$0.3	\$0.2	\$4.0	\$54.4	\$3.0	\$0.2	\$57.6
1999	\$3.9	\$0.3	\$0.3	\$4.5	\$58.4	\$3.2	\$0.3	\$61.9
2000	\$4.6	\$0.3	\$0.3	\$5.2	\$63.7	\$3.6	\$0.3	\$67.6
2001	\$5.2	\$0.4	\$0.4	\$6.0	\$68.5	\$4.3	\$0.4	\$73.2
2002	\$5.8	\$0.4	\$0.4	\$6.7	\$73.4	\$4.1	\$0.4	\$78.0
2003	\$6.4	\$0.5	\$0.6	\$7.5	\$79.2	\$4.7	\$0.6	\$84.5
2004	\$7.0	\$0.5	\$0.6	\$8.2	\$84.4	\$4.8	\$0.6	\$89.8
2005	\$7.6	\$0.6	\$0.6	\$8.8	\$90.4	\$4.9	\$0.6	\$95.9
2006	\$8.2	\$0.6	\$0.7	\$9.4	\$96.6	\$5.3	\$0.7	\$102.5
2007	\$8.7	\$0.6	\$0.7	\$10.0	\$103.5	\$5.7	\$0.7	\$109.9
2008	\$9.2	\$0.6	\$0.8	\$10.6	\$111.7	\$6.4	\$0.8	\$118.8
2009	\$9.9	\$0.6	\$0.8	\$11.3	\$118.7	\$6.9	\$0.8	\$126.5
2010	\$10.1	\$0.6	\$0.8	\$11.5	\$126.1	\$6.6	\$0.8	\$133.5
2011	\$10.3	\$0.7	\$0.9	\$11.8	\$130.9	\$6.7	\$0.9	\$138.5
2012	\$10.3	\$0.6	\$0.9	\$11.8	\$134.8	\$6.9	\$0.9	\$142.6
2013	\$10.3	\$0.6	\$1.0	\$11.9	\$137.9	\$6.9	\$1.0	\$145.7
2014	\$10.7	\$0.7	\$1.0	\$12.4	\$141.5	\$7.0	\$1.0	\$149.5
2015	\$11.2	\$0.7	\$1.1	\$13.0	\$147.8	\$7.1	\$1.1	\$156.0
2016	\$11.4	\$0.8	\$1.1	\$13.3	\$151.2	\$7.6	\$1.1	\$159.9
2017	\$11.5	\$0.8	\$1.2	\$13.5	\$156.7	\$7.7	\$1.2	\$165.7

⁴⁴ CIHI (2018). National Health Expenditure Database, 1975 to 2018. Table C.4.1 Provincial/territorial government health expenditure by use of funds in millions of current dollars, Canada, 1975 to 2018.

⁴⁵ CIHI (2018). National Health Expenditure Database, 1975 to 2018. Table C.6.1 Federal direct health expenditure by use of funds in millions of current dollars, Canada, 1975 to 2018.

⁴⁶ CIHI (2018). National Health Expenditure Database, 1975 to 2018. Table G.14.1 Expenditure on drugs by type and source of finance in millions of current dollars, Canada, 1985 to 2018.

Table C. Patented medicines.⁴⁷

CALCULATED DATA									
Index	Per capita	Per capita	%	%	%	Billions	%	%	
Year	CPI 1990 = 1.000	Per capita IPRxEEx	CPI-deflated Per capita IPRxEEx 1990 \$	IPRxEEx % GDP	IPRxEEx % THEX	PUBDP % RxEx	PUBDP IPRxEEx (gross)	PUBDP IPRxEEx % GHEX	IPRxEEx % drugsEx
1990	1.000	\$61	\$61	0.25%	2.8%	46.2%	\$0.8	1.8%	24.5%
1991	1.056	\$71	\$68	0.29%	3.0%	47.0%	\$0.9	1.9%	26.0%
1992	1.071	\$78	\$72	0.31%	3.1%	47.0%	\$1.0	2.0%	25.8%
1993	1.092	\$84	\$77	0.32%	3.4%	45.5%	\$1.1	2.1%	26.2%
1994	1.093	\$83	\$76	0.30%	3.3%	45.1%	\$1.1	2.1%	25.2%
1995	1.117	\$89	\$79	0.31%	3.5%	45.0%	\$1.2	2.3%	25.5%
1996	1.134	\$101	\$89	0.35%	4.0%	43.3%	\$1.3	2.5%	28.7%
1997	1.153	\$124	\$107	0.41%	4.7%	41.7%	\$1.5	2.8%	32.1%
1998	1.165	\$143	\$122	0.46%	5.1%	41.9%	\$1.8	3.1%	34.1%
1999	1.185	\$178	\$150	0.54%	6.0%	43.9%	\$2.4	3.8%	39.7%
2000	1.217	\$205	\$169	0.57%	6.4%	44.6%	\$2.8	4.2%	41.6%
2001	1.247	\$245	\$196	0.67%	7.1%	45.5%	\$3.5	4.7%	45.5%
2002	1.276	\$284	\$222	0.75%	7.7%	45.6%	\$4.1	5.2%	48.3%
2003	1.311	\$306	\$234	0.78%	7.8%	45.5%	\$4.4	5.2%	48.1%
2004	1.335	\$328	\$246	0.79%	8.0%	45.6%	\$4.8	5.3%	48.2%
2005	1.365	\$337	\$247	0.77%	7.8%	46.0%	\$5.0	5.2%	47.0%
2006	1.392	\$359	\$258	0.78%	7.8%	45.4%	\$5.3	5.2%	46.7%
2007	1.422	\$368	\$259	0.77%	7.6%	45.4%	\$5.5	5.0%	45.8%
2008	1.455	\$379	\$260	0.76%	7.3%	45.2%	\$5.7	4.8%	45.2%
2009	1.459	\$387	\$265	0.83%	7.1%	45.7%	\$5.9	4.7%	44.0%
2010	1.486	\$365	\$245	0.75%	6.4%	41.9%	\$5.2	3.9%	38.2%
2011	1.529	\$376	\$246	0.73%	6.5%	42.1%	\$5.4	3.9%	38.9%
2012	1.552	\$371	\$239	0.71%	6.3%	41.8%	\$5.4	3.8%	38.5%
2013	1.566	\$381	\$243	0.71%	6.4%	41.5%	\$5.6	3.8%	39.5%
2014	1.597	\$388	\$243	0.69%	6.4%	42.0%	\$5.8	3.9%	39.7%
2015	1.615	\$421	\$261	0.76%	6.7%	42.2%	\$6.4	4.1%	41.6%
2016	1.638	\$430	\$263	0.77%	6.7%	42.4%	\$6.6	4.1%	42.1%
2017	1.663	\$458	\$275	0.78%	6.9%	41.9%	\$7.0	4.2%	43.9%

⁴⁷ PMPRB publishes its own per capita numbers, but for this study CHPI used the population data published by CIHI as the same base to calculate per capita numbers for patented drugs that were comparable to CIHI data for other categories of health spending.

Table D. High-cost patented medicines.

CALCULATED DATA								
	Index	Per capita	Per capita	%	%	Billions	%	%
Year	CPI 2006 = 1.000	Per capita H\$IPRxEEx	CPI-deflated per capita H\$IPRxEEx 2006 \$	H\$IPRxEEx % GDP	H\$IPRxEEx % THEX	PUBDP H\$IPRxEEx (gross)	PUBDP H\$IPRxEEx % GHEX	H\$IPRxEEx % drugsEx
2006	1.000	\$30	\$30	0.06%	0.6%	\$0.4	0.4%	3.9%
2007	1.022	\$33	\$32	0.07%	0.7%	\$0.5	0.5%	4.1%
2008	1.046	\$41	\$39	0.08%	0.8%	\$0.6	0.5%	4.9%
2009	1.049	\$51	\$48	0.11%	0.9%	\$0.8	0.6%	5.8%
2010	1.068	\$58	\$55	0.12%	1.0%	\$0.8	0.6%	6.1%
2011	1.099	\$73	\$67	0.14%	1.3%	\$1.1	0.8%	7.6%
2012	1.115	\$89	\$80	0.17%	1.5%	\$1.3	0.9%	9.3%
2013	1.126	\$109	\$97	0.20%	1.8%	\$1.6	1.1%	11.3%
2014	1.148	\$127	\$110	0.23%	2.1%	\$1.9	1.3%	13.0%
2015	1.160	\$160	\$138	0.29%	2.5%	\$2.4	1.6%	15.8%
2016	1.177	\$193	\$164	0.34%	3.0%	\$3.0	1.9%	18.8%
2017	1.195	\$172	\$144	0.29%	2.6%	\$2.6	1.6%	16.5%

Table E. Net cost calculations.⁴⁸

CIHI	Billions \$ 2017	% of Total	PMPRB IPRxEx	Billions \$ 2017	PMPRB H\$IPRxEx	Billions \$ 2017
Total RxEx	\$32.3	100.0%	Total IPRxEx (gross)	\$16.8	Total H\$IPRxEx (gross)	\$6.3
PROV + TERR PUBDP RxEx	\$11.5	35.6%	PROV + TERR PUBDP IPRxEx (gross)	\$6.0	PROV + TERR PUBDP H\$IPRxEx (gross)	\$2.2
FED PUBDP RxEx	\$0.8	2.5%	FED PUBDP IPRxEx (gross)	\$0.4	FED PUBDP H\$IPRxEx (gross)	\$0.2
PUBDIF premiums RxEx	\$1.2	3.8%	PUBDIF premiums IPRxEx (gross)	\$0.6	PUBDIF premiums H\$IPRxEx (gross)	\$0.2
Total PUBDP RxEx	\$13.5	41.9%	Total PUBDP IPRxEx (gross)	\$7.0	Total PUBDP H\$IPRxEx (gross)	\$2.6
			Total PUBDP IPRxEx (net)	\$4.9	Total PUBDP H\$IPRxEx (net)	\$1.9
PRIVDP RxEx	\$11.8	36.5%	PRIVDP IPRxEx (gross)	\$6.1	PRIVDP H\$IPRxEx (gross)	\$2.3
SSF RxEx	\$0.2	0.5%	SSF IPRxEx (gross)	\$0.1	SSF H\$IPRxEx (gross)	\$0.0
Patient RxEx	\$6.9	21.2%	Patient IPRxEx (gross)	\$3.6	Patient H\$IPRxEx (gross)	\$1.3
Total PRIV RxEx	\$18.8	58.1%	Total PRIV IPRxEx (gross)	\$9.8	Total PRIV H\$IPRxEx (gross)	\$3.7
			Total IPRxEx (net)	\$14.7	Total H\$IPRxEx (net)	\$5.5
THEx	\$243.4		Total IPRxEx (net) % THEx	6.0%	Total H\$IPRxEx (net) % THEx	2.3%
GHEX	\$165.7		PUBDP IPRxEx (net) % GHEX	3.0%	PUBDP H\$IPRxEx (net) % GHEX	1.1%
GDP	\$2,144.4		Total IPRxEx (net) % GDP	0.68%	Total H\$IPRxEx (net) % GDP	0.26%
			POP (Billions)	0.037	POP (Billions)	0.037
			Per capita IPRxEx (gross)	\$458	Per capita H\$IPRxEx (gross)	\$172
			Per capita IPRxEx (net)	\$400	Per capita H\$IPRxEx (net)	\$150
			CPI 1990 = 1.000	1.663	CPI 2006 = 1.000	1.195
			CPI-deflated per capita IPRxEx (gross)	\$275	CPI-deflated per capita H\$IPRxEx (gross)	\$144
			CPI-deflated per capita IPRxEx (net)	\$241	CPI-deflated per capita H\$IPRxEx (net)	\$126

⁴⁸ Drugs expenditures of Social Security Funds (SSF) are classified as “public” costs by CIHI. However, CHPI classifies SSF expenditures as non-governmental “private” costs. CHPI conceptualizes SSFs as mandatory quasi-private insurance organizations. SSF’s are comprised primarily of Workers Compensation Boards (e.g. Ontario’s Workers Safety and Insurance Board), which are financed by mandatory contributions from employers and employees, with independently administered drug plans and a separate formulary designed exclusively for the use of SSF beneficiaries. By contrast public drug plans are financed from fungible taxes and drug insurance fund premiums with a formulary designed and administered by public service agencies to serve the general population.

Table F. Annual Rate of Change (%), Patented Medicines Price Index (net, gross) and Consumer Price Index (CPI).^{49,50}

SOURCE DATA			
Year	PMPI (net)	PMPI (gross)	CPI
1988	4.1%		4.0%
1989	1.9%		5.0%
1990	2.8%		4.8%
1991	3.9%		5.6%
1992	2.1%		1.5%
1993	0.1%		1.8%
1994	-0.7%		0.2%
1995	-1.9%		2.2%
1996	-2.2%		1.6%
1997	-0.1%		1.6%
1998	-0.1%		0.9%
1999	0.2%		1.7%
2000	0.5%		2.7%
2001	0.1%		2.6%
2002	-0.1%		2.2%
2003	0.1%	0.6%	2.8%
2004	0.7%	1.0%	1.8%
2005	0.5%	1.2%	2.2%
2006	-0.2%	0.1%	2.0%
2007	0.0%	1.4%	2.2%
2008	0.2%	2.9%	2.3%
2009	0.3%	1.3%	0.3%
2010	-0.4%	2.4%	1.8%
2011	-0.1%	1.4%	2.9%
2012	0.3%	1.2%	1.5%
2013	-0.1%	1.4%	0.9%
2014	0.0%	0.8%	2.0%
2015	0.9%	0.2%	1.1%
2016	-0.6%	0.3%	1.4%
2017	-0.3%	0.8%	1.6%

⁴⁹ PMPRB (2018). Annual Report 2017. Figure 17. Annual Rate of Change (%), Patented Medicines Price Index (PMPI) and Consumer Price Index (CPI), 2003 to 2017.

⁵⁰ PMPRB (2017). 2016 Annual Report. Figure 7. Annual Rate of Change, Patented Medicines Price Index (PMPI) and Consumer Price Index (CPI), 1988–2016.

Table G. 7-country average foreign-to-Canadian gross price ratios (median at Market Exchange Rates (MER), mean at Purchasing Power Parities (PPP)).^{51,52}

SOURCE DATA		
Year	Median at MER	Mean at PPP
2007	1.03	1.04
2008	1.03	1.07
2009	1.04	1.07
2010	1.06	1.22
2011	1.05	1.22
2012	1.07	1.29
2013	1.06	1.34
2014	1.13	1.45
2015	1.18	1.43
2016	1.25	1.51
2017	1.26	1.53

⁵¹ PMPRB (2018). 2017 Annual Report. Figure 24. Average Ratio of Median International Price (MIP) to Canadian Price, at Market Exchange Rates, 2007–2017.

⁵² PMPRB (2018). 2017 Annual Report. Table 10. Average Foreign-to-Canadian Price Ratios, Multilateral Comparisons, 2017. (historical data from ARs 2008-2016).



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