Patented Medicine Prices Review Board

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PmPrB 2002

Annual Report

Canada

Since 1987
Depuis

Mission and Values of the PMPRB

The PMPRB protects consumers and contributes to Canadian health care by ensuring that prices charged by manufacturers for patented medicines are not excessive.

The PMPRB achieves this by:

- promoting voluntary compliance with Guidelines established by the Board
- reviewing prices and taking remedial action when necessary
- analyzing and reporting to Canadians on price trends of all medicines and on research and development conducted by patentees
- consulting with interested parties on Guidelines and other matters of policy
- fostering awareness of the Board's mandate, activities and achievements through communication, dissemination of information and public education.

In fulfilling the mission we are committed to innovative leadership based on the following values:

- effectiveness and efficiency
- fairness
- integrity
- mutual respect
- transparency of process
- a supportive and challenging work environment.

To obtain our publications, log on to our website: **www.pmprb-cepmb.gc.ca** or call us at our toll-free number: 1 877 861-2350.

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All PMPRB publications are available in both official languages.

MANDATE

The PMPRB is an independent quasi-judicial body created by Parliament in 1987 under the *Patent Act*. The PMPRB protects consumer interests and contributes to Canadian health care by ensuring that prices charged by manufacturers of patented medicines are not excessive.

The PMPRB reports to Parliament through the Minister of Health. The Annual Report, which covers each calendar year, includes a review of the PMPRB's major activities, analyses of the prices of patented medicines and of the price trends of all drugs, and reports on the R&D expenditures as reported by patent-holding drug manufacturers.

May 30, 2003

The Honourable Anne McLellan, P.C., Q.C., M.P.
Minister of Health
House of Commons
Ottawa, Ontario
K1A 0A6

Dear Minister:

I have the honour to present to you, in accordance with sections 89 and 100 of the *Patent Act*, the Annual Report of the Patented Medicine Prices Review Board for the year ended December 31, 2002.

Yours very truly,

Robert G. Elgie
Chairperson

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PATENTED DRUG PRODUCTS FOR HUMAN USE AND CANADIAN PATENTEES, JANUARY 1, 2002 – DECEMBER 31, 2002

This list is available on the PMPRB website: www.pmprb-cepmb.gc.ca, under Other Publications; Patented Medicines, or by calling our toll-free number: 1 877 861-2350

Chairperson's Message

In 2002, the Patented Medicine Prices Review Board formally marked its 15th anniversary by hosting a Symposium that brought together Canadian and international representatives of the health care, academic, pharmaceutical and public sectors along with consumers and seniors. This unique forum provided an opportunity to share information on a wide range of issues related to drug prices, from approaches used in other countries to assess the value of new drugs, to the work of the Commission on the Future of Health Care in Canada, chaired by Roy Romanow.

Events such as the 2002 PMPRB Symposium also served as a timely reminder of the fact that health care remains at the forefront of public policy issues. For Canadians, no issue is more important. This preoccupation was reflected in the September 2002 Speech from the Throne in which the Government of Canada committed to action in a number of key areas including speeding up the regulatory process for drug approvals. More recently, in February 2003, the First Ministers renewed their commitment through the Health Accord, to work in partnership with each other, with providers, and with Canadians in shaping the future of our public health care system and ensuring its sustainability.

In late 2002, building on provincial reports of the last several years, the Romanow Commission and the Senate Standing Committee on Social Affairs, Science and Technology, chaired by Senator Michael Kirby, released their respective reports and presented their recommendations addressing Canadians' concerns about the universality and sustainability of our health care system. Of particular interest, from the perspective of the PMPRB, were suggestions by the Romanow Commission for a continued and somewhat expanded role of the current price review system and for the provision of more comprehensive analysis on pharmaceuticals to better assist decision makers. These proposals build on the current mandate of the PMPRB, both in its regulatory responsibilities and its reporting role. We subsequently indicated to the Minister of Health our willingness to collaborate with Health Canada in studying these recommendations. At the same time, we will continue to work to fulfill our mandate, including the review and application of the Price Guidelines for patented medicines, and the implementation of the new National Prescription Drug Utilization Information System (NPDUIS).

Along with the NPDUIS, a second important initiative announced by Ministers of Health in September 2001 was the Common Drug Review (CDR) involving participating federal, provincial and territorial drug plans. The CDR is designed to ensure a consistent and rigorous approach to drug reviews across Canada by replacing multiple review and recommendation processes for new drugs with one common approach. In this context, the PMPRB is working to better co-ordinate the timing of its price review process with other management programs such as the CDR and formulary listings. These efforts are necessary to enable the PMPRB to respond to speedier drug approvals by Health Canada.

Once again, in 2002, we were reminded of the increasingly important role played by drugs in Canada's health care system. Total sales by manufacturers of pharmaceuticals for human use in Canada are estimated at $13.1 billion in 2002. This represents an increase of 13.9 % over 2001 sales. The share of patented drugs within total drug sales rose from 65.0% in 2001 to 67.4% in 2002. Total sales of patented drugs, as reported by patentees, reached $8.8 billion in 2002, an increase of 17.3 % over the previous year.

While continuing to pursue our regulatory and reporting responsibilities in 2002, we also maintained a strong focus on consultation and transparency. Key examples included the release of our Environmental Scan, which served as a basis for developing the program of the PMPRB Symposium 2002 and our Research Agenda. In the past year, we also began reporting the results of reviews of new patented drugs by Board Staff, conducted for purposes of applying the Price Guidelines.

The Working Group on Price Review Issues made further important contributions in the past year with the submission of its final report. It reinforced the importance of our timelines project in the context of our price review process and helped focus our attention on the need to continue to examine approaches to assess the value of new drug products. I wish to take this opportunity to thank the members of the Working Group for their contribution over the past three years.

At the same time, we outlined a number of key areas in our Research Agenda for the coming year, including the Price Guidelines for breakthrough drugs, International Price Comparison guidelines, and the analysis of expenditures by publicly funded drug plans.

The celebration of our 15th anniversary and the hosting of the PMPRB Symposium 2002 provided further opportunities to consult with and engage many of our stakeholders, and to foster a better understanding of our respective issues and perspectives.

Among our regulatory activities in 2002, the Board issued a Notice of Hearing into the price of Remicade, a drug product used in the treatment of Crohn's disease and rheumatoid arthritis. In the course of the proceeding, the Board received a joint submission by Board Staff and Schering Canada Inc. to consider a Voluntary Compliance Undertaking by Schering to lower the price of Remicade bringing it within the Price Guidelines. In the public interest, the Board accepted the VCU in April 2003 and the matter was concluded.

As for the Board's reporting functions, highlights included the publication of several studies such as the *Foreign Price Trends for Patented Medicines* and the *Comparison of R&D Spending in Canada and Selected Countries* by the brand name pharmaceutical industry. This latter study showed that total R&D spending in Canada has increased by 51% from $625 million in 1995 to $945 million in 2000. However, despite this growth, Canada still ranks behind comparator countries in the ratio of R&D spending to domestic sales – well below that of the United Kingdom and the United States.

Another noteworthy event of the past year was the announcement by the Minister of Health on October 3, 2002, of the appointment of Thomas E. (Tim) Armstrong to the PMPRB. A Toronto lawyer with a distinguished career as a public servant, Tim is a valued and welcome new Board member.

The activities and events of 2002 reflect the further evolution of the role of the PMPRB. We are committed to working with other organizations and levels of government to support and improve Canada's health care system. **In this increasingly integrated and interconnected environment, we will continue to pursue a collaborative approach based on the goal of serving the health care needs of all Canadians.**

Robert G. Elgie

HIGHLIGHTS FOR 2002

SALES

- Total sales of all drugs for human use by manufacturers in Canada increased 13.9% from 2001 to $13.1 billion.
- Sales of patented drugs increased by 17.3% to $8.8 billion in 2002. Patented drugs now account for 67.4% of total sales, up from 45.0% in 1996.

COMPLIANCE

- In total, there were 94 new patented drug products (DINs) introduced in 2002, including 24 new active substances. As of March 31, 2003, 60 DINs had been reviewed. Of those, 46 were priced within the Guidelines and 14 were priced at levels which appeared to be outside the Guidelines and investigations were commenced.

PHARMACEUTICAL TRENDS

- The manufacturers' prices of patented drugs, as measured by the Patented Medicine Price Index (PMPI), fell by 1.2% in 2002. This result continues the pattern of declines and near-negligible increases in the PMPI that began in 1993.
- Since the mid-1990s Canadian prices for patented drugs had remained between 5% to 12% below the median of foreign prices. In 2002, the prices of patented medicines in the Canadian market were about 1% higher than the median of foreign prices in the seven countries used for price comparison purposes – lower than prices in the U.K., Switzerland and the U.S. and higher than those in Italy, France, Sweden and Germany. As in previous years, U.S. prices appear to be substantially higher than prices in Europe and Canada.

RESEARCH AND DEVELOPMENT

- Patentees reported total R&D expenditures of $1.18 billion in 2002, an increase of 11.6% over 2001. The R&D-to-sales ratio remained at 9.9%, unchanged from 2001 for all patentees, while the R&D-to-sales ratio for members of Rx&D declined from 10.6% in 2001 to 10.0%.
- Expenditures on basic research increased by 21.8% in 2002 to reach $198.6 million, and its share of total R&D increased to 17.6% from 16.1% in 2001.

Mandate and Jurisdiction

MANDATE

The PMPRB is an independent quasi-judicial body created by Parliament in 1987 under the *Patent Act*. The PMPRB protects consumer interests and contributes to Canadian health care by ensuring that prices charged by manufacturers of patented medicines are not excessive.

The PMPRB reports to Parliament through the Minister of Health. The Annual Report, which covers each calendar year, includes a review of the PMPRB's major activities, analyses of the prices of patented medicines and of the price trends of all drugs, and reports on the R&D expenditures as reported by patent-holding drug manufacturers.

JURISDICTION

The PMPRB is responsible for regulating the prices that patentees charge for prescription and non-prescription patented drugs sold in Canada for human and veterinary use to ensure that they are not excessive. If, after a public hearing, the Board finds that a price is excessive it may order the patentee to reduce the price and take measures to offset any excess revenues it may have received. The PMPRB reviews the "factory-gate" price at which the manufacturer sells the product to wholesalers, hospitals and pharmacies. The PMPRB's jurisdiction includes patented medicines marketed or distributed under voluntary licences. The PMPRB has no authority to regulate the prices of non-patented drugs, including generic drugs sold under compulsory licences, and does not have jurisdiction over prices charged by wholesalers or retailers nor over pharmacists' professional fees.

In Canada, Health Canada assesses new medicines to ensure that they conform with the *Food and Drugs Act and Regulations*. Formal authorization to market or distribute a medicine is granted through a Notice of Compliance (NOC). A medicine may be temporarily distributed with specified restrictions before receiving a NOC, as an Investigational New Drug or under the Special Access Program.

The PMPRB regulates the price of each patented drug product, including each strength of each dosage form of a patented medicine. This is normally the level at which Health Canada assigns a Drug Identification Number (DIN).

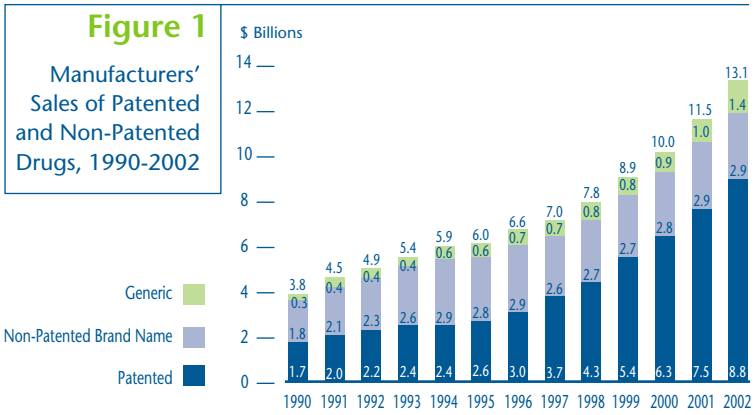
SALES OF DRUGS IN CANADA

As reported in the following chapter, **total sales by all manufacturers of pharmaceuticals for human use in Canada are estimated at $13.1 billion in 2002, an increase of 13.9% over sales in 2001.** Patentees reported sales of patented medicines of $8.8 billion, an increase of 17.3% over 2001. For more information, please see *Trends in Manufacturers' Sales of Drugs in Canada and Other Countries*, on page 18.

Figure 1 shows the growth in annual sales of patented and non-patented drugs from 1990 to 2002. Non-patented drugs include non-patented brand name drugs and generic drugs.

Figure 1

Manufacturers' Sales of Patented and Non-Patented Drugs, 1990-2002



Sources: PMPRB and IMS Health

COMPLIANCE AND EXCESSIVE PRICE GUIDELINES

Under the *Patented Medicines Regulations* (Regulations), patentees are required to report information on the introductory prices and sales of new patented medicines within 60 days of the date of first sale and to continue to file detailed information on prices and sales of each patented drug for the first and last six-month period of each year for as long as the drug remains patented. The PMPRB reviews the pricing information for all patented medicines sold in Canada on an ongoing basis to ensure that the prices charged by patentees comply with the Price Guidelines established by the Board. The Guidelines are published in the PMPRB's *Compendium of Guidelines, Policies and Procedures* (Compendium) and are available on the website under Legislation, Regulations, Guidelines, or by calling our toll-free number: 1-877-861-2350.

PRICE GUIDELINES

The Guidelines are based on the price determination factors in section 85 of the *Patent Act* (Act) and have been developed in consultation with stakeholders, including the provincial and territorial ministers of health, consumer groups and the pharmaceutical industry. In summary, the Guidelines provide that:

- prices for most new patented drugs are limited such that the cost of therapy for the new drug does not exceed the highest cost of therapy for existing drugs used to treat the same disease in Canada;
- prices of breakthrough patented drugs and those which bring a substantial improvement are generally limited to the median of the prices charged for the same drug in other industrialized countries listed in the Regulations (France, Germany, Italy, Sweden, Switzerland, U.K. and U.S.);
- price increases for existing patented medicines are limited to changes in the Consumer Price Index (CPI); and
- the price of a patented drug in Canada may, at no time, exceed the highest price for the same drug in the foreign countries listed in the Regulations.

Board Staff reviews the prices of all patented medicines sold in Canada. When it finds that the price of a patented drug product appears to exceed the Guidelines, and the circumstances meet the criteria for commencing an investigation, Board Staff will conduct an investigation to determine the facts. Additional information on the criteria for commencing an investigation is available in Annex 1 on page 45. An investigation could result in:

- its closure where it is concluded that the price was within the Guidelines;
- a Voluntary Compliance Undertaking (VCU) by the manufacturer to reduce the price and take other measures to comply with the Guidelines; or
- a public hearing to determine if the price is excessive and to make a remedial order.

As part of the PMPRB's transparency initiative, beginning in 2001, the list of New Patented Medicines Reported to the PMPRB is posted on the PMPRB website every month. This list includes information on the status of the review (i.e., under review, within Guidelines, VCU, notice of hearing). Drug products "under review" also include drugs which are subject to an investigation.

New Active Substances in 2002

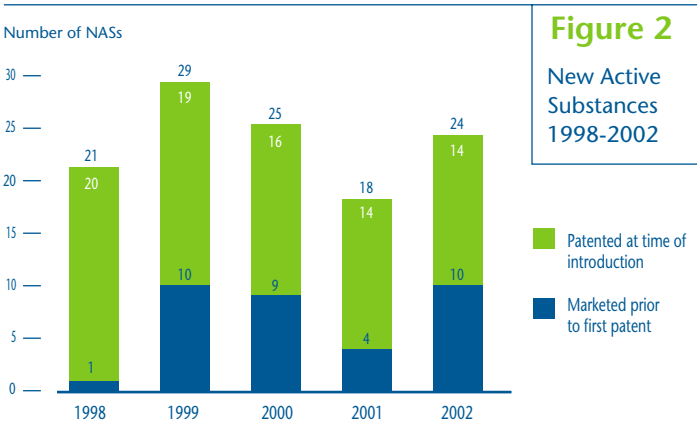
Health Canada reported 24 New Active Substances (NASs) in 2002 but not all were introduced to the market in that year.[1] The PMPRB's list of patented NASs in any year may differ from the list of NASs approved by Health Canada's Therapeutic Products Directorate (TPD) for the following reasons:

- the NAS is not patented and therefore not subject to the PMPRB's jurisdiction;
- the NAS may not be on the TPD list because it is being sold under the Special Access Program (SAP) before it receives a Notice of Compliance (NOC); or
- the NAS may have been approved, but is not being sold.

As shown in Table 1 on page 12, and Figure 2, ten of the 24 patented NASs that came under the PMPRB's jurisdiction were sold prior to 2002.

Figure 2

New Active Substances 1998-2002

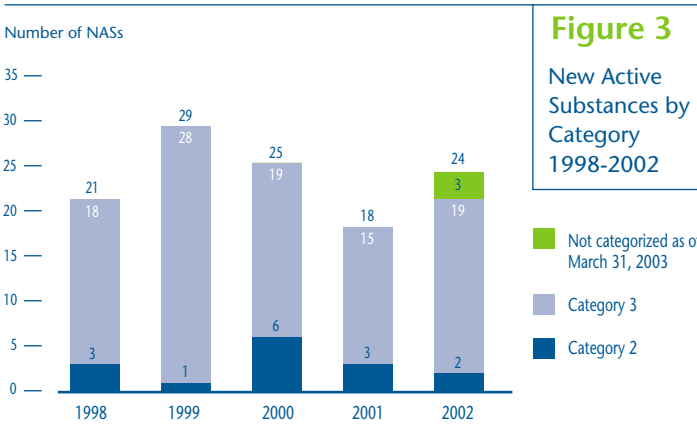


Source: PMPRB

A New Active Substance may include more than one DIN if it is sold in more than one strength or dosage form. The 24 NASs listed for 2002 were marketed as 34 presentations (DINs). Figure 3 provides a breakdown of the patented new active substances for human use, by category assigned for price review purposes, over the five-year period 1998 through 2002 inclusive.

Figure 3

New Active Substances by Category 1998-2002



Source: PMPRB

In 1999, there were two medicines classified as category 2. One was the medicine Rebetron, which was not a new active substance as it is a combination of two existing medicines (interferon + ribavirin). The second category 2 medicine was Herceptin, a NAS, as reported in the 2000 Annual Report.

1 *Annual Drug Submission Performance Report*, January-December 2002, Therapeutic Products Directorate, Health Canada at http://www.hc-sc.gc.ca/hpfb-dqpsa/tpd-dpt.

Table 1 New Patented Medicines in 2002 (Human) — New Active Substances

New Active Substances Introduced in 2002

Brand Name	Chemical Name	Company	# DINs	ATC Class
Aerius	desloratadine	Schering Canada Inc.	1	R06AX27
Aranesp HSA Free	darbepoetin alfa	Amgen Canada Inc.	5	B03XA02
Arixtra	fondaparinux sodium	Organon Sanofi-Synthélabo Canada	1	B01AX05
MabCampath	alemtuzumab	Berlex Canada Inc.	1	L01XC04
Elitek	rasburicase	Sanofi-Synthélabo Canada Inc.	1	V03AF07
Kineret	anakinra	Amgen Canada Inc.	1	L04AA14
Novorapid	insulin aspart	Novo Nordisk Canada Inc.	1	A10AB05
Orgalutran	ganirelix acetate	Organon Canada Ltd.	1	H01CC01
Pariet	rabeprazole sodium	Janssen-Ortho Inc.	2	A02BC04
Spiriva	tiotropium bromide	Boehringer Ingelheim (Canada) Ltd.	1	R03BB04
Starlix	nateglinide	Novartis Pharmaceuticals Canada Inc.	3	A10BX03
Tracleer	bosentan	Actelion Pharmaceuticals Canada Inc.	2	C02KX01
Valcyte	valganciclovir hydrochloride	Hoffmann-La Roche Limited	1	J05AB14
Xatral	alfuzosin hydrochloride	Sanofi-Synthélabo Canada Inc.	1	G04CA01

New Active Substances Introduced in 2002[2]

Brand Name	Chemical Name	Company	# DINs	ATC Class
Alphagan	Brimonidine tartrate	Allergan Inc.	1	S01EA05
Cancidas	caspofungin acetate	Merck Frosst Canada Ltd.	2	J02AX04
Gleevec	imatinib mesylate	Novartis Pharmaceuticals Canada Inc.	1	L01XX28
Infergen	interferon alfacon-1	Intermune Inc.	1	L03AB09
Integrilin	eptifibatide	Schering Canada Inc.	2	B01AC16
Lovenox	Enoxaparin sodium	Aventis Pharma Inc.	1	B01AB05
Pulmozyme	dornase alfa	Hoffmann-La Roche Limited	1	R05CB13
Tamiflu	oseltamivir phosphate	Hoffmann-La Roche Limited	1	J05AH02
Travatan	travoprost	Alcon Canada Inc.	1	S01EX06
Zenapax	daclizumab	Hoffmann-La Roche Limited	1	L04AA08

2 These drugs, which were on the market before 2002, came under the PMPRB's jurisdiction in 2002 with the issuance of a patent.

The Human Drug Advisory Panel (HDAP)[3] recommended that two new patented medicines (two DINs) should be classified as category 2 new medicines in 2002:

- MabCampath (alemtuzumab, Berlex Canada Inc.), indicated for the treatment of B-cell chronic lymphocytic leukemia; and
- Gleevec (imatinib mesylate, Novartis Pharmaceuticals Canada Inc.), indicated for the treatment of chronic myeloid leukemia (CML).

The summary reports for MabCampath and Gleevec are available on the PMPRB's website under Other Publications; Patented Medicines.

The following updates have been made to information provided in Figure 4 in the 2001 Annual Report:

- The 2001 information has been updated to include Remicade (infliximab, Schering Canada Inc. - category 2) and Definity (perflutren, Bristol-Myers Squibb Pharmaceutical Group - category 3), the two new active substances that were reported as not categorized in the 2001 Annual Report.
- The 2000 information has been revised with respect to Thyrogen (thyrotropin alfa, Genzyme Canada Inc.). This drug product was first sold in 2000 with a Notice of Compliance still pending, and was at that time reported as a category 3 drug. When the NOC was granted in 2002, it was referred to the Human Drug Advisory Panel (HDAP). The HDAP recommended that it be categorized as a category 2 new medicine.
- The 2000 information has also been revised to include two other drug products categorized as a category 2 drug products: Octreoscan (in-111 penetreotide, Bristol-Myers Squibb Pharmaceutical Group) and Botox (botulinum toxin type A, Allergan Inc.). The patent for Octreoscan was issued in 2000, but it was first sold in 1996. The patentee at that time, Mallinckrodt Medical Inc., advised the Board of this drug product in 2000. In 2001, there were preliminary discussions with Mallinckrodt and there was a change in patentee followed by a merger. The HDAP recommended a category 2 for Octreoscan and the review was completed in 2002.

  The patent for Botox was issued in 2000, but it was first sold in 1990. The patentee did not advise the Board of the existence of this patent until 2001. The HDAP recommended that Botox be reviewed as a category 2 drug and the review was completed in 2002.
- The 1998 information has been revised to include Rituxan (rituximab, Hoffmann-La Roche Canada Ltd.). The HDAP recommended a category 2 for Rituxan. This drug product was first sold in 1998. The patentee had reported this drug as patent pending, but it was determined in 2002 that a relevant patent had been issued in 1995.

New Patented Drug Products in 2002

There were 94 new patented drug products (DINs) for human use introduced in 2002. The 94 DINs represent 64 medicines. Some are one or more strengths of a NAS and others are new presentations of existing medicines.

For purposes of our price review, any patented drug product introduced on the market in Canada, or previously marketed but first patented, between December 1, 2001 and November 30, 2002, is considered a new patented drug product in 2002.[4]

Nineteen (20.2%) of the 94 new patented DINs were being sold in Canada prior to 2002 when the issuance of a Canadian patent brought them under the PMPRB's jurisdiction. These DINs are denoted by a "FPG" (first patent granted) in Annex 2 on page 46. Table 2 identifies the number of patented drug products by the year in which they were first sold. The time delay between date of first sale and date of patent grant for these products ranged from several months to nine years.

3 The Human Drug Advisory Panel is comprised of three independent scientific experts and provides recommendations for the categorization of new drug products and the selection of comparable drug products.

4 Because of the timing of the filing requirements under the *Patented Medicines Regulations* and the manner of calculating benchmark prices, drug products introduced or patented in December are considered to be new patented products in the following year.

Table 2 New Patented Drug Products in 2002 by Year First Sold

	Human
Year First Sold	**# DINs**
Total	94
2002	75
2001	5
2000	3
1999	6
1998	1
1997	2
1994	1
1993	1

Price Review of New Patented Drugs for Human Use

A list of the 94 new patented drug products and their price review status as of March 31, 2003 appears in Annex 2 on page 46. Of the 94 new patented DINs, the prices of 60 had been reviewed. Of those, 46 were found to be within the Guidelines and 14 were priced at levels which appeared to be outside the Guidelines and investigations were commenced. Of the 14, two were closed as the prices were within the Guidelines and 12 were ongoing at the end of the fiscal year. For a more detailed explanation of the criteria for commencing an investigation, please refer to Annex 1 on page 45.

Price Review of Existing Patented Drug Products for Human Use

For the purpose of this report, existing medicines include all patented drug products that were introduced prior to December 1, 2001. The PMPRB's Guidelines limit the price changes for existing patented drugs to changes in the Consumer Price Index (CPI). In addition, the price of a patented drug cannot exceed the highest price of the same drug product in the countries listed in the Regulations (France, Germany, Italy, Sweden, Switzerland, U.K. and U.S.)

A total of 933 existing patented drug products (DINs) for human use were sold during 2002. There were 57 investigations under way at the beginning of the year and during 2002 investigations were opened on 13 existing patented drug products (DINs) that were found to be outside the Guidelines. Of the total of these investigations, 15 were closed as the prices were found to be within the Guidelines, leaving 55 investigations into existing drugs at the end of the year.

At the time of this report:

- the prices of 827 DINs (88.6%) were within the Guidelines;
- 55 DINs were the subject of investigations commenced as a result of pricing in earlier periods;
- 3 DINs, all pertaining to Nicoderm, were the subject of a hearing under section 83 (see *Quasi-Judicial Activities* on page 16); and
- 48 DINs were still under review.

A summary of the review, compliance and investigation status, as of March 31, 2003, of the new and existing patented drug products for human use in 2002 is provided in Table 3.

Table 3 Patented Drug Products for Human Use Sold in 2002 – Status of Price Review as of March 31, 2003

	New Drugs Introduced in 2002	Existing Drugs	Total
Total	94	933	1027
Within Guidelines	48	827	875
Under Review	34	48	82
Under Investigation	12	55	67
Notice of Hearing		3	3

Update of the 2001 Annual Report

In last year's Annual Report, it was reported that of the 985 patented drug products for human use sold in 2001, the prices of 52 were still under review. The results of those reviews concluded that 21 had been within the Guidelines, nine DINs were priced at levels that appeared to exceed the Guidelines and therefore investigations were opened, 21 are still under review and included in Table 3 and one was already an investigation.

In its 2001 Report, the Board had also reported that 57 DINs were under investigation. Of those, 12 investigations have been concluded: in 10 cases, the prices were ultimately found to be within the Guidelines. Two cases, Remicade and Differin Pledget, were concluded as a result of Voluntary Compliance Undertakings (see Voluntary Compliance Undertakings on this page and Quasi-Judicial Activities on page 16).

Patented Drugs for Veterinary Use

In March 1999, the PMPRB implemented, on a three-year trial basis, a complaints-driven process as an alternative means of reviewing the prices of patented veterinary medicines.

There were a total of 91 patented drug products for veterinary use in 2002. Of those, two were introduced in 2002. In last year's Annual Report it was reported that 13 were under review. Two of those have been found to be within the Guidelines and the remaining 11, plus the 2 introduced in 2002 are still under review. The summary reports of the price review of those two drug products (Fucithalmic Vet and Ivomec Eprinex Pour-On) are available on the PMPRB's website under Other Publications; Patented Medicines; Reports on New Patented Drugs for Veterinary Use.

The PMPRB's Research Agenda projects the Board's response to its evaluation of the complaints-driven process for patented veterinary medicines in 2003-2004.

VOLUNTARY COMPLIANCE UNDERTAKINGS

Under the Compliance and Enforcement Policy, patentees are given an opportunity to make a Voluntary Compliance Undertaking (VCU) when Board Staff conclude, following an investigation, that a price appears to have exceeded the Board's Price Guidelines. Approval of a VCU by the Chairperson is an alternative to the commencement of formal proceedings through the issuance of a Notice of Hearing. Under the Board's Compliance and Enforcement Policy, a VCU can also be submitted following the issuance of a Notice of Hearing. A VCU submitted at this point must be approved by the Board.

In 2002, the Chairperson approved a VCU from Galderma Canada Inc. for the patented medicine Differin Pledget. In 2003 prior to the release of this Annual Report, the Chairperson also approved a VCU from Pharmacia Canada Inc. for the patented medicine Aromasin.

In addition, following the issuance of a Notice of Hearing on December 16, 2002, the Board approved a VCU by Schering Canada Inc. for the patented medicine Remicade on March 31, 2003. The full text on this matter appears in the Quasi-judicial Activities section of this Report, on page 16.

Under the *Patent Act*, the Board has no authority to order that funds paid to the Government of Canada to offset excess revenues be used for certain purposes. Pursuant to section 103 of the Act however, the Minister of Health may enter into agreements with her provincial and territorial counterparts regarding the distribution of funds collected in respect of a VCU as a result of orders made under the Act and VCUs.

Differin Pledget, Galderma Canada Inc.

On September 16, 2002, the Chairperson approved a VCU from Galderma Canada Inc. to lower the price of Differin Pledget (adapalene).

Differin Pledget is a patented medicine sold in Canada by Galderma and is used for the topical treatment of acne vulgaris. Differin Pledget 0.1% is supplied in a cream, gel and solution. Galderma began selling Differin Pledget on July 1, 2001 at a price of $0.7774 per ml.

Board Staff concluded that the price of Differin Pledget Solution exceeded the Maximum Non-Excessive (MNE) price of $0.5780 per ml by 34.5% with resulting excess revenues of $17,575.12 during the introductory period July 1, 2001 to December 31, 2001.

The terms and conditions of the VCU were agreed to between Board Staff and the patentee. Having considered the evidence, the Chairperson approved the VCU submitted by Galderma. Under the terms of the VCU, Galderma reduced the average selling price in order that it not exceed the Guidelines and offset the excess revenues by making a payment of $17,575 to the Government of Canada.

Aromasin, Pharmacia Canada Inc.

On April 26, 2003, the Chairperson approved a VCU from Pharmacia Canada Inc. (Pharmacia) for the drug product Aromasin (exemestane).

Aromasin is a selective steroidal aromatase inhibitor indicated for the treatment of advanced breast cancer in women with natural or artificially induced postmenopausal status whose disease has progressed following antiestrogen therapy. Pharmacia began selling Aromasin on August 17, 2000 at a price of $5.7243.

Board Staff concluded that the introductory price of Aromasin exceeded the Maximum Non-Excessive price (MNE) of $4.95 and commenced an investigation. During the course of the investigation, Pharmacia lowered the list price of Aromasin to $4.95 per tablet effective April 1, 2002, and provided public notification of this price reduction.

The price review results for 2002 showed that the average selling price of Aromasin of $4.9174 per tablet was lower than the CPI-adjusted price of $5.1826 per tablet by 5.2%. As a result, Pharmacia has offset the cumulative amount of revenues in excess of the Guidelines received in previous years.

The terms and conditions of the VCU were agreed to between Board Staff and the patentee. Under the terms of the VCU, Pharmacia has undertaken to ensure that the average selling price of Aromasin 25 mg tablet will continue to be within the Board's Guidelines as long as it is under the jurisdiction of the PMPRB. Having considered the evidence, the Chairperson approved the VCU.

The prices of Differin Pledget and Aromasin will remain under the Board's jurisdiction until the expiry of their respective patents.

The VCUs are available on the PMPRB website under Other Publications; VCUs, ACRs, Hearings and Decisions of the Board.

QUASI-JUDICIAL ACTIVITIES

Remicade, Schering Canada Inc.

On December 16, 2002, the Chairperson of the Board issued a Notice of Hearing to consider whether under sections 83 and 85 of the *Patent Act*, the medicine Remicade had been, and is being, sold by Schering Canada Inc. (Schering) at prices exceeding the Guidelines. The matter was first reported in the January 2003 NEWSletter.

Remicade is sold pursuant to a Notice of Compliance issued by Health Canada on June 6, 2001 for the treatment of Crohn's disease and to a Notice of Compliance issued on September 27, 2001 for the treatment of rheumatoid arthritis.

A pre-hearing conference was held in February 2003 and the matter scheduled to be heard by the Board commencing on April 22. On March 18, Schering and Board Staff filed a joint submission proposing that the Board approve a Voluntary Compliance Undertaking (VCU) to resolve issues raised by the Notice of Hearing.

The Board accepted the VCU agreed to by Schering and Board Staff, benefiting patients with an immediate price reduction of approximately 20% and bringing the price of Remicade within the Board's Price Guidelines.

The terms of the VCU require that the average transaction price of Remicade not exceed $909.51 per vial as of April 1, 2003, and for the balance of 2003. Under the Guidelines, future price increases for Remicade will be limited to increases in the Consumer Price Index (CPI). Also, to offset excess revenues from past sales of Remicade, Schering made a payment to the Government of Canada in the amount of approximately $7.8 million.

The Board's Order and relevant documents are available on the PMPRB website under Other Publications; VCUs, ACRs, Hearings and Decisions of the Board; Hearings; Remicade.

Nicoderm, Hoechst Marion Roussel Canada Inc.

On April 20, 1999, the Chairperson of the Board issued a Notice of Hearing to consider whether, under sections 83 and 85 of the *Patent Act,* Nicoderm is being, or has been, sold by Hoechst Marion Roussel Canada Inc. (HMRC) in Canada at a price that, in the opinion of the Board, is excessive and if so, what order, if any, should be made. The matter was first reported on page 32 of the Annual Report for the year 2000.

Following the issuance of the Board's decisions, in 1999 and 2000 affirming its jurisdiction to conduct a hearing into the price of Nicoderm, HMRC commenced two judicial review applications in the Federal Court of Canada seeking to set aside the Board's decisions.

As reported in last year's Annual Report, Board Staff and the Board Hearing Panel applied to the Federal Court to participate in the proceedings. In December 2002, the Federal Court of Appeal dismissed their appeals and upheld a decision of a Prothonotary which allowed the Board to intervene on a limited basis. It is expected that HMRC's applications for judicial review will be heard in 2003.

Nicoderm is a transdermal nicotine patch, indicated as an aid for smoking cessation for the partial relief of nicotine withdrawal symptoms.

The Hearing Panel's decisions in this case are available on the PMPRB website under Other Publications; VCUs, ACRs, Hearings and Decisions of the Board; Hearings; Nicoderm.

TRENDS IN MANUFACTURERS' SALES OF DRUGS IN CANADA AND OTHER COUNTRIES

It is estimated that total sales by all manufacturers of pharmaceuticals for human use in Canada increased to $13.1 billion in 2002, up 13.9% over 2001.[5] As shown in Table 4 on page 19, this increase was slightly smaller than the increase of 15.0% in the previous year, but in line with annual increases above 10% since 1998.

According to the information filed by patentees with the PMPRB, their **sales of patented drugs increased by 17.3% in 2002 to $8.8 billion**. As a result, **patented drugs represented 67.4% of total sales in 2002**. The annual increases in sales of patented drugs have been greater than increases in the sales of all drugs since 1995. As shown in Table 4, until 1996 patented drugs accounted for approximately 41% to 45% of all drug sales, but their share of total sales has increased in every year since then.

Non-patented medicines include products for which all patents have expired, those that are not yet or never will be patented, and generic copies. Non-patented drugs include drugs sold by brand name companies and generic drugs. Prior to 1996, sales of non-patented brand name drugs accounted for more than half of the total drug sales of patentees. That proportion has since declined steadily, reaching 22.1% in 2002. Figure 1, on page 10, shows the trends in sales since 1990 of all medicines, including patented drugs and non-patented drugs.

The Global Context

It has been reported that manufacturers' sales of drugs for human use in the major world markets were $638.8 billion in the year ending October 2002.[6] As shown in Figure 4, pharmaceutical sales in Canada accounted for 2.6% of this amount. The U.S. market is the largest in the world, with more than twice the combined sales of Canada, France, Italy, Germany and the U.K.

5 Total sales by manufacturers are estimated by adding the total sales reported by patentees (for patented and non-patented medicines) and an estimate of generic sales in Canada.

Patentees are required, under the *Patented Medicines Regulations*, to submit to the PMPRB information showing their annual total pharmaceutical sales for both patented and non-patented drugs in Canada. They reported sales of $11.5 billion for 2002. IMS Health publishes estimated sales of pharmaceuticals by individual firms. Generic sales are calculated by summing the sales of drug companies belonging to the Canadian Generic Pharmaceutical Association (CGPA). This calculation yields an estimate of $1.4 billion in 2002, up by 37.2% from 2001. This increase may reflect in part the inclusion of two companies (Pharmascience Inc. and Ratiopharm) not previously covered by the calculations. Excluding those two companies growth in sales would have been 9.7% in 2002.

Beginning with the year 1999, the calculation of manufacturers' sales of all drugs and patented drugs includes the sales of drug products for human use only.

6 SCRIP Magazine, February 2003, "Sales growth starts to slow" (issue 120, pp. 32-34).

Table 4 Manufacturers' Sales of All Drugs and Patented Drugs for Human and Veterinary Use, 1990-1998; and Human Use 1999-2002

Year	Total		Patented		Patented Drugs as Percentage of Total
	Sales ($ billions)	Change * (%)	Sales ($ billions)	Change * (%)	
2002	13.1	13.9	8.8	17.3	67.4
2001	11.5	15.0	7.5	18.9	65.0
2000	10.0	12.4	6.3	16.7	63.0
1999**	8.9	16.8	5.4	27.0	61.0
1998	7.8	11.4	4.3	18.9	55.1
1997	7.0	7.0	3.7	22.6	52.3
1996	6.6	10.0	3.0	12.8	45.0
1995	6.0	1.7	2.6	10.8	43.9
1994	5.9	9.3	2.4	-2.1	40.7
1993	5.4	12.5	2.4	9.4	44.4
1992	4.8	9.1	2.2	14.0	43.8
1991	4.4	18.9	2.0	13.1	43.2
1990	3.7	-	1.7	-	43.2

Sources: PMPRB; IMS Health

* Percentage changes reflect exact values of total sales and not rounded values.

** The percentage change from 1998 of 16.8% for total drugs and 27.0% for patented drugs represents the change in sales of drugs for human use only.

According to IMS Health, pharmaceutical sales in Canada have grown faster in recent years than other major markets. As shown in Figure 5, estimates published for the year ending October 2002 show that the growth in sales in Canada has exceeded that in the other countries. As shown in Figure 6, the year-over-year sales growth in Canada exceeded growth in the U.S., the U.K., Germany, Italy and France.

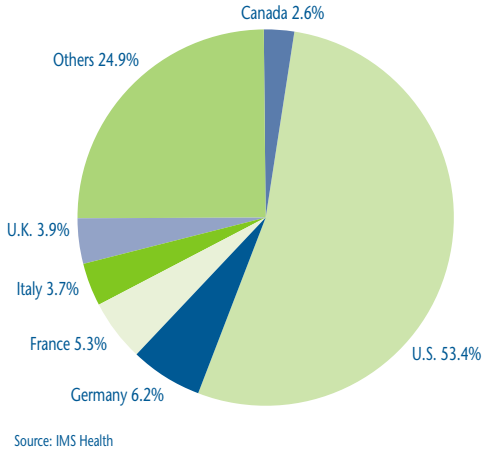
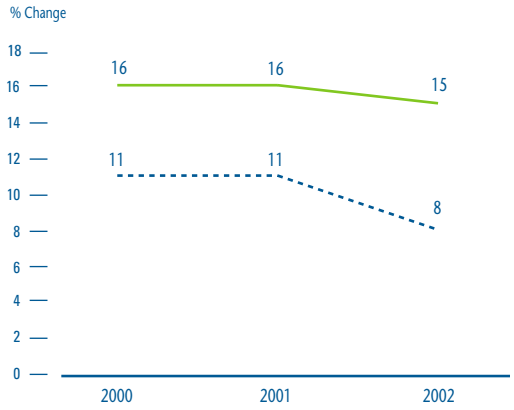


Figure 4
Share of Pharmaceutical Sales, 2002

Figure 5

Year-over-Year Changes in Pharmaceutical Sales, 2000-2002

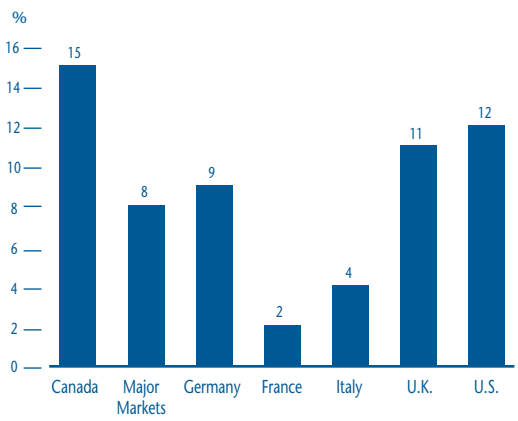


Source: IMS Health

*IMS estimates may differ from the figures reported by the PMPRB.

Figure 6

Growth in Pharmaceutical Sales for 2002*

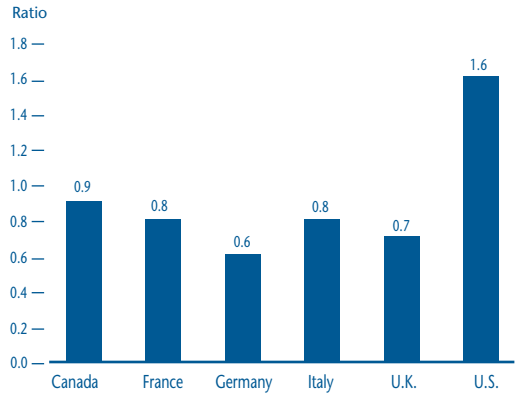


Source: IMS Health

* Growth was calculated using constant Exchange Rate.

Figure 7

Pharmaceutical Sales to Gross Domestic Product, 2002



Source: IMS Health; Organisation for Economic Cooperation and Development (OECD)

The share of national income absorbed by spending on pharmaceuticals provides an indicator of drug expenditures in various countries. Pharmaceutical sales accounted for less than 1% of Gross Domestic Product (GDP) in most developed countries (Figure 7). The pharmaceutical sales-to-GDP ratio is considerably higher in the U.S. Although lower than the U.S. ratio, Canada's ratio is slightly above the European countries in the sample.

TRENDS IN DRUG PRICES AND EXPENDITURES

Prices of Patented Drugs in 2002

To monitor the trends in manufacturers' prices of patented drugs, the PMPRB maintains the Patented Medicine Price Index (PMPI). The PMPI measures average year-over-year changes in the transaction prices of patented drug products sold in Canada based on the price and sales information reported by patentees.[7]

As measured by the PMPI and as shown in Figure 8, **manufacturers' prices of patented drugs fell by 1.2% in 2002. This result continues the pattern of declines and near-negligible increases in the PMPI that began in 1993.** The price stability implied by the trends in the PMPI over the past decade is broadly based: small price decreases or increases of less than 1% were recorded for the great majority of patented drugs in 2002. It should be noted that the PMPI only measures year-over-year changes in the prices of patented drug products; it does not measure the effect on total drug sales or expenditures from the introduction of new drugs.

Price Trends of All Drugs – Patented and Non-Patented

The *Patent Act* provides that, among other price determination factors, the PMPRB shall consider changes in the Consumer Price Index (CPI) in determining whether the price of a patented medicine is excessive. Figure 9 shows that increases in the prices of patented drugs, as measured by the PMPI, have been less than increases in the CPI in almost every year since 1988, the sole exception being 1992.[8] This pattern continued in 2002, with consumer prices increasing by 2.3% while the PMPI fell by 1.2%.[9]

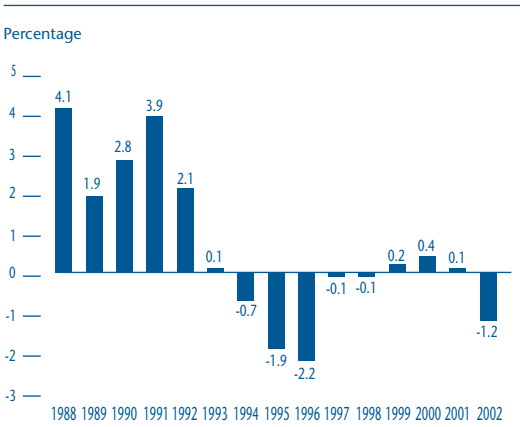


Figure 8

Year-Over-Year Changes in the PMPI, 1988-2002

Source: PMPRB

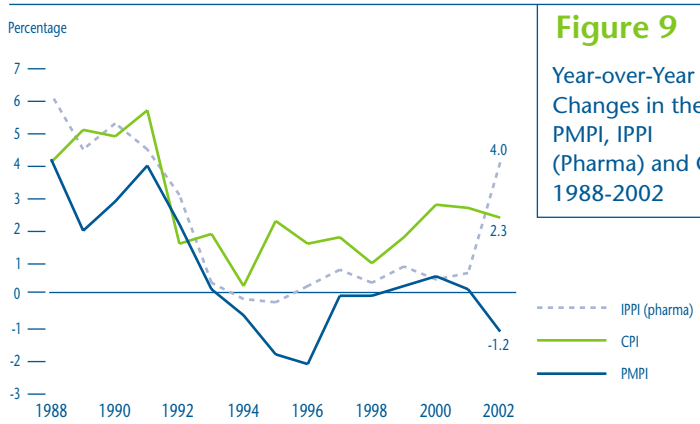


Figure 9

Year-over-Year Changes in the PMPI, IPPI (Pharma) and CPI, 1988-2002

Sources: PMPRB and Statistics Canada

That increases in the PMPI have been less than CPI inflation is not surprising. This in fact reflects a structural feature of the PMPRB's Price Guidelines, which are applied to patented drugs on a product-by-product basis. Among other things, the Guidelines limit price increases to the expected increase in the CPI over a three-year period. Naturally, in any such period, prices of some drug products will increase by less than the CPI or even decrease. To the extent this occurs, growth in the PMPI will tend to be less than CPI inflation.

7 See the PMPRB's *A description of the Laspeyres methodology used to construct the Patented Medicine Price Index (PMPI)*, March 1997, revised June 2000, for a detailed explanation of the PMPI. Also see *A Description of the Major Price Indexes for Pharmaceuticals*, produced by Statistics Canada and the PMPRB, January 2001. As of the 1999 Annual Report, the PMPI includes only the changes in the prices of patented drug products for human use.

8 To facilitate and encourage compliance by patentees, the PMPRB's CPI-adjusted methodology uses the forecast rate of CPI inflation published by the Department of Finance. The forecast CPI inflation rate for 1992 had been 3.2%, but the actual rate was 1.5%. For a full explanation of the CPI-adjusted methodology please refer to Schedule 4 of the PMPRB's *Compendium of Guidelines, Policies and Procedures,* available on our website under Legislation, Regulations, Guidelines.

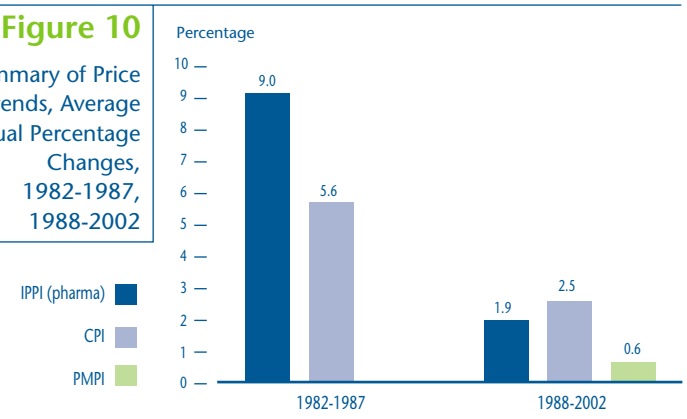
9 Statistics Canada, CANSIN, Series V 735319.

Industrial Product Price Index (IPPI)

Figure 9 also depicts the year-over-year changes in the pharmaceutical component of Statistics Canada's Industrial Product Price Index [IPPI (pharma)]. It is an index of manufacturers' prices for all pharmaceutical products manufactured in Canada. It includes patented and non-patented drugs produced for domestic and export sale; it does not include finished pharmaceutical products that are imported and sold in Canada. The IPPI (pharma) rose by 4.0% in 2002, after having remained virtually unchanged from 1993 to 2001.[10]

Figure 10

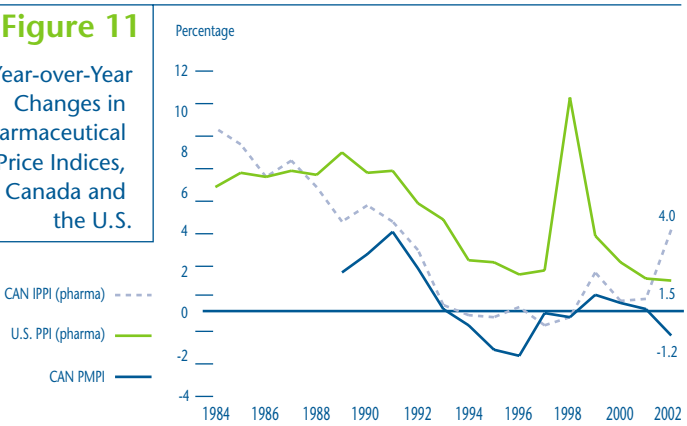
Summary of Price Trends, Average Annual Percentage Changes, 1982-1987, 1988-2002



Sources: PMPRB; Statistics Canada

Figure 11

Year-over-Year Changes in Pharmaceutical Price Indices, Canada and the U.S.



Sources: PMPRB; Statistics Canada; U.S. Bureau of Labor Statistics

As illustrated by Figure 10, a distinct break in pharmaceutical price trends seems to have occurred in 1987. From 1988 to 2002 the IPPI (pharma) increased at an annual average rate of approximately 1.9%, exceeding the corresponding average PMPI increase of 0.6% but falling below the average CPI inflation rate of 2.5%. A much different situation prevailed between 1982 and 1987: during this period prices of all drugs, as measured by the IPPI (pharma), rose at an annual average rate of 9.0%, exceeding the CPI inflation rate of 5.6%.

Price Trends in Canada and the United States

Figure 11 compares annual changes in the pharmaceutical component of the U.S. Product Price Index [PPI (pharma)] to annual changes in the IPPI (pharma) before and after 1987. The U.S. PPI (pharma) measures price increases of all pharmaceuticals at the factory-gate.[11] It is similar in construction to the Statistics Canada IPPI (pharma).

Here again, a marked change in growth patterns occurred in 1987. Increases observed in the Canadian IPPI (pharma) outpaced the U.S. PPI (pharma) in all years up to 1987. From 1987 to 2001, the growth in the Canadian IPPI (pharma) was considerably below the growth in the U.S. PPI (pharma), but this trend reversed in 2002. The increases in the PMPI, however have been well below the U.S. PPI (pharma) throughout the entire period.

10 Statistics Canada, CANSIN, Series V 1576093. The PMPRB is following up with representatives of Statistics Canada to seek clarification of those factors which may explain the sharp increase in the IPPI (pharma) in 2002.

11 U.S. Bureau of Labor Statistics, Producer Price Index — Commodities, Series ID: Wpu063.

Relationship of Canadian Prices to Foreign Prices: Past and Present

The above results demonstrate how prices of drugs in Canada have changed over time. Another way of examining drug price trends is to examine trends in Canadian prices relative to those in other countries.

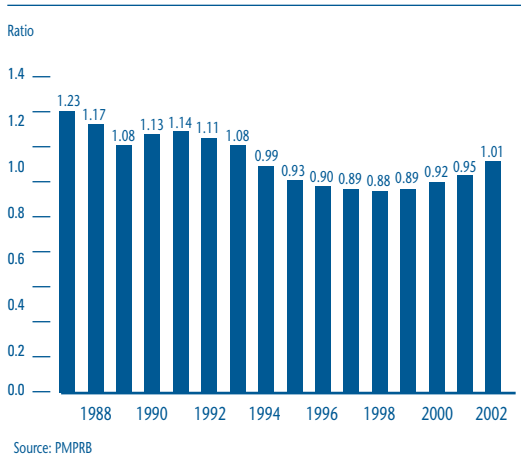
In accordance with the *Patent Act* and the *Patented Medicines Regulations*, patentees are required to report all publicly available ex-factory prices for patented drugs in seven foreign countries: France, Germany, Italy, Sweden, Switzerland, the United Kingdom and the United States. This foreign price information is used for two purposes:

- to conduct the International Price Comparison (IPC) tests specified in the Guidelines, and
- to compare drug prices in Canada with other countries.

Figure 12 shows the relationship between Canadian prices and the corresponding median price among the seven comparator countries over the period 1987 to 2002.[12] Canadian prices were on average 23% higher than median international prices in 1987. This ratio declined and remained relatively stable at levels 5% to 12% below the median prices from 1994 to 2001. **In 2002 prices in the Canadian market were about 1% higher than median foreign prices.**

Figure 13 shows the relationship between Canadian prices for patented drug products and prices in each of the seven comparator countries. In 1987 Canadian prices were, on average, below U.S. prices, but above those in all other countries. By the mid-1990s the situation had changed dramatically, with Canadian prices moving to the mid-range of the six European countries. This situation still obtained in 2002, with prices of patented drugs in Canada being on average somewhat lower than prices in the U.K., Switzerland and the U.S., but higher than those observed in France, Italy, Germany and Sweden. As in previous years, U.S. prices appear to be substantially higher than prices in both Europe and Canada.[13]

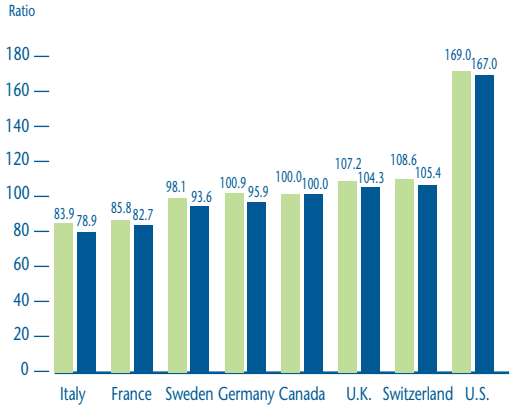
There are several factors that could explain the change in relationship of Canadian to foreign prices for patented drugs and the PMPRB intends to investigate these factors over the coming year. Among other things, we will examine the impact of changes in the exchange rate, as well as examine the differences in price trends in domestic currencies from one country to another. Finally, we will investigate whether changes have occurred in the relationship of the prices of the new drugs at the time of introduction over the past few years.



Source: PMPRB

Figure 12

Ratio of Canadian Prices of Patented Drugs to Median International Prices, 1987-2002



Source: PMPRB

Figure 13

Average Foreign to Canadian Price Ratios, Patented Drug Products

12 This calculation is based on a revenue-weighted average of the ratio of the Canadian price to the median international price for each patented drug product reported in that year. The methodology used by the PMPRB in conducting foreign price comparisons can be found in the *Compendium of Guidelines, Policies and Procedures* and in two papers published with the *Road Map for the Next Decade* in 1998 entitled *Trends in Patented Drug Prices* and *Verification of Foreign Patented Drug Prices*.

13 The pharmaceutical industry in the U.S. has argued that the publicly available prices in that country do not reflect actual prices because of confidential discounts and rebates. Effective January 2000, and following public consultation, the PMPRB implemented the policy of including prices listed in the U.S. Federal Supply Schedule (FSS), which is publicly available, in calculating the average U.S. price of patented drugs.

Increased Expenditures on Drugs at the Retail Level

Despite the moderating influence of prices, total drug spending by Canadians has grown rapidly in recent years. In its latest reports, the Canadian Institute for Health Information (CIHI) has revised upward its previous estimates of the growth in retail drug expenditures in 2000 and 2001.[14]

According to CIHI, it is estimated that total spending on drugs grew by 11.6% in 2000 to $15.0 billion and 11.9% in 2001 to $16.8 billion. As a result, retail spending on drugs represented 15.4% of total health spending in 2000 and 15.9% in 2001. CIHI forecasts that drug expenditures increased by a further 7.7% in 2002 to $18.1 billion and 16.2% of total health costs.

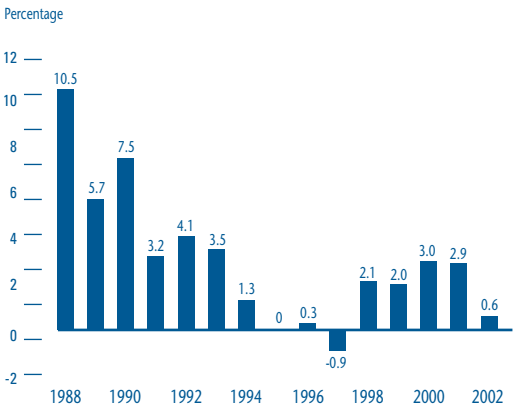
CIHI also reports that prescribed drugs account for an increasing share of total retail drug spending, from 70.3% in 1990 to a forecast 80.3% in 2002.

Consumers often ask why changes in total drug expenditures usually exceed corresponding changes in drug prices.[15] One factor is differences in relevant price concepts. While the PMPRB reports average changes in prices at the manufacturers' level, total drug expenditures reflect changes in the prices at the retail level. These prices include wholesale and retail mark-ups, as well as pharmacists' professional fees. Statistics Canada measures changes in retail prices of prescription drugs with the Consumer Price Index for prescribed medicines, CPI (Rx). Figure 14 shows prices of prescription medicines at the retail level have risen in every year since 1997, registering year-over-year growth of 0.6% in 2002.[16]

Even after accounting for growth in retail prices, most of the increase in spending on drugs is left to be explained. There are several other factors, mostly related to changes in the volume and composition of drug utilization. These are outlined in Figure 15. The control of drug prices at the factory level does not necessarily mean control of total expenditures. Studies conducted by the PMPRB of provincial drug plans have suggested that increased utilization and new drugs account for most of the recent growth in expenditures.[17]

Figure 14

Year-over-Year Changes in the CPI(Rx) Index, 1988-2002



Source: Statistics Canada

14 Canadian Institute for Health Information, *Drug Expenditure in Canada, 1985-2002*, April 2003. CIHI's estimates have been assembled from several data sources: Statistics Canada's annual Survey of Household Spending (for private out-of-pocket expenditure on prescribed drugs), provincial and federal public accounts (for public drug expenditure), data provided by the Canadian Life and Health Insurance Association (for drug benefits paid by private insurers) and information provided by the market research firm A.C. Nielson (Canada) (for expenditure on over-the-counter drugs).

15 In its study, *Analysis of Drug Claim Costs 1997-2001*, Green Shield Canada found that while drug costs for the average claim rose at an average annual compound rate of 7.4%, drug prices decreased on average by 0.2% annually over the same period.

16 Statistics Canada, CANSIM, Series V 737546.

17 *Pharmaceutical Trends, 1995-96 to 1999-2000*, September 2001.

Trends in Quantities of Sales of Patented Drug Products

Data available to the PMPRB allow it to measure changes in the quantities of patented medicines sold from year to year. To this end, the PMPRB maintains the Patented Medicine Quantity Index (PMQI), designed to indicate overall trends in the utilization of patented drugs. Figure 16 displays annual average rates of utilization growth according to the PMQI. This analysis reveals that volumes of patented drugs sold have consistently risen much more quickly than prices. From 1988 to 2002 the average annual increase in quantities of patented drugs sold was approximately 12.6%, compared to an average annual increase of 0.6% in prices. This trend extends through 2002; although prices for patented medicines declined by 1.2%, the average increase in quantities amounted to 15.5%.

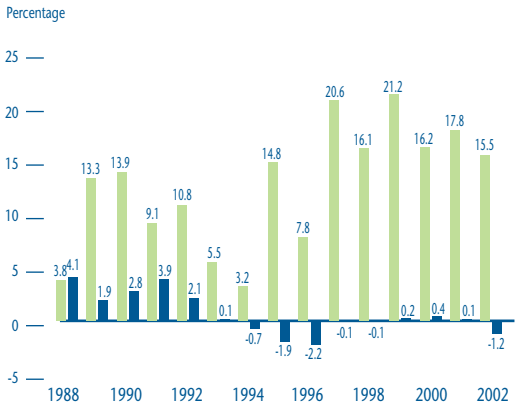
It should be noted that the PMQI may not represent tendencies in the overall pharmaceutical market, since it excludes non-patented medicines. By construction, the PMQI treats shifts in utilization between patented drugs and non-patented drugs and changes in patent status as volume changes, whereas a broader index would treat these as changes in the composition rather than volume of utilization.

- changes in the total population
- changes in the demographics and health status of the population (i.e. towards those with increased medication needs)
- changes in the unit prices of drugs (both patented and non-patented)
- changes in retail and wholesale mark-ups and professional fees
- changes in the prescribing habits of physicians (i.e. from older, less expensive medications to newer, relatively more expensive medications [± improved therapeutic effect] to treat the same underlying diagnosis)
- changes in utilization of drugs on a per patient basis (i.e. more medications per patient per year)
- trends towards using drug therapy instead of other treatments (e.g. as alternatives to surgery in some cases)
- new diseases to be treated
- old diseases to be treated, where there existed no treatment before; old diseases better treated with new drugs

Source: PMPRB

Figure 15

Factors Affecting Total Drug Expenditures



Source: PMPRB

Figure 16

Year-over-Year Changes in the PMPI and the PMQI, 1988-2002

Trends by Major Therapeutic Group (ATC class)

For purposes of price reviews, the PMPRB uses the World Health Organization's (WHO) Anatomical Therapeutic Chemical (ATC) classification system. Table 5 breaks out the sales of patented drugs in Canada in 2002 according to major therapeutic groups.

It should be noted that the relative share of sales by ATC group for all drugs in Canada may differ from the shares for patented drugs.

The last column in Table 5 gives the contribution of each therapeutic class to overall sales growth, with this contribution being the sales growth within the class weighted by its share of overall expenditure. By this measure the leading drivers of growth were drugs in these classes:

- Cardiovascular System (such as lipid-reducing agents and drugs treating hypertension);
- Nervous System drugs (such as drugs treating depression);
- Alimentary Tract and Metabolism drugs (such as drugs treating ulcers); and
- Antineoplastics and Immunomodulating Agents (such as cancer treatments).

These four classes accounted for more than three-quarters of the increase in manufacturers' sales in 2002.

Table 5 Manufacturers' Sales of Patented Drugs for Human Use by Major Therapeutic Group, 2002

ATC Main Group	Sales	Share of Total	Growth from 2001		Contribution to Total Expenditure Growth
	$M	%	$M	%	%
A: Alimentary tract and Metabolism	1190.9	13.6	180.8	17.9	13.9
B: Blood and Blood Forming Organs	438.6	5.0	66.4	17.9	0.1
C: Cardiovascular System	2334.4	26.6	377.0	19.2	29.1
D: Dermatologicals	58.3	0.7	-12.4	-17.5	-0.9
G: Genito-urinary System and Sex Hormones	264.1	3.0	34.2	14.8	2.6
H: Systemic Hormonal Preparations, Excluding Sex Hormones	76.2	0.9	17.6	30.0	1.4
J: General Antiinfectives for Systemic use; and	969.9	11.1	66.0	7.3	5.1
P: Antiparasitic Products[18]					
L: Antineoplastics and Immunomodulating Agents	704.7	8.0	151.6	27.4	11.7
M: Musculo-skeletal System	616.5	7.0	7.9	1.3	0.6
N: Nervous System	1425.4	16.2	325.4	29.6	25.1
R: Respiratory System	559.1	6.4	50.9	10.0	4.0
S: Sensory Organs	100.9	1.2	20.8	25.9	1.6
V: Various	35.8	0.4	5.7	19.0	0.5
Total	**8774.8**	**100.0***	**1291.9**	**100.0***	**100.0***

Sources: PMPRB

* The percentage may not equal 100 due to rounding

18 These groups have been combined for reasons of confidentiality.

STUDIES — HIGHLIGHTS

A Comparison of Pharmaceutical Research & Development Spending in Canada and Selected Countries

In 2002, the PMPRB released a study comparing research & development spending by the brand name pharmaceutical industry in Canada and other major industrialized countries.[19] This work updates and extends an earlier PMPRB study.[20]

The emphasis is on comparisons with France, Germany, Italy, Sweden, Switzerland, the United Kingdom and the United States, the seven countries the PMPRB is required to consider for purpose of carrying out its regulatory mandate under the *Patent Act*. The analysis covers the period 1995 to 2000.

The study found that although total R&D spending in Canada increased 51% from $626 million in 1995 to $945 million in 2000, Canada still ranked behind the other industrialized countries by several measures. Most importantly, the ratio of R&D to domestic sales in Canada remained well below values observed in Europe and the U.S. The Canadian ratio stood at 10.1% in 2000, whereas the aggregate ratio for the seven countries was 19.0%. Among these countries, only Italy had a lower ratio than Canada in 2000.

The study also compared the pharmaceutical R&D-to-sales ratio in Canada to the ratios observed in a set of smaller European countries (e.g., Denmark, Belgium), and again found the Canadian ratio to be well below the average value observed in this set of countries.

Measures of pharmaceutical R&D spending relative to population and GDP also indicated low levels of pharmaceutical research investment in Canada compared to other developed countries. R&D in Canada lags the countries used for regulatory purposes, except Italy, by each of these measures. Canada accounts for a share of total pharmaceutical R&D that is roughly one-half of its share of total pharmaceutical sales. In 2000, there was total pharmaceutical R&D spending of $53.4 billion in Canada and the seven countries. R&D spending by pharmaceutical patentees in Canada accounted for 1.8% of this amount. In the same year total Canadian brand name sales accounted for 3.4% of the $275 billion in sales observed in the eight countries.

Foreign Price Trends for Patented Medicines

The PMPRB regularly reports on trends in the Canadian prices of patented drug products in its Annual Report. It also reports on the overall ratio of Canadian prices to foreign prices. Extending these analyses, the PMPRB recently completed a study examining trends in the prices of patented drugs observed in the seven countries the PMPRB includes in its international price comparisons for the period of 1988 to 2001.[21]

The study relies on data filed by pharmaceutical patentees with the PMPRB giving ex-factory prices in these countries. It uses the PMPRB's standard Laspeyres price index methodology. This methodology reflects changes in the prices of drugs already on the market, but does not measure impacts on the cost of pharmaceutical therapy caused by the introduction of new medicines.

The study found that, with the notable exception of the U.S., all countries experienced only modest overall increases in patented drug prices over the period 1988 to 2001. As a result, the average rate of increase in Canadian patented drug prices, less than 1% per year on average over this period, falls squarely within the range of the six European countries considered in the analysis. In contrast, prices in the U.S. increased at an average annual rate of more than 5%.

International comparisons of changes in product prices have only limited analytical significance in their own right. In particular, changes in patented drug prices cannot by themselves tell whether consumers are paying more or less for patented drugs relative to other goods and services. To this end, the study also compared trends in patented drug prices to inflation. It found that increases in patented drug prices have been less

19 This study is available on our website, under Other Publications; Study Series; S-0217.

20 *A Comparison of Pharmaceutical Research and Development Spending in Canada and Selected Countries*, Study Series S-9709, October 1997.

21 This study is available on our website, under Other Publications; Study Series; Federal/Provincial/Territorial Reports.

than increases in the Consumer Price Index (CPI) in all countries except the U.S. Adjusting for inflation, patented drug prices in Canada declined at an average annual rate of 1.8% from 1988 to 2000, which is in line with results obtained for the six European countries. This relationship persists through the more recent period 1996 to 2001.

The emergence of parallel trade in European drug markets and the concomitant decline of market segmentation suggest an international convergence of drug prices. To assess this hypothesis, the study examines the variation of patented drug prices across countries. All measures indicate the existence of substantial international price variation, but give no evidence that the extent of this variation has notably changed over the last decade.

REPORT ON PRICE TRENDS FOR FEDERAL/PROVINCIAL/ TERRITORIAL DRUG PLANS

As part of its work on behalf of the Federal/Provincial/Territorial (F/P/T) Working Group on Drug Prices, the PMPRB completed studies one of which compares manufacturers' prices of the top selling non-patented single source prescription drugs prevailing in Canada to those in other countries. These studies were conducted by the PMPRB pursuant to a Memorandum of Understanding with the Minister of Health.

Top Selling Non-Patented Single Source Drug Products

In 1999 manufacturers' sales of non-patented drugs were $3.6 billion, representing 39% of all manufacturers' sales in Canada. As part of the PMPRB's work on behalf of the F/P/T Working Group on Drug Prices, it completed a report examining ex-factory prices of top selling non-patented single source (NPSS) prescription drugs in Canada.[21]

In this study Canadian prices of the top selling NPSS drugs were compared to prices in the seven countries used by the PMPRB for purposes of regulating patented medicines. Using data for 1999, the study found that Canadian prices for NPSS products were, on an expenditure-weighted basis, 28% higher than the median international prices of the seven countries; Canadian prices were 75% higher when the comparison is restricted to the six European countries in the comparison. This analysis implies that had NPSS medicines been priced at median international levels spending on such products by the six participating provincial drug plans, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Nova Scotia would have been reduced by approximately 20% in 1999 fiscal year, representing a savings of some $60 million overall.

The top selling NPSS drug products included in this study were identified from the Ontario Drug Benefit Plan (ODB) database. Price and utilization patterns were also constructed from ODB data. The 56 products included represented approximately 50% of all NPSS products in the six participating provincial drug plans.

NATIONAL PRESCRIPTION DRUG UTILIZATION INFORMATION SYSTEM

In September 2001, Federal/Provincial/Territorial Ministers of Health announced the establishment of the National Prescription Drug Utilization Information System (NPDUIS) based on a Business Case prepared by the PMPRB and the Canadian Institute for Health Information (CIHI). The purpose of the NPDUIS is to provide critical analyses of price, utilization and cost trends so that Canada's health system has more comprehensive, accurate information on how prescription drugs are being used and on sources of cost increases.

This initiative involves two major elements: the development and implementation of a prescription claims level drug database capable of incorporating program data from publicly-funded drug plans; and the production of analytical reports relying on information in this database. CIHI is responsible for the first of these elements, while the PMPRB is principally responsible for the second.

An information system housing data from public plans across Canada will be a major first step in developing a national data repository for prescription drug data in Canada. The NPDUIS will provide accurate and timely national prescription drug utilization information to support public drug programs in the establishment of sound pharmaceutical policies and the effective management of Canada's public drug benefit programs.

For the PMPRB, the NPDUIS represents a natural evolution of research previously conducted under a Memorandum of Understanding (MOU) between the Minister of Health and the PMPRB.

In 2002, a Steering Committee consisting of F/P/T drug plan managers was established to provide sound advice to CIHI and the PMPRB regarding the development, analytical direction and priorities, and strategic direction of the NPDUIS. The Steering Committee held its inaugural meeting in November.

A series of projects have been approved for 2003-2004 and are listed on the PMPRB's Research Agenda as follows:

- Non-Insured Health Benefits Cost Driver study
- Budget Impact Analysis Methodology
- Program Expenditure Forecasting Methodology
- Therapeutic Cost Index Methodology.

ANALYSIS OF RESEARCH-AND-DEVELOPMENT EXPENDITURES

With the adoption of the 1987 amendments to the *Patent Act* (Act), Canada's Research Based Pharmaceutical Companies (Rx&D) made a public commitment that the brand name pharmaceutical industry would increase its annual research-and-development (R&D) expenditures as a percentage of sales to 10% by 1996.

Under the Act, the PMPRB monitors and reports the R&D spending as reported to the Board by patentees, but it has no regulatory authority to influence the type of research or amount of R&D spending by patentees. The Act requires each patentee to report its revenues from the sales of drugs and the expenditures made by the patentee in Canada on R&D relating to medicine. For individual patentees, this calculation includes all revenues from Canadian sales of medicines, including revenues from licensing agreements.

Data Sources

Companies that reported sales of patented medicines in 2002 were also required to file R&D data for that calendar year as per the *Patented Medicines Regulations* (Regulations). Consequently, companies that had no sales of patented medicines in 2002 were not required by the Act to report on R&D expenditures. As new patents are granted and others expire, the group of companies required to file R&D data may change from year to year.

The information reported in this chapter is derived from reports filed with the Board by patentees. Under the Regulations, patentees are required to certify that the information reported is true and correct by an officer of the company. The PMPRB does not audit but attempts to reconcile the information and to seek corrections or clarifications from patentees if it finds any discrepancies. Each patentee is also given the opportunity to confirm the R&D-to-sales ratio calculated by the PMPRB for that company before publication of this report.

For 2002, 76 companies selling human and veterinary drug products filed reports on R&D. Sales of drugs for both human and veterinary use are included for the purpose of this section of the report. Of those 76 companies, 36 were members of Rx&D. The data from the 76 reporting firms are the basis of this report.

Failure to File

Under ss. 89(3) of the Act, the PMPRB is to report the identity of the patentees who have failed to file information as per section 88 of the Act. In 2002, one company, Pharmascience Inc., reported sales of a patented medicine but failed to file information on its R&D expenditures as per ss. 88(1)(c) of the Act. This matter is currently under investigation.

Revenues from Sales

As shown in Table 6, the 76 patentees reported total revenues of $11.9 billion from Canadian sales of patented and non-patented drugs in 2002, up 11.0% over 2001. Patentees are largely brand name companies that sell patented and non-patented drugs. Of total sales revenues, less than 1% was generated by licencing agreements. The total sales revenues reported by the 36 Rx&D members totalled $10.3 billion, accounting for 86.6% of the total sales revenues.

R&D Expenditures

Pursuant to the Regulations, patentees are required to report those R&D expenditures that would have been eligible for an Investment Tax Credit for scientific research and experimental development under the provisions of the *Income Tax Act* in effect on December 1, 1987. Market research, sales promotions, quality control or routine testing of materials, devices or products and routine data collection are among the expenditures that are not eligible for an Investment Tax Credit and therefore should not be included in the patentees' filings. Total R&D expenditures include current expenditures, capital equipment costs and allowable depreciation expenses.

As shown in Table 6, **the total R&D expenditures reported by all the companies was $1.18 billion in 2002, an increase of 11.6% over 2001**. The expenditures reported by the 36 Rx&D members totalled $1.03 billion in 2002, which accounted for 87.3% of the total R&D expenditures for the patented pharmaceutical industry as a whole.

Table 6 Total R&D Expenditures* and R&D-to-Sales Ratios of Reporting Companies, 1988-2002

Year	Companies Reporting	Total R&D Expenditures* ($M)	Change from Previous Year (%)	Total Sales Revenues** ($M)	Change from Previous Year (%)	R&D-to-Sales Ratio All Patentees (%)	R&D-to-Sales Ratio Rx&D Patentees*** (%)
2002	76	1183.5	11.6	11908.3	11.0	9.9	10.0
2001	74	1060.1	12.6	10732.1	15.3	9.9	10.6
2000	79	941.8	5.3	9309.6	12.0	10.1	10.6
1999	78	894.6	12.0	8315.5	19.2	10.8	11.3
1998	74	798.9	10.2	6975.2	10.9	11.5	12.7
1997	75	725.1	9.0	6288.4	7.4	11.5	12.9
1996	72	665.3	6.4	5857.4	9.9	11.4	12.3
1995	71	625.5	11.5	5330.2	7.5	11.7	12.5
1994	73	561.1	11.4	4957.4	4.4	11.3	11.6
1993	70	503.5	22.1	4747.6	14.0	10.6	10.7
1992	71	412.4	9.6	4164.4	6.9	9.9	9.8
1991	65	376.4	23.2	3894.8	18.1	9.7	9.6
1990	65	305.5	24.8	3298.8	11.0	9.3	9.2
1989	66	244.8	47.4	2973.0	9.4	8.2	8.1
1988	66	165.7	-	2718.0	-	6.1	6.5

Source: PMPRB

* Total expenditures include current expenditures, capital equipment expenditures and allowable depreciation expenses. If the expenditures funded by government are excluded, the ratios for all patentees and for the members of Rx&D decrease to 9.8% and 9.9%, respectively.

** Total sales revenues include sales of patented and non-patented drugs for both human and veterinary use.

***In the past, Rx&D has reported that its members have achieved a higher R&D-to-sales ratio than reported by the PMPRB. Not all members of Rx&D are required to report to the PMPRB each year as, under the *Patent Act*, only companies with active Canadian patents pertaining to a medicine sold in Canada are required to report on R&D expenditures. For example, some biotechnology companies are engaged in R&D but are not required to report to the PMPRB as they have not made sales of a patented product during this reporting year.

R&D-to-Sales Ratios

The ratio of R&D expenditures to sales revenues for the patented pharmaceutical industry was 9.9% in 2002, the same as in 2001 (Table 6). **The ratio for the 36 companies that were members of Rx&D was 10.0% in 2002, down from 10.6% in 2001.**

As shown in Figure 17, the R&D-to-sales ratios for all patentees and Rx&D members increased from 1989 to the mid-1990s but have declined in recent years. The R&D-to-sales ratios for the past three years have been lower than any year since 1992.

Table 8 in Annex 3, on page 49, provides details on the range of R&D-to-sales ratios. Of the 76 reporting companies, 15 companies reported having performed no R&D in 2002. Sales revenues for companies with no R&D totalled $349.3 million in 2002, accounting for 2.9% of total sales revenues for the patented pharmaceutical companies. The 39 companies reporting R&D expenditures with an R&D-to-sales ratio of 10% or less in 2002 accounted for 53.6% of total sales revenues. This group included companies with total sales of $6.4 billion in 2002 compared with $5.8 billion in 2001. The 22 companies with ratios of more than 10% accounted for a smaller proportion of total sales, 43.4%, or $5.2 billion in 2002.

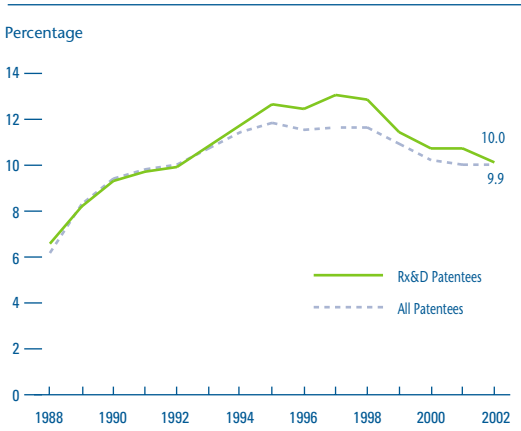
Table 9 in Annex 3, on page 49, lists all reporting patentees and their R&D-to-sales ratios.

Current Expenditures by Type of Research

Current expenditures accounted for $1.1 billion, or 95.2% of total R&D expenditures. Capital equipment costs and allowable depreciation expenses amounted to 3.4% and 1.4%, respectively. Total current expenditures on R&D rose by 11.5% in 2002.

Table 10 in Annex 3, on page 52, shows how current expenditures on R&D in 2002 were allocated among basic, applied and other qualifying R&D.

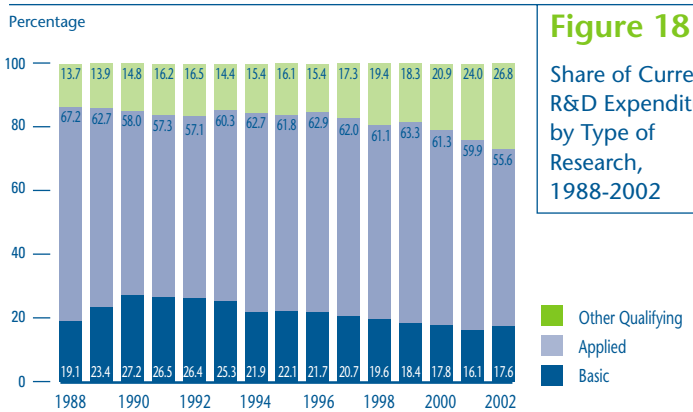
Patentees reported spending on basic research of $198.6 million, or 17.6% of the total current R&D expenditures in 2002. Basic research is defined as work that advances scientific knowledge without a specific application in view. As shown in Figure 18, **expenditures on basic research increased by 21.8% in 2002, and its share of total R&D increased from 16.1% in 2001 to 17.6% in 2002.**



Source: PMPRB

Figure 17

R&D-to-Sales Ratio, Pharmaceutical Patentees, 1988-2002



Source: PMPRB

Figure 18

Share of Current R&D Expenditures by Type of Research, 1988-2002

The lion's share of R&D spending continued to be on applied research, $626.3 million, or 55.6% of the total. Applied research is directed towards some practical application, comprising the manufacturing process, pre-clinical trials and clinical trials. Clinical trials totalled $438.8 million in 2002 and accounted for 70.1% of total applied research expenditures, and 39.0% of the total current R&D expenditures. Manufacturing process accounted for $110.9 million, or 9.8% of the total current R&D expenditures, and pre-clinical trials accounted for $76.6 million, or 6.8% of the total current R&D expenditures. Other qualifying research, which accounted for 26.8% of total expenditures in 2002, includes drug regulation submissions, bioavailability studies and Phase IV clinical trials.

Figure 19 in Annex 3, on page 49, shows current expenditures on R&D by type of research from 1988 to 2002.

Current Expenditures by Organizations Performing R&D and by Source of Funds

Pharmaceutical patentees report their expenditures on research they conduct themselves (intramural) and research performed by others, including universities and hospitals and other manufacturers (extramural). Table 11 in Annex 3, page 52, shows that most R&D was carried out by patentees. In 2002, 54.4% of R&D expenditures were directed to R&D performed by patentees, compared with 54.0% in 2001. Expenditures on R&D performed by other companies on behalf of patentees increased by 20.3% in 2002. From 2001 to 2002, expenditures on R&D performed by universities and hospitals decreased by 12.3% to $139.9 million. The category "others" includes individuals, organizations such as private clinics, and federal and provincial governments. This category incurred the largest increase with 28.4%, from 78.2 million in 2001 to $100.4 million in 2002.

In 2002, as in previous years, most of the R&D expenditures of pharmaceutical patentees were funded internally. In 2002, 93% of all patentees' R&D was funded by internal funds and funds provided by associated companies. Refer to Table 12 in Annex 3, on page 53, for more details.

Current R&D Expenditures by Location

In 2002, R&D spending increased in all parts of Canada. There was no significant change in the regional distribution of R&D spending in 2002. Almost 85% of total expenditures continued to be made in Ontario and Québec. Tables 13 and 14 in Annex 3, on pages 53 and 54, show the current R&D expenditures as reported by province and by R&D performer for 2002.

RESEARCH AGENDA

The PMPRB's Research Agenda is developed each year as part of our annual planning process. It outlines current or upcoming projects which we are working on or will be undertaken in the near future. Initiatives that are currently, or may become, subject to public consultations are also indicated in the Research Agenda.

The National Prescription Drug Utilization System (NPDUIS), a partnership between the Canadian Institute for Health Information (CIHI) and the PMPRB, was launched in 2002. Under this initiative, the PMPRB will undertake a number of research studies related to the utilization and management of pharmaceutical products. The NPDUIS research projects are now reflected in the Research Agenda.

Our Research Agenda is available on our website under Other Publications. Updates to the Research Agenda are published quarterly in the PMPRB's NEWSletter.

WORKING GROUP ON PRICE REVIEW ISSUES

The Working Group on Price Review Issues, a consultative group representing the PMPRB's various stakeholders, was established in 1999 to review and provide reports for the Board's consideration on the following three issues:

- Use of the United States Federal Supply Schedule prices in international price comparisons;
- Transparency in the price review process; and
- Guidelines for category 3 new drugs.

On the first issue, the Working Group discussed challenges related to determining U.S. prices for the purpose of conducting international price comparisons. In response to their recommendations on this issue, in early 2000, the Board implemented a process for taking into account the prices charged to the U.S. government, published on the Federal Supply Schedule, in calculating U.S. prices for price comparisons.

The Working Group was also asked to assess the level of transparency in the price review process, and propose options for improvement. In March 2001, following a review of the Working Group's recommendations on this issue, the Board implemented a number of initiatives aimed at improving the transparency of the price review process. For example, the PMPRB now publishes summary reports on the results of the reviews of all new active substances. The PMPRB has also committed in its Research Agenda to evaluate these transparency initiatives.

The third and final issue that the Working Group addressed was the Guidelines for category 3 new drugs. Category 3 new drugs, for the most part, represent new active substances, but they are not breakthrough discoveries. The Working Group's final report on the category 3 Guidelines was submitted to the Board in October 2002. Overall, the Working Group's recommendations reaffirmed the appropriateness of many of the Board's existing practices, or suggested where some minor improvements could be made. On the issue of the price test, however, the Working Group indicated that it would be appropriate for the Board to consider the relative value of a new drug to a greater extent than it currently does in the category 3 Guidelines, but they did not go so far as to define what is meant by "value" and how "value" could be linked to price limits.

The Board appreciates the complexity of this issue, and recognizes that other jurisdictions are also attempting to address value concepts as they relate to new drugs. To begin, the Board has committed to undertake more research and analysis on the subject of value in a manner that is consistent with its mandate under the *Patent Act* and its need to have clear and effective Guidelines.

The Working Group officially completed its mandate when it submitted its final report on category 3 new drugs last fall. The Board wishes to thank the Working Group members for their time and effort, and for their assistance to the Board in addressing these difficult issues. The Working Group experience has been a very positive one for the Board.

In addition to the specific operational improvements that the Working Group's recommendations have led to, there were several other successes of the Working Group process, including improved communication with stakeholders and better understanding of the PMPRB's processes.

All of the Working Group's reports are available on our website under Working Group on Price Review Issues; Reports.

SYMPOSIUM 2002

In 2001, we conducted a survey of our major stakeholder groups as part of our annual Environmental Scan exercise. The results of the survey showed that our stakeholders are mostly concerned about:

- the rising cost of drugs;
- the need for research and development;
- the impact of emerging technologies; and
- transparency in the PMPRB's operations.

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PMPRB Symposium 2002, October 7 & 8, 2002, Fairmont Château Laurier, Ottawa, Canada.

This input was taken into account by the PMPRB in developing our Research Agenda which is published annually in the NEWSletter and updated quarterly. It also played a major part in developing the program for our Symposium 2002. The Symposium brought together experts and others interested in questions related to pharmaceutical pricing from across Canada and from other major countries. Its purpose was to provide a forum to share information, ideas and views on current issues in drug price regulation in Canada.

Although the planning for this conference went back one year, its genesis actually goes back several years. In 1997, the Standing Committee on Industry recommended that the PMPRB consult with stakeholders to find out what further information we could provide to the public. In response to the public consultations which led to the *Road Map for the Next Decade* in 1998, we have been continually seeking new ways to share information on major pharmaceutical trends.

A broad range of the PMPRB's stakeholders attended the Symposium including representatives of consumer groups, health professionals, departments and agencies of both senior levels of government and the pharmaceutical industry.

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Professor Sir Michael Rawlins, Chairman, National Institute for Clinical Excellence, U.K.

The major theme throughout the two-day Symposium was to examine approaches to assessing the value of new drugs in other countries and to identify the major issues in Canada. Among others, we heard from Professor Sir Michael Rawlins, the Chairman of the National Institute for Clinical Excellence, or NICE, in the United Kingdom and Professor Lloyd Sansom, the Chair of the Pharmaceutical Benefits Advisory Committee in Australia. They told us about some of the current issues and practices in those countries, including continued efforts to enhance evidence-based decision-making; to increase transparency; and to link the reviews of new drugs to appropriate prescribing and utilization.

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The Honourable Anne McLellan, Minister of Health; Dr. Robert G. Elgie, Chairperson, PMPRB; Professor Lloyd Samson, Chairman, Pharmaceutical Benefits Advisory Committee, Australia; Mrs. Margaret Sansom.

The delegates were privileged to hear Dr. Robert McMurtry, who was then serving as Special Advisor to the Romanow Royal Commission on the Future of Health Care. He reported that many Canadians have raised their concerns about pharmaceuticals, particularly on the affordability and accessibility of necessary medications.

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Dr. Robert Y. McMurtry, former Special Advisor to the Commission on the Future of Health Care; Dr. Ingrid Sketris, Member, PMPRB.

All countries are facing significant increases in drug expenditures. Leading economists reported to us on the experiences of other developed countries in attempting to understand and wrestle with double-digit rates of growth in drug plan spending. As Stéphane Jacobzone of the OECD reported to us, there continues to be a constant evolution in public policy throughout Europe related to the pricing of drugs and reimbursement under public programs. On the pricing side, these initiatives include reference-based pricing, foreign price comparisons, and mandated price reductions. The U.K. continues to control the profits of drug manufacturers through the Pharmaceutical Price Regulation Scheme and actively promotes the utilization of cost-effective drugs through NICE. Some countries are negotiating volume agreements with manufacturers to limit total expenditures.

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Panos Kanavos, London School of Economics, U.K.; Réal Sureau, Vice-Chairperson, PMPRB; Stéphane Jacobzone, OECD.

Professor Panos Kanavos of the London School of Economics, who had just completed a year as a Visiting Professor at Harvard University, also reported on the significant developments in the United States. He pointed out that more and more public programs, especially at the state level, are adopting some of the price control and cost-containment measures that have previously been seen in Europe and elsewhere. For example, a number of states have effectively introduced reference-based pricing programs for their Medicaid plans. In the private sector, HMOs and other major insurers are increasing the rigour of their formulary reviews in deciding which drugs to cover.

Canadians are not unique in facing significant increases in drug expenditures and in continually examining and modifying pharmaceutical policies to address them.

Looking at the domestic side, we heard from a number of speakers on four separate panels addressing issues related to:

- assessing the value of new drugs, including the use of pharmacoeconomics;
- international experience with pharmaceutical industrial policy: common challenges and lessons for Canada;
- how the new National Prescription Drug Utilization Information System (NPDUIS) can be used to promote optimal drug therapy; and
- the challenges arising from the emerging pharmaceutical technologies.

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Mrs. Jean Jones, O.C., Consumers' Association of Canada; the Honourable Anne McLellan, Minister of Health.

Our panelists included a wide range of experts: academics in the fields of health policy, economics and law; representatives of the pharmaceutical industry - brand-name, generic, and biotechnology; health care professionals; and senior government officials with responsibility for pharmaceutical policy and drug plans.

Needless to say they did not always agree, but they were frank in identifying some tough questions and promoting more dialogue.

It is clear that there are no magic bullets or easy answers.

The Symposium provided a concrete example of the dual nature of the mandate of the PMPRB of regulating prices charged by manufacturers of patented medicines to ensure that they are not excessive and reporting to Canadians on pricing and R&D performance for pharmaceuticals.

Information on the PMPRB Symposium 2002 along with speaker and panelist's presentations are available on our website.

COMMUNICATIONS

The PMPRB's Communications Program includes the development and maintenance of the PMPRB's communications policies, plans and activities. The Secretariat manages the PMPRB's Communications program and is responsible for responding to public enquiries and is accountable for the management, direction, development and dissemination of all communications activities including media relations.

We strive to integrate all of our communication planning into our annual strategic planning process and to evaluate communications as an integral component in our Strategic Plan.

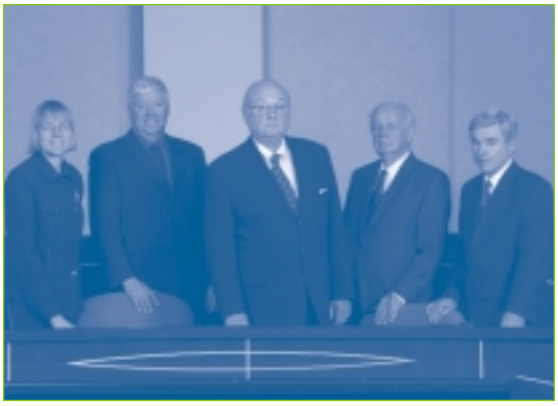
An educational component underlies all of our communications planning. We undertake to raise awareness and foster an understanding of the PMPRB's mandate, role and jurisdiction.

In 2002, the focus of our Communications Program was transparency. We worked towards facilitating two-way communications by providing our stakeholders and the public with timely, accurate information and ensuring that the lines of communication are open. We established opportunities for feedback and participation throughout the year by using established modes of communications (i.e. our NEWSletter). In 2002, we also celebrated our 15 year anniversary. The major event to mark this occasion was our Symposium.

As we look ahead, transparency and accessibility remain the central elements in our Communications Program.

GOVERNANCE

The Board consists of not more than five members who serve on a part-time basis, appointed by the Governor-in-Council, including a Chairperson and Vice-Chairperson. The Chairperson is designated under the *Patent Act* as the Chief Executive Officer of the PMPRB with the authority and responsibility to supervise and direct its work. The Executive Director manages the work of the Staff. Senior Staff consists of the Executive Director, the Director of Compliance and Enforcement, the Director of Policy and Economic Analysis, the Director of Corporate Services, the Secretary of the Board and Senior Counsel.



One Look Imaging, Inc.

Left to right: Ingrid Sketris, Anthony Boardman, Robert G. Elgie, Chairperson, Thomas E. (Tim) Armstrong, Réal Sureau, Vice-Chairperson.

MEMBERS OF THE BOARD AND SENIOR STAFF

Members
Thomas E. (Tim) Armstrong
Anthony Boardman
Ingrid Sketris

Chairperson
Robert G. Elgie

Vice-Chairperson
Réal Sureau

Senior Counsel
Martine Richard

Executive Director
Wayne D. Critchley

Secretary of the Board
Sylvie Dupont

Director of Policy and Economic Analysis
Ronald Corvari

Director of Compliance and Enforcement
Ginette Tognet

Director of Corporate Services
Robert Sauvé

Members' Biographies

Chairperson: Robert G. Elgie
C.M., LL.B., M.D., F.R.C.S. (C), LL.D. (hon.)

Dr. Elgie was appointed Member and Chairperson of the Board in March 1995 and re-appointed in March 2000.

Dr. Elgie, a lawyer and neurosurgeon, Fellow of the Royal College of Surgeons (Neurosurgery), was the founder and first Director of Dalhousie University's Health Law Institute from 1991 to 1996. He was also the part-time Chair of the Workers' Compensation Board of Nova Scotia from 1992 to 1996. Dr. Elgie has taught at the Medical Schools of Queen's University and the University of Toronto, and has held several positions with the Scarborough General Hospital, including Chief of Medical Staff. In 1977, he was elected to the Ontario Legislative Assembly and subsequently served in several Cabinet positions. He resigned from the Ontario Legislature in September 1985 to become Chair of the Workers' Compensation Board of Ontario where he served until 1991. In October 2000, Dr. Elgie was appointed to the Ontario Press Council.

In May 2001, Dr. Elgie was awarded an honorary degree by Dalhousie University: Doctor of Laws, honoris causa, in recognition of his outstanding personal achievements. In January 2003, Dr. Elgie was appointed Member of the Order of Canada.

Vice-Chairperson: Réal Sureau F.C.A.

Mr. Sureau was appointed Member and Vice-Chairperson of the Board in October 1995 and re-appointed in October 2000.

Mr. Sureau, a chartered accountant, is President of Sureau Management Limited. From January 1997 to February 2000, he was Director of Business Development of the Montréal Baseball Club. From June 1995 to June 1996, he was President of the Order of Chartered Accountants of Québec. Through the years, Mr. Sureau was a member of several committees of the Order, including the Disciplinary Committee, the Professional Practice Committee, the Professional Development Committee and the Committee on Government Finances. He was Vice-President, Finance, at Forex and Canam-Manac.

Mr. Sureau sits on the board of directors of many organizations, including Gaz Métropolitain and the *Institut de réadaptation de Montréal.*

Members

Thomas E. (Tim) Armstrong Q.C., O. Ont.

Mr. Armstrong was appointed Member of the Board on October 3, 2002.

A lawyer, Mr. Armstrong has had a long career as a provincial public servant. He served as Chair of the Ontario Labour Relations Board (1974-1976), Deputy Minister of Labour (1976-1986), Agent General for Ontario in Tokyo (1986-1990), and Deputy Minister of Industry, Trade and Technology (1991-1992). He was advisor to the Premier of Ontario on Economic Development from 1992 to 1995, and advisor to the Minister of Labour on Construction Industry Labour Relations in 1999. He has been Chief Representative for Canada to the Japan Bank for International Cooperation since 1996.

Mr. Armstrong was awarded the Order of Ontario in 1995 in recognition of his contribution to public service in Ontario.

Anthony Boardman B.A., Ph.D.

Dr. Boardman was appointed Member of the Board in January 1999.

Dr. Boardman is the Van Dusen Professor of Business Administration in the Strategy and Business Economics Division, Faculty of Commerce and Business Administration at the University of British Columbia (UBC). He graduated from the University of Kent at Canterbury, England (B.A., 1970) and Carnegie-Mellon University (Ph.D., 1975). Prior to taking up his position at UBC he was a professor at the Wharton School, University of Pennsylvania.

Dr. Boardman's current research interests include privatization, cost-benefit analysis and strategic management. Dr. Boardman has been a consultant to many private and public organizations including Vodafone, Stora Enzo, Pricewaterhouse Coopers, the Treasury of New Zealand and all levels of government in Canada. He is also an excellent teacher and has taught executive programmes in Finland, China, Australia and elsewhere. As a member of the MBA Core Team at UBC, he won the Alan

Blizzard award in 2001. Between 1995 and 2001, Dr. Boardman was a member of the Pharmacoeconomic Initiative Scientific Committee which made recommendations to B.C. Pharmacare on the cost-effectiveness of new drugs.

During his career, Dr. Boardman has published many articles in leading academic journals. Recently, he completed the second edition of *Cost-Benefit Analysis: Concepts and Practice*.

Ingrid S. Sketris
BSc(Phm), Pharm.D., MPA(HSA)

Dr. Sketris was appointed Member of the Board in May 1999.

Dr. Sketris is a Professor at the College of Pharmacy and School of Health Services Administration and an Associate Professor of the Department of Community Health and Epidemiology, Dalhousie University. She is a consultant to the pharmacy department of the Queen Elizabeth II Health Sciences Centre, Halifax. Since 2000, Dr. Sketris holds a Chair in health services research from the Canadian Health Services Research Foundation/Canadian Institutes of Health Research (Cosponsored by the Nova Scotia Health Research Foundation).

She is a graduate of the University of Toronto (BSc(Phm), 1977), University of Minnesota (Pharm.D,1979), University of Tennessee Center for the Health Sciences (Residency in Clinical Toxicology/Pharmacy Practice, 1980) and Dalhousie University (MPA(HSA) 1989).

Dr. Sketris is a fellow of the Canadian Society of Hospital Pharmacists and the American College of Clinical Pharmacy. She is currently on the Editorial Boards of the Canadian Journal of Clinical Pharmacology and Clinical Therapeutics. She was a member of the scientific advisory panel of the Canadian Coordinating Office for Health Technology Assessment from 1996-1998. Dr. Sketris' research interests include examining the impact of changes in Pharmacare policy and the use of drugs and health services particularly related to the population of Nova Scotia.

Dr. Sketris has numerous publications in the area of transplantation therapeutics and pharmacoepidemiology.

BUDGET

The PMPRB operated with a budget of $4,459,300 in 2002-2003 and a staff of 39 employees. The budget included $664,000 for the NPDUIS project. More information on the NPDUIS is available on page 28.

Table 7 Financial Performance

	Actual Spending 2001-2002 ($ thousands)	Forecast Spending 2002-2003 ($ thousands)
Total PMPRB	4,002.9	4,459.3
Full Time Equivalents	37.0	39.0

Additional information on the PMPRB budget is available on our website under Other Publications; Reports to Parliament.

Publications

We seek to inform our stakeholders regularly through our publications. Some of these publications, such as the Annual Report and the NEWSletter, are published at regular intervals throughout the year while others are released in response to program and corporate requirements.

To obtain our publications, please call us at 1 877 861-2350 or (613) 952-7360, or access them on our website.

Publications	Release Date
Annual Report	June
Articles	
- *Filing Requirements – Patent Pending Policy*	July
CPI-Adjustment Factors	April
Hearings	
- In the matter of Hoechst Marion Roussel Canada (HMRC) and the medicine Nicoderm	April 1999 (ongoing)
- In the matter of Schering Canada Inc. and the medicine Remicade	December 2002 – April 2003
NEWSletter	Quarterly
Notice and Comment	
A Comparison of Pharmaceutical Research and Development Spending - Methodology	July
Patented Medicines	
- Reported to the PMPRB in 2002 (including the review status for each drug)	Monthly
- Reports on New Patented Drugs:	
1. Prevnar	January
2. Cerezyme	April
3. Sustiva	July
4. Zyagen	
5. NovoRapid	October
6. Xatral	January 2003
7. Pulmozyme	April 2003
8. Gleevec	
Research Agenda[22]	January
Speech Series	
- *Drug Patents and Drug Prices: The Role of the PMPRB*	March
- *Drug Pricing: A Comparison between Canada and Other Countries*	September
- *How the Patented Medicine Prices Review Board Contributes to Controlling Drug Prices in Canada*	October
- *The PMPRB – Latest Developments*	October
PMPRB Symposium 2002	October
Study Series	
- S-0215 – Verification of Foreign Patented Drug Prices	January
- S-0216 – Foreign Price Trends for Patented Medicines (2002)	January 2003
- S-0217 – A Comparison of Pharmaceutical Research and Development Spending	
F/P/T Studies	
- Top Selling Non-Patented Single Source Drug Products	April 2003
Summary of Board Meetings	Quarterly
Voluntary Compliance Undertakings	
- Differin Pledget	September
- Aromasin	April 2003
Working Group on Price Review Issues	
- Price Guidelines for Category 3 Drugs – Part I	March
- Price Guidelines for Category 3 Drugs – Part II	October

22 In 2003, the Research Agenda is published quarterly in the NEWSletter and posted on our website under Other Publications; Research Agenda.

Glossary

Note To Reader:
This glossary is included for the convenience of the reader. For more detailed information and definitions please refer to the *Patent Act*, the *Patented Medicines Regulations*, the PMPRB *Compendium of Guidelines, Policies and Procedures* and the *Food and Drug Regulations*, or contact the PMPRB.

Active Ingredient:
Chemical or biological substance responsible for the claimed pharmacologic effect of a drug product. (Ingrédient actif)

Advance Ruling Certificate (ARC):
A non-binding certificate may be issued pursuant to subsection 98(4) of the Act at the request of a patentee when the Board is satisfied that the price or proposed price of the medicine would not exceed the maximum non-excessive price under the Board's Guidelines. (Certificat de décision au préalable)

ATC:
Anatomical Therapeutic Chemical [ATC] classification system, developed and maintained by the World Health Organization (WHO) Collaborating Centre for Drug Statistics Methodology, divides drugs into different groups according to their site of action and therapeutic and chemical characteristics. This system is used by the PMPRB as a guide for selecting comparable medicines for purposes of price review. (ATC)

Dedication of Patent:
A practice whereby a patentee notifies the Commissioner of Patents that it has surrendered its rights and entitlements flowing from the patent for the benefit of the public to use and enjoy. (Cession d'un brevet)

NB: As of January 30, 1995, the Board does not recognize dedication of patent as a means to remove the medicine from its jurisdiction. (See PMPRB Bulletin 17, page 3.)

Drug Identification Number (DIN):
A registration number that the Health Protection Branch of Health Canada assigns to each prescription and non-prescription drug product marketed under the *Food and Drug Regulations*. The DIN is assigned using information in the following areas: manufacturer of the product; active ingredient(s); strength of active ingredient(s); pharmaceutical dosage form; brand/trade name; and route of administration. (Numéro d'identification de drogue)

Drug Product:
A particular presentation of a medicine characterized by its pharmaceutical dosage form and the strength of the active ingredient(s). (Produit médicamenteux)

Drug Product, Existing:
An existing drug product is a DIN for which a benchmark price has been established in accordance with the Board's Guidelines. (See Chapter 1, subsection 3.3 of the *Compendium of Guidelines, Policies and Procedures*.) (Produit médicamenteux existant)

Drug Product, New:
A new drug product is one for which the introductory price is under review. Patented drug products are considered new in the year during which they are first introduced on the market in Canada or the year they receive their first patent(s) if previously marketed. For price review purposes, new drug products for a given year are those introduced between December 1, of the previous year and November 30, of the reporting year. Because of the filing requirements under the *Patented Medicines Regulations* and the manner of calculating benchmark prices, drug products introduced in December are considered to have been introduced in the following year. (See Chapter 1, subsection 3.2 of the *Compendium of Guidelines, Policies and Procedures*.) (Produit médicamenteux nouveau)

Emergency Drug Release (EDR) Program:
See Special Access Program.

Generic Product:
A drug product with the same active ingredient, strength and dosage form of a brand name drug product. (Produit générique)

Investigational New Drug (IND):
A drug that has been authorized for clinical evaluation (i.e. testing on humans) by Health Canada but that is not yet approved for sale for the indication under study. (Drogue de recherche)

Licence, Compulsory:
A licence granted by the Commissioner of Patents in accordance with subsection 39(4) of the *Patent Act* that has been continued pursuant to subsection 11(1) of the *Patent Act Amendment Act, 1992* which permits the licencee to import, make, use or sell a patented invention pertaining to a medicine. Royalties payable are determined by the Commissioner of Patents who sets the terms of licences pursuant to subsection 39(5) of the *Patent Act*. Except for those compulsory licences issued prior to December 20, 1991, which are continued pursuant to subsection 11(1) of the *Patent Act*, licences issued after December 20, 1991 have no effect. (Licence obligatoire)

Licence, Voluntary:
A contractual agreement between a patent holder and a licensee under which the licensee is entitled to enjoy the benefit of the patent or to exercise any rights in relation to the patent for some consideration (i.e., royalties in the form of a share of the licensee's sales.) (Licence volontaire)

Medicine:
Any substance or mixture of substances made by any means, whether produced biologically, chemically, or otherwise, that is applied or administered *in vivo* in humans or in animals to aid in the diagnosis, treatment, mitigation or prevention of disease, symptoms, disorders, abnormal physical states, or modifying organic functions in humans and or animals, however administered. For greater certainty, this definition includes vaccines, topical preparations, anaesthetics and diagnostic products used *in vivo*, regardless of delivery mechanism (e.g. transdermal, capsule form, injectable, inhaler, etc.). This definition excludes medical devices, *in vitro* diagnostic products and disinfectants that are not used *in vivo*. (See *Compendium of Guidelines, Policies and Procedures*, Introduction, subsection 1.5.) (Médicament)

Notice of Compliance (NOC):
A notice in respect of a medicine issued by the Health Products and Food Branch of Health Canada under section C.08.004 of the *Food and Drug Regulations*. The issuance of an NOC indicates that a drug product meets the required Health Canada standards for use in humans or animals and that the product is approved for sale in Canada. (Avis de conformité)

Patent:
An instrument issued by the Commissioner of Patents in the form of letters patent for an invention that provides its holder with a monopoly limited in time, for the claims made within the patent. A patent gives its holder and its legal representatives, the exclusive right of making, constructing and using the invention and selling it to others to be used. (Brevet)

Patentee:
As defined by subsection 79(1) of the *Patent Act*, "the person for the time being entitled to the benefit of the patent for that invention (pertaining to a medicine) and includes, where any other person is entitled to exercise any rights in relation to that patent other than under a licence continued by subsection 11(1) of the *Patent Act Amendment Act, 1992*, that other person in respect of those rights;" (Breveté)

Pending Patent:
An application for a patent that has not yet been issued. (Brevet en instance)

NB: In cases where a medicine is sold before a patent is issued, it is the Board's policy once the patent is issued, to review the price of the medicine as of the date on which the patent application was laid open for public inspection. (See PMPRB Bulletin 15, page 7.)

Research and Development (R&D):
Basic or applied research for the purpose of creating new, or improving existing, materials, devices, products or processes (e.g. manufacturing processes). (Recherche et développement)

Research and Development — Applied Research:
Work that advances scientific knowledge with a specific practical application in view such as creating new or improved products or processes through manufacturing processes or through preclinical or clinical studies. (Recherche et développement — recherche appliquée)

Research and Development — Basic Research:
Work that advances scientific knowledge without a specific application in view. (Recherche et développement — recherche fondamentale)

Research and Development — Clinical Research:
The assessment of the effect of a new medicine on humans. It typically consists of three successive phases, beginning with limited testing for safety in healthy humans then proceeding to further safety and efficacy studies in patients suffering from the target disease. (Recherche et développement — recherche clinique)

Research and Development — Preclinical Research:
Tests on animals to evaluate the pharmacological and toxicological effects of medicines. (Recherche et développement — recherche pré-clinique)

Research and Development — Other Qualifying:
Includes eligible research and development expenditures that cannot be classified into any of the preceding categories of "type of research and development". (Recherche et développement — Autres R-D admissibles)

Research and Development Expenditures:
For the purposes of the Patented Medicines Regulations, 1994, in particular sections 5 and 6, research and development includes activities for which expenditures would have qualified for the investment tax credit for scientific research and experimental development under the Income Tax Act as it read on December 1, 1987. (Dépenses en recherche et développement)

Special Access Program (SAP):
A program operated by Health Canada to give practitioners access to drugs that are not approved or otherwise available for sale in Canada. (Formerly the EDR Program.) (Programme d'accès spécial)

Voluntary Compliance Undertaking (VCU):
A written undertaking by a patentee to adjust its price to conform with the PMPRB's Excessive Price Guidelines (see Chapter 1 of the *Compendium of Guidelines, Policies and Procedures*). Pursuant to the Board's Compliance and Enforcement Policy (see Chapter 2, section 7) the Chairperson may approve a VCU in lieu of issuing a Notice of Hearing if it is consistent with the *Patent Act* and the policies of the Board and in the public interest. Under the Board's Compliance and Enforcement Policy, a VCU can also be submitted following the issuance of a Notice of Hearing. A VCU submitted at this point must be approved by the Board. The Board reports publicly on all VCUs approved by the Chairperson or the Board. (Engagement de conformité volontaire)

ANNEX 1

CRITERIA FOR COMMENCING AN INVESTIGATION

A price is considered to be within the Guidelines unless it meets the criteria for commencing an investigation. The criteria represent the standards the Board applies in order to allocate its resources to investigations as efficiently as possible. Their existence should not be construed as indicating that the Board accepts any deviation from the Guidelines. The Board is satisfied that its criteria assure all significant cases of pricing outside the Guidelines will be subject to investigation. In most instances where a price exceeds the maximum allowable price by an amount too small to trigger an investigation in one year, it is offset by a price below that which is permitted by the Guidelines the following year. The Board expects the prices of all patented medicines to be within the Guidelines and evidence of persistent pricing outside the Guidelines, even by a small amount, may be used as a criterion for commencing an investigation.

Criteria for Commencing an Investigation

Board Staff will commence an investigation into the price of a patented drug product when any of the following criteria are met:

New Drug Products

- The introductory price is 5% or more above the maximum non-excessive price;
- Excess revenues in the introductory period are $25,000 or more; or
- Complaints with significant evidence.

Existing Drug Products

- A price is 5% or more above the maximum non-excessive price and there are cumulative excess revenues of $25,000 or more over the life of the patent after January 1, 1992;
- Cumulative excess revenues are $50,000 or more over the life of the patent after January 1, 1992; or
- Complaints with significant evidence.

For more information on the Criteria for Commencing an Investigation, please consult Schedule 5 of the *Compendium of Guidelines, Policies and Procedures* available on our website under Legislation, Regulations, Guidelines.

ANNEX 2

PATENTED DRUG PRODUCTS INTRODUCED IN 2002

Brand Name	Company	DIN	NAS[1]/ FPG[2]	ATC[3]	Status	Category
Advair 25/125 -0.15mg/dose	GlaxoSmithKline Inc.	02245126		R	Within Guidelines	3
Advair 25/250 - 0.275mg/dose	GlaxoSmithKline Inc.	02245127		R	Within Guidelines	3
Aerius - 5mg/tab	Schering Canada Inc.	02243919	NAS	R	Under Review	
Aggrastat - 0.05mg/mL	Merck Frosst Canada Ltd.	02240706		B	Within Guidelines	1
Alphagan - 2mg/mL	Allergan Inc.	02236876	NAS/FPG	S	Under Review	
Androderm - 24.3mg/patch	Paladin Labs Inc.	02245972		G	Within Guidelines	1
Aranesp HSA Free - 100mcg/mL	Amgen Canada Inc.	02246357	NAS	B	Under Review	
Aranesp HSA Free - 200mcg/mL	Amgen Canada Inc.	02246358	NAS	B	Under Review	
Aranesp HSA Free - 25mcg/mL	Amgen Canada Inc.	02246354	NAS	B	Under Review	
Aranesp HSA Free - 40mcg/mL	Amgen Canada Inc.	02246355	NAS	B	Under Review	
Aranesp HSA Free - 500mcg/mL	Amgen Canada Inc.	02246360	NAS	B	Under Review	
Arixtra - 2.5mg/ syringe	Organon Sanofi-Synthelabo Canada	02245531	NAS	B	Within Guidelines	3
Biaxin - 50mg/mL	Abbott Laboratories Limited	02244641		J	Within Guidelines	1
Biaxin XL - 500mg/tab	Abbott Laboratories Limited	02244756		J	Within Guidelines	1
Busulfex - 60mg/amp	Orphan Medical Inc.	02240602	FPG	L	Under Review	
MabCampath - 30mg/amp	Berlex Canada Inc.		NAS	L	Under Review	
Cancidas - 50mg/vial	Merck Frosst Canada Ltd.	02244265	NAS/FPG	J	Under Review	
Cancidas - 70mg/vial	Merck Frosst Canada Ltd.	02244266	NAS/FPG	J	Under Review	
Cellcept - 200mg/mL	Hoffmann-La Roche Limited	02242145		L	Within Guidelines	3
Claritin Liberator - 250mg/tab	Schering Canada Inc.	02244941		R	Within Guidelines	1
Diamicron MR - 30mg/tab	Servier Canada Inc.	02242987	FPG	A	Under Review	
Dovobet - 0.55mg/g	Leo Pharma Inc.	02244126		D	Under Review	
Elitek - 1. 5mg/vial	Sanofi-Synthelabo Canada Inc.		NAS	V	Under Review	
Eprex - 5000unit/syringe	Janssen-Ortho Inc.	02243400		B	Within Guidelines	1
Estradot 25 - 0.39mg/patch	Novartis Pharmaceuticals Canada Inc.	02245676		G	Within Guidelines	1
Florazole ER - 750mg/tab	Ferring Inc.	02244405		P	Under Review	
Flovent HFA - 0.05mg/dose	GlaxoSmithKline Inc.	02244291		R	Under Review	
Flovent HFA - 0.125mg/dose	GlaxoSmithKline Inc.	02244292		R	Under Review	
Flovent HFA - 0.25mg/dose	GlaxoSmithKline Inc.	02244293		R	Under Review	
Fosamax - 70mg/tab	Merck Frosst Canada Ltd.	02245329		M	Within Guidelines	1
Gleevec - 100mg/cap	Novartis Pharmaceuticals Canada Inc.	02244725	NAS/FPG	L	Within Guidelines	2
Glucagon - 1mg/mL	Eli Lilly Canada Inc.	02243297		H	Within Guidelines	1
Imodium Advanced Caplet 2/125 - 127mg/cpl	McNeil Consumer Healthcare	02245185		A	Under Review	
Infergen - 0.03mg/mL	Intermune Inc.	02239832	NAS/FPG	L	Within Guidelines	3

Brand Name	Company	DIN	NAS[1]/ FPG[2]	ATC[3]	Status	Category
Integrilin - 0.75mg/mL	Schering Canada Inc.	02240351	NAS/FPG	B	Under Review	
Integrilin - 2mg/mL	Schering Canada Inc.	02240352	NAS/FPG	B	Under Review	
Kadian - 10mg/cap	Abbott Laboratories Limited	02242163		N	Within Guidelines	1
Kineret - 100mg/syringe	Amgen Canada Inc.	02245913	NAS	L	Under Review	
Lipidil Supra - 100mg/tab	Fournier Pharma Inc.	02241601	FPG	C	Within Guidelines	1
Lipidil Supra - 160mg/tab	Fournier Pharma Inc.	02241602	FPG	C	Within Guidelines	1
Lovenox - 100mg/mL	Aventis Pharma Inc.	02012472	NAS/FPG	B	Under Review	
Lovenox - 100mg/mL	Aventis Pharma Inc.	02236564	FPG	B	Under Review	
Lovenox - 100mg/mL	Aventis Pharma Inc.	02236883	FPG	B	Under Review	
Lovenox HP - 150mg/mL	Aventis Pharma Inc.	02242692		B	Under Review	
Myocet - 50mg/vial	Elan Pharmaceuticals Inc.	02245015		L	Within Guidelines	1
Neisvac-C	Shire Biologicals	02245057		J	Under Review	
Nicorette Inhaler - 10mg/dose	Pharmacia Canada Inc.	02241742		N	Under Review	
Novorapid - 100unit/mL	Novo Nordisk Canada Inc.	02244353	NAS	A	Within Guidelines	3
Novorapid - 100unit/mL	Novo Nordisk Canada Inc.	02245397		A	Within Guidelines	1
Nutropin - 10mg/vial	Hoffmann-La Roche Limited	02216191		H	Within Guidelines	1
Optimark - 330.9mg/mL	Tyco Healthcare Group Canada Inc.	02242986		V	Within Guidelines	1
Orgalutran - 250mcg/syringe	Organon Canada Ltd.	02245641	NAS	H	Under Review	
Pariet – 10mg/tab	Janssen-Ortho Inc.	02243796	NAS	A	Within Guidelines	3
Pariet – 20mg/tab	Janssen-Ortho Inc.	02243797	NAS	A	Within Guidelines	3
Pegetron 100	Schering Canada Inc.	02246028		J	Under Review	
Pegetron 120	Schering Canada Inc.	02246029		J	Under Review	
Pegetron 150	Schering Canada Inc.	02246030		J	Under Review	
Pegetron 50	Schering Canada Inc.	02246026		J	Under Review	
Pegetron 80	Schering Canada Inc.	02246027		J	Under Review	
Premplus 0.625+5.0	Wyeth-Ayerst Canada Inc.	02242879		G	Within Guidelines	1
Priorix	GlaxoSmithKline Inc.	02239208	FPG	J	Within Guidelines	1
Pulmozyme - 2.5mg/amp	Hoffmann-La Roche Limited	02046733	NAS/FPG	R	Within Guidelines	3
Reactine - 20mg/tab	Pfizer Canada Inc.	01900978		R	Within Guidelines	1
Recombivax HB Thimerosal Free - 40mcg/mL	Merck Frosst Canada Ltd.	02245977		J	Under Review	
Seroquel - 300mg/tab	AstraZeneca Canada Inc.	02244107		N	Within Guidelines	1
Spiriva - 18mcg/cap	Boehringer Ingelheim (Canada) Ltd.	02246793	NAS	R	Within Guidelines	3
Starlix - 120mg/tab	Novartis Pharmaceuticals Canada Inc.	02245439	NAS	A	Under Review	
Starlix - 180mg/tab	Novartis Pharmaceuticals Canada Inc.	02245440	NAS	A	Under Review	
Starlix - 60mg/tab	Novartis Pharmaceuticals Canada Inc.	02245438	NAS	A	Under Review	
Symbicort 100/6 Turbuhaler - 106mcg/dose	AstraZeneca Canada Inc.	02245385		R	Within Guidelines	3

Brand Name	Company	DIN	NAS[1]/ FPG[2]	ATC[3]	Status	Category
Symbicort 200/6 Turbuhaler - 206mcg/dose	AstraZeneca Canada Inc.	02245386		R	Within Guidelines	3
Synagis - 50mg/vial	Abbott Laboratories Limited	02245889		J	Within Guidelines	1
Tamiflu - 75mg/cap	Hoffmann-La Roche Limited	02241472	NAS/FPG	J	Under Review	
Tarka 2/240 – 242mg/tab	Abbott Laboratories Limited	02240946		C	Under Review	
Tequin - 2mg/mL	Bristol-Myers Squibb Pharmaceutical Group	02243183		J	Within Guidelines	1
Tracleer - 125mg/tab	Actelion Pharmaceuticals Canada Inc.	02244982	NAS	C	Within Guidelines	3
Tracleer - 62.5mg/tab	Actelion Pharmaceuticals Canada Inc.	02244981	NAS	C	Within Guidelines	3
Transdermal Nicotine Patch 14-35mg/patch	Novartis Consumer Health Canada Inc.	02241226		N	Within Guidelines	1
Transdermal Nicotine Patch 21-52.5mg/patch	Novartis Consumer Health Canada Inc.	02241228		N	Within Guidelines	1
Transdermal Nicotine Patch 7 - 17.5mg/patch	Novartis Consumer Health Canada Inc.	02241227		N	Within Guidelines	1
Travatan - 0.04mg/mL	Alcon Canada Inc.	02244896	NAS/FPG	S	Within Guidelines	3
Triaminic Vapour Patch	Novartis Consumer Health Canada Inc.	02244651		R	Within Guidelines	1
Tylenol 8 hour - 650mg/cpl	McNeil Consumer Healthcare	02246060		N	Within Guidelines	1
Unidet - 2mg/cap	Pharmacia Canada Inc.	02244612		G	Within Guidelines	1
Unidet - 4mg/cap	Pharmacia Canada Inc.	02244613		G	Within Guidelines	1
Valcyte - 450mg/tab	Hoffmann-La Roche Limited	02245777	NAS	J	Within Guidelines	3
Ventolin HFA - 0.1mg/dose	GlaxoSmithKline Inc.	02241497		R	Under Review	
Videx EC - 125mg/cap	Bristol-Myers Squibb Pharmaceutical Group	02244596		J	Under Review	
Videx EC - 200mg/cap	Bristol-Myers Squibb Pharmaceutical Group	02244597		J	Under Review	
Videx EC - 250mg/cap	Bristol-Myers Squibb Pharmaceutical Group	02244598		J	Under Review	
Videx EC - 400mg/cap	Bristol-Myers Squibb Pharmaceutical Group	02244599		J	Under Review	
Xalacom - 5.05mg/mL	Pharmacia Canada Inc.	02246619		S	Within Guidelines	3
Xatral - 10mg/tab	Sanofi-Synthelabo Canada Inc.	02245565	NAS	G	Within Guidelines	3
Zenapax - 5mg/mL	Hoffmann-La Roche Limited	02241473	NAS/FPG	L	Under Review	

The Board's Guidelines establish three categories of new patented drug products for purposes of conducting introductory price reviews.

- Category 1 — a new DIN of an existing or comparable dosage form of an existing medicine, usually a new strength of an existing drug (line extension).
- Category 2 — the first drug product to treat effectively a particular illness or which provides a substantial improvement over existing drug products, often referred to as "breakthrough" or "substantial improvement".
- Category 3 — a new drug or new dosage form of an existing medicine that provides moderate, little or no improvement over existing medicines.

For complete definitions of the categories, refer to the *Compendium of Guidelines, Policies and Procedures*, Chapter 3, section 3.

1 NAS: New Active Substance

2 FPG: First Patent Grant

3 ATC: Anatomical Therapeutic Chemical Classification System

ANNEX 3

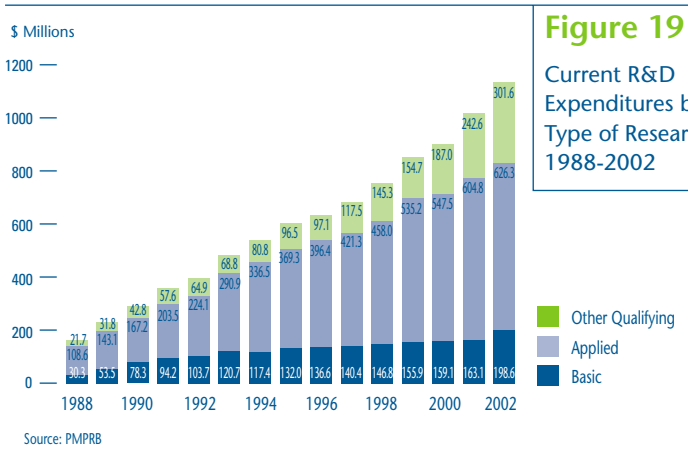
RESEARCH & DEVELOPMENT

Table 8 Range of R&D-to-Sales Ratios by Number of Reporting Companies and Total Sales Revenues

Range of R&D-to-Sales Ratio	2002			2001		
	Number of Reporting Companies	Total Sales Revenues ($millions)	%	Number of Reporting Companies	Total Sales Revenues ($millions)	%
0%	15	349.3	2.9	16	340.8	3.2
0%-10%	39	6,386.0	53.6	36	5,792.8	54.0
> 10%	22	5,173.0	43.4	22	4,598.5	42.8
Total	76	11,908.3	100.00*	74	10,732.1	100.0

Source: PMPRB

* Columns may not add up due to rounding



Source: PMPRB

Figure 19

Current R&D Expenditures by Type of Research, 1988-2002

Table 9 Ratios of R&D Expenditures to Sales Revenues by Reporting Patentee,[1] 2002 and 2001

Company	R&D-to-Sales Ratio (%)	
	2002	2001
3M Canada Company	0.8	0.04
Abbott Laboratories, Limited[2]	1.7	1.9
Actelion Pharmaceutiques Canada Inc. (not a patentee in 2001) [2]	23.5[4]	-
Agouron Pharmaceuticals, Inc.	16.6	43.0
Alcon Canada Inc.	0.0	0.0
Allergan Inc. [2]	5.5	6.7
Alpha Therapeutic Corporation	0.0	0.0
Altana Pharma Inc. [2, 3]	7.8	12.8
Amersham Health Inc.	0.0	0.0
Amgen Canada Inc. [2, 7]	20.1[4]	45.2 [4]

Table 9 continued

Company	R&D-to-Sales Ratio (%)	
	2002	2001
AstraZeneca Canada Inc. [2]	9.1	9.3
Aventis Pasteur Limited [7]	75.7[4]	45.8 [4]
Aventis Pharma Inc. [2]	14.3	14.0
Axcan Pharma Inc. [2]	21.6	24.2
Ayerst Veterinary Laboratories, Division of Wyeth-Ayerst Canada Inc.	0.0	0.0
Baxter Corporation	0.05	0.1
Bayer Inc., Healthcare Division [2, 7]	5.3	7.1
Bayer Inc., Agriculture Division	2.4	1.9
Berlex Canada Inc. [2]	6.2	6.0
Biogen Canada Inc. [7]	41.1	37.6
Biovail Pharmaceuticals Canada, Division of Biovail Corporation [7]	33.9[4]	30.7[4]
Boehringer Ingelheim (Canada) Ltd. [2]	32.8[4]	23.2 [4]
Bracco Diagnostics Canada Inc.	0.0	0.0
Bristol-Myers Squibb Pharmaceutical Group [2]	9.2	13.4
Canderm Pharma Inc.	6.2	1.6
Cangene Corporation	393.8[4]	299.0[4]
Chiron Canada ULC	8.4	7.6
Draxis Health Inc.	10.5	12.8
Elan Pharmaceuticals, Inc. (not a patentee in 2001)	2.3	-
Eli Lilly Canada Inc. (includes Elanco Animal Health Division) [2, 7]	8.9	10.6
Enzon Pharmaceuticals Inc. (not a patentee in 2001)	0.0	-
Ferring Inc.	1.1	1.7
Fournier Pharma Inc. [2]	1.8	6.1
Fujisawa Canada Inc. [2]	11.6	11.4
Galderma Canada Inc.	1.0	0.5
Genzyme Canada Inc. [7]	0.8	0.9
GlaxoSmithKline [2, 7]	10.0	9.1
GlaxoSmithKline Consumer Healthcare Inc.	0.0	0.0
Guilford Pharmaceuticals	0.0	0.0
Hoffmann-La Roche Limited, Canada [2, 7]	3.8	5.1
ICN Canada Ltd.	1.6	1.6
Intermune Inc. (not a patentee in 2001)	0.0	-
Janssen-Ortho Inc. [2, 7]	8.2	10.1
Johnson & Johnson Merck, Consumer Pharmaceuticals of Canada	0.0	0.0
Leo Pharma Inc. [2]	5.2	7.8
Lundbeck Canada Inc.[2]	1.0	3.7
McNeil Consumer Healthcare Canada	1.8	0.8
Medicis Canada Ltd.	0.0	0.0
Merck Frosst Canada Ltd. [2, 7]	12.3	13.5
Merial Canada Inc.	0.6	0.3

Table 9 continued

Company	R&D-to-Sales Ratio (%) 2002	2001
Novartis Animal Health Canada Inc.	0.7	0.3
Novartis Consumer Health Canada Inc.	1.4	1.3
Novartis Ophthalmics	11.0	12.0
Novartis Pharmaceuticals Canada Inc. [2, 7]	12.5	9.0
Novo Nordisk Canada Inc. [7]	0.9	1.0
Organon Canada Ltd. [2]	2.3	3.2
Organon Sanofi-Synthélabo Canada (not a patentee in 2001) [5]	0.0	-
Orphan Medical Inc. (not a patentee in 2001)	49.8	-
Ortho Dermatological, Division of Johnson & Johnson Inc.	0.0	0.0
Paladin Laboratories Inc. [2]	5.7	6.9
Pfizer Canada Inc., Animal Health Group	1.6	1.3
Pfizer Canada Inc. [2]	12.0	13.0 R
Pfizer Canada Inc., Consumer Healthcare Division	1.0	0.6
Pharmacia Canada Inc. [2, 7]	6.7	7.3
Pharmascience Inc. (failed to file R&D information in 2002; not a patentee in 2001)	-	-
Procter & Gamble Pharmaceuticals Canada, Inc. [2]	8.3	11.9
Purdue Pharma [2]	3.9	4.4
Ratiopharm [6]	0.0	0.0
Sanofi-Synthélabo Canada Inc. [2]	42.0	27.7
Schering Canada Inc. [2]	8.9	8.9
Servier Canada Inc. [2]	14.9	19.9
Shire-BioChem Inc. (not a patentee in 2001) [2, 7]	98.0	-
Solvay Pharma Inc. [2]	0.8	1.7
Stiefel Canada Inc. [2]	1.2	2.2
Tyco Healthcare Group Canada Inc.	0.02	0.02
Wyeth-Ayerst Canada Inc. [2]	13.5	13.7
Yamanouchi Pharmaceutical Co. Ltd.	0.0	0.0

Source: PMPRB

1 The revenues from royalties are included in calculating each company's ratio, but are deducted, when appropriate, for the industry-wide aggregation to avoid double-counting. Federal and provincial government grants have been netted from the expenditures used to calculate the individual R&D-to-sales ratios but are included in the aggregate statistics. Differences between the list of firms filing data on prices and those filing R&D data are due to differences in reporting practices between patentees and their affiliates or licencees as well as the fact that veterinary patentees are required to file information on R&D expenditures, but some are not required to report price and sales information each year.

2 Member of Rx&D. This information has been added at the request of stakeholders and is based on published sources.

3 Formerly known as BYK Canada Inc.

4 These ratios have been verified with the companies. The largest part of their R&D expenditures was provided by non arms length companies.

5 Joint venture between Organon Canada Ltd. and Sanofi-Synthélabo Canada.

6 Formerly known as Altimed Pharmaceutical Inc.

7 Member of BIOTECanada. Provided for information and based on public sources.

R Revised

Table 10 Current R&D Expenditures* by Type of Research, 2002 and 2001

Type of Research	2002		2001		% Change in Expenditures 2002-2001
	$M	%	$M	%	
Basic	**198.6**	**17.6**	**163.1**	**16.1**	**21.8**
– Chemical	104.5	9.3	84.3	8.3	24.0
– Biological	94.1	8.4	78.8	7.8	19.4
Applied	**626.3**	**55.6**	**604.8**	**59.9**	**3.6**
– Manufacturing Process	110.9	9.8	79.5	7.9	39.5
– Pre Clinical Trial I	46.4	4.1	56.5	5.6	-17.9
– Pre Clinical Trial II	30.2	2.7	23.0	2.3	31.3
– Clinical Trial Phase I	37.1	3.3	23.2	2.3	59.9
– Clinical Trial Phase II	103.7	9.2	96.2	9.5	7.8
– Clinical Trial Phase III	298.0	26.5	326.4	32.3	-8.7
Other Qualifying R&D**	**301.6**	**26.8**	**242.6**	**24.0**	**24.3**
Total***	1,126.4	100.0	1,010.5	100.0	11.5

Source: PMPRB

* Current expenditures exclude capital equipment and depreciation expenditures.

** Other qualifying R&D includes drug regulation submissions, bioavailability studies and Phase IV clinical trials.

***The sum of each column may vary slightly from the total, due to rounding.

Table 11 Current R&D Expenditures* by Organizations Performing R&D, 2002 and 2001

R&D Performer	2002		2001		% Change in Expenditures 2002-2001
	$M	%	$M	%	
Intramural					
– Patentees	612.4	54.4	545.2	54.0	12.3
Extramural					
– Universities and Hospitals	139.9	12.4	159.6	15.8	-12.3
– Other Companies	273.7	24.3	227.5	22.5	20.3
– Others	100.4	8.9	78.2	7.7	28.4
Total **	1,126.4	100.0	1,010.5	100.0	11.5

Source: PMPRB

* Current expenditures exclude capital equipment and depreciation expenditures.

** The sum of each column may vary slightly from the total, due to rounding.

Table 12 Total R&D Expenditures* by Source of Funds, 2002 and 2001

Source of Funds	2002		2001		% Change in Expenditures 2002-2001
	$M	%	$M	%	
Company Funds	1,100.1	93.0	1,038.7R	98.0	5.9
Federal/Provincial Governments	14.4	1.2	6.1R	0.6	136.1
Others	68.9	5.8	15.3	1.4	350.3
Total**	1,183.5	100.0	1,060.1	100.0	11.6

Source: PMPRB

* Total expenditures include capital equipment and allowable depreciation.

** The sum of each column may vary slightly from the total, due to rounding.

R Revised

Table 13 Current R&D Expenditures* by Location, 2002 and 2001

Location of R&D	2002		2001		% Change in Expenditures 2002-2001
	$M	%	$M	%	
Atlantic Provinces	26.5	2.4	26.3R	2.6	0.8
Québec	476.7	42.3	423.2	41.9	12.6
Ontario	479.1	42.5	430.1 R	42.6	11.4
Western Provinces	140.1	12.4	131.0 R	13.0	6.9
Territories	3.9	0.3	0.01 R	0.0	38,900
Total**	1,126.4	100.0	1,010.5	100.0	11.5

Source: PMPRB

* Current expenditures exclude capital equipment and depreciation expenditures.

** The sum of each column may vary slightly from the total, due to rounding.

R Revised

Table 14 Current R&D Expenditures by Province and by Organizations Performing R&D, 2002

Province		R&D Performer						Percentage of Expenditures	
		Patentees	Other Companies	University	Hospitals	Others	Total	Rx&D	
Newfoundland	$(000)	567.17	1,164.83	965.45	664.38	1,247.96	4,609.78	4,057.74	0.41
	%	12.30	25.27	20.94	14.41	27.07	100.00	0.41	
Prince Edward Island	$(000)	40.34	320.30	190.54	0.11	50.33	601.61	374.81	0.05
	%	6.71	53.24	31.67	0.02	8.37	100.00	0.04	
Nova Scotia	$(000)	5,071.81	7,070.08	925.85	3,657.31	1,830.43	18,555.48	17,303.58	1.65
	%	27.33	38.10	4.99	19.71	9.87	100.00	1.76	
New Brunswick	$(000)	488.51	749.78	224.52	594.46	684.44	2,741.72	2,198.18	0.24
	%	17.82	27.35	8.19	21.68	24.96	100.00	0.22	
Quebec	$(000)	291,676.74	113,830.38	12,349.90	26,382.50	32,492.14	476,731.66	467,466.44	42.32
	%	61.18	23.88	2.59	5.53	6.82	100.00	47.65	
Ontario	$(000)	281,896.00	86,610.71	18,106.02	47,604.05	44,913.02	479,129.79	370,295.19	42.54
	%	58.84	18.08	3.78	9.94	9.37	100.00	37.74	
Manitoba	$(000)	19,250.38	2,817.11	861.94	3,151.31	2,178.31	28,259.05	11,042.41	2.51
	%	68.12	9.97	3.05	11.15	7.71	100.00	1.13	
Saskatchewan	$(000)	1,477.77	1,942.64	1,774.33	1,040.73	1,643.19	7,878.66	7,420.30	0.70
	%	18.76	24.66	22.52	13.21	20.86	100.00	0.76	
Alberta	$(000)	7,107.26	27,284.57	9,100.51	3,012.10	7,350.49	53,854.94	52,748.79	4.78
	%	13.20	50.66	16.90	5.59	13.65	100.00	5.38	
British Columbia	$(000)	4,840.42	28,024.10	4,734.80	4,531.73	7,976.34	50,107.40	48,237.72	4.45
	%	9.66	55.93	9.45	9.04	15.92	100.00	4.92	
Yukon; N.W.T.; Nunavut	$(000)	0.00	3,924.09	0.00	5.45	0.90	3,930.44	6.35	0.35
	%	0.00	99.84	0.00	0.14	0.02	100.00	0.00	
Canada	$(000)	612,416.41	273,738.58	49,233.87	90,644.12	100,367.56	1,126,400.53	981,151.51	100.00
	%	54.37	24.30	4.37	8.05	8.91	100.00	100.00	

Source: PMPRB

1. The percentage under each R&D category gives the percentage of all money spent in that category in that province.
2. Expenditures as a percentage of total means percentage of R&D expenditures in that province compared to total R&D in Canada.
3. Rows and columns may not equal totals due to rounding.
4. Current expenditures plus capital expenditures (equipment + depreciation) = total R&D expenditures.