Introduction:

The cornerstone of Canadian health care is the universal public health care insurance financed and administered by the ten provinces and three territories. National standards of access to necessary medical and hospital care are promoted by the federal-provincial cost sharing mechanisms established in the Canada Health Act—legislation expressly designed to prevent financial barriers to accessing health care and ensure that all Canadians have an equal opportunity to get the health care they need. Despite this universal coverage for physician and hospital care, Canadians still regularly report experiencing unmet need for health care (1). This suggests that some Canadians are experiencing barriers to accessing health care despite the universal physician and hospital insurance provided to all Canadians.

However, not all Canadian health care services are covered publicly. The largest health care component (measured in terms of expenditures) that falls outside of the Canada Health Act are prescription drugs consumed outside of hospital. In fact, prescription drugs consumed outside of hospital are not covered by any legislation that would ensure national standards for accessibility. As a result, public pharmaceutical insurance programs designed to provide access to ambulatory prescription medicines have evolved independently in each province and territory and have historically focused on providing coverage for seniors and those of low income (2). Thus a considerable number of Canadians receive little or no public insurance coverage for costs associated with prescription medicines. To fill this insurance gap private insurance carriers began providing pharmaceutical coverage, and have done so almost entirely through employment-related packages (3). It is estimated that approximately 65% of working-age Canadians have some form of private drug insurance (4). Approximately 10 to 20 percent of the Canadian population has no drug coverage of any kind and a further 10 to 20 percent have incomplete coverage, particularly for exceptionally high drug costs (5).

This large number of uninsured Canadians is particularly problematic given that prescription drugs are playing an increasingly larger role in Canadian health care. The number of prescriptions dispensed to Canadians in retail pharmacies has grown by 65% since 1994, and estimates indicate that 60% of general practitioner visits in the year 2004 resulted in a prescription (6). Due to increasing prescribing and use of prescription

medicines, we hypothesize that the lack of adequate prescription drug coverage could be a determinant of reporting unmet for health care in Canada. Unmet need may arise as individuals choose not to seek care because they anticipate the physician will write a prescription for which they have no coverage. Their unmet need for care may also stem from their inability to fill a prescription because they are inadequately insured. While many hypotheses explaining Canadians reported unmet need for care have been examined, the relationship between unmet need for care and prescription drug insurance has not.

This study will examine the relationship between prescription drug insurance and the likelihood of reporting unmet need for health care in the non-senior population of the Ontario and Quebec. We will then determine whether this relationship persists when examining whether the reasons individuals cited for not getting care were related or not related to prescription drug insurance. We hypothesize that not having prescription drug insurance will increase the likelihood of reporting unmet need for health care for reasons that are related to prescription drug insurance (e.g. cost), but that this relationship will not hold for reasons that are not related to prescription drug insurance (e.g. waiting time for care is too long).

Methods:

The Canadian Community Health Survey (CCHS) is a cross-sectional survey that collects information related to health status, health care utilization and health determinants across all 10 provinces and 3 territories in Canada. It is conducted by Statistics Canada, and consists of a large sample of individuals aged 12 years and older who live in private residences. The sample for this analysis was drawn from Cycle 3.1 of the CCHS survey, which was administered between January 1 and December 31, 2005 throughout all Canadian health regions. Ethics approval was covered by the publicly available data clause (Item 3.1) under the University of British Columbia's policy #89: Research and other studies involving human subjects.

The CCHS includes both core content and optional content modules. Optional content modules are asked only of the respondents in provinces or health regions that opt-in to these modules. We include Ontario residents in our sample as Ontario residents were the only respondents asked about prescription drug insurance as a part of an optional

content module (n=41,766). We include Quebec residents because prescription drug insurance is mandatory in Quebec as a result of a policy implemented in 1997 and thus we know that all Quebecers are insured (n=29,165). The Quebec policy ensures that individuals are insured using a series financial incentives. Quebecers who are not covered by prescription drug insurance have to pay Revenue Quebec an amount equivalent to the public plan premium for every full month during which they were not covered. Those registered for the public plan but eligible for a private plan are required to repay the public plan the full amount paid for any prescription drugs obtained during the period of non-eligibility. We include Quebec residents to increase our sample size and to compare Quebec and Ontario residents' likelihood in reporting unmet need for reasons related and not related to prescription drug insurance. We anticipate that Quebecers will be less likely to report unmet need for reasons related to prescription drug insurance as they are all insured. We restrict the sample to non-seniors (ages 12-64) as it is common to cover senior populations differently than non-senior populations. Ontario, for example, offers public drug coverage to those over the age of 65. After also eliminating the individuals who did not have valid responses to the prescription drug insurance question and the question regarding unmet need for health care, the final sample included 54,820 individuals.

The outcome variable, reporting unmet need for health care, is from the CCHS question that asked respondents "During the past 12 months, was there ever a time when you felt you needed health care but you didn't receive it?" If an individual reports unmet need for care by answering yes to this question, they are asked "Thinking of the most recent time, why didn't you get care?" They are offered a list of 16 reasons and asked to indicate all that apply. We stratified this list into reasons that could be related to prescription drug insurance and reasons that are likely not related to prescription drug insurance. Reasons for reporting unmet need for care that we considered potentially related to prescription drug insurance include: cost; decided not to seek care, and; other. We felt that reporting cost as a reason for not seeking care could be directly related to the absence of prescription drug insurance as individuals who could not fill prescriptions due to their lack of coverage might report cost as a barrier to accessing care. One could have decided not to seek care because of coverage-related reasons, and thus we include

deciding not to seek care as an insurance-related reason for reporting unmet need, and finally we include other because the survey did not give individuals an opportunity to indicate that their unmet need for care was related to prescription drug insurance.

Reasons that are not likely related to prescription drug insurance are: care was not available in the area; care was not available at the time; the waiting time was too long; the patient felt the care would be inadequate; the patient was too busy; the patient didn't get around to it or didn't bother; the patient didn't know where to get care; transportation problems; language problems; personal or family responsibilities; the patient dislikes or is afraid of doctors; the doctor didn't think it was necessary, and; the patient is unable to leave the house because of a health problem. Using this stratification, we created two separate dependent variables: 1) reporting unmet need for care for reasons that could be related to prescription drug insurance and 2) reporting unmet need for care for reasons that are likely not related to prescription drug insurance.

The independent variable of primary interest is whether or not a respondent has prescription drug insurance. This variable is built from the CCHS question asking respondents "Do you have insurance that covers all or part of your prescription medications?" Ontario residents are coded as having prescription drug insurance if they answered 'yes' to this question, while all Quebec residents are coded as having prescription drug insurance because of the mandatory status of pharmaceutical insurance in Quebec. Covariates of interest include the socio-demographics measures of age and gender. We control for socio-economic status using household income, and the highest level of education achieved by the respondent. We control for health status using a variable indicating the presence of a chronic medical condition, and self-reported health status. We include a covariate indicating whether an individual reports having a regular medical doctor as this can influence an individual's ability to access the health care system. Finally, we also include a dummy variable representing whether the respondent is from Quebec in order to control for differences in reporting unmet need for health care between Quebecers and Ontarians.

We ran three separate multivariate logistic regressions to determine the association between prescription drug insurance and: 1) reporting unmet need for health care for any reason; 2) reporting unmet need for health care for reasons related to

prescription drug insurance; and, 3) reporting unmet need for health care for reasons not related to prescription drug insurance. All regressions included the covariates outlined above. Odds ratios are calculated to measure the association between prescription drug insurance and reporting unmet need for care. All analyses are weighted to account for the multistage cluster sampling used in the CCHS. Analyses are performed using SAS version 9.1.

Results

Of the 54,820 non-seniors included in our sample, 47,275 reported having prescription drug insurance. Table 1 reports the distribution of variables by insurance status. Individuals without prescription drug insurance were slightly younger (39.1% vs 31.3% were under the age of 30), slightly less educated (41.6% vs. 34.1% had no post-secondary), and less likely to be earning over $50,000 (50.1% vs. 70.4%). Both groups appear to be of similar health status, and have similar access to a regular medical doctor. Table 2 outlines the reasons for reporting unmet need among those who reported an unmet need for health care, and whether the reason was classified as related or not related to prescription drug insurance. The most common reason for reporting unmet need for health care was that the waiting time was too long—37.6% of those reporting unmet need for care stated this reason. Indicating the reason as 'other' was also common (22.1%), suggesting that the list of options respondents were given often did not include an individual's reason for reporting unmet need. The least common reasons were language problems and being unable to leave the house because of a health problem.

Table 3 presents adjusted odds ratios modeling the relationship between prescription drug insurance and the likelihood of reporting unmet need for health care for any reason, as well as the relationship between prescription drug insurance and reporting unmet need for health care for reasons related and not related to insurance. The odds ratio suggests that not having prescription drug insurance increases the likelihood of reporting unmet need for health care for any reason (OR=1.30 95% CI: 1.20-1.42). Being female, not having a regular medical doctor, reporting the presence of a chronic medical condition, and being of poor, fair, good or very good health as compared to excellent health all significantly increased the likelihood of reporting unmet need for health care.

Quebec residents were also slightly more likely to report unmet need for care than Ontarians (OR=1.08 95% CI: 1.01-1.15).

After stratifying the reasons for reporting unmet need for health care into those potentially related and those not likely related to prescription drug insurance, we find that not having prescription drug insurance significantly increases the likelihood of reporting unmet need for care for insurance-related reasons (OR=1.79 95% CI: 1.55-2.06). However, not having prescription drug insurance is not significantly related to reporting unmet need for health care for reasons not related to prescription drug insurance (OR=1.10 95% CI: 0.98-1.22). Quebecers also appear less likely than Ontarians to report unmet need for care for reasons related to prescription drug insurance (OR=0.81 95%CI: 0.72-0.93) while they are more likely to report unmet need for care for reasons not related to prescription drug insurance (OR=1.17 95% CI: 1.09-1.26). Again being female, not having a regular medical doctor, reporting the presence of a chronic medical condition, and being of poor, fair, good or very good health as compared to excellent health all significantly increased the likelihood of reporting unmet need for health care. However, except for the presence of a chronic medical condition, all of these variables had smaller effect sizes on unmet need for reasons related to prescription drug insurance than on unmet need for reasons not related to prescription drug insurance. Increasing income was associated with decreased likelihood for reporting unmet need due to prescription insurance related reasons. This relationship was not found among those reporting unmet need for non-insurance related reasons.

Discussion

Our results suggest that in the Ontario and Quebec non-senior population, individuals who report not having prescription drug insurance have 1.30 times the odds of reporting unmet need for health care as those with prescription drug insurance, when controlling for socio-demographics, socio-economic status, health status and access to a regular medical doctor. This relationship becomes even stronger when examining unmet need for care for prescription drug insurance related reasons. Those without prescription drug insurance have 1.79 times the odds of reporting unmet need for health care for reasons related to prescription drug insurance as those who have prescription drug

insurance. When examining unmet need for care for reasons that are likely not related to prescription drug insurance, the association between prescription drug insurance and reporting unmet need for care is no longer significant. The potential relationship between prescription drug insurance and unmet need for health care is also supported by the fact that Quebecers are less likely to report unmet need for care for reasons related to prescription drug insurance. Given that all Quebecers have mandatory prescription drug insurance, we would expect to find this relationship. The opposite is true when examining unmet need for care that is not related to prescription drug insurance—Quebecers are more likely to report unmet need for care for these reasons, which is consistent with the fact that Quebecers have been more likely to report access barriers and dissatisfaction with health care services than Canadians from other provinces (7,8). We also find decreasing likelihood of reporting unmet for health care for insurance-related reasons as income increases suggesting that individuals of higher income may be simply paying out-of-pocket to meet their health care needs, thus decreasing their chances of reporting unmet need for health care for insurance-related reasons. These results support our hypothesis that the lack of prescription drug insurance may be related to some reporting of unmet need for care in Canada.

While this is the first study examining the role of prescription drug insurance in reporting unmet need for health care in Canada, our results are consistent with a number of U.S. studies that have found a relationship between health insurance status and reporting unmet need for care (9-12). However, as most research from the U.S. focused on overall health insurance, rather than simply prescription drug insurance, their results have been more dramatic. For example, Mayer et al (2004) found that among children with special health care needs, those who were not adequately insured (both for health care services and prescription drugs) were 7 times more likely to report unmet need for health care (13). Understandably, prescription drug insurance in a group of non-senior Canadians with universal health care coverage for physician and hospital services is not as significant a determinant of unmet need.

An important limitation of our work is that there appears to have been some confusion surrounding the response to the prescription drug insurance question among senior Ontarians (65+). Ontario operates an age-based, government-sponsored

prescription drug insurance plan offering coverage to seniors and low income non-seniors. However, when asked, many seniors responded that they did not have prescription drug insurance, indicating that they were either unaware of or not considering their public coverage when answering the question. Given that we have focused our analysis on non-seniors, this is less of a limitation; however, low income non-seniors covered under the public plan may also have misunderstood the question resulting in a small amount of misclassification. Our inclusion of Quebec in the analysis is also potentially problematic, as there are substantial cultural, health and political differences between the populations of Ontario and Quebec. In order to determine whether the inclusion of Quebec may have significantly altered our results, we ran the analysis on Ontarians alone and found the same relationships between prescription drug insurance and unmet need in the Ontario sample alone. As Quebecers act as a comparator to Ontarians in the analysis, we felt it was illuminating to include them. Finally, our stratification of the reasons for reporting unmet need for health care could certainly be challenged. To assess how different stratifications might change our results we ran some sensitivity analyses moving some of the reasons that were less clearly related or not related to prescription drug insurance into the opposite category (e.g. moving 'didn't get around to it or didn't bother' to being related to prescription drug insurance and moving 'felt the care would be inadequate' into reasons related to insurance). Our results were robust to all the changes we tested in what we deemed were reasons that could be plausibly included in either category.

The results of this research suggest that there may be a relationship between the lack of prescription drug coverage and unmet need for health care in Canada. Specifically, we find that having prescription drug insurance decreases the likelihood of reporting unmet health care needs in the previous 12 months—suggesting that the lack of adequate prescription drug insurance may be acting as a barrier to accessing health care in Canada, and as such improving prescription drug coverage may be integral to meeting the objectives of the Canada Health Act. While the relationship between prescription drug insurance and access to medicines receives considerable attention, much less attention has been given to the role that prescription drug insurance might play in access to other health care services. Our results suggest that prescription drug insurance could be

influencing more than just access to prescription medicines—something that deserves further investigation and consideration especially as pharmaceutical expenditures and use continue to grow in Canada.

References:

(1) Marshall E. Universal health care? Access to primary care and missed care of young adult Canadians. 2007.

(2) Morgan SG, Barer ML, Agnew JD. Whither Seniors' Pharmacare: Lessons From (And For) Canada. Health Aff. 2003;22(3):49-59.

(3) Canada Life and Health Insurance Association. Canadian Life and Health Insurance Facts. 2007.

(4) Stabile M. Private insurance subsidies and public health care markets: evidence from Canada. Can.J.Econ. 2001;34(4):921-942.

(5) Dewa CS, Hoch JS, Steele L. Prescription drug benefits and Canada's uninsured. Int.J.Law Psychiatry 2005 Sep-Oct;28(5):496-513.

(6) IMS Health. Retail Prescriptions Grow at Record Level in 2003. 2004.

(7) Leger Marketing. Canadian Perceptions of Their Health Care System. 2001.

(8) Canadian Medical Association. 7th Annual National Report Card on Health Care. 2007.

(9) Davidoff AJ. Insurance for children with special health care needs: patterns of coverage and burden on families to provide adequate insurance. Pediatrics 2004 Aug;114(2):394-403.

(10) Dusing SC, Skinner AC, Mayer ML. Unmet need for therapy services, assistive devices, and related services: data from the national survey of children with special health care needs. Ambul.Pediatr. 2004 Sep-Oct;4(5):448-454.

(11) Feinberg E, Swartz K, Zaslavsky A, et al. Family income and the impact of a children's health insurance program on reported need for health services and unmet health need. Pediatrics 2002 Feb;109(2):E29.

(12) Federico SG, Steiner JF, Beaty B, et al. Disruptions in insurance coverage: patterns and relationship to health care access, unmet need, and utilization before enrollment in the State Children's Health Insurance Program. Pediatrics 2007 Oct;120(4):e1009-16.

(13) Mayer ML, Skinner A, Slifkin RT. Unmet Need for Routine and Specialty Care: Data From the National Survey of Children With Special Health Care Needs. Pediatrics 2004;113(2).

Table 1: Distribution of variables in the study sample by prescription drug insurance status

Variable	With prescription drug insurance (%)	Without prescription drug insurance (%)
Gender		
Male	50.0	49.8
Female	50.0	50.2
Age (years)		
Under 20	14.0	13.9
20 to 29	17.3	25.2
30 to 39	19.0	19.2
40 to 49	23.7	20.8
50 to 59	18.9	14.2
60 to 64	7.1	6.7
Highest education achieved		
Less than secondary	20.1	22.8
Graduated secondary	14.0	18.7
Has some post-secondary	8.7	8.6
Graduated post-secondary	57.2	49.9
Regular medical doctor		
Yes	82.7	86.1
No	17.3	13.9
Household Income		
$0-$15,000	4.3	7.3
$15,000-$29,999	8.0	16.8
$30,000-$49,999	17.3	25.8
$50,000-$79,999	28.7	24.7
$80,000 or more	41.7	25.4
Chronic medical condition		
Yes	66.3	61.3
No	33.7	38.7
Self-rated health		
Poor	1.9	2.2
Fair	6.3	6.6
Good	27.8	28.4
Very Good	39.5	39.7
Excellent	24.5	23.2

Table 2: Reasons for reporting unmet need for health care and classification of related or not related to prescription drug insurance

Reason for reporting unmet need for health care	% of those who reported unmet need reporting this reason	Classification as related or not-related to prescription drug insurance
Care was not available in the area	10.9%	Not-related
Care was not available at the time	13.4%	Not-related
Waiting time was too long	37.6%	Not-related
Felt the care would be inadequate	4.0%	Not-related
Cost	7.1%	Related
Too busy	5.9%	Not-related
Didn't get around to it/didn't bother	7.3%	Not-related
Didn't know where to go for care	2.2%	Not-related
Transportation problems	1.5%	Not-related
Language problems	0.2%	Not-related
Personal or family responsibilities	0.9%	Not-related
Dislikes doctors or is afraid of health care	1.8%	Not-related
Decided not to seek care	7.3%	Related
Doctor didn't think it was necessary	4.5%	Not-related
Unable to leave the house because of a health problem	0.8%	Not-related
Other	22.1%	Related

Table 3: Adjusted odds ratios from models examining reporting unmet need for health care for: any reason; reasons related to prescription drug insurance; and, reasons not related to prescription drug insurance

Variable	Overall	Related to insurance	Not related to insurance
Insurance			
Yes	1.00 (ref)	1.00 (ref)	1.00
No	1.30 (1.20-1.42)	1.79 (1.55-2.06)	1.10 (0.98-1.22)
Gender			
Male	1.00 (ref)	1.00 (ref)	1.00 (ref)
Female	1.44 (1.36-1.52)	1.31 (1.18-1.46)	1.46 (1.67-1.56)
Age (years)			
Under 20	1.00 (ref)	1.00 (ref)	1.00 (ref)
20 to 29	1.46 (1.28-1.66)	1.59 (1.24-2.05)	1.54 (1.32-1.79)
30 to 39	1.41 (1.24-1.60)	1.64 (1.27-2.12)	1.48 (1.27-1.72)
40 to 49	1.26 (1.11-1.43)	1.44 (1.12-1.85)	1.33 (1.15-1.55)
50 to 59	0.88 (0.77-1.00)	1.10 (0.84-1.42)	0.97 (0.83-1.13)
60 to 64	0.77 (0.65-0.89)	0.78 (0.56-1.08)	0.90 (0.74-1.08)
Quebec			
No	1.00 (ref)	1.00 (ref)	1.00 (ref)
Yes	1.08 (1.01-1.15)	0.81 (0.72-0.93)	1.17 (1.09-1.26)
Highest education achieved			
Less than secondary	1.00 (ref)	1.00 (ref)	1.00 (ref)
Graduated secondary	1.29 (1.16-1.45)	1.11 (090-1.37)	1.32 (1.16-1.51)
Has some post-secondary	1.85 (1.64-2.08)	1.68 (1.34-2.09)	1.71 (1.48-1.97)
Graduated post-secondary	1.66 (1.51-1.83)	1.36 (1.14-1.62)	1.73 (1.55-1.93)
Regular medical doctor			
Yes	1.00 (ref)	1.00 (ref)	1.00 (ref)
No	2.03 (1.89-2.18)	1.80 (1.57-2.06)	2.00 (1.84-2.16)
Household Income			
$0-$15,000	1.00 (ref)	1.00 (ref)	1.00 (ref)
$15,000-$29,999	0.88 (0.76-1.02)	0.62 (0.49-0.78)	1.06 (0.90-1.26)
$30,000-$49,999	0.84 (0.73-0.96)	0.63 (0.51-0.78)	1.00 (0.85-1.16)
$50,000-$79,999	0.83 (0.73-0.94)	0.52 (0.42-0.64)	1.05 (0.90-1.22)
$80,000 or more	0.89 (0.78-1.01)	0.50 (0.41-0.62)	1.14 (0.98-1.32)
Chronic medical condition			
No	1.00 (ref)	1.00 (ref)	1.00 (ref)
Yes	2.29 (2.14-2.47)	2.32 (2.00-2.68)	2.20 (2.03-2.40)
Self-rated health			
Excellent	1.00 (ref)	1.00 (ref)	1.00 (ref)
Poor	5.96 (5.06-7.02)	4.01 (3.03-5.31)	5.60 (4.67-6.73)
Fair	3.91 (3.49-4.39)	2.76 (2.23-3.42)	3.90 (3.42-4.44)
Good	2.07 (1.92-2.26)	1.82 (1.54-2.15)	2.02 (1.83-2.23)
Very Good	1.48 (1.36-1.61)	1.25 (1.06-1.48)	1.50 (1.36-1.65)