Generic Drugs in Canada:
Market Structure —
Trends and Impacts

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National Prescription Drug Utilization Information System

NPDUIS

Canada

About the PMPRB

The Patented Medicine Prices Review Board (PMPRB) is an independent quasi-judicial body established by Parliament in 1987.

The PMPRB has a dual role: to ensure that prices at which patentees sell their patented medicines in Canada are not excessive; and to report on pharmaceutical trends of all medicines and on R&D spending by patentees.

The PMPRB reports annually to Parliament, through the Minister of Health, on its activities, on pharmaceutical trends relating to all medicines, and on the R&D spending by patentees.

The NPDUIS Initiative

The National Prescription Drug Utilization Information System (NPDUIS) provides critical analyses of drug price, utilization, and cost trends in Canada to support drug plan policy decision-making for participating federal, provincial, and territorial governments.

The NPDUIS initiative is a partnership between the PMPRB and the Canadian Institute for Health Information. It was established in 2001 by the federal/provincial/territorial Ministers of Health.

Acknowledgements

Executive Summary

This report examines market-structure trends among markets for generic prescription drug products in Canada. It is principally concerned with the degree of sales concentration in Canadian generic markets, as well as the possible impact of such concentration on prices.

Canadian markets for generic drug products are highly concentrated with respect to sales. The two leading suppliers in a typical generic market accounted for 84.5% of sales in 2007, while the top four suppliers accounted for 96.7%. There are high levels of sales concentration in all therapeutic classes. In even the largest generic markets, where one would expect vigorous competition for market share, sales are typically dominated by a few suppliers.

On the other hand, an analysis of various foreign-to-Canadian average price ratios does not point to any simple relationship between market structure and the relative costliness of generic drug products in Canada. These results imply that relatively low sales-concentration ratios and the existence of numerous suppliers in Canada by no means guarantee that the Canadian price of a particular generic drug will be in line with prices in other countries. It follows that while markets for generic drug products definitely are highly concentrated at the manufacturing level, this is not the fundamental source of divergence between Canadian and foreign prices.

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1 Introduction

This report examines market-structure trends among non-patented prescription drug products in Canada. It is principally concerned with the degree of sales concentration in Canadian generic markets, as well as the possible impact of such concentration on prices.

The analysis covers a set of 298 leading generic drug products.[1] The analysis is restricted to cases where there were at least two generic versions of the product sold in Canada in 2007. Markets where there is a single generic supplier will be considered separately in a subsequent study.

All data used in this report are from IMS Health's MIDAS database. The data cover only drug purchases made by the retail pharmacy sector.[2]

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[1] Note that many of the markets considered in this analysis are "patented markets", in the sense that the market includes at least one (branded or generic) product reported to the PMPRB as patented between 2003 and 2007. This analysis draws no distinction between such "patented markets" and markets where there are no such patented drug products.

Appendix B provides a detailed description of the process by which drug products were selected for inclusion in the analysis, as well as all other aspects of the methodology. A list of the drug products included in the analysis can be found in Appendix C.

[2] Throughout this report the term "price" refers to prices paid by pharmacies to wholesalers or directly to companies, not those paid by consumers or drug plans. These prices are derived from sales data based on invoiced prices and do not include off-invoice discounts, free goods and other forms of price reduction such as rebates. Appendix B provides details on how prices are derived, as well as other aspects of the methodology.

2 Generic Drug Products: Trends in Market Structure

Table 2.1 presents basic market information for the top 10 suppliers of generic drug products (by 2007 sales) in Canada. The first column shows how many of the 298 leading generic drug products each supplier sold in 2007. The second column gives the corresponding estimated value of the supplier's sales revenue. The third column gives the supplier's average share of sales in those generic markets in which it was active. Hence, the first line in Table 2.1 indicates that in 2007 Apotex sold 246 of the 298 leading generic drug products, thereby generating $978.9 million in ex-factory sales. Among the 246 leading generic drug products in which Apotex was active, it had an average market share of 48.4%.

Table 2.2 provides basic results on the sales concentration in generic markets. These results indicate that, although sales concentration may have declined slightly from 2003 to 2007, Canadian generic markets remain highly concentrated. In particular, Table 2.2 indicates that in 2007 the two leading suppliers in a typical generic market accounted for 84.5% of sales, while the four leading firms accounted for 96.7% of sales. The Herfindahl index[3] reinforces the finding of high concentration: this has a value of 49.1% for 2007, which is extraordinarily high by the standards usually applied in the interpretation of this measure.

Table 2.1. Leading suppliers, generic drug products, 2007

Supplier	Number of drug products	Sales ($ millions)	Average market share (%)
Apotex	246	978.9	48.4
Teva	209	525.1	25.3
Mylan	154	300.0	21.5
ratiopharm	137	263.1	19.3
Pharmascience(Cdn)	168	196.8	17.2
Novartis	98	99.2	12.0
Cobalt Pharmaceuticals	70	92.8	12.7
Ranbaxy	32	45.7	15.5
Riva	79	23.0	2.0
Johnson & Johnson	6	15.1	27.2

Table 2.2. Concentration statistics, generic drug products, 2003–2007

Year	Average number of suppliers	Average two-firm concentration ratio (%)	Average four-firm concentration ratio (%)	Average Herfindahl index (%)
2003	3.8	88.8	98.5	57.0
2004	4.1	87.7	98.3	55.2
2005	4.3	86.3	98.1	53.2
2006	4.6	85.4	97.6	52.7
2007	4.9	84.5	96.7	49.1

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[3] The Herfindahl index (sometimes called the Herfindahl-Hirschmann index) is calculated by squaring the market share of each supplier and then summing the resulting values. This calculation can return a value of 50% or more only if sales are dominated by one or two firms. If, in contrast, sales are evenly distributed among three firms, the Herfindahl index will have a value of 33%. This falls to 25% if sales are evenly divided among four firms, and so forth. Very high values of the Herfindahl index — values in the range of 70% to 100% — are possible, but can only occur if a single supplier accounts for at least 80% of sales.

Table 2.3 provides additional information on the individual ratios summarized by the average two-firm concentration ratio reported in Table 2.2. The results in this table show that in 2007, 117 (39.3%) of the 298 leading generic drug products were sold in markets where the two leading suppliers accounted for 95% or more of sales. Another 95 drug products (31.2%) were sold in markets where the two leading suppliers had between 75% and 95% of sales. In contrast, only 5 drug products (1.7%) were sold in markets where the two leading suppliers had less than 50% of sales.

Table 2.4 provides concentration statistics by major therapeutic class. These results are entirely consistent with the aggregate results of Table 2.2. No matter the therapeutic class, all measures indicate a very high degree of sales concentration.

Table 2.3. Range distribution, two-firm concentration ratio, generic drug products, 2007

Range: Two-firm concentration ratio (CR2)	Number of drug products	Share of drug products (%)	Sales ($ millions)	Share of sales (%)
45% ≤ CR2 < 50%	5	1.7	49.6	1.9
50% ≤ CR2 < 55%	4	1.3	88.3	3.4
55% ≤ CR2 < 60%	12	4.0	150.5	5.8
60% ≤ CR2 < 65%	23	7.7	485.3	18.6
65% ≤ CR2 < 70%	19	6.4	190.8	7.3
70% ≤ CR2 < 75%	23	7.7	197.7	7.6
75% ≤ CR2 < 80%	20	6.7	159.6	6.1
80% ≤ CR2 < 85%	31	10.4	225.8	8.7
85% ≤ CR2 < 90%	21	7.0	98.7	3.8
90% ≤ CR2 < 95%	23	7.7	119.0	4.6
95% ≤ CR2	117	39.3	839.6	32.2
Total	298	100.0	2,604.8	100.0

Table 2.4. Concentration statistics, generic drug products, by major therapeutic class, 2007

Therapeutic class	Average number of suppliers	Average two-firm concentration ratio (%)	Average four-firm concentration ratio (%)	Average Herfindahl index (%)
Alimentary Tract and Metabolism	5.6	82.5	96.2	45.5
Blood and Blood Forming Organs	4.0	88.7	99.9	48.5
Cardiovascular System	5.3	83.7	96.5	46.8
Dermatological	4.0	82.8	97.1	50.0
Genito-urinary System and Sex Hormones	4.4	85.7	98.5	46.5
Systemic Hormonal Preparations	3.0	95.0	100.0	70.6
General Antiinfectives for Systemic Use	4.4	86.0	98.0	51.2
Antineoplastics and Immunomodulating Agents	3.5	83.2	98.6	46.4
Musculo-skeletal System	4.1	86.1	98.4	57.8
Nervous System	5.1	82.7	95.3	48.4
Antiparasitics	3.0	93.3	100.0	56.4
Respiratory System	3.2	90.6	99.0	49.5
Sensory Organs	3.3	84.7	98.4	41.8

Table 2.5 reports concentration statistics by the size of market. As might be expected, the results in the table indicate that the larger the market, the more entrants it can support, and hence, the smaller the degree of sales concentration. However, this relationship is not nearly as strong as one might expect. For example, the table shows that in markets with total sales of less than $5 million, there were typically 4.0 suppliers, with the two leading firms accounting for 89.1% of sales. By comparison, the 20 markets where there were sales of at least $25 million typically sustained

7.6 suppliers. Despite this, the two leading suppliers still accounted for 73.9% of sales, while the top four suppliers accounted for 92.8%. Thus it appears that in even the largest generic markets, where one would expect vigorous competition for market share, sales are usually dominated by a few suppliers.

Table 2.6 gives results specifically for the 20 drug products among the set of 298 with 2007 sales of $25 million or more. Although there were five or more suppliers in most of these markets, the two

Table 2.5. Concentration statistics, generic drug products, by size of market, 2007

Range: Market size	Number of drug products	Sales ($ millions)	Average number of suppliers	Average two-firm concentration ratio (%)	Average four-firm concentration ratio (%)	Average Herfindahl index (%)
$25 million ≤ sales	20	1,079.1	7.6	73.9	92.8	40.2
$10 million ≤ sales < $25 million	48	701.9	6.1	75.4	94.0	37.1
$5 million ≤ sales < $10 million	53	390.6	5.5	81.3	95.8	44.6
Sales < $5 million	177	433.2	4.0	89.1	98.2	54.7

Table 2.6. Concentration statistics, top-selling generic drug products, 2007

Ingredient	Strength	Form	Number of suppliers	Two-firm concentration ratio (%)	Four-firm concentration ratio (%)	Herfindahl index (%)
Omeprazole	20 mg	Capsule	2	100.0	100.0	99.0
Ramipril	10 mg	Capsule	4	95.3	100.0	49.1
Venlafaxine	75 mg	Delayed-action capsule	3	98.9	100.0	93.6
Citalopram	20 mg	Coated tablet	8	65.4	91.0	25.1
Metformin	5 mg	Tablet	10	53.9	83.5	19.9
Venlafaxine	50 mg	Delayed-action capsule	3	99.1	100.0	94.1
Simvastatin	20 mg	Coated tablet	8	61.6	91.1	23.7
Ranitidine	50 mg	Coated tablet	12	64.9	88.3	27.6
Paroxetine	20 mg	Coated tablet	8	81.4	95.0	36.7
Alendronic acid	70 mg	Tablet	8	77.2	92.8	31.4
Fluoxetine	20 mg	Capsule	10	59.0	82.3	21.4
Simvastatin	40 mg	Coated tablet	8	62.0	91.1	23.8
Gabapentin	3 mg	Capsule	8	62.2	91.7	26.2
Ramipril	5 mg	Capsule	4	95.2	100.0	49.0
Sertraline	50 mg	Capsule	11	71.2	87.5	39.8
Diltiazem	240 mg	Delayed-action capsule	6	61.0	97.1	25.7
Zopiclone	7.5 mg	Coated tablet	9	63.0	92.8	24.6
Pravastatin	20 mg	Tablet	12	74.0	88.5	29.1
Sertraline	100 mg	Capsule	11	69.3	87.1	37.4
Diltiazem	80 mg	Delayed-action capsule	6	62.5	95.6	27.3

leading firms accounted for more than half of the sales in every case. These results permit only one conclusion: there are factors at work in the Canadian generic sector that bring about a high degree of sales concentration even where market entry is uninhibited and the number of active suppliers is large.

For the sake of comparison, Table 2.7 provides concentration statistics for foreign markets. These have been calculated in exactly the same way as the corresponding statistics given in Table 2.2. In particular, underlying observations are again restricted to the set of 298 leading generic drug products in Canada.

The results in Table 2.7 imply that Canadian generic markets are more concentrated than generic markets in other countries. Average Canadian two- and four-firm concentration ratios are higher — in most instances, substantially higher — than concentration ratios seen elsewhere. The value of the Herfindahl index in Canada is higher than that obtained for any country except the United Kingdom, whose value of 72.8 indicates a remarkable degree of sales concentration.[4] Somewhat surprisingly, given the difference in scale of the two markets, the Canadian market structure appears to most closely resemble that prevailing in the United States.

Table 2.7. **Concentration statistics, generic drug products, by country, 2007**

Country	Number of drug products	Average number of suppliers	Average two-firm concentration ratio (%)	Average four-firm concentration ratio (%)	Average Herfindahl index (%)
Canada	298	4.9	84.5	96.7	49.1
Australia	77	4.3	76.5	89.2	58.5
France	110	7.6	64.2	85.5	33.2
Germany	159	8.5	66.8	90.0	32.9
Italy	92	7.8	60.8	81.3	33.8
Netherlands	140	6.3	61.4	86.4	29.0
New Zealand	36	5.4	52.7	76.1	28.9
Sweden	102	5.4	70.7	88.5	41.4
Spain	101	8.7	61.4	85.1	28.6
Switzerland	68	5.4	67.6	85.7	39.4
United Kingdom	141	4.8	86.2	94.9	72.1
United States	208	7.4	80.5	96.4	47.0

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4 The UK data includes many instances in which a single company accounts for 85% or more of sales (in which case the Herfindahl index will have a minimum value of 72%). This explains the extraordinarily high average Herfindahl index value obtained for this country.

It is of interest to know whether, on a market-by-market basis, the extent of market concentration in Canada correlates with levels of concentration in other countries. To this end, Table 2.8 gives the average number of generic suppliers by country for those markets where there are one or two suppliers, three or four suppliers and five or more suppliers in Canada.

The results in Table 2.8 provide clear evidence of a positive correlation between the number of generic suppliers active in Canada and the number of suppliers in individual foreign markets. This tendency is especially pronounced at the top end: where a drug has at least five suppliers in Canada, it will typically have at least that number of generic suppliers in every foreign market.

Table 2.8. **Average number of generic suppliers, by number of Canadian suppliers, 2007**

Number of Canadian suppliers	AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
1–2 suppliers	1.8	5.7	6.1	3.8	4.7	2.2	7.7	2.6	2.6	2.2	4.4
3–4 suppliers	2.6	5.9	5.6	6.7	5.8	3.2	6.7	3.7	3.7	3.3	6.6
5 or more suppliers	5.6	8.7	10.8	9.3	7.0	7.6	10.1	6.9	7.2	6.5	9.4

3 Generic Drug Products: International Price Comparisons by Level of Concentration

Conventional economic theory acknowledges that market structure can affect price. In particular, standard models of price determination suggest that markets where sales are dominated by only a few firms may produce prices substantially exceeding the economic costs of manufacturing and distribution. Such models usually imply that the greater the concentration of sales among leading firms, the higher the price, all other things being equal. It, therefore, is of some interest to compare prices in Canada's highly concentrated generic markets with those prevailing elsewhere.

Tables 3.1*a* and 3.1*b* provide average foreign-to-Canadian price ratios for three distinct sets of generic drug products: those sold by one or two suppliers in Canada, those sold by three or four suppliers and those sold by five or more suppliers. Table 3.1*a* provides bilateral comparisons. It might be expected that Canadian prices would be highest relative to foreign prices where there are the fewest domestic suppliers and closer to international prices where there are more suppliers and, therefore, more competition in the Canadian market. In fact, the results Table 3.1*a* point in the opposite direction: where a pattern is discernible, it is that Canadian prices are relatively higher when there are a greater number of Canadian suppliers.

Table 3.1*b* provides multilateral comparisons for two sets of countries. The first of these encompasses the seven countries that the PMPRB normally considers in carrying out its price reviews: France, Germany, Italy, Sweden, Switzerland, the UK and the US. The second set encompasses all 11 foreign countries represented in the entire extract of MIDAS dataset available to PMPRB. Here again, we have the counterintuitive result of an inverse relationship between foreign-to-Canadian price ratios and the number of Canadian suppliers. The results for the case of five or more Canadian suppliers are especially striking: it appears Canadian prices are the highest relative to foreign prices in precisely those cases where one would expect price competition to be strongest in Canadian markets.

Table 3.1*a*. Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by number of Canadian suppliers, bilateral comparators, 2007

Range: Number of Canadian suppliers		AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
1–2 suppliers	Price ratio	1.92	0.64	0.53	1.00	0.50	0.12	0.24	0.70	0.92	0.61	0.71
	Number of drug products	7	10	21	14	16	5	12	16	13	18	40
3–4 suppliers	Price ratio	0.92	0.65	0.46	0.64	0.78	0.35	0.69	0.36	0.66	0.68	0.77
	Number of drug products	19	31	48	22	42	10	31	22	13	45	69
5 or more suppliers	Price ratio	0.90	0.62	0.61	0.68	0.81	0.20	0.57	0.41	0.70	0.62	0.36
	Number of drug products	51	69	90	56	82	21	58	63	40	78	99

Table 3.1*b*. Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by number of Canadian suppliers, multilateral comparators, 2007

Range: Number of Canadian suppliers		PMPRB comparator countries					All countries				
		Min	Max	Mean	Weighted mean	Median	Min	Max	Mean	Weighted mean	Median
1–2 suppliers	Price ratio	0.54	1.35	0.88	0.71	0.80	0.48	1.44	0.86	0.68	0.81
	Number of drug products	48	48	48	48	48	49	49	49	49	49
3–4 suppliers	Price ratio	0.38	0.93	0.62	0.51	0.57	0.37	1.16	0.71	0.53	0.72
	Number of drug products	89	89	89	89	89	90	90	90	90	90
5 or more suppliers	Price ratio	0.29	0.98	0.59	0.48	0.56	0.28	1.06	0.62	0.50	0.60
	Number of drug products	125	125	125	125	125	129	129	129	129	129

Tables 3.2*a* and 3.2*b* again give average foreign-to-Canadian price ratios for three sets of generic drug products, with the division in this case based on the Canadian two-firm concentration ratios. The results in these tables indicate that foreign generic prices tend to be substantially less than Canadian prices even in those cases where the Canadian sales concentration is relatively low. This is especially striking when one considers the results for the foreign mean, weighted mean and median reported in Table 3.2*b*.

Table 3.2*a*. **Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by range of two-firm concentration ratio, bilateral comparators, 2007**

Range: Two-firm concentration ratio (CR2) in Canada		AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
CR2 < 50%	Price ratio	1.19	1.41	2.49	1.09	1.59	0.87	0.72	1.61	—	1.60	—
	Number of drug products	4	2	5	3	4	1	3	3	0	4	0
50% ≤ CR2 < 75%	Price ratio	0.76	0.56	0.44	0.54	0.64	0.12	0.47	0.30	0.66	0.46	0.36
	Number of drug products	26	43	54	32	46	12	32	37	28	48	61
75% ≤ CR2	Price ratio	1.09	0.68	0.59	0.92	0.84	0.20	0.63	0.57	0.84	0.75	0.59
	Number of drug products	47	65	100	57	90	23	66	61	38	89	147

Table 3.2*b*. **Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by range of two-firm concentration ratio, multilateral comparators, 2007**

Range: Two-firm concentration ratio (CR2) in Canada		PMPRB comparator countries					All countries				
		Min	Max	Mean	Weighted mean	Median	Min	Max	Mean	Weighted mean	Median
CR2 < 50%	Price ratio	1.29	2.49	1.81	1.97	1.79	0.92	2.49	1.57	1.76	1.57
	Number of drug products	5	5	5	5	5	5	5	5	5	5
50% ≤ CR2 < 75%	Price ratio	0.22	0.81	0.48	0.39	0.46	0.24	0.87	0.51	0.41	0.49
	Number of drug products	74	74	74	74	74	78	78	78	78	78
75% ≤ CR2	Price ratio	0.41	1.13	0.72	0.58	0.67	0.39	1.31	0.78	0.59	0.76
	Number of drug products	183	183	183	183	183	185	185	185	185	185

Tables 3.3*a* and 3.3*b* give foreign-to-Canadian price ratios based on a division of drug products according to the size of the Canadian market. The results in these tables indicate that foreign generic prices tend to be substantially less than Canadian prices in even those cases where Canadian sales are the highest. Here again, the multilateral results are very striking: whether one considers the foreign mean, weighted mean or median, foreign prices appear to be no more than two-thirds of corresponding Canadian prices in those generic markets that are largest in Canada.

Table 3.3*a*. Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by market size, bilateral comparators, 2007

Range: Market size in Canada		AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
$25 million ≤ sales	Price ratio	0.88	0.64	0.43	0.69	0.65	0.09	0.55	0.28	0.71	0.30	0.30
	Number of drug products	7	14	15	13	14	2	12	11	9	15	12
$10 million ≤ sales < $25 million	Price ratio	1.12	0.58	0.68	0.71	0.92	0.32	0.59	0.60	0.78	0.79	0.67
	Number of drug products	17	25	28	19	28	7	20	24	17	29	35
$5 million ≤ sales < $10 million	Price ratio	0.72	0.63	0.72	0.72	0.80	0.16	0.53	0.52	0.66	1.14	0.41
	Number of drug products	20	24	35	22	31	7	24	21	8	29	37
Sales < $5 million	Price ratio	1.08	0.73	0.72	0.93	0.87	0.35	0.57	0.89	0.82	1.15	0.56
	Number of drug products	33	47	81	38	67	20	45	45	32	68	124

Table 3.3*b*. Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by market size, multilateral comparators, 2007

Range: Market size in Canada		PMPRB comparator countries					All countries				
		Min	Max	Mean	Weighted mean	Median	Min	Max	Mean	Weighted mean	Median
$25 million ≤ sales	Price ratio	0.20	0.82	0.46	0.38	0.44	0.19	0.93	0.52	0.39	0.54
	Number of drug products	17	17	17	17	17	17	17	17	17	17
$10 million ≤ sales < $25 million	Price ratio	0.41	1.10	0.70	0.61	0.66	0.38	1.24	0.75	0.64	0.71
	Number of drug products	45	45	45	45	45	47	47	47	47	47
$5 million ≤ sales < $10 million	Price ratio	0.40	1.10	0.69	0.56	0.62	0.39	1.16	0.69	0.56	0.64
	Number of drug products	49	49	49	49	49	51	51	51	51	51
Sales < $5 million	Price ratio	0.52	1.28	0.87	0.66	0.83	0.51	1.38	0.88	0.66	0.84
	Number of drug products	151	151	151	151	151	153	153	153	153	153

Table 3.4 provides supplementary bilateral price comparisons that directly address the question of how differences in concentration influence relative prices. In this case, before calculating average price ratios, drugs were assigned to one of four groups. Each group was defined by the extent of concentration in Canada and the relevant comparator country, with concentration measured by the two-firm concentration ratio (CR2). In particular, concentration was designated as "low" where the CR2 was less than or equal to 75%, and "high" where the concentration was greater than 75%. This low/high distinction applied in turn to the Canadian and foreign market yields the four-way division mentioned above.

Table 3.4. **Average foreign-to-Canadian price ratios, generic drug products, at market exchange rates, by ranges of two-firm concentration ratios (CR2), bilateral comparators, 2007**

CR2-Canada	≤75%	≤75%	>75%	>75%
CR2-Comparator	≤75%	>75%	≤75%	>75%
Australia	—	0.80	—	1.09
France	0.58	0.62	0.71	0.62
Germany	0.55	0.57	0.58	0.59
Italy	0.53	0.60	0.81	0.98
Netherlands	0.65	0.81	0.83	0.86
New Zealand	—	0.18	—	0.20
Sweden	0.40	0.62	0.56	0.72
Spain	0.12	0.63	0.35	0.63
Switzerland	0.48	0.67	0.54	0.86
United Kingdom	—	0.52	—	0.75
United States	0.31	0.39	0.38	0.70

The third column of Table 3.4 (CR2-Canada ≤ 75%, CR2-Comparator > 75%) represents instances where the concentration was low in the Canadian market but high in the corresponding foreign market. Comparing average price ratios in this column to those in the second column (CR2-Canada ≤ 75%, CR2-Comparator ≤ 75%), it appears that a higher foreign concentration tends to be associated with relatively higher foreign prices, as might be expected. The same pattern emerges when comparing the fourth (CR2-Canada > 75%, CR2-Comparator ≤ 75%) and fifth columns (CR2-Canada > 75%, CR2-Comparator > 75%).

Note, however, that this pattern does not emerge when it is the extent of Canadian concentration that is varied. Comparing results in the second and fourth columns of Table 3.4, it appears that foreign-to-Canadian price ratios are unaffected or even tend to rise as Canadian concentration levels rise. (Comparing results in the third and fifth columns leads to the same conclusion.)

The average price ratios obtained for the United States illustrate the overall trend of the results. In this case, no matter whether Canadian concentration is low or high, the US-to-Canadian price ratios tend to be higher in markets where the US concentration is high. The converse is decidedly not true: the average price ratio in markets where concentration is high in both the US and Canada, 0.70, drops to 0.39 in markets where the US concentration is high and the Canadian concentration is low. Canadian generic prices appear to be closest to their US counterparts where market concentration is high in both countries.

4   Conclusion

This report is principally concerned with the degree of sales concentration in Canadian generic markets, as well as the possible impact of such concentration on prices.

Canadian markets for generic drug products are highly concentrated with respect to sales. The two leading suppliers in a typical generic market accounted for 84.5% of sales in 2007, while the top four suppliers accounted for 96.7%. There are high levels of sales concentration in all therapeutic classes. In even the largest generic markets, where one would expect vigorous competition for market share, sales are typically dominated by a few suppliers.

On the other hand, an analysis of various foreign-to-Canadian average price ratios does not point to any simple relationship between market structure and the relative costliness of generic drug products in Canada. These results imply that relatively low sales-concentration ratios and the existence of numerous suppliers in Canada by no means guarantee that the Canadian price of a particular generic drug will be in line with prices in other countries. It follows that while markets for generic drug products definitely are highly concentrated at the level of the supplier, this is not the fundamental source of differences between Canadian and foreign prices.[5]

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[5] A recent study of the Canadian Competition Bureau concludes that "until recently, prices paid for generic drugs across the country tended to reflect the maximum generic drug prices allowed under Ontario's drug plan". The study also concludes that competition among Canadian companies occurs principally through rebates provided to retailers. In a market framework of this sort one would expect more vigourous competition among companies to produce larger off-invoice rebates rather than lower prices. See Canadian Competition Bureau, *Canadian Drug Sector Study*, 2007.

Appendix A: International Price Comparisons at Purchasing Power Parities

This appendix reproduces the tables in Section 3 using purchasing power parities to perform currency conversions rather than market exchange rates. Tables A.1*a* and A.1*b* correspond to Tables 3.1*a* and 3.1*b*; Tables A.2*a* and A.2*b* correspond to Tables 3.2*a* and 3.2*b*; and Tables A.3*a* and A.3*b* correspond to Tables 3.3*a* and 3.3*b*.

Table A.1*a*. Average foreign-to-Canadian price ratios, generic drug products, at purchasing power parities, by number of Canadian suppliers, bilateral comparators, 2007

Range: Number of Canadian suppliers		AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
1–2 suppliers	Price ratio	1.82	0.58	0.51	0.96	0.46	0.12	0.27	0.59	0.75	0.53	0.80
	Number of drug products	7	10	21	14	16	5	12	16	13	18	40
3–4 suppliers	Price ratio	0.87	0.59	0.44	0.61	0.73	0.35	0.77	0.30	0.53	0.59	0.86
	Number of drug products	19	31	48	22	42	10	31	22	13	45	69
5 or more suppliers	Price ratio	0.85	0.56	0.59	0.65	0.75	0.19	0.63	0.35	0.57	0.54	0.40
	Number of drug products	51	69	90	56	82	21	58	63	40	78	99

Table A.1*b*. Average foreign-to-Canadian price ratios, generic drug products, at purchasing power parities, by number of Canadian suppliers, multilateral comparators, 2007

Range: Number of Canadian suppliers		PMPRB comparator countries					All countries				
		Min	Max	Mean	Weighted mean	Median	Min	Max	Mean	Weighted mean	Median
1–2 suppliers	Price ratio	0.53	1.30	0.85	0.75	0.79	0.48	1.36	0.83	0.72	0.80
	Number of drug products	48	48	48	48	48	49	49	49	49	49
3–4 suppliers	Price ratio	0.38	0.91	0.60	0.50	0.56	0.36	1.16	0.70	0.52	0.70
	Number of drug products	89	89	89	89	89	90	90	90	90	90
5 or more suppliers	Price ratio	0.28	0.90	0.55	0.48	0.53	0.28	1.00	0.59	0.51	0.57
	Number of drug products	125	125	125	125	125	129	129	129	129	129

Table A.2a. Average foreign-to-Canadian price ratios, generic drug products, at purchasing power parities, by range of two-firm concentration ratio, bilateral comparators, 2007

Range: Two-firm concentration ratio (CR2) in Canada		AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
CR2 < 50%	Price ratio	1.13	1.28	2.40	1.05	1.48	0.86	0.80	1.34	—	1.39	—
	Number of drug products	4	2	5	3	4	1	3	3	—	4	—
50% ≤ CR2 < 75%	Price ratio	0.72	0.51	0.42	0.52	0.59	0.12	0.52	0.25	0.54	0.40	0.40
	Number of drug products	26	43	54	32	46	12	32	37	28	48	61
75% ≤ CR2	Price ratio	1.04	0.62	0.57	0.89	0.78	0.20	0.70	0.47	0.69	0.66	0.67
	Number of drug products	47	65	100	57	90	23	66	61	38	89	147

Table A.2b. Average foreign-to-Canadian price ratios, generic drug products, at purchasing power parities, by range of two-firm concentration ratio, multilateral comparators, 2007

Range: Two-firm concentration ratio (CR2) in Canada		PMPRB comparator countries					All countries				
		Min	Max	Mean	Weighted mean	Median	Min	Max	Mean	Weighted mean	Median
CR2 < 50%	Price ratio	1.21	2.40	1.67	1.84	1.57	0.96	2.40	1.47	1.66	1.40
	Number of drug products	5	5	5	5	5	5	5	5	5	5
50% ≤ CR2 < 75%	Price ratio	0.21	0.75	0.45	0.39	0.44	0.23	0.82	0.49	0.42	0.47
	Number of drug products	74	74	74	74	74	78	78	78	78	78
75% ≤ CR2	Price ratio	0.41	1.08	0.69	0.58	0.64	0.38	1.26	0.75	0.60	0.73
	Number of drug products	183	183	183	183	183	185	185	185	185	185

Table A.3*a*. Average foreign-to-Canadian price ratios, generic drug products, at purchasing power parities, by market size, bilateral comparators, 2007

Range: Market size in Canada		AUS	FRA	GER	ITA	NLD	NZL	ESP	SWE	SWI	UK	USA
$25 million ≤ sales	Price ratio	0.84	0.58	0.42	0.66	0.61	0.09	0.61	0.23	0.58	0.26	0.34
	Number of drug products	7	14	15	13	14	2	12	11	9	15	12
$10 million ≤ sales < $25 million	Price ratio	1.06	0.52	0.65	0.69	0.86	0.32	0.66	0.50	0.64	0.69	0.76
	Number of drug products	17	25	28	19	28	7	20	24	17	29	35
$5 million ≤ sales < $10 million	Price ratio	0.69	0.57	0.69	0.70	0.75	0.15	0.59	0.43	0.53	0.99	0.46
	Number of drug products	20	24	35	22	31	7	24	21	8	29	37
Sales < $5 million	Price ratio	1.03	0.66	0.69	0.89	0.81	0.35	0.63	0.74	0.67	1.01	0.63
	Number of drug products	33	47	81	38	67	20	45	45	32	68	124

Table A.3*b*. Average foreign-to-Canadian price ratios, generic drug products, at purchasing power parities, by market size, multilateral comparators, 2007

Range: Market size in Canada		PMPRB comparator countries					All countries				
		Min	Max	Mean	Weighted mean	Median	Min	Max	Mean	Weighted mean	Median
$25 million ≤ sales	Price ratio	0.18	0.75	0.43	0.37	0.41	0.17	0.89	0.49	0.38	0.52
	Number of drug products	17	17	17	17	17	17	17	17	17	17
$10 million ≤ sales < $25 million	Price ratio	0.40	1.05	0.67	0.63	0.64	0.38	1.20	0.72	0.66	0.68
	Number of drug products	45	45	45	45	45	47	47	47	47	47
$5 million ≤ sales < $10 million	Price ratio	0.40	1.03	0.66	0.56	0.60	0.40	1.09	0.66	0.57	0.61
	Number of drug products	49	49	49	49	49	51	51	51	51	51
Sales < $5 million	Price ratio	0.53	1.21	0.84	0.66	0.80	0.51	1.32	0.85	0.67	0.81
	Number of drug products	151	151	151	151	151	153	153	153	153	153

Appendix B: Notes on Methodology

The results described in this report have been calculated from a large set of data on drug sales and prices in Canada and other countries. This section describes the data, sources, concepts and methods applied in performing these calculations.

1 Terminology

In this report, the term "drug" refers to any unique combination of active ingredient, strength and form. Except where manufacturer detail is required, all statistical results are calculated at the level of individual drug products and then aggregated.

The term "product" refers to a version of a drug sold by a particular supplier.

Results are sometimes reported by "major therapeutic class". This refers to the Level 1 classes of the World Health Organization's Anatomical, Therapeutic, Chemical (ATC) drug classification system. Level 1 codes normally refer to the anatomical system on which the drug acts.

A "branded" product is one sold under a particular trade name. A "generic" product is sold under the name of its principal ingredient(s).

The term "supplier" refers to the economic entity (usually a corporation) that controls the manufacturer of a given drug product.[6]

2 Price and Sales Data

IMS Health's MIDAS database is the source of all price and sales data used in this analysis. MIDAS is a summary of data obtained from IMS Health's detailed audits of pharmaceutical purchases made by retailers (in 70 countries) and hospitals (in 45 countries). MIDAS contains information on sales of individual products, measured in both currency and physical units, as well as information on the product manufacturer, active ingredient, brand, form, strength, pack size and therapeutic class.

The data used in this report cover prescription drug sales to the retail pharmacy sector. Sales data include direct sales by suppliers to pharmacies and indirect sales via wholesalers. The retail pharmacy sector accounts for most sales in all of the countries considered in the analysis.[7]

2.1 Sales

MIDAS includes a field representing IMS Health's estimate of the sales revenue in local currency received by the supplier selling the product in question. This measure of sales is used throughout the analysis. IMS's estimates are based directly on the purchase information obtained in its pharmacy and hospital audits.

To estimate the value of a supplier's sales of a particular product, IMS removes its estimate of wholesalers' mark-ups from the acquisition costs reported by pharmacies and hospitals.

It is important to understand that the acquisition costs used by IMS are based on invoiced prices. Off-invoice discounts, free goods and other forms of price reduction, such as rebates, are therefore not represented in the MIDAS data.

2.2 Quantities

MIDAS provides a measure of physical quantity it calls standardized units (SU). This measure is used throughout the report. Standardized units represent IMS's estimate of the number of normal doses that a given volume of physical units constitutes. This is simply the "number of pills" in the case of oral solids.

2.3 Prices

A drug product's price for any given period is obtained by dividing the value of the manufacturer's sales of that product by the number of standardized units of the product MIDAS reports for that period. Note that the prices thus obtained are properly interpreted as estimated ex-factory prices (i.e., prices charged by suppliers) and not as final retail prices paid by consumers or drug reimbursement plans.

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[6] These controlling entities are identified in the MIDAS database's Corporation field.

[7] Retail pharmacy purchases account for more than 85% of drug sales in Canada, based on 2004 results from IMS's Hospital and Pharmacy Audit.

Prices obtained at the level of the drug are derived in a similar fashion, except that sales and quantities of the drug are first summed across suppliers and the resulting sums divided.[8]

2.4 Patent Status

For the purpose of this study, a drug is identified as patented if at least one version of the drug (either branded or generic) was subject to price review by the PMPRB at some point over the period 2003–2007. If no version of the drug was reviewed by the PMPRB over this period, it is considered non-patented.

Every year the PMPRB, as an addendum to its Annual Report, publishes a list of patented drug products that were subject to price review as of the end of the calendar year. These lists were used to determine the patent status of individual drug products.

3 Identification and Selection of Generic Drug Products

A master list of leading generic drug products was constructed for the analysis of 2007 generic sales and prices. The following steps describe the method by which this was done.

Step 1. Using MIDAS data, drugs sold in 2007 by leading Canadian generic suppliers were identified. Drugs with aggregate 2007 generic sales of less than $1 million were then deleted.

Step 2. Using information from Health Canada's Drug Product Database, any non-prescription drugs were eliminated from the list of drugs obtained in Step 1.

Step 3. A list of all products corresponding to the drugs remaining after Step 2 was obtained. Note that the resulting list of products encompasses all branded and generic versions of the drug.

Step 4. For each remaining product, the contents of the MIDAS database's Local Product Name and Molecule fields were compared.[9] Provided that the contents of the two fields were reasonably similar, the product was retained as a generic.[10]

Step 5. For each remaining drug, the number of generic versions on the Canadian market in 2007 was determined. If there was only a single generic version available in 2007, the drug was deleted.[11]

4 Matching Data Across Countries

When performing international price comparisons, matching products across countries can be difficult. Prices for the same drug can vary appreciably by strength, form and pack size, even within a single market. This suggests that price comparisons should be limited to those drug products where an exact match can be made. On the other hand, not all pack sizes may be available in all markets, which raises the possibility that a large amount of information may be lost if this is included in the matching criteria. In the PMPRB's view, matching by drug (as defined above) strikes a reasonable compromise between rigour and coverage. This is the approach taken to produce the international price comparisons reported in the main text.

All foreign-to-Canadian price comparisons are based on foreign prices encompassing foreign generic products only.[12] Foreign generic products were identified by comparing the Local Brand Name and Molecule fields.

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[8] Note that, under this approach, a drug's price can be interpreted as a sales-weighted average of the product prices it encompasses.

[9] For a large majority of generic products, the ingredient name actually appears in MIDAS's brand-name field (along with a company identifier). Sometimes the brand-name field contains the ingredient name in a modified form, in which case the product was retained as a generic. Only products sold under names clearly different from that of their principal ingredient were eliminated.

[10] Note that whether the product is sold by a "generic" or a "brand-name" manufacturer does not matter here. This means our list of generic products will include "pseudo-generics" sold by companies principally engaged in selling branded products.

[11] Markets with a single generic supplier will be considered separately in a subsequent report.

[12] Because generic versions of some drug products are not available in all markets, the number of matches will vary from comparator to comparator.

5 Currency Conversion

As noted above, the MIDAS sales data used in this report are expressed in local currencies. Sales were restated in Canadian dollars to allow for meaningful international price comparisons. Currency conversions were done using (1) annual average spot-market exchange rates (as reported by the Bank of Canada)[13] and (2) purchasing power parities (as reported by the OECD).

6 Specific Reporting Elements: Statistical Methodology

The following subsections briefly describe the construction of the statistics provided in the report.

6.1 Concentration Statistics

The concentration statistics presented in Section 2 measure the extent to which markets are dominated by a small number of suppliers. In keeping with the PMPRB's general approach, concentration is first measured at the level of individual drugs. Overall statistics are then obtained by aggregating the results across all drugs. Aggregation is done by taking a simple average of drug-level results.

N-firm sales concentration ratios are commonly used in economic analysis. An N-firm ratio is calculated by first identifying the N suppliers with the largest sales in a given market, adding up their sales, and then calculating the proportion of overall market sales accounted for by the N-firm total.

Standard criticisms of N-firm ratios are that they say nothing about the extent of concentration among leading sellers, and that their construction entirely excludes the remainder of the market. The Herfindahl index represents an attempt to correct for these supposed deficiencies. To calculate the Herfindahl index one first calculates market shares for every manufacturer and then takes a sales-weighted average of these market shares. The resulting statistic is the sum of squared market shares taken across all suppliers.

6.2 International Price Comparisons

This report presents a variety of average foreign-to-Canadian price ratios, similar to those published in the PMPRB's Annual Report. These average ratios are constructed as Canadian-sales-weighted arithmetic averages of foreign-to-Canadian price ratios at the level of individual drug products. Algebraically, let

i = 1 … N, each number identifying a drug included in the calculation

$p(i)$ = the Canadian price of drug i

$p^f(i)$ = the foreign price of drug i (restated in Canadian dollars)

$w(i)$ = the proportion of Canadians' spending on the drugs 1 to N accounted for by drug i

Then the sales-weighted arithmetic mean of foreign-to-Canadian price ratios is given by:

$$R_A = \sum w(i)[p^f(i)/p(i)]$$

where $\sum$ signifies summation over drug products 1 to N.

With currency conversion at market exchange rates, average ratios constructed this way have a simple intuitive interpretation: they indicate how much more or less Canadians would have paid for the medicines they purchased in a given period had they paid foreign prices.

Multilateral foreign-to-Canadian price comparisons are also presented using the following indicators as comparators: minimum foreign price, maximum foreign price, the simple mean of foreign prices, the weighted mean of foreign prices (with weights based on sales by country) and the median of foreign prices. Each of these indicators is an aggregate measure encompassing all countries where comparable drug prices could be calculated.

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[13] This is the Bank of Canada's annual average of the daily noon rates.

Appendix C: Drug Products Included in the Analysis

Ingredient	Form	Strength	Ingredient	Form	Strength
Acebutolol	Film-coated tablet	100 mg	Carbamazepine	Delayed-action tablet	400 mg
Acebutolol	Film-coated tablet	200 mg	Carvedilol	Tablet	25 mg
Acebutolol	Film-coated tablet	400 mg	Carvedilol	Film-coated tablet	25 mg
Aciclovir	Tablet	200 mg	Carvedilol	Tablet	12.5 mg
Aciclovir	Tablet	400 mg	Carvedilol	Film-coated tablet	12.5 mg
Aciclovir	Tablet	800 mg	Carvedilol	Film-coated tablet	3.12 mg
Alendronic acid	Tablet	10 mg	Carvedilol	Tablet	6.25 mg
Alendronic acid	Tablet	70 mg	Carvedilol	Film-coated tablet	6.25 mg
Allopurinol	Tablet	100 mg	Cefaclor	Capsule	500 mg
Allopurinol	Tablet	200 mg	Cefalexin	Film-coated tablet	250 mg
Allopurinol	Tablet	300 mg	Cefalexin	Film-coated tablet	500 mg
Alprazolam	Tablet	0.25 mg	Cefprozil	Film-coated tablet	250 mg
Alprazolam	Tablet	0.5 mg	Cefprozil	Dry syrup	250 mg
Amoxicillin	Capsule	250 mg	Cefprozil	Film-coated tablet	500 mg
Amoxicillin	Suspension	250 mg	Cilazapril	Tablet	5 mg
Amoxicillin	Capsule	500 mg	Cilazapril	Tablet	2.5 mg
Anagrelide	Capsule	0.5 mg	Ciprofloxacin	Tablet	250 mg
Atenolol	Film-coated tablet	25 mg	Ciprofloxacin	Film-coated tablet	250 mg
Atenolol	Tablet	50 mg	Ciprofloxacin	Tablet	500 mg
Atenolol	Film-coated tablet	50 mg	Ciprofloxacin	Film-coated tablet	500 mg
Atenolol	Tablet	100 mg	Citalopram	Tablet	20 mg
Atenolol	Film-coated tablet	100 mg	Citalopram	Film-coated tablet	20 mg
Azathioprine	Tablet	50 mg	Citalopram	Tablet	40 mg
Azithromycin	Film-coated tablet	250 mg	Citalopram	Film-coated tablet	40 mg
Baclofen	Tablet	10 mg	Clarithromycin	Film-coated tablet	250 mg
Baclofen	Tablet	20 mg	Clarithromycin	Film-coated tablet	500 mg
Beclometasone	N.top M-D	50 mcg	Clindamycin	Capsule	150 mg
Bicalutamide	Film-coated tablet	50 mg	Clindamycin	Capsule	300 mg
Bisoprolol	Film-coated tablet	5 mg	Clobetasol	Ointment	0.05%
Bisoprolol	Film-coated tablet	10 mg	Clobetasol	Cream	0.05%
Brimonidine	Eye drops	0.2%	Clomipramine	Film-coated tablet	50 mg
Bromazepam	Tablet	3 mg	Clonazepam	Tablet	0.5 mg
Bromazepam	Tablet	6 mg	Clonazepam	Tablet	1 mg
Bupropion	Film-coated tablet	150 mg	Clonazepam	Tablet	2 mg
Buspirone	Tablet	10 mg	Clonidine	Tablet	0.1 mg
Captopril	Tablet	50 mg	Clonidine	Tablet	0.2 mg
Carbamazepine	Tablet	200 mg	Clozapine	Tablet	25 mg
Carbamazepine	Delayed-action tablet	200 mg	Clozapine	Tablet	100 mg

Ingredient	Form	Strength	Ingredient	Form	Strength
Codeine	Tablet	30 mg	Fluconazole	Tablet	100 mg
Cyclobenzaprine	Tablet	10 mg	Fluconazole	Capsule	150 mg
Cyclobenzaprine	Film-coated tablet	10 mg	Fluoxetine	Capsule	10 mg
Cyproterone	Tablet	50 mg	Fluoxetine	Capsule	20 mg
Desmopressin	N sys M-D	10 mcg	Fluticasone	N.top M-D	50 mcg
Dexamethasone	Tablet	4 mg	Fluvoxamine	Film-coated tablet	50 mg
Diazepam	Tablet	5 mg	Fluvoxamine	Film-coated tablet	100 mg
Diazepam	Tablet	10 mg	Fosinopril	Tablet	10 mg
Diclofenac	Enteric-coated tablet	50 mg	Fosinopril	Tablet	20 mg
Diclofenac	Film-coated tablet	75 mg	Furosemide	Tablet	20 mg
Diclofenac	Film-coated tablet	100 mg	Furosemide	Tablet	40 mg
Digoxin	Tablet	0.12 mg	Furosemide	Tablet	80 mg
Digoxin	Tablet	0.25 mg	Gabapentin	Capsule	100 mg
Diltiazem	Delayed-action capsule	120 mg	Gabapentin	Capsule	300 mg
Diltiazem	Delayed-action capsule	180 mg	Gabapentin	Capsule	400 mg
Diltiazem	Delayed-action capsule	240 mg	Gabapentin	Tablet	600 mg
Diltiazem	Delayed-action capsule	300 mg	Gabapentin	Tablet	800 mg
Diltiazem	Delayed-action capsule	360 mg	Gemfibrozil	Capsule	300 mg
Dimenhydrinate	Tablet	50 mg	Gemfibrozil	Tablet	600 mg
Domperidone	Tablet	10 mg	Gemfibrozil	Film-coated tablet	600 mg
Domperidone	Film-coated tablet	10 mg	Glibenclamide	Tablet	5 mg
Doxazosin	Tablet	2 mg	Glibenclamide	Tablet	2.5 mg
Doxazosin	Tablet	4 mg	Gliclazide	Tablet	80 mg
Doxepin	Capsule	25 mg	Hydrochlorothiaz	Tablet	25 mg
Doxepin	Capsule	50 mg	Hydrochlorothiaz	Tablet	50 mg
Doxycycline	Film-coated tablet	100 mg	Hydrocortisone	Ointment	0.5%
Doxycycline	Capsule	100 mg	Hydroxyzine	Capsule	25 mg
Enalapril	Tablet	5 mg	Ibuprofen	Film-coated tablet	600 mg
Enalapril	Tablet	10 mg	Indapamide	Coated tablet	2.5 mg
Enalapril	Tablet	20 mg	Indapamide	Film-coated tablet	2.5 mg
Famciclovir	Film-coated tablet	125 mg	Indapamide	Film-coated tablet	1.25 mg
Famciclovir	Film-coated tablet	250 mg	Indometacin	Capsule	50 mg
Famciclovir	Film-coated tablet	500 mg	Ipratropium bromide	N.top M-D	0.03%
Famotidine	Film-coated tablet	20 mg	Ipratropium bromide	Liq/inh l	250 mcg
Famotidine	Film-coated tablet	40 mg	Ipratropium bromide	Rgn lung U-D	250 mcg
Fenofibrate	Film-coated tablet	100 mg	Ketoconazole	Tablet	200 mg
Fenofibrate	Film-coated tablet	160 mg	Ketorolac	Eye drops	0.5%
Fenofibrate	Capsule	200 mg	Ketorolac	Film-coated tablet	10 mg
Fentanyl	Transdermal patch	50 mcg	Lamotrigine	Tablet	25 mg
Fentanyl	Transdermal patch	100 mcg	Lamotrigine	Tablet	100 mg

Ingredient	Form	Strength	Ingredient	Form	Strength
Lamotrigine	Tablet	150 mg	Naproxen	Enteric-coated tablet	375 mg
Leflunomide	Tablet	10 mg	Naproxen	Tablet	500 mg
Leflunomide	Tablet	20 mg	Naproxen	Enteric-coated tablet	500 mg
Leflunomide	Film-coated tablet	20 mg	Naproxen	Film-coated tablet	550 mg
Levetiracetam	Film-coated tablet	500 mg	Nizatidine	Capsule	150 mg
Lisinopril	Tablet	5 mg	Norfloxacin	Film-coated tablet	400 mg
Lisinopril	Tablet	10 mg	Nortriptyline	Capsule	10 mg
Lisinopril	Tablet	20 mg	Nortriptyline	Capsule	25 mg
Lorazepam	Tablet	0.5 mg	Omeprazole	Capsule	20 mg
Lorazepam	Tablet	1 mg	Ondansetron	Film-coated tablet	4 mg
Lorazepam	Tablet	2 mg	Ondansetron	Film-coated tablet	8 mg
Lovastatin	Tablet	20 mg	Oxazepam	Tablet	15 mg
Lovastatin	Tablet	40 mg	Oxazepam	Tablet	30 mg
Medroxyprogester	Tablet	2.5 mg	Oxybutynin	Tablet	5 mg
Meloxicam	Tablet	15 mg	Paroxetine	Tablet	10 mg
Meloxicam	Tablet	7.5 mg	Paroxetine	Film-coated tablet	10 mg
Metformin	Tablet	500 mg	Paroxetine	Tablet	20 mg
Metformin	Film-coated tablet	500 mg	Paroxetine	Film-coated tablet	20 mg
Metformin	Tablet	850 mg	Paroxetine	Tablet	30 mg
Metformin	Film-coated tablet	850 mg	Paroxetine	Film-coated tablet	30 mg
Methotrexate	Tablet	2.5 mg	Pindolol	Tablet	10 mg
Methylphenidate	Tablet	10 mg	Pioglitazone	Tablet	30 mg
Methylphenidate	Tablet	20 mg	Pioglitazone	Tablet	45 mg
Metoprolol	Tablet	50 mg	Pramipexole	Tablet	0.25 mg
Metoprolol	Film-coated tablet	50 mg	Pramipexole	Tablet	1 mg
Metoprolol	Tablet	100 mg	Pravastatin	Tablet	10 mg
Metoprolol	Film-coated tablet	100 mg	Pravastatin	Tablet	20 mg
Metronidazole	Capsule	500 mg	Pravastatin	Tablet	40 mg
Minocycline	Capsule	50 mg	Prednisone	Tablet	5 mg
Minocycline	Capsule	100 mg	Propafenone	Film-coated tablet	150 mg
Mirtazapine	Tablet	30 mg	Propafenone	Film-coated tablet	300 mg
Mirtazapine	Film-coated tablet	30 mg	Quinine	Capsule	200 mg
Misoprostol	Tablet	200 mcg	Quinine	Capsule	300 mg
Mometasone	Ointment	0.1%	Rabeprazole	Enteric-coated tablet	20 mg
Nabumetone	Film-coated tablet	500 mg	Ramipril	Capsule	5 mg
Nadolol	Tablet	40 mg	Ramipril	Capsule	10 mg
Nadolol	Tablet	80 mg	Ramipril	Capsule	2.5 mg
Naproxen	Tablet	250 mg	Ramipril	Capsule	1.25 mg
Naproxen	Film-coated tablet	275 mg	Ranitidine	Oral liquid	15 mg
Naproxen	Tablet	375 mg	Ranitidine	Film-coated tablet	150 mg

Ingredient	Form	Strength	Ingredient	Form	Strength
Ranitidine	Film-coated tablet	300 mg	Trazodone	Film-coated tablet	100 mg
Risperidone	Film-coated tablet	0.25 mg	Trazodone	Tablet	150 mg
Risperidone	Film-coated tablet	0.5 mg	Trazodone	Film-coated tablet	150 mg
Risperidone	Film-coated tablet	1 mg	Tryptophan	Film-coated tablet	1 g
Risperidone	Film-coated tablet	2 mg	Valproic acid	Capsule	250 mg
Risperidone	Film-coated tablet	3 mg	Valproic acid	Syrup	250 mg
Risperidone	Film-coated tablet	4 mg	Valproic acid	Enteric-coated tablet	500 mg
Sertraline	Capsule	25 mg	Vancomycin	Vial dry	1 g
Sertraline	Capsule	50 mg	Venlafaxine	Delayed-action capsule	75 mg
Sertraline	Capsule	100 mg	Venlafaxine	Delayed-action capsule	150 mg
Simvastatin	Film-coated tablet	5 mg	Venlafaxine	Delayed-action capsule	37.5 mg
Simvastatin	Tablet	10 mg	Verapamil	Film-coated tablet	120 mg
Simvastatin	Film-coated tablet	10 mg	Verapamil	Film-coated tablet	180 mg
Simvastatin	Tablet	20 mg	Verapamil	Film-coated tablet	240 mg
Simvastatin	Film-coated tablet	20 mg	Warfarin	Tablet	1 mg
Simvastatin	Tablet	40 mg	Warfarin	Tablet	2 mg
Simvastatin	Film-coated tablet	40 mg	Warfarin	Tablet	3 mg
Simvastatin	Film-coated tablet	80 mg	Warfarin	Tablet	4 mg
Sotalol	Tablet	80 mg	Warfarin	Tablet	5 mg
Sotalol	Tablet	160 mg	Warfarin	Tablet	2.5 mg
Sumatriptan	Tablet	50 mg	Zopiclone	Film-coated tablet	5 mg
Sumatriptan	Tablet	100 mg	Zopiclone	Tablet	7.5 mg
Tamoxifen	Tablet	20 mg	Zopiclone	Film-coated tablet	7.5 mg
Tamsulosin	Delayed-action capsule	0.4 mg			
Temazepam	Capsule	15 mg			
Temazepam	Capsule	30 mg			
Terazosin	Tablet	1 mg			
Terazosin	Tablet	2 mg			
Terazosin	Tablet	5 mg			
Terazosin	Tablet	10 mg			
Terbinafine	Tablet	250 mg			
Ticlopidine	Film-coated tablet	250 mg			
Timolol	Eye drops	0.5%			
Topiramate	Film-coated tablet	25 mg			
Topiramate	Film-coated tablet	100 mg			
Topiramate	Film-coated tablet	200 mg			
Trazodone	Tablet	50 mg			
Trazodone	Film-coated tablet	50 mg			
Trazodone	Tablet	100 mg			