

Case Study of Interprovincial Variations in Patient Access to Oncology Drugs: Does a Common Public Formulary exist for Oncology Drugs in Canada?

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Abstract

In Canada, not all oncology drugs are covered under the Canada Health Act. Public coverage, however, can be obtained for some drugs through publically administered plans and their formularies, where the federal, provincial and territorial governments individually decide what drugs to cover and for whom. The Canadian Health Ministers declared in 2008 that Canada had an essentially common public formulary. This study examines that claim for oncology drugs, using two provinces' formularies, British Columbia (BC) and Ontario (ON), as a case study by evaluating several measures of patient access to drugs. The results show that while BC had a faster review time and approved more of the drugs studied than ON, it placed more conditions on coverage. Both provinces also have unique systems of cost-sharing. With these differences, it is suggested that oncology drugs may not be becoming part of a common public formulary and that further research is required.

Keywords: Access, Pharmaceutical, Oncology, Reimbursement, Government, Policy, Canada

1. Introduction

The health care landscape in Canada is changing to include prescription drugs as a more integral care component. After hospital care, Canada spends more on drugs than any other category, accounting for 16.3 per cent of total public health expenditure equaling \$28.0 billion in 2008. (Canadian Institute for Health Information, 2010a) Public plans provide reimbursement, or coverage, for the cost of drugs on an approved list of drugs called a formulary, in whole or in part, under the provincial public health system. Rising costs are seen to threaten the sustainability of public drug plans, (Federal/Provincial/Territorial Ministers Task Force, 2006) causing some plans to shrink in both the number of drugs covered and for whom they are covered, with more emphasis placed on pharmaco-economics, or cost-effectiveness, and more reliance on private sector mechanisms to cover patients. (Turner and Associates, 2009) The situation is particularly acute for oncology drugs. Three-quarters of oncology drugs approved in the last decade are reported to cost more than \$20,000 for a normal course of treatment.

In addition, half of all new oncology drugs are oral formulations that a patient can take on an outpatient basis. While this is considered beneficial for the patient's well-being, policy issues arise because drugs not administered in a hospital setting do not fall under the jurisdiction of the *Health Canada Act* and are therefore not covered. (Turner and Associates, 2008) Costs must be covered by an alternative public program or private sector mechanisms, such as private insurance or self-pay. Unlike most members of the Organisation for Economic Co-operation and Development, Canada does not have a national catastrophic drug coverage system. (Phillips, 2009) Many Canadians say that if they were diagnosed with cancer, the cost of drugs would have a negative impact on their personal finances. (Canadian Cancer Society, 2010) The challenge facing health care managers and other policymakers in Canada and around the world is how public plans are to balance the challenge of increased demand, due to the increased use of drugs as therapies as well as an aging population, with cost containment while still providing effective, timely, and quality care.

Oncology drugs, like drugs for other certain diseases like human immunodeficiency virus (HIV), are often placed on separate public plans and may be covered under multiple programs. Because of this and because it entails a complex mix of programs, both public and private, patient access to oncology drugs has been described as a “patchwork system” (Turner and Associates, 2009) and “a dog’s breakfast” (Anis, Guh, & Wang, 2001) that is often difficult and time consuming for patients and physicians to navigate. (Berry, Hubay, Soibelman, & Martin, 2007) Variations inherent to this type of mixed bag approach to drug coverage have caused the equity of patient access to oncology drugs to be questioned. (Cancer Advocacy Coalition of Canada, 2005, 2006, 2007) Concerns have been raised that access is based on where one resides or works, and not necessarily by need. (Menon, Stafinski, & Stuart, 2005) More consistent and equal access to high quality reviews of the clinical/pharmacoeconomic benefits of drugs has been identified as an area of improvement for public plans. (Menon, et al., 2005) Certain initiatives, like the Common Drug Review (CDR) and its antecedents, the interim Joint Oncology Drug Review (JODR) and the new pan-Canadian Oncology Drug Review (pCODR) process, are attempting to make the system more equitable with respect to evaluating drugs for public reimbursement and providing expert advice for the smaller provinces.

However, the potential for variation remains as the decisions of the review are not binding on the participants, which includes all federal and provincial plans except Quebec, in order to account for provincial budgetary and priority funding considerations before drugs are placed on provincial formularies. (Vogel, 2010) In 2004, the federal, provincial, and territorial (FPT) minister’s National Pharmaceuticals Strategy called for plans to create a common public formulary called the National Drug Formulary. (Federal/Provincial/Territorial Ministers Task Force, 2006) In 2008, the FPT ministers indicated that they believed that the Common Drug Review (CDR) process established in 2003 had effectively created a common public formulary and so the need for creating one no longer existed. (Health Council of Canada, 2009) Does a common public formulary exist for oncology drugs? If so, one would expect that all Canadians have access to the same oncology drugs, under the same conditions and for the same price. This study examines this claim using two of the biggest provinces, British Columbia and Ontario, as a case study into the interprovincial variation in patient access to oncology drugs in Canada.

2. Methods

The provinces of British Columbia (BC) and Ontario (ON) were chosen for three reasons. The first is that, combined, BC and ON contain more than half the population of Canada (52.58 %) and thus more than half (50.12 %) of the estimated new cancer cases in 2009. (Canadian Cancer Society’s Steering Committee, 2009) The second reason is that they each hold a unique status in the context of cancer drug access in Canada. It has been said that BC has the best funded and most timely access to cancer drugs in the country. (Cancer Advocacy Coalition of Canada, 2005) The JODR, implemented on March 1st of 2007, is administered by Cancer Care Ontario and all decisions are shared with the participating provinces. The third reason is that they have a significant amount of data publicly available that is amenable to the type of analysis undertaken in this study. This is not the case in all provinces, and this lack of transparency in provincial processes has been noted as a barrier to understanding how access can be improved. (Cancer Advocacy Coalition of Canada, 2006; Dhalla & Laupacis, 2008) Determining what constitutes ‘patient access’ is a difficult task because there is no standardized way in which it has been measured in the literature. Access itself is the result of a large number of mechanisms and processes.

For this study, comparative research involving several dimensions of access adapted from the work of Cohen, *et al.*, was used as a framework. (Cohen, Cairns, Paquette, & Faden, 2006; Cohen, Faden, Predaris, & Young, 2007) Access is described by Cohen, *et al.*, using three main themes of availability, coverage, and pricing. Within each of these themes are several dimensions, or measures, of access that can influence how, when and for how much a particular drug is available for a patient under any health care system, in this case the Canadian public health care system. Of course, each of these themes can contain more than the dimensions included in this adapted framework which is why there is no standardized way in which access has been measured. The sources of the data for this study are listed in Table 1. The Health Canada Drug and Health Products Notice of Compliance (NOC) Database was the source for the number of drugs approved for sale in Canada and the time of marketing authorization, which is when the NOC is issued. A list of twenty-four new oncology drugs approved in Canada since 2000, which represent a variety of drug types and classes, was compiled and is shown in Table 2. Measures were based on the first indication for the drug approved by the Therapeutic Product Directorate (TPD), the federal regulatory body in Canada. The time period between the marketing approval and reimbursement decision were determined using the available data sources in each province.

The Ontario Ministry of Health and Long Term Care (MOHLTC) publishes Drug Submission Status updates on the review of drugs that notes the current status as well as the date the drug was submitted for review. Decisions are made by the Committee to Evaluate Drugs (CED) and the Executive Officer (EO). The CED issues Recommendations and Reason documents on each drug which notes the month and year the document is posted which was used as the date recommendation was given. The first day of the month was used for the calculation of the time period from NOC to recommendation decision. For Ontario, this signifies the date that the drug was available for public reimbursement if approved. For other provinces however, that subscribe to the JODR administered under this system, it does not. In BC, all approved drugs are covered for all residents through the PharmaCare program, including cancer drugs. All cancer drug coverage is administered by the BC Cancer Agency which maintains a Benefit List of approved drugs for reimbursement. The Benefit List was consulted to determine which drugs were currently covered by the plan. When a drug is approved for provincial reimbursement, an announcement is made in the newsletter of the BC Cancer Agency. All newsletters, dating back to 1998, were searched to find the date when coverage was announced for the approved drugs.

The percentage of approved drugs placed on formularies or recommended for reimbursement and use, as well as the percentage of covered drugs with conditions of reimbursement, was determined using the formularies available online through the provincial department websites. A condition of reimbursement is defined here as the presence of an application process to be done by the patient and their physician that is in addition to the drug being used for the indication approved by the TPD. The evenness of drug coverage across the population was assessed by outlining the coverage policies in each province as it pertains to identifiable groups. The data source for this information is the National Prescription Drug Utilization Information System (NPDUIS) Plan Information Document from the Canadian Institute for Health Information. (Canadian Institute for Health Information, 2010b) The groups were considered covered if the plan was universal for the entire population within the group. The population groups identified were: children, seniors, social assistance recipients, low income families and individuals and working age families and individuals.

The degree to which third party payers (here the public plans) defray the cost of covered drugs was evaluated using the NPDUIS document. The cost-sharing mechanisms listed in the document are “premium”, “co-payment/co-insurance”, “deductible”, and “maximum beneficiary contribution”. As was noted in the introduction, the high cost of many new cancer drugs is a significant issue for many patients and so the protections available for beneficiaries were documented. Only those programs that would potential cover the cost of cancer drugs were included in the analysis. To analyse the data, the cost-sharing mechanisms were categorized according to their payment structure: none (i.e., the mechanism was not present in the provincial system), income based, fixed rate, or income based fixed rate. High drug cost protection was considered present either through the existence of maximum beneficiary contributions in plans that covered all residents or programs specific for high drug costs available to all residents. All information collected from databases or provincial websites is current to March 1st, 2011. The differences between all dates were calculated inclusive of both beginning and end dates.

3. Results

3.1 Availability

The dates for Notice of Compliance (NOC) approval and provincial reimbursement decisions are shown in Table 3. Of the 24 drugs approved for sale in Canada, the date on which a recommendation decision was made (either positive or negative) by BC was obtained for 70.8 per cent (17). Review data were unavailable for 29.2 per cent (7) of the drugs. The coverage status in BC is known from the BC Benefit List for three of these seven drugs while four were not listed in either the newsletter database nor in the Benefit List. This means that the four drugs may be currently under review or completely denied coverage, but in either case they are not currently available. The average time to reimbursement decision for the seventeen drugs in BC was 411 days (12.6 months; 17 – 1770 days). This is also the same as the average time to reimbursement, as all of the 17 drugs were approved. In Ontario, review data on 54.2 per cent (13) of the marketed drugs could be obtained. Data for 20.8 per cent (5) were unavailable while another 20.8 per cent (5) were still under review. The average time to a reimbursement decision was 1048 days (34 months; 305 – 2111 days). Three of the drugs were not approved and so the average time to reimbursement for the ten approved drugs is 1020 days (33 months; 305 – 2111 days). One drug, Torisel, was initially rejected for coverage but later approved. The first decision date where it was rejected was used to calculate the average reimbursement decision time.

The date when the drug was approved was used to calculate the average time to reimbursement. Ten drugs with known decision dates were reviewed in both BC and ON. A decision was made an average of 15.4 months after the NOC date in BC and an average of 33 months in ON, a difference of 17.6 months.

3.2 Coverage

3.2.1 Percentage of approved drugs placed on formularies or recommended for reimbursement and use

The results for this dimension can be seen in Figure 1. In British Columbia (BC), of the twenty-four drugs in the dataset, 79.2 per cent (19) were covered and the only one not covered, Zometa (zoledronic acid), was described in 2003 as not being covered for pharmaco-economic reasons at some earlier, unspecified date. While information on 16.7 per cent (4) of the drugs was not available in the newsletter database, it is known that these drugs were not covered as they were not included in the Benefit List. Therefore the per cent of drugs placed on formularies is calculated based on all 24 drugs. These four drugs may either be under review, as three of these were given marketing approval a short time ago in 2009, or a decision was made not to cover them, as is likely for one that was approved in 2004. In Ontario, of the twenty-four drugs in the dataset, 45.8 per cent (11) were listed as covered under various programs, 12.5 per cent (3) were not covered and 20.8 per cent (5) were currently under review. A total of 20.8 per cent (5) had no data available and, as they are not included on the approved list of drugs, are considered not to be covered in Ontario for calculation purposes.

3.2.2 Percentage of covered drugs with conditions of reimbursement

In British Columbia, the Benefit List includes coverage descriptions for Class I, Class II, and Case-by-case approval. Drugs that were listed as Class I were considered to have no conditions for reimbursement while all other categories were considered to have conditions as they required a further approval process. There were nineteen drugs covered in BC. Only 10.5 per cent (2) of these drugs were Class I approved. All remaining approved drugs (89.5 %; 17) had conditions of reimbursement. In Ontario, conditions of reimbursement were recorded as present if the drug was covered under the Exceptional Access Program (EAP), which requires a further approval process. Drugs covered under the Ontario Drug Benefit (ODB) or the New Drug Funding (NDF) Program for Cancer Care were not considered to have conditions of reimbursement. Information was obtained using Committee to Evaluate Drugs (CED) decision documents or the NDF program list of drugs. Information on all eleven drugs was obtained and four drugs (36.4 %) were found to have conditions for reimbursement (i.e., covered under EAP). The remaining seven drugs were either covered under the ODB (9.1 %; Gleevec, imatinib mesylate) or the NDF program (54.5 %) for a total of 63.6 per cent.

3.2.3 Evenness of distribution of drug coverage across the population

All population groups studied were covered in the province of BC under the Fair Pharmacare program. The Ontario Drug Benefit (ODB) Program only covers selected groups including seniors, residents of long term care or special care homes, recipients of professional home services, social assistance recipients, and recipients of the Trillium Drug Program. The Trillium Drug Program is designed for Ontario residents who have high drug costs relative to income and so potentially all population groups are served by this program. Only one drug studied, Gleevec, is listed on the ODB formulary and is therefore covered by the ODB or Trillium programs. The NDF provides coverage for all residents, however it is only for newer intravenous drugs that are typically administered in hospitals and equate to six of the eleven drugs covered. Oral drugs are not covered. The remaining four covered drugs are available under the EAP, which also covers potentially all ON residents. The three ON programs, Trillium, NDF, or EAP, potentially cover all residents regardless of the population group. However, it should be noted that in both BC and ON, while all population groups are potentially covered, a resident may still be excluded from coverage if their indication or drug is not on the approved list.

3.3 Pricing

The NPDUIS Plan Information Document outlined four main cost-sharing mechanisms utilized by provincial health plans: premiums, co-payments, deductibles and maximum beneficiary contributions. In addition, the presence of high drug cost protection was determined. The data were gathered for the programs in each province that potentially cover cancer drugs and the results are shown in Table 4. While BC's Fair Pharmacare does not contain premium requirements, residents are only eligible for the program if they have active BC Medical Services Plan Coverage which does require income based/family size based premiums. These monthly premiums range from \$0-121 with premium assistance programs in place to further qualify for a higher level of assistance.

4. Summary

The summary of results is seen in Table 5. The cancer drugs studied are both reviewed and available faster in British Columbia (BC) than in Ontario (ON) when looking at the time to decision and reimbursement. Drugs reviewed in both BC and ON were reviewed an average of 17.6 months quicker in BC. Coverage results are mixed. There was a higher percentage of drugs placed on the public formulary in BC, while there were fewer conditions for reimbursement placed on approved drugs in ON. Both BC and ON have complex systems of cost-sharing which are different from each other. Comparison across the rows of Table 4 above show that there is variability in the amounts and methods used for cost-sharing across the four plans in BC and ON. Further studies will need to explore the result of this variability by examining the cost actually paid by identical patients receiving the same drug in each province, as the potential for variation exists due to the different structures of the plans.

5. Interpretation

The purpose of this study was to examine the claim by the FPT ministers that a common public formulary exists. This claim is examined for the case of oncology drugs using two provinces' formularies, British Columbia (BC) and Ontario (ON), by evaluating several measures of patient access to drugs. The results show that availability, coverage and pricing is variable between the two provinces for the selected drugs using the dimensions studied. While the research is limited in the number of provinces, drugs and dimensions studied, what this research provides is evidence that oncology drugs may not be becoming part of an essentially common formulary. Between provinces, one reason for the faster review times in BC versus ON is because BC sometimes begins the clinical review process before a drug is approved for sale in Canada: evidence that the provincial review systems that underlay access are causing some of the variability between provinces. The varied approaches used by the provinces, for example, in the number and types of plans for drug coverage and the different cost-sharing mechanisms, highlights the complexity of patient access to oncology drugs.

In order to more fully understand the state of patient access to oncology drugs in Canada it would be necessary to expand the scope of the research performed here, both geographically and metrically. Geographically, the plans studied should be expanded to include all the federal, provincial and territorial plans, and expanded internationally to compare alternate public health systems. There are some challenges to performing a country-wide interprovincial comparison. The provinces vary in how they deliver services and control access. In all provinces, some data on key dimensions of access were, to varying extents, either not publically available or were not available in a form that was amenable to systematic analysis. In particular, provincial pricing policies and reimbursement times were difficult to ascertain and therefore this research echoes the calls made by others for a more transparent review process at all levels in all provinces. Similar challenges would likely be seen in international comparisons. Overcoming these challenges requires close collaboration between patients and their advocacy groups, governments, cancer agencies, and researchers.

The scope of the research could also be expanded metrically. This study is limited to the public system of access through provincial plans. Other methods of access, such as the private insurance system, off label use and special access programs, were not included here and represent important access channels. However, the public system in Canada accounted for 46.1 per cent of all prescribed drugs in 2008 and is therefore a significant contributor to access. (Canadian Institute for Health Information, 2010a) Access is also influenced by more than the dimensions included in this study. Other factors, including the efforts of individuals (patients and doctors) to pursue various access channels, as well as socioeconomic and cultural differences, impact the uptake of medicines and help shape differences in prescribing patterns. Determining how significant is the variability seen here can be performed in a number of ways, ranging from the use of case studies to determine actual costs shared by patients with identical medical conditions, to evaluating how many patients are actually affected by a 17 month delay in reimbursement for a particular drug.

In conclusion, decision makers who are evaluating whether or not Canada has a common national formulary should further consider the variations in programs like those for oncology drugs, that are often separate from other drug plans and often more complex. The estimated 171,000 newly diagnosed Canadians are in need of action. (Canadian Cancer Society's Steering Committee, 2009)

6. References

- Anis, A. H., Guh, D., & Wang, X. (2001). A dog's breakfast: prescription drug coverage varies widely across Canada. *Medical Care*, 39(4), 315-326.
- Berry, S., Hubay, S., Soibelman, H., & Martin, D. (2007). The effect of priority setting decisions for new cancer drugs on medical oncologists' practice in Ontario: a qualitative study. *BMC Health Services Research*, 7(1), 193.
- Canadian Cancer Society's Steering Committee. (2009). Canadian Cancer Statistics 2009. Toronto: Canadian Cancer Society.
- Canadian Cancer Society. (2010). Majority of Canadians worried about cost of cancer drugs Retrieved March 09, 2011, from http://www.cancer.ca/Canada-wide/About%20us/Media%20centre/CW-Media%20releases/CW-2010/Majority%20of%20Canadians%20Worried%20about%20Cost%20of%20Cancer%20Drugs.aspx?sc_lang=en
- Canadian Institute for Health Information. (2010a). National Health Expenditure Trends, 1975 to 2010 (pp. 172). Ottawa.
- Canadian Institute for Health Information. (2010b). National Prescription Drug Utilization Information System plan information document. Ottawa: Canadian Institute for Health Information.
- Cancer Advocacy Coalition of Canada. (2005). Report Card on Cancer in Canada 2005. Toronto.
- Cancer Advocacy Coalition of Canada. (2006). Report Card on Cancer in Canada 2006. Toronto.
- Cancer Advocacy Coalition of Canada. (2007). Report Card on Cancer in Canada 2007. Toronto.
- Cohen, J., Cairns, C., Paquette, C., & Faden, L. (2006). Comparing Patient Access to Pharmaceuticals in the UK and US. *Applied Health Economics and Health Policy*, 5, 177-187.
- Cohen, J., Faden, L., Predaris, S., & Young, B. (2007). Patient access to pharmaceuticals: An international comparison. *European Journal of Health Economics*, 8(3), 253-266. doi: <http://www.springerlink.com/content/1618-7598>
- Dhalla, I., & Laupacis, A. (2008). Moving from opacity to transparency in pharmaceutical policy. *CMAJ: Canadian Medical Association Journal*, 178(4), 428-431.
- Federal/Provincial/Territorial Ministers Task Force. (2006). National Pharmaceutical Strategy Progress Report. Ottawa: Health Canada.
- Health Council of Canada. (2009). A status report on the National Pharmaceutical Strategy: A prescription unfilled. Toronto: Health Council of Canada.
- Menon, D., Stafinski, T., & Stuart, G. (2005). Access to drugs for cancer: does where you live matter? *Canadian Journal of Public Health*, 96(6), 454-458.
- Phillips, K. (2009). Catastrophic drug coverage in Canada (pp. 30). Ottawa: Parliamentary Information and Research Service.
- Turner and Associates. (2008). Issues of access to cancer drugs in Canada: A report to the Canadian Cancer Action Network. Toronto.
- Turner and Associates. (2009). Cancer drug access for Canadians (a report to the Canadian Cancer Society). Toronto.
- Vogel, L. (2010). Pan-Canadian review of cancer drugs will not be binding on provinces. *CMAJ*, 182(9), 887-888. doi: 10.1503/cmaj.109-3262

7. Appendices

Appendix 1 – Abbreviations

Abbreviation	Extended
BC	British Columbia
BCG	Bacillus Calmette-Guerin
CDR	Common Drug Review
CED	Committee to Evaluate Drugs
DIN	Drug Identification Number
EAP	Exceptional Access Program (Ontario)
EO	Executive Officer
FPT	Federal, Provincial and Territorial governments
HIV	Human immunodeficiency virus
IV	intravenous
JODR	Joint Oncology Drug Review
MOHLTC	Ministry of Health and Long Term Care
NDF	New Drug Funding Program for Cancer Care (Ontario)
NOC	Notice of Compliance
NPDUIS	National Prescription Drug Utilization Information System
ODB	Ontario Drug Benefit
ON	Ontario
TPD	Therapeutic Product Directorate

8. Tables

Table 1: Dimensions of patient access to prescription drugs

Cohen, <i>et al.</i> , Themes	Dimensions of Patient Access	Source
Availability	Time period between marketing approval and reimbursement decision	HC NOC provincial health department
Coverage	Percentage of approved drugs placed on formularies or recommended for reimbursement and use	provincial health department
	Percentage of covered drugs with conditions of reimbursement	provincial health department
	Evenness of distribution of drug coverage across the population	NPDUIS Plan Information
Pricing	Degree to which third-party payers defray costs of covered drugs	NPDUIS Plan Information

HC – Health Canada; NOC – Notice of Compliance database; NPDUIS – National Prescription Drug Utilization Information System; provincial health department – websites, formularies

Table 2: Oncology drugs included in study

Trade / Brand	Drug Name	DIN	Ad	Indication
Alimta	pemetrexed	02253437	IV	with ciplatin for MPM
Avastin	bevacizumab	02270994	IV	with chemotherapy as first-line treatment for mCRC
Bexxar	tositumomab	02270471	IV	NHL
Mab-campath	alemtuzumab	02273993	IV	relapsed chronic lymphocytic leukemia
Clolar	clorafarabine	02330407	IV	paediatric patients 1 to 21 years old with relapsed or refractory ALL
Eloxatin	oxaliplatin	02296268	IV	with chemotherapy for mCRC
Erbitux	cetuximab	02271249	IV	with chemotherapy for mCRC
Faslodex	fulvestrant	02248624	IM	metastatic breast cancer
Firmagon	degarelix	02337029	S	prostate cancer
Gleevec	imatinib mesylate	02244724	oral	CML
Iressa	gefitinib	02248676	oral	refractory NSCLC
Nexavar	sorafenib	02284227	oral	advanced renal cell carcinoma
Pacis	BCG, live	02130947	IV	bladder cancer
Sprycel	dasatinib	02293145	oral	refractory CML
Sutent	sunitinib	02280809	oral	refractory GIST
Tarceva	erlotinib	02269023	oral	advanced NSCLC
Tasigna	nilotinib	02315874	oral	refractory CML
Torisel	temsirolimus	02304104	IV	metastatic renal cell carcinoma
Tykerb	lapatinib	02326442	oral	advanced or metastatic breast cancer with over-expressed HER2
Vectibix	panitumumab	02308487	IV	refractory mCRC
Velcade	bortezomib	02262452	IV	relapsed and refractory multiple myeloma
Zevalin	ibritumomab tiuxetan	N/A	IV	relapsed or refractory NHL
zolinza	vorinostat	02327619	oral	advance refractory CTCL
Zometa	zoledronic acid	02242725	IV	reduce bone complications from metastatic breast cancer

Ad = Route of Administration; DIN = Drug Identification Number; BCG = bacillus calmette guerin; IV = intravenous; IM = intramuscular; S = subcutaneous injection; MPM = malignant pleural mesothelioma; mCRC = metastatic colorectal carcinoma; NHL = non-Hodgkins lymphoma; ALL = acute lymphoblastic leukaemia; CML = chronic myeloid leukemia; GIST = gastrointestinal stromal tumour; NSCLC = non-small cell lung cancer; CTCL = cutaneous T-cell lymphoma; HER2 = Human Epidermal Receptor Type 2

Table 3: Dates for selected cancer drug marketing approval and provincial reimbursement decision in BC and ON

Trade / Brand	Federal approval	BC	BC Delay (days)	ON	ON Delay (days)
Alimta	05/21/2004	05/01/2007	1076	Jul-07	1137
Avastin	09/09/2005	03/01/2006	174	Sep-09	1454
Bexxar	08/01/2005	11/01/2005	93	-	-
Mab-campath	11/30/2005	-	-	Jul-07	579
Clolar	07/16/2009	-	-	-	-
Eloxatin	06/15/2007	07/01/2007	17	Oct-08	475
Erbix	09/09/2005	01/01/2008	845	10/16/2009	1499
Faslodex	02/17/2004	-	-	07/10/2009	1971
Firmagon	11/16/2009	07/01/2010	228	-	-
Gleevec	09/20/2001	07/01/2002	285	Jul-07	2111
Iressa	12/17/2003	05/01/2004	137	-	-
Nexavar	07/28/2006	07/01/2007	339	Oct-08	797
Pacis	03/08/2000	-	-	-	-
Sprycel	03/26/2007	11/01/2007	221	Nov-08	587
Sutent	05/26/2006	07/01/2007	402	Oct-07	494
Tarceva	07/07/2005	02/01/2006	210	-	-
Tasigna	09/09/2008	07/01/2009	296	-	-
Torisel*	12/21/2007	11/01/2008	317	Oct-09 / 06/14/2010	651 / 907
Tykerb	05/15/2009	-	-	-	-
Vectibix	04/03/2008	07/01/2009	455	Feb-09	305
Velcade	01/27/2005	12/01/2009	1770	05/13/2009	1568
Zevalin	05/10/2005	01/01/2005	130	-	-
Zolinza	06/11/2009	-	-	-	-
Zometa	08/21/2000	-	-	-	-

All dates are mm/dd/yyyy, except where just the month and year is shown. Federal approval = marketing authorization (called a NOC = Notice of Compliance) given by federal review body (TPD = Therapeutic Products Directorate); BC = provincial public reimbursement decision date in BC as reported by the BC Cancer Agency; ON = provincial public reimbursement decision date as reported by the EO/CED (Executive Officer/Committee to Evaluate Drugs); BC/ON Delay = time period between when the drug was approved for sale in Canada and when a decision was made provincially for reimbursement on the public plan.

*Torisel was first rejected then later approved for coverage. Both dates are shown.

Table 4: Cost-sharing mechanisms in BC and ON

Cost-Sharing Mechanism	BC Fair Pharmacare	ON ODB	ON Trillium	ON NDF
Premium	No	No	No	No
Co-payment/co-insurancary per prescription	Fixed rate (30% or 25% based on age)	Income based fixed rate (\$2 or \$6.11); Fixed rate (\$2.83 outpatient hospital pharmacies)	Fixed rate (\$2)	No
Deductible	Income based (0-3%)	Fixed rate (\$100)	Income based (% not listed)	No
Maximum Beneficiary Contribution	Income based (1.25-4%)	No	No	No
High Drug Cost Protection	Yes (max cont.)	Yes (Trillium Program)	N/A	Yes (no cont.)

ODB = Ontario Drug Benefit; NDF = New Drug Funding Program for Cancer Care; cont. = contribution

Table 5: Dimensions of patient access to prescription drugs – Results, BC and ON

Cohen, <i>et al.</i> , Themes	Dimensions of Patient Access	British Columbia	Ontario
Availability	Time period between marketing approval and reimbursement decision / reimbursement (average months)	15.4	33
Coverage	Percentage of approved drugs placed on formularies or recommended for reimbursement and use	79.2 %	45.8 %
	Percentage of covered drugs with conditions of reimbursement	89.5 %	36.4 %
	Evenness of distribution of drug coverage across the population	All population groups potentially covered	
Pricing	Degree to which third-party payers defray costs of covered drugs	See Table: Cost-sharing mechanisms in BC and ON	

9. Figures

Figure 1 – Drug Coverage in BC and ON (% of total)

