# COST DRIVER ANALYSIS OF PROVINCIAL DRUG PLANS

# BRITISH COLUMBIA

**1990/91 - 1998/99**

**Federal/Provincial/Territorial**

**Working Group on Drug Prices**

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# EXECUTIVE SUMMARY

- The Federal Provincial Territorial (F/P/T) Task Force on Pharmaceutical Prices[1] was established to examine pharmaceutical pricing issues facing provincial drug plans and Canadians in general.
- This Study is an update which reports on pharmaceutical cost drivers in British Columbia's Pharmacare program over the period 1990/91 to 1998/99.
- An examination of cost drivers, produced by the Patented Medicine Prices Review Board (PMPRB) on behalf of the F/P/T Working Group on Drug Prices, provides both public and private drug plan managers, policy makers and other stakeholders, including consumers, with a better understanding of the major components that influence annual changes in pharmaceutical spending.
- The focus of the report was to disaggregate annual changes in the cost of drugs into five separate components: price effect, volume effect, entry of new drugs, exiting drugs and others. A further break out of cost drivers was done by therapeutic class, novelty and patent status.
- The British Columbia Pharmacare program has undergone major changes since its implementation with a view to contain increasing drug costs and encourage cost-effective prescribing. The implementation of the Low Cost Alternative Drug Program in 1994, and the Reference Based Pricing policy in 1995, coincided with the slower growth in Pharmacare expenditures over the period 1994/95 to 1996/97.
- Between 1990/91 and 1998/99 total drug expenditures increased by $159 million (for plans under consideration). On average, between 1990/91 and 1998/99 per unit price changes seen by the province were responsible for -17% of the expenditure change, volume change or utilization was responsible 79%, entry of new drugs were responsible for 43%, and both exiting drugs and other factors were responsible for -1% and -5% of expenditures changes respectively. The findings suggest that utilization and entry of new drugs accounted for the largest increase in expenditures over the period with expenditures rising significantly despite a decrease in the average per unit price. The contribution of each of these factors change dramatically in 1994/95 with varying values from year to year; further work is required to understand the sensitivity of the model, the impact of cost containment policies and the entry and market penetration of new drug therapies.
- In 1998/99, drugs that existed in 1990/91 and newer drugs (drugs that were introduced after 1990/91) accounted for 34% and 66% respectively, in total drug expenditures.

[1] Presently known as F/P/T Working Group on Drug Prices

- In 1990/91, the proportion of total expenditures accounted for by patented drugs was 38%, by 1998/99, patented drugs accounted for 52% of total expenditures and were responsible for approximately 75% of the total increase in expenditures for the period under consideration.
- Among patented medicines, category 3 drugs made up the largest share of total patented drug expenditures. In 1998/99, drugs categorized as having little, moderate or no improvement (category 3) accounted for 56% of total patented drug expenditures. The share of line extension (category 1) and break through or substantial improvement (category 2) drugs were 31% and 8%, respectively.
- The study found that sales of new drugs increased rapidly in the first few years. For example, expenditures on new drugs during their first full year on the market grew, on average, by 43%. The growth in sales fell each year as the newer drugs matured. By the 4th-5th year, expenditures on these drugs fell, on average, by 5%. The tapering off in sales of these drugs occurred because new drugs continued to enter the market and experience high growth rates.
- In 1998/99, drugs in seven Anatomical Therapeutic Chemical (ATC) groups, including, Cardiovascular Systems, Central Nervous System, Alimentary Tract and Metabolism, Respiratory System, General Anti-infectives, Blood and Blood Forming Organs and Sensory Organs accounted for $290.9 million or 91% of total expenditures.
- It was shown that over the period 1990/91 to 1998/99, drugs in the Cardiovascular Systems group contributed to the largest increase in the share of drug expenditures at 36%. This group was followed by drugs in the Nervous System, at 33%, Alimentary Tract and Metabolism at 11%, Respiratory Systems at 7% General Anti-infectives at 3%, Blood and Blood Forming Organs at 3% and Sensory Organs at 1%.
- In order to identify which disease groups are contributing proportionately more to increases in pharmaceutical expenditures, the analysis was broken down to the second level of their ATC classification. The study revealed that Lipid Reducing Agents in Cardiovascular Systems had the highest contribution to percentage increases in expenditures over the period 1990/91 to 1998/99. The second largest contributor was Psychoanaleptics in Central Nervous Systems followed by Agents Acting on the Renin-Angiotensin System in the Cardiovascular Systems. Each of these disease groups contributed 17%, 14%, and 12%, respectively, to increases in pharmaceutical expenditures over the period 1990/91 to 1998/99.

## COST DRIVER ANALYSIS OF PROVINCIAL DRUG PLANS

## BRITISH COLUMBIA 1990/91-1998/99

# 1.0 Introduction

In April 1997, the Task Force on Pharmaceutical Prices[2] prepared an overview paper which provided a description of the pharmaceutical sector in Canada, price and expenditure trends, and existing mechanisms used by private and public payers for regulating and/or influencing pharmaceutical prices.

The Task Force on Pharmaceutical Prices has made progress in the following areas:

- price trend analyses for the period 1990 to 1997 for prescription drug products covered by six provincial drug plans;
- an analysis of the relationship between price levels of generic and brand name drugs over the period 1990 to 1997;
- international price comparisons for the 1996 top selling non-patented single source drug products;
- comparisons of prices of non-breakthrough or non-substantial improvement (category 3) patented drugs introduced in 1995 and 1996 to other medicines in their therapeutic class; and,
- a comparison of prescription drug prices in six provincial drug plans (1990-1997).

This study updates a report on cost drivers of total pharmaceutical spending in British Columbia's Pharmacare program over the period 1990/91 to 1998/99[3]. Information on prices, quantities, total expenditures and market shares were obtained from the British Columbia Pharmacare database. Health Canada's Drug Product database was used to ensure that only those drugs defined by the *Food and Drug Act* were included. The Drug Product database was also used to identify all drug products by their respective ATC classification. Finally, the Patented Medicine Prices Review Board database was used to group drugs according to patent status and category.

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[2] The Task Force has representatives from British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Nova Scotia, Health Canada and the Patented Medicine Prices Review Board. It was established to examine one of six pharmaceutical issues identified at the April, 1996 meeting of F/P/T Ministers of Health. The other issues included utilization, marketing, wastage, consumer education and research and development. The work is overseen by the Pharmaceutical Issues Committee, which reports to the Advisory Council on Health Services (ACHS).

[3] The previous study was conducted on a calendar basis and price was calculated at the din level. This study is based on a fiscal year and price is calculated at the chemical level, ie. price for a chemical with an identical ingredient, strength, route, schedule and form. This change in definition was adapted in order to more fully capture the substitution within multi-source markets and refine the definition of a new drug.

The report is divided into the following sections: section 2 describes why a study of cost drivers provides important information to all stakeholders in the health care sector; section 3 describes the focal points of the cost driver analysis; section 4 reports on the growth of total drug costs in public and private drug plans for British Columbia over the period 1990/91 to 1998/99; section 5 presents the findings followed by a conclusion in section 6.

# 2.0 Why Study Cost Drivers?

An examination of cost drivers provides both public and private drug plan managers, policy makers and other stakeholders including consumers with a better understanding of the major components that influence annual increases and trends in pharmaceutical spending. During the 1990's, increases in the annual cost of drugs in Canada was, on average, approximately 10% per year[4]. This growth in total spending was occurring while average annual increases in overall prescription prices was less than 3%[5]. This demonstrates that changes in annual costs of pharmaceuticals are reflective of a combination of many factors. These factors are summarized in Figure 1.[6]

**Figure 1**

**Factors Affecting Total Drug Expenditures**

1. Changes in the total population
2. Changes in the demographics and health status of the population (i.e. towards those with increased medication needs)
3. Changes in the unit prices of drugs (both patented and non-patented)
4. Changes in retail and wholesale mark-ups, and dispensing fees
5. 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)
6. Changes in utilization of drugs on a per patient basis (i.e. more medications per patient per year)
7. Trends towards using drug therapy instead of other treatments (e.g. as alternatives to surgery in some cases)
8. New diseases to be treated and old diseases to be treated or better treated
9. Extended patent protection, barriers to entry and reduction in competition

While it is difficult to quantify the relative effect that the above factors[7] may have on increases in drug costs, some studies have attempted to do so.[8] These studies have employed different methodologies to assess the impact of the different factors. The main findings from these studies are that price changes represent only one factor which influence changes in the total cost of

[4] 1994 and 1996 had exceptionally low growth rates of approximately 3%

[5] Statistics Canada, CANSIM, Series P200202

[6] This figure was partly reproduced from the PMPRB's Discussion Paper, "*Examining the Role, Function and Methods of the Patented Medicine Prices Review Board.*", November 1997.

[7] Another factor worth mentioning is the shift to community care over the last several years. In addition to replacing surgery, community based drug plans are experiencing utilization increases because more treatment is taking place in the community, that previously may have required hospitalization. An example of this trend is the growth in community based palliative care.

[8] See for example Green Shield Canada *"A Report on Drug Costs", 1994*; Gorecki, P.K., *"Controlling Drug Expenditures in Canada, The Ontario Experience:,* 1991; Angus, D.E. et al. *"Sustainable Health Care for Canadians, 1995;* and, Brogan Inc. (1998) "Handbook on Private Drug Plans: 1993 - 1996.

drugs. Other important factors include utilization (i.e. changes in the amount of drugs consumed), therapeutic shifts, prescribing patterns and the influence from the introduction of new drugs.

## 3.0 Focus of Report

This analysis attempts to break out annual changes in the cost of drugs into the following major components:

- annual volume (utilization) changes of older and newer drugs;
- annual price changes of older and newer drugs[9];
- annual influence from the introduction of new drugs (patented and non-patented); and,
- annual influence of newer drugs by therapeutic class or disease groups.

This analysis provides some insight into several factors outlined in Figure 1. Each of these factors is examined to assess their individual influence on annual drug cost changes. In other words, an evaluation of what percentage of the increase in annual cost of drugs is attributed to each of the above components will be done[10]. It is important to note that a more detailed review of price levels (rather than annual price change), substitution of older drugs; rapid market penetration of new drugs and trends in treatment costs are areas that need to be considered in much greater detail in further research and analysis.

A further disaggregation of cost drivers by therapeutic class allows an investigation of whether certain disease groups are experiencing proportionately greater increases in annual costs. Furthermore, an investigation of the extent to which new drugs are being substituted for older drugs and the relative cost of new drugs to older drugs can be done. Finally, breaking out the drugs into patented and non-patented drugs allows us to examine drugs by therapeutic novelty. In other words, to what extent is the introduction of new patented drugs that are line extensions (category 1), breakthrough or substantial improvement drugs (category 2) or, moderate, little or no improvement drugs (category 3) influencing annual changes in drug costs.

[9] New drugs are defined at the chemical, dose, form and route level. Generic bioequivalent products are not considered as new drugs in the major component decomposition.

[10] See Appendix 1 for methodology details and methodological and definitional changes from previous cost driver studies.

# 4.0 Trends in British Columbia Drug Expenditures

The British Columbia Pharmacare Program has undergone some major changes over the past few years and hence, a brief description of the Pharmacare Program may be helpful.

## 4.1 General Information

The British Columbia Pharmacare program was implemented on January 1, 1974. Pharmacare is administered by the Ministry of Health and Ministry Responsible for Seniors under the authority of the Pharmacists, Pharmacy Operations, and Drug Scheduling Act. All permanent residents of British Columbia are covered under Pharmacare. There are several plans under the program which contain various eligibility criteria. See Appendix 2 for detailed information on eligibility. The program covers prescription medications; designated permanent prosthetic appliances; insulin, syringes, needles for insulin dependent diabetics; ostomy supplies; mastectomy supplies; blood glucose testing strips for eligible holders of Certificates for Training; and orthotic bracing for children 19 years of age and under.

## 4.2 Major Changes Since Implementation of Pharmacare

- In 1977 the program expanded to include benefits beyond prescription drugs and beneficiaries beyond seniors and social assistance recipients
- In 1978 long-term care facility residents were added.
- Co-payments for seniors began in 1987.
- In 1988, a $2000 maximum limit was placed on what an individual or family would pay.
- The annual deductible was increased to $300 in 1988; $325 in 1989; $375 in 1991; $400 in 1992; $500 in 1993; $600 in 1994; and $800 in 1998.
- The Rural Incentive and Product Incentive Programs were introduced in 1990. The Product Incentive Program was phased out in 1994. The Rural Incentive program still remains.
- The Low Cost Alternative Drug Program was introduced in 1994.
- PharmaNet, a secure network linking pharmacies through a central database, was introduced in 1995. PharmaNet allows eligibility for recipients to be determined automatically.
- Reference-Based Pricing was introduced in 1995 for specific therapeutic categories of drug products. Pharmacare reimburses other drugs in the category up to the level of the reference-based product.

The implementation of the Low Cost Alternative Drug Program in 1994, and Reference- Based Pricing in 1995 coincided with the slower growth in Pharmacare expenditure over the period 1994 to 1996.

## 4.3 Cost Reimbursement of Prescription Drug Products

While on average manufacturers prices account for almost 65% of the retail price of a prescription drug, changes in retail and wholesale mark-ups and dispensing fees are also important components which contribute to changes in total pharmaceutical expenditure. Table 1 shows the changes in wholesale mark-ups and dispensing fees in Plan A and Plan C[11] from 1990/91 to 1998/99. Retail fees are not applicable for British Columbia Pharmacare.

**Table 1**

**Wholesale Mark-ups and Dispensing Fees**
**British Columbia: 1990-1998**

| Year | Wholesale Mark-up | Average Dispensing Fees | |
|---|---|---|---|
| | | Plan A** | Plan C |
| 1990 | 0% - 24%* | $5.74 | $6.18 |
| 1991 | 0% - 24%* | $5.78 | $6.24 |
| 1992 | 0% - 24%* | $5.81 | $6.28 |
| 1993 | 0% - 24%* | $5.90 | $6.35 |
| 1994 | 0% - 24%* | $5.78 | $6.37 |
| 1995 | 0% - 9% | $6.23 | $6.32 |
| 1996 | 0% - 9% | $6.70 | $6.14 |
| 1997 | 0% - 7% | $6.67 | $5.89 |
| 1998 | 0% - 7% | $6.12 | $5.90 |

Source: Pharmacare Trends, British Columbia, 1997 and Pharmacare claims data.

* On average, wholesalers mark-up was approximately 12%

** The average dispensing fee for Plan A is an estimate due to the fact that it does not capture the fee for seniors until they go over the $200 annual ceiling on fee.

Generally, Pharmacare reimburses pharmacists for the actual acquisition cost of the drug (the price paid by the pharmacy to the wholesaler or manufacturer). Prior to 1995, the wholesale mark-up in British Columbia varied between 0% and 24%, with an average mark-up of approximately 12%. On May 1, 1995, the maximum allowable wholesale mark-up was capped at 9%. On January 1, 1997, the maximum allowable wholesale mark-up was reduced to 7%.

After introducing the Low Cost Alternative Program, the wholesale up-charge maximum and the Reference Based Pricing policy, Pharmacare began reimbursing retail pharmacists subject to the following provisions:

- Pharmacare reimbursement is limited to the actual acquisition cost (AAC) for all drugs up to a maximum up-charge of 7% (9% in 1995 and 1996) above the manufacturers' list price. Reimbursement is based on best available price for a few high volume products.

[11] Expenditures in Plan A and Plan C was, on average, 75% of total Pharmacare Expenditure from 1990/91 to 1998/99.

- reimbursement is further limited to the actual acquisition cost of the lower cost alternatives for multiple source drugs;
- for all drugs falling under the Reference Based Pricing policy, reimbursement is limited to the cost of the identified reference-based product or products, a 7% max policy as well as applicable co-payments and deductibles.

**Dispensing Fees** - As shown in Table 1 the average dispensing fee in Plan A and Plan C remained fairly constant since 1990/91. Dispensing fees in Plan A increased from $5.74 to $6.12 per prescription between 1990/91 and 1998/99. Average dispensing fees in Plan C decreased from $6.18 to $5.90 per prescription over the period 1990/91 to 1998/99. The maximum dispensing fee for a regular prescription is $7.55. The actual professional fee charged is determined by the individual pharmacy. Pharmacare will accept professional fees which do not exceed the provincial average by more than 15%.

**Capitation Rates** - prescription drugs intended for administration to residents of long-term care facilities are reimbursed on a capitation rate basis for pharmacy services. Service is defined in legislation and in agreement with the Pharmacare Program.

## 4.4 Total Retail Private and Public Drug Expenditures[12]

Since the early 1980s, drug expenditures in British Columbia, as in the rest of Canada, have been the fastest growing component of total health care spending[13]. Expenditures in British Columbia slowed down between 1994/95 and 1996/97, however, over the past two years, growth has returned to pre-94 levels. In 1997/98 expenditures grew by 9.6% and 10.2% in 1998/99. These rates are approximately twice the national average and faster than the annual rate of inflation, as measured by the Consumer Price Index (CPI) during this period.

In 1998 total retail spending on prescription drugs was $1,041 million which was divided into public spending at $619 million and private spending at $422 million.[14] The provincial drug plan portion or public (Expenditures of Prescription Drug Plans) portion was $431 million or 70% of total public expenditures in 1998. Public (other) comprises the remaining 30% or $187 million, which represents drug expenditures in hospitals and federal programs. Total retail spending, i.e. public and private spending including OTC drugs, was $1,418 million in 1998. Total spending (public and private) on prescription drugs was 73% of total retail spending.

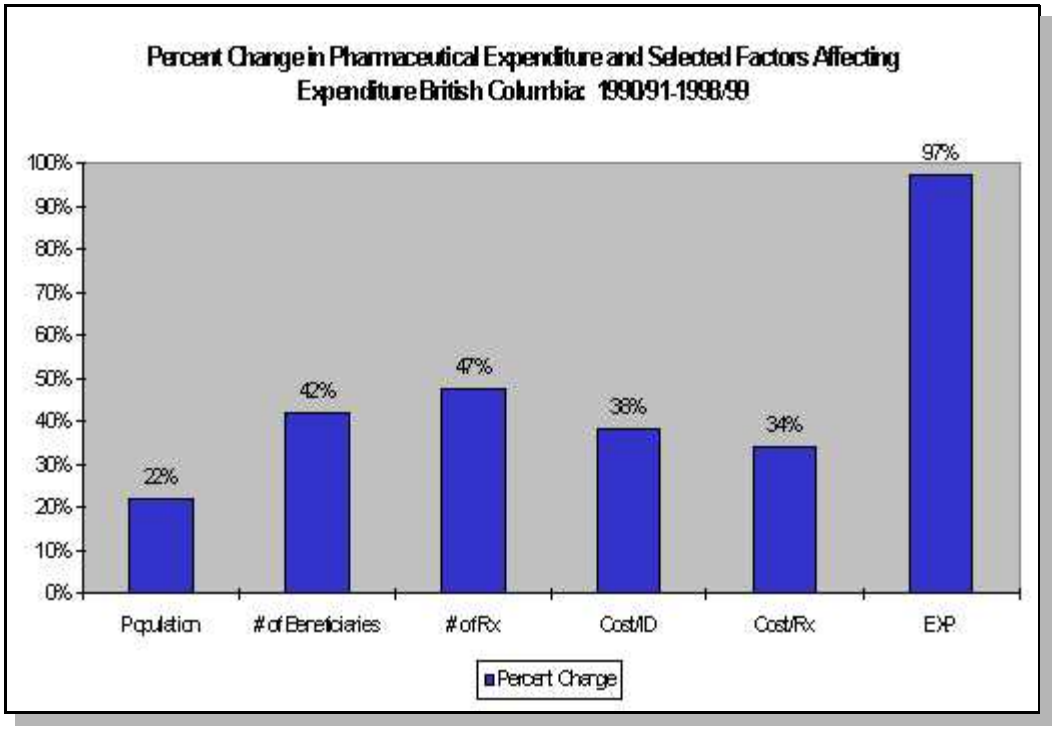
Over the years, the share of total public spending as a part of total spending has fallen. In 1990, total public spending accounted for 62% of total spending. In 1998, total public spending

[12] The figures used in this section are based on Health Canada and CIHI numbers. Expenditure levels used for 1998 are preliminary estimates.

[13] Between 1993-1999 drug expenditures in Canada represented approximately 15% of total health expenditures. (CIHI, National Health Expenditure Trends 1975-1999)

[14] Private spending includes co-pays and deductibles payed by beneficiaries of provincial prescription drug plans.

accounted for 59% of total spending. Nonetheless, the share of public spending in British Columbia has remained relatively high.




## 4.5 Factors Affecting Pharmaceutical Expenditures

Figure 2 summarises some of the important factors described in Figure 1, which may have contributed to total pharmaceutical expenditures, over the period 1990/91 to 1998/99:

- the number of beneficiaries increased by 42%. The large increase in the number of beneficiaries over this period may be partly attributed to the introduction of the PharmaNet system in 1995.[15]
- the number of prescriptions increased by 47% and the average cost per prescription increased by 34%. It is important to note that many factors may influence the cost per prescription. These include: manufacturers' unit price; wholesale and retail mark-ups; changes in prescribing habits of physicians (i.e. from older less expensive therapies to newer relatively more expensive ones); the trend towards using drug therapy instead of other treatments; and,

[15] The Network provides a province wide profile of individual patient medication use, eliminates the need for patients to save receipts and submit claims, and automates billing and payment processing to pharmacies.

the inclusion of new diseases to be treated and new drugs for diseases in which drug therapy was not previously available; and, changes in the size of prescriptions.

A more complete analysis is required to evaluate the separate effect that each of these factors may have on changes in annual drug expenditures.

# 5.0 Analysis

## 5.1 Drug Expenditures in British Columbia's Pharmacare: 1990/91 to 1998/99

During the period 1990/91 to 1998/99, total Pharmacare expenditures[16] on drug products in British Columbia increased from $159.8 million to $318.6 million. This amount differs from the total Pharmacare expenditures, for the following reasons:

- drugs were only included in this analysis if they could be matched to those drugs in the Health Canada Health Protection Branch (HPB) database;
- drug expenditures in this analysis excluded the universal plan since this data was not net of co-pays and deductibles paid by the client[17]; and,
- the expenditure figures do not include dispensing fees and non-drug expenditures such as diagnostic test strips.

## 5.2 Breakdown of Changes in Expenditure by Components

The change in total annual expenditures has been broken out into the following components: Price Effect, Volume Effect, Entry of New Drugs, Exiting drugs and Others[18]. Table 2 summarizes the relative contribution each of the above components have on the total annual change in expenditures.

On average, between 1991/92 and 1998/99 per unit price changes seen by the province were responsible for -17% of the expenditure change, volume change or utilization was responsible for 79%, entry of new drugs was responsible for 44%, and both exiting drugs and other factors were responsible for -1% and -5% of expenditures changes. The findings demonstrate that utilization and the entry of new drugs accounted for the largest increase in expenditures over the period.

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16 Total expenditure refers to Plans A, B, C, D and F.

17 Co-payment and the deductible are based on both the recognized ingredient cost and dispensing fee.

18 Others represent the cross effect of price and volume. The cross effect is an interaction term between changes in prices and changes in quantity. That is, it is a measure of the correlation between price changes and the quantity changes. If a large change in price corresponds with a large change in quantity the cross effect will be significant. The negative sign indicates that the changes are moving in opposite directions and are significant in magnitude. A negative cross effect is recorded when a large decrease in price is accompanied by a large increase in quantity, or conversely, a large increase in price is accompanied by a large decrease in quantity.

The contribution of each of these factors change dramatically in 1994/95 with varying values from year to year. The change in each of the factors corresponds to the policy changes implemented by the program in 1994.

Between 1991/92 and 1993/94 the average per unit price effect was responsible for 10%[19] of the expenditure change, volume change or utilization was responsible for 66%, entry of new drugs were responsible for 26%, and both exiting drugs and other factors were responsible for -1% and -2% of expenditure changes. Between 1995/96 and 1998/99 the average per unit price effect was responsible for -24% of the expenditure change, while volume changes or utilization was responsible for 80%, entry of new drugs were responsible for 54%, and both exiting drugs and other factors were responsible for -0% and -9% of expenditures changes. The change in contribution for each component provides some insight into the trends which are largely responsible for changes in expenditures. That is, increases in the utilization of drugs and the introduction of new drugs (mainly patented category 3 or me-too drugs) are the significant cost drivers and are becoming increasingly more important in explaining the increases in expenditure changes facing the province.

Table 2 illustrates that the impact of new drugs is significant in the year of introduction, but more significant in the second year where the average percent contribution to expenditure increases from 11% to 33%.

**Table 2**

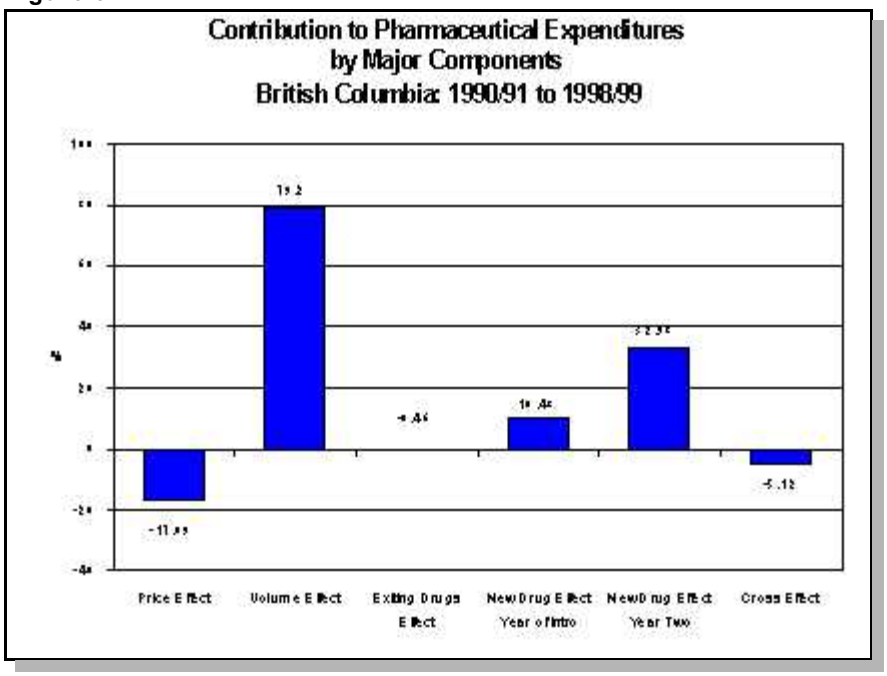
**Average Contribution to Pharmaceutical Expenditures by Major Components British-Columbia: 1990/1991 - 1998/1999**

| Year | Price Effect (%) | Quantity [20] Effect (Volume) (%) | Exiting Effect (%) | New Drug Effect Year of Introduction (%) | New Drug Effect Second Year (%) | Cross Effect (%) |
|---|---|---|---|---|---|---|
| 1991/92 | 18.5 | 72.2 | 0 | 7.8 | N/A | 1.5 |
| 1992/93 | 17.1 | 50.9 | 0 | 6.3 | 25.1 | 0.6 |
| 1993/94 | -12.5 | 76 | -1.9 | 10.1 | 38.9 | -10.5 |
| 1994/95 | -1309.1 | 728.4 | -0.8 | 60.3 | 380.7 | 40.5 |
| 1995/96 | -10 | 85.7 | -0.1 | 11.3 | 35.4 | -22.3 |
| 1996/97 | -63.1 | 48.5 | -0.6 | 9.3 | 120.1 | -14.3 |
| 1997/98 | -20.4 | 90.4 | -0.6 | 23.3 | 13.9 | -6.6 |
| 1998/99 | -21.2 | 78 | -0.3 | 3.3 | 44.6 | -4.5 |
| Average | -17.1 | 79.2 | -0.5 | 10.5 | 33 | -5.12 |

[19] It is important to note that this does not mean that prices declined by 17.1% over the time frame, a marginal decline in a popular drug may drive large negative price effects, as well, the introduction of LCA and generic substitution played an important role in reducing the cost of multiple source markets over the period of analysis.

[20] It is important to note that switching from older drugs to newer, more expensive therapies potentially overstates the quantity (volume) effect. Future work is required to better account for this substitution effect.

**Figure 3**




The findings presented above suggest that increases in utilization and coverage of new drugs significantly influence annual changes in expenditures. The expenditure decomposition provides a sense of the relative importance of changes in utilization of existing and newer drugs. It is important to keep in mind that the effects reported represent the relative impact each component had on changes in expenditure levels. The negative price effect in this analysis is greatly influenced by generic competition, which reduces the cost of the entire therapeutic class, and cost containment policies. Absolute price reductions at the DIN level, particularly of top selling newer drug products, are not the main source of the large negative price effect. Future analysis of price level of new drugs and changes in prescribing patterns toward newer therapies; changes in treatment costs and/or the price levels (rather than annual change); marketing strategies for new drugs, rate of new drug market penetration and displacement of older drugs, and impact of public policy would provide more insight into results presented above.

Table 3 breaks out annual total expenditures into “existing” drugs and “newer” drugs. Existing drugs are those drugs that were on the market in 1990/91, i.e., drugs that were introduced in 1990/91 or before. Newer drugs are those drugs that were introduced in 1991/92 or during subsequent years. It was found that expenditures on drugs that existed in 1990/91 fell by an average of 5% between 1990/91 and 1998/99, and expenditures on all drugs which includes both existing and newer drugs, increased by an average of 9% between the same time period. It can be seen from Table 1 that expenditures on all drugs had high growth rates throughout the years with the exception of period 1994/95 to 1996/97. Whereas, expenditures on existing drugs were

falling since 1994/95. As a result, the proportion of expenditures on newer drugs were increasing in total expenditures every year.

**Table 3**

**Pharmaceutical Expenditure**
**British Columbia: 1990/91-1998/99**
(millions of dollars)

| Year | All Drugs (existing and newer drugs) | | | Existing Drugs in 90/91-98/99 | | |
|---|---|---|---|---|---|---|
| | Total Expenditure | Difference in Expenditure | % Growth Rates | Total Expenditure | Difference in Expenditure | % Growth Rates |
| 1990/91 | $159.8 | - | - | $159.8 | - | - |
| 1991/92 | $195.1 | $35.3 | 22.1% | $191.0 | $31.2 | 19.5% |
| 1992/93 | $225.5 | $30.4 | 15.6% | $208.2 | $17.2 | 9.0% |
| 1993/94 | $248.0 | $22.5 | 10.0% | $209.6 | $1.4 | 0.7% |
| 1994/95 | $247.1 | $-0.9 | -0.4% | $168.9 | $-40.7 | -19.4% |
| 1995/96 | $256.0 | $9.0 | 3.6% | $145.1 | $-23.9 | -14.1% |
| 1996/97 | $263.9 | $7.9 | 3.1% | $128.6 | $-16.5 | -11.4% |
| 1997/98 | $289.2 | $25.3 | 9.6% | $120.9 | $-7.7 | -6.0% |
| 1998/99 | $318.6 | $29.4 | 10.2% | $109.0 | $-11.9 | -9.9% |

Table 3 shows that while expenditures in the "All Drug products" category were increasing on average at a rate of 9.01%, expenditures in the "Existing Drug products" category were falling on average at a rate of -5%. The growth of expenditures remained relatively small between 1994/95 and 1995/96. This coincides with the introduction of cost containment policies such as the Low Cost Alternative Program and the Reference Based Pricing Program introduced in 1994 and 1995. However, in the same years, spending on existing drug products fell by the largest amount. In 1997/98 expenditures in "All Drugs Products" category increased by 9.6% and by 1998/99 the growth rate returned to pre 1994/95 levels.

Figure 4 shows the contribution of each component in another way. As shown in Figure 4, pharmaceutical expenditures were increasing on average at a rate of 9.01% during the period 1990/91 to 1998/99. Figure 4 shows that utilization and new drugs were largely responsible for the growth in expenditures.

**Figure 4**

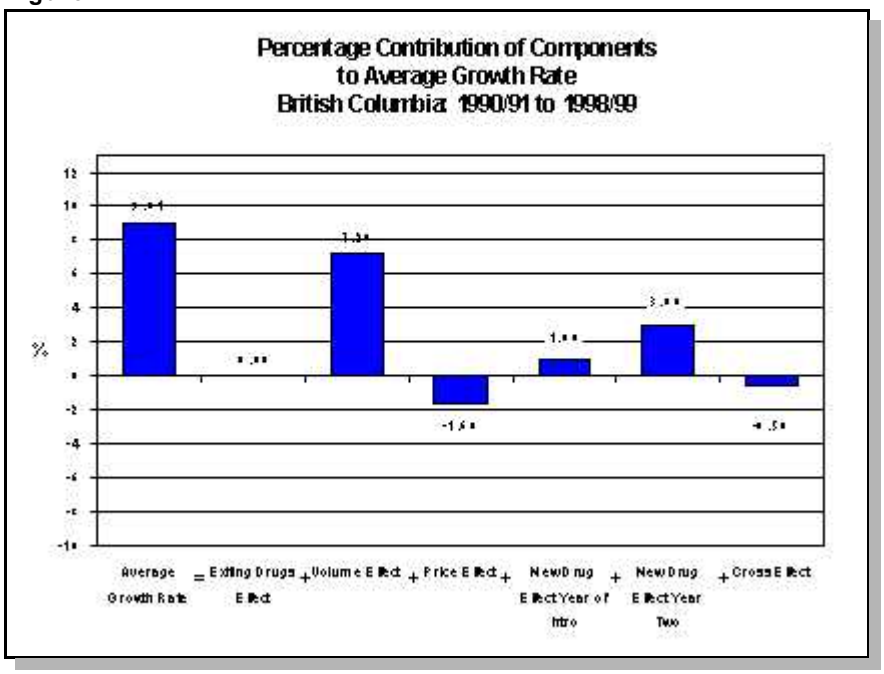



Figure 5 corresponds to Table 2; it shows the trends of expenditures on all, new and existing drug products. Expenditures on existing drug products fell by 32% between 1990/91 and 1998/99. Expenditures on new drug products, on the other hand, increased by over 5,000% and total expenditures rose by approximately 97% over the entire period of analysis.

Other than replacement of newer drug products for older drug products, the decrease in the price and utilization of existing drug products can account for some of the decrease in expenditure levels. While the number of prescriptions for older drugs decreased by 5% over the entire period, the claimed prices of older products fell by 20%; from $25.10 in 1990/91 to $19.96 in 1998/99 and the average period unit cost dropped from $0.28 to $0.23 respectively. The reverse is true for newer drugs, in 1992/93, the claimed ingredient cost of a newer prescription was $53.17 with a corresponding per unit price of $0.68; by 1998/99, the average claimed ingredient cost of a newer prescription was $54.95 with a corresponding per unit price of $0.70.[21] By 1998/99 drugs that were introduced on to the formulary after 1990/91 accounted for approximately 40% of all prescriptions and 63% of the expenditures, up from 3.4% and 6.0% respectively in 1992/93.

[21] These numbers are not deflated by an inflation factor.

**Figure 5**

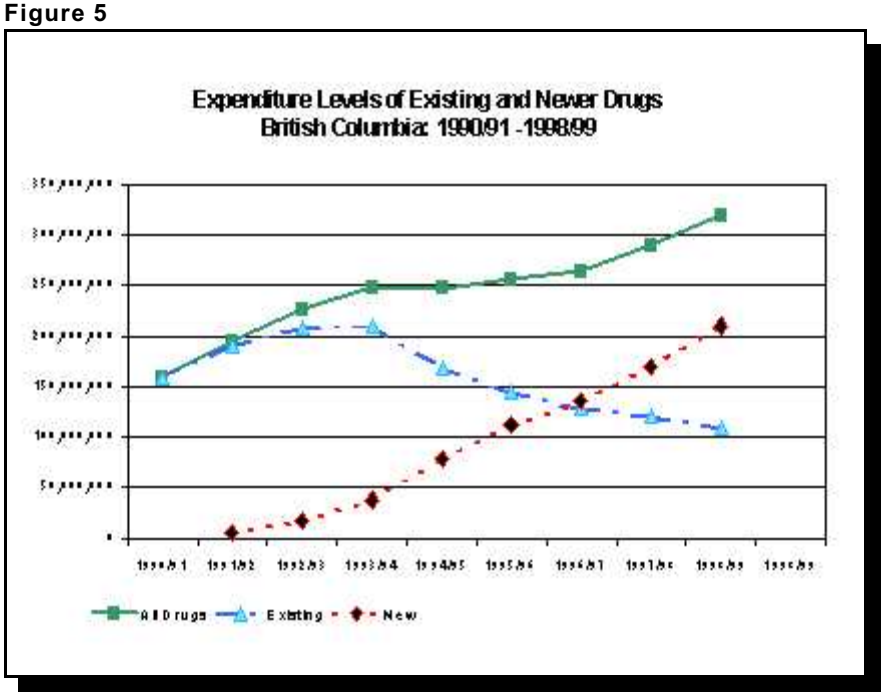
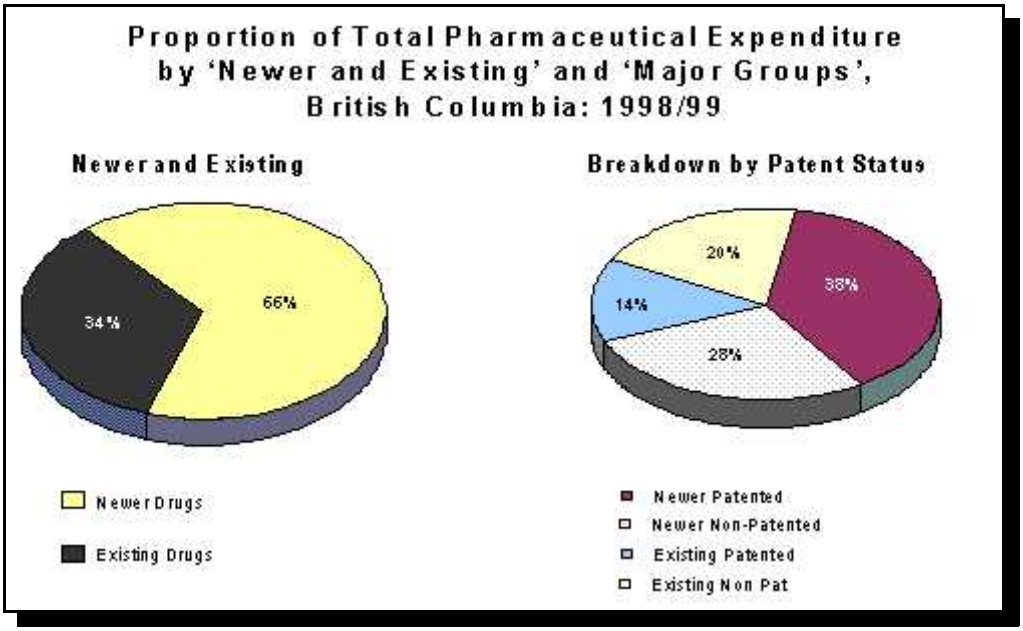



Figure 6 breaks out total pharmaceutical expenditures into patented and non-patented expenditures. In 1990/91, the proportion of patented and non-patented expenditures in total drug costs were 38% and 62%, respectively. Among patented expenditures, the proportion of older non-categorized patented drugs were 62%, category 1 drugs were 7%, category 2 drugs were 12%, and category 3 drugs were 19%. In 1990/91, the proportion of expenditures on patented drugs in total pharmaceutical expenditures was 38%. In 1998/99, the proportion of expenditures on patented drugs increased to 52%, while expenditures on non-patented drugs decreased to 48%. Among patented drugs, patented non-categorized drugs accounted for 5%, category 1 drugs accounted for 31%, category 2 drugs accounted for 8% and category 3 drugs accounted for 56% of total patented drug costs. The growth in patented drug expenditures is consistent with the impact of increased patent protection resulting from the passing of Bills C-22 and C-91 in 1987 and in 1993[22].

[22] This is consistent with overall growth in the share of patented drugs as reported by the PMPRB (1998). See S-9811, Trends in Patented Drug Prices.

**Figure 6**




## 5.3 Breakdown of Pharmaceutical Expenditure: (By Patent Status and Category)

Figure 7 shows the share of patented and non-patented drug products in total pharmaceutical expenditures. The patented portion is broken out into category 1 (line extensions of an existing drug product); category 2 (a breakthrough drug or substantial improvement over an existing drug product); category 3 (moderate, little or no improvement over an existing drug product) and older non-categorized patented drug products. However, it should be noted that, while the expenditures for category 1, category 2 and category 3 drug products are reported separately, they are often different brands, strengths and dosage forms of a single medicine. Category 1 products are sometimes a line extension of a category 2 or category 3 product and a category 3 drug product is often a moderate, little or no improvement over a category 2 product.[23]

[23] For example, the Asthma medication Budesonide is available in many brands, strengths and dosage forms. Pulmicort Inhaler and Pulmicort Spacer, which are two different dosage forms of the brand Pulmicort, were introduced in 1988 as moderate improvements (category 3). Pulmicort Turbuhaler was introduced in 1990 as a line extension (category 1) and Pulmicort Nebuamp was introduced in 1992 as a breakthrough (category 2) product. Also, for example, Losec (20 mg/Cap ) a brand of the medicine Omeprazole was introduced as a breakthrough (category 2) product in 1989. Losec (20 mg/Tab) was reintroduced in the same strength but different dosage form as a line extension (category 1) in 1996.

**Figure 7**

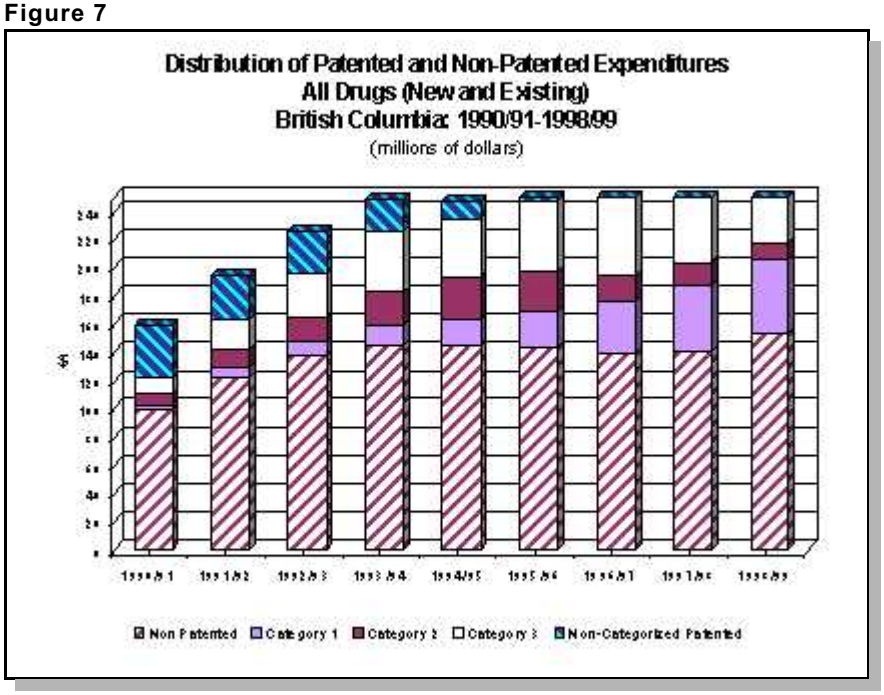



Figure 7 shows that in 1990/91 the proportion of patented and non-patented drug products in total expenditures were 38% ($61 M) and 62% ($ 99M) respectively. Of the 38% of expenditures accounted for by patented drug products, of category 1 drug products accounted for 7% ($3.97 M), category 2 drug products accounted for 12% ($7.36 M), category 3 drug products accounted for 19% ($11.71 M), and older non categorized drug products accounted for 62% ($37.63 M). In 1998/99, the proportion of patented and non-patented drug products in total expenditures were 52% ($165.07 M) and 48% ($153.57 M) respectively. Of the 52% of expenditures accounted for by patented drug products, category 1 products accounted for 31% ($51.7 M), category 2 products accounted for 8% ($12.4 M), category 3 products accounted for 56% ($92.9 M), and older non-categorized patented products accounted for 5% ($7.97 M) of total patented expenditures.

## 5.4 Growth of Expenditures on Newer Drug Products

The information in Table 4 demonstrates how fast the market responds to new drugs. For example, expenditures on drugs introduced in 1991/92 were $4.1 million and in 1992/93 increased to $15 million. A similar increase in expenditures following the year of introduction can be observed in each of the eight years under consideration. After a sharp increase in the first two or three years, expenditures begin to fall off. However, it should be noted that, depending on the month of introduction, expenditures during the year of introduction represent expenditures of a "partial" year. For example, if a drug was introduced in July, of any year, the data on expenditures would represent expenditures for six months only.

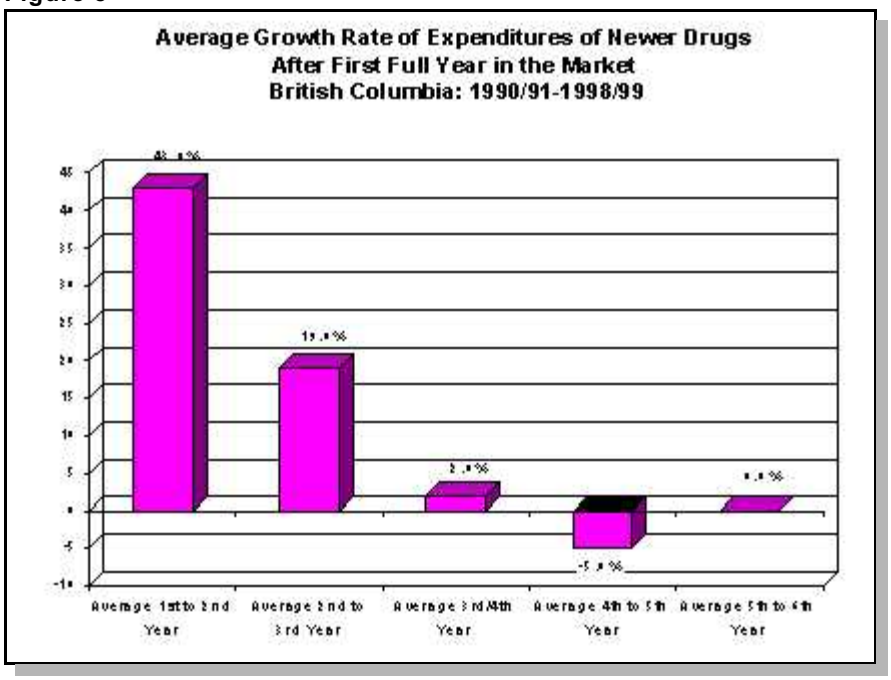
**Table 4**

**Expenditures on Newer Drug Products**
**British-Columbia: 1990/1991 - 1998/1999**
(millions of dollars)

| Year of Introduction | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|
| 1991/1992 | 4.11 | 15.02 | 21.35 | 25.84 | 29.83 | 29.08 | 29.63 | 28.64 |
| 1992/1993 | n/a | 2.28 | 13.58 | 24.42 | 33.73 | 31.52 | 24.95 | 25.76 |
| 1993/1994 | n/a | n/a | 3.48 | 23.95 | 30.76 | 26.05 | 23.25 | 25.02 |
| 1994/1995 | n/a | n/a | n/a | 3.93 | 13.26 | 17.66 | 24.55 | 27.18 |
| 1995/1996 | n/a | n/a | n/a | n/a | 3.39 | 23.15 | 30.01 | 33.86 |
| 1996/1997 | n/a | n/a | n/a | n/a | n/a | 7.86 | 23.14 | 26.05 |
| 1997/1998 | n/a | n/a | n/a | n/a | n/a | n/a | 12.73 | 38.51 |
| 1998/1999 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | 4.61 |
| Total | 4.11 | 17.3 | 38.4 | 78.14 | 110.98 | 135.33 | 168.27 | 209.64 |

In order to avoid over estimating the growth of new drugs by comparing expenditures between a "partial" year and a "full" year, the information in Table 3 is used to derive the average growth of expenditures on new drugs between each "full" year on the market, following the year of introduction.

**Figure 8**




In Figure 8, 1st-2nd Year represented the average growth of expenditures of new drugs between their first and second full year on the market. On average, the growth of expenditures between their first and second full year on the market was 43%. This growth fell each year, as the newer drugs matured. This is demonstrated in Figure 8 where the average growth of expenditures fell to 19% between the second and third year, 2% between the third and fourth year and eventually to -5% between the fourth and fifth year. The tapering-off of drug sales occurred because new drugs continued to enter the market and experience high growth rates.

## 5.5 Therapeutic Class Analysis

In order to identify which disease groups are contributing proportionately more to increases in pharmaceutical expenditures, the analysis is broken down to the second level of their ATC classifications. The second level of the ATC classification groups drugs of different pharmacological classes that have the same main therapeutic use. Sixteen therapeutic classes were identified based on their level of expenditures relative to other therapeutic classes. Table 5 shows the percentage contribution of the top sixteen therapeutic classes in total expenditures and their contribution to the changes in expenditures between 1990/91 and 1998/99.

**Table 5**

**Percentage Contribution of Selected Therapeutic Classes to Total Expenditure**
**British-Columbia: 1990/1991 - 1998/1999**

| Therapeutic Class | Code | Contribution in 1990/91 | | Contribution in 1998/99 | | % of Total Expend. Change | Average Rate of Expend. Growth |
|---|---|---|---|---|---|---|---|
| | | $ (in 000's) | % of total Expend. | $ (in 000's) | % of total Expend. | | |
| Alimentary Tract and Metabolism | A | 24,459 | 15.3% | 42,626 | 13.4% | 11.0% | 7.0% |
| Antacids, drugs for treatment of peptic ulcer and flatulence | A02 | 17,121 | 10.7% | 24,315 | 7.6% | 5.0% | 4.0% |
| Drugs used in diabetes | A10 | 3,642 | 2.3% | 9,125 | 2.9% | 3.0% | 12.0% |
| Others | | 3,696 | 2.3% | 9,186 | 2.9% | 3.0% | 12.0% |
| Blood and Blood Forming Organs | B | 2,051 | 1.3% | 6,865 | 2.2% | 3.0% | 16.0% |
| Antithrombotic agents | B01 | 1,865 | 1.2% | 6,703 | 2.1% | 3.0% | 17.0% |
| Others | | 186 | 0.1% | 162 | 0.1% | 0.0% | -2.0% |
| Cardiovascular System | C | 59,658 | 37.3% | 116,365 | 36.5% | 36.0% | 9.0% |
| Cardiac therapy | C01 | 8,484 | 5,3% | 10,823 | 3.4% | 1.0% | 3.0% |
| Beta blocking agents | C07 | 7,762 | 4.9% | 10,090 | 3.2% | 1.0% | 3.0% |
| Calcium channel blockers | C08 | 19,315 | 12.1% | 25,821 | 8.1% | 4.0% | 4.0% |
| Agents acting on the renin-angiotensin system (ACEI) | C09 | 11,762 | 7.4% | 31,343 | 9.8% | 12.0% | 13.0% |
| Serum lipid reducing agents | C10 | 6,418 | 4.0% | 34,076 | 10.7% | 17.0% | 23.0% |
| Others | | 5,917 | 3.6% | 4,212 | 1.3% | -1.0% | -4.0% |
| General Antiinfectives for Systemic Use | J | 7,535 | 4.7% | 13,089 | 4.1% | 3.0% | 7.0% |
| Antibacterials for systemic use | J01 | 6,757 | 4.2% | 10,558 | 3.3% | 2.0% | 6.0% |
| Others | | 778 | 0.5% | 2,530 | 0.8% | 1.0% | 16.0% |
| Nervous System | N | 22,935 | 14.4% | 75,302 | 23.6% | 33.0% | 16.0% |
| Analgesics | N02 | 4,204 | 2.6% | 9,037 | 2.8% | 3.0% | 10.0% |
| Antiepileptics | N03 | 2,288 | 1.4% | 7,814 | 2.5% | 3.0% | 17.0% |
| Anti-Parkinson drugs | N04 | 4,564 | 2.9% | 5,908 | 1.9% | 1.0% | 3.0% |
| Psycholeptics | N05 | 6,308 | 3.9% | 24,347 | 7.6% | 11.0% | 18.0% |
| Psychoanaleptics | N06 | 5,141 | 3.2% | 27,366 | 8.6% | 14.0% | 23.0% |
| Others | | 430 | 0.3% | 831 | 0.3% | 0.0% | 9.0% |
| Respiratory System | R | 13,043 | 8.2% | 24,585 | 7.7% | 7.0% | 8.0% |

| Therapeutic Class | Code | Contribution in 1990/91 | | Contribution in 1998/99 | | % of Total Expend. Change | Average Rate of Expend. Growth |
|---|---|---|---|---|---|---|---|
| | | $ (in 000's) | % of total Expend. | $ (in 000's) | % of total Expend. | | |
| Anti-asthmatics | R03 | 11,261 | 7.0% | 21,672 | 6.8% | 7.0% | 9.0% |
| Others | | 1,783 | 1.1% | 2,914 | 0.9% | 1.0% | 6.0% |
| Sensory Organs | S | 4,340 | 2.7% | 5,933 | 1.9% | 1.0% | 4.0% |
| Ophthalmologicals | S01 | 4,061 | 2.5% | 5,647 | 1.8% | 1.0% | 4.0% |
| Others | | 279 | 0.2% | 286 | 0.1% | 0.0% | 0.0% |
| Top 16 ATCs - Level 2 | | 120,953 | 75.7% | 264,645 | 83.1% | 90.5% | 10.1% |
| Top 7 ATCs - Level 1 | | 134,021 | 83.9% | 284,765 | 89.4% | 94.9% | 0.1% |
| Total | | 159,816 | | 318,635 | | 100.0% | 9.0% |

It was found that the top sixteen therapeutic classes, which were approximately 15% of the total number of therapeutic classes (at second level), accounted for 80.5% of total pharmaceutical expenditures in 1998/99.

The first two columns of Table 5 show the percentage contribution of the top sixteen therapeutic classes in total expenditures, as well as the contribution of each of the seven ATC groups to which these sixteen therapeutic classes belong. The seven ATC groups are: Cardiovascular Systems, Nervous System, Alimentary Tract and Metabolism, Respiratory System, General Anti-infectives, Blood and Blood Forming Organs and Sensory Organs. Expenditures on these seven ATC groups were $290.9 million or 91% of total expenditures in 1998/99.

Among the second level therapeutic classes, Lipid Reducing Agents in Cardiovascular Systems had the highest contribution to percentage increases in expenditures over the period 1990/91 to 1998/99. The second largest contributor was Psychoanaleptics in Central Nervous Systems followed by Agents Acting on the Renin-Angiotensin System in the Cardiovascular Systems. Each of these disease groups contributed 17%, 14%, and 12%, respectively, to increases in pharmaceutical expenditures over the period 1990/91 to 1998/99.

In 1990, Lipid Reducing Agents accounted for 4% of total expenditures; by 1998/99 it accounted for 10.7% of total expenditures. Psychoanaleptics rose from 3.2% in 1990/91 to 8.6% of total expenditures in 1998/99. Agents Acting on the Renin-Angiotensin System were 7.4% of total expenditures in 1990/91. By 1998/99 they increased to 9.8%of total expenditures.

The last column in Table 5 shows the contribution of each of the ATC groups and therapeutic classes to the total increase in expenditures between 1990/91 and 1998/99. Among the seven ATC groups, Cardiovascular System was the largest contributor to the increase in expenditures (36%), followed by Central Nervous System (33%) and Alimentary Tract and Metabolism (11%). Among the sixteen second level therapeutic classes, Lipid Reducing Agents, Psychoanaleptics and Agents Acting on the Renin-Angiotensin System were the major cost drivers. Their contributions to the increase in expenditures were 17%, 14% and 12%, respectively. Psycholeptics (11%) and Anti-asthmatics (7%) were among the other large contributors to the increase in expenditures. Nonsteroidal Anti-inflammatory drugs (NSAIDs)

and Diuretics helped reduce the increase in expenditures. Their contributions were -6% and -1%, respectively.

Table 6 reports on the average component contribution to expenditure change for the top 16 therapeutic classes. It is clear that there are significant differences between the classes. Generally speaking, the average trends reported in Table 2 are consistent with the average reported for the top 16 classes, however, there are some interesting exceptions. For instance, although price change contributes negatively to expenditure increases, i.e. price is decreasing on average over time, within Lipid reducing agents price change is responsible, on average, for 1% of the increase in expenditures. Within antibacterials for systemic use, price change is responsible, on average, for 12% of the increase in expenditure. The variations reported below suggest that therapeutic markets are different, understanding these differences and the reasons behind them is one of the future research challenges.

**Table 6**

**Average Contribution to Pharmaceutical Expenditures by Major Components for Top 16 Therapeutic Classes British-Columbia: 1990/1991 - 1998/1999**

| Therapeutic Class | Code | Average Price Effect (%) | Average Quantity Effect (%) | Average New Drug Effect (Year of Introduction) (%) | Average New Drug Effect (2nd Year) (%) | Average Exiting Drug Effect (%) | Average Cross (Other) Effect (%) |
|---|---|---|---|---|---|---|---|
| Antacids, drugs for treatment of peptic ulcer and flatulence | A02 | -64 | 16 | 16 | 133 | 0 | -1 |
| Drugs used in diabetes | A10 | -32 | 132 | 0 | 3 | 0 | -3 |
| Antithrombotic agents | B01 | -1 | 86 | 3 | 9 | 0 | 4 |
| Cardiac therapy | C01 | -71 | 173 | 1 | 7 | 0 | -9 |
| Beta blocking agents | C07 | -99 | 142 | 19 | 41 | 0 | -3 |
| Calcium channel blockers | C08 | -109 | 107 | 8 | 65 | 0 | 29 |
| Agents acting on the renin-angiotensin system | C09 | -4 | 89 | 4 | 11 | 0 | 0 |
| Serum lipid reducing agents | C10 | 1 | 67 | 6 | 29 | 0 | -3 |
| Antibacterials for systemic use | J01 | 12 | 111 | 13 | 15 | -2 | -49 |
| Analgesics | N02 | -7 | 74 | 9 | 26 | 0 | -1 |
| Antiepileptics | N03 | -8 | 89 | 7 | 13 | 0 | 0 |
| Anti-Parkinson drugs | N04 | -39 | 35 | 44 | 55 | 0 | 6 |
| Psycholeptics | N05 | -13 | 63 | 22 | 27 | 0 | 1 |
| Psychoanaleptics | N06 | -15 | 92 | 5 | 19 | 0 | -1 |
| Anti-asthmatics | R03 | -22 | 91 | 5 | 25 | 0 | 0 |
| Ophthalmologicals | S01 | -19 | 6 | 16 | 85 | 0 | 12 |
| Total Average | | -19 | 81 | 9 | 30 | 0 | -1 |

Following is a detailed analysis of the impact of existing and newer drugs for Lipid Reducing Agents, Psychoanaleptics and Agents Acting on the Renin-Angiotensin System. Appendix 4 provides a detailed analysis of the remaining therapeutic classes.

### Lipid Reducing Agents:

Expenditures in this therapeutic class had the largest growth rates. Table 5 shows that expenditures rose from $6.4 million in 1990/91 to $34.1 million in 1998/99.

In 1990/91, the proportion of expenditures on patented drugs accounted for 81% of total expenditures. Expenditures on patented products were distributed mainly between category 2 drugs, which represented 77% of patented expenditures, and older non classified drugs, which represented 19% of patented expenditures. In 1990/91 expenditures on patented category 3 drugs accounted for only 4% of total patented expenditures. By 1998/99, the proportion of expenditures on patented drugs fell to 78% of total expenditures and the proportion of expenditures on category 1 and category 3 drugs as part of total patented expenditures increased dramatically to 30% and 70% respectively.

**Table 7**

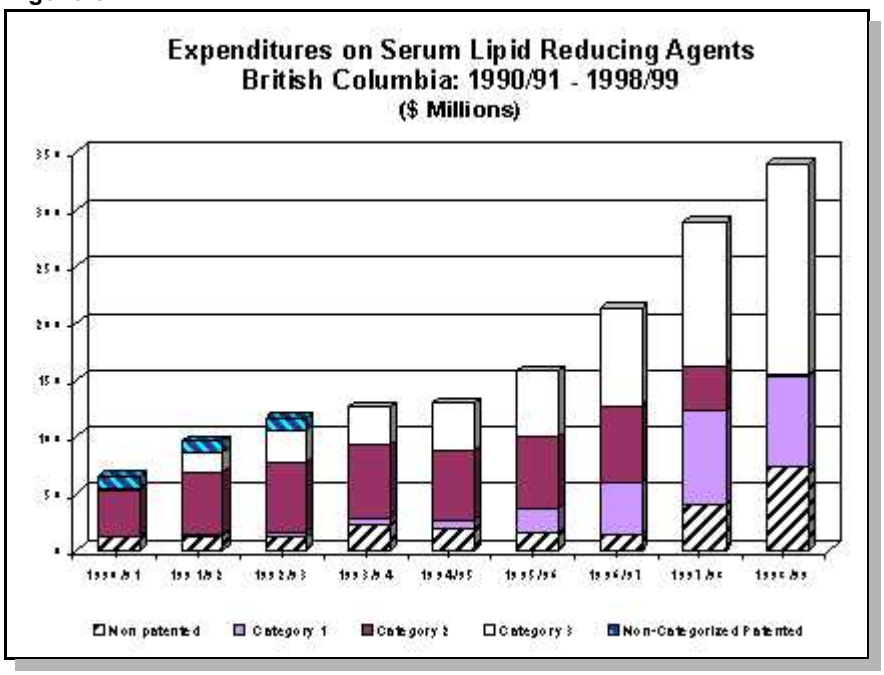
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Serum Lipid Reducing Agents**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/91 | - | 1,191 | 1,201 | 918 | 1,764 | 636 | 182 | 91 | 96 | 113 |
| 1990/91 | 1 | 29 | 188 | 368 | 521 | 637 | 787 | 1,058 | 880 | 30 |
| 1990/91 | 2 | 4,016 | 5,454 | 6,233 | 6,400 | 6,184 | 6,274 | 6,595 | 3,934 | 145 |
| 1990/91 | 3 | 218 | 1,632 | 2,786 | 3,386 | 3,978 | 5,393 | 8,034 | 10,696 | 11,035 |
| 1990/91 | NC | 964 | 1,038 | 1,103 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1991/92 | - | 0 | 24 | 200 | 210 | 91 | 2 | 5 | 5 | 4 |
| 1991/92 | 1 | 0 | 4 | 18 | 39 | 43 | 52 | 79 | 120 | 132 |
| 1992/93 | - | 0 | 0 | 0 | 52 | 306 | 282 | 271 | 272 | 231 |
| 1993/94 | - | 0 | 0 | 0 | 224 | 838 | 630 | 442 | 347 | 251 |
| 1993/94 | 3 | 0 | 0 | 0 | 1 | 150 | 453 | 681 | 912 | 848 |
| 1993/94 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1994/95 | - | 0 | 0 | 0 | 0 | 2 | 234 | 256 | 205 | 162 |
| 1994/95 | 1 | 0 | 0 | 0 | 0 | 87 | 1,326 | 3,502 | 6,350 | 6,113 |
| 1995/96 | - | 0 | 0 | 0 | 0 | 0 | 176 | 220 | 173 | 133 |
| 1995/96 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1996/97 | - | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 44 | 495 |
| 1996/97 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 993 | 1,625 |
| 1997/98 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,849 | 6,033 |
| 1997/98 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,036 | 6,650 |
| 1998/99 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1998/99 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 74 |
| 1998/99 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Expenditures | | 6,418 | 9,541 | 11,627 | 12,597 | 12,952 | 15,790 | 21,335 | 28,911 | 34,076 |
| Patented Expenditures | | 5,227 | 8,316 | 10,508 | 10,347 | 11,079 | 14,285 | 20,035 | 24,920 | 26,653 |
| Non-Patented Expenditures | | 1,191 | 1,225 | 1,119 | 2,250 | 1,873 | 1,505 | 1,300 | 3,991 | 7,423 |

The top three selling drugs in this category were Provastatin, Atorvastatin and Lovastatin accounting for more than 70% of total expenditures.

Figure 9 corresponds to Table 7. It can be seen that over the years, total patented expenditures in this therapeutic class were dominated by category 3 drugs followed by category 1 drugs.

**Figure 9**




## Psychoanaleptics*:*

Psychoanaleptics had the second highest contribution to the increase in total expenditures between 1990/91 and 1998/99. As shown in Table 8, total expenditures increased from $5.1 million in 1990/91 to $27.4 million in 1998/99. In 1990/91, 49% of the expenditures were on patented drugs. By 1998/99, patented drugs comprised 67% of total expenditures.

The top three selling drugs in this category were Paroxetine, Sertraline and Fluoxetine accounting for approximately 64% of total expenditures.

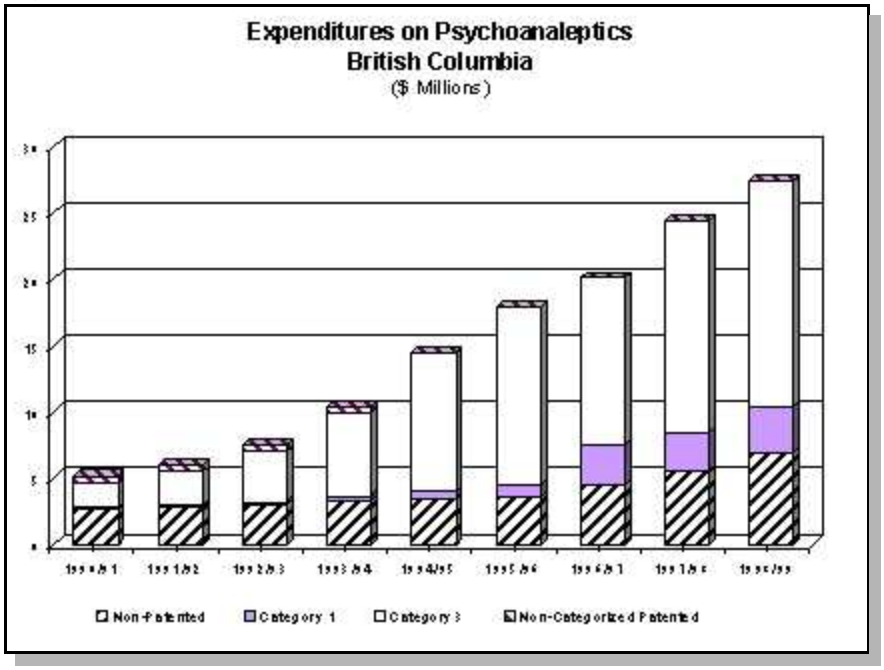
**Table 8**

**Impact of Existing and Newer Drug Products by Major Disease Groups**
**British-Columbia: 1990/1991 - 1998/1999**
**Psychoanaleptics**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 2,644 | 3,414 | 3,593 | 3,567 | 1,896 | 1,877 | 1,797 | 2,736 | 1,339 |
| 1990/1991 | 1 | 105 | 167 | 177 | 205 | 93 | 4 | 4 | 3 | 6 |
| 1990/1991 | 3 | 1,900 | 2,411 | 2,983 | 3,638 | 5,215 | 5,272 | 1,694 | 41 | 34 |
| 1990/1991 | NC | 491 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1991/1992 | - | 0 | 2 | 11 | 15 | 35 | 34 | 34 | 35 | 29 |
| 1991/1992 | 3 | 0 | 8 | 694 | 1,484 | 2,153 | 2,494 | 2,702 | 3,142 | 3,472 |
| 1992/1993 | - | 0 | 0 | 46 | 166 | 407 | 341 | 282 | 237 | 192 |
| 1992/1993 | 3 | 0 | 0 | 62 | 535 | 939 | 1,335 | 1,545 | 1,789 | 1,668 |
| 1992/1993 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 1993/1994 | - | 0 | 0 | 0 | 114 | 952 | 874 | 798 | 800 | 723 |
| 1993/1994 | 1 | 0 | 0 | 0 | 135 | 428 | 487 | 16 | 8 | 5 |
| 1993/1994 | 3 | 0 | 0 | 0 | 571 | 2,103 | 3,285 | 4,770 | 6,692 | 8,060 |
| 1994/1995 | - | 0 | 0 | 0 | 0 | 159 | 239 | 182 | 212 | 198 |
| 1994/1995 | 3 | 0 | 0 | 0 | 0 | 56 | 1,006 | 1,933 | 3,193 | 3,718 |
| 1995/1996 | - | 0 | 0 | 0 | 0 | 0 | 129 | 3,104 | 2,836 | 2,641 |
| 1995/1996 | 1 | 0 | 0 | 0 | 0 | 0 | 528 | 189 | 402 | 593 |
| 1996/1997 | - | 0 | 0 | 0 | 0 | 0 | 0 | 1,057 | 1,686 | 1,742 |
| 1997/1998 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 606 | 2,126 |
| 1997/1998 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1997/1998 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1998/1999 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 149 |
| 1998/1999 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 664 |
| 1998/1999 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Total Expenditures | | 5,141 | 6,002 | 7,566 | 10,430 | 14,437 | 17,906 | 20,106 | 24,419 | 27,366 |
| Patented Expenditures | | 2,497 | 2,586 | 3,916 | 6,568 | 10,987 | 14,412 | 12,853 | 15,272 | 18,227 |
| Non-Patented Expenditures | | 2,644 | 3,416 | 3,650 | 3,862 | 3,450 | 3,494 | 7,253 | 9,147 | 9,139 |

Figure 10 corresponds to Table 8. It reflects the high growth rates in expenditures in this therapeutic class. It also shows how over the years patented category 3 drugs had the largest share in total expenditures. The category 2 drugs are older drugs which where eventually replaced by new category 1 and 3 drugs.

**Figure 10**




### Agents Acting on the Renin-Angiotensin System (ACEI):

Total expenditures almost doubled since 1990/91. In 1990/91 expenditures were $11.8 million and rose to $31.3 million by 1998/99, despite the inclusion of Agents Acting on the Renin-Angiotensin System in the Reference Based Pricing Program in 1997. The greater proportion of expenditures were on patented drugs until 1994/95 and again in 1996/97 to 1998/99. In 1994/95 and 1995/96 the non-patented had a significant market share. The greatest increase in expenditures on patented drugs was accounted for by existing category 3 drugs in 1990/91 and new category 3 drugs introduced in 1992/93.

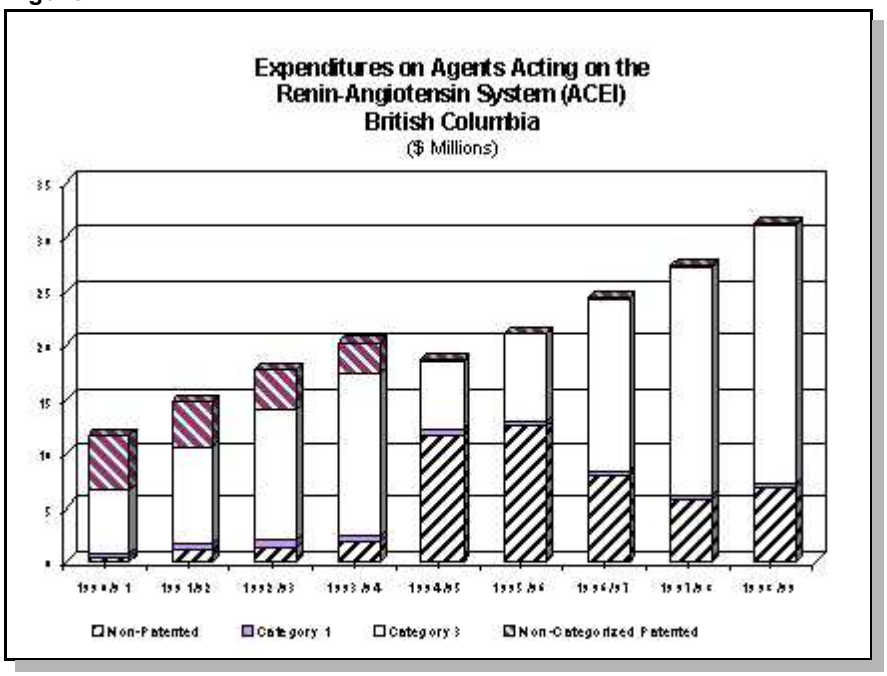
The top three drugs within this therapeutic class were Enapril Maleate with $10.8 million, Quinapril at $6.0 million and Ramipril at $5.1 million. The total share of these three chemicals in total expenditures on Agents Acting on the Renin-Angiotensin System was 67%.

**Table 9**

**Impact of Existing and Newer Drug Products**
**by Major Disease Groups**
**Agents Acting on the Renin-angiotensin System (ACEI)**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 352 | 980 | 980 | 1,102 | 1,747 | 1,463 | 1,360 | 1,230 | 1,379 |
| 1990/1991 | 1 | 378 | 672 | 679 | 625 | 514 | 428 | 314 | 254 | 0 |
| 1990/1991 | 3 | 5,823 | 8,885 | 11,701 | 13,850 | 4,521 | 5,600 | 12,140 | 13,452 | 13,283 |
| 1990/1991 | NC | 5,210 | 4,286 | 3,778 | 2,884 | 118 | 19 | 48 | 90 | 0 |
| 1991/1992 | - | 0 | 71 | 287 | 413 | 718 | 670 | 629 | 468 | 398 |
| 1991/1992 | 3 | 0 | 0 | 120 | 277 | 300 | 347 | 757 | 2,157 | 2,575 |
| 1992/1993 | - | 0 | 0 | 9 | 59 | 48 | 108 | 85 | 35 | 29 |
| 1992/1993 | 3 | 0 | 0 | 202 | 722 | 1,161 | 1,525 | 2,177 | 3,809 | 4,794 |
| 1993/1994 | - | 0 | 0 | 0 | 293 | 9,055 | 9,686 | 4,657 | 36 | 9 |
| 1993/1994 | 3 | 0 | 0 | 0 | 71 | 322 | 574 | 690 | 770 | 936 |
| 1994/1995 | - | 0 | 0 | 0 | 0 | 143 | 562 | 1,200 | 3,502 | 4,957 |
| 1994/1995 | 1 | 0 | 0 | 0 | 0 | 4 | 46 | 88 | 137 | 199 |
| 1994/1995 | NC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1995/1996 | - | 0 | 0 | 0 | 0 | 0 | 17 | 52 | 330 | 347 |
| 1996/1997 | - | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 77 | 124 |
| 1996/1997 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 141 | 966 | 1,964 |
| 1997/1998 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| 1997/1998 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 114 |
| 1998/1999 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 1998/1999 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| 1998/1999 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 205 |
| Total Expenditures | | 11,762 | 14,895 | 17,755 | 20,297 | 18,650 | 21,045 | 24,340 | 27,342 | 31,343 |
| Patented Expenditures | | 11,410 | 13,843 | 16,479 | 18,430 | 6,940 | 8,538 | 16,355 | 21,661 | 24,096 |
| Non-Patented Expenditures | | 352 | 1,051 | 1,276 | 1,867 | 11,711 | 12,507 | 7,985 | 5,681 | 7,247 |

**Figure 11**


Expenditures on Agents Acting on the
Renin-Angiotensin System (ACEI)
British Columbia
($ Millions)
Non-Patented
Category 1
Category 3
Non-Categorized Patented

# 6.0 Conclusions

The study reports on the cost drivers of total pharmaceutical spending in British Columbia's Pharmacare program over the period 1990/91 to 1998/99.

During the period under review, expenditures increased from $159.8 million to $318.6 million for the plans used for analysis. Growth in spending was driven by higher utilization of existing drug products and by newer drug products introduced in 1991/92 or in subsequent years.

Between 1990/91 and 1998/99 total drug expenditures increased by $159 million (for plans under consideration). On average, between 1990/91 and 1998/99 per unit price changes seen by the province were responsible for -17% of the expenditure change, volume change or utilization was responsible 79%, entry of new drugs were responsible for 43%, and both exiting drugs and other factors were responsible for -1% and -5% of expenditures changes respectively. The findings suggest that utilization and entry of new drugs accounted for the largest increase in expenditures over the period with expenditures rising significantly despite a decrease in the average per unit price. The contribution of each of these factors change dramatically in 1994/95 with varying values from year to year; further work is required to understand the sensitivity of the model, the impact of cost containment policies and the entry and market penetration of new drug therapies.

Change in total expenditures was broken out into five components: retail price effect, volume effect, new drug products effect, exiting drug products and others. Between 1990/91 and 1998/99 total drug expenditures increased by $159 million.

The report also analyses the extent to which the top seven ATC groups are contributing to increases in pharmaceutical expenditures. In 1998/99, drugs in seven Anatomical Therapeutic Chemical (ATC) groups, including, Cardiovascular Systems, Nervous System, Alimentary Tract and Metabolism, Respiratory System, General Anti-infectives, Blood and Blood Forming Organs and Sensory Organs accounted for $290.9 million or 91% of total expenditures.

The British Columbia Pharmacare Program underwent several changes since 1993/94 with a view to manage the growth in drug costs. Further analysis is necessary to fully understand the effect that those changes had on total pharmaceutical expenditures and utilization trends.

# Appendix 1

## Methodology

This study analyses the cost drivers in total pharmaceutical spending from 1990/91 to 1998/99 in British Columbia.

In order to conduct the analysis, information on prices, quantities and expenditures were obtained from the British Columbia Pharmacare Database. Health Canada's Drug Product Database was used to ensure that only those drugs defined by the Food and Drug Act were included. The Patented Medicine Prices Review Board data base was used to group drugs according to patent status.

Prices used in this study are claimed costs and include wholesale mark-ups but exclude dispensing fees.

This study reports expenditures by year of introduction of drugs. Year of Introduction is defined as the year of first sales recorded in British Columbia Pharmacare Database. Drugs with sales in 1990/91 or before, are termed as "existing" drugs while drugs with sales in 1991/91 and subsequent years are termed as "newer" drugs.

The study focuses on two aspects of expenditures change:

- the influence from existing drugs in terms of growth in price and quantity and exit
- the impact of new drugs in terms of replacement of older drugs

For this purpose, the annual change in pharmaceutical expenditures is broken down into five components: price effect, volume effect, entry of new drugs, exiting drugs and others. The following model was used to obtain the results.

$TE_o = P_oQ_o$ o = base period.....(1)

$\Delta TE_1 = P_1Q_1 - P_oQ_o$ 1 = first period.....(2)

$= P_o(Q_1 - Q_o) + Q_o(P_1 - P_o) + (P_1 - P_o)(Q_1 - Q_o) + P_{1n}Q_{1n} - P_o^oQ_o^o$

*Where*:

$TE$ = Total Expenditure

$P_o(Q_1 - Q_o) = VolumeEffect$

$Q_o(P_1 - P_o) = PriceEffect$

$(P_1 - P_o)(Q_1 - Q_o) = InteractionTerm$

$P_{1n}Q_{1n} = NewDrugExpenditureInfluence$

$P_o^oQ_o^o = ExitingDrugs$

$P_o(Q_1 - Q_o) + Q_o(P_1 - P_o) + (P_1 - P_o)(Q_1 - Q_o)$ = Existing Drug Influence, $E_i$

After the first period,1, New drugs can be separated into Volume and Price influence on annual change in total expenditures:

$\Delta TE = P_2Q_2 - P_1Q_1$ 2 = Second Period.....(3)

$= P_1(Q_2 - Q_1) + Q_1(P_2 - P_1) + (P_2 - P_1)(Q_2 - Q_1) + P_{1n}(Q_{2n} - Q_{1n}) + Q_{1n}(P_{2n} - P_{1n})$

$+ (P_{2n} - P_{1n})(Q_{2n} - Q_{1n}) + P_{2n}^*Q_{2n}^*$

*Where*,

$P_{2n}^*Q_{2n}^*$ = New Drugs inPeriod 2 = $N_i^*$

$P_1(Q_2 - Q_1)$ = New Drug Volume Influence

$Q_1(P_2 - P_1)$ = New Drug Price Influence

$(P_2 - P_1)(Q_2 - Q_1)$ = Interaction Term

$P_1(Q_2 - Q_1) + Q_1(P_2 - P_1) + (P_2 - P_1)(Q_2 - Q_1) = M$, New Drug Influence

$\therefore \Delta TE_i = E_i + \sum N_i + N_i^*$.....(4)

*Divide*(4)*by*$\Delta TE_i$

$\Delta TE_i / \Delta TE_i = 1 = E_i / \Delta TE_i + \sum N_i / \Delta TE_i + N_i^* / \Delta TE_i$

Estimates the influence of each component

The previous study was conducted on a calender basis and price was calculated at the din level, this study is based on a fiscal year and price is calculated at the chemical level, i.e. price for a chemical with an identical ingredient, strength, route, schedule and form. This change in definition was adapted in order to better capture the substitution within multi-source markets and better represent the contribution of each cost driver component in the model.[24]

The impact of new drugs is tracked not only during the year of introduction, but also in the subsequent year. After the two periods, the effect of new drugs is recorded as part of the price, utilization and other effect.

The other major focus of the report was a breakdown of expenditures by therapeutic class and patent status over the period 1990/91 to 1998/99. This would enable us to:

- identify the extent to which each therapeutic class contributed to the increases in total Pharmacare expenditures over the period 1990/91 and 1998/99; This was done by calculating the difference between the level of expenditures of each therapeutic class between 1990/91 and 1998/99, and dividing the difference by the difference between the level of total expenditures between 1990/91 and 1998/99.
- identify the extent of substitution between new drugs and exiting drugs in each therapeutic class;
- identify the impact that category 1, 2 and 3 drugs have on the market.

[24] The previous version of cost drivers treated all new DIN's as new drugs, including generics.

# Appendix 2

## PROVINCIAL DRUG PLANS: BRITISH COLUMBIA

### General Plan Information

***Beneficiaries Covered***

All permanent residents of British Columbia are covered under Pharmacare. There are several plans under the program which contain various eligibility:

Plan A: seniors 65 or older.

Plan B: residents in long term care facilities.

Plan C: recipients of social assistance.

Plan D: cystic fibrosis patients.

Plan E: all other residents of British Columbia

Plan F: medically dependent children.

***Deductibles, Copayments and Professional Fees***

Plan A: Seniors pay 100% of the dispensing fee, up to a maximum of $200 annually, with subsequent dispensing fee's paid by the province. 100% of the recognized ingredient cost is covered by Pharmacare.

Plans B,C,D &F: Recipients under these plans pay no deductibles or copayments.

Plan E: Recipients pay the first $800 of their prescription costs and 30% of each prescription thereafter up to a maximum of $2,000. Families with annual income less than $20,000, have an annual deductible of $600, with 100% coverage after the deductible

***Pharamacare Coverage***

Pharmacare covers:

- eligible drugs prescribed by a physician, dentist, or podiatrist
- insulin, needles, and syringes for diabetics
- blood glucose monitoring strips where home blood glucose monitoring has been deemed medically necessary and the individual has a valid certificate of training from an approved diabetic teaching centre. As of May 1996, there were 35,406 individuals with home blood glucose certificates of training registered with Pharmacare
- certain ostomy supplies
- designated permanent prosthetic appliances and children's orthotic devices

***Pharmacare does not Cover***

- bandages
- artificial sweeteners
- antacids, laxatives and other over-the-counter drugs
- wheelchairs, walkers, and other medical devices
- drug costs which have been fully reimbursed by another plan
- drugs or supplies obtained while outside of British Columbia

# Appendix 3

## Population Changes and Top Selling Drugs

The following table reports on population growth in British Columbia between 1990 and 1997 by age group. In 1991, the 30-39 age group represented the highest proportion of the total population, at 17.1%. This was followed by the 20-29 age group, at 15.3%, and the 40-49 age group and the 0-9 age group, at 13.7% each. In 1997, the 30-39 age group remained the largest group at 17.1% of the total population. The 40-49 age group increased to 15.6%. The 0-9 age group decreased to 12.6% and 20-29 age group decreased to 14.2% of the total population.

Between 1990 and 1997, the highest growth rate was achieved by the 80-90+ (45.8%) age group. This group was followed by 40-49 (44.2 %) and 50-59 (38.5%) age groups.

**Population Growth**
**British Columbia: 1990 to 1998**

| AGE GROUPS | YEAR | | | | CHANGES 1990-1998 (in thousands) | % GROWTH 1990-1998 |
|---|---|---|---|---|---|---|
| | 1990 | | 1998 | | | |
| | Population (in thousands) | % of total | Population (in thousands) | % of total | | |
| 0-9 | 430.30 | 13.70 | 496.16 | 12.37 | 65.86 | 15.31 |
| 10-19 | 410.40 | 13.10 | 527.09 | 13.14 | 116.69 | 28.43 |
| 20-29 | 478.40 | 15.30 | 557.64 | 13.91 | 79.24 | 16.56 |
| 30-39 | 535.00 | 17.10 | 676.73 | 16.88 | 141.73 | 26.49 |
| 40-49 | 427.50 | 13.70 | 642.16 | 16.01 | 214.66 | 50.21 |
| 50-59 | 297.80 | 9.50 | 440.85 | 10.99 | 143.05 | 48.03 |
| 60-69 | 280.10 | 8.90 | 311.52 | 7.77 | 31.42 | 11.22 |
| 70-79 | 189.60 | 6.10 | 237.76 | 5.93 | 48.16 | 25.40 |
| 80-90+ | 82.60 | 2.60 | 120.00 | 2.99 | 37.40 | 45.28 |
| Seniors(65+) | 409.40 | 13.10 | 509.18 | 12.70 | 99.78 | 24.37 |
| All Ages | 3,131.70 | 100.00 | 4,009.92 | 100.00 | 878.22 | 28.04 |

**Source:** Statistics Canada, Annual Demographic Statistics, Catalogue Number 91-213-XPB, 1998.

**■Top 25 Drugs Patented and Non-Patented Drug Products**
**British Columbia: 1998/99**

| DIN | Brand | Ingredient | ATC | Year of Introduction | Expenditure 1997/98 | Expenditure 1998/99 |
|---|---|---|---|---|---|---|
| 2190915 | Losec 20mg | Omeprazole (omeprazole magnesium) | A | 1995 | $12,906,228 | $14,751,090 |
| 1940481 | Paxil tab 20mg | Paroxetine (paroxetine hydrochloride) | N | 1993 | $6,041,080 | $7,229,754 |
| 893757 | Pravachol tab 20mg | Pravastatin sodium | C | 1990 | $5,512,836 | $5,773,801 |
| 2220172 | Apo-lovastatin - tab 20mg | Lovastatin | C | 1997 | $2,350,159 | $4,803,546 |
| 884340 | Zocor tab 20mg | Simvastatin | C | 1994 | $3,805,329 | $4,588,608 |
| 884332 | Zocor tab 10mg | Simvastatin | C | 1990 | $4,447,526 | $4,504,775 |
| 708879 | Vasotec tab 5mg | Enalapril maleate | C | 1990 | $4,615,112 | $4,399,638 |
| 2230711 | Lipitor 10mg | Atorvastatin (atorvastatin calcium) | C | 1997 | $657,441 | $4,149,526 |
| 2155907 | Adalat xl - srt 30mg | Nifedipine | C | 1991 | $4,371,698 | $4,147,411 |
| 2215055 | Becloforte inhaler - aem inh 250mcg/aem | Beclomethasone dipropionate | R | 1990 | $4,543,302 | $3,968,025 |
| 878928 | Norvasc tab 5mg | Amlodipine (amlodipine besylate) | C | 1992 | $3,275,684 | $3,928,583 |
| 2229285 | Zyprexa - 10mg | Olanzapine | N | 1997 | $1,704,150 | $3,724,447 |
| 1962817 | Zoloft cap 50mg | Sertraline (sertraline hydrochloride) | N | 1991 | $3,092,524 | $3,466,465 |
| 894745 | Clozaril tab 100mg | Clozapine | N | 1990 | $2,838,467 | $3,165,731 |
| 670901 | Vasotec tab 10mg | Enalapril maleate | C | 1990 | $3,140,277 | $3,144,974 |
| 870935 | Sinemet cr 200/50 | Levodopa | N | 1991 | $2,582,629 | $2,920,277 |
| 1947672 | Accupril tab 10mg | Quinapril (quinapril hydrochloride) | C | 1991 | $2,156,729 | $2,575,431 |
| 836338 | Prepulsid tab 10mg | Cisapride (cisapride monohydrate) | A | 1990 | $2,569,551 | $2,473,000 |
| 576158 | Atrovent aem 28.6mg/100gm | Ipratropium bromide | R | 1990 | $2,140,699 | $2,333,715 |
| 2155966 | Cipro 500 - tab 500mg | Ciprofloxacin (ciprofloxacin hydrochloride) | J | 1990 | $2,067,228 | $2,255,929 |
| 851752 | Pulmicort turbuhaler 200mcg/aem | Budesonide | R | 1990 | $2,053,493 | $2,121,170 |
| 2230713 | Lipitor 20mg | Atorvastatin (atorvastatin calcium) | C | 1997 | $314,846 | $2,075,559 |
| 2229269 | Zyprexa - 5mg | Olanzapine | N | 1997 | $1,023,128 | $2,013,612 |
| 2176017 | Didrocal -400mg tab and 1250mg tab(500mg ca) | Calcium carbonate | M | 1995 | $1,169,277 | $1,967,795 |
| 2177587 | Pms-fluoxetine - cap 20mg | Fluoxetine (fluoxetine hydrochloride) | N | 1995 | $2,098,300 | $1,889,840 |
| TOTAL | | | | | $81,477,694.98 | $98,372,702.49 |

**Top 10 Category 1 Patented Drug Products**
**British Columbia: 1998/99**

| DIN | Brand | Ingredient | ATC | Year of Introduction | Expenditure 1997/98 | Expenditure 1998/99 |
|---|---|---|---|---|---|---|
| 2190915 | Losec 20mg | Omeprazole (omeprazole magnesium) | A | 1995 | $12,906,228 | $14,751,090 |
| 884340 | Zocor tab 20mg | Simvastatin | C | 1994 | $3,805,329 | $4,588,608 |
| 870935 | Sinemet cr 200/50 | Levodopa | N | 1991 | $2,582,629 | $2,920,277 |
| 851752 | Pulmicort turbuhaler 200mcg/aem | Budesonide | R | 1990 | $2,053,493 | $2,121,170 |
| 2176017 | Didrocal -400mg tab and 1250mg tab(500mg ca) | Calcium carbonate | M | 1995 | $1,169,277 | $1,967,795 |
| 2177587 | Pms-fluoxetine - cap 20mg | Fluoxetine (fluoxetine hydrochloride) | N | 1995 | $2,098,300 | $1,889,840 |
| 2213613 | Flovent inhalers - aem inh-orl 250mcg/aem | Fluticasone propionate | R | 1996 | $1,041,600 | $1,700,577 |
| 2146959 | Lipidil micro - cap 200mg | Fenofibrate | C | 1994 | $2,544,855 | $1,524,203 |
| 2054817 | Prepulsid tab 20mg | Cisapride (cisapride monohydrate) | A | 1993 | $1,286,116 | $1,509,038 |
| 851760 | Pulmicort turbuhaler 400mcg/aem | Budesonide | R | 1991 | $1,159,564 | $1,182,325 |
| 2155990 | Adalat xl - srt 60mg | Nifedipine | C | 1992 | $1,055,523 | $1,066,906 |

**Expenditures on the Top 10 Category 2 Patented Drug Products**
**British Columbia: 1998/99**

| DIN | Brand | Ingredient | ATC | Year of Introduction | Expenditure 1997/98 | Expenditure 1998/99 |
|---|---|---|---|---|---|---|
| 2155966 | Cipro 500 - tab 500mg | Ciprofloxacin (ciprofloxacin hydrochloride) | J | 1990 | $2,067,228 | $2,255,929 |
| 2025299 | Risperdal tab 2mg | Risperidone | N | 1992 | $1,463,821 | $1,627,549 |
| 2025302 | Risperdal tab 3mg | Risperidone | N | 1993 | $1,347,972 | $1,347,575 |
| 2212161 | Imitrex - tab 100mg | Sumatriptan (sumatriptan succinate) | N | 1991 | $1,302,690 | $1,290,268 |
| 2155958 | Cipro 250 - tab 250mg | Ciprofloxacin (ciprofloxacin hydrochloride) | J | 1990 | $1,208,489 | $1,258,837 |
| 1978926 | Pulmicort nebuamp sus inh 0.5mg/ml | Budesonide | R | 1992 | $655,440 | $709,922 |
| 2025310 | Risperdal tab 4mg | Risperidone | N | 1993 | $686,648 | $708,496 |
| 2169649 | Betaseron | Interferon Beta - 1B | L | 1997 | $312,523 | $671,139 |
| 2010909 | Proscar tab 5mg | Finasteride | G | 1992 | $1,583,492 | $644,335 |
| 2213575 | Zofran - tab 8mg | Ondansetron (ondansetron hydrochloride dihydrate) | A | 1991 | $522,052 | $602,849 |

**Expenditures on the Top 10 Category 3 Patented Drug Products**
**British Columbia: 1998/99**

| DIN | Brand | Ingredient | ATC | Year of introduction | Expenditure 1997/98 | Expenditure 1998/99 |
|---|---|---|---|---|---|---|
| 1940481 | Paxil tab 20mg | Paroxetine (paroxetine hydrochloride) | N | 1993 | $6,041,080 | $7,229,754 |
| 893757 | Pravachol tab 20mg | Pravastatin sodium | C | 1990 | $5,512,836 | $5,773,801 |
| 884332 | Zocor tab 10mg | Simvastatin | C | 1990 | $4,447,526 | $4,504,775 |
| 708879 | Vasotec tab 5mg | Enalapril maleate | C | 1990 | $4,615,112 | $4,399,638 |
| 2230711 | Lipitor 10mg | Atorvastatin (atorvastatin calcium) | C | 1997 | $657,441 | $4,149,526 |
| 878928 | Norvasc tab 5mg | Amlodipine (amlodipine besylate) | C | 1992 | $3,275,684 | $3,928,583 |
| 2229285 | Zyprexa - 10mg | Olanzapine | N | 1997 | $1,704,150 | $3,724,447 |
| 1962817 | Zoloft cap 50mg | Sertraline (sertraline hydrochloride) | N | 1991 | $3,092,524 | $3,466,465 |
| 670901 | Vasotec tab 10mg | Enalapril maleate | C | 1990 | $3,140,277 | $3,144,974 |
| 1947672 | Accupril tab 10mg | Quinapril (quinapril hydrochloride) | C | 1991 | $2,156,729 | $2,575,431 |

# Appendix 4

## Therapeutic Class Analysis

**Percentage Contribution of Selected Therapeutic Classes to Total Expenditure**
**British-Columbia: 1990/1991 - 1998/1999**

| Therapeutic Class | Contribution in 1990/1991 ($ millions) | Contribution in 1998/1999 ($ millions) | % of Total Expenditure Change |
|---|---|---|---|
| Cardiovascular System | 59.57 | 116.36 | 35.76% |
| Nervous System | 22.94 | 75.3 | 32.97% |
| Alimentary Tract and Metabolism | 24.46 | 42.63 | 11.44% |
| Respiratory System | 13.04 | 24.59 | 7.27% |
| General Antiinfectives for Systemic Use | 7.54 | 13.09 | 3.50% |
| Musculo-skeletal System | 5.71 | 10.82 | -3.07% |
| Genito Urinary System and Sex Hormones | 3.9 | 8.14 | 2.67% |
| Blood and Blood Forming Organs | 2.05 | 6.86 | 3.03% |
| Sensory Organs | 4.34 | 5.93 | 1.00% |
| Dermatologicals | 3.11 | 5.08 | 1.24% |
| Antineoplastic and Immunomodulating Agents | 0.92 | 4.66 | 2.36% |
| Systemic Hormonal Preparations, excl. Sex Hormones | 1.26 | 3.14 | 1.18% |
| Antiparasitic Products, Insecticides and Repellents | 0.23 | 0.57 | 0.22% |
| Unclassified | 0.57 | 1.15 | 0.36% |
| Various | 0.19 | 0.31 | 0.08% |
| **Total** | **159.82** | **318.63** | **100.00%** |

## Anatomical Therapeutic Chemical (ATC)

The Anatomical Therapeutic Chemical (ATC) classification system [and the Defined Daily Dose (DDD)] as a measuring unit are recommended by the WHO for drug utilization studies.

In the ATC classification system, the drugs are divided into different groups according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties. Drugs are classified in groups at five different levels. The drugs are divided into fourteen main groups (1st level), with two therapeutic/pharmacological subgroups (2nd and 3rd levels). The 4th level is a therapeutic/pharmacological/chemical subgroup and the 5th level is the chemical substance.

Medicinal products are classified according to the main therapeutic use of the main active ingredient, on the basic principle of only one ATC code for each pharmaceutical formulation (i.e. similar ingredients, strength and pharmaceutical form). A medicinal product can be given more than one ATC code if it is available in two or more strengths or formulations with clearly different therapeutic uses.

| ATC | Therapeutic Class | Subgroups* |
|---|---|---|
| A02 | Antacids, drugs for treatment of peptic ulcer and flatulence | Antacids; $H_2$-receptor antagonists; Prostaglandins; Proton pump inhibitors; Combinations for eradication of *Helicobacter pylori* & Others such as sucralfate |
| A10 | Drugs used in diabetes | Insulins and analogues; Biguanides; Sulfonamides; Alpha glucosidase inhibitors; Thiazolidinediones & Others such as repaglinide |
| B01 | Antithrombotic agents | Vitamin K antagonists (warfarin); Heparin group (includes LMWH); Platelet aggregation inhibitors (clopidogrel, ticlopidine..,abciximab..); Enzymes (streptokinase, alteplase..) & Others (lepirudin) |
| C01 | Cardiac Therapy | Cardiac glycosides (digoxin); Antiarrhythmics; Cardiac stimulants (adrenergic and dopaminergic agents, phosphodiesterase inhibitors); Vasodilators (organic nitrates) & Others such prostaglandins |
| C07 | Beta blocking agents | Beta blocking agents; Beta blocking agents and Thiazides; Beta blocking agents and other diuretics; Beta blocking agents and Vasodilators & Beta blocking agents and Other antihypertensives |
| C08 | Calcium channel blockers | Selective Calcium channel blockers with mainly vascular effects; Selective Calcium channel blockers with direct cardiac effects; Non-selective Calcium channel blockers & Calcium channel blockers and diuretics |
| C09 | Agents acting on the renin-angiotensin system | ACEIs, plain; ACEIs, combinations; Angiotensin II antagonists, plain; Angiotensin II antagonists, combinations & Others |
| C10 | Serum lipid reducing agents | HMG CoA reductase inhibitors; Fibrates; Bile acid sequestrants; Nicotinic acid and derivatives |
| J01 | Antibacterials for systemic use | Tetracyclines; Amphenicols (chloramphenicol); Penicillins; Beta-lactamase inhibitors; Cephalosporins; Monobactams; Carbapenems; Sulfonamides and Trimethoprim; Macrolides and Lincosamides (clindamycin); Aminoglycosides; Quinolones & Others such as vancomycin, fusidic acid, metronidazole |

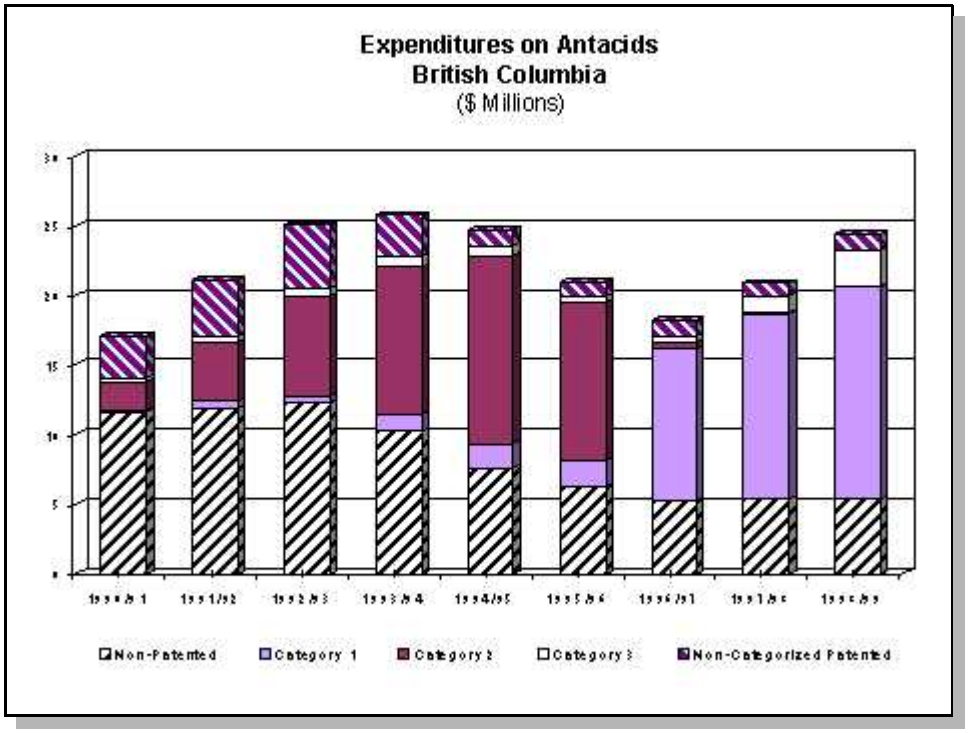
| ATC | Therapeutic Class | Subgroups* |
|---|---|---|
| N02 | Analgesics | Opioids (natural opium alkaloids such as morphine, codeine..; phenylpiperidines derivatives such as pethidine, fentanyl..; diphenylpropylamine derivatives such as methadone; pentazocine; morphinan derivative such as butorphanol and nalbuphine; opioids in combination with antispasmodics); Other analgesics and antipyretics (salicylic acid and derivatives, pyrazolones, anilides such as paracetamol); Antimigraine preparations (ergot alkaloids, selective $5HT_1$-receptor agonists & other antimigraine preparations such as pizotifen, clonidine) |
| N03 | Antiepileptics | Barbiturates and derivatives; Hydantoin derivatives; Oxazolidine derivatives; Succinimide derivatives; Benzodiazepine derivatives (clonazepam); Carboxamide derivatives; Fatty acid derivatives (valproic acid, vigabatrin) & Others (lamotrigine, topiramate, gabapentin) |
| N04 | Anti-parkinson drugs | Anticholinergic agents; Dopaminergic agents [Dopa and dopa derivatives; Adamantane derivatives (amantadine); Dopamine agonists; MAO type B inhibitors (selegiline); Others (entacapone)] |
| N05 | Psycholeptics | Antipsychotics (phenothiazines; butyrophenone derivatives; indole derivatives; thioxanthene derivatives; diphenylbutylpiperidine derivatives such as pimozide; diazepines, oxazepines and thiazepines such as clozapine, olanzepine & quetiapine; neuroleptics in tardive dyskinesia such as tetrabenazine; benzamides; lithium); Anxiolytics (benzodiazepine derivatives, carbamates, buspirone); Hypnotics and sedatives (barbiturates-plain, barbiturates-combinations,aldehydes and derivatives, benzodiazepine derivatives, piperidinedione derivatives, benzodiazepine related drugs such as zopiclone) |
| N06 | Psychoanaleptics | Antidepressants; Psychostimulants and nootropics (centrally acting sympathomimetics, xanthine derivatives); Psycholeptics and psychoanaleptics in combination (antidepressants in combination with psycholeptics); Anti-dementia drugs |
| R03 | Anti-asthmatics | Adrenergics, inhalants; Other anti-asthmatics, inhalants (glucocorticoids, anticholinergics, antiallergic agents); Adrenergics for systemic use; Other anti-asthmatics for systemic use (xanthines, xanthines and adrenergics, leukotriene receptor antagonists) |

| ATC | Therapeutic Class | Subgroups* |
|---|---|---|
| S01 | Ophthalmologicals | Anti-infectives (antibiotics, sulfonamides, antivirals, other anti-infectives); Anti-inflammatory agents (corticosteroids, plain; corticosteroids and mydriatics in combination; anti-inflammatory agents, non-steroids); Anti-inflammatory agents and anti-infectives in combination; Anti-glaucoma preparations and miotics; Mydriatics and cycloplegics; Decongestants and antiallergics; Local anesthetics; Diagnostic agents; Surgical aids; Others such as artificial tears |

* main one listed

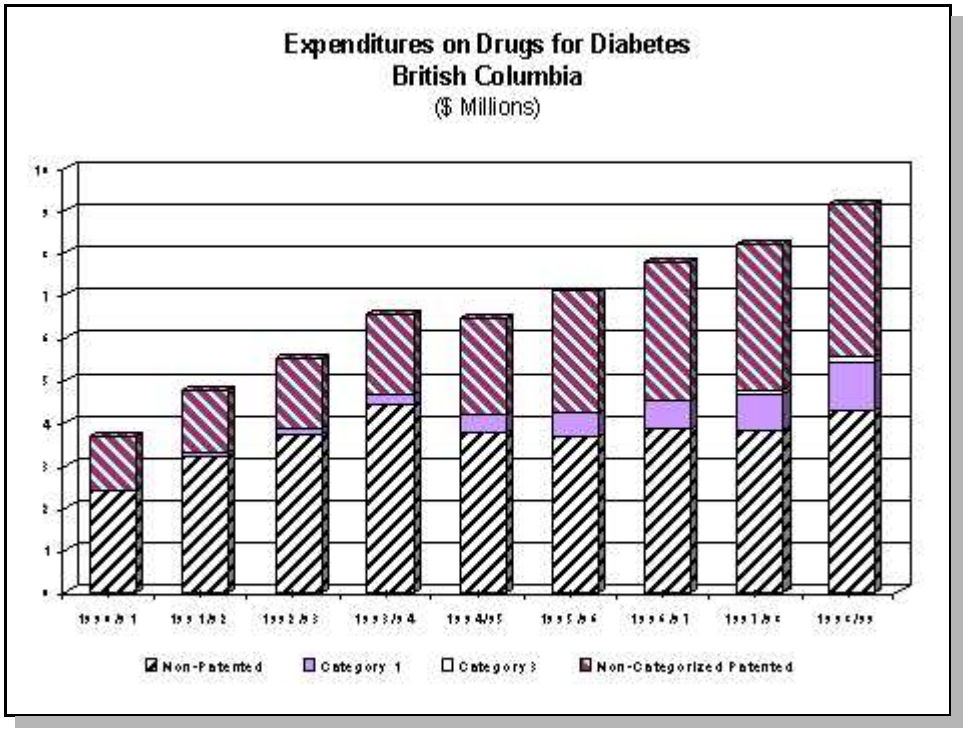
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Antacids, Drugs for Treatment of Peptic Ulcer and Flatulence**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 11,618 | 11,981 | 12,031 | 9,399 | 6,339 | 6,240 | 5,437 | 4,872 | 4,303 |
| 1990/1991 | 1 | 211 | 373 | 405 | 381 | 576 | 277 | 89 | 104 | 93 |
| 1990/1991 | 2 | 1,920 | 4,327 | 7,189 | 10,636 | 13,515 | 11,382 | 396 | 121 | 41 |
| 1990/1991 | 3 | 289 | 383 | 591 | 782 | 718 | 463 | 217 | 198 | 167 |
| 1990/1991 | NC | 3,082 | 3,979 | 4,503 | 2,919 | 1,095 | 46 | 69 | 73 | 74 |
| 1991/1992 | - | - | 17 | 273 | 345 | 298 | 255 | 215 | 176 | 150 |
| 1992/1993 | - | - | - | 30 | 382 | 431 | 288 | 131 | 118 | 110 |
| 1992/1993 | 1 | - | - | 10 | 809 | 1,159 | 585 | 274 | 211 | 154 |
| 1993/1994 | - | - | - | - | 91 | 446 | 304 | 205 | 171 | 128 |
| 1994/1995 | - | - | - | - | - | 9 | 166 | 131 | 131 | 144 |
| 1995/1996 | 1 | - | - | - | - | - | 976 | 10,484 | 12,906 | 14,751 |
| 1995/1996 | 3 | - | - | - | - | - | 0 | 217 | 623 | 1,102 |
| 1995/1996 | NC | - | - | - | - | - | 0 | - | - | 0 |
| 1996/1997 | - | - | - | - | - | - | - | 193 | 745 | 925 |
| 1996/1997 | 3 | - | - | - | - | - | - | 87 | 160 | 158 |
| 1997/1998 | - | - | - | - | - | - | - | - | 121 | 656 |
| 1997/1998 | 1 | - | - | - | - | - | - | - | 12 | 55 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 144 | 1,196 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 14 |
| 1998/1999 | 1 | - | - | - | - | - | - | - | - | 95 |
| Total Expenditures | | 17,121 | 21,060 | 25,030 | 25,745 | 24,637 | 20,932 | 18,144 | 20,885 | 24,315 |
| Patented Expenditures | | 5,503 | 9,062 | 12,697 | 15,527 | 17,064 | 13,728 | 11,831 | 14,552 | 17,885 |
| Non-Patented Expenditures | | 11,618 | 11,998 | 12,333 | 10,218 | 7,573 | 7,204 | 6,313 | 6,333 | 6,430 |


Expenditures on Antacids
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

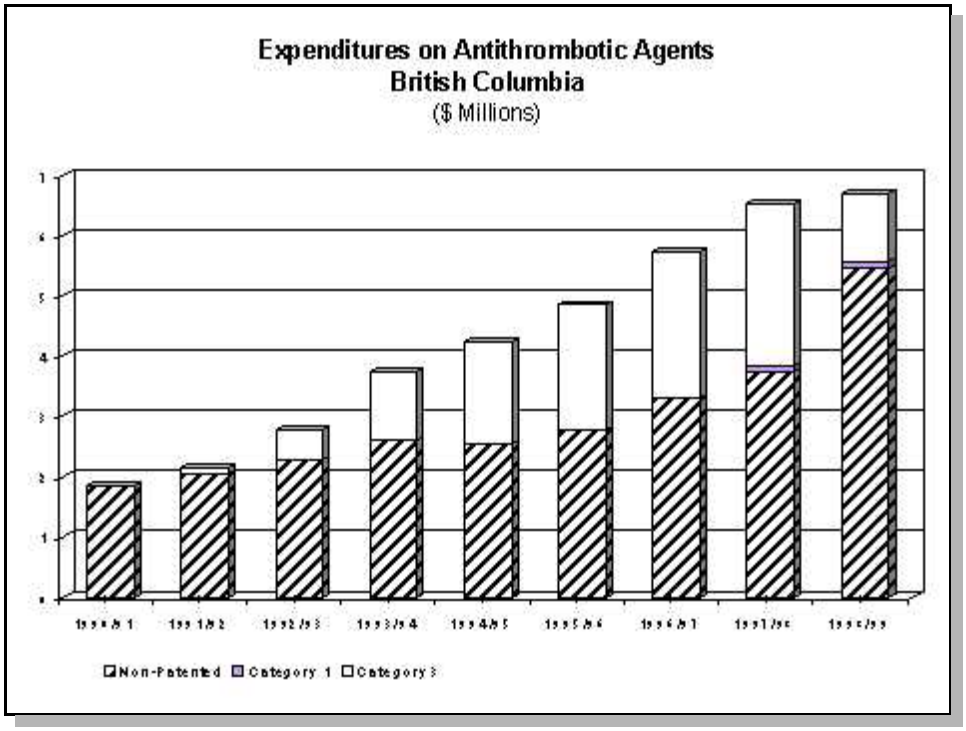
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Drug Used in Diabetes**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 2,316 | 3,176 | 3,555 | 4,129 | 2,281 | 3,636 | 3,637 | 3,214 | 3,070 |
| 1990/1991 | 1 | 25 | 55 | 107 | 175 | 236 | - | - | - | - |
| 1990/1991 | NC | 1,251 | 1,475 | 1,672 | 1,799 | 1,853 | 514 | 519 | 488 | 464 |
| 1991/1992 | - | - | 42 | 149 | 153 | 273 | 328 | 414 | 476 | 495 |
| 1992/19923 | - | - | - | 3 | 142 | 244 | 383 | 372 | 397 | 509 |
| 1992/1993 | 1 | - | - | 13 | 46 | 96 | - | - | - | - |
| 1993/1994 | - | - | - | - | 1 | 972 | 1,159 | 828 | 834 | 860 |
| 1993/1994 | 1 | - | - | - | 16 | 63 | 76 | 129 | 191 | 251 |
| 1993/1994 | NC | - | - | - | 73 | 434 | 689 | 932 | 1,203 | 1,425 |
| 1994/1995 | - | - | - | - | - | 1 | 250 | 762 | 1,039 | 1,327 |
| 1995/1996 | - | - | - | - | - | - | 53 | 164 | 257 | 331 |
| 1995/1996 | 3 | - | - | - | - | - | 0 | 3 | 46 | 92 |
| 1996/1997 | - | - | - | - | - | - | - | 0 | 3 | 10 |
| 1996/1997 | 3 | - | - | - | - | - | - | 1 | 18 | 29 |
| 1997/1998 | - | - | - | - | - | - | - | - | 29 | 100 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 162 |
| Total Expenditures | | 3,642 | 4,749 | 5,500 | 6,533 | 6,453 | 7,089 | 7,762 | 8,197 | 9,125 |
| Patented Expenditures | | 1,276 | 1,531 | 1,792 | 2,108 | 2,681 | 1,279 | 1,584 | 1,946 | 2,262 |
| Non-Patented Expenditures | | 2,366 | 3,218 | 3,708 | 4,424 | 3,772 | 5,809 | 6,177 | 6,251 | 6,863 |


Expenditures on Drugs for Diabetes
British Columbia
($ Millions)
Non-Patented
Category 1
Category 3
Non-Categorized Patented

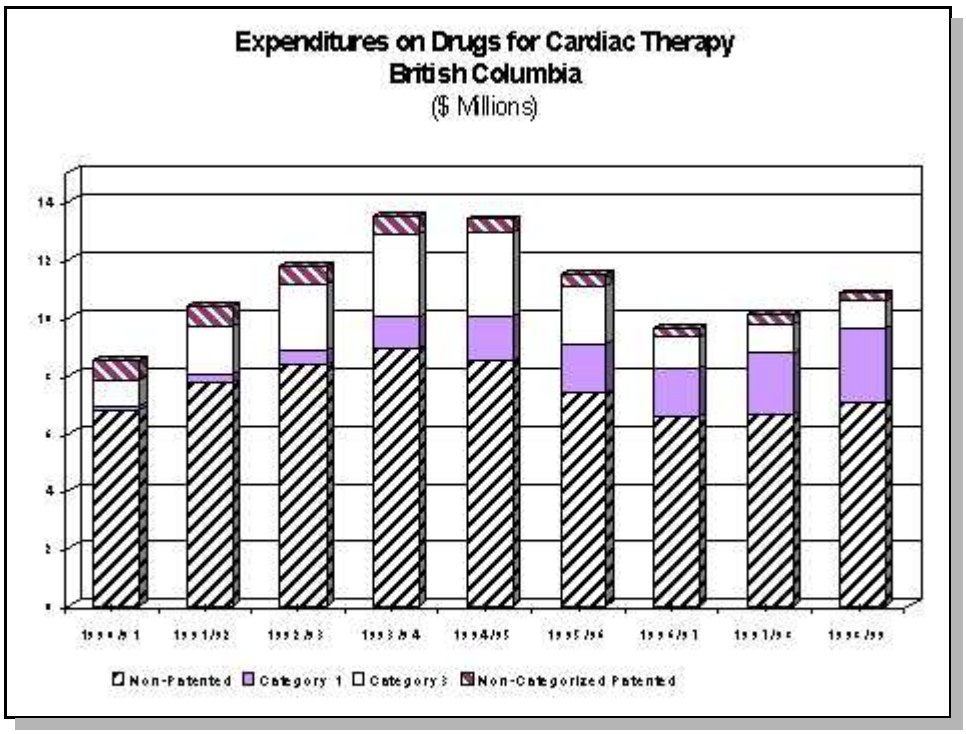
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Antithrombotic Agents**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 1,865 | 2,020 | 2,221 | 2,511 | 2,418 | 2,588 | 3,045 | 3,428 | 3,801 |
| 1991/1992 | - | - | 33 | 46 | 42 | 55 | 45 | 40 | 37 | 41 |
| 1991/1992 | 3 | - | 90 | 502 | 1,130 | 1,681 | 2,060 | 2,380 | 2,677 | 951 |
| 1992/1993 | - | - | - | 2 | 33 | 79 | 134 | 209 | 266 | 336 |
| 1994/1995 | - | - | - | - | - | 2 | 11 | 4 | 7 | - |
| 1995/1996 | - | - | - | - | - | - | - | - | - | - |
| 1995/1996 | 1 | - | - | - | - | - | 4 | 16 | 57 | 64 |
| 1996/1997 | - | - | - | - | - | - | - | - | - | - |
| 1996/1997 | 1 | - | - | - | - | - | - | 0 | - | - |
| 1996/1997 | 3 | - | - | - | - | - | - | 31 | 9 | 3 |
| 1997/1998 | - | - | - | - | - | - | - | - | 2 | 20 |
| 1997/1998 | 1 | - | - | - | - | - | - | - | 28 | 57 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 17 | 170 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 1,248 |
| 1998/1999 | 1 | - | - | - | - | - | - | - | - | 1 |
| 1998/1999 | 3 | - | - | - | - | - | - | - | - | 10 |
| Total Expenditures | | 1,865 | 2,143 | 2,772 | 3,716 | 4,235 | 4,842 | 5,724 | 6,528 | 6,703 |
| Patented Expenditures | | 0 | 90 | 502 | 1,130 | 1,681 | 2,064 | 2,427 | 2,789 | 1,257 |
| Non-Patented Expenditures | | 1,865 | 2,053 | 2,269 | 2,586 | 2,554 | 2,778 | 3,297 | 3,739 | 5,445 |


Expenditures on Antithrombotic Agents
British Columbia
($ Millions)
Non-Patented
Category 1
Category 3

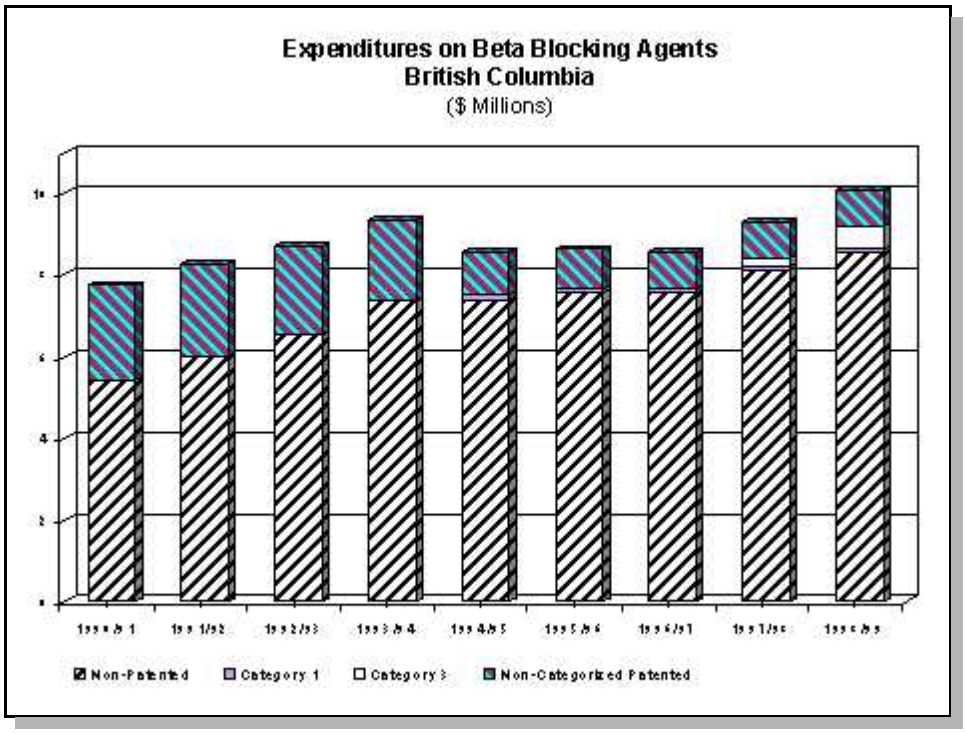
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Cardiac Therapy**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 6,889 | 8,446 | 8,816 | 9,574 | 8,942 | 7,759 | 6,838 | 6,862 | 7,141 |
| 1990/1991 | 1 | 1 | 81 | 431 | 705 | 981 | 1,025 | 962 | 1,160 | 1,395 |
| 1990/1991 | 3 | 901 | 1,686 | 2,297 | 2,889 | 2,893 | 2,061 | 1,093 | 1,043 | 965 |
| 1990/1991 | NC | 692 | 109 | 95 | 1 | 0 | 0 | 0 | - | - |
| 1991/1992 | - | - | 18 | 58 | 61 | 53 | 45 | 32 | 28 | 23 |
| 1991/1992 | 1 | - | 13 | 70 | 195 | 277 | 243 | 172 | 218 | 272 |
| 1991/1992 | NC | 0 | - | 0 | 0 | - | - | - | - | - |
| 1992/1993 | - | - | - | 3 | 16 | 25 | 34 | 37 | 42 | 41 |
| 1992/1993 | 1 | - | - | 1 | 3 | 5 | 7 | 11 | 19 | 28 |
| 1993/1994 | 1 | - | - | - | 12 | 193 | 255 | 233 | 275 | 372 |
| 1994/1995 | - | - | - | - | - | 1 | 6 | 4 | 0 | 0 |
| 1994/1995 | 1 | - | - | - | - | 14 | 51 | 74 | 99 | 55 |
| 1995/1996 | - | - | - | - | - | 0 | 4 | 13 | 16 | 17 |
| 1995/1996 | 1 | - | - | - | - | - | 10 | 168 | 282 | 329 |
| 1996/1997 | - | - | - | - | - | - | - | 0 | 0 | - |
| 1996/1997 | 1 | - | - | - | - | - | - | 6 | 38 | 58 |
| 1997/1998 | - | - | - | - | - | - | - | - | 7 | 42 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 86 |
| Total Expenditures | | 8,484 | 10,353 | 11,772 | 13,456 | 13,385 | 11,500 | 9,643 | 10,089 | 10,823 |
| Patented Expenditures | | 1,595 | 1,888 | 2,894 | 3,805 | 4,364 | 3,652 | 2,718 | 3,134 | 3,474 |
| Non-Patented Expenditures | | 6,889 | 8,464 | 8,878 | 9,651 | 9,021 | 7,847 | 6,925 | 6,955 | 7,349 |


Expenditures on Drugs for Cardiac Therapy
British Columbia
($ Millions)
Non-Patented
Category 1
Category 3
Non-Categorized Patented

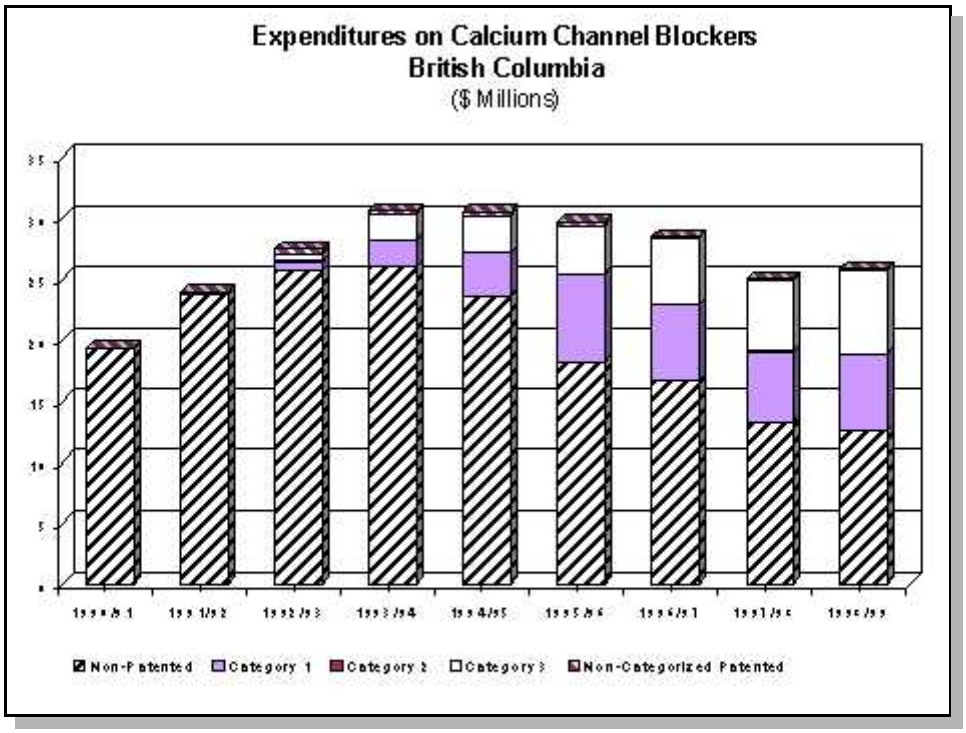
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Beta Blocking Agents**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 5,432 | 6,004 | 6,931 | 7,864 | 6,495 | 4,669 | 3,302 | 3,195 | 3,948 |
| 1990/1991 | 1 | 2 | 7 | 15 | 29 | 36 | 39 | 43 | 47 | - |
| 1990/1991 | NC | 2,328 | 2,251 | 1,745 | 1,060 | 873 | 832 | 797 | 783 | 170 |
| 1991/1992 | - | - | 0 | 1 | 1 | 6 | 7 | 9 | 9 | 13 |
| 1991/1992 | 1 | - | 1 | - | - | - | - | - | - | - |
| 1991/1992 | NC | - | 0 | - | - | - | - | - | 0 | - |
| 1992/1993 | - | - | - | 1 | 4 | 29 | 28 | 28 | 23 | 23 |
| 1993/1994 | - | - | - | - | 387 | 1,090 | 1,350 | 160 | 150 | 169 |
| 1994/1995 | - | - | - | - | - | 13 | 1,212 | 1,479 | 1,501 | 1,477 |
| 1995/1996 | - | - | - | - | - | - | 491 | 2,667 | 2,721 | 2,529 |
| 1996/1997 | - | - | - | - | - | - | - | 71 | 642 | 974 |
| 1997/1998 | - | - | - | - | - | - | - | - | 49 | 187 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 171 | 567 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 33 |
| Total Expenditures | | 7,762 | 8,262 | 8,692 | 9,345 | 8,543 | 8,628 | 8,556 | 9,292 | 10,090 |
| Patented Expenditures | | 2,329 | 2,258 | 1,760 | 1,089 | 910 | 871 | 839 | 1,001 | 737 |
| Non-Patented Expenditures | | 5,432 | 6,004 | 6,932 | 8,256 | 7,633 | 7,757 | 7,717 | 8,290 | 9,353 |


Expenditures on Beta Blocking Agents
British Columbia
($ Millions)
Non-Patented
Category 1
Category 3
Non-Categorized Patented

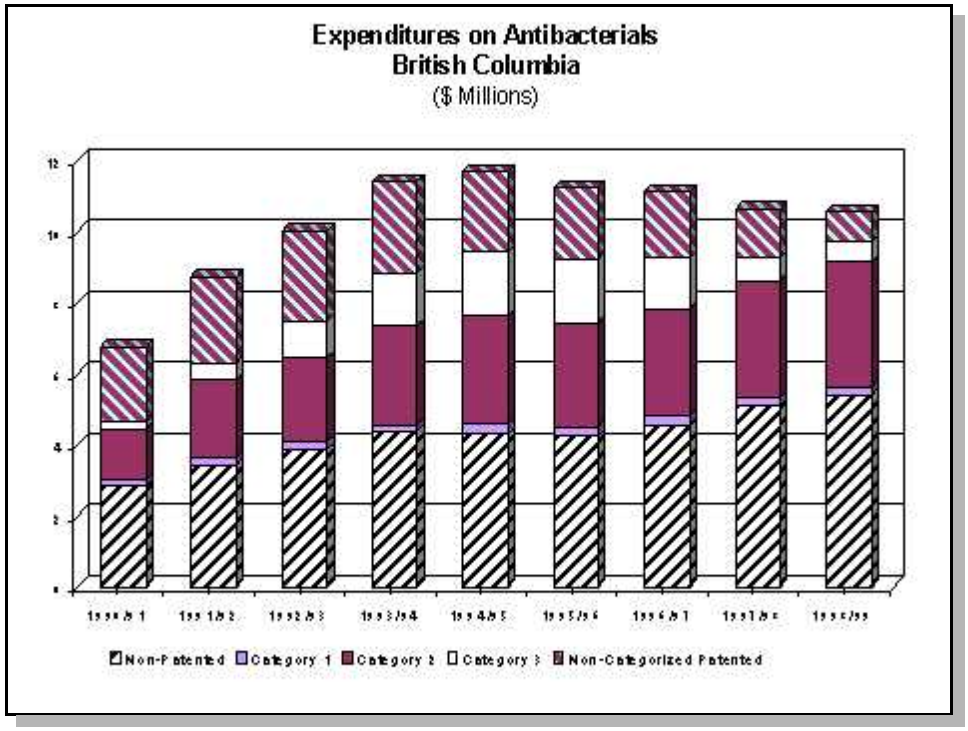
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Calcium Channel Blockers**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 19,287 | 23,673 | 25,419 | 24,285 | 19,448 | 4,436 | 2,853 | 993 | 760 |
| 1990/1991 | 2 | 0 | 1 | 7 | 8 | 8 | 9 | 22 | 37 | 41 |
| 1990/1991 | NC | 27 | 229 | 121 | 256 | 269 | 211 | 140 | 95 | 75 |
| 1991/1992 | - | - | 2 | 73 | 206 | 323 | 373 | 282 | 15 | 7 |
| 1991/1992 | 1 | - | 0 | 615 | 1,655 | 2,554 | 5,490 | 4,731 | 4,372 | 4,147 |
| 1991/1992 | 3 | - | 4 | 417 | 933 | 972 | 642 | 763 | 1,278 | 1,470 |
| 1991/1992 | NC | - | 19 | 281 | 164 | 53 | 24 | 14 | 6 | 5 |
| 1992/1993 | - | - | - | 146 | 1,469 | 3,123 | 9,885 | 7,484 | 131 | 84 |
| 1992/1993 | 1 | - | - | 157 | 548 | 914 | 1,692 | 1,521 | 1,056 | 1,067 |
| 1992/1993 | 3 | - | - | 161 | 1,099 | 2,056 | 3,317 | 4,697 | 4,526 | 5,432 |
| 1993/1994 | - | - | - | - | 38 | 526 | 2,801 | 2,411 | 697 | 724 |
| 1993/1994 | 1 | - | - | - | 0 | 5 | 14 | 33 | 100 | 148 |
| 1994/1995 | - | - | - | - | - | 180 | 663 | 765 | 1,048 | 1,125 |
| 1994/1995 | 1 | - | - | - | - | 12 | 24 | 10 | 14 | 11 |
| 1995/1996 | - | - | - | - | - | - | 42 | 740 | 1,576 | 1,599 |
| 1996/1997 | - | - | - | - | - | - | - | 2,051 | 7,353 | 5,239 |
| 1997/1998 | - | - | - | - | - | - | - | - | 1,634 | 3,715 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 13 |
| 1998/1999 | 1 | - | - | - | - | - | - | - | - | 159 |
| Total Expenditures | | 19,315 | 23,928 | 27,395 | 30,663 | 30,444 | 29,628 | 28,515 | 24,932 | 25,821 |
| Patented Expenditures | | 28 | 252 | 1,758 | 4,664 | 6,843 | 11,424 | 11,930 | 11,484 | 12,555 |
| Non-Patented Expenditures | | 19,287 | 23,675 | 25,637 | 25,999 | 23,601 | 18,205 | 16,585 | 13,447 | 13,266 |


Expenditures on Calcium Channel Blockers
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

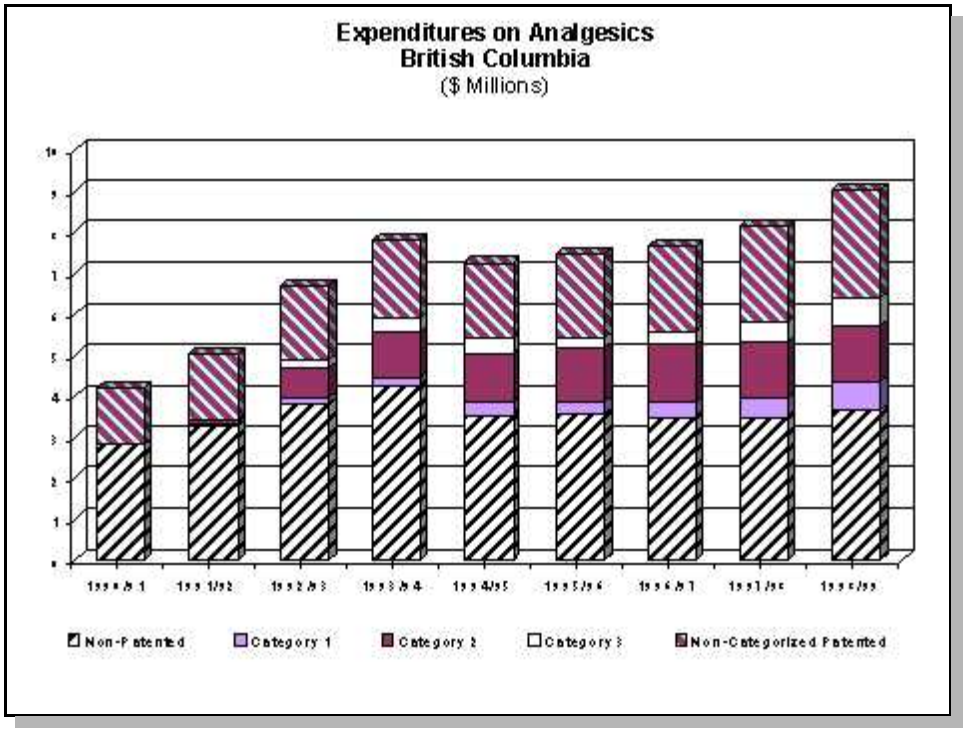
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Antibacterials for Systemic Use**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 2,916 | 3,499 | 3,933 | 4,566 | 4,248 | 3,951 | 4,102 | 4,290 | 4,237 |
| 1990/1991 | 1 | 181 | 217 | 201 | 179 | 91 | 40 | 33 | 26 | 10 |
| 1990/1991 | 2 | 1,407 | 2,175 | 2,395 | 2,801 | 3,044 | 2,867 | 2,991 | 3,276 | 3,515 |
| 1990/1991 | 3 | 201 | 337 | 498 | 610 | 627 | 566 | 438 | 287 | 246 |
| 1990/1991 | NC | 2,053 | 2,380 | 2,387 | 2,320 | 2,099 | 1,837 | 1,704 | 1,264 | 796 |
| 1991/1992 | - | - | 0 | 6 | 11 | 10 | 9 | 8 | 5 | 8 |
| 1991/1992 | 1 | - | 0 | - | - | - | - | 0 | 0 | 0 |
| 1991/1992 | 3 | - | 114 | 214 | 207 | 175 | 159 | 153 | 137 | 44 |
| 1991/1992 | NC | - | 0 | - | 0 | - | 0 | - | - | - |
| 1992/1993 | - | - | - | 23 | 15 | 127 | 191 | 248 | 282 | 300 |
| 1992/1993 | 1 | - | - | 3 | 1 | 1 | 1 | 0 | 0 | 0 |
| 1992/1993 | 3 | - | - | 305 | 663 | 981 | 1,069 | 785 | 161 | 131 |
| 1992/1993 | NC | - | - | 0 | - | - | - | - | - | - |
| 1993/1994 | - | - | - | - | 7 | 215 | 165 | 135 | 142 | 142 |
| 1993/1994 | 1 | - | - | - | 0 | 0 | - | - | - | - |
| 1994/1995 | - | - | - | - | - | 38 | 215 | 239 | 250 | 265 |
| 1994/1995 | 1 | - | - | - | - | 19 | 110 | 147 | 93 | 100 |
| 1994/1995 | 3 | - | - | - | - | 0 | - | - | 7 | 0 |
| 1994/1995 | NC | - | - | - | - | 0 | 3 | - | - | - |
| 1995/1996 | - | - | - | - | - | - | 8 | 22 | 35 | 60 |
| 1995/1996 | 1 | - | - | - | - | - | 0 | - | - | 0 |
| 1995/1996 | 3 | - | - | - | - | - | 46 | 49 | 5 | 4 |
| 1995/1996 | NC | - | - | - | - | - | 3 | 2 | 8 | - |
| 1996/1997 | - | - | - | - | - | - | - | 32 | 263 | 304 |
| 1996/1997 | 3 | - | - | - | - | 0 | - | 2 | 21 | 33 |
| 1997/1998 | - | - | - | - | - | - | - | - | 5 | 87 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 54 | 85 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 186 |
| 1998/1999 | 1 | - | - | - | - | - | - | - | - | 2 |
| 1998/1999 | 3 | - | - | - | - | - | - | - | - | 4 |
| Total Expenditures | | 6,757 | 8,724 | 10,025 | 11,381 | 11,676 | 11,243 | 11,089 | 10,611 | 10,558 |
| Patented Expenditures | | 3,841 | 5,224 | 6,003 | 6,782 | 7,038 | 6,702 | 6,304 | 5,339 | 4,969 |
| Non-Patented Expenditures | | 2,916 | 3,499 | 4,022 | 4,599 | 4,638 | 4,540 | 4,785 | 5,272 | 5,589 |


Expenditures on Antibacterials
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

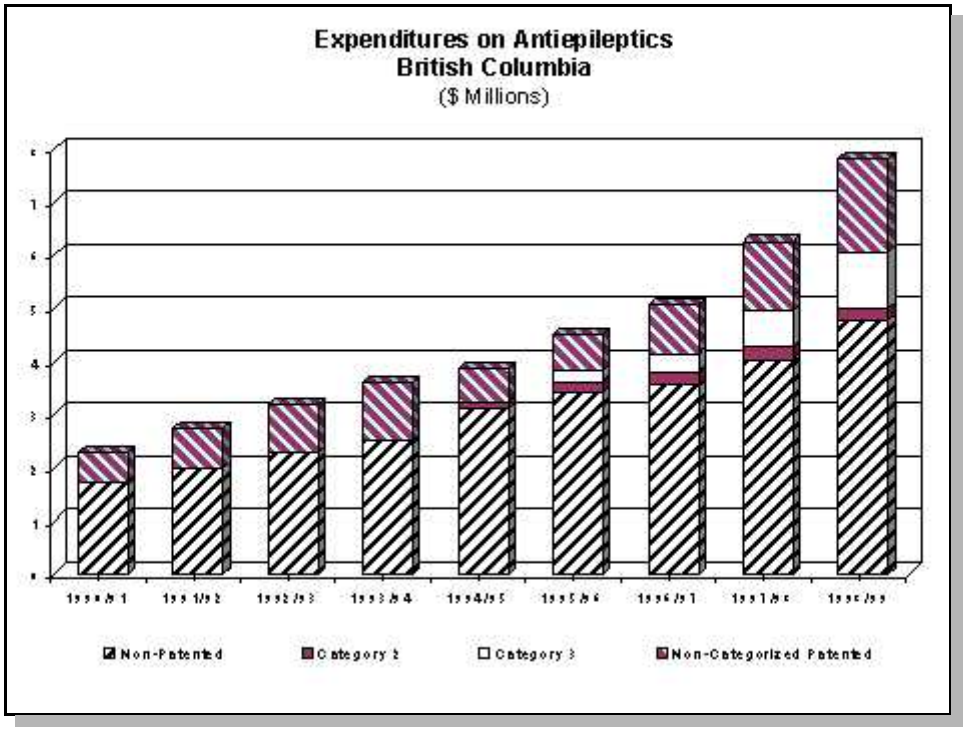
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Analgesics**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 2,791 | 3,238 | 3,491 | 3,778 | 4,939 | 5,056 | 5,162 | 5,214 | 5,565 |
| 1990/1991 | 1 | 0 | 95 | 147 | 198 | - | - | - | - | - |
| 1990/1991 | NC | 1,413 | 1,605 | 1,813 | 1,909 | 8 | 2 | 2 | 1 | 1 |
| 1991/1992 | - | - | 26 | 265 | 415 | 446 | 400 | 349 | 319 | 370 |
| 1991/1992 | 2 | - | 66 | 756 | 1,075 | 1,165 | 1,301 | 1,375 | 1,360 | 1,345 |
| 1992/1993 | - | - | 0 | 27 | 61 | 85 | 76 | 60 | 48 | 39 |
| 1992/1993 | 3 | - | - | 178 | 336 | 405 | 250 | 315 | 378 | 535 |
| 1993/1994 | - | - | - | - | 13 | 145 | 238 | 216 | 238 | 310 |
| 1994/1995 | - | - | - | - | 0 | 48 | 94 | 76 | 84 | 87 |
| 1994/1995 | 3 | - | - | - | - | 0 | 6 | 34 | 65 | 79 |
| 1995/1996 | - | - | - | - | - | - | 31 | 34 | 105 | 72 |
| 1995/1996 | 1 | - | - | - | - | - | 4 | 27 | 37 | 55 |
| 1996/1997 | - | - | - | - | - | - | - | 11 | 26 | 42 |
| 1996/1997 | 1 | - | - | - | - | - | - | 10 | 103 | 196 |
| 1996/1997 | NC | - | - | - | - | - | - | 0 | 76 | 92 |
| 1997/1998 | - | - | - | - | - | - | - | - | 37 | 3 |
| 1997/1998 | 1 | - | - | - | - | - | - | - | 3 | 97 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 47 | 87 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 47 |
| 1998/1999 | 1 | - | - | - | - | - | - | - | - | 15 |
| Total Expenditures | | 4,204 | 5,030 | 6,676 | 7,784 | 7,241 | 7,457 | 7,671 | 8,142 | 9,037 |
| Patented Expenditures | | 1,414 | 1,766 | 2,894 | 3,518 | 1,578 | 1,562 | 1,763 | 2,071 | 2,502 |
| Non-Patented Expenditures | | 2,791 | 3,264 | 3,782 | 4,266 | 5,663 | 5,894 | 5,908 | 6,071 | 6,535 |


Expenditures on Analgesics
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

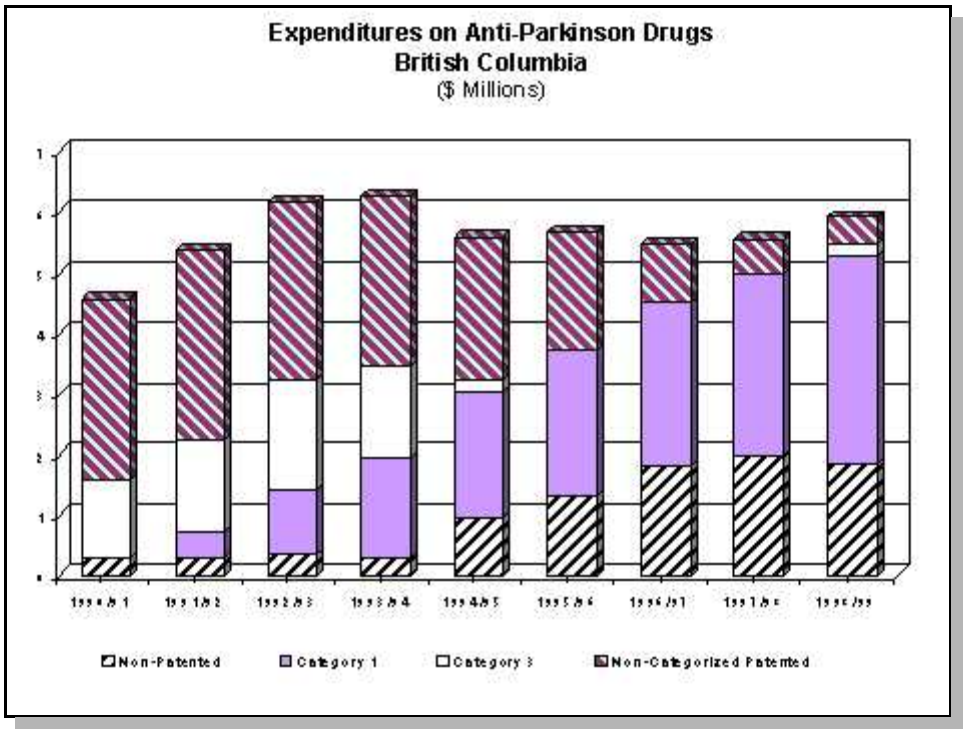
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Antiepileptics**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 2,087 | 2,459 | 2,821 | 3,166 | 2,674 | 2,519 | 2,312 | 2,079 | 1,743 |
| 1990/1991 | NC | 201 | 282 | 357 | 431 | 501 | 668 | 911 | 1,293 | 1,745 |
| 1991/1992 | - | - | 0 | 0 | - | - | 0 | 0 | 0 | 0 |
| 1992/1993 | - | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1993/1994 | - | - | - | - | 16 | 509 | 515 | 385 | 365 | 338 |
| 1994/1995 | - | - | - | - | - | 45 | 343 | 398 | 917 | 1,590 |
| 1994/1995 | 2 | - | - | - | - | 154 | 215 | 231 | - | - |
| 1994/1995 | 3 | - | - | - | - | 2 | 190 | 308 | 470 | 580 |
| 1995/1996 | - | - | - | - | - | - | 52 | 427 | 603 | 622 |
| 1995/1996 | 3 | - | - | - | - | - | 9 | 24 | 45 | 58 |
| 1996/1997 | - | - | - | - | - | - | - | 60 | 283 | 302 |
| 1997/1998 | - | - | - | - | - | - | - | - | 27 | 215 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 172 | 444 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 178 |
| Total Expenditures | | 2,288 | 2,741 | 3,178 | 3,614 | 3,885 | 4,511 | 5,057 | 6,255 | 7,814 |
| Patented Expenditures | | 201 | 282 | 357 | 431 | 656 | 1,082 | 1,474 | 1,980 | 2,827 |
| Non-Patented Expenditures | | 2,087 | 2,459 | 2,821 | 3,183 | 3,229 | 3,430 | 3,583 | 4,274 | 4,987 |


Expenditures on Antiepileptics
British Columbia
($ Millions)
Non-Patented
Category 2
Category 3
Non-Categorized Patented

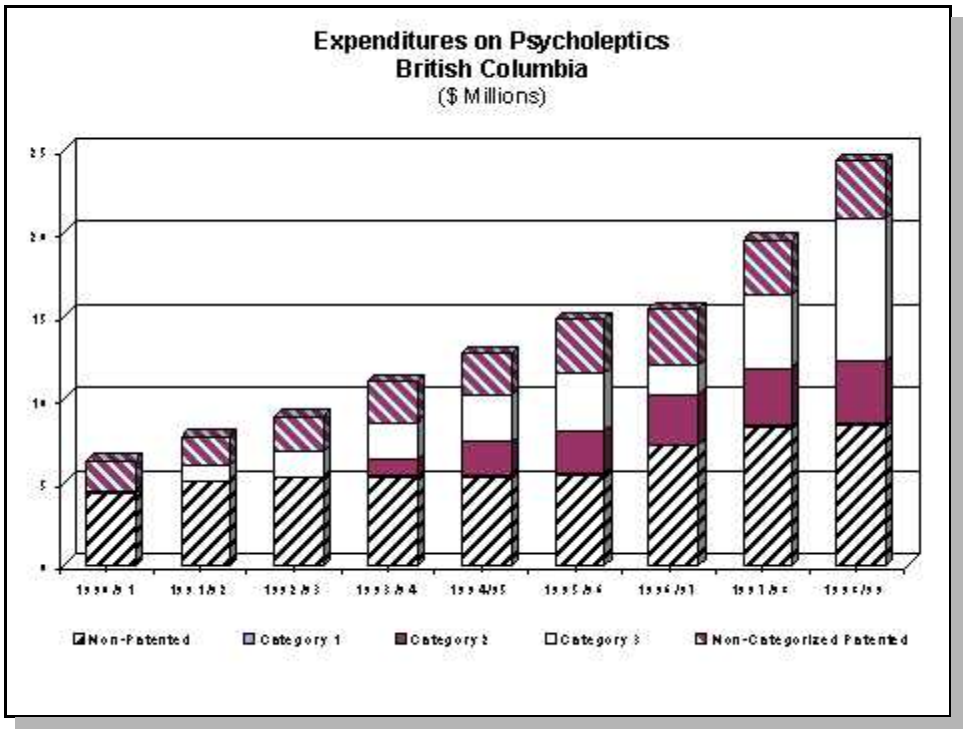
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Anti-Parkinson Drugs**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 397 | 1,619 | 3,217 | 2,936 | 2,282 | 1,879 | 870 | 394 | 215 |
| 1990/1991 | 3 | 1,274 | 1,529 | 1,796 | 1,535 | 222 | 2 | 2 | 0 | 1 |
| 1990/1991 | NC | 2,894 | 1,823 | - | - | - | - | - | - | - |
| 1991/1992 | - | - | 0 | 0 | 0 | - | - | - | - | - |
| 1991/1992 | 1 | - | 414 | 1,083 | 1,615 | 1,928 | 2,146 | 2,350 | 2,583 | 2,920 |
| 1991/1992 | NC | - | 5 | 50 | 96 | 147 | 164 | 66 | 47 | 21 |
| 1992/1993 | - | - | - | 0 | - | 0 | 0 | 0 | - | 0 |
| 1993/1994 | - | - | - | - | 52 | 105 | 96 | 79 | 67 | 51 |
| 1993/1994 | 1 | - | - | - | 34 | 145 | 241 | 342 | 427 | 504 |
| 1994/1995 | - | - | - | - | - | 773 | 1,120 | 969 | 829 | 659 |
| 1995/1996 | - | - | - | - | - | - | 19 | 380 | 482 | 454 |
| 1995/1996 | NC | - | - | - | - | - | 13 | 152 | 225 | 291 |
| 1996/1997 | - | - | - | - | - | - | - | 278 | 480 | 542 |
| 1997/1998 | - | - | - | - | - | - | - | - | 10 | 39 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | - |
| 1998/1999 | 3 | - | - | - | - | - | - | - | - | 209 |
| Total Expenditures | | 4,564 | 5,391 | 6,146 | 6,268 | 5,603 | 5,680 | 5,487 | 5,545 | 5,908 |
| Patented Expenditures | | 4,167 | 3,772 | 2,929 | 3,279 | 2,442 | 2,566 | 2,911 | 3,283 | 3,947 |
| Non-Patented Expenditures | | 397 | 1,619 | 3,217 | 2,989 | 3,160 | 3,114 | 2,577 | 2,262 | 1,961 |


Expenditures on Anti-Parkinson Drugs
British Columbia
($ Millions)
Non-Patented
Category 1
Category 3
Non-Categorized Patented

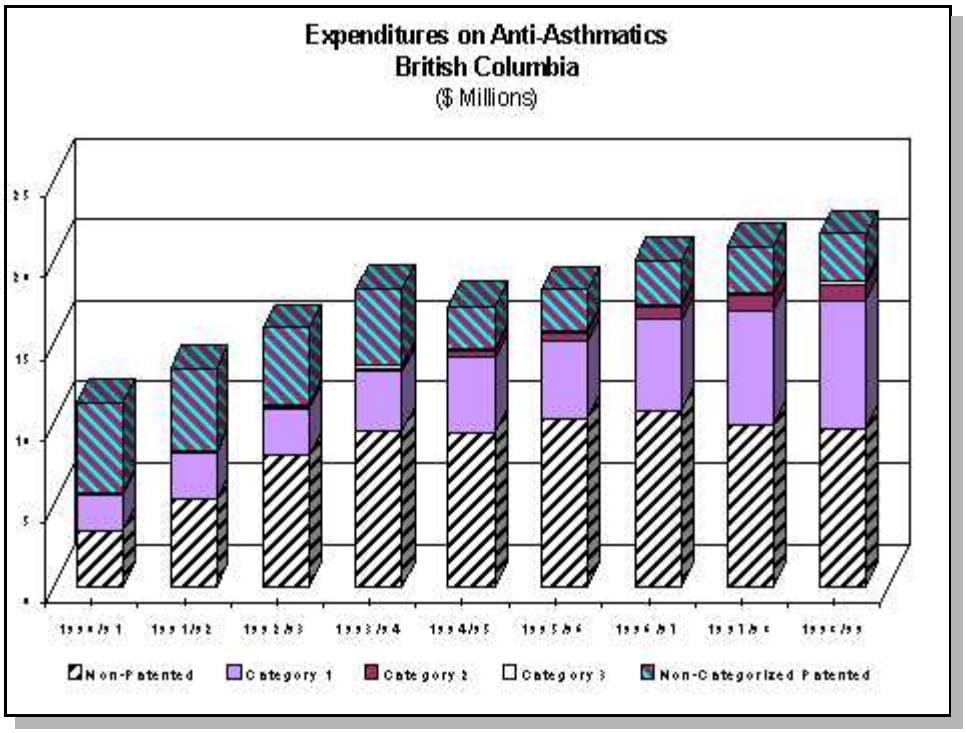
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Psycholeptics**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 4,462 | 5,533 | 7,806 | 9,851 | 10,058 | 10,872 | 8,236 | 6,551 | 5,869 |
| 1990/1991 | 1 | 175 | 123 | 83 | - | - | - | - | - | - |
| 1990/1991 | 3 | 163 | 851 | - | - | - | - | - | - | - |
| 1990/1991 | NC | 1,608 | 1,271 | 1,048 | 54 | 61 | 63 | 59 | 65 | 65 |
| 1991/1992 | - | - | 5 | 30 | 38 | 60 | 65 | 79 | 103 | 123 |
| 1992/1993 | - | - | - | 3 | 46 | 93 | 105 | 101 | 92 | 26 |
| 1992/1993 | 2 | - | - | 0 | 373 | 723 | 986 | 1,245 | 1,464 | 1,628 |
| 1992/1993 | 3 | - | - | 0 | 2 | 1 | 1 | 3 | 8 | 0 |
| 1992/1993 | NC | - | - | 0 | - | - | - | - | - | - |
| 1993/1994 | - | - | - | - | 2 | 150 | 106 | 224 | 238 | 143 |
| 1993/1994 | 2 | - | - | - | 585 | 1,182 | 1,514 | 1,744 | 2,035 | 2,056 |
| 1993/1994 | 3 | - | - | - | 93 | 214 | 435 | 758 | 1,180 | 1,692 |
| 1994/1995 | - | - | - | - | - | 219 | 457 | 471 | 494 | 439 |
| 1995/1996 | - | - | - | - | - | - | 57 | 247 | 298 | 278 |
| 1996/1997 | - | - | - | - | - | - | - | 2,312 | 3,623 | 3,782 |
| 1997/1998 | - | - | - | - | - | - | - | - | 261 | 821 |
| 1997/1998 | 1 | - | - | - | - | - | - | - | 10 | 180 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 3,169 | 6,780 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 408 |
| 1998/1999 | 3 | - | - | - | - | - | - | - | - | 56 |
| Total Expenditures | | 6,308 | 7,783 | 8,971 | 11,044 | 12,760 | 14,760 | 15,478 | 19,590 | 24,347 |
| Patented Expenditures | | 1,846 | 2,245 | 1,132 | 1,107 | 2,180 | 2,998 | 3,810 | 7,930 | 12,457 |
| Non-Patented Expenditures | | 4,462 | 5,538 | 7,839 | 9,937 | 10,580 | 11,761 | 11,668 | 11,660 | 11,890 |


Expenditures on Psycholeptics
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

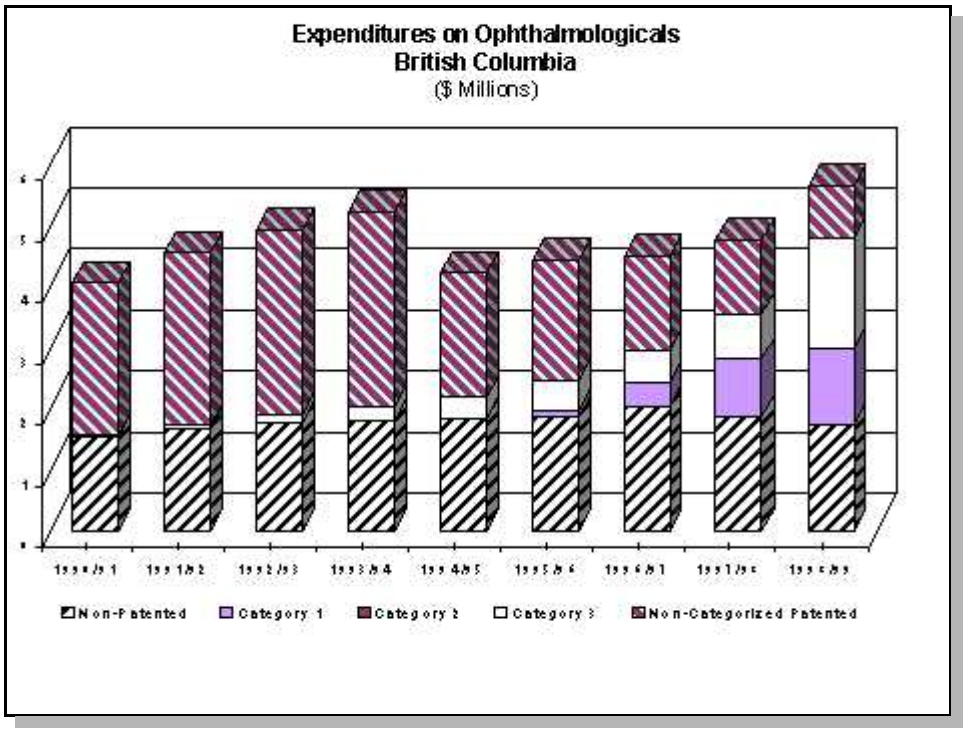
**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Anti-asthmatics**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 4,215 | 8,001 | 8,447 | 7,981 | 4,968 | 4,500 | 4,557 | 4,736 | 4,743 |
| 1990/1991 | 1 | 2,252 | 2,569 | 2,281 | 2,430 | 2,468 | 2,466 | 2,519 | 2,573 | 2,616 |
| 1990/1991 | 3 | 28 | 145 | 156 | 163 | 185 | 170 | 141 | 107 | 82 |
| 1990/1991 | NC | 4,766 | 1,718 | 1,310 | 1,037 | 265 | 226 | 195 | 121 | 99 |
| 1991/1992 | - | - | 930 | 3,284 | 5,030 | 5,826 | 6,747 | 6,497 | 4,722 | 3,995 |
| 1991/1992 | 1 | - | 11 | 246 | 521 | 737 | 911 | 1,083 | 1,160 | 1,182 |
| 1992/1993 | - | - | - | 18 | 717 | 1,718 | 1,778 | 1,861 | 1,725 | 1,444 |
| 1992/1993 | 1 | - | - | 55 | - | - | - | - | - | - |
| 1992/1993 | 2 | - | - | 56 | 238 | 408 | 560 | 804 | 980 | 1,064 |
| 1993/1994 | - | - | - | - | 105 | 316 | 423 | 498 | 385 | 42 |
| 1993/1994 | NC | - | - | - | 49 | 223 | 212 | 178 | 155 | 127 |
| 1994/1995 | - | - | - | - | - | 67 | 226 | 243 | 217 | 168 |
| 1995/1996 | - | - | - | - | - | - | 3 | 110 | 305 | 309 |
| 1995/1996 | 1 | - | - | - | - | - | 2 | 382 | 939 | 1,088 |
| 1995/1996 | 3 | - | - | - | - | - | 0 | 40 | 58 | 18 |
| 1996/1997 | - | - | - | - | - | - | - | 517 | 1,486 | 1,760 |
| 1996/1997 | 1 | - | - | - | - | - | - | 337 | 1,081 | 1,760 |
| 1997/1998 | - | - | - | - | - | - | - | - | 89 | 899 |
| 1997/1998 | 1 | - | - | - | - | - | - | - | 2 | 8 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 8 | 76 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 63 |
| 1998/1999 | 1 | - | - | - | - | - | - | - | - | 128 |
| Total Expenditures | | 11,261 | 13,374 | 15,854 | 18,273 | 17,181 | 18,223 | 19,963 | 20,849 | 21,672 |
| Patented Expenditures | | 7,046 | 4,443 | 4,104 | 4,440 | 4,286 | 4,547 | 5,679 | 7,184 | 8,248 |
| Non-Patented Expenditures | | 4,215 | 8,931 | 11,750 | 13,833 | 12,895 | 13,676 | 14,284 | 13,665 | 13,424 |


Expenditures on Anti-Asthmatics
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

**Impact of Existing and Newer Drug Products by Major Disease Groups**
**Ophthalmologicals**
**British-Columbia: 1990/1991 - 1998/1999**
(thousands of dollars)

| Year of Introduction | CAT | 90/91 | 91/92 | 92/93 | 93/94 | 94/95 | 95/96 | 96/97 | 97/98 | 98/99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1990/1991 | - | 1,960 | 2,243 | 2,448 | 3,892 | 2,901 | 2,579 | 1,626 | 1,600 | 1,304 |
| 1990/1991 | 1 | 0 | 0 | 0 | - | - | - | - | - | - |
| 1990/1991 | 3 | - | - | - | - | - | - | 186 | 214 | 229 |
| 1990/1991 | NC | 2,100 | 2,296 | 2,400 | 960 | 541 | 547 | 521 | 25 | 1 |
| 1991/1992 | - | - | 3 | 18 | 24 | 48 | 48 | 51 | 49 | 41 |
| 1991/1992 | 3 | - | 5 | 39 | 55 | 78 | 184 | 173 | 167 | 211 |
| 1992/1993 | - | - | - | 8 | 179 | 425 | 662 | 841 | 777 | 674 |
| 1992/1993 | 2 | - | - | 0 | 0 | 2 | 2 | - | - | - |
| 1992/1993 | 3 | - | - | 7 | 78 | 144 | 100 | 121 | 158 | 229 |
| 1993/1994 | - | - | - | - | 7 | 20 | 17 | 22 | 26 | 22 |
| 1993/1994 | NC | - | - | - | 30 | 57 | 77 | 101 | 124 | 14 |
| 1994/1995 | - | - | - | - | - | 11 | 104 | 121 | 96 | 68 |
| 1994/1995 | 1 | - | - | - | - | 8 | 89 | 171 | 613 | 854 |
| 1995/1996 | - | - | - | - | - | - | 12 | 326 | 305 | 290 |
| 1995/1996 | 1 | - | - | - | - | - | 20 | 212 | 317 | 380 |
| 1996/1997 | - | - | - | - | - | - | - | 25 | 99 | 110 |
| 1997/1998 | - | - | - | - | - | - | - | - | 15 | 41 |
| 1997/1998 | 3 | - | - | - | - | - | - | - | 171 | 1,153 |
| 1998/1999 | - | - | - | - | - | - | - | - | - | 26 |
| Total Expenditures | | 4,061 | 4,547 | 4,921 | 5,225 | 4,235 | 4,441 | 4,496 | 4,757 | 5,647 |
| Patented Expenditures | | 2,101 | 2,301 | 2,446 | 1,123 | 830 | 1,018 | 1,485 | 1,789 | 3,071 |
| Non-Patented Expenditures | | 1,960 | 2,246 | 2,475 | 4,102 | 3,405 | 3,422 | 3,011 | 2,968 | 2,576 |


Expenditures on Ophthalmologicals
British Columbia
($ Millions)
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

# Appendix 5

**Glossary**

*Beneficiary*
Someone who has made a claim to the British Columbia Pharmacare Program.

*Category 1 Drugs*
PMPRB din categorization - a new DIN of an existing or comparable dosage form of an existing medicines, usually a new strength of an existing drug (line extension).

*Category 2 Drugs*
PMPRB DIN categorization - 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 Drugs*
PMPRB DIN categorization - a new drug or new dosage form of an existing medicine that provides moderate, little or no improvement over existing medicines.

*Exiting Drug Effect*
Exiting Drug Effect shows the amount by which expenditures decrease as a result of de-listing drugs from the formulary, discontinuation of the products by the manufacturer, or lack of claims during follow-up periods.

*Existing Drug Products*
In this Study, Existing Drug Products are defined as drug products that were already listed on the British Columbia benefit list on or before 1990/91.

*New Drug Effect*
New Drug Effect shows the amount by which expenditures increase as a result of listing new drugs on the formulary.

*Newer Drug Products*
In this Study, new drug products are defined as drug products that were listed on the British Columbia Pharmacare benefit list in 1991/92 or during subsequent years.

*Price Effect*
Price effect shows the impact of prices on expenditures by holding volume consumed constant. In other words, it is the amount by which expenditures would change if volume consumed did not change from the previous year.

*Total Pharmaceutical Expenditures*
Total Pharmaceutical Expenditures in this study include expenditures made by the British Columbia Pharmacare Program and any deductibles and co-payments made by its beneficiaries. Expenditures also include wholesale mark ups but do not include dispensing fees.

*Volume Effect*
Volume effect shows the impact of volume consumed on expenditures by holding prices constant. In other words, it is the amount by which expenditures would change if prices did not change from the previous year.