

**INSURANCE COVERAGE FOR PRESCRIPTION MEDICATION AND HAVING  
A REGULAR SOURCE OF CARE IN ONTARIAN ADULTS: A CROSS-  
SECTIONAL ANALYSIS**

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## **Abstract**

This study seeks to determine the population based predictors of not having tried to contact an regular medical doctor (NC-RMD) and not being able to find an regular medical doctor (NF-RMD) separately, and to specifically determine if there is an association between a lack of insurance coverage for prescription drugs and not having a regular medical doctor (RMD) in Ontarians aged 18-64 years old. Data for this cross-sectional analysis was derived from the Canadian Community Health Survey (2008) and considers a variety of socio-demographic variables as covariates/predictors. Results indicate a borderline association between a lack of insurance coverage for prescription drugs and NC-RMD. Predictors unique to NC-RMD and NF-RMD were found. Refinements in provincial strategies that seek to connect individuals with RMD's, as well as further research into the casual association between a lack of insurance coverage for prescription drugs and trying to connect with an RMD are warranted.

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## **Introduction and Background**

### **Primary care and the regular medical doctor**

“Primary care is first-contact, continuous, comprehensive and coordinated care provided to populations undifferentiated by gender, disease, or organ system” (Starfield, 1994). Starfield (1994) suggests that ‘first contact’ refers to not only the availability of a general practitioner, as they are most likely to deliver primary care services, but also whether the population chooses to use the services. “Thus, first contact involves assessment of both accessibility of provider or facility and the extent to which the population actually uses the services when a need for them is first perceived.” (Starfield, 1994). Accessibility of the RMD is therefore a priority. Access to ‘primary care physicians’, referred to here as regular medical doctors (RMD), has been stressed as an ‘essential part of Canada’s health care system’ (Health Canada, 2008). Bierman et al. (2008) defined three types of primary care access: primary, secondary, and tertiary. Each of these provides an important component in overall access to primary care, primary access focuses on being able to access the system, secondary access focuses on barriers within the system that cause difficulties (getting an appointment) and tertiary access concerns the ability of the provider to address patient needs (skills and knowledge of provider) (Bierman et al., 2008). This study will address primary access, or the ability of individuals to gain initial access to an RMD within the health system.

## **The importance of a regular source of care**

### ***Continuity of care***

Continuity of care, or care provided by the same person over a period of time, as well as having consultation with one physician responsible for all health problems, is associated with greater patient satisfaction (Hjortdahl et al., 1991). Patients report more value on continuity of care when they have shared experiences with a physician regardless of the amount of time they have been under their care (Mainous III et al., 2004) and continuity of care is positively related to receiving preventative care in a universally insured population in Winnipeg (Menac et al., 2005). Freeman and Hjortdahl (1997) stress the importance of ‘personal continuity of care’ as an ongoing relationship between patients and practitioner, where the practitioner is the most valued form of medical advice, and that the quality of the contact between patient and practitioner are more important than the number of visits. The personal relationship between provider and patient is therefore an important consideration in primary care services. In a qualitative study conducted by von Bultzingslowen et al., (2005), patients described the main impact of having a family doctor as a sense of security, which stemmed from four subcategories; coherence, confidence in care, a trusting relationship and accessibility.

### ***Screening***

In a Canadian study, having a family doctor was the strongest predictor, aside from age, for having been screened for prostate cancer using a prostate specific antigen test (Beaulac et al., 2006). In a sample of Vietnamese women in the United States having been screened for cervical cancer was associated with having a regular medical doctor



(Taylor et al., 2009). Having a regular medical doctor is associated with receiving the recommended preventative care procedures such as having blood pressure checked, having had a pap smear or mammography (McIsaac et al., 2001, Qi et al., 2006), having met the guidelines for colorectal cancer screening (Wilkins & Sheilds, 2009), as well as densitometry and cholesterol testing (Finkelstein, 2002) in the female population. A study in Eastern Canada found that physician suggestion was associated with breast and cervical cancer screening in women aged 50-69 years old and concluded that contact with physician was most effective for the promotion of these types of screening (Miedema et al., 2003).

### ***Hospital Use and Mortality***

More primary care doctors were found to be associated with fewer admissions to hospitals for both acute and chronic conditions in a study conducted in the United Kingdom (Gulliford, 2002). Menec and colleagues (2005) found that continuity of care is associated with less visits to the emergency department. In a study conducted in the United States it was found that physician supply was linked to overall mortality with an increase in mortality as a result of less family physicians in a white population (Shi & Starfield, 2001). In a separate American study that looked at the results of 17 different studies related to primary care supply it was found that, “Pooled results for all-cause mortality suggest that an increase of one primary care physician per 10,000 populations was associated with an average mortality reduction of 5.3 percent, or 49 per 100,000 per year (Macinko et al., 2007).”

### ***Use of Physician Services***

Canadian studies show that accessing physician services is highly related to having a RMD (Nabalamba & Miller, 2007, Sanmartin & Ross, 2006, Dunlop et al, 2000).

Canadian population based studies report that those without RMDs have difficulty-acquiring primary or 'first contact' care (Sanmartin & Ross, 2006), make less physician (Nabalamba & Miller, 2007, Dunlop et al., 2000) and specialist consultations (Dunlop et al., 2000) while controlling for need.

### **Prevalence of having a regular medical doctor in Canada and Ontario**

In Canada, in 2007, 83.0% of the population reported having a RMD, a slight decrease from a level of 84.8% in 2005 and 85.1% in 2003 (Health Canada, 2008). The prevalence rates of having an RMD ranges from 73% in Quebec to 94% in Nova Scotia with the prevalence rates for 'not having looked' and 'being unable to find' a RMD at 9% and 6% respectively in the Canadian population (Statistics Canada, 2008). In Ontario, 10% of the population reported not having an RMD in 2007, with approximately 4% reporting not having looked for an RMD and 5% reporting not being able to find an RMD (Statistics Canada, 2008). A study conducted in Southwestern Ontario shows similar results reporting that 9.1% of the population is without an RMD (Reid et al., 2009).

### **Barriers in obtaining a regular medical doctor**

A study conducted in Canada using data from the 1995/1997 National Population Health Survey, showed those without a RMD were "younger, men, single people, poorer respondents, respondents who perceived themselves in better health, recent immigrants,

those without confidants and smokers...” (Talbot et al., 2001). In the United States Hispanic women were less likely to have a RMD than non-Hispanic women, with the difference being attribute to language barriers and differences in insurance coverage (Shreffler et al., 2009). Individual barriers related to men choosing not to access primary health care have been studied qualitatively and are associated with having a female partner, perceived vulnerability, and factors related to men’s traditional social roles and feelings of ‘immunity and immortality’ (Tudiver et al, 1999). Other studies have shown that those living in a rural setting in Newfoundland (Mathews & Edwards, 2004), individuals who live in more affluent neighborhoods in Manitoba (Menec et al., 2001), those who perceive themselves as healthier (Menec et al, 2001 & Talbot et al., 2001) and have less chronic conditions (Broemeling et al., 2008) are less likely to have a RMD. A study in south western Ontario explored why single men did not have an RMD and found the most cited reason was that they chose not to have one, this reason was rarely found in other groups (Reid et al., 2009).

In a study conducted in Southwestern Ontario, 27% of patients could not find a RMD because there was a lack of physicians accepting new patients, 9.9% chose not to have an RMD and 13.2% had access to alternative care (Reid et al., 2009). In addition to this characteristics associated with not having an RMD in this study were being male, recently having moved and being single (Reid et al., 2009). Furthermore, Sanmartin and Ross (2006), found that 54% of people who reported that they had difficulty in accessing routine care experienced that difficulty due to ‘physician/service availability’, which

refers to trouble contacting a physician, getting an appointment, or services that were unavailable in their area or at the time needed.

The POWER Study, a province wide study completed in Ontario, found that a greater proportion of those with an RMD were women, immigrants who had been in Canada more than 5 years and those living in the highest income neighborhoods compared to the lowest income neighborhoods (95% and 90% respectively) (The POWER Study, 2010). In addition to this, a major reason cited for not having an RMD was that the respondent had moved or that the doctor was retired or deceased (The POWER Study, 2010).

### **Insurance coverage for prescription medication in Canada**

The Canada Health Act sets out the laws regarding how health services are to be insured across the country and has a primary objective to “protect, promote and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers (Canada Health Act, 1985)”. While the Act sets out the how health services are covered within the provinces, it does not require that provincial health plans cover the costs associated with outpatient prescription medication. Each province is responsible for determining the type of coverage, with regards to prescription medication, that will be available to the members of their population. There are large variations across the provinces in terms of public coverage for outpatient prescription drug costs (Demers et al., 2008) and even in terms of the type of drugs covered under certain public plans (Anis et al., 2001).

In Ontario, those without insurance for prescription drugs were more likely to report an unmet need for healthcare due in part to cost (Hanley, 2009). Not having supplemental

insurance has been found to be associated with less physician visits in a variety of countries including Canada (Allin and Hurley, 2008; Devlin et al., 2010; Buchmueller et al., 2003; Buchmueller et al., 2005; Winkelmann, 2004). In addition, differences in the amount of cost sharing related to prescription drugs has been shown to be associated with different levels of prescription adherence and discontinuation of drug therapy (Goldman et al., 2007) in the United States.

### **The Case of Ontario**

“Differences in the level and sources of health care financing, payment mechanisms, benefits packages, supply of health services and level of further decentralization to regional and local levels may, thus, lead to different degrees of inequity in access to health services” (Allin, 2008). Since each province is in charge of their individual health system and therefore in charge of their own initiatives to increase the uptake and accessibility of RMD’s, it must be considered that each province may face unique barriers based on their unique geographic and socio demographic characteristics.

For this analysis, data collected from the province of Ontario was used as it included questions regarding the current insurance status of individuals within the province, including information on insurance coverage for prescription medication. This provided the unique opportunity to access insurance for prescription medication as a possible predictor for not having an RMD. New Brunswick and Ontario both chose to ask questions related to insurance coverage and for this analysis Ontario was chosen because of its larger sample size.

## **Insurance coverage for prescription medication in Ontario**

Ontario has a fairly comprehensive public insurance plan as compared to other provinces (Demers et al., 2008). Seniors, as well as those who are on social assistance, are covered by the Ontario Drug Benefit Plan (Ministry of Health and Long-Term Care, 2010), which has existed since the mid 1970's (Grootendorst, 2002). In Ontario, those who have high costs for prescription drugs as compared to their incomes are covered under the Trillium Drug Program (Ministry of Health and Long-Term Care, 2010), a program that was started in February 1995 (Pomey et al., 2010). Appendix A outlines deductibles and copayments that are associated with Ontario public insurance coverage for specific groups. In Ontario, 22.8% of the population is covered under a public drug plan (Kapur & Basu, 2005). Those not covered under public plans often have private insurance provided by either an employer or self-sponsored. This type of coverage covers 60.4% of Ontarians (Kapur and Basu, 2005), with the remainder of the population paying for prescription drugs out-of-pocket.

## **Rationale & Knowledge Translation**

While studies have explored the population-based predictors of who is at risk for not having an RMD (Talbot et al., 2001; Menec et al., 2001), no studies have considered insurance for prescription medication as a possible predictor. In addition, there is little information on the population-based predictors of not being able to find and not having tried to contact an RMD. The importance of having an RMD has been clearly demonstrated in the literature (Starfield et al., 2005; Beaulac et al., 2006; Taylor et al., 2009, McIsaac et al., 2001; Qi et al., 2006; Wilkins & Sheilds, 2009; von Bultzingslowen

et al., 2005), and the need to more fully understand possible barriers to obtaining an RMD could be useful in connecting more Ontarians with a regular source of care. Canadian provinces have created different ways to try and connect populations to RMD's, including the 'Health Care Connect' program in Ontario, which looks to connect Ontarians looking for a RMD with one in their area of residence (Ministry of Health and Long-Term Care, 2010 b). Methods of connecting people will depend on demand, and the type of services that they are being connected to and are determined by each province individually. More detailed information on those without an RMD will help policy and program creators to better understand and serve these populations. While it is important to target those who have had difficulty finding a doctor it is also important to consider those who choose not to access the primary health care system. With this information we can work to establish ways of getting these individuals interested in accessing routine care from a RMD. Information related to associations between not having an RMD and not having insurance coverage for prescription medication will determine whether a lack of universal coverage for prescription drugs is associated with inequalities in access to RMD's.

This study could contribute to a deeper understanding of the factors that determine why 10% (2007) of Ontarians do not have an RMD, even in light of the evidence that illustrates the benefit of having a regular source of care. Specifically this study seeks to highlight both the individual (socio demographic and health related) and systemic/policy related (insurance for prescription medications) factors that influence whether members of the population are seeking and successfully connecting with an RMD.

## **Objectives**

It is therefore the objectives of this study to determine the population based factors associated with not having tried to contact an regular medical doctor (NC-RMD) and not being able to find an regular medical doctor (NF-RMD) separately, and to specifically determine if there is an association between a lack of insurance coverage for prescription drugs and not having a regular medical doctor (RMD) in Ontarians aged 18-64 years old.



## **Methods**

### **Data source: Canadian Community Health Survey (CCHS)**

The Canadian Community Health Survey was derived from a joint effort between the Canadian Institute of Health Information, Statistics Canada and Health Canada to respond to a need for a better health information system within Canada. Data was available biennially from 2001 until 2007, when the CCHS underwent major changes. Changes included improving the content of the survey by addressing the needs of partners and increasing the frequency of data release to annually rather than biennially. The current objectives of the CCHS were revised in 2007 and include supporting health surveillance at a variety of levels, providing a single source for health research data, supporting the timely release of information, and providing the ability to address emerging health issues through a flexible survey instrument (Statistics Canada, 2009).

In order for a researcher to obtain access to the data, a proposal must be approved by Statistics Canada and data must be accessed through one of Statistics Canada's Research Data Centre's. Data for the current analysis was accessed and analyzed at the Research Data Centre at York University.

## **Manuscript**

### **Insurance for prescription medication and having a regular source of care: A cross-sectional analysis**

#### **Abstract**

**Introduction:** Having a regular source of care is an important aspect of primary health care and of the Canadian health system. Despite this, many Canadians are still without a regular source of care. Differences in the use of health care services have been noted among those with and without insurance coverage for prescription medication. The objectives of this study were to assess the relationship between having insurance coverage for prescription medication and having a regular medical doctor (RMD) and to determine the factors associated with not having tried to contact NC-RMD and not being able to find an RMD (NF-RMD) in Ontarians aged 18-64 years old.

**Methods:** Data for this analysis was derived from the Canadian Community Health Survey 2008, a national cross-sectional survey. The main independent variable was insurance coverage for prescription medication and the main dependent variable was not having a regular medical doctor (N-RMD). The dependent variable was divided into 2 subcategories, not having tried to contact an RMD (NC-RMD) not being able to find an RMD (NF-RMD). Covariates/predictors included a variety of socio demographic and health related behaviors. Three multiple logistic regression analyses were performed to assess the independent relationship between the independent variables and the overall and the 2 subcategories of the dependent variable.

**Results:** Overall, 10% of subjects reported N-RMD. After adjustment for confounding variables, insurance coverage for prescription drugs was borderline significant with NC-RMD (OR=1.37; CI=1.00-1.89). In addition to not having insurance for prescription drugs, variables significantly and uniquely related to NC-RMD included being a recent immigrant, being a smoker and being a secondary school graduate, whereas variables uniquely related to NF-RMD were having a lower education, being single and living in a rural or urban area with a population less than 500,000.

**Conclusion:** Results indicate that NC-RMD is related to not having insurance for prescription medication. Future qualitative studies are needed to determine the extent to which a lack of insurance coverage for prescription medication influences the choice of individuals to seek an RMD. Increasing access in rural areas continues to be an important issue, while increasing the uptake of programs that help to connect individuals with RMD's is important in individuals with lower education levels and incomes. New ways to get males, recent immigrants and smokers interested in obtaining an RMD are also warranted.

## **Introduction**

Having a regular medical doctor (RMD) has been stressed as an essential component of the Canadian health care system (Health Canada, 2008). Having an RMD is associated with a variety of positive outcomes including acquiring appropriate cancer screening tests (Beaulac et al., 2006, Taylor et al., 2009, McIsaac et al., 2001, Qi et al., 2006, Wilkins & Sheilds, 2009), increased patient satisfaction (Hjortdahl et al., 1991) and sense of security (von Bultzingslowen et al., 2005), lower costs and greater equality in the health system in the United States (Starfield et al., 2005) and having less difficulty acquiring ‘first-contact’ services in Canada (Sanmartin & Ross, 2006). Even with a strong focus on primary health care in Canada, approximately 15% of Canadians reported not having an RMD (N-RMD) in 2007, with 9% reporting that they have not tried to contact an RMD (NC-RMD) and 6% reporting that they cannot find an RMD (NF-RMD) (Statistics Canada, 2008).

The Canada Health Act sets out the laws regarding how health services are to be insured across the country (Canada Health Act, 1985). While the Act sets out parameters that dictate provincial coverage for health services, there is no requirement that provincial health plans cover the costs associated with outpatient prescription medication. It is therefore at the discretion of each individual province to determine the extent of public coverage related to outpatient prescription drugs and a review by Demers et al., (2008) illustrated that there is a lack of consistency in this type of coverage across each province.

In the province of Ontario, prescription medication can be paid for in one of three ways; a government-sponsored program, a private insurance program (usually provided

by an employer), or out of pocket by a patient (Ministry of Health and Long-Term Care, 2010 a). According to a study by Kapur et al. (2005), 83% of Ontario's population (all ages), have either public or private coverage for "low cost" prescription medication, or medication that is not of excessively high cost in relation to their income (Kapur et al., 2005).<sup>1</sup> In Ontario, all those aged 65 and over are covered by a public drug plan (Ministry of Health and Long-Term Care, 2010), although the copayment amount varies in relation to household income with seniors paying a \$100 deductible and \$2.00-\$6.00 per prescription (Demers et al., 2008). Public coverage for Ontarians under the age of 65 is provided to those who live in long-term care homes and those on social assistance (Ministry of Health and Long-Term Care, 2010). Overall, there are approximately 22.8% of Ontarians (all ages) covered under a public drug plan and 60.4% are covered under a private drug plan (Kapur et al., 2005).

Not having insurance for prescription medication has been found to be associated with not filling prescriptions (Anis et al., 2005; Williamson & Fast, 1998) and with making less visits to physicians in Canada (Allin & Hurley, 2008; Devlin et al., 2010; Stabile, 2001). International studies have also demonstrated that a lack of supplemental health insurance coverage leads to less use of physician services (Buchmueller et al., 2004 and Buchmueller et al., 2005). The need to create a universal drug coverage program in Canada has been deemed an 'action needed for change' to improve the health system (Canadian Medical Association, 2010) and it has been suggested that 'we begin to

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<sup>1</sup> All Ontarians have access to catastrophic drug coverage under Ontario's 'Trillium Drug Program', which covers prescription drug expenses for those who have costs of 4% or greater of their household income (Kapur & Basu, 2005).

integrate universal coverage for prescription medication to ensure that all Canadian benefit from comprehensive coverage for prescription drugs' (Romanow, 2002).

While studies have explored the population-based predictors of who is at risk for not having an RMD (Talbot et al., 2001; Menec et al., 2001; The POWER Study, 2010; Reid et al., 2009), no studies have considered insurance for prescription medication as a possible predictor. In addition, there is little information on the population-based predictors of NC-RMD and NF-RMD. The importance of having an RMD has been clearly demonstrated in the literature (Starfield et al., 2005, Beaulac et al., 2006, Taylor et al., 2009, McIsaac et al., 2001, Qi et al., 2006, Wilkins & Shields, 2009, von Bultzingslowen et al., 2005), and the need to more fully understand possible barriers to obtaining an RMD could be useful in connecting more Ontarians with a regular source of care.

It is therefore the objectives of this study to determine the population based factors associated with not having tried to contact an regular medical doctor (NC-RMD) and not being able to find an regular medical doctor (NF-RMD) separately, and to specifically determine if there is an association between a lack of insurance coverage for prescription drugs and not having a regular medical doctor (RMD) in Ontarians aged 18-64 years old.

## **Methods**

### **The Canadian Community Health Survey**

The sample for this study was derived from the Canadian Community Health Survey (CCHS) 2008, an annual cross-sectional survey conducted by Statistics Canada. Data

was collected from January to December 2008 and sampled approximately 60,000 Canadians. Certain members were excluded from the survey including full time members of the armed forces, those institutionalized, those living on crown lands or Indian reserves and those living in certain remote locations. The CCHS represents approximately 98% of the Canadian population age 12 and over (Statistics Canada, 2009).

### **Sampling and Data Collection**

Sampling occurred using an area framework (49% of sample), telephone framework (50% of sample) and random-digit dialing (1% of sample). The area frame is derived from the Canadian Labour Force Survey and uses a multistage stratified cluster design with the dwelling as the sampling unit and clusters as groups of dwellings defined by geographic and socio-economic strata. The list frame uses the Canada Phone directory, which is matched with postal codes to create frame strata for sampling. Four Health Regions used random digit dialing which is used to include numbers that may be unlisted and therefore would not be found in the list frame (Statistics Canada, 2009).

The CCHS 2008 used a self-report survey, lasting approximately 40-45 minutes, to collect data. Data was collected using computer assisted interviewing and was collected either in person or over the phone by a trained interviewer. One member of the dwelling was asked to provide basic demographic information for all members of the dwelling. Following this, one person in the dwelling was chosen to take part in a more detailed interview. Subjects were interviewed in private when possible. Methods to increase participation rate included introduction letters, refusal conversations and the option to

conduct interviews in a variety of languages. Language selection was determined by the needs of individual health regions (Statistics Canada, 2009).

Each province and territory participated in the “core” component of the survey, which remains fairly consistent over a 6-year period, and provinces had the opportunity to participate in “optional” modules. In 2008, Ontario participated in the optional module related to insurance coverage, which, along with the core component, is where study variables were derived (Statistics Canada, 2009).

## **Variables**

***Dependent:*** The main dependent variable used in this study was N-RMD and was derived from the question “Do you have an RMD?” with possible responses of “yes” or “no”. Those who answered, “no” to the question “Do you have an RMD?” were then asked, “Why do you not have an RMD?” with 5 possible answers: 1) there are no physicians in the area 2) physicians are not taking on new patients 3) my physician left or retired 4) have not tried to contact a physician and 5) other. There were 2 subcategories of the dependent variable created from these answers, NF-RMD and NC-RMD. Those who answered only 1), 2) or 3) (and not 4) comprised the “yes” category for the NF-RMD outcome variable and those who answered 4) comprised the “yes” for the outcome NC-RMD. Those who answered only 5) were excluded from the sub analyses of NC-RMD and NF-RMD, but were included in the analysis of those who report not having an RMD (N-RMD) overall.

***Independent:*** The primary independent variable in this study was derived from the question “Do you have insurance that covers all or part of the cost of prescription



medications?” with possible answers of “yes” or “no”. Two categories of covariates/predictors were considered in this analysis; socio-demographic variables and health related variables. Socio-demographic characteristics included age, sex, marital status (never married/widowed/divorced, married/common law), household income group, cultural/racial background (white, non-white including those who are of Aboriginal, Korean, Filipino, Chinese, South Asian, South East Asian, Black, Japanese, Arab, West Asian, Latin, other or multiple origin), highest level of education, population size group, length of time in Canada and work status (full-time, part-time and those who did not report working full or part-time). Income was measured using the Statistics Canada household income groups, which was grouped into 5 categories; lowest/lower-middle, middle, upper-middle, highest and a missing group was created for those who did not respond (Tjepkema, 2008 & Garriguet, 2004). Health related characteristics included number of chronic conditions (none, one or more consisting of migraines, chronic bronchitis, diabetes, cancer, having had cancer, heart disease, stomach/intestinal ulcers, urinary incontinence, bowel disorders Alzheimer’s, mood disorders, anxiety disorders, asthma, arthritis, back problems), self-perceived health status and current smoking status as a measure of health related behaviors. Where possible, variable coding was consistent with a Canada wide study that considered population-based predictors of having an RMD in 2001 (Talbot et al., 2001).

### **Statistical Analysis**

An initial descriptive and multiple logistic regression analysis of the factors associated with not having insurance coverage for prescription medication was completed using all

covariates (independent variables) and insurance status for prescription medication (yes/no) as the dependent variable. Odds Ratios (OR) and 95% Confidence Intervals (95% CI) were reported. Descriptive statistics were used to determine the prevalence of N-RMD, NC-RMD and NF-RMD, in addition to showing the distribution of all independent variables across each outcome. Crude odds ratios were determined and reported for each independent versus dependent variable along with the 95% confidence interval. Three multivariate logistic regression models were performed to determine associations between a lack of insurance for prescription drugs and each of the three outcomes, while adjusting for covariates. Odds Ratios (OR) and 95% Confidence Intervals (95% CI) were reported. Results were weighted to represent the population of Ontario 18-64 years old and confidence intervals were estimated using the bootstrapping technique to account for complicated sampling procedures. Variables were coded using SPSS version 17.0 and descriptive, bivariate and regression analysis were completed using STATA version 9.

## Results

Sample sizes for each of the three analyses were 14,682 (N-RMD), 13,530 (NC-RMD), and 14,113 (NF-RMD). The adjusted logistic regression analyses were weighted to represent approximately 7,907,309 (N-RMD), 7,385,819 (NC-RMD) and 7,538,672 (NF-RMD) of the Ontarian population aged 18-64 years old. Those who answered “other” to the question “Why do you know have an RMD?” were included in only the analysis of N-RMD where 10% (n=1,525) reported that they were without an RMD. For the sub-analyses, 4% reported NC -RMD and 6% reported NF-RMD. Questions regarding N-RMD and the main independent variable (insurance coverage for prescription medication) had a response rate of 97% or greater.

Results of the descriptive analysis for insurance variables can be found in Appendix B. Approximately, 25% of the study population reported not having insurance for prescription medication. Table 1 illustrates the results the multiple logistic regression analysis that considered predictors related to insurance coverage for prescription medications. Not having insurance coverage was most strongly related to household income and length of time in Canada, with those in the middle income (OR=4.08; CI=3.21-5.81) and those who have lived in Canada for less than 10 years (OR=2.65; CI=1.94-3.62) more likely to report not having insurance for prescription drugs. In addition those who work full-time were less likely to report a lack of insurance coverage for prescription drugs (OR=0.77; CI=0.64-0.93).

Table 2 displays the results of the descriptive analysis for all independent variables and the 3 outcome variables (N-RMD, NC-RMD, and NF-RMD). Results indicate that

the proportion of those who reported N-RMD, NC-RMD and NF-RMD were all higher for those who reported that they did not have partial or full coverage for prescription medication (13% versus 9%, 6% versus 3% and 7% versus 6% respectively). Overall, 15% of adults under the age of 34 reported N-RMD. Overall, 18% (n=263) of immigrants who have been in Canada for less than 10 years reported N-RMD, with 11% reporting that they NC-RMD. In terms of income, 23% of those in the lowest/lower-middle income group reported N-RMD with 5% reporting that this was because they had not looked for an RMD and 16% because they could not find one. Results related to health characteristics indicate that 12% of those reporting poor/fair health reported that they N-RMD, with 1% reporting NC-RMD.

### **Crude Associations**

Unadjusted associations for the main outcome and two subcategories are shown in Table 3. Not having insurance for prescription drugs was significantly associated with N-RMD (OR=1.53; CI=1.26-1.85) and NC-RMD (OR=1.87; CI=1.38-2.54) but not with NF-RMD (OR=1.19; CI= 0.95-1.49). Sex, marital status, smoking status and population size group were associated with all outcomes at the bivariate level with men, unmarried individuals and smokers all more likely have N-RMD, NC-RMD and NF-RMD. Those living in rural or urban areas with less than 500,000 people were less likely to NC-RMD and more likely to NF-RMD.

### **Adjusted Associations**

Adjusted associations for N-RMD, NC-RMD and NF-RMD, as compared to those who have an RMD, are shown in Table 4. Not having insurance coverage for prescription medication was no longer associated with N-RMD (OR=1.12; CI=0.90-1.39), but remained borderline associated with NC-RMD (OR=1.37; CI=1.00-1.89). NF-RMD showed no association with insurance coverage in the adjusted model (OR=0.95; CI=0.73-1.24).

Independent variables significantly associated with all three outcomes at the multivariate level were sex, age, household income group and self-perceived health status. Males, those with the lowest/lower middle incomes and younger individuals (18-34, 35-44 years old) were more likely to N-RMD and to NC-RMD whereas only individuals 35-44 years old were more likely to NF-RMD. Males were 3.6 (CI=2.49-5.20) times more likely to NC-RMD as compared to females, and those with the lowest or lower-middle household incomes were 3.07 (CI=1.72-5.47) times more likely to report NF-RMD as compared to those in the highest income category. Those in the 18-34 and 34-55 year old groups (only 34-55 years old for NF-RMD) showed positive associations with not N-RMD, NC-RMD, NF-RMD. Having a fair/poor self-perceived health status was positively related to NF-RMD (OR=2.10; CI=1.31-3.38) and negatively related (OR=0.34; CI=0.15-0.80) to NC-RMD. Having less than a secondary school education was positively associated with NF-RMD (OR=1.75; CI=1.16-2.63), while having completed secondary school was negatively associated with NC-RMD. Characteristics uniquely related to NC-RMD included being an immigrant who has lived in Canada for

less than 10 years (OR=2.75; CI= 1.27-5.96) and being a smoker (OR=1.62; CI=1.06-2.46). Characteristics uniquely associated with NF-RMD included, having less than a secondary school education, being single (OR=1.40; CI=1.04-1.89) and living in rural area (OR=2.15; CI=1.51-3.07) or in an urban area with less than 500,000 people (OR=1.63; CI=1.51-1.90).

## **Discussion**

The current study aimed to assess the association between a lack of insurance for prescription medication and not having an RMD and to explore the predictors N-RMD by considering two subcategories of the dependent variable; NC-RMD and NF-RMD separately. A borderline significant association was found between NC-RMD and not having insurance for prescription medication. As far as we know, this is the first study to consider an association between insurance coverage for prescription medication and N-RMD, NC-RMD and NF-RMD. Results further indicate that there are distinct differences in the associations of independent variables to NC-RMD and NF-RMD.

The results of this study show that approximately 75% of Ontarians (18-64 years old) self-reported that they had either partial or full coverage for prescription medication, which is below previously reported figure of 83.3% for conventional coverage in Ontario (Kapur & Basu, 2005). This difference is likely due to the fact that the current study considers only the population aged 18-64 years old, eliminating the insured population of those 65 years plus. Predictors of insurance coverage found in the current study remain consistent with past findings with younger individuals (Kapur and Basu, 2005; Hanley, 2009) those working part time, those living in rural areas, single peoples, those with lower and middle incomes (Kapur and Basu, 2005) and those with no chronic medical conditions (Hanley, 2009) as more likely to lack insurance coverage for prescription medication. Findings from the current analysis, show that all income groups were more likely to lack insurance when compared to the highest income group, although those in the middle income group are 4 times more likely to lack insurance for prescription drugs.

This is most likely because those in the lowest income groups can be covered under public plans and those with the highest incomes are likely to be covered by a private plan. In agreement with what would be expected those who work full time are more likely to have insurance, as they are likely to receive supplemental health insurance coverage from their place of employment.

Insurance coverage for prescription medication was associated with N-RMD overall and NC-RMD in the unadjusted model and in the adjusted model only remained borderline associated with NC- RMD. Considering that not having insurance for prescription drugs and not having an RMD share many of the same predictors, it is not surprising that there was a loss in significance in two of the adjusted models. Concepts contributing to individuals NC-RMD could include a fear of costs associated with being prescribed medication (Williamson & Fast, 1998), or that individuals with insurance may be prompted to seek care because they are alleviated (partially or fully) of the possible costs associated with a physician visit. Stabile (2001) found that those with supplemental insurance (prescription drugs) increased their number of physician visits by 4% and that overall those with supplemental insurance used 10% more public health services than those without supplemental health coverage. A study by Allin and Hurley (2009) found that individuals with insurance for prescription drugs use physician services to greater extent than those without insurance, while controlling for need. This study also found that in those who lack insurance coverage for prescription medication, the likelihood of a visit to a general practitioner was greater for those with a chronic condition (Allin & Hurley, 2009). A recent Canadian study demonstrated that a lack of coverage for



prescription medication only influenced physician visits in healthy populations and did not act as a deterrent in unhealthy populations (Devlin et al., 2010). A study by Devlin et al. (2010) also highlighted the fact that individuals without insurance are more likely to use over the counter drugs when ill and that those with insurance were more likely to visit a physician because of reduced costs.

In the multivariate analysis the socio-demographic characteristics, sex, age, highest level of education completed and household income group remained significantly associated with NC-RMD and NF-RMD. This is consistent with studies that have considered national predictors of not having an RMD in Canada (Talbot et al., 2001) as well as studies that have looked at predictors of not having an RMD in Manitoba (Menec et al., 2001). Talbot et al., (2001) concluded that younger individuals were more likely to have NC-RMD because they have less chronic health concerns than older populations. The current study found no relationship between chronic conditions and the 2 subcategories of the outcome in the adjusted model, but did find a relationship between chronic conditions and the N-RMD similar to what Talbot et al. (2001) previously reported. Those who self-perceived their health as poor/fair were less likely to report NC-RMD, indicating, as expected, that those with poor health are actively seeking an RMD.

Variables uniquely related to NC-RMD included length of time in Canada, with immigrants who have been in the country for less than 10 years were more likely to report NC-RMD. This is consistent with the results of a qualitative study from Quebec that showed that new immigrant families start by using “ad hoc” services and eventually

adopt a regular source of care overtime (Leduc & Proulx, 2004). Similar ideas have been presented in a Canadian study that considered the healthy immigrant effect and highlighted the notion that immigrants begin to use health services similarly to native born individuals over time (McDonald & Kennedy, 2004). Leduc and Proulx (2004) further highlighted the fact that health care is not a priority for new immigrants and comes after finding a job and housing. In Ontario being a recent immigrant was not associated with NF-RMD, which indicates that immigrants who are looking for an RMD do not experience any greater difficulties than the Canadian born population. Although being a male was associated with overall and subcategories of the dependent variable, the strongest relationship was found for NC-RMD, with males 3.6 times more likely to have not looked for an RMD. Men are less likely to use health care services (Pinkhasov et al., 2010) which can be attributed to traditional masculine social roles that men display with regards to help seeking behavior (Tudiver et al., 1999; Noone & Stephens, 2008; Addis & Mahalik, 2003). The use of preventative health services has been shown to increase with education (Devlin et al., 2010), although in the current study a lower education was associated with being more likely to try to contact an RMD. Further investigation into reasons for this discrepancies are needed and could be due, in part, to the fact that although these individuals have tried to contact an RMD they may run into greater difficulty actually connecting with one. Smoking status was uniquely related to NC-RMD with those who were smokers more likely to NC-RMD. Talbot et al. (2001) suggests that this related to not being concerned with one's health and may be further related to the fact that risky behaviors cluster in individuals.

Variables uniquely related to NF-RMD included education level with those with less than a secondary school education are more likely not to be able to find an RMD (OR=1.69, CI=1.14-2.51). This could be due to the fact that programs that seek to connect individuals with an RMD are not currently able to reach these specific populations. Marital status was only related to NF-RMD, which as Talbot et al., point out is related to the ‘social aspects’ of seeking care. Interestingly this variable was unrelated to NC-RMD, which indicates that being married is not influencing individuals decisions to attempt to contact an RMD as indicated in previous studies (Talbot et al., 2001). This study confirmed that those living in rural areas are more likely to report NF-RMD. In addition to a reported lack of physicians in rural areas (CIHI, 2005; Matthews & Park, 2007), this is likely due to the fact that those living in urban areas have a greater variety of health care options both in terms of primary and ‘walk-in’ type care.

Limitations of the current study included the self-reported nature of data collection, which could lead to information bias, including misclassification of the main independent variable. The cross-sectional method of data collection does not allow for causality to be determined in the current analysis and leaves the potential for reverse causality. The lack of an objective measure of insurance status, as well as a lack of information on the extent of coverage, or associated deductibles and copayments, was also a limitation that needs to be addressed in future studies. A limitation of the data set included the inability to adjust for time at current residence, a variable which has been found to be an important variable in having an RMD in past studies (Reid et al., 2009; The POWER Study, 2010). Strengths of this study included the large province wide sample of the adult population and the

ability to adjust for a variety of important confounding variables. Finally, the ability of this study to consider subcategories of the outcome variable allowed us to highlight predictors that were specifically associated with each outcome allowing for a deeper understanding of barriers related to accessing an RMD.

## **Conclusion**

The current study showed a borderline significant association between a lack of insurance for prescription medication and not having tried to contact an RMD. These findings indicate that the lack of universal access to public insurance coverage for prescription medication is related to one's decision to seek an RMD, therefore leading to access inequalities resulting from inconsistent coverage. Although provincial programs in Ontario do cover partial costs for the most vulnerable population, seniors, those on social assistance and those with excessively high costs related to prescription drugs, there appears to still be individuals who are being affected by the lack of coverage. These results indicate that there may be further support for expanding public drug coverage in the province of Ontario. Although this relationship does exist, this study also demonstrates that there may be other more influential factors that determine whether an individual has an RMD including gender, income and length of time since immigration. Qualitative studies could help to provide a deeper understanding of the complicated mix of factors that are responsible for not having an RMD in Ontario as it relates to current insurance status for prescription drugs.

Associations with independent variables indicate that there are distinct differences between populations who NC-RMD and those who NF-RMD. Findings indicate that

considering different reasons for N-RMD at the population level can provide more targeted associations of N-RMD and can effectively provide more useful information to inform program and policy development that seek to connect individuals with RMD's. To better connect individuals with an RMD, Ontario might consider ways to help those with a lower education levels better utilize provincial programs that seek to connect individuals with an RMD, in addition to continued efforts to increase access in rural areas. Fostering a stronger focus on preventative care in the male population, recent immigrant populations and in those with health risk behaviors such as smoking could help to increase uptake of an RMD in these populations.

## **Extended Discussion**

### **Limitations and Strengths**

Reverse causality is a potential concern in this study due to the cross-sectional nature of data collection. We were therefore unable to determine if not having insurance precedes not having tried to contact an RMD or if not contacting an RMD leads to a lack of insurance. It is possible that those who have an RMD are more likely to seek insurance to cover costs, therefore leading to the greater proportion of individuals with a doctor reporting that they have insurance. The current study is only able to demonstrate an association between the 2 variables and therefore provide some guidance for future analysis that seeks to determine the directions of this relationship. There is the potential for misclassification of the outcome variable in that all subjects may define a “regular medical doctor” differently. Although sample selection has the potential to lead to selection bias in this study, weighting the analysis seeks to eliminate this factor. In relation to the lack of an objective measure of insurance status, those who do not have an RMD may be less likely to be aware of their current insurance status. Regardless, if one is unaware of their insurance status and believes that they are not covered this can still have an effect on their decision to seek an RMD. Lastly, when the dependent variable was divided into sub-categories, sample sizes, in some cases, became quite small across independent variable categories. This meant that categories had to be collapsed for variables such as race/culture and income. Since not having tried to contact an RMD accounted for only 4% of the study population this problem was particularly apparent with regards to this variable.

Additional strengths of the current study include the ability to track data over time, as questions remain fairly consistent year to year, and to allow for yearly comparisons of indicators. Having an RMD has been and continues to be an important indicator considered by the CCHS. This study was the first to explore the potential association between a lack of insurance coverage for prescription medication and NC-RMD and should therefore act as a guide to inform future directions.

### **Implications and Future Studies**

Public coverage for prescription drugs remains an important gap in provincial health insurance schemes, as this type of coverage is not currently mandated under the Canada Health Act. This study demonstrated that inequalities in choosing to access an RMD do exist in Ontario, and that in order to facilitate more individuals connecting with RMD's, one might consider increasing public coverage for prescription drugs. The possibility of increasing coverage to all Ontarians or to increase coverage to include more groups, specifically younger individuals and those of middle incomes, could help to alleviate differences in decisions to seek a regular source of care. A change in the provincial public insurance scheme for prescription medication coverage would require an in depth consideration of the costs of supporting expanded public financing for prescription drugs. There is evidence that indicates that a stronger primary health care system lowers costs (Starfield & Shi, 2002) and evidence that points to a universal Pharmacare program in Canada as a way to save billions (Gagnon & Herb ert, 2010). In light of this, there is still no clear intention to change the current policy being presented by the government.

Ontario has one of the higher provincial prevalence rates for having an RMD in Canada (Statistics Canada, 2008) and has one of the more comprehensive public plans for prescription drug coverage (Demers et al., 2010). Studies in provinces where fewer individuals have an RMD would be useful and could provide an opportunity to consider how different provincial policies related to insurance coverage for prescription medication are associated with the decision of individuals to seek an RMD. A qualitative analysis of the association between a lack of insurance and NC-RMD should be explored in younger and healthy populations as these groups are most susceptible to have health services use affected by a lack of insurance coverage for prescription drugs (Allin & Hurley, 2008; Devlin et al., 2010). Studying this relationship in smaller populations and using purposeful sampling could prove useful in teasing out the details of these relationships. Qualitative analysis would allow for many of variables that we were unable to control for in the current analysis (eg. time at current residence and amount of co-payments/deductibles) to be considered.

Implications of the current study further include efforts to get populations who are currently more likely to not seek an RMD (males, recent immigrants, smokers) interested in accessing a regular source of care. This study also highlights areas that provincial programs, such as 'Health Care Connect', should consider new ways to reach populations with lower education levels and those with lower incomes. Continued provincial efforts to increase primary care access in rural communities also remains important. Finally, the need to further assess the relationship between a lack of insurance coverage and NC-RMD remains the main future research direction resulting from these analyses.



**Tables**

<b>Table 1: Crude and adjusted associations of not having insurance for prescription medication in Ontarian adults aged 18-64</b>		
	<b>Crude Odds Ratio</b>	<b>Adjusted Odds Ratio</b>
	<b>OR (95% CI)<sup>1</sup></b>	<b>OR (95% CI)<sup>1</sup></b>
<b>Socio-Demographic Characteristics</b>		
<b>Sex</b>		
Male	1.14 (0.99-1.30)	<b>1.28 (1.10-1.48)</b>
Female	Ref	Ref
<b>Age</b>		
18-34	<b>1.75 (1.43-2.14)</b>	<b>1.52 (1.12-1.90)</b>
35-44	1.02 (0.81-1.27)	1.06 (0.83-1.36)
45-54	1.03 (0.83-1.28)	1.15 (0.92-1.45)
55-64	Ref	Ref
<b>Marital Status</b>		
Single	<b>1.71 (1.50-1.95)</b>	<b>1.42 (1.22-1.64)</b>
Married	Ref	Ref
<b>Urban/ Rural</b>		
Rural (<30, 000)	<b>1.17 (1.02-1.33)</b>	<b>1.48 (1.23-1.77)</b>
Urban (< 500,000)	<b>2.61 (2.00-3.40)</b>	1.04 (0.96-1.13)
Urban (>500,000)	Ref	Ref
<b>Education Level</b>		
< Secondary school (sec)	<b>1.87 (1.51-3.31)</b>	1.15 (0.91-1.46)
Sec. graduate	<b>1.66 (1.39-2.00)</b>	<b>1.31 (1.08-1.60)</b>
Some post sec.	1.06 (0.82-1.36)	<b>0.72 (0.54-0.97)</b>
Completion of post sec.	Ref	Ref
<b>Racial/Cultural Background</b>		
Non-white	<b>1.85 (1.57-2.17)</b>	0.96 (0.77-1.18)
White	Ref	Ref
<b>Household Income Group</b>		
Missing	<b>1.89 (2.33-3.58)</b>	<b>2.16 (1.71-2.72)</b>
Lowest/lower-middle	<b>4.33 (4.38-5.65)</b>	<b>3.26 (2.43-4.38)</b>
Middle	<b>5.43 (4.38-6.74)</b>	<b>4.08 (3.21-5.18)</b>
Upper-Middle	<b>2.35 (2.00-2.76)</b>	<b>2.03 (1.70-2.42)</b>
Highest	Ref	Ref
<b>Time Since Immigration</b>		
0-9 years	<b>2.94 (2.56-3.81)</b>	<b>2.65 (1.94-3.62)</b>
10+ years	<b>1.66 (1.42-1.95)</b>	<b>1.87 (1.52-2.28)</b>
Not an immigrant	Ref	Ref

<b>Work</b>		
Part-time	<b>0.56 (0.48-0.65)</b>	0.82 (0.65-1.02)
Full-time	<b>0.71 (0.58-0.87)</b>	<b>0.77 (0.64-0.93)</b>
Not applicable	Ref	Ref
<b>Health Characteristics</b>		
<b>Self-Perceived Health</b>		
Fair/poor	1.20 (0.93-1.56)	0.87 (0.65-1.16)
Good	<b>1.21 (1.04-1.41)</b>	1.00 (0.84-1.79)
Excellent/very good	Ref	Ref
<b>Chronic Conditions</b>		
None	<b>1.26 (1.10-1.44)</b>	<b>1.21 (1.04-1.42)</b>
1 or more	Ref	Ref
<b>Type of Smoker</b>		
Daily or occasional smoker	<b>1.29 (1.10-1.52)</b>	<b>1.43 (1.17-1.75)</b>
Former smoker	<b>0.71 (0.60-0.83)</b>	1.00 (0.83-1.81)
Never smoked	Ref	Ref
Bold if significant		
<sup>1</sup> OR (Odds Ratio), 95 % CI (95% Confidence Interval)		
CI are estimated using bootstrapping technique		

<b>Table 2: Distribution of independent variables across not having an RMD in Ontarian adults aged 18-64 years old</b>			
	<b>N-RMD</b>	<b>NC-RMD</b>	<b>NF-RMD</b>
	<b>N* (%)</b>	<b>N (%)</b>	<b>N (%)</b>
<b>Insurance for prescription drugs</b>			
No	485 (13)	195 (6)	221 (7)
Yes	999 (9)	329 (3)	585 (6)
<b>Sex</b>			
Male	978 (13)	421 (6)	460 (7)
Female	547 (7)	115 (2)	364 (5)
<b>Age</b>			
18-34	765 (15)	332 (7)	321 (7)
35-44	358 (10)	91 (3)	240 (7)
45-54	226 (7)	74 (2)	135 (4)
55-64	176 (6)	38 (1)	128 (5)
<b>Marital Status</b>			
Single	726 (14)	270 (6)	367 (7)
Married	792 (8)	265 (3)	452 (5)
<b>Urban/Rural Location</b>			
Rural (<30,000)	192 (9)	46 (2)	132 (6)
Urban (< 500,000)	552 (12)	130 (3)	377 (9)
Urban (>500,000)	780 (10)	361 (5)	315 (4)
<b>Education Level</b>			
< Secondary school (sec)	213 (15)	52 (4)	153 (11)
Sec. graduate	246 (9)	74 (3)	157 (6)
Some post sec.	157 (12)	50 (4)	73 (6)
Completion of post sec.	879 (10)	351 (4)	430 (5)
<b>Racial/ Cultural Background</b>			
Non-White	493 (12)	211 (6)	225 (6)
White	999 (10)	311 (3)	588 (6)
<b>Household Income Group</b>			
Lowest/lower-middle	189 (23)	38 (5)	124 (16)
Middle	185 (12)	72 (5)	94 (6)
Upper middle	341 (10)	125 (4)	307 (6)*
Missing	232 (12)	86 (5)	
Highest	579 (8)	215 (3)	299 (5)
<b>Time Since Immigration</b>			
0-9 years	263 (18)	138 (11)	238 (5)*
10+ years	265 (8)	93 (3)	
Canadian born	962 (10)	298 (3)	566 (6)

<b>Work Status</b>			
Part-time	416 (10)	52 (4)	80 (6)
Full-time	954 (10)	375 (4)	502 (6)
Not applicable	369 (11)	83 (3)	225 (7)
<b>Self-Perceived Health</b>			
Fair/poor	193 (12)	16 (1)	413 (8)*
Good	449 (11)	128 (3)	
Excellent/very good	882 (10)	392 (5)	410 (5)
<b>Chronic Conditions</b>			
None	816 (12)	352 (6)	363 (6)
1 or more	698 (9)	175 (2)	458 (6)
<b>Smoking Status</b>			
Daily/ occasional smoker	493 (14)	176 (6)	277 (9)
Former smoker	418 (8)	146 (3)	226 (5)
Never smoked	611 (10)	212 (4)	321 (5)
Frequencies are estimated using normalized weights			
*Categories were collapsed due to data vetting procedures			

<b>Table 3: Crude associations between not having an RMD and socio-demographic and health related characteristics in Ontarian adults aged 18-64</b>			
	<b>N-RMD</b>	<b>NC-RMD</b>	<b>NF-RMD</b>
	<b>OR (95% CI)<sup>1</sup></b>	<b>OR (95% CI)<sup>1</sup></b>	<b>OR (95% CI)<sup>1</sup></b>
<b>Insurance for Prescription Drugs</b>			
No	<b>1.53 (1.26-1.85)</b>	<b>1.87 (1.38-2.54)</b>	1.19 (0.95-1.49)
Yes	Ref	Ref	Ref
<b>Socio-Demographic Characteristics</b>			
<b>Sex</b>			
Male	<b>1.93 (1.63-2.30)</b>	<b>3.96 (2.84-5.52)</b>	<b>1.37 (1.09-1.72)</b>
Female	Ref	Ref	Ref
<b>Age</b>			
18-34	<b>1.65 (1.86-3.80)</b>	<b>5.25 (3.19-8.66)</b>	1.51 (0.92-2.46)
35-44	<b>2.06 (1.42-2.97)</b>	<b>2.51 (2.08-5.93)</b>	1.42 (0.87-2.32)
45-54	1.29 (0.89-1.88)	1.6 (0.84-3.07)	1.20 (0.73-1.96)
55-64	Ref	Ref	Ref
<b>Marital Status</b>			
Single	<b>1.76 (1.49-2.09)</b>	<b>1.96 (1.46-2.65)</b>	<b>1.56 (1.24-1.96)</b>
Married	Ref	Ref	Ref
<b>Urban/Rural Location</b>			
Rural (<30,000)	0.96 (0.77-1.19)	<b>0.49 (0.32-0.76)</b>	<b>1.63 (1.19-2.25)</b>
Urban (< 500,000)	<b>1.15 (1.05-1.26)</b>	<b>0.82 (0.71-0.95)</b>	<b>1.50 (1.30-1.72)</b>
Urban (>500,000)	Ref	Ref	Ref
<b>Education Level</b>			
< Secondary school (sec)	<b>1.69 (1.19-2.38)</b>	1.03 (0.58-1.84)	<b>2.47 (1.61-3.80)</b>
Sec. graduate	0.95 (0.77-1.18)	0.72 (0.49-1.06)	1.25 (0.96-1.61)
Some post sec.	1.26 (0.93-1.69)	1.01 (0.61-1.69)	1.19 (0.81-1.76)
Completion of post sec.	Ref	Ref	Ref
<b>Racial/Cultural Background</b>			
Non-white	<b>1.3 (1.05-1.61)</b>	<b>1.78 (1.27-2.49)</b>	1.01 (0.72-1.40)
White	Ref	Ref	Ref
<b>Household Income Group</b>			
Missing	<b>1.44 (1.08-1.91)</b>	1.44 (0.82-2.53)	<b>1.41 (1.02-1.94)</b>
Lowest/lower-	<b>3.27 (2.23-4.80)</b>	1.78 (0.99-3.22)	<b>4.13 (2.41-7.08)</b>

middle			
Middle	<b>1.42 (1.08-1.87)</b>	1.5 (0.99-2.29)	<b>1.41 (1.02-1.95)</b>
Upper middle	1.67 (0.95-1.43)	1.16 (0.78-1.72)	1.26 (0.98-1.61)
Highest	Ref	Ref	Ref
<b>Time Since Immigration</b>			
0-9 years	<b>2.03 (1.52-2.70)</b>	<b>3.43 (2.19-5.37)</b>	1.09 (0.74-1.60)
10+ years	0.81 (0.61-1.08)	0.92 (0.61-1.37)	0.81 (0.52-1.25)
Canadian born			
<b>Work Status</b>			
Part-time	0.94 (0.69-1.28)	1.5 (0.90-2.51)	0.85 (0.55-1.30)
Full-time	0.93 (0.74-1.17)	<b>1.64 (1.12-2.41)</b>	0.80 (0.59-1.20)
Not applicable	Ref	Ref	Ref
<b>Health Characteristics</b>			
<b>Self-Perceived Health</b>			
Fair/poor	1.31 (0.91-1.88)	<b>0.24 (0.11-0.49)</b>	<b>2.25 (1.45-3.50)</b>
Good	1.13 (0.94-1.36)	<b>0.73 (0.53-0.99)</b>	<b>1.40 (1.11-1.77)</b>
Excellent/very good	Ref	Ref	Ref
<b>Chronic Conditions</b>			
None	<b>1.47 (1.24-1.74)</b>	<b>2.52 (1.86-3.42)</b>	0.99 (0.80-1.23)
1 or more	Ref	Ref	Ref
<b>Smoking Status</b>			
Daily/occasional smoker	<b>1.49 (1.20-1.84)</b>	<b>1.53 (1.07-2.19)</b>	<b>1.59 (1.20-2.12)</b>
Former smoker	<b>0.80 (0.65-0.99)</b>	0.81 (0.56-1.17)	0.83 (0.62-1.10)
Never smoked	Ref	Ref	Ref
Bold if significant (alpha<0.05)			
<sup>1</sup> OR (Odds Ratio); CI (Confidence Interval)			
95% Confidence Interval calculated using bootstrapping technique			

<b>Table 4: Adjusted associations between not having an RMD and socio-demographic and health related characteristics in Ontarian adults aged 18-64</b>			
	<b>N-RMD</b>	<b>NC-RMD</b>	<b>NF-RMD</b>
	<b>OR (95% CI)<sup>1</sup></b>	<b>OR (95% CI)<sup>1</sup></b>	<b>OR (95% CI)<sup>1</sup></b>
<b>Insurance coverage for prescription medication</b>			
No	1.12 (0.90-1.39)	<b>1.37 (1.00-1.89)</b>	0.91 (0.69-1.20)
Yes	Ref	Ref	Ref
<b>Socio-Demographic Characteristics</b>			
<b>Sex</b>			
Male	<b>1.93 (1.57-2.37)</b>	<b>3.60 (2.49-5.20)</b>	<b>1.43 (1.10-1.87)</b>
Female	Ref	Ref	Ref
<b>Age</b>			
18-34	<b>1.94 (1.38-2.72)</b>	<b>2.70 (1.34-5.46)</b>	1.41 (0.97-2.05)
35-44	<b>1.82 (1.30-2.57)</b>	<b>2.10 (1.14-3.89)</b>	<b>1.52 (1.01-2.30)</b>
45-54	1.18 (0.84-1.66)	1.15 (0.59-2.24)	1.19 (0.78-1.80)
55-64	Ref	Ref	Ref
<b>Marital Status</b>			
Single	<b>1.42 (1.13-1.77)</b>	1.40 (0.94-2.10)	<b>1.40(1.04-1.89)</b>
Married	Ref	Ref	Ref
<b>Urban/Rural Location</b>			
Rural (<30,000)	1.28 (0.99-1.65)	0.65 (0.40-1.05)	<b>2.15 (1.51-3.07)</b>
Urban (< 500,000)	<b>1.26 (1.13-1.40)</b>	0.90 (0.76-1.06)	<b>1.63 (1.39-1.90)</b>
Urban (> 500,000)	Ref	Ref	Ref
<b>Education Level</b>			
< Secondary school (sec)	1.33 (0.94-1.89)	0.94 (0.53-1.68)	<b>1.75 (1.16-2.63)</b>
Sec. graduate	0.85 (0.67-1.08)	<b>0.57 (0.36-0.89)</b>	1.14 (0.87-1.50)
Some post sec.	1.02 (0.74-1.41)	0.77 (0.43-1.37)	1.02 (0.69-1.54)
Completion of post sec.	Ref	Ref	Ref
<b>Racial/Cultural Background</b>			
Non-white	1.00 (0.75-1.34)	0.99 (0.58-1.71)	1.06 (0.72-1.55)
White	Ref	Ref	Ref
<b>Household Income Group</b>			
Missing	1.23 (0.83-1.80)	1.58 (0.69-3.65)	1.17 (0.83-1.65)
Lowest/lower-middle	<b>2.71 (1.79-4.10)</b>	<b>2.13 (1.11-4.07)</b>	<b>3.07 (1.72-5.47)</b>
Middle	1.12 (0.81-1.52)	1.23 (0.70-2.16)	1.11 (0.78-1.59)
Upper middle	1.06 (0.85-1.33)	1.16 (0.77-1.75)	1.08 (0.82-1.43)
Highest	Ref	Ref	Ref
<b>Time Since Immigration</b>			
0-9 years	<b>2.1 (1.36-3.24)</b>	<b>2.75 (1.27-5.96)</b>	1.48 (0.84-2.60)
10+ years	0.99 (0.72-1.37)	0.89 (0.48-1.65)	1.12 (0.74-1.65)
Canadian born	Ref	Ref	Ref

<b>Work Status</b>			
Part-time	1.08 (0.79-1.48)	1.40 (0.81-2.44)	1.11 (0.76-1.63)
Full-time	1.17 (0.92-1.49)	1.45 (0.94-2.24)	1.24 (0.94-1.63)
Not applicable	Ref	Ref	Ref
<b>Health Characteristics</b>			
<b>Self-Perceived Health</b>			
Fair/poor	<b>1.51 (1.00-2.29)</b>	<b>0.34 (0.15-0.80)</b>	<b>2.10 (1.31-3.38)</b>
Good	1.09 (0.88-1.35)	0.71 (0.48-1.04)	1.26 (0.99-1.60)
Excellent/very good	Ref	Ref	Ref
<b>Chronic Conditions</b>			
None	<b>1.31 (1.07-1.61)</b>	1.42 (0.98-2.24)	1.18 (0.91-1.51)
1 or more	Ref	Ref	Ref
<b>Smoking Status</b>			
Daily or occasional smoker	1.29 (0.99-1.68)	<b>1.62 (1.06-2.46)</b>	1.16 (0.83-1.62)
Former smoker	0.92 (0.72-1.16)	1.05 (0.70-1.58)	0.84 (0.61-1.15)
Never smoked	Ref	Ref	Ref
Bold if significant (alpha<0.05)			
<sup>1</sup> OR (Odds Ratio); CI (Confidence Interval)			
95% Confidence Interval calculated using bootstrapping technique			



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## Appendices

### Appendix A

#### Summary of publicly covered insurance programs in Ontario

Group	Deductibles	User Copayment
Seniors (>64 years old)	\$100/senior annually	Single: <ul style="list-style-type: none"> <li>▪ \$2.00/prescription if income &lt;\$16,081</li> <li>▪ \$6.11/prescription if income &gt;=16,081</li> </ul> Couple: <ul style="list-style-type: none"> <li>▪ \$2.00/prescription if income &lt;\$24,175</li> <li>▪ \$6.11/prescription is income &gt;=24,175</li> </ul>
Recipients of Social Assistance	\$0	\$2.00/prescription
Ontarians under the age of 65 who qualify for the Trillium Drug Program <sup>1</sup>	<ul style="list-style-type: none"> <li>▪ Net annual household income &lt;=\$100,000 (\$150-\$4089)</li> <li>▪ Net annual household income &gt;\$100,000 (varies)</li> </ul>	\$2.00/prescription
Adapted from Demers et al. 2008 and 'A Guide to Understanding the Trillium Drug Program'		
<sup>1</sup> To qualify for the Trillium drug program individuals must have prescription drug costs that account for approximately 4% (or greater) of their household income		
Other groups are covered under the Ontario Drug Benefit program including those living in long-term care facilities and those who receive home care.		

## Appendix B

<b>Table 5:</b> Descriptive results for a lack of insurance coverage for prescription medication in Ontarian adults aged 18-64	
	<b>Does not have insurance for prescription drugs</b>
	<b>N* (%)</b>
<b>Socio-Demographic Characteristics</b>	
<b>Sex</b>	
Male	1858 (26)
Female	1708 (23)
<b>Age</b>	
18-34	1485 (30)
35-44	775 (22)
45-54	708 (22)
55-64	597 (22)
<b>Marital Status</b>	
Single	1593 (32)
Married	1967 (21)
<b>Urban/ Rural</b>	
Rural (<30, 000)	515 (26)
Urban (< 500,000)	1002 (23)
Urban (>500,000)	2049 (26)
<b>Education Level</b>	
< Secondary school (sec)	468 (34)
Sec. graduate	826 (32)
Some post sec.	293 (23)
Completion of post sec.	1955 (21)
<b>Racial/Cultural Background</b>	
Other	1338 (34)
White	2196 (22)
<b>Household Income Group</b>	
Missing	527 (33)
Lowest/lower-middle	338 (42)
Middle	750 (48)
Upper-Middle	978 (28)
Highest	972 (14)
<b>Time Since Immigration</b>	
0-9 years	612 (43)
10+ years	970 (30)
Not an immigrant	1973 (21)

<b>Work</b>	
Part-time	364 (26)
Full-time	2027 (22)
Not applicable	1122 (33)
<b>Health Characteristics</b>	
<b>Self-Perceived Health</b>	
Fair/poor	411 (27)
Good	1082 (27)
Excellent/very good	2069 (24)
<b>Chronic Conditions</b>	
None	1769 (27)
1 or more	1791 (23)
<b>Type of Smoker</b>	
Daily or occasional smoker	1049 (31)
Former smoker	976 (20)
Never smoked	1537 (26)
*Frequencies estimated using normalized weights	