COST DRIVER ANALYSIS OF PROVINCIAL DRUG PLANS

SASKATCHEWAN

1991/92 - 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 Saskatchewan Drug Plan and Extended Benefits (SDP&EB) program over the period 1991/92 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 expenditures on 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.
- Between 1991/92 and 1998/99 total drug expenditures increased by $37.1 million. On average and taking total change in drug expenditures as 100%, between 1991/92 and 1998/99 per unit price changes seen by the province were responsible for -32.2% of the expenditure change, volume change or utilization was responsible for 50.9% entry of new drugs were responsible for 101.2%, and both exiting drugs and other factors were responsible for -0.7% and -19.2% of expenditures changes. These findings demonstrate that the entry of new drugs and utilization increases accounted for a large part of the increase in drug expenditures over the period 1991/92 to 1998/99.
- In 1998/99, drugs that existed in 1991/92 and newer drugs (drugs that were introduced after 1991/92) accounted for 39% and 61%, respectively, of total drug expenditures.
- In 1991/92 the proportion of total expenditures accounted for by patented drugs was 37.2%. By 1998/99, patented drugs accounted for 51.2% of total expenditures.
- 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 58.9% of total patented drug expenditures. The share of line extension (category 1) and break through or substantial improvement (category 2) drugs were 26.1% and 8.2%, respectively.
- In 1998/99 drugs in eight Anatomical Therapeutic Chemical (ATC) groups (Cardiovascular Systems, Nervous System, Alimentary Tract and Metabolism, Respiratory System, General

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

Anti-infectives, Antineoplastic and Immunostimulating Agents, Genito Urinary Systems and Sex Hormones and Musculo-Skeletal System) accounted for $116.1 million or 91.3% of total expenditures.

- Over the period 1991/92 to 1998/99, drugs in the Cardiovascular System contributed to the largest share of the increase in drug expenditures, 34%, followed by Nervous System group, 33%.
- 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 Agents Acting on the Renin-Angiotensin System (Cadiovascular System) had the highest contribution, 20%, to percentage increases in expenditures over the period 1991/92 to 1998/99; Psychoanaleptics (Central Nervous System) and Serum Lipid Reducing Agents (Cadiovascular System) were the second and third highest accounting for 17% and 11% respectively of expenditure increase over the eight year period.

COST DRIVER ANALYSIS OF PROVINCIAL DRUG PLANS

SASKATCHEWAN 1991/92-1998/99

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 is an update report on cost drivers of total pharmaceutical spending in Saskatchewan Drug Plan and Extended Benefits (SDP&EB) program over the period 1991/92 to 1998/99[3]. Information on prices, quantities, total expenditures and market shares were obtained from the SDP&EB 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 Saskatchewan over the period 1991/92 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 partially 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 dis-aggregation 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, strength, 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 Saskatchewan Drug Expenditures

4.1 General Information

The Saskatchewan Prescription Drug Plan was implemented on September 1, 1975. The Plan is administered by the Drug Plan and Extended Benefits Branch of Saskatchewan Health under the authority of the Prescription Drug Act and Regulations. The Drug Plan provides coverage for drugs listed in the Saskatchewan Formulary or approved under the "Exception Drug Status" for specific beneficiaries. For detailed information on the plan, please consult Appendix 2.

4.2 Major Changes Since Implementation

- In 1987, coverage changed from a first dollar cost-sharing with fixed co-payment for each prescription to a family based deductible program.[11]
- In 1989, on-line submissions with payments directly to pharmacy was introduced.
- In 1991, family co-payments increased from 20% to 25%. Co-payments are calculated on claims once the deductible is met.
- In 1991, coverage for drugs in interchangeable groups was changed to allow every approved drug the actual acquisition cost up to the lowest priced product of the group listed in the Saskatchewan Formulary.
- In 1992, family co-payment increased from 25% to 35%. Deductibles changed from annual to semi-annual and regular deductibles increased from $125 annual to $190 semi-annual. Catastrophic Cap was introduced allowing co-payments to be reduced to 10% once a family has paid $375 in a semi-annual deductible period.
- In 1993, income-tested Special Support Program was introduced and deductibles were changed to reflect family economic status (income testing) rather than age of recipient;[12] Catastrophic Cap was also discontinued.
- 1999 maximum wholesale mark-up of $30 and $20 maximum cap on pharmacy mark-up introduced.

[11] As of July 1, 1987, annual deductibles were: $125 (regular family), $75 (senior family), and $50 (single senior). Once the deductibles were met, the co-payment was 20%.

[12] See Appendix 2 for current deductible and co-payment levels.

4.3 Total Retail Private and Public Expenditures[13]

Since the early 1980s, drug expenditures in Saskatchewan, as in the rest of Canada[14], have been the fastest growing component of total health care spending. In 1997/98 total drug expenditures in Saskatchewan grew by 10.9% and by 7.1% 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 $329.3 million which was divided into public spending at $138 million and private spending at $191.3 million.[15] The provincial drug plan portion was $68.5 million or 49.6% of total public expenditures in 1998. Other public expenditure comprises the remaining 50.4% or $69.5 million, which represents drug expenditures in hospitals and federal programs. Total retail spending (public and private spending including OTC drugs) was $435.4 million in 1998. Spending on prescription drugs was 75.6% of total retail spending.

Over the years, the share of total public spending as a part of total spending has fallen. In 1995, total public spending accounted for 34.7% of total spending. In 1998, total public spending accounted for 31.7% of total spending.

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

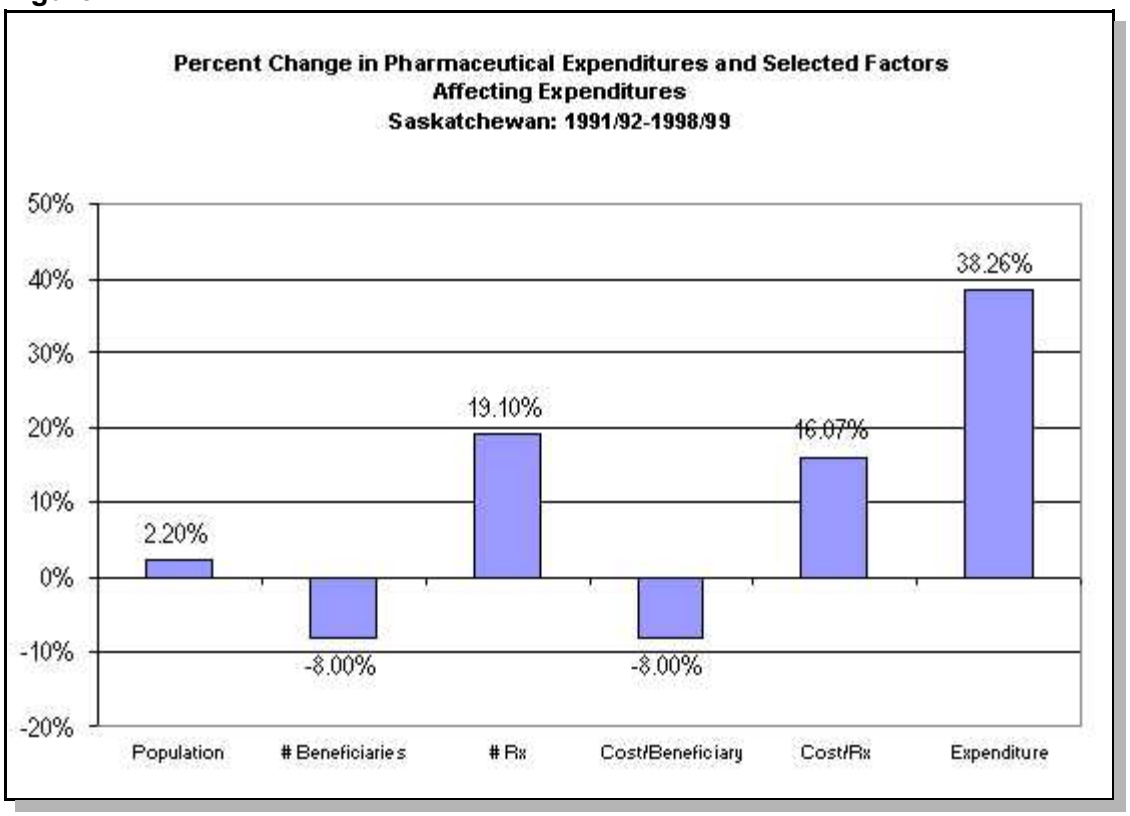
[14] Between 1993-1999 drug expenditures in Canada represented approximately 15% of total health expenditures. (CIHI, National Health Expenditure Trends 1975-1999)

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

4.4 Factors Affecting Pharmaceutical Expenditures

Figure 2[16] summarizes some of the important factors described above in Figure 1 that may have contributed to growth in total pharmaceutical expenditures over the period 1991/92 to 1998/99. The figure shows that Saskatchewan's population increased by 2.20% over this period, while the number of beneficiaries[17] declined by 8.00%. Despite the reduction in the number of beneficiaries, the number of overall prescriptions increased by 19.10% and the average cost per prescription rose by 16.07%, leading to a total growth in pharmaceutical expenditure of 38.26% between 1991/92 and 1998/99.

Figure 2



[16] In Figure 2, growth in cost/prescription and growth in expenditures were calculated using total prescription cost which includes the patients' portion of the cost. Thus expenditures presented do not represent the net cost of the prescription to the drug plan.

[17] Someone who has made a claim to the Saskatchewan Prescription Drug Plan during the year of analysis.

It is important to note that many factors may influence the cost of a prescription. These include: manufacturers' unit price; wholesale and retail mark-ups; changes in the size of prescriptions; 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, the inclusion of new indications and new drugs for diseases in which drug therapy was not previously available .

Section 5 below provides a more complete evaluation of the relative magnitude different factors have on changes in annual drug expenditures.

5.0 Analysis

5.1 Drug Expenditures in Saskatchewan Drug Plan and Extended Benefits (SDP&EB) program: 1991/92 to 1998/99

During the period 1991/92 to 1998/99, total recognized cost of drug products considered in this analysis increased from $90.1 million to $127.2 million. In 1993/94 total SDP&EB expenditures decreased by 7%, this is the only year over the period under review which had a decrease in recognized cost ($90.8 million). This decrease coincides with the 1993 change in deductibles where family economic status rather than age of recipient determined the amount. These amounts differ from the total SDP & EB 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;
- the expenditure figures do not include dispensing fees and non-drug expenditures such as diagnostic test strips.
- the expenditure figures include patients portion of the accepted ingredient cost[18];

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 (year of introduction and second year), Exiting drugs and Others[19]. Table 1 summarizes the relative contribution each of the above components have on the total annual change in expenditures on an annual basis and on average between 1991/92 and 1998/99.

From Figure 3, it can be seen that on average, between 1991/92 and 1998/99, annual per unit price changes seen by the province were responsible for -32.2% [20] of the expenditure change, volume change or utilization was responsible for 50.9%, entry of new drugs was responsible for 101.2%, and both exiting drugs and other factors were responsible for -0.7% and -19.2% of expenditures changes, respectively. The findings demonstrate that utilization and the entry of

[18] Expenditures were based on total approved acquisition cost as this was the only available field which excluded pharmacy mark-up and dispensing fees. It is important to note that the actual cost to the drug plan was generally declining in 1993/94. In 1994/95 drug plan costs increased steadily however, drug plan costs were still lower in 1998/99 than 1990/91 and 1991/92. This would suggest that patients paid a larger portion of the total prescription cost as a result of eligibility changes over the 1990's.

[19] Others represent the cross effect of price and volume.

[20] It is important to note that this does not mean that prices declined by 32.2% over the time frame, a marginal decline in a popular drug may drive large negative price effects, as well, the introduction of generic substitution and standing offer contracts played an important role in reducing the cost of multiple source markets over the period of analysis.

new drugs accounted for the largest increase in expenditures over the period. Table 1 also indicates that the impact of new drugs was significant in both the year of their introduction (31.3%) and the following year (69.9%).

Table 1

Average Contribution to Pharmaceutical Expenditures by Major Components Saskatchewan 1991/92 - 1998/99

Year	Price Effect (%)	Quantity Effect (%)	New Drug Effect Year of Introduction (%)	New Drug Effect Second Year (%)	Exiting Drug Effect (%)	Cross Effect (%)[21]
1992/93	28.38	69.47	5.39		-0.98	-2.26
1993/94	16.40	-154.29	20.28	26.81	-0.06	-9.16
1994/95	-35.25	2.18	61.63	77.78	-1.35	-5.01
1995/96	-17.54	27.46	10.16	88.61	-0.12	-8.57
1996/97	-97.11	118.12	44.91	104.64	-0.18	-70.39
1997/98	-86.11	112.70	40.08	41.92	-0.96	-7.63
1998/99	-20.07	78.40	11.07	49.11	-0.15	-18.37
Average	**-32.19%**	**50.86%**	**31.29%**	**69.92%**	**-0.66%**	**-19.21%**

The average cross effect was both large and negative (-19.2%), suggesting that price changes and quantity changes moved in opposite direction and were of relatively significant magnitude. Generic entry into markets where patents expire is an example of the kind of market situation which would result in a significant cross effect in this model.

It is noteworthy that 1993/94 is the only year where the volume effect is negative, and the last year in which the price effect is positive. It is also the only year where there was a decrease in expenditure from the preceding year. The large negative volume effect can be attributed to changes in utilization of drugs such as lovastatin tab 20mg, salbutamol nebule PF sol 1mg/ml, diclofenac SR tab 100mg and famotidine tab 40mg. The top ten drugs contributing to the large volume effect in 1993/94 accounted for approximately 40% of the entire volume effect that year; the reduction in the absolute number of prescriptions for these drugs was 19%.

Changes in eligibility and reimbursement policies may be responsible for driving these results. It is also interesting to note the annual differences in each of the contributing factors, the negative price effect is significantly larger between 1996/97 and 1997/98; the size of the volume effect is also considerably higher during those years. In 1996/97 the large negative price effect is lead by such drugs as fluoxetine cap 20mg, the claimed and accepted price of the chemical decreased by

[21] 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..

50% and accounted for approximately $1 million reduction in expenditures on that product. The price of nifedipine pa tab 20mg and ranitidine tab 150mg decreased in price by 40% and 13% and together accounted for another $1.0 million expenditure reduction. The 45% reduction in the price of nitroglycerine patches .2mg and .4mg also played a large role in the significant negative price effect recorded in 1996/97. The large increase in the volume effect in 1996/97 can be largely attributed to increases in utilization of pravastatin tab 20mg, amlodipine tab 5mg, ranitidine tab 150mg, simvastatin tab 20mg and paroxetine tab 20mg. The absolute increase in the number of prescriptions is 21% for the top 10 drugs driving the large volume effect. Omeprazole tab 20mg is by far the most significant new drug and accounts for approximately 30% of the entire second year new drug effect in 1996/97. The number of prescriptions for omeprazole increased by 40% between 1996/97 and 1997/98 and by 22% the following year.

In 1997/98 the reduction in the cost of the new generic diltiazem CR and the new SOC verapamil SR contributed significantly to the large negative price effect. After omeprazole tab 20mg (40%)[22], losartan potassium tab 50mg (441%), isotretinoin cap 40mg (91%), paroxetine tab 20mg(33%), amlodipine tab 5mg (35%) and risperidone tab 1mg (285%) are the top drugs contributing to the large volume effect.

The findings presented above suggest that increases in utilization and new drugs play a significant role in expenditure changes, while the savings from generic competition contribute significant savings to the system and are registered in the model as negative price effects. Future analysis of changes in prescribing patterns; 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.

[22] The percentages reported in parentheses represent the annual increase in the number of prescriptions between 1996/97 and 1998/97.

Figure 3

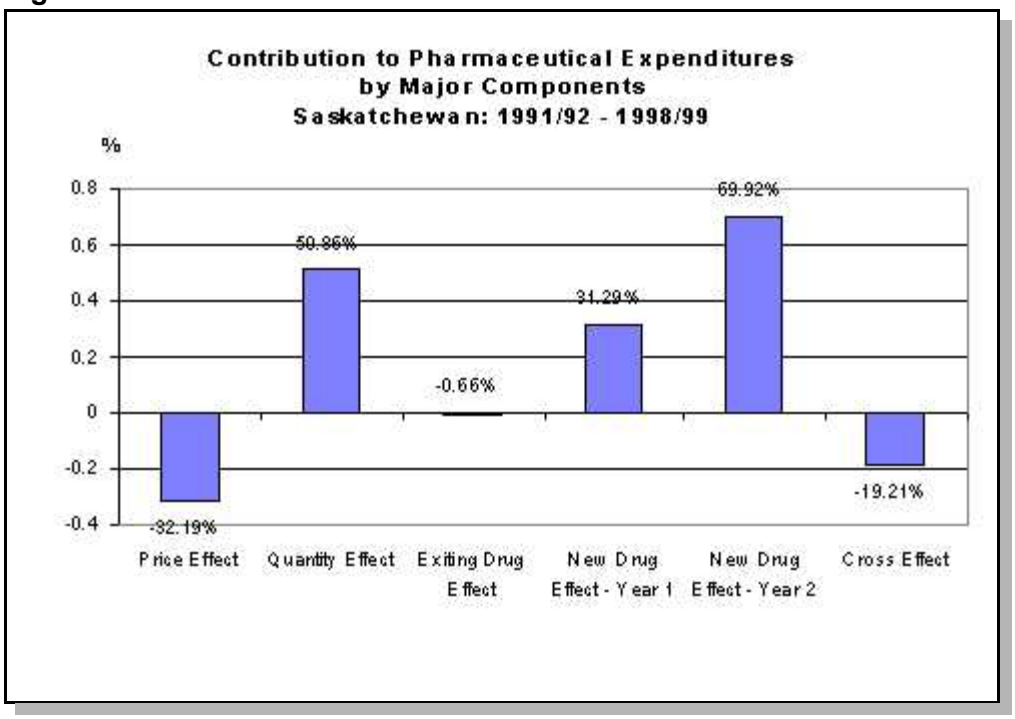


Table 2 breaks out annual total expenditures into "existing" drugs and "newer" drugs. Existing drugs are those drugs that were on the market in 1991/92, i.e., drugs that were introduced in 1991/92 or before. Newer drugs are those drugs that were introduced in 1991/92 or during subsequent years, including new strengths or forms of chemical entities previously covered. Table 2 shows that, generally, recognized expenditures on "all drugs" were increasing over the entire period, with the exception of 1993/94. At the same time, recognized expenditures on "existing drugs" were falling significantly from 1992/93 to 1998/99. Thus, as expenditures on "existing products" declined, expenditures on "newer" drugs continued to climb.

Table 2

Pharmaceutical Expenditures
Saskatchewan 1991/92 - 1998/99
(dollars)

Year	All Drugs 1991/92 - 1998/99			Existing Drugs 1991/92 - 1998/99		
	Total Expenditure	Difference in Expenditure	% Growth Rate	Total Expenditure	Difference in Expenditure	% Growth Rate
1991/92	90,066,089			90,066,089		
1992/93	97,300,628	7,234,538	8.03%	96,361,897	6,295,808	6.99%
1993/94	90,797,727	(6,502,901)	-6.68%	82,097,222	-14,264,675	-14.80%

Year	All Drugs 1991/92 - 1998/99			Existing Drugs 1991/92 - 1998/99		
	Total Expenditure	Difference in Expenditure	% Growth Rate	Total Expenditure	Difference in Expenditure	% Growth Rate
1994/95	96,231,260	5,433,533	5.98%	72,310,486	-9,786,736	-11.92%
1995/96	104,224,933	7,993,673	8.31%	66,374,907	-5,935,578	-8.21%
1996/97	107,564,220	3,339,288	3.20%	57,257,868	-9,117,039	-13.74%
1997/98	114,218,598	6,654,377	6.19%	52,300,106	-4,957,762	-8.66%
1998/99	127,177,568	12,958,970	11.35%	49,149,582	-3,150,524	-6.02%

Figure 4 shows the contribution of each component as a percentage of average growth. Pharmaceutical expenditures were increasing on average at an annual rate of 5.1% during the period 1991/92 to 1998/99. Figure 4 shows that both utilization and new drugs were largely responsible for expenditure growth.

Figure 4

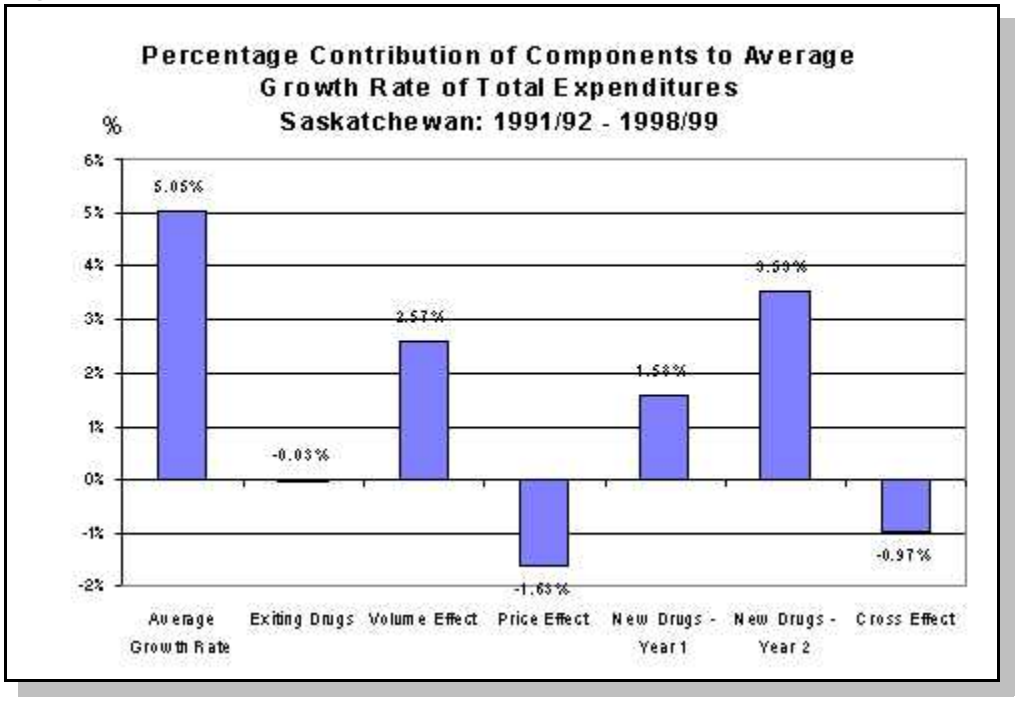
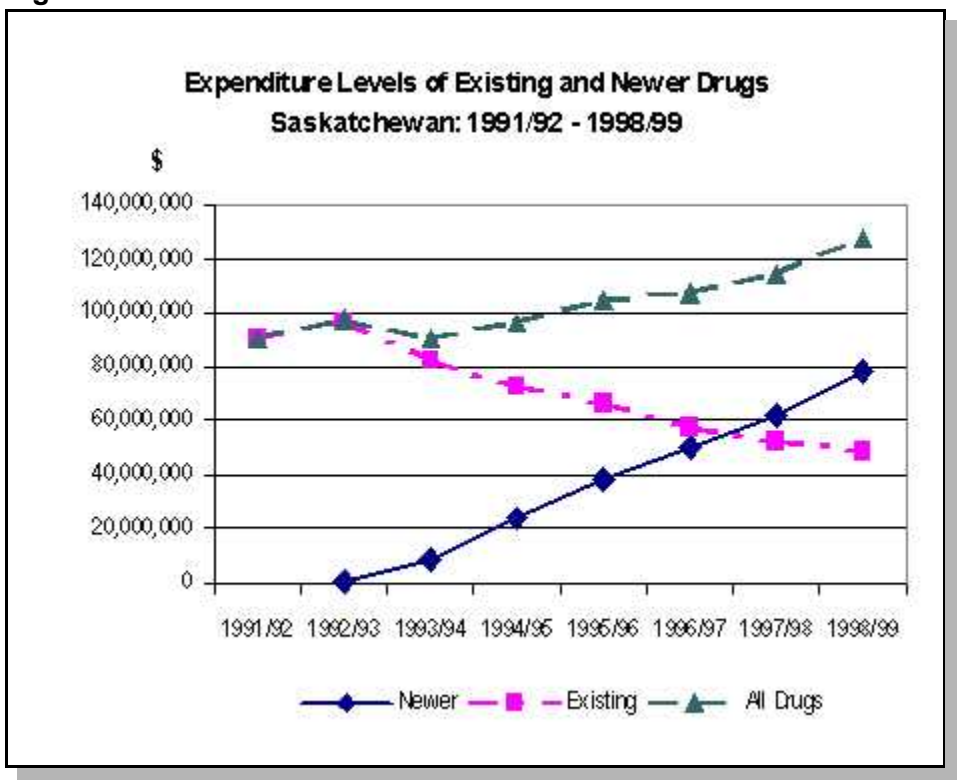


Figure 5 corresponds to Table 2; it shows the trends of expenditures on all, new and existing drug products. Expenditures on existing drug products fell by 45% between 1991/92 and total expenditures rose by approximately 40% over the entire period of analysis.

Other than replacement of newer drug products for older drug products, the decrease in the price of existing drug products can account for some of the decrease in expenditure levels. Prices of

older products were falling; the average recognized cost of a prescription for an existing product fell from $16.95 in 1991/92 to $13.39 in 1998/99 and the average period unit cost dropped $0.31 to $0.26 respectively. The reverse is true for newer drugs, in 1992/93, the average actual acquisition cost of a newer prescription was $25.38 with a corresponding per unit price of $0.35; by 1998/99, the average actual acquisition cost of a newer prescription was $29.18 with a corresponding per unit price of $0.64.[23]

Figure 5

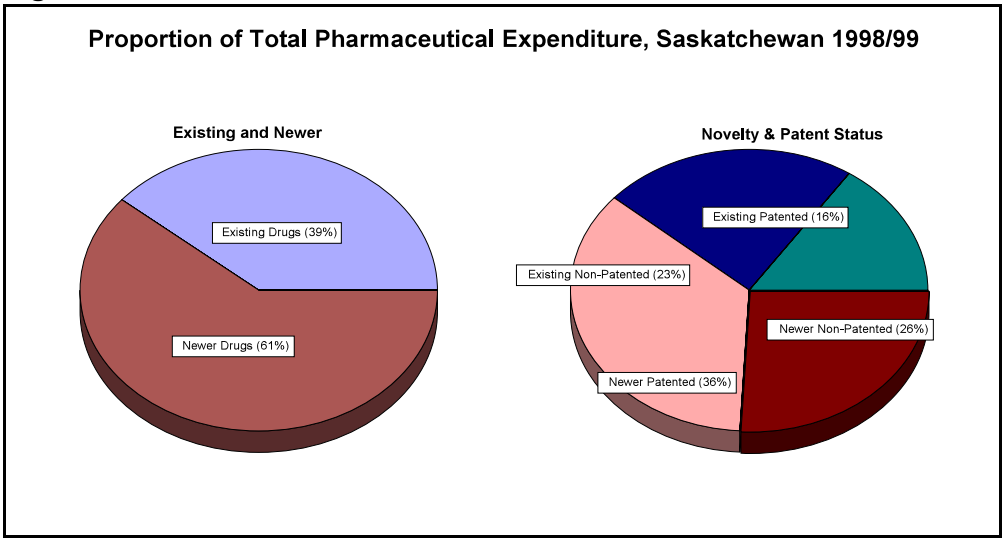


[23] These numbers are not deflated by an inflation factor.

Figure 6 breaks out total pharmaceutical expenditures into patented and non-patented expenditures on newer and existing drugs. By 1998/99, newer drugs represented approximately 40% of total volume and over 60% of total cost.

In 1991/92, the proportion of patented and non-patented expenditures in total drug costs were 37% and 63%, respectively. In 1998/99 the share of expenditures absorbed by patented drugs had increased to 52%. 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[24].

Figure 6



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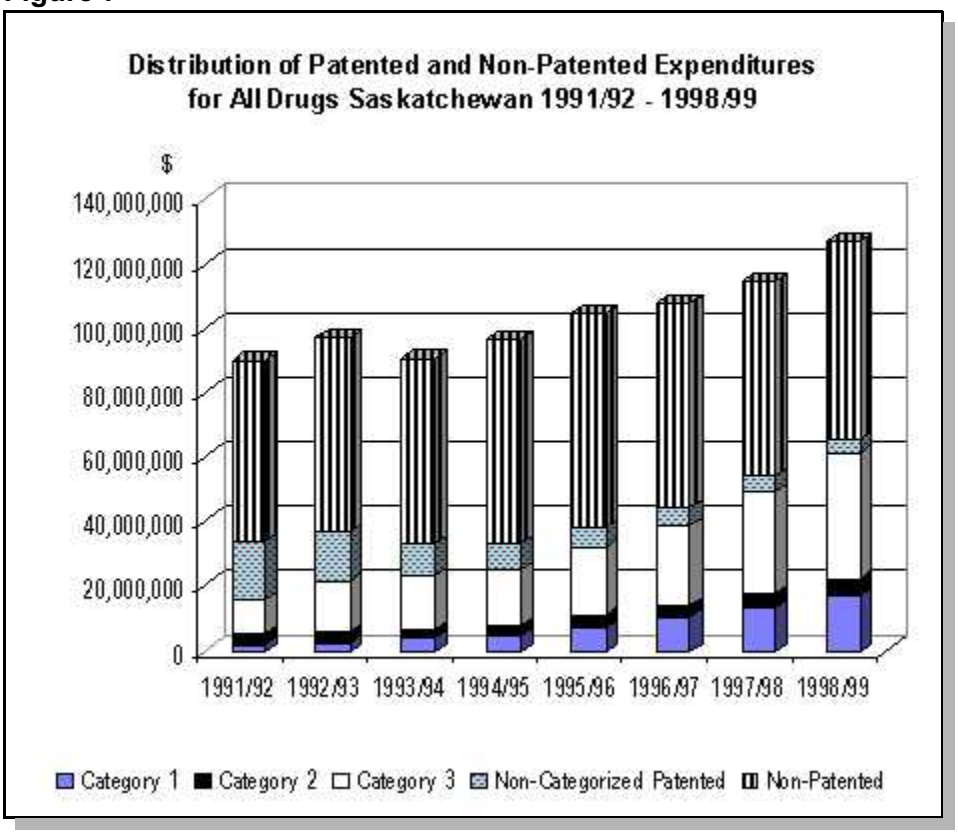
[24] This is also consistent with overall growth in the share of patented drugs as reported by the PMPRB (1998). See S-9811, Trends in Patented Drug Prices.

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 between 1991/92 and 1998/99. 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.[25]

Figure 7



[25] 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.

Figure 7 shows that in 1991/92 of the $33.5 million of expenditures accounted for by patented drugs, category 1 drugs made up 5.4% ($1.8 million), category 2 drug products accounted for 9.3% ($3.1 million), category 3 drug products accounted for 31.9% ($10.7 million), and older non categorized drug products accounted for 53.1% ($17.8 million). In 1998/99 of the $65.5 million of expenditures accounted for by patented drug products, category 1 drugs made up 26.1% ($17.1 million), category 2 drugs accounted for 8.2% ($5.4 million), category 3 drugs accounted for 58.9% ($38.6 million), and older non-categorized patented products accounted for 6.7% ($4.4 million) of total patented expenditures.

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.

5.4 Growth of Expenditures on Newer Drug Products

The information in Table 3 demonstrates how fast the market responds to new drugs. For example, expenditures on drugs introduced in 1992/93 were $0.94 million in that year, but had risen to $4.17 million in 1993/94. A similar increase in expenditures following the year of introduction can be observed for drugs that appeared in 1993/94. It should be noted that, depending on the month coverage is provided by the drug plan, expenditures during the year of introduction may represent expenditures of a "partial" year. For example, if a drug was introduced on July of any year, the data on expenditures would represent expenditures for six months only.

Table 3

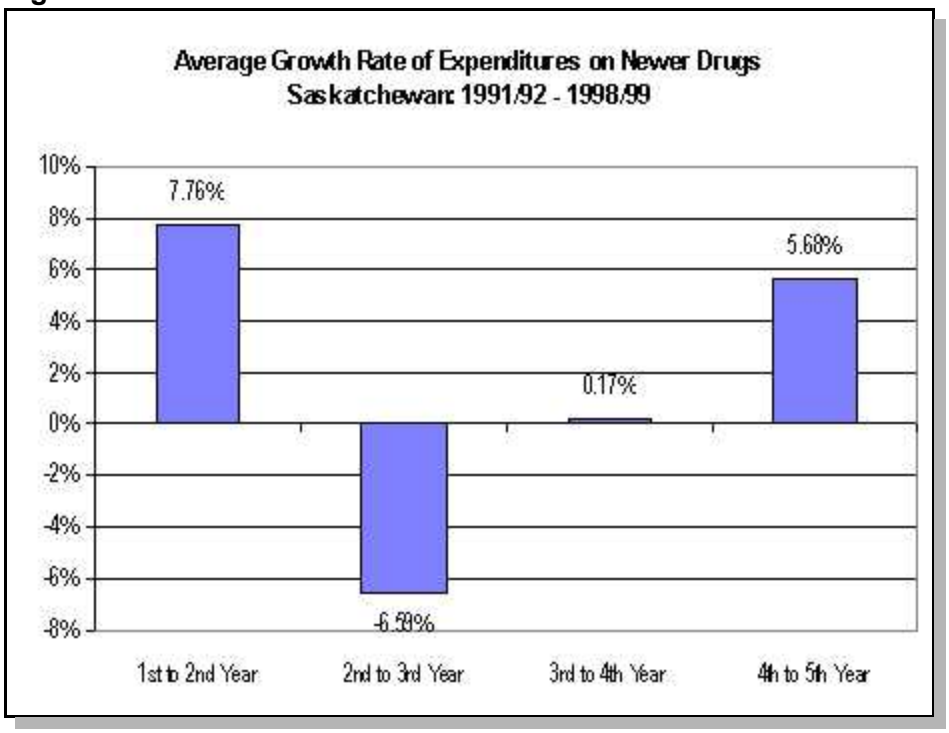
Expenditure on Newer Drug Products
Saskatchewan 1991/92 - 1998/99
(dollars)

Year of Introduction	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1992/93	938,731	4,174,617	4,643,677	5,240,637	5,431,120	5,978,349	6,250,712
1993/94		4,525,888	14,019,803	15,261,567	13,494,861	13,744,701	14,286,379
1994/95			5,257,295	15,131,221	16,607,589	13,395,329	13,008,419
1995/96				2,216,600	10,009,495	10,911,295	12,169,138
1996/97					4,763,288	12,490,466	12,732,327
1997/98						5,398,352	15,863,473
1998/99							3,717,538
Total	**938,731**	**8,700,505**	**23,920,774**	**37,850,025**	**50,306,352**	**61,918,492**	**78,027,986**

The rate with which new drugs are able to attain market share may be influenced by many factors; the maturity of the therapeutic market; the type of coverage provided (ie. "full" or "partial"); and the delay between notice of compliance (NOC) and formulary listing decision.

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 on the formulary.

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 in Saskatchewan between their first and second full year on the market was 7.76%, this is significantly lower than what was recorded in other jurisdiction. For example, in British Columbia, the average growth rate was 43%; in Alberta it was 12%; in Ontario it was 28%.

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 Anatomical Therapeutic Chemical (ATC) classifications. The second level of the ATC (ATC-2) 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 4 shows the percentage contribution of the top sixteen therapeutic classes in total expenditures and their contribution to the changes in expenditures between 1991/92 and 1998/99.

Table 4

Percentage Contribution of Selected Therapeutic Classes to Total Expenditure
Saskatchewan: 1991/92 - 1998/99

Therapeutic Class	Code	Contribution in 1991/92		Contribution in 1998/99		% of Total Expenditure Change	Average Rate of Expenditure Growth
		Expenditure ($)	% of Total Expenditure	Expenditure ($)	% of Total Expenditure		
Alimentary tract and metabolism	**A**	**11,068,874**	**12%**	**15,146,492**	**12%**	**11%**	4.58%
Antacids	A02	5,707,974	**6%**	6,890,301	**5%**	**3%**	2.73%
Drugs used for diabetes	A10	2,437,558	**3%**	3,969,104	**3%**	**4%**	7.21%
Others	Other	2,923,342	**3%**	4,287,086	**3%**	**4%**	5.62%
Cardiovascular System	**C**	**28,415,001**	**32%**	**41,153,234**	**32%**	**34%**	5.43%
Cardiac therapy	C01	1,890,232	**2%**	2,768,493	**2%**	**2%**	5.60%
Beta blocking agents	C07	3,666,310	**4%**	3,387,789	**3%**	**-1%**	-1.12%
Calcium channel blockers	C08	8,721,487	**10%**	9,752,615	**8%**	**3%**	1.61%
Agents Acting on the Renin-Angiotensin System	C09	6,449,206	**7%**	14,014,873	**11%**	**20%**	11.73%
Serum lipid reducing agents	C10	5,258,306	**6%**	9,363,789	**7%**	**11%**	8.59%
Others	Other	2,429,459	**3%**	1,865,675	**1%**	**-2%**	-3.70%
Genito urinary system and sex hormones	**G**	**7,457,356**	**8%**	**7,823,903**	**6%**	**1%**	0.69%
Sex hormones and modulators for the genital system	G03	6,460,001	**7%**	6,275,694	**5%**	**0%**	-0.41%
Others	Other	997,355	**1%**	1,548,209	**1%**	**1%**	6.48%
General anti-infectives for systemic use	**J**	**7,091,789**	**8%**	**5,798,278**	**5%**	**-3%**	-2.84%
Anti-bacterials for systemic use	J01	6,760,778	**8%**	4,062,434	**3%**	**-7%**	-7.02%
Others	Other	331,011	**0%**	1,735,843	**1%**	**4%**	26.71%
Anti-neoplastic and immunomodulating agents[26]	**L**	**1,619,241**	**2%**	**6,167,073**	**5%**	**12%**	21.05%
Immunosuppressive agents	L04	1,063,222	**1%**	2,694,636	**2%**	**4%**	14.21%
Others	Other	556,019	**1%**	3,472,437	**3%**	**8%**	29.91%
Musculo-skeletal system	**M**	**8,699,626**	**10%**	**6,702,995**	**5%**	**-5%**	-3.66%

[26] Drugs used in the treatment of cancer are not included in the drug plan and are covered under the Saskatchewan Cancer Agency. Expenditures presented for these drugs are only for non-cancer indications.

Therapeutic Class	Code	Contribution in 1991/92		Contribution in 1998/99		% of Total Expenditure Change	Average Rate of Expenditure Growth
		Expenditure ($)	% of Total Expenditure	Expenditure ($)	% of Total Expenditure		
Anti-inflammatory and anti-rheumatic products	M01	8,373,103	**9%**	4,816,624	**4%**	**-10%**	-7.60%
Others	Other	326,523	**0%**	1,886,371	**1%**	**4%**	28.47%
Nervous system	**N**	**10,515,513**	**12%**	**22,847,431**	**18%**	**33%**	11.72%
Analgesics	N02	1,324,004	**1%**	2,697,087	**2%**	**4%**	10.70%
Anti-epileptics	N03	1,283,943	**1%**	2,982,871	**2%**	**5%**	12.80%
Psycholeptics	N05	1,967,032	**2%**	4,702,844	**4%**	**7%**	13.26%
Psychoanaleptics	N06	3,792,641	**4%**	10,244,510	**8%**	**17%**	15.25%
Others	Other	2,147,892	**2%**	2,220,119	**2%**	**0%**	0.47%
Respiratory system	**R**	**7,453,578**	**8%**	**10,477,443**	**8%**	**8%**	4.99%
Anti-asthmatics	R03	6,970,270	**8%**	8,171,386	**6%**	**3%**	2.30%
Others	Other	483,307	**1%**	2,306,058	**2%**	**5%**	25.01%
Subtotal (16 ATC-2)		**72,126,068**	**80%**	**96,795,050**	**76%**	**67%**	**4.29%**
Subtotal (8 ATC-1)		**82,320,977**	**91%**	**116,116,848**	**91%**	**91%**	**5.04%**
Total Expenditure		**90,066,089**	**100%**	**127,177,568**	**100%**	**100%**	**5.05%**

The top sixteen therapeutic classes, which were approximately 20% of the total number of therapeutic classes (at second level), accounted for 76.1% of total pharmaceutical expenditures in 1998/99.

The top 16 ATC-2 classes belong to eight different general ATC groupings (ATC-1). The percentage contribution of the top sixteen second-level therapeutic classes to total expenditures, as well as the contribution of each of the eight first-level ATC groups to which these sixteen therapeutic classes belong is also presented above. These eight ATC groups are: Alimentary Tract and Metabolism, Cardiovascular Systems, Genito Urinary System and Sex Hormones, Central Nervous System, Respiratory System, General Anti-Infectives, Antineoplastic and Immunomodulating Agents and Musculo-skeletal System. Expenditures on these eight ATC groups were $116.1 million or 91.3% of total expenditures in 1998/99.

Table 4 also presents the contribution of each of the eight ATC groups and top sixteen therapeutic classes to the total increase in expenditures between 1991/92 and 1998/99. Among the eight first-level ATC groups, drugs related to the Cardiovascular System made by far the largest contribution to the increase in expenditures. Expenditures in this group increased from $28.1 million in 1991/92 to $41.1 million in 1998/99 (34%). The second largest contributor was Central Nervous System (33%) followed by Anti-Neoplastic and Immunomodulating Agents (12%) and Alimentary Tract and Metabolism (11%).

Among the second-level therapeutic classes, the major cost drivers were: Agents Acting on the Renin-Angiotensin System and Serum Lipid Reducing Agents in the Cardiovascular System and Psychoanaleptics in Central Nervous System. These three categories of drugs are major cost

drivers in all jurisdictions studied to date (ie. British Columbia, Alberta, Manitoba, Ontario and Nova Scotia).

The therapeutic categories that were responsible for decreasing drug expenditures were Beta Blocking Agents(-1%), Anti-Bacterials for Systemic Use(-7%) and Anti-inflammatory and Anti-rheumatic drugs(-10%).

The average annual growth rate of total expenditures between 1991/92 and 1998/99 was 5.05%. The average growth rate Cardiovascular drugs was marginally higher than the average, 5.43%, and the average growth rate of Anti-neoplastics and Immunomodulating Agents and the Nervous System were significantly higher than the average, 21.05% and 11.72% respectively.

Immunosuppressants in Antineoplastic and Immunomodulating Agents and Psychoanaleptics in the Central Nervous System, growing at 14.2% and 15.3%, respectively, by far had the highest growth rates among all other therapeutic classes over the period 1991/92 to 1998/99. They were followed by Psycholeptics in Central Nervous System, with a growth rate of 13.3% over the period under review. See Appendix 4 for examples of drugs belonging to each therapeutic class.

Table 5 below, reports on the average contribution to expenditure change by major component for the top 16 second-level therapeutic classes. Significant differences among the classes are evident, nonetheless, overall, price changes at the chemical (bio-equivalent) level do not contribute to increases in expenditures, where as introduction and increased utilization of newer, often more expensive, drugs increased expenditures. The average trends reported in Table 1 are consistent with the average reported for the top 16 classes.

Table 5 indicates that price adjustments tended to reduce expenditures for each of the top 16 therapeutic classes. Although volume effects were mostly positive there were notable exceptions, expenditure changes in Calcium Channel Blockers were mainly driven by introduction of newer drugs. The volume effect recorded for Sex Hormones and Modulators of the Genital System and Anti-inflammatory and Anti-rheumatic drugs was significantly negative[27]. The impact of new drugs was pronounced in Antacids, Beta Blocking Agents, Sex Hormones and Modulators of the Genital System and Anti-asthmatics.

The average price effect for the top 16 level two ATC's has the same sign as the overall average, but is of a higher magnitude. The new drug effect second year after introduction on the formulary is also higher than the average for the top ATC's.

[27] This result may be driven by therapeutic substitution within the category.

Table 5

Average Contribution to Pharmaceutical Expenditures by Major Components for Top 16 Therapeutic Classes Saskatchewan 1991/92 - 1998/99							
Therapeutic Class	Code	**Price Effect (%)**	**Quantity Effect (%)**	**New Drug Effect Year of Introduction (%)**	**New Drug Effect Second Year (%)**	**Exiting Drug Effect (%)**	**Cross Effect (%)**
Antacids and drugs used to treat peptic ulcer	A02	-148%	103%	17%	131%	-0.17%	-2.99%
Drugs used for Diabetes	A10	-1%	120%	25%	16%	0%	-6%
Cardiac therapy	C01	-101%	206%	4%	13%	-0.30%	-21.37%
Beta blocking agents	C07	-223%	33%	61%	272%	-0.02%	-242.70%
Calcium channel blockers	C08	-227%	-281%	204%	389%	-0.01%	15.30%
Agents acting on the renin-angiotensin system	C09	-4%	69%	15%	21%	0.00%	-0.45%
Serum lipid reducing agents	C10	-13%	15%	34%	68%	0.00%	-4.59%
Sex hormones and modulators of the genital system[28]	G03	-23%	-719%	321%	398%	-33.73%	-43.81%
Anti-bacterials for systemic use	J01	2%	-96%	5%	4%	-2.70%	-13.71%
Immunosuppressive agents	L04	-8%	41%	6%	59%	0.00%	1.80%
Anti-inflammatory and anti-rheumatic products	M01	-27%	-143%	16%	51%	0.00%	2.70%
Analgesics	N02	-6%	79%	13%	17%	-0.07%	-2.87%
Anti-epileptics	N03	-9%	80%	9%	20%	0.00%	-0.04%
Psycholeptics	N05	-12%	70%	16%	26%	-0.15%	0.71%
Psychoanaleptics	N06	-39%	94%	16%	33%	-0.02%	-4.15%
Anti-asthmatics	R03	-110%	61%	27%	150%	-0.17%	-28.98%
Average		**-51.94%**	**43.87%**	**36.30%**	**80.82%**	**-0.59%**	**-8.47%**

Agents Acting on the Renin-Angiotensin System(C09), Serum Lipid Reducing Agents(C10) and Psychoanaleptics(N06) were the top 3 cost drivers over the period under review. Following is a detailed analysis of the impact existing and newer drugs expenditure trends for Agents Acting on the Renin-Angiotensin System, Serum Lipid Reducing Agents and Psychoanaleptics. Appendix 4 provides a detailed analysis of the remaining 13 therapeutic classes identified representing a significant portion of overall expenditures in 1998/99.

[28] The large volume effect is driven by a shift in therapeutic mix and by a reduction in the use of menotropins inj, norethindrone/ethynil estradiol, urofollotropin inj 75iu and clomiphene tab 50mg. Three of these drugs are used as fertility agents, which were removed as benefits in 1993.

Agents Acting on the Renin-angiotensin System (ACEI)

Expenditures on ACEI rose from $6.5 million in 1991/92 to $ 14.0 million in 1998/99; a 120% increase. Expenditures in this therapeutic class were dominated by patented drugs since 1991/92. In 1991/92 expenditures on patented drugs accounted for 88% of total expenditures on this therapeutic class. In 1994/95 and 1995/96, non-patented drugs began to play an increasing role, however, by 1997/98 and 1998/99 patented drugs increased market share to 85% and 90% respectively. The enalapril patent dispute may be responsible for the continued market dominance of patented drugs in 1997/98 and 1998/99.

Table 6

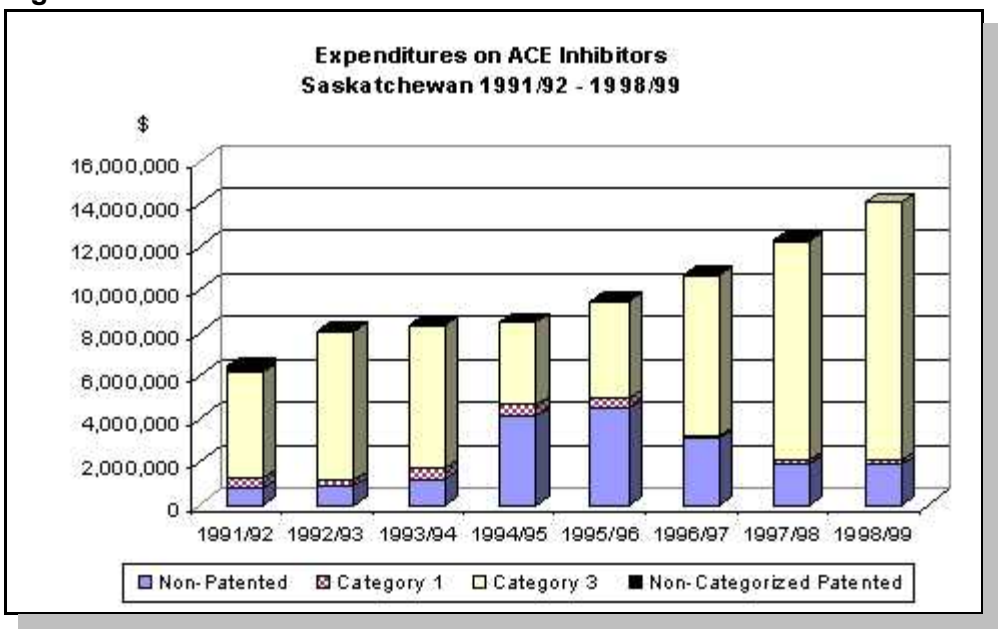
Impact of Existing and Newer Drugs by Major Disease Groups
Agents Acting on the Renin-Angiotensin System
Saskatchewan 1991/92 - 1998/99
(dollars)

Year of Introduction	Category	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		772,802	867,571	574,699	450,609	391,869	32,122	2,426	8,431
1991/92 or before	1	466,884	279,046	492,159	502,856	469,926	23,319	3,023	
1991/92 or before	3	4,929,214	6,802,863	5,906,609	2,582,637	2,748,067	5,145,618	6,860,875	7,352,829
1991/92 or before	NC	280,305	20,911	13,638	10,415	10,782	17,732	8,149	
1992/93			421	683	738	1,455	2,665	1,422	1,172
1992/93	3		96,198	619,741	878,954	1,099,677	1,380,755	1,696,750	1,914,403
1993/94				605,570	3,636,365	3,803,643	2,039,737	649,018	154,388
1993/94	3			96,948	394,481	614,349	773,330	941,887	1,070,039
1994/95					17,446	144,587	230,994	301,467	337,034
1995/96						119,701	359,389	157,730	234,849
1995/96	1					20,933	69,875	137,185	185,807
1995/96	3					868	114,122	606,081	1,010,950
1996/97							452,814	602,268	492,713
1997/98								176,016	597,122
1997/98	3							94,979	338,009
1998/99									38
1998/99	1								42,602
1998/99	3								274,490
Total Expenditure		**6,449,206**	**8,067,010**	**8,310,047**	**8,474,502**	**9,425,858**	**10,642,471**	**12,239,275**	**14,014,873**
Patented Expenditure		**5,676,404**	**7,199,018**	**7,129,095**	**4,369,344**	**4,964,602**	**7,524,751**	**10,348,929**	**12,189,128**
Non-Patented Expenditure		**772,802**	**867,992**	**1,180,952**	**4,105,158**	**4,461,255**	**3,117,720**	**1,890,346**	**1,825,746**

Expenditures on patented products were heavily concentrated on category 3 drugs.

In 1998/99 the top drug product in this class were Vasotec 5 & 10 mg, Cozaar 50 mg and Prinivil 10mg. Expenditures on these four products accounted for approximately 40% of total expenditures on Agents Acting on the Renin-Angiotensin System

Figure 9



Serum Lipid Reducing Agents

Expenditures on Lipid Reducing Agents rose from $5.3 million in 1991/92 to $ 9.4 million in 1998/99; a 78% increase. Expenditures on patented drugs represent 83% of total expenditures; category 3 drugs represent 80% of expenditures on patented drugs and category 1 and non-categorized patented drugs make up the remaining 20%.

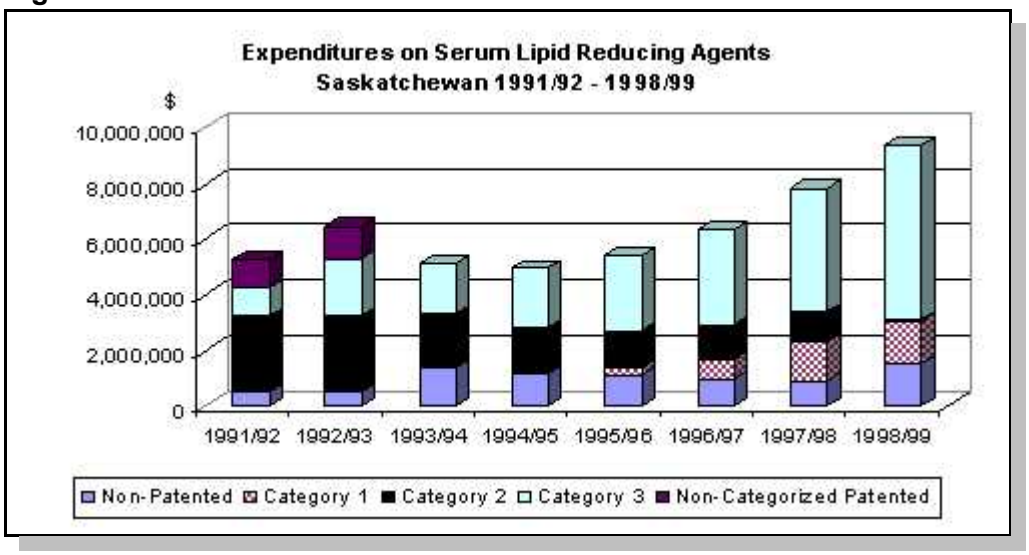
Table 7

Impact of Newer and Existing Drugs by Major Disease Groups
Lipid Reducing Agents
Saskatchewan 1991/92 - 1998/99
(dollars)

Year of Introduction	Category	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		500,816	533,332	1,271,899	362,519	219,064	125,713	87,658	83,305
1991/92 or before	1	5,663	25,614	25,734	29,221	30,633	52,213	66,981	69,843
1991/92 or before	2	2,709,079	2,688,296	1,913,516	1,626,064	1,323,477	1,271,688	1,033,717	76,997
1991/92 or before	3	1,008,720	2,032,989	1,763,456	1,811,735	2,001,554	2,654,341	2,834,090	2,800,490
1991/92 or before	NC	1,034,028	1,152,179						
1993/94				115,752	756,520	686,946	39,234	42,186	2,682
1993/94	NC								
1994/95					35,544	114,476	103,633	72,352	53,618
1994/95	1				13,197	248,128	535,579	776,918	901,300
1994/95	3				294,419	672,056	727,908	819,151	733,212
1995/96						94,122	702,527	616,495	560,792
1995/96	1					4,242	60,022	105,234	122,247
1996/97							5,195	7,128	7,879
1996/97	1						40,877	454,751	440,370
1997/98								107,698	810,135
1997/98	3							805,195	2,463,579
1997/98	NC								
1998/99									129
1998/99	3								237,211
Total Expenditure		**5,258,306**	**6,432,410**	**5,090,358**	**4,929,220**	**5,394,699**	**6,318,929**	**7,829,553**	**9,363,789**
Patented Expenditure		**4,757,490**	**5,899,079**	**3,702,707**	**3,774,637**	**4,280,091**	**5,342,627**	**6,896,037**	**7,845,249**
Non-Patented Expenditure		**500,816**	**533,332**	**1,387,651**	**1,154,583**	**1,114,608**	**976,302**	**933,517**	**1,518,540**

In 1998/99 the top drug products in this class were Lipitor 10 mg, Pravachol 20 mg and Zocor 10 & 20 mg. Expenditures on these four products accounted for approximately 60% of total expenditures on Serum Lipid Reducing Agents.

Figure 10



Psychoanaleptics

Expenditures on Psychoanaleptics rose from $3.8 million in 1991/92 to $10.2 million in 1998/99; a 168% increase. Expenditures on patented drugs represent 38% of total expenditures in 1991/92 and 63% in 1998/99; category 3 drugs represent 91% of expenditures on patented drugs in 1998/99 .

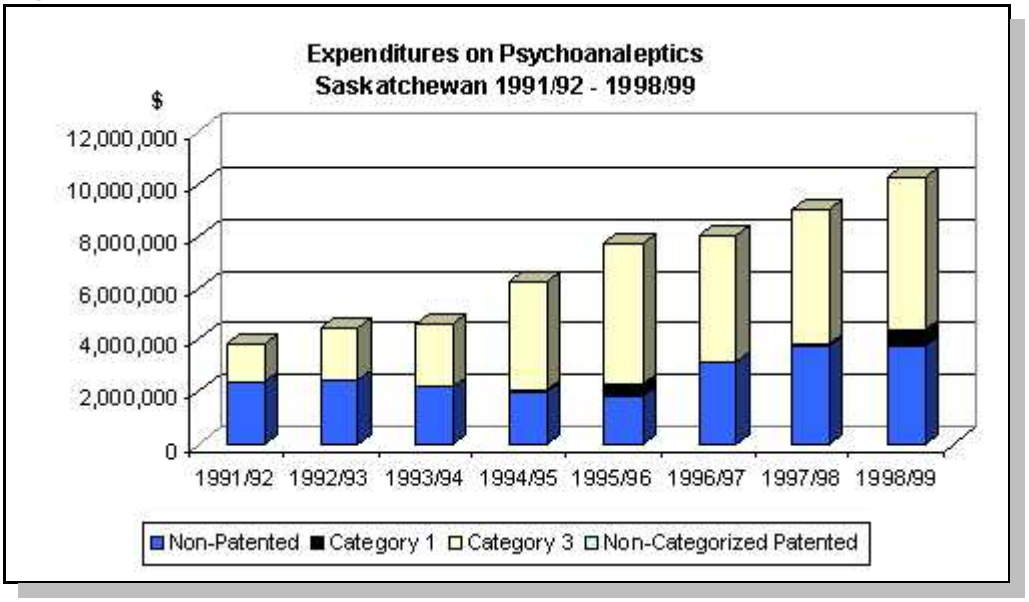
In 1998/99, the top drug product in this class were Paxil 20mg, Zoloft 50 mg, Nu-Fluoxetine 20mg, Effexor 37.5mg. These four drugs accounted for 43% of expenditures on Psychoanaleptics in 1998/99.

Table 8

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Psychoanaleptics
(dollars)

Year of Introduction	Cat	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		2,361,438	2,446,009	1,878,368	1,217,131	1,046,881	952,330	1,372,722	1,000,262
1991/92 or before	3	1,431,204	1,960,023	2,055,203	2,702,546	2,641,769	940,302	34,640	25,838
1992/93			5,776	10,827	65,803	88,115	75,651	84,628	90,681
1992/93	3		1,204	6,788	13,890	15,049	17,057	11,716	2,156
1993/94				289,249	603,791	456,945	273,924	141,215	114,905
1993/94	3			365,154	1,421,338	2,159,844	2,733,650	3,344,875	4,038,508
1994/95					82,378	171,150	115,162	86,734	78,603
1994/95	1				83,319	172,673	19,889	3,112	3,508
1994/95	3				47,233	355,909	542,322	704,057	799,543
1995/96						94,764	836,377	340,065	339,828
1995/96	1					293,454			
1995/96	3					219,629	652,722	1,053,602	1,024,932
1996/97							859,221	1,284,283	1,249,689
1996/97	1						16,694	72,460	158,466
1997/98								459,191	836,320
1997/98	NC								
1998/99									35,912
1998/99	1								445,360
Total Expenditure		**3,792,641**	**4,413,011**	**4,605,590**	**6,237,430**	**7,716,183**	**8,035,300**	**8,993,299**	**10,244,510**
Patented Expenditure		**1,431,204**	**1,961,226**	**2,427,145**	**4,268,326**	**5,858,326**	**4,922,363**	**5,224,462**	**6,498,311**
Non-Patented Expenditure		**2,361,438**	**2,451,785**	**2,178,444**	**1,969,103**	**1,857,856**	**3,112,663**	**3,768,837**	**3,746,199**

Figure 11


Expenditures on Psychoanaleptics
Saskatchewan 1991/92 - 1998/99
$
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 3
Non-Categorized Patented

6.0 Conclusions

The study reports on the cost drivers of total pharmaceutical spending in Saskatchewan Drug Plan and Extended Benefits (SDP&EB) program over the period 1991/92 to 1998/99.

During the period under review, recognized actual drug acquisition expenditures increased from $90.1 million to $127.2 million. Growth in cost was mainly driven by introduction of new drugs and increased utilization of newer and existing therapies.

On average, between 1991/92 and 1998/99 per unit price changes seen by the province were responsible for -32.2% of the expenditure change, volume change or utilization was responsible for 50.9%, entry of new drugs were responsible for 101.2%, and both exiting drugs and other factors were responsible for -0.7% and -19.2% of expenditures changes. 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 some decrease in the average per unit price. The contribution of each of these factors changed markedly from year to year, indicating that further work is required to understand the sensitivity of the model, the impact of cost containment policies, shifts in prescribing patterns and the entry and market penetration of new drug therapies.

The Report shows that, in Saskatchewan, the three top disease groups contributing to increases in expenditures are: Agents Acting on the Renin-Angiotensin System, Serum Lipid Reducing Agents and Psychoanaleptics.

The SDP&EB underwent several changes since 1991/92 with a view to manage the growth in drug costs. Further analysis is necessary to understand further the effect that policy changes had on total pharmaceutical expenditures and utilization trends.

Appendix 1

Methodology

This study analyzes the cost drivers in total pharmaceutical spending from 1991/92 to 1998/99 in Saskatchewan.

In order to conduct the analysis, information on prices, quantities and expenditures were obtained from the Saskatchewan Prescription Drug Plan 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 based on recognized actual acquisition cost; wholesale mark-ups are included, however, dispensing and/or compounding fees are excluded. The expenditures presented in this analysis include the patients portion of the cost in order to capture the full ingredient cost of the drug products.

This study reports expenditures by year of introduction of drugs. Year of Introduction is defined as the year of first coverage recorded in Saskatchewan Prescription Drug Plan Database. Drugs with sales in 1991/92 or before, are termed as "existing" drugs while drugs with sales in 1991/92 and subsequent years are termed as "newer" drugs, including new strengths and forms of chemical entities previously covered.

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*

$Q_o(P_1 - P_o)$ = **Pr***iceEffect*

$(P_1 - P_o)(Q_1 - Q_o)$ = *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 period 1, New Drugs can be separated into Volume and Price influences 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*ΔTE_i

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

Estimates the influence of each component

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, 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.[29]

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 1991/92 to 1998/99. This would enable us to:

- identify the extent to which each therapeutic class contributed to the increases in total Drug Plan expenditures over the period 1991/92 and 1998/99; This was done by calculating the difference between the level of expenditures of each therapeutic class between 1991/92 and 1998/99, and dividing the difference by the difference between the level of total expenditures between 1991/92 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.

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

Appendix 2

General Plan Information

General Information

The Saskatchewan Prescription Drug Plan was implemented on September 1, 1975. The Plan is administered by the Drug Plan and Extended Benefits Branch of Saskatchewan Health under the authority of the Prescription Drug Act and Regulations. The Drug Plan provides coverage for drugs listed in the Saskatchewan Formulary or approved under the "Exception Drug Status" for specific beneficiaries.

Beneficiaries Covered

All Saskatchewan residents holding a valid Saskatchewan Health Services Card. Exceptions include those whose prescription is paid by another government agency: Status Indians, Department of Veteran Affairs beneficiaries, Workers' Compensation Board claimants, RCMP, Armed Forces personnel and Federal penitentiary inmates.

Deductibles, Co-payments and Professional Fees (current levels) [30]

The standard deductible per family is $850 semi-annually. Deductibles for non-seniors on the Family Income Plan, seniors on the Saskatchewan Income Plan and senior guaranteed income supplement (GIS) recipients residing in nursing homes is $100 semi-annually. For senior GIS recipients residing in the community, the deductible is $200 semi-annually. All the above groups are eligible for coverage under the Special Support Program. Residents must apply, and if approved, the Drug Plan may lower the deductible and/or assign a lower co-payment to spread the costs over the year. This co-payment varies and is based on a ratio in which annual drug cost exceeds 3.4% of annual income. The majority of drug plan expenditures are directed toward the income tested Special Support Program.

Cost Reimbursements

Cost reimbursement is based on the pharmacist's actual acquisition cost (AAC) plus a mark-up of between 10% and 30% depending on the drug cost component of the prescription. Mark-up is capped at $20 per prescription and is included in the ingredient cost. The average mark-up in fiscal 1998/99 was $2.29 per prescription.

Claims are submitted by means of a network and adjudicated on-line by a central processing unit. The Pharmacy collects the appropriate payment from the consumer (deductible, co-payment, and/or incremental cost of no-substitution prescription). The portion of the cost eligible for coverage is paid by the Drug Plan directly to the pharmacy.

[30] See section 4.2 for history.

Special Considerations

The Prescription Drug Plan utilizes compulsory product substitution in interchangeable drug groups to reduce costs. Only when no-substitution is requested by a physician is that product dispensed. The incremental cost is the responsibility of the consumer, except in rare cases when specific exemptions are made for individuals at the physician's request. Standing offer contracts are used to obtain quantity discounts for high volume, usually interchangeable brands of drugs. These contracts are obtained by a tendering process. Exception Drug Status coverage is provided for certain non-formulary drugs. These drugs are recommended by the Saskatchewan Formulary Committee and coverage is subject to specific criteria being met. Education programs, including an academic detailing project, are conducted to encourage the rational use of drugs.

Appendix 3

Population Changes and Top Selling Drugs

The following table reports on population growth in Saskatchewan between 1991 and 1998 by age group. In 1991, the 0-9 and 30-39 age group represented the highest proportion of the total population, both at 16.0%, followed by the 10-19 age group at 15.2%. In 1998, the 10-19 age group was largest group at 15.6% of the total population. The 0-9 age group decreased to 14.4% and the 30-39 group stood at 14.8% .

Between 1991 and 1998, the highest growth was achieved by the 40-49 age group (27.3%), followed by the 80-90+ group (25.3%) and the 50-59 group (12.4%).

Population Growth

Saskatchewan: 1991 - 1998

Age Groups	1991 Population (thousands)	1991 % of total	1998 Population (thousands)	1998 % of total	Change 1991 - 1998	%Growth 1991 - 1998
0-9	160,825	16.04	147,717	14.41	-13,108	-8.15
10-19	152,613	15.22	159,831	15.59	7,218	4.73
20-29	146,067	14.57	137,594	13.42	-8,473	-5.80
30-39	160,144	15.97	151,552	14.78	-8,592	-5.37
40-49	113,153	11.29	143,986	14.04	30,833	27.25
50-59	85,556	8.53	96,137	9.38	10,581	12.37
60-69	84,767	8.45	78,976	7.70	-5,791	-6.83
70-79	65,850	6.57	67,196	6.55	1,346	2.04
80-90+	33,693	3.36	42,214	4.12	8,521	25.29
Seniors(65+)	141,048	14.07	151,203	14.75	10,155	7.20
All Ages	1,002,668	79149.96	1,025,203	69217.59	22,535	2.25

Source: Statistics Canada Catalogue Number 91-213

Top 25 Patented and Non-Patented Drug Products
Saskatchewan 1997/98 - 1998/99 - Based on Total Expenditures
(dollars)

DIN	Brand	Ingredient	ATC	Year of Introduction	1997/98	1998/99
865737	NU-RANIT TAB 150MG	RANITIDINE (RANITIDINE HYDROCHLORIDE)	A	1991/92 or before	2,507,234	2,328,064
2190915	LOSEC 20 MG	OMEPRAZOLE (OMEPRAZOLE MAGNESIUM)	A	1995	1,721,479	2,142,904
1940481	PAXIL TAB 20MG	PAROXETINE (PAROXETINE HYDROCHLORIDE)	N	1993	1,592,027	2,076,219
2169649	BETASERON	INTERFERON BETA-1B	L	1997	326,899	2,052,431
2230711	LIPITOR 10MG	ATORVASTATIN (ATORVASTATIN CALCIUM)	C	1997	614,777	1,728,099
670901	VASOTEC TAB 10MG	ENALAPRIL MALEATE	C	1991/92 or before	1,686,457	1,711,126
878928	NORVASC TAB 5MG	AMLODIPINE (AMLODIPINE BESYLATE)	C	1993	1,371,080	1,703,466
708879	VASOTEC TAB 5MG	ENALAPRIL MALEATE	C	1989	1,193,749	1,632,021
893757	PRAVACHOL TAB 20MG	PRAVASTATIN SODIUM	C	1991/92 or before	1,696,458	1,630,900
2155907	ADALAT XL - SRT 30MG	NIFEDIPINE	C	1994	1,221,578	1,243,081
582352	ACCUTANE CAP 40MG	ISOTRETINOIN	D	1991/92 or before	995,721	1,203,114
836338	PREPULSID TAB 10MG	CISAPRIDE (CISAPRIDE MONOHYDRATE)	A	1991/92 or before	1,209,913	1,188,291
2213672	FLONASE - AEM-SUS NAS 50MCG/MD	FLUTICASONE PROPIONATE	R	1994	998,367	1,125,493
2215055	BECLOFORTE INHALER - AEM INH 250MCG/AEM	BECLOMETHASONE DIPROPIONATE	R	1991/92 or before	1,486,929	1,096,040
1917056	ARTHROTEC 50 TAB	MISOPROSTOL AND DICLOFENAC	M	1994	1,113,637	1,072,285
884332	ZOCOR TAB 10MG	SIMVASTATIN	C	1991/92 or before	992,367	1,014,728
2213613	FLOVENT INHALERS - AEM INH-ORL 250MCG/AEM	FLUTICASONE PROPIONATE	R	1995	638,930	972,521
1962817	ZOLOFT CAP 50MG	SERTRALINE (SERTRALINE HYDROCHLORIDE)	N	1993	785,686	965,087
878936	NORVASC TAB 10MG	AMLODIPINE (AMLODIPINE BESYLATE)	C	1993	716,927	963,401
2182874	COZAAR - TAB 50MG	LOSARTAN POTASSIUM	C	1995	574,157	937,701
884340	ZOCOR TAB 20MG	SIMVASTATIN	C	1994	776,918	901,300

DIN	Brand	Ingredient	ATC	Year of Introduction	1997/98	1998/99
2213605	FLOVENT INHALERS - AEM INH-ORL 125MCG/AEM	FLUTICASONE PROPIONATE	R	1995	602,781	888,573
2150670	NEORAL 100MG	CYCLOSPORINE	L	1994	816,249	864,489
587737	HUMULIN N INJ 100UNIT/ML	INSULIN NPH HUMAN DNA ORIGIN	A	1989	825,459	815,237
2188961	MED ATENOLOL - TAB 50MG	ATENOLOL	C	1996	746,586	812679

Top 10 Category 1 Drugs
Saskatchewan 1997/98 - 1998/99
(dollars)

DIN	Brand	Ingredient	ATC	Year of Introduction	1997/98	1998/99
2190915	LOSEC TAB 20 MG	OMEPRAZOLE (OMEPRAZOLE MAGNESIUM)	A	1995	1,721,479	2,142,904
2155907	ADALAT XL - SRT 30MG	NIFEDIPINE	C	1994	1,221,578	1,243,081
2213613	FLOVENT INHALERS - AEM INH-ORL 250MCG/AEM	FLUTICASONE PROPIONATE	R	1995	638,930	972,521
884340	ZOCOR TAB 20MG	SIMVASTATIN	C	1994	776,918	901,300
2213605	FLOVENT INHALERS - AEM INH-ORL 125MCG/AEM	FLUTICASONE PROPIONATE	R	1995	602,781	888,573
2150670	NEORAL 100MG	CYCLOSPORINE	L	1994	816,249	864,489
2176017	DIDROCAL -400MG TAB AND 1250MG TAB(500MG CA)	ETIDRONATE AND CALCIUM CARBONATE	M	1996	503,354	770,264
2155990	ADALAT XL - SRT 60MG	NIFEDIPINE	C	1994	641,246	763,506
2229837	ARTHROTEC-75 TABLETS	MISOPROSTOL AND DICLOFENAC	M	1997	290,870	701,109
2054817	PREPULSID TAB 20MG	CISAPRIDE (CISAPRIDE MONOHYDRATE)	A	1994	594,383	643,346

Top 10 Category 2 Drugs
Saskatchewan 1997/98 - 1998/99
(dollars)

DIN	Brand	Ingredient	ATC	Year of Introduction	1997/98	1998/99
2169649	BETASERON	INTERFERON BETA-1B	L	1997	326,899	2,052,431
2031116	LAMISIL TAB 250MG	TERBINAFINE (TERBINAFINE HYDROCHLORIDE)	D	1993	469,062	494,359
2025302	RISPERDAL TAB 3MG	RISPERIDONE	N	1993	381,428	390,927
2025299	RISPERDAL TAB 2MG	RISPERIDONE	N	1993	313,104	383,913
2010909	PROSCAR TAB 5MG	FINASTERIDE	G	1993	272,102	278,074
1978926	PULMICORT NEBUAMP 0.5 MG/ML	BUDESONIDE	R	1992	216,473	263,171
1978918	PULMICORT NEBUAMP 0.25 MG/ML	BUDESONIDE	R	1992	162,041	207,882
2025310	RISPERDAL TAB 4MG	RISPERIDONE	N	1993	197,972	202,452
2155966	CIPRO 500 - TAB 500MG	CIPROFLOXACIN (CIPROFLOXACIN HYDROCHLORIDE)	J	1991/92 or before	119,341	148,438
2031094	LAMISIL CRM 1%	TERBINAFINE HYDROCHLORIDE	D	1994	89,232	108,014

Top 10 Category 3 Drugs
Saskatchewan 1997/98 - 1998/99
(dollars)

DIN	Brand	Ingredient	ATC	Year of Introduction	1997/98	1998/99
1940481	PAXIL TAB 20MG	PAROXETINE (PAROXETINE HYDROCHLORIDE)	N	1993	1,592,027	2,076,219
2230711	LIPITOR 10MG	ATORVASTATIN (ATORVASTATIN CALCIUM)	C	1997	614,777	1,728,099
670901	VASOTEC TAB 10MG	ENALAPRIL MALEATE	C	1991	1,686,457	1,711,126
878928	NORVASC TAB 5MG	AMLODIPINE (AMLODIPINE BESYLATE)	C	1993	1,371,080	1,703,466
708879	VASOTEC TAB 5MG	ENALAPRIL MALEATE	C	1991/92 or before	1,193,749	1,632,021
893757	PRAVACHOL TAB 20MG	PRAVASTATIN SODIUM	C	1991	1,696,458	1,630,900
836338	PREPULSID TAB 10MG	CISAPRIDE (CISAPRIDE MONOHYDRATE)	A	1991	1,209,913	1,188,291
1917056	ARTHROTEC 50 TAB	MISOPROSTOL AND DICLOFENAC	M	1994	1,113,637	1,072,285
884332	ZOCOR TAB 10MG	SIMVASTATIN	C	1991/92 or before	992,367	1,014,728
1962817	ZOLOFT CAP 50MG	SERTRALINE (SERTRALINE HYDROCHLORIDE)	N	1993	785,686	965,087

Appendix 4

Therapeutic Class Analysis

Percentage Contribution of Selected Therapeutic Classes to Total Expenditure Saskatchewan 1991/92 - 1998/99			
Therapeutic Class	**Contribution in 1991/92 (dollars)**	**Contribution in 1998/99 (dollars)**	**% of Total Expenditure Change**
Alimentary Tract and Metabolism	11,068,874	15,146,492	10.99
Blood and Blood Forming agents	363,826	2,572,456	5.95
Cardiovascular System	28,415,001	41,153,234	34.32
Dermatologicals	2,802,163	4,083,268	3.45
Genito Urinary System and Sex Hormones	7,457,356	7,823,903	0.99
Systemic Hormonal Preparations, Exc, Sex Hormones	660,857	1,326,450	1.79
General Anti-Infectives for Systemic Use	7,091,789	5,798,278	-3.49
Anti-Neoplastic and Immunomodulating Agents	1,619,241	6,167,073	12.25
Musculo-Skeletal System	8,699,626	6,702,995	-5.38
Nervous System	10,515,513	22,847,431	33.23
Anti-Parasitic Products, Insecticides and Repellents	157,891	350,223	0.52
Respiratory System	7,453,578	10,477,443	8.15
Sensory Organs	1,954,445	2,446,425	1.33
Various	49,315	91,141	0.11
Total	**90,066,089**	**127,177,568**	**100.00**

The 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. The second level of the ATC classification system is used to represent a general disease grouping within the study.

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
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

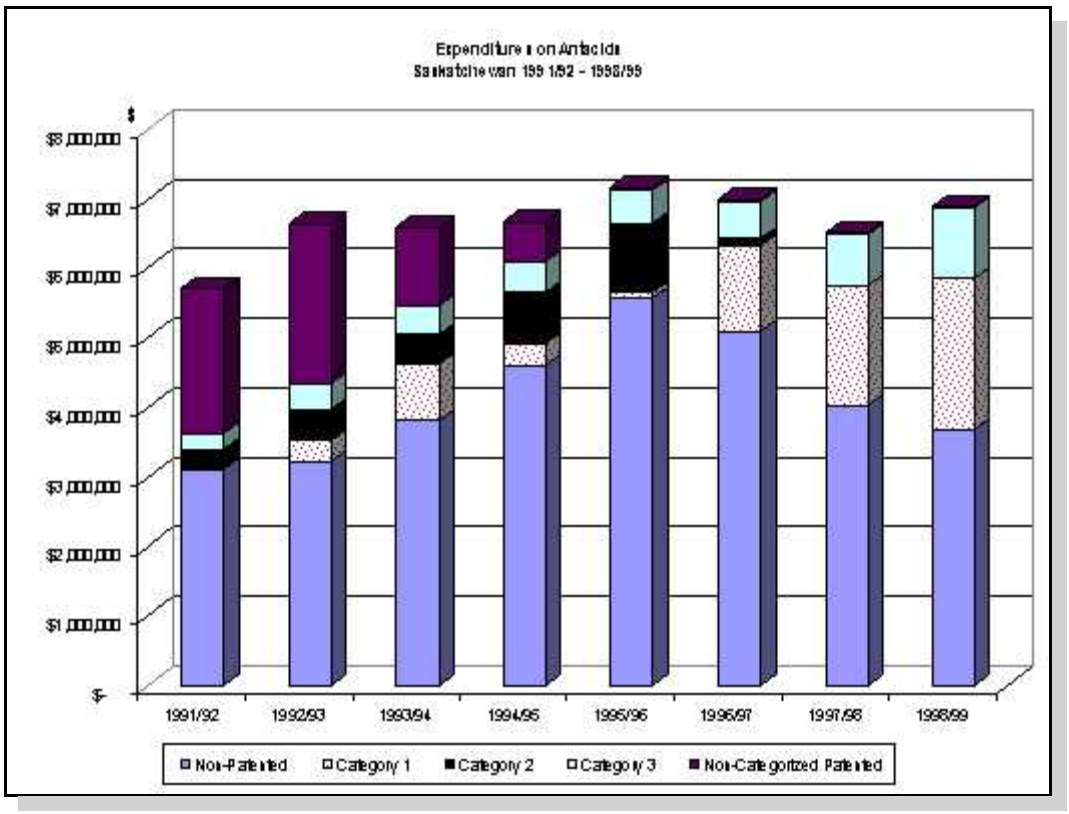
ATC	Therapeutic Class	Subgroups*
G03	Sex hormones and modulators of the genital system	Hormonal contraceptives for systemic use (including progestogens); Androgens; Estrogens; Progestogens; Androgens and female sex hormones in combination; Progestogens and Estrogens in combination; Gonadotropins and other ovulation stimulants; Antiandrogens & Others [Antigonadotropins and similar agents; antiprogestogens & selective estrogen receptor modulators (raloxifene)]
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
L04	Immunosuppressive agents	Selective immunosuppressive agents (cyclosporin, muromonab-CD3, antilymphocyte immunoglobulin (horse), antithymocyte immunoglobulin (rabbit), tacrolimus, glatiramer acetate, etanercept, infliximab..) & Others (azathioprine)
M01	Anti-inflammatory and anti-rheumatic products	Anti-inflammatory and anti-rheumatic products, Non-steroids (butylpyrazolidines, acetic acid derivatives and related substances, oxicams, propionic acid derivatives, fenamates, coxibs & others such as nabumetone & glucosamine); Anti-inflammatory/anti-rheumatic agents in combination; Specific anti-rheumatic agents (gold preparations, penicillamine)
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)

ATC	Therapeutic Class	Subgroups*
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)

* main one listed

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Antacids
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		3,104,507	3,126,910	3,118,809	3,361,242	4,190,284	3,928,634	3,039,718	2,781,993
1991/92 or before	1	10,682	300,734	399,614	14,191	2,313	1,172	520	455
1991/92 or before	2	271,434	458,114	415,598	732,068	994,871	93,752	1,826	
1991/92 or before	3	247,299	362,653	414,522	439,072	460,319	428,309	441,571	446,523
1991/92 or before	NC	2,074,052	2,294,317	1,104,906	576,405	43,851	30,597	20,179	17,956
1992/93			95,176	356,085	328,481	150,970	121,680	195,939	162,482
1993/94				339,438	379,095	328,849	283,936	268,536	177,437
1993/94	1			427,170	315,909	21,521	14,796	10,612	4,307
1994/95					527,064	824,399	595,680	388,693	403,162
1995/96						64,517	149,487	127,882	109,172
1995/96	1					73,064	1,221,018	1,721,479	2,142,904
1995/96	3					8,433	120,346	229,911	361,273
1996/97							11,969	1,637	691
1997/98								2,601	2,036
1997/98	1							882	14,562
1997/98	3							61,233	220,871
1998/99									41,730
1998/99	1								2,635
1998/99	3								112
Total Expenditure		**5,707,974**	**6,637,904**	**6,576,142**	**6,673,527**	**7,163,390**	**7,001,376**	**6,513,220**	**6,890,301**
Patented Expenditure		**2,603,467**	**3,415,818**	**2,761,810**	**2,077,645**	**1,604,371**	**1,909,991**	**2,488,213**	**3,211,597**
Non-Patented Expenditure		**3,104,507**	**3,222,086**	**3,814,332**	**4,595,882**	**5,559,019**	**5,091,386**	**4,025,007**	**3,678,704**


Expenditure on Antacids
Saskatchewan 1991/92 - 1998/99
$
$8,000,000
$7,000,000
$6,000,000
$5,000,000
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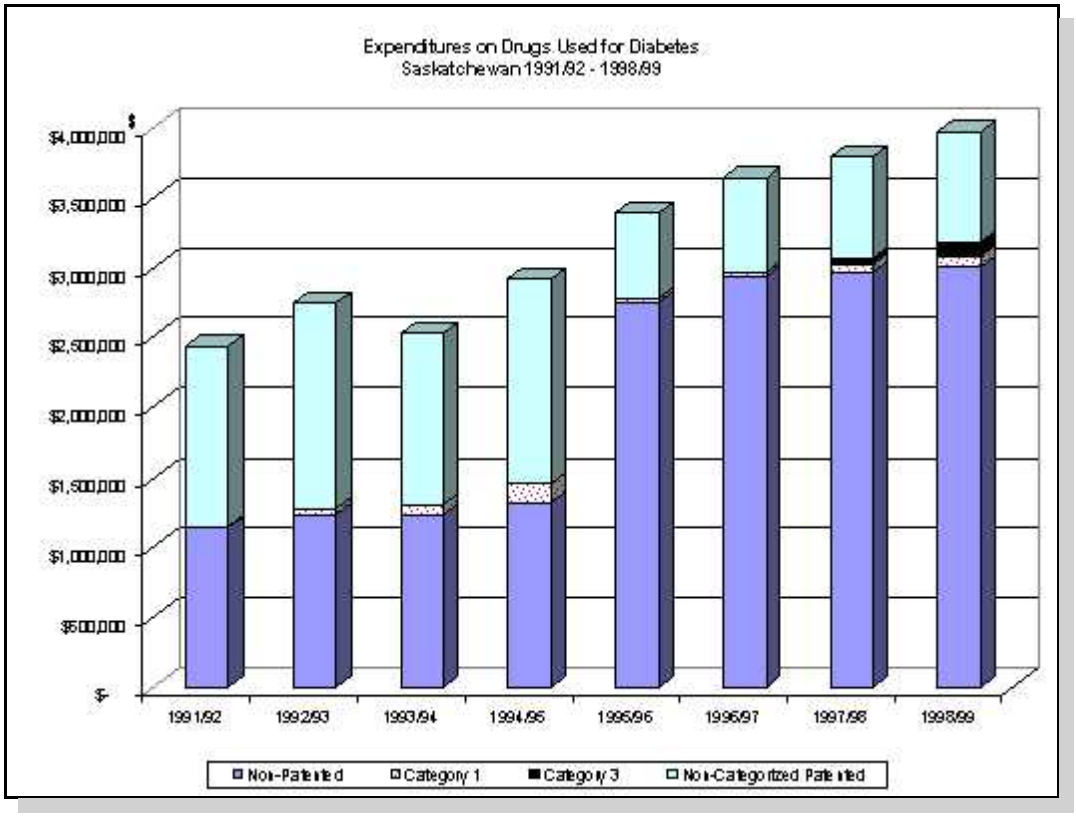
$3,000,000
$2,000,000
$1,000,000
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Diabetes
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		1,142,993	1,237,520	1,155,210	596,815	1,560,293	1,575,924	1,544,318	1,546,538
1991/92 or before	1	10,344	26,601	43,888	73,115				
1991/92 or before	NC	1,284,221	1,471,931	1,214,337	1,377,875	486,542	502,957	479,050	456,717
1992/93			107	921	882	44,018	63,633	95,260	137,893
1992/93	1		5,465	16,033	28,442				
1993/94				82,275	365,019	459,313	529,611	220,239	74,280
1993/94	1			6,076	34,823	27,780	36,840	53,996	79,163
1993/94	NC			10,900	84,077	129,826	166,635	246,371	332,054
1994/95					357,103	593,617	296,468	47,819	14,981
1994/95	1				658				
1995/96						91,727	468,018	746,081	801,660
1997/98								309,730	158,812
1997/98	3							53,929	95,844
1998/99									271,162
Total Expenditure		**2,437,558**	**2,741,624**	**2,529,640**	**2,918,809**	**3,393,117**	**3,640,085**	**3,796,793**	**3,969,104**
Patented Expenditure		**1,294,565**	**1,503,998**	**1,291,234**	**1,598,989**	**644,148**	**706,432**	**833,346**	**963,778**
Non-Patented Expenditure		**1,142,993**	**1,237,626**	**1,238,406**	**1,319,820**	**2,748,969**	**2,933,653**	**2,963,447**	**3,005,327**


Expenditures on Drugs Used for Diabetes
Saskatchewan 1991/92 - 1998/99
$
$4,000,000
$3,500,000
$3,000,000
$2,500,000
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$1,500,000
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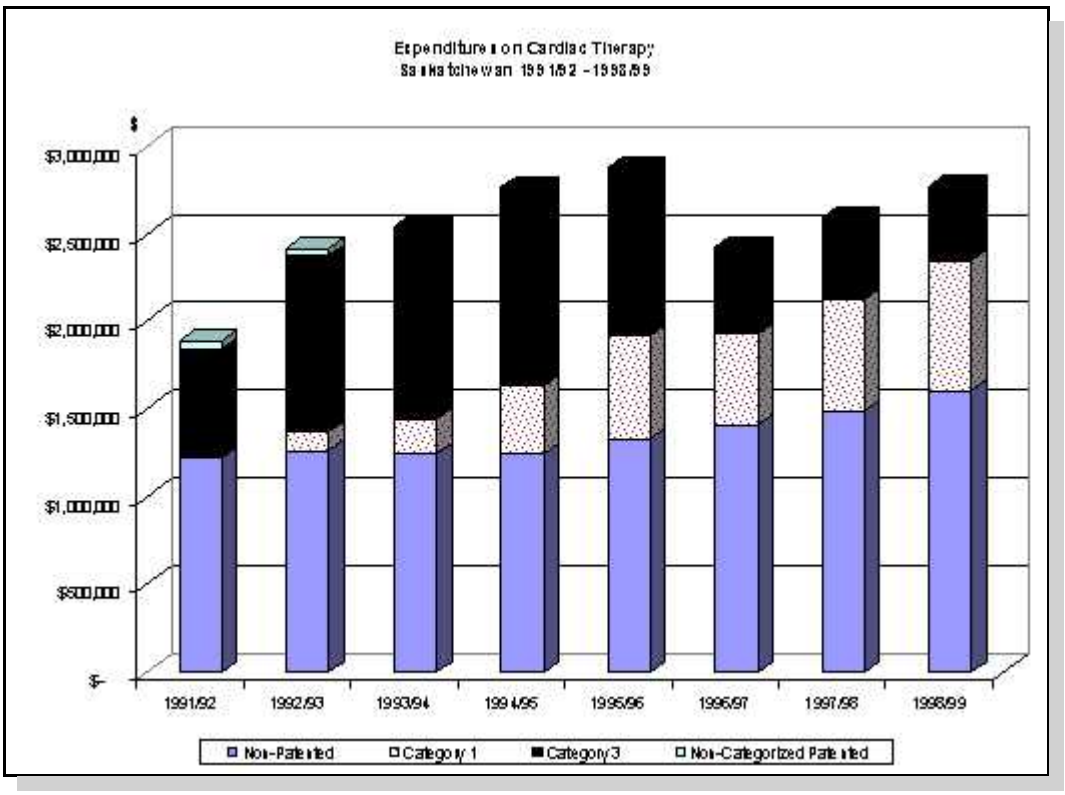
$500,000
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Cardiac Therapy
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		1,222,080	1,260,504	1,242,437	1,232,159	1,223,726	1,266,700	1,332,641	1,415,465
1991/92 or before	1	1,769	110,186	199,262	354,840	512,138	444,412	548,249	648,182
1991/92 or before	3	619,823	1,001,958	1,098,926	1,130,959	955,804	493,280	461,695	423,603
1991/92 or before	NC	46,560	41,846						
1992/93			553	888	380	206	4,508	7,538	6,222
1994/95					15,370	103,272	120,950	126,248	120,441
1994/95	1				31,127	74,560	77,097	80,534	86,607
1995/96						7,054	16,124	24,648	32,006
1996/97							155		
1996/97	1						456	5,411	8,358
1997/98								1,435	12,991
1997/98	1							334	618
1998/99									13,999
Total Expenditure		**1,890,232**	**2,415,047**	**2,541,512**	**2,764,835**	**2,876,759**	**2,423,682**	**2,588,734**	**2,768,493**
Patented Expenditure		**668,152**	**1,153,990**	**1,298,187**	**1,516,926**	**1,542,501**	**1,015,244**	**1,096,224**	**1,167,369**
Non-Patented Expenditure		**1,222,080**	**1,261,057**	**1,243,324**	**1,247,909**	**1,334,258**	**1,408,437**	**1,492,510**	**1,601,124**


Expenditures on Cardiac Therapy
Saskatchewan 1991/92 - 1998/99
$
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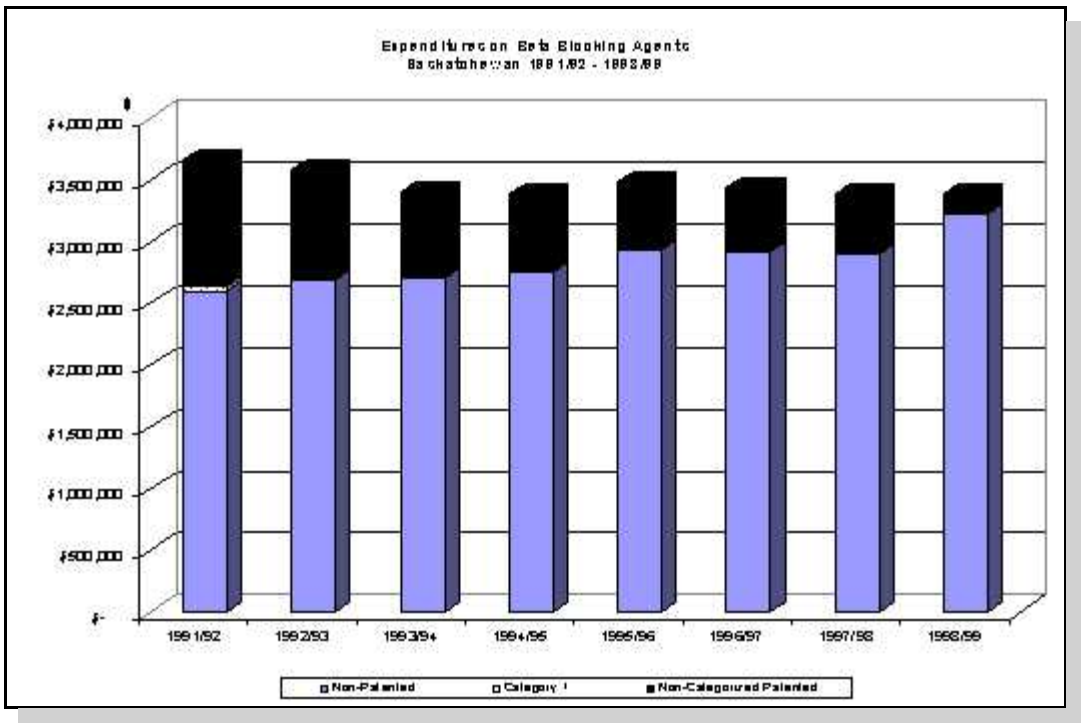
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Beta Blocking Agents
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		2,599,844	2,627,654	2,128,660	1,394,018	1,386,907	989,381	778,033	1,038,165
1991/92 or before	1	43,127							
1991/92 or before	NC	1,023,340	891,931	676,141	614,047	541,363	504,515	465,015	161,537
1992/93			55,877	388,294	194,596	182,872	45,115	12,076	35,045
1992/93	1		4,905	16,896	17,647	21,631	20,282	20,516	
1993/94				189,677	1,098,548	1,014,478	133,151	69,589	61,509
1994/95					64,217	73,724	64,508	60,979	51,838
1995/96						268,316	863,500	479,901	319,271
1996/97							820,153	1,449,313	1,548,755
1997/98								49,424	169,448
1998/99									2,221
Total Expenditure		**3,666,310**	**3,580,366**	**3,399,669**	**3,383,074**	**3,489,292**	**3,440,604**	**3,384,846**	**3,387,789**
Patented Expenditure		**1,066,466**	**896,835**	**693,038**	**631,694**	**562,994**	**524,797**	**485,531**	**161,537**
Non-Patented Expenditure		**2,599,844**	**2,683,531**	**2,706,631**	**2,751,380**	**2,926,298**	**2,915,808**	**2,899,315**	**3,226,252**


Expenditures on Beta Blocking Agents
Saskatchewan 1991/92 - 1998/99
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
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$1,000,000
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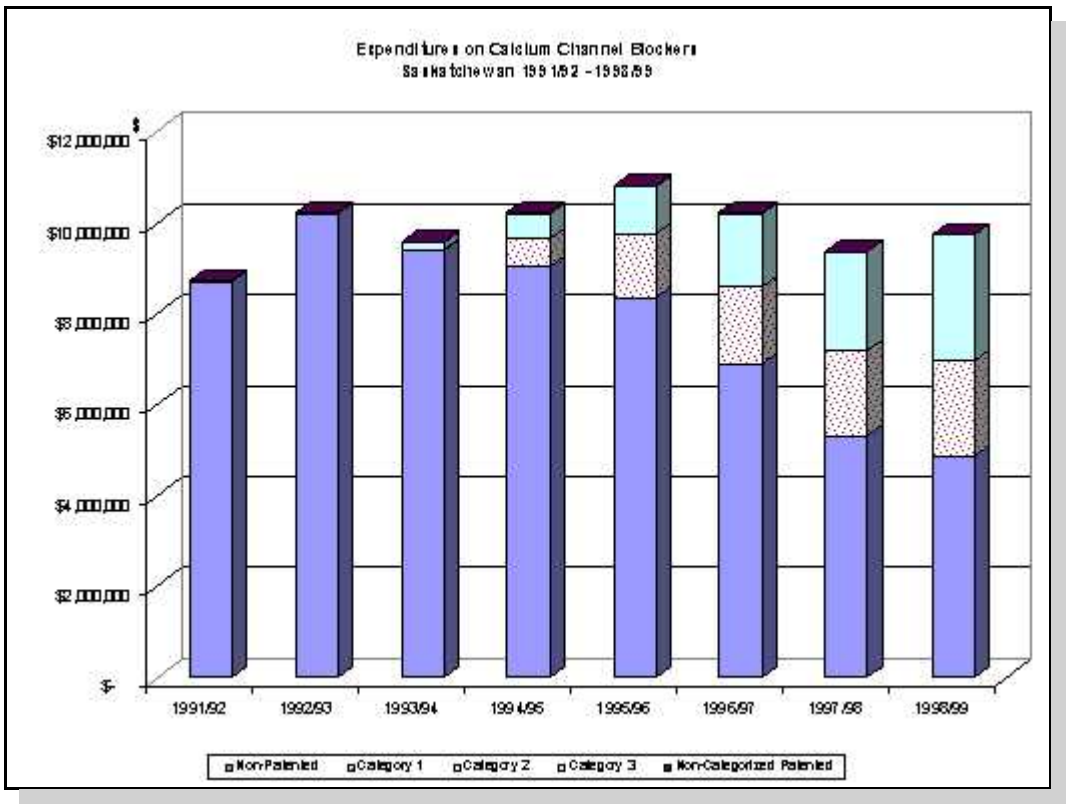
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category I
Non-Categorized Patented

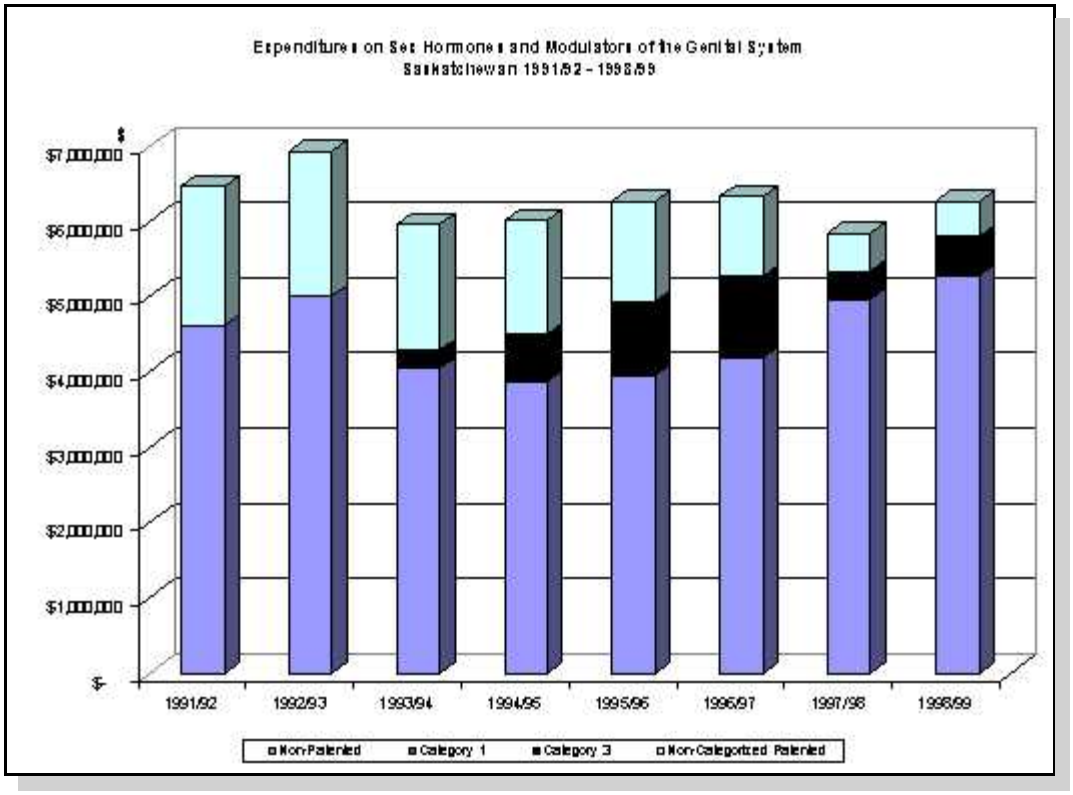
Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Calcium Channel Blockers
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		8,716,245	10,174,711	8,776,707	6,921,092	3,691,491	912,110	168,613	116,353
1991/92 or before	2	1,956	3,760	1,665	5,134	982	6,074	1,525	636
1991/92 or before	NC	3,286	5,990	16,103	21,728	14,589	11,199	8,905	7,483
1992/93			32,496	382,550	434,291	491,623	486,164	491,205	517,343
1992/93	3		2,328	24,553	34,672	47,335	71,454	91,033	111,736
1993/94				233,569	385,269	209,956	83,655	49,563	11,899
1993/94	3			154,226	527,084	989,472	1,535,415	2,088,007	2,666,867
1994/95					1,280,987	3,899,011	3,983,497	373,307	113,846
1994/95	1				615,555	1,402,888	1,683,662	1,868,056	2,014,261
1995/96						75,713	802,311	274,501	171,605
1996/97							639,263	3,441,859	2,526,100
1997/98								522,337	1,397,886
1998/99									35,387
1998/99	1								61,215
Total Expenditure		**8,721,487**	**10,219,285**	**9,589,374**	**10,225,810**	**10,823,059**	**10,214,802**	**9,378,910**	**9,752,615**
Patented Expenditure		**5,242**	**12,077**	**196,548**	**1,204,173**	**2,455,266**	**3,307,803**	**4,057,526**	**4,862,197**
Non-Patented Expenditure		**8,716,245**	**10,207,207**	**9,392,826**	**9,021,638**	**8,367,793**	**6,906,999**	**5,321,385**	**4,890,418**


Expenditures on Calcium Channel Blockers
Saskatchewan 1991/92 - 1998/99
$
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

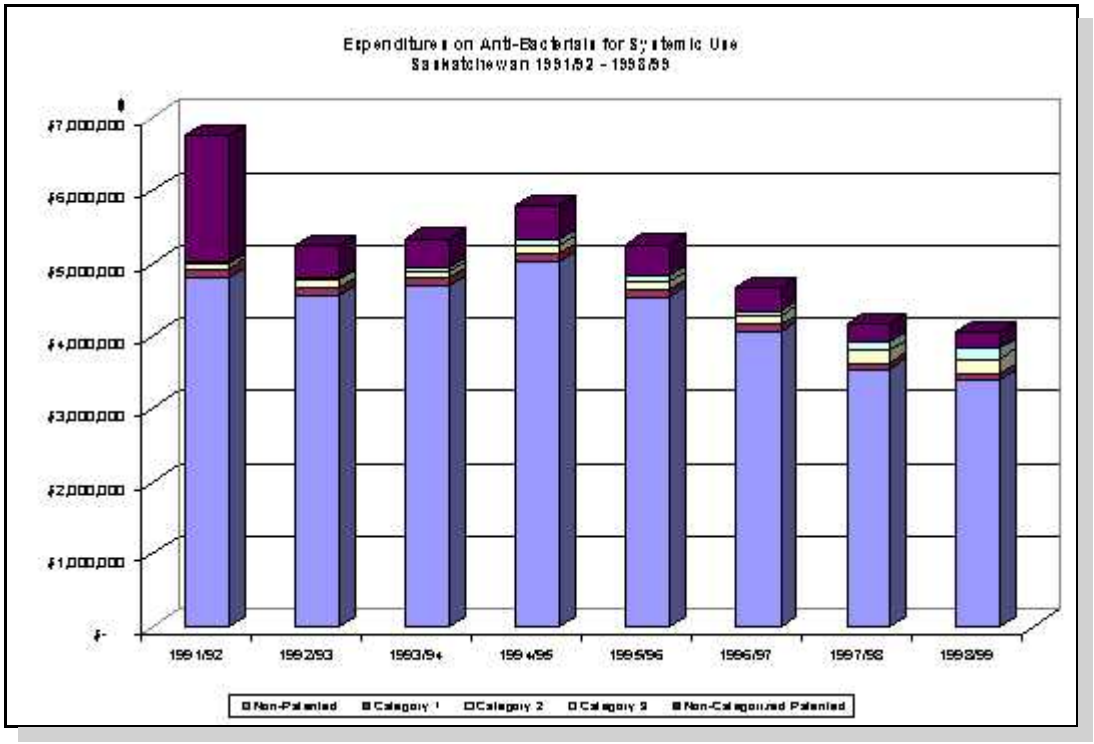
Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Sex Hormones and Modulators of the Genital System
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		4,610,004	5,005,578	4,034,434	3,745,942	3,705,065	3,744,713	3,519,864	3,481,727
1991/92 or before	NC	1,849,997	1,927,318	1,687,060	1,512,434	1,323,855	1,067,409	505,525	480,831
1992/93			0						
1993/94				24,907	114,713	200,721	276,843	665,870	709,088
1993/94	3			218,759	476,618	580,792	687,816	337,539	476,278
1994/95					9,896	29,097	39,079	279,068	257,249
1994/95	3				157,872	398,225	370,903	14,276	12,201
1995/96						26,301	103,949	185,127	308,945
1995/96	3					323	4,278	8,157	13,692
1996/97							30,388	309,711	236,977
1996/97	1						2,646	8,138	11,097
1997/98								8,419	28,560
1998/99									257,558
1998/99	1								1,492
Total Expenditure		**6,460,001**	**6,932,896**	**5,965,160**	**6,017,475**	**6,264,378**	**6,328,024**	**5,841,695**	**6,275,694**
Patented Expenditure		**1,849,997**	**1,927,318**	**1,905,819**	**2,146,924**	**2,303,195**	**2,133,052**	**873,636**	**995,591**
Non-Patented Expenditure		**4,610,004**	**5,005,578**	**4,059,341**	**3,870,551**	**3,961,183**	**4,194,972**	**4,968,059**	**5,280,103**


Expenditures on Sex Hormones and Modulators of the Genital System
Saskatchewan 1991/92 - 1998/99
$
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Anti-Bacterials for Systemic Use
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		4,786,956	4,537,964	4,426,739	4,345,324	3,943,368	3,517,327	2,398,981	1,999,707
1991/92 or before	1	132,247	110,258	114,723	118,242	95,190	81,331	70,608	75,658
1991/92 or before	2	77,728	107,299	80,501	108,210	114,021	121,184	170,075	199,389
1991/92 or before	3	25,095	34,684	32,578	55,663	48,452	25,770	17,188	29,119
1991/92 or before	NC	1,738,752	424,800	397,661	464,418	421,754	311,867	254,518	244,126
1992/93			9,661	166,456	108,339	29,987	15,991	37,064	59,501
1992/93	3		6,986	23,944	26,684	31,734	40,189	83,503	80,295
1992/93	NC		242	90					
1993/94				90,988	522,700	410,883	418,778	387,564	280,523
1993/94	1			45					
1993/94	NC			465					
1994/95					38,236	115,843	77,119	59,137	45,796
1994/95	3				1,203	369	601	3,099	1,715
1994/95	NC				1,292	561	174	15	
1995/96						36,541	32,176	33,764	34,795
1995/96	1								
1995/96	3					931	5,227	14,166	20,988
1996/97							4,150	9,559	23,120
1996/97	1						3,543	7,199	17,959
1997/98								617,031	929,572
1997/98	1							404	1,490
1997/98	3							1,715	5,841
1998/99									7,918
1998/99	3								4,922
Total Expenditure		**6,760,778**	**5,231,893**	**5,334,192**	**5,790,312**	**5,249,635**	**4,655,428**	**4,165,589**	**4,062,434**
Patented Expenditure		**1,973,823**	**684,268**	**650,008**	**775,713**	**713,013**	**589,887**	**622,489**	**681,501**
Non-Patented Expenditure		**4,786,956**	**4,547,625**	**4,684,184**	**5,014,599**	**4,536,622**	**4,065,541**	**3,543,100**	**3,380,933**


Expenditures on Anti-Bacterials for Systemic Use
Saskatchewan 1991/92 - 1998/99
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
1991/92
1992/93
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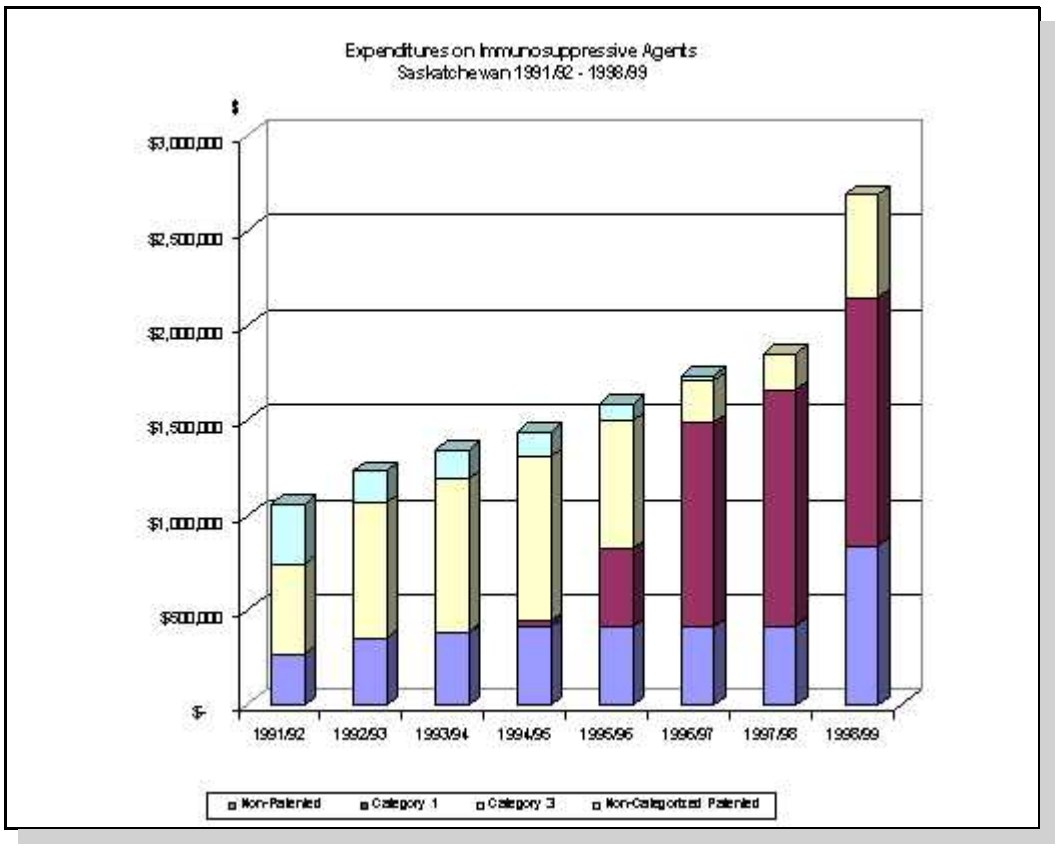
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

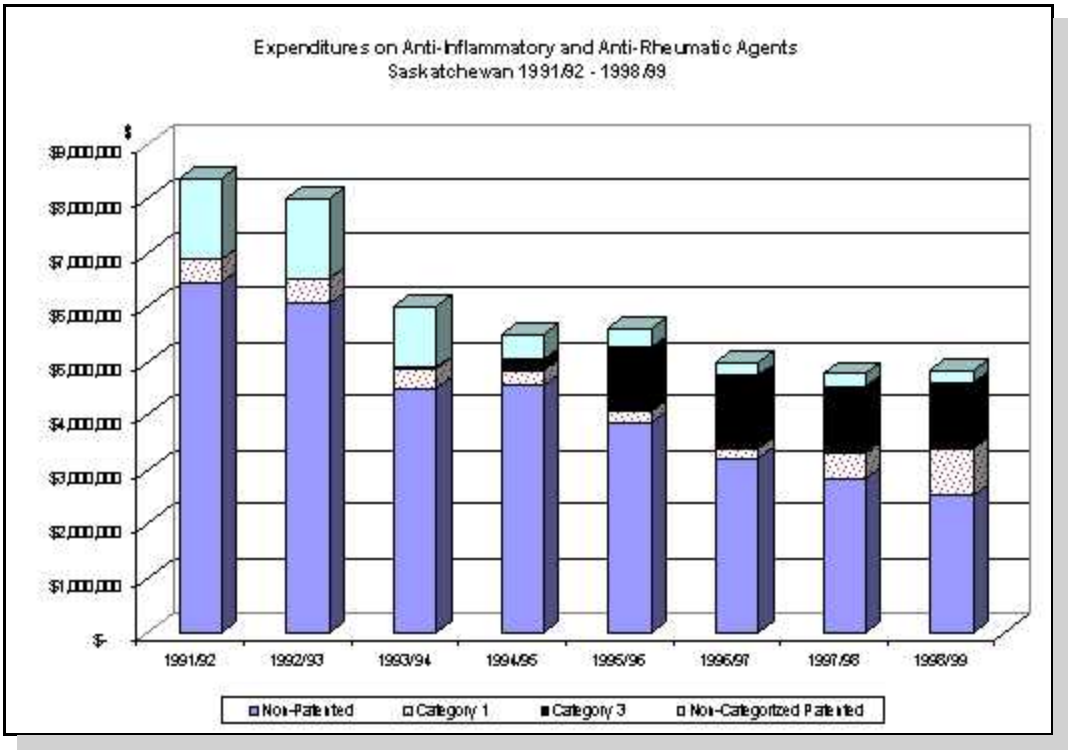
Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Immunosuppressive Agents
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		265,833	350,974	375,726	411,833	413,298	413,133	339,680	49,575
1991/92 or before	3	472,353	714,682	812,099	868,436	677,418	161,855	19,878	21,272
1991/92 or before	NC	325,035	167,521	149,082	132,446	85,489	25,778		
1992/93	1		92	6,000	13,930	11,397	10,292	738	169
1994/95	1				14,609	386,663	1,019,530	1,171,325	1,226,533
1995/96	1					9,225	39,519	44,892	41,262
1996/97									
1996/97	1						6,158	29,145	45,232
1996/97	3						59,983	169,004	522,650
1997/98								77,453	769,658
1998/99									18,285
Total Expenditure		**1,063,222**	**1,233,270**	**1,342,906**	**1,441,254**	**1,583,489**	**1,736,247**	**1,852,116**	**2,694,636**
Patented Expenditure		**797,388**	**882,296**	**967,180**	**1,029,421**	**1,170,191**	**1,323,114**	**1,434,983**	**1,857,117**
Non-Patented Expenditure		**265,833**	**350,974**	**375,726**	**411,833**	**431,298**	**413,133**	**417,133**	**837,518**


Expenditures on Immunosuppressive Agents
Saskatchewan 1991/92 - 1998/99
$
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$-
1991/92
1992/93
1993/94
1994/95
1995/96
1996/97
1997/98
1998/99
Non-Patented
Category 1
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Anti-Inflammatory and Anti-Rheumatic Products
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		6,459,060	5,994,026	3,691,677	3,216,451	2,277,843	1,245,942	774,139	626,451
1991/92 or before	1	419,052	458,412	315,149	283,136	214,061	188,176	152,537	160,518
1991/92 or before	3	11,027	12,246	12,742	13,160	11,611	13,004	11,793	9,701
1991/92 or before	NC	1,483,963	1,128,572	695,603	452,864	349,072	246,991	230,578	203,576
1992/93			60,101	397,928	443,113	338,318	222,970	87,579	16,253
1992/93	1		6,297	52,076					
1992/93	NC		341,704	446,259					
1993/94				408,356	825,014	636,139	510,108	472,834	353,160
1993/94	NC			70	24				859
1994/95					71,495	469,218	475,522	421,800	130,812
1994/95	3				184,816	1,174,916	1,309,947	1,242,142	1,201,182
1995/96						142,788	666,467	567,250	255,356
1995/96	1					112	4,140	6,495	4,080
1996/97							90,486	219,434	175,642
1997/98								299,950	359,512
1997/98	1							290,870	701,109
1998/99									618,414
Total Expenditure		**8,373,103**	**8,001,359**	**6,019,859**	**5,490,073**	**5,614,077**	**4,973,754**	**4,777,400**	**4,816,624**
Patented Expenditure		**1,914,043**	**1,947,232**	**1,521,899**	**934,000**	**1,749,771**	**1,762,259**	**1,934,415**	**2,281,026**
Non-Patented Expenditure		**6,459,060**	**6,054,127**	**4,497,960**	**4,556,073**	**3,864,306**	**3,211,495**	**2,842,984**	**2,535,599**


Expenditures on Anti-Inflammatory and Anti-Rheumatic Agents
Saskatchewan 1991/92 - 1998/99
$
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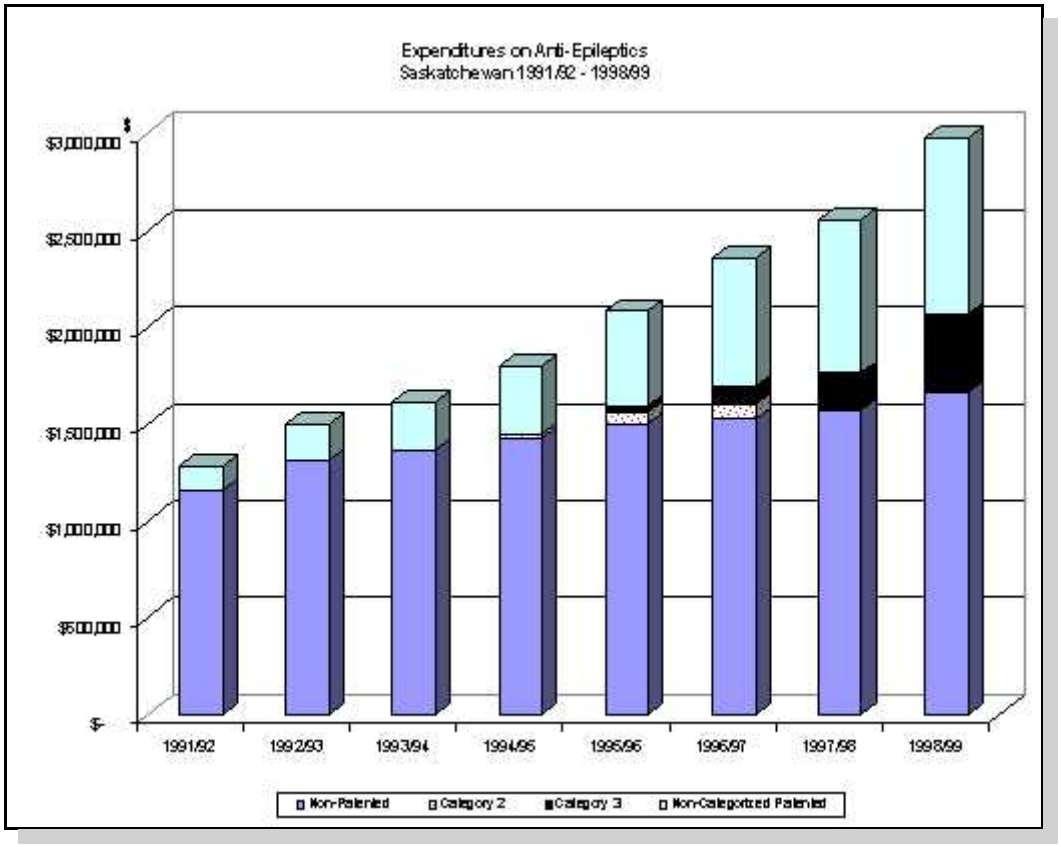
Non-Patented
Category 1
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Anti-Epileptics
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		1,156,292	1,314,720	1,341,638	1,171,629	1,082,142	843,939	635,784	607,034
1991/92 or before	NC	127,651	188,408	249,829	354,798	490,384	661,252	797,685	913,590
1992/93			15	15					
1993/94				25,098	164,162	37,066	4,609	9,120	22,203
1994/95					89,662	309,967	378,804	486,724	538,889
1994/95	2				20,611	59,328	84,099		
1995/96						69,688	258,234	170,803	71,031
1995/96	3					34,772	87,324	164,540	245,397
1996/97							36,531	196,613	215,143
1997/98								73,986	181,726
1997/98	3							22,854	161,353
1998/99									26,506
1998/99	NC								
Total Expenditure		**1,283,943**	**1,503,143**	**1,616,579**	**1,800,862**	**2,083,346**	**2,354,792**	**2,588,108**	**2,982,871**
Patented Expenditure		**127,651**	**188,408**	**249,829**	**375,409**	**584,484**	**832,675**	**985,079**	**1,320,340**
Non-Patented Expenditure		**1,156,292**	**1,314,735**	**1,366,751**	**1,425,453**	**1,498,863**	**1,522,116**	**1,573,030**	**1,662,531**


Expenditures on Anti-Epileptics
Saskatchewan 1991/92 - 1998/99
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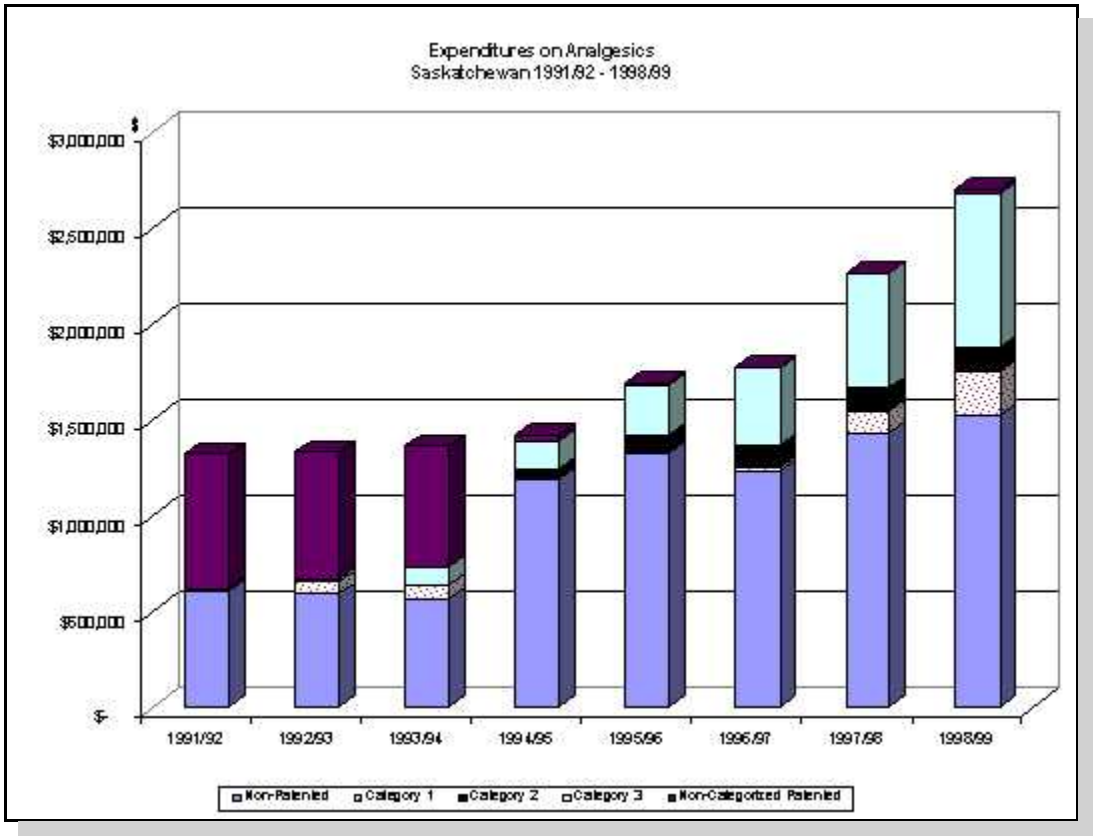
Non-Patented
Category 2
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Analgesics
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		612,654	592,574	555,136	1,094,736	1,178,736	1,113,072	1,220,114	1,338,207
1991/92 or before	1	11,120	62,509	73,420					
1991/92 or before	NC	700,230	655,050	624,214	30,808	4,793	2,946	1,760	552
1992/93			540	627	1,017	303	302	188	528
1992/93	3		18,934	97,144	146,518	259,521	404,767	586,393	787,320
1993/94				12,813	69,619	47,011	29,519	30,359	35,410
1994/95					29,169	48,887	50,329	41,327	37,431
1994/95	2				53,414	87,542	110,123	120,088	121,214
1995/96						50,893	34,073	72,015	105,720
1995/96	1					11,373	22,360	28,847	44,488
1996/97							2,156	27,234	4,965
1996/97	1						4,955	80,289	157,891
1997/98								42,381	5,041
1997/98	1							676	11,951
1997/98	3							10,684	14,244
1997/98	NC							5,261	15,987
1998/99									45
1998/99	1								12,238
1998/99	3								3,853
Total Expenditure		**1,324,004**	**1,329,607**	**1,363,353**	**1,425,280**	**1,689,058**	**1,774,603**	**2,267,617**	**2,697,087**
Patented Expenditure		**711,350**	**736,493**	**794,778**	**230,739**	**363,228**	**545,151**	**833,998**	**1,169,739**
Non-Patented Expenditure		**612,654**	**593,114**	**568,575**	**1,194,540**	**1,325,830**	**1,229,452**	**1,433,618**	**1,527,347**


Expenditures on Analgesics
Saskatchewan 1991/92 - 1998/99
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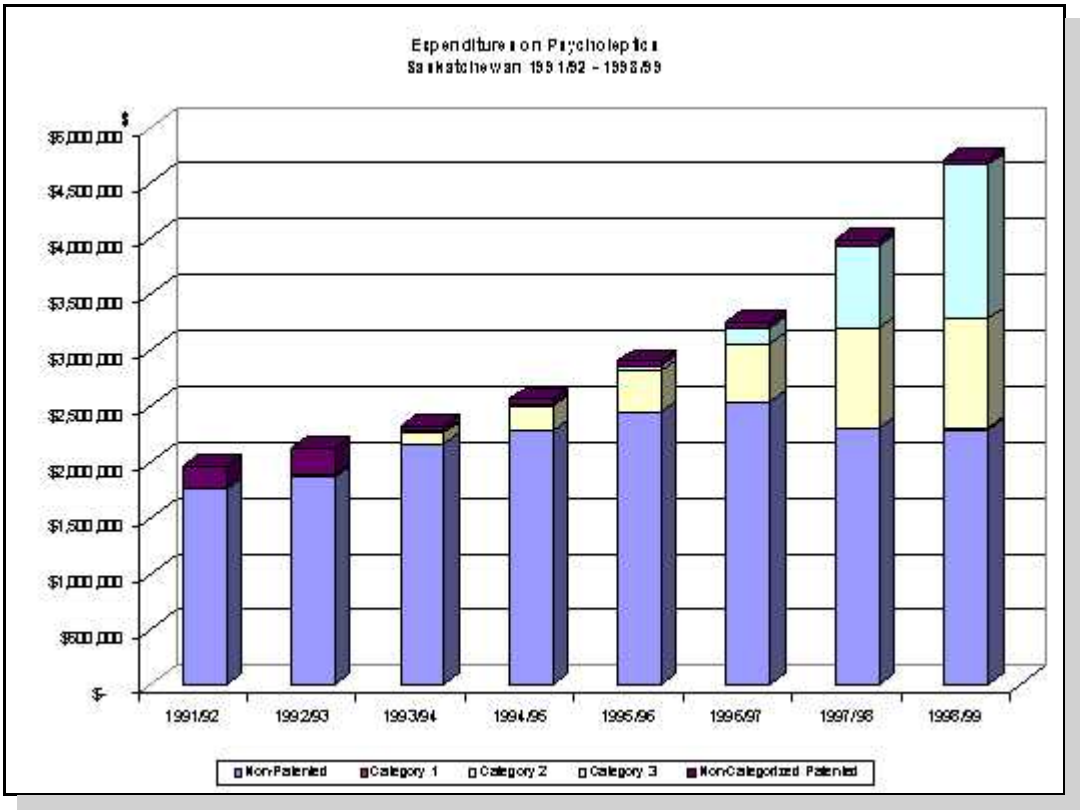
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Psycholeptics
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		1,755,206	1,867,173	1,996,789	2,042,006	2,192,992	2,078,285	1,614,596	1,574,327
1991/92 or before	1	33	10,341						
1991/92 or before	3	40	923	2,050		375	1,881	2,593	793
1991/92 or before	NC	211,754	242,995	49,729	51,912	48,367	46,312	42,329	40,205
1992/93			627	39,859	104,886	134,939	76,037	79,535	70,830
1992/93	1		7,642						
1993/94				123,255	123,335	46,767	46,435	30,683	30,096
1993/94	1			22		121	323	216	850
1993/94	2			95,908	221,469	363,198	530,917	892,503	977,293
1993/94	3			14,811	19,993	44,056	134,864	465,421	685,882
1994/95					3,597	59,199	64,346	27,050	10,344
1995/96						15,448	75,132	59,124	44,438
1996/97							192,880	450,645	431,261
1997/98								47,173	116,738
1997/98	1							112	11,227
1997/98	3							271,672	688,700
1998/99									9,048
1998/99	3								10,814
Total Expenditure		**1,967,032**	**2,129,701**	**2,322,424**	**2,567,198**	**2,905,462**	**3,247,413**	**3,982,653**	**4,702,844**
Patented Expenditure		**211,827**	**261,900**	**162,520**	**293,374**	**456,117**	**714,298**	**1,674,846**	**2,415,763**
Non-Patented Expenditure		**1,755,206**	**1,867,800**	**2,159,904**	**2,273,824**	**2,449,345**	**2,533,115**	**2,308,806**	**2,287,080**


Expenditures on Psycholeptics
Saskatchewan 1991/92 - 1998/99
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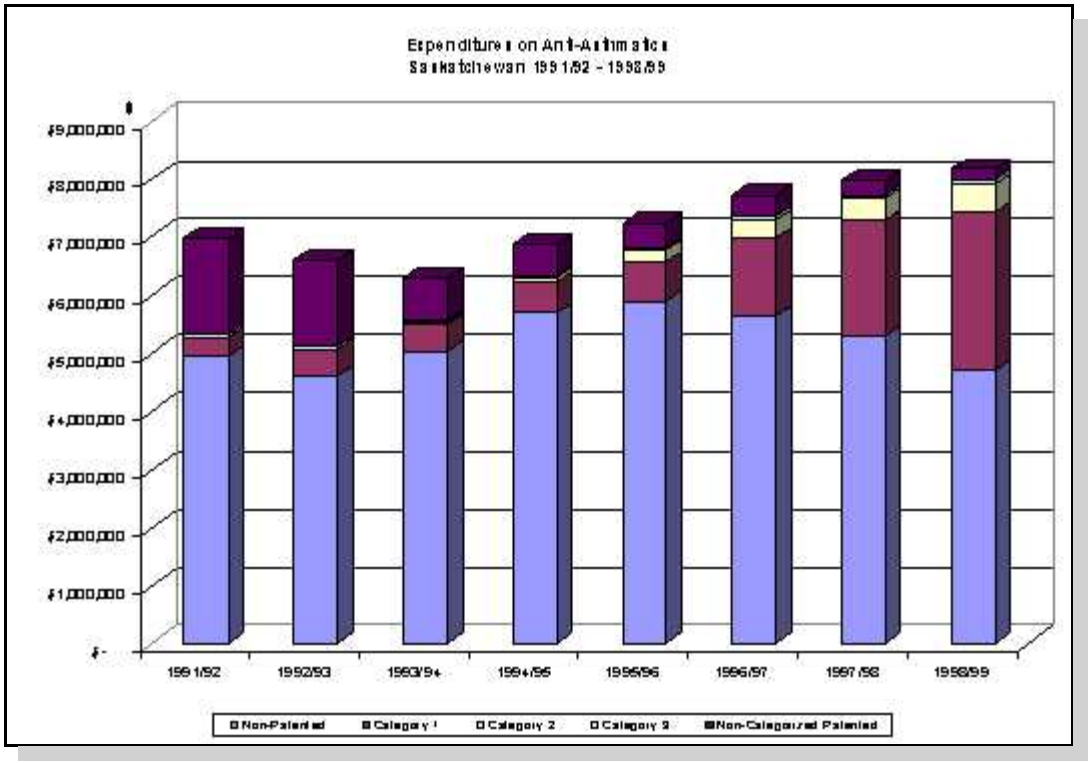
1998/99
Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

Impact of Existing and Newer Drugs by Major Disease Groups
Saskatchewan 1991/92 - 1998/99
Anti-Asthmatics
(dollars)

Year of Introduction	CAT	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
1991/92 or before		4,956,659	4,557,557	4,384,676	4,523,670	4,114,293	3,592,029	3,096,380	2,495,579
1991/92 or before	1	320,843	463,969	445,244	505,912	554,511	597,366	636,117	681,691
1991/92 or before	3	36,858	41,602	34,428	31,390	29,751	72,282	55,291	36,236
1991/92 or before	NC	1,655,910	1,490,848	726,294	519,052	439,733	346,745	245,469	183,135
1992/93			47,376	610,209	860,959	869,987	583,829	320,798	270,440
1992/93	1		1,701	12,659	28,760	66,729	87,861	115,722	115,453
1992/93	2		2,765	32,872	89,214	208,208	305,780	378,514	471,052
1993/94				44,136	126,830	302,727	399,028	438,303	97,195
1994/95					179,970	541,099	547,181	479,803	360,992
1995/96						77,639	346,151	444,317	285,484
1995/96	1					44,210	666,288	1,241,712	1,861,094
1996/97							175,727	462,506	511,618
1997/98								51,728	296,857
1997/98	1							2,402	47,831
1997/98	3							2,256	27,382
1998/99									404,366
1998/99	1								12,025
1998/99	3								12,956
Total Expenditure		**6,970,270**	**6,605,817**	**6,290,517**	**6,865,756**	**7,248,886**	**7,720,267**	**7,971,318**	**8,171,386**
Patented Expenditure		**2,013,611**	**2,000,885**	**1,251,497**	**1,174,328**	**1,343,142**	**2,076,323**	**2,677,483**	**3,448,854**
Non-Patented Expenditure		**4,956,659**	**4,604,932**	**5,039,020**	**5,691,428**	**5,905,744**	**5,643,945**	**5,293,836**	**4,722,531**


Expenditures on Anti-Asthmatics
Saskatchewan 1991/92 - 1998/99
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Non-Patented
Category 1
Category 2
Category 3
Non-Categorized Patented

Appendix 5

Glossary

Beneficiary

Someone who has made a claim to the Saskatchewan Prescription Drug Plan during the specified time period.

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 Drug Benefit 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 in the Saskatchewan Drug Benefit Formulary before 1991/92, or were listed in 1991/92.

New Drug Effect

New Drug Effect shows the amount by which expenditures increase as a result of listing new drugs in the Saskatchewan Prescription Drug Plan Formulary.

Newer Drug Products

In this Study, New Drug Products are defined as drug products that were listed in the Saskatchewan Prescription Drug Plan Formulary in 1992/93 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 Saskatchewan Drug Benefit 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.