FACTORS ASSOCIATED WITH PEOPLE GOING TO THE EMERGENCY DEPARTMENT FOR NON-URGENT VISITS RATHER THAN ATTENDING A FAMILY PHYSICIAN

by

© Allison Maybank

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ABSTRACT

Context: Poor access to primary care (PC) has been associated with increased use of emergency departments (ED) for non-urgent reasons. Identifying PC factors associated with non-urgent ED use will inform the development of policies designed to lower this usage. **Objective:** Determine PC factors associated with non-urgent ED use. **Design:** 1) Canada-wide, and 2) St. John's, NL ED cross-sectional surveys. **Participants:** 1) Adult PC patients across Canada 2) adult ED patients at Health Sciences Centre, St. John's, NL. **Outcome Measures:** Patient attended the ED for non-urgent reasons. **Results:** Limited availability of after-hours services (OR=2.08,$p<0.0001$) and the ability to arrange an appointment as soon as wanted (OR=0.56,$p<0.0001$) were significantly associated with non-urgent ED use within the Canada-wide data. Non-urgent St. John's ED users report that restricted hours of operation influenced them to attend the ED, more than other users (62.5%vs.25.0%, p=0.0083). **Conclusions:** Limited hours and timely availability of services affect patients' decisions to attend the ED for non-urgent issues.

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Abbreviations

BREB	Behavioural research ethics board
CFHI	Canadian Foundation for Healthcare Improvement
CMA	Canadian Medical Association
DF	Degrees of freedom
ED	Emergency department
FPS	Family physician survey
GEE	Generalized estimating equation
HREA	Health research ethics authority
NL	Newfoundland and Labrador
NLMA	Newfoundland and Labrador Medical Association
NS	Nova Scotia
ON	Ontario
OR	Odds ratio
PEI	Prince Edward Island
PES	Patient experience survey
PRA	Practice survey
QC	Quebec
QICC-	Corrected quasi-likelihood under independence model criterion
QUALICO-PC	Quality and costs of primary care
RPAC	Research proposals approval committee
VIF	Variance inflation factor

Symbols

χ^2	Chi-square
σ	Standard deviation
α	p-value/ Alpha
β	Beta
p	population proportion
q	1-p

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1. Introduction

1.1 The Issue

Emergency departments (ED) are used for the treatment of patients who are in need of immediate medical attention for a medical condition and are not intended to be used for on-going care (Carret et al., 2009). However, many patients use the ED as a form of primary care and for treatment of conditions with no increased likelihood of adverse outcome if treatment were delayed by several hours. These visits are often deemed as non-urgent visits (Lowe et al., 2005; Rust et al., 2008) and are affected by a multitude of factors including sociodemographics, health status, previous experiences, beliefs, knowledge (Uscher-Pines et al., 2013). As such, ED use, particularly non-urgent use, is a useful indicator of how well care systems are responding to patients' needs (Schoen et al., 2004).

Non-urgent ED visits have been discussed in the literature for some time now and are viewed as a problem within ED services in many countries (Lowe et al., 2005; Uscher-Pines et al., 2013). Non-urgent use of the ED has been associated with many different effects on a patient's healthcare as well as on the healthcare system. ED overcrowding, added costs, and decrease in quality of care are some of the highly debated and widely discussed impacts of these visits (Lowe et al., 2005; Howard et al., 2008; Rust et al., 2008; Sempere-Selva et al., 2001; Uscher-Pines et al., 2013).

ED overcrowding has been recognized as a significant problem facing emergency care providers (Bond et al., 2007). Many researchers and healthcare professionals believe that

non-urgent ED users are a main cause of overcrowding (Bond et al., 2007; Rust et al., 2008), but there is contradicting research which states that they do not significantly contribute to this overcrowding and that there are other factors that should be considered (Durand et al., 2011; Schull et al., 2002; Schull et al., 2007). Due to these varying views based on results from studies which are not consistent in key methodological definitions, such as 'who is a non-urgent patient', it is difficult to determine if these non-urgent visits are increasing patient volume to an extent where they are causing problems for the healthcare system (Schull et al., 2002).

Although there is no consensus on whether limiting ED misuse by non-urgent users will improve the healthcare system by reducing overcrowding, the issue of potential added financial strain on the system must also be considered. It is believed by some that adding treatment of non-urgent visits to EDs does not significantly affect their operational costs as the ED is already staffed and running (Bamezai et al., 2005). That being said, there is evidence that the cost of treating patients, for similar conditions, in the ED is higher than in a family physician's office or at a clinic (Bamezai et al., 2005; Campbell et al., 2005). Lowering ED operating costs may have an impact on overall healthcare costs (Bamezai et al., 2005).

Finally and more importantly, beyond the potential impact on ED overcrowding and healthcare service operating costs, the use of the ED for non-urgent treatment, when compared to primary care, has a negative effect on patient care. ED visits can result in unnecessary tests and treatments, and not having a relationship with the physician you are

seeing can negatively impact communication levels as well as decrease the continuity of care received (Lowe et al., 2005; Rust et al., 2008). When a patient sees a primary care physician regularly the physician has access to the patients full chart and builds a rapport with that patient allowing the physician to be more effective in educating the patient on their choices and finding options for treatment which best fit their wants and needs (Lowe et al., 2005; Moskop, 2010; Rust et al., 2008).

1.2 Primary care as a solution

Interventions to limit non-urgent use of EDs are being investigated and since many factors affecting non-urgent ED use are related to patient characteristics, they are often the focus of these interventions (Lowe et al., 2005; Uscher-Pines et al., 2013). However, patient characteristics are often hard to change (Lowe et al., 2005). One of the factors which has been found to affect non-urgent use of the ED is access to care and more specifically access to primary care (Alyasin and Douglas, 2014; Uscher-Pines et al., 2013). Some interventions also focus on this factor which is modifiable and attempt to direct people away from the emergency room and towards primary care (Morgan et al., 2013; Uscher-Pines et al., 2013). This type of intervention can help educate patients on what qualifies as urgent and non-urgent care, but is not as effective when patients have difficulty accessing the appropriate source of care, their primary care physician, within a reasonable amount of time and do not receive care that they deem satisfactory.

1.3 Limited access to primary care

Having educated patients who know when to go to the emergency room and when they should see a family physician is important. However, for this to be effective in lowering the use of non-urgent ED visits, patients must have adequate access to the primary care that they need. As reported by the Canadian Medical Association (CMA), in 2014 there were on average 114 general practitioners or family physicians per 100,000 people in Canada, ranging from 169 in the Yukon to 99 in Prince Edward Island (PEI) (CMA, 2016). A majority of the adult population have regular family physicians or general practitioners—a study done by the Canadian Foundation for Healthcare Improvement (CFHI) found that 77% of the population has a regular family physician—but there are issues with access to these services (Aggarwal and Hutchison, 2012). In the same study by CFHI, 32% of adults had to wait 6 or more days or were never able to get an appointment to see a family physician when they were sick, compared to 2% in Switzerland, the top ranked of 11 high income countries (Aggarwal and Hutchison, 2012). Also in a study surveying adults in Canada by Schoen et al. (2004), 52% waited 2 or more days to get an appointment which was higher than Australia (24%), New Zealand(13%), United Kingdom (39%) and the US (43%). Patients also found there was limited access to their primary care service in evenings and on weekends, with 57% or more finding it very or somewhat difficult to do so (Aggarwal and Hutchison, 2012; Schoen et al., 2004). There were also only 43% of practices which reported having after-hours arrangements for their patients to see a doctor or nurse (Aggarwal and Hutchison, 2012).

Patients often turn away from primary care due to specific aspects of access. Beyond patient sociodemographics and characteristics like age, ethnicity, and employment status, studies have found that common barriers affecting access to primary care include: practice size, inability to access them after hours, barriers related to the initiation of care like calling to make an appointment, waiting to get an appointment, and waiting time in office (Kontopontolis et al., 2010; Ronksley et al., 2014; Weaver et al., 2014)

1.4 Current solutions to inadequate primary care access

Issues with access to care, especially primary care, are increasing in importance. Frameworks are being developed to asses and study access to care, as it remains a complex concept with varying interpretations (Levesque et al., 2013). Aday and Andersen (1974) conceptualized that studying access should begin with health policy as its effects on altering access to care are the centre of most evaluations. Health policy then affects the characteristics of the healthcare system, including resources and organization, and the characteristics of populations at risk, which are the individual determinants of utilizations. All of this then can affect utilization of services and consumer satisfaction, which are the outcomes that are observed and studied. Many of these components also have interactions which further complicate the study of access to care. This framework by Aday and Andersen (1974) divides determinants of access into two major categories, the healthcare system and the population, which are under the umbrella of health policy.

Other researchers have gone a step further and created frameworks to look at the patients' perspectives on access to care (Penchansky and Thomas, 1981; Levesque et al., 2013).

This allows for the study of access to focus on the views of the patient, what the patient needs to be able to access primary care instead of the ED, rather than what the policy makers' think is needed (Wensing and Elwyn, 2003). In a framework originally reported by Penchansky and Thomas in 1981, they characterized access into five divisions, called the 5 A's of access, which reflect on the interactions between the characteristics and expectations of providers and clients. The five dimensions are affordability, availability, accessibility, accommodation, and acceptability (McLaughlin and Wyszewianski, 2002; Penchansky and Thomas, 1981).

Levesque et al. (2013) more recently have created a similar framework through a combination of literature on access to healthcare. Their framework is based on access being the opportunity to identify needs, seek healthcare services, and to reach, obtain or use healthcare services, and to have a need for services fulfilled. Within this framework, a similar five dimensions are noted; approachability, acceptability, availability and accommodation, affordability, and appropriateness. Although the frameworks are not the same, they and others recognize that access is comprised of many aspects, dimensions or determinants which reflect on multiple perspective levels from the population to the services to the healthcare system.

Researchers are working hard to find ways to innovate primary care to solve inadequate access as it presents such a major problem. Many practices in the US have switched to an advanced access model of care which allows patients to be seen on the same day no matter what their reasons for the visit is (Murray et al., 2003). Provinces in Canada have

tried many different interventions to strengthen primary care, most involving organizational infrastructure, provider payment, the healthcare work force, and quality and safety. Many provinces have implemented primary care teams/networks which vary on physician payment, incorporation of other providers, and formal enrolment of patients (Strumpf et al., 2012). Canada has also been developing strategies to improve primary care within the country. The Canadian Working Group for Primary Healthcare Improvement has put together a strategy to improve primary care in Canada. They focus on, among other aspects, how the healthcare system should be centred on patients, supported by a primary care team (Aggarwal and Hutchison, 2012). According to their action plan, in the transformed system,

> [P]atients, their families and informal caregivers are partners in care; the primary care team provides the majority of healthcare, serves as integrator/coordinator with other system providers and services and works in partnership with others to address the social determinants of health; all other sectors interact with each other and with the primary care team to form an integrated system; all participants are committed to continuous improvement of health outcomes (better health) and patient experience (better care) while controlling health costs (better value); and all stakeholders take responsibility for ensuring the system is effective and accountable. (Aggarwal and Hutchison, 2012)

1.5 Determinants of access to primary care - do they affect non-urgent ED use?

Although these innovations aim to improve primary care in general, as Aday and Andersen (1974), Penchansky and Thomas (1981), and Levesque et al. (2013) point out, there are many different factors which effect access to care. Does this inaccessibility to primary care services in Canada increase the use of ED's for non-urgent issues?

Problems with accessing primary care have been associated with the use of EDs as an alternative to primary care and therefore non-urgent (Carret et al., 2009; Durand et al., 2011; Howard et al., 2008 and Rust et al., 2008). Within the many studies which have investigated reasons for non-urgent ED use, accessibility to primary care has been indicated as an influencing factor for many patients (Alyasin and Douglas, 2014; Callen et al., 2008; Carret et al., 2007; Carret et al., 2009; Guttman et al., 2003; Lega and Mengoni, 2008; Liggins et al., 1993; McCusker et al., 2003; Murphy, 1998; Nelson et al., 2011; Roberge et al., 2007; Saver et al., 2002; Thorton et al., 2014; Uscher-Pines et al., 2013). Some of these studies have identified specific aspects of primary care which were affecting non-urgent visits. Afialo et al. (2004), a Canadian study, found that 32% of non-urgent patients presented due to primary care accessibility with reasons of; the office was closed, unable to reach the physician, and unable to get an appointment. Alaysin and Douglas (2014), a study from Saudi Arabia, found that the most common reasons for attending the ED for non-urgent users were not having a regular healthcare provider (63%), ability to get care on the same day (62%), and the availability of blood tests and x-rays. Many patients in this study reported dissatisfaction with primary care due to lack of access and convenience including; frustration with the appointment system, poor telephone communication, long waiting lists, and restricted hours (Alaysin and Douglas, 2014). A study from the United States also found that non-urgent ED patients present to the ED due to limited availability of after-hours consultations and timely appointments at primary care as well as not having a primary healthcare physician and shorter waiting times at the ED (Guttman et al., 2003).

Although the focus of these studies was not specifically on access to primary care and non-urgent ED use, they did find some primary care access factors affecting non-urgent ED use, but may miss important access factors as this was not their primary research objective. Studies whose objectives were to find primary care access factors related to non-urgent ED use were limited. Two studies whose outcome was only ED utilization, not necessarily non-urgent, found many access factors affecting ED utilization. Lowe et al. (2005) found that there were 20% fewer ED visits when physicians had 12 or more evening hours during the week, having a higher ratio of patients per clinician-hour increased ED visits by 5% per 50 people, and presence of a nurse practitioner or physician's assistant increased ED visits by 11%. Rust et al. (2008) found that those with a usual source of care and an access barrier of: trouble getting through to their family physicians office on the phone (OR= 1.27), inability to get an appointment soon enough (OR=1.45), had high wait times in office (OR=1.20), and no transportation (OR=1.88), were more likely to be ED users.

Saver et al. (2002) also found that, as a group of factors, people who had difficulty getting hold of their practice on the phone, had difficulty getting an appointment, and had a higher waiting time, were more likely to use the ED for non-urgent reasons. But individually none of the factors were significant when controlling for patient characteristics. There were also two studies which looked at different access factors such as general practice not being appropriate, general practice not available, difficult to contact, convenience, and being dissatisfied with care. They found that none of these factors significantly influenced non-urgent ED use (Rieffe et al., 1999; Rocovich and

Patel, 2012). Results from Rieffe et al. (1999), Rocovich and Patel (2012) and, Saver et al. (2002) indicate that access factors are not important influencing factors which conflicts with the many other studies, previously mentioned, who indicate differently. Differences in study samples, data collection and analysis methods, definitions of non-urgent, and study locations could cause such different results.

These studies had a number of limitations: i) there is no consensus on who a non-urgent ED user is, making it hard to compare studies; ii) many studies used descriptive questionnaires without any statistical analysis and no comparison group, which limits the ability to determine if these factors are specific to non-urgent ED users; iii) there is limited information looking at a wide variety of specific determinants of primary care access and their effect on non-urgent ED use; iv) many researchers only focus on having a usual source of primary care and cost of services. These are not so important in Canada where a high percentage of the population have a usual source of care and most medical services are paid for by our publically funded health insurance.

Although major primary care reform may be needed in the future, small reforms can be implemented simply, quickly and for specific issues facing the healthcare system (Hutchison et al., 2001). Therefore, before being able to implement changes to primary care and hopefully find a solution to non-urgent ED use, it must be understood why patients are presenting to the ED for non-urgent issues instead of to their family physicians. Once specific access factors are determined to affect patients' choices to attend an ED rather than a family physician for non-urgent issues, implementation of

specific strategies to improve PC for these patients can be made. With better access to primary care, a decrease in non-urgent ED visits would hopefully follow which would address the problems of cost and overcrowding which have been associated with non-urgent ED use and patients would also gain access to better care allowing for the healthcare system to operate more effectively.

1.6 Objectives

The overall objective of this study is to determine which accessibility factors surrounding family medical practices are associated with increased non-urgent visits to the ED by patients, compared to those who accessed the ED for other reasons in Canada. Specifically the objectives are:

1. To determine which primary care physician and practice access factors are associated with non-urgent use of the ED by family physician patients in Canada, compared to those who accessed the ED for other reasons, while controlling for general sociodemographic characteristics[1].

2. To determine which primary care physician and practice factors more frequently influence non-urgent patients to use the ED compared to other ED patients, in the Health Sciences Centre Emergency Department, St. John's, NL.

3. To compare primary care physician and practice access factors associated with non-urgent ED use in family physician patients across Canada and the primary care

[1] These include; age, gender, place of birth, province of practice, practice setting, employment status, education, economic status, and health condition.

physician and practice factors which more frequently influence non-urgent use of the ED by patients attending the ED in St. John's, NL.

2. Methods

Research for this project was conducted in two parts. The primary aspect of this research was completed using secondary data analysis of the previously collected Canadian Quality and Costs of Primary Care (QUALICO-PC) study data. This study collected patient and physician information from across Canada on the quality and cost of primary care using a set of surveys (Wong et al., 2015). Additional supplementary data was collected for this research through primary survey research of patients attending an ED in St. John's, Newfoundland (NL), and results of both analyses were compared.

2.1 Ethics

Ethics approval was obtained for both parts of this project. Ethics for QUALICO-PC data collection was approved by Behavioural Research Ethics Boards (BREB) at the institution of the lead investigator in each province (Wong et al., 2015). Ethics approval was obtained for the primary survey research through the Health Research Ethics Authority (HREA) of Newfoundland and Labrador (Ref #15.286) and the project was approved to be conducted in an Eastern Health centre by the Eastern Health Research Proposals Approval Committee (RPAC).

2.2 Secondary Data Analysis

2.21 Study design

The design of this study is a cross-sectional study using data from the Canadian QUALICO-PC study.

2.22 Data Source

The data being used was originally collected for the QUALICO-PC study (Wong et al., 2015). The QUALICO-PC study is an international cross-sectional study, with 34 countries participating, including Canada. Surveys and data collection procedures were originally created by the European research team, with minor adjustments made by the Canadian team to align with different healthcare systems (Wong et al., 2015). Surveys were used to collect data important to the delivery and organization of primary care. The surveys were created by amalgamating questions from previously validated questionnaires administered to healthcare physicians and patients which were suitable for international comparisons. Questions from these questionnaires were chosen after being reviewed by researchers for specific inclusion and exclusion criteria. Once the surveys were created they were piloted to determine practicality, applicability, comprehensibility, and appropriateness and changes were made if needed (Schafer et al., 2013). A full description of the survey development process can be found in the original paper by Shafer et al. (2013); "Measures of quality, costs and equity in primary health care: instruments developed to analyse and compare primary health care in 35 countries".

Four surveys collecting in-depth information regarding primary care activities were sent out to physicians and patients. However, only data from three were used for this study: the patient experiences survey (PES); the practice survey (PRA); and the family physicians survey (FPS). The PES collected information from the patients about their experiences, including quality of care, continuity, and coordination. This questionnaire was to be filled out after seeing their physician as it dealt with the experiences of the

patient with their physician. The PES also included information about the patients' sociodemographic factors. The PRA collected information about the practice and its organizational features such as delivery, communication of opening hours, and equity in access. The FPS collected information about the physicians' tasks and services delivered. Topics such as efficiency, economic conditions, continuity of care, comprehensiveness of services, and accessibility were covered through questions in this survey (Shafer et al., 2013; Wong et al., 2015). Full surveys can be found in Appendix A.

Participant recruitment and procedures were run by provincial research teams as part of a standard protocol, but were coordinated by the Canadian Primary Health Care Research and Innovation Network. Data collection was done in a clustered format where family physicians were recruited to the study from the 10 provinces (PEI and New Brunswick combined recruiting) if they were working with a family/general practice (only one physician per practice). Then patients of these family physicians were eligible if they were 18 years or older, spoke/read English or French, and were not cognitively impaired. Physicians were recruited via mail or email from a list of all practicing physicians in each province; interested physicians registered online or by fax. Physicians were sent surveys once registered. The physician completed the PRA and FPS, and nine PES's were distributed to consecutive patients of theirs, as was done in the original European study (Shafer et al., 2011; Wong et al., 2015). Informed consent was collected from both physicians and patients. Physicians were compensated $200 for participating. Surveys were returned to the provincial research team where the de-identified data was scanned

into a file, then the data from all provinces was combined into a national dataset (Wong et al., 2015).

2.23 Sample population

Family practices and patients were recruited from all 10 provinces in Canada. Of the people who responded (study population), only people who; indicated that they had been to the emergency room in the past 12 months (n=2748). This was determined through question 22 of the PES (PES22) which asks "In the last 12 months, how often did you visit a hospital emergency department for yourself?" (Appendix B). And who had answered the PES question #23 (PES23) on why they attended the emergency room rather than a family physician were included in the study's analysis.

2.24 Outcome measure

The outcome (dependent variable) for the purpose of this study was, of people who had attended the ED at least once in the 12 months prior to completing the survey, had they attended for a non-urgent reason. This variable is a binomial variable with responses of: “yes”, they had gone to the ED for a non-urgent reason, or “no”, they had not gone to the ED for a non-urgent reason. This was determined by using the question "Why did you go to the emergency department instead of going to a family doctor?" (PES23) (Appendix B). Of the eight possible answers, those who responded that "there was no family doctor available" and/or "they expected a shorter waiting time" were considered non-urgent ED users, and those who responded with any of the other answers were not. These answers were chosen to represent non-urgent use based on access to primary care, as they are factors related to inaccessibility of a family physician and do not align with the appropriate use of an ED. Based on the options given in the survey seen in Appendix B,

all other answers were considered urgent or were not addressing access to primary care, therefore the two answers listed above were the only ones considered as non-urgent.

2.25 Variables

Independent variables were chosen from the available questions in the three surveys (PES, FPS and PRA). Variables which were determined as factors affecting access to a family physician and therefore possibly contributing to the use of EDs over family physicians for non-urgent conditions were identified using information from previous research and through discussion individuals with clinical expertise in this area. A total of 35 variables were chosen. These variables, their location in the surveys and the concept of access they represent, based on the 5 A's of access by Penchansky and Thomas (1981), can be found in Table 2.1. Specific patient characteristics and interactions were also used as control variables as they were possible confounders (Table 2.2). Variable names are shortened versions of the questions used, the full question corresponding to each variable can be found in Appendix A, using the survey and questions guide in table 2.1.

Table 2.1: List of independent variables for QUALICO-PC data analysis from the PES, the location of the corresponding question in the QUALICO-PC surveys, and the representative concept of access

Independent Variable	Survey	Question #	Access concept
Regular family physician to consult	PES	3	Continuity of care
Availability of an interpreter	PES	6	Language barriers
Restricted hours of operation	PES	9_1	Restricted hours of operation
Waiting to speak to someone on the phone	PES	9_4	Difficulty scheduling an appointment

Travel time	PES	10	Convenience of office location
Ease of getting an appointment	PES	12	Difficulty scheduling an appointment
Time before appointment available	PES	13	Length of time before being able to see a doctor
Able to arrange appointment as soon as wanted	PES	14	Length of time before being able to see a doctor
Difficulty in seeing FP on evenings nights and weekends	PES	15	Availability of evening, night and weekend services
Waiting time	PES	48	Waiting time
Doctor was polite	PES	49_2	Doctor patient interactions
Doctor listened carefully	PES	49_3	Doctor patient interactions
Doctor hardly looked at me when we talked	PES	49_4	Doctor patient interactions
Couldn't understand what the doctor was trying to explain	PES	49_6	Doctor patient interactions
Doctor taking sufficient time	PES	49_7	Doctor patient interactions
The doctor involved patient in making decisions	PES	49_8	Doctor patient interactions

Table 2.2: List of independent variables for QUALICO-PC data analysis from the PRA, the location of the corresponding question in the QUALICO-PC surveys, and the representative concept of access

Independent Variable	**Survey**	**Question #**	**Access concept**
Practice has a parking space for disabled people	PRA	5	Accessibility of office
Practice is on the ground floor	PRA	6	Accessibility of office
Is an elevator available for patients	PRA	7	Accessibility of office
Accessibility for wheelchairs and strollers	PRA	8	Accessibility of office
Nurse practitioner working in the practice	PRA	13	Presence of nurse practitioner

Table 2.3: List of independent variables for QUALICO-PC data analysis from the FPS, the location of the corresponding question in the QUALICO-PC surveys, and the representative concept of access

Independent Variable	**Survey**	**Question #**	**Access concept**
Physicians country of birth	FPS	3	Doctor patient interactions
Size of practice population	FPS	7	Difficulty scheduling an appointment

Hours spent on direct patient care	FPS	12	Restricted hours of operation
Number of face to face patient contacts in a normal day	FPS	13_1	Number of consultations in a day
Length of a regular patient consultation	FPS	14	Length of usual consultation
Number of hours on call in evenings in past 3 months	FPS	18_1	Availability of evening, night and weekend services
Number of hours on call during nights in past 3 months	FPS	18_2	Availability of evening, night and weekend services
Number of hours on call on weekends in past 3 months	FPS	18_3	Availability of evening, night and weekend services
Access to lab facility	FPS	30	Access to laboratory testing
Access to X-ray facilities	FPS	31	Access to x-ray facilities
Hours practice is open	FPS	33	Restricted hours of operation
How do you provide access to medical services for your patients on evenings and nights	FPS	35	Availability of evening, night and weekend services
How do you provide access to medical services for your patients on weekend days	FPS	36	Availability of evening, night and weekend services
Walk in visits available	FPS	38	Availability of same day appointment or walk-ins

Table 2.4: Control variables used in multivariate logistic regression of QUALICO-PC data and the location of the corresponding question in the QUALICO-PC surveys

Control Variables	**Survey**	**Question #**
Gender	PES	35
Age	PES	36
Country of birth	PES	37
Province of practice		
Practice Setting	FPS	4
Occupation status	PES	42
Education level	PES	43
Income	PES	45
Health status	PES	1
Have a longstanding condition	PES	2
Interaction terms		
Age*Gender		
Education*Income		
Health status*longstanding condition		

2.26 Statistical analysis

Before analysis, data cleaning was performed for errors and outliers. Many variables were also recoded in order to fit the analysis better or to collapse responses with low frequencies. Answers of "I Don't Know" were coded as missing values except in three variables: in PES6 "is an interpreter available" I don't knows were combined with those who "have never needed an interpreter". Originally PES13 and PES15 were coded with "I Don't Knows" as missing values but after an initial analysis they were kept as their own category, as there were a number of these responses (N= 195, 7.3 % and N= 905, 34.0%, respectively) which lead to having a large number of missing values. The final coding of each variable and the responses which were collapsed can be viewed in Appendix C.

Statistical analysis was completed in IBM SPSS statistics Version 22. A multicollinearity diagnostic test was completed, through collinearity diagnostics within linear regression in SPSS, to assess if predictors were linearly related. Collinearity is measured using the variance inflation factor (VIF), which quantifies the change in regression coefficient variation due to collinearity. A VIF of less than 10 was considered good and if VIF was 10 or above, variables were reassessed. As the outcome was a dichotomous variable, binary logistic regression using generalized estimating equations (GEE) to control for clustering at the practice/physician level was the analysis method used for all bivariate and multivariate regression analyses. GEE was performed via generalized linear models, using an exchangeable correlation matrix, a binary logistic model, as well as subject and within-subject variables of the combined province and practice ID and the patient ID, respectively.

First, bivariate analyses were completed to compare each predictor variable with the outcome in order to determine variables that will not be included in the multivariate regression due to low association. Variables were included in the multivariate regression if they had a p-value of 0.2 or less in the bivariate analysis. All control variables were automatically included in the multivariate analysis regardless of the bivariate analysis. Multivariate variable selection was done using a backwards stepwise process. Missing values were included where possible to ensure as much data as possible was being used. Initially all variables were placed in the model altogether and tested to determine if they had predictive value while controlling for patient characteristics as possible confounders. At each step the variable with the highest p-value was removed from the model, excluding control variables which remained in the model regardless of p-value. QICC (The Corrected Quasi-likelihood under Independence Model Criterion) was examined to insure that the fit of the models was increasing as variables were excluded. After all non-significant variables were eliminated; all eliminated variables were re-added and removed if not significant to ensure no significantly associated variables were missed. Odds ratios (OR) are reported to determine the association between the independent variable and using the ED for non-urgent reasons.

2.3 Primary Survey Research

The results from QUALICO-PC data, which was collected from patients in primary care offices, could differ from results collected from patients in the ED due to differences in their patient populations. For this reason, similar questions were asked in a population

attending the ED in St. John's, NL and were compared descriptively to the results found in the analysis of the QUALICO-PC data.

2.31 Study design

This study used a cross-sectional survey to assess the different factors which affect the abilities of people visiting the ED to access a family physician and therefore lead to their decision to attend an ED instead.

2.32 Study population

The data were collected from patients attending the ED at the Eastern Health, Health Sciences Centre in St. John's, NL. Data were collected during the day and evenings on both weekdays and weekends to ensure a wide variety of patients. Eligible patients were above the age of 18 and had not entered the emergency room in an ambulance. Patients were not asked to participate if they were below the age of 18, had come into the emergency room via ambulance, or if they were in an obviously high amount of distress.

Sample size

The sample size calculation used the formula for the basic estimation of a population proportion. The values used in this calculation were; a confidence level of 95% (α=0.05), power of 80% (β=0.20), a population proportion of p= 0.307, and an absolute error accepted of d= 0.05. The population proportion was determined based on the QUALICO-PC data and the proportion of people found to visit the ED due to inaccessibility of a family physician within the population of people who had said they had been to the ED in the past 12 months (844/2748). Although these samples were from different populations,

which could indicate a different proportion of non-urgent ED users, this proportion was still used as it was found to be in the middle of the proportions found in the literature which ranged from 8% to 65% (Bianco et al., 2003; Callen et al., 2008; Carret et al., 2007; Lang et al;, 1996; Liu et al., 1999; Martin et al.,2002; Rieffe et al., 1999; Rocovich and Patel, 2012; Sempere-Selva et al., 2001; St. Maurice and Kuo, 2012; Uscher-Pines et al., 2013).

$$N = [(z_{1-\alpha/2})^2 * (p(1-p))] / (d)^2$$

$$= [1.96^2 * (0.307(1-0.307))]/0.05^2$$

$$= 3.8416 * 0.212751/0.0025$$

$$= 326.92$$

Based on this sample size calculation, 327 surveys needed to be completed.

2.33 Data collection and sampling strategy

Data on why the patient was attending the ED and not their family physician was collected through a short survey. The survey was anonymous and completed before the patient was seen by an ED doctor to make sure their responses were not affected by factors such as wait time or visit satisfaction. The survey was created based on the QUALICO-PC surveys. The survey asked for age, gender and whether they had a regular family physician, to compare demographic factors. The first question, which was taken from the QUALICO-PC survey, asked why they had come to the ED instead of going to their family doctor and a list of possible answers was provided. Options were the same as

those from PES23 of the QUALICO-PC surveys (Appendix B) to allow for comparison. This question was used to determine whether their visit was urgent or not as per the previous section. The second question asked which factors concerning their family physician influenced their decision to attend the ED. The options provided for this question were the primary care access concepts associated with all of the independent variables found in the QUALICO-PC data and used in the analysis (Table 2.1). Multiple answers were allowed to be checked. An option of "other" was provided for each question and under it a space for patients to write in any answer which they did not see, to ensure all possible factors were accounted for. Consent was assumed upon return of the survey as was indicated on the research study information page at the beginning of the survey. The information page and survey questions are available in Appendix D and factors/access concepts are listed below.

-Language barriers

-Restricted hours of operation

-Difficulty scheduling an appointment

-Availability of evening, night and weekend services

-Length of time before being able to see a doctor

-Convenience of office (Distance to office)

-Waiting time

-Doctor patient interactions

-Accessibility of office

-Number of consultations in a day

-Length of usual consultation

-Availability of same day appointment or walk-ins

-Presence of a nurse practitioner

-Access to laboratory testing

-Access to x-ray facilities

2.34 Recruitment and procedures

Participants were recruited based on a convenience sample. Surveys were available in the ED in two ways; they were handed out by registration clerks as the patient registered at the ED and they were available on a table in the waiting area for patients to fill out. The survey was advertised though posters in the waiting area (Appendix E) and the patient was asked to fill out the survey before being seen by the physician. Once the survey was completed, it was returned to the registration desk where the clerk was instructed to place it in a locked box. Surveys were collected from this box periodically by the researcher and stored in a locked cabinet. Once all surveys were collected they were transferred from paper to electronic format. Data were inputted by one person and double checked to ensure no errors were made. Surveys were collected from January, 2016 to April, 2016. This data collection process was used in order to reach a large sample of the patient population over varying times and days, as all patients must see the registration clerk, with little resource availability and limited disruption in the ED.

2.35 Analysis

Frequencies of patients who checked each factor were compared between those who attended the ED for non-urgent reasons and those who attended for other reasons. This was done to determine if a higher proportion of non-urgent users, compared to other users, indicated that that factor was an influencing factor in attending the ED.

Comparison was done using a one-tailed Chi-Square test using GraphPad Software to determine which differences were significant ($p \leq 0.05$ is significant). Answers found in the "other" section were also examined to find factors which were not available in the QUALICO-PC survey or that were missed by the researcher.

2.4 Comparison of analyses

The results of both analyses, secondary data analysis and primary survey research, were compared to see if factors found using data collected from patients in a family physicians office are similar to data actually collected from the population of interest, those attending the ED. This comparison was done descriptively looking at the access concepts identified as important in each analysis as well as basic patient characteristics.

3. Results

3.1 Secondary data analysis results

3.11 Population Characteristics

Invitations were sent to 23,000 family physicians with completion of all four surveys by 8,332 patients from 792 physicians and 772 primary care practices (there are more physicians than practices due to Quebec recruiting more than one physician per practice, but all physician data was used regardless). Out of the 7172 patients who completed the patient experiences QUALICO-PC survey a total of 2748 (38.3%) said that they had been to the ED at least once in the past 12 months, and 4309 (60.1%) who had not. 1637 (59.6%) had visited once, 895 (32.6%) visited 2 or 3 times and 216 (7.9%) 4 or more times. A total of 115 (1.6%) people had not answered this question.

Of the 2748 people who had visited the ED at least once in the past 12 months, 812 (29.5%) had attended for a non-urgent reason ("there was no family doctor available at the time" or "at the ED I expected a shorter waiting time") and 1850 (67.3%) had attended for various other reasons. A total of 86 (3.1%) did not answer this question, and therefore were not included in analysis, giving a total sample population of 2662 cases (Figure 3.1).

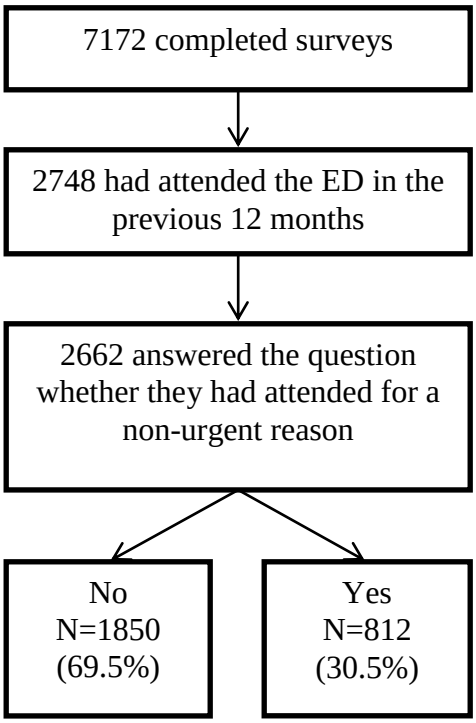

Figure 3.1: Population of interest flow chart for QUALICO-PC data analysis

Of the total of respondents included in analysis the majority were female (n=1737, 66.6%), with a mean age of 51 (σ = 17.16, range:18-99). A large proportion of patients were born in Canada (n=2309, 88.7%) and were seeing a doctor in Quebec (n=699, 26.3%), Ontario (n=596, 22.4%), or Alberta (n=463, 17.4%), and most were located in a large city centre (n=661, 25.9%). Only 48.5% were employed. The majority had a post-secondary education (n=1408, 54.6%) and reported that they had a household income comparable to what they thought the average Canadian household income was (n=1497, 58.1%). Regarding their health status, 47.1% (n=1244) reported being in good health and only 6.5% (n=171) reported being in poor health, and 1618 patients (61.5%) reported having a longstanding disease or condition (Table 3.1). Between patients who went to the

ED for non-urgent reasons and those who visited for other reasons many of the sociodemographic factors had similar proportions of patients within them between the two groups. However, when compared to those who visited the ED for other reasons, a greater percentage of people who went to the ED for non-urgent reasons were females (73.8% vs. 63.4%) and from Newfoundland (8.6% vs. 3.9%) or from Nova Scotia (12.1% vs. 6.4%). There was a lower percentage of non-urgent ED patients from practices in large city centres (20.0% vs. 28.7%), from practices in the suburbs (8.7% vs. 16.1%), and a higher percentage from practices in small towns (28.9% vs. 20.9%) and rural areas (27.4 vs. 21.2%) (Table 3.1).

Table 3.1: Sociodemographic information of ED users from QUALICO-PC data

Sociodemographic variables	Non-urgent ED visit? [n(%)]		
	No (N= 1850)	Yes (N=812)	Total(N=2662)
Gender			**2610***
Female	1151 (63.4%)	586 (73.8%)	1737 (66.6%)
Male	665 (35.6%)	208 (26.2%)	873 (33.4%)
Age (mean, range)	**50.53 (18-99)**	**51.34 (18-94)**	**51 (18-99)**
Born in Canada			**2412***
No	218 (12.0%)	75 (9.5%)	293 (11.3%)
Yes	1594 (88.0%)	715 (90.5%)	2309 (88.7%)
Province			**2662***
Ontario	433 (23.4%)	163 (20.1%)	596 (22.4%)
British Columbia	134 (7.2%)	44 (5.4%)	178 (6.7%)
Newfoundland	72 (3.9%)	70 (8.6%)	142 (5.3%)
Quebec	511 (27.6%)	188 (23.2%)	699 (26.3%)
Alberta	336 (18.2%)	127 (15.6%)	463 (17.4%)
New Brunswick/PEI	131 (7.1%)	80 (9.9%)	211 (7.9%)
Saskatchewan	50 (2.7%)	13 (1.6%)	63 (2.4%)
Nova Scotia	119 (6.4%)	98 (12.1%)	217 (8.2%)
Manitoba	64 (3.5%)	29 (3.6%)	93 (3.5%)
Practice setting			**2552***

Large city centre	505 (28.7%)	156 (20.0%)	661 (25.9%)
Suburbs	283 (16.1%)	68 (8.7%)	351 (13.8%)
(small) Town	365 (20.2%)	226 (28.9%)	591 (23.2%)
Mixed urban-rural	245 (13.9%)	117 (15.0%)	362 (14.2%)
Rural	373 (21.2%)	214 (27.4%)	587 (23.0%)
Occupation status			**2574***
Employed	881 (49.2%)	368 (46.9%)	1249 (48.5%)
Unemployed	34 (1.9%)	21 (2.7%)	55 (2.1%)
Not in labour force	874 (48.9%)	396 (50.4%)	1270 (49.3%)
Education			**2580***
Less than grade 10	197 (11.0%)	101 (12.8%)	298 (11.6%)
grades 10-12	623 (34.7%)	251 (31.9%)	874 (33.9%)
post-secondary education	974 (54.3%)	434 (55.2%)	1408 (54.6%)
Household income compared to Canadian average (patient reported)			**2578***
Below average	418 (23.4%)	202 (25.6%)	620 (24.0%)
Average	1028 (57.4%)	469 (59.5%)	1497 (58.1%)
Above average	344 (19.2%)	117 (14.8%)	461 (17.9%)
Health Status			**2642***
Very good	345 (18.8%)	121 (15.1%)	466 (17.6%)
Good	868 (47.2%)	376 (46.3%)	1244 (47.1%)
Fair	509 (27.7%)	252 (31.0%)	761 (28.8%)
Poor	117 (6.4%)	54 (6.7%)	171 (6.5%)
Chronic Condition			**2629***
No	723 (39.6%)	288 (35.9%)	1011 (38.5%)
Yes	1104 (60.4%)	514 (64.1%)	1618 (61.5%)

* Total of patients who had complete data

3.12 Regression Analysis

After testing for multicollinearity two variables, PRA6 “is the practice on the ground floor” and PRA7 “is an elevator available for patients”, had VIF’s above 10 (28.65 and 28.97, respectively) indicating possible correlation between the two. The variable “is the practice on the ground floor” was removed and a new multicollinearity test was run with no variables with VIFs above 10.

Bivariate analysis between all variables and the outcome variable (whether the patient had been to the ED for a non-urgent visit in the past 12 months or not), and variable selection based on a p-value ≤ 0.2000, determined the variables to be included in the initial multivariate regression. A list of variables and their p-values from bivariate analysis can be found in Appendix F. Exact wording of the surveys questions from which variables were derived can be found in the surveys in Appendix A. The variables, including all controlling variables and interaction terms as outlined in table 2.2 of the methods section, were: availability of an interpreter (PES6); restricted hours of operation (PES9_1); waiting time to speak to someone on the phone (PES9_4); travel time (PES10); ease of getting an appointment (PES12); time before appointment was available (PES13); ability to arrange an appointment as soon as wanted (PES14); difficulty in seeing family physician on evenings nights and weekends (PES15); waiting time (PES48); doctor taking sufficient time (PES49_7); doctor involved patient in making decisions (PES49_8); accessibility for wheelchairs and strollers (PRA8); hours spent on direct patient care (FPS12); access to lab facility (FPS30); hours practice is open (FPS33); how do you provide access to medical service for your patients on evenings and nights (FPS35); and how do you provide access to medical services for your patients on weekend days (FPS36).

3.13 Model Selection

After following the backwards stepwise elimination variable selection method a final model was determined, where all control variables (regardless of significance) and independent predictors that were found to be statistically significant were included. In this

model (Model 1), answers of “I don't know" from variables PES13 and PES15 were coded as missing values and therefore excluded from the analysis. Variables found to be associated with non-urgent ED use in this model were; PES13 (χ^2=10.61, p=0.0140, df=3), PES 14 (χ^2=8.72, p=0.0030, df=1), PES 15 (χ^2=22.00, p<0.0001, df=1), and PRA8. For PRA8 the test for model effect was not significant (χ^2=4.76, p=0.1910, df= 3), which shows the overall significance of the variable, but there was a significant association between those who found accessibility for wheelchairs and strollers easy compared to very easy and non-urgent ED visits (χ^2=3.94, p=0.0470, df=1). Only 44.1% of cases (n=1174) were included in this model due to the large number of missing values in PES13 and PES15 (Table 3.2). A high amount of missing values can lead to missing associations, therefore affecting the quality of results.

A second model was run with answers of “I Don’t Know” from PES13 and PES15 coded as its own category and included in the analysis. The new model (Model 2) was similar to the original but now with 75.2% of cases included (n=2002). Within this model PRA8 was no longer significant at any level, which differs from the previous model, and therefore was removed. PES13 (χ^2= 11.69, p=0.0200, df=4), PES14 (χ^2=19.06, p<0.0001, df=1), and PES15 (χ^2=32.83, p<0.0001, df=2) remained very similar to the previous model. Based on little change between the two models when PRA8 was removed and a decrease in missing data in the second model, which increases the ability to detect patterns, the second model was determined to be more acceptable (Table 3.2).

Although no correlation between PES13 and PES14 was found in the test for multicollinearity, upon revision of the model it was found that the two variables were asking a similar question (time before appointment was available and ability to arrange an appointment as soon as wanted), which may lead to issues with confounding. Also, people who responded to PES13 are more likely to be non-urgent patients, therefore adding to the confounding of this variable. Regressions with each one removed were compared and the one with PES13 removed had a lower QICC (2335.536 vs. 2351.461) therefore it was removed. The QICC value remained very similar after removing PES13 from the model compared to the model containing both PES13 and PES14 (2333.205 vs. 2335.536) and so did the other significant variables, therefore removing PES13 was deemed acceptable (Table 3.2).

3.14 Final regression model

The final model (Model 3) included two significant variables PES14 (ability to arrange an appointment as soon as wanted) (OR=0.56, $p<0.0001$) and PES15 (difficulty in seeing family physician on evenings, nights, and weekends) (OR=2.08, $p<0.0001$). This indicates that those who were able to arrange an appointment as soon as they wanted were almost half as likely to have been to the emergency room in the past 12 months for non-urgent reasons compared to those who were not and that people who had difficulty seeing a family physician on evening nights and weekends compared to those who did not were approximately twice as likely to have been to the ED in the past 12 months for a non-urgent reason (Table 3.2).

A small number of control variables, which were included in analysis regardless of significance, were found to be significant. Males were less likely to attend the ED for non-urgent reasons compared to females (OR=0.63, p<0.0001); compared to the patients in the province of Ontario, those in the province of NL were more than twice as likely to attend the ED for non-urgent reasons (OR= 2.24, p=0.0010); those in the province of Quebec were less likely to attend the ED for non-urgent reasons (OR= 0.71, p=0.0410); those in the province of Nova Scotia were more likely to attend the ED for non-urgent reasons (OR=1.75, p=0.0060); and the patients attending practices in a small town (OR=2.09, p<0.0001), mixed urban and rural community (OR=1.64, p=0.0050), and a rural community (OR=1.96, p<0.0001) compared to those attending in a large city centre were more likely to have attended the ED for non-urgent reasons in the past 12 months (Table 3.2).

Table 3.2: QUALICO-PC multivariate logistic regression model results: Control variables

	Model 1 (N=1174, 44.1%)			**Model 2 (N=2002, 75.2%)**			**Model 3 (N=2002, 75.2%)**		
	Model Effects	**Parameter Estimates**		**Model Effects**	**Parameter Estimates**		**Model Effects**	**Parameter Estimates**	
Variable	**χ2, p-value**	**OR, p-value**	**Confidence Interval**	**χ2, p-value**	**OR, p-value**	**Confidence Interval**	**χ2, p-value**	**OR, p-value**	**Confidence Interval**
Gender	7.44, 0.0060	0.67, 0.0060	0.50-0.89	16.52, <0.0001	0.63, <0.0001	0.50-0.79	16.71, <0.0001	0.63, <0.0001	0.50-0.79
Age	0.68, 0.4090	1.00, 0.4090	0.99-1.01	2.75, 0.0970	1.01, 0.0970	1.00-1.01	2.47, 0.1160	1.01, 0.1160	1.00-1.01
Province	29.93. <0.0001			37.21, <0.0001			38.64, <0.0001		
ON		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A

BC		1.34, 0.3730	0.71-2.54		0.88, 0.6330	0.53-1.48		0.89, 0.6510	0.54-1.47
NL		2.71, 0.0010	1.52-4.81		2.29, 0.0010	1.42-3.69		2.24, 0.0010	1.40-3.59
QC		0.75, 0.1610	0.51-1.12		0.71, 0.0400	0.51-0.99		0.71, 0.0410	0.52-0.99
AB		1.48, 0.0870	0.95-2.31		1.19, 0.3270	0.84-1.70		1.19, 0.3240	0.84-1.69
NB/PEI		1.32, 0.2620	0.81-2.16		1.31, 0.1910	0.88-1.95		1.31, 0.1870	0.88-1.96
SK		0.49, 0.1450	0.19-1.28		0.63, 0.2600	0.28-1.41		0.66, 0.3520	0.28-1.58
NS		1.64, 0.0470	1.01-2.68		1.72, 0.0100	1.14-2.59		1.75, 0.0060	1.17, 2.62
MB		1.22, 0.6070	0.57-2.65		1.18, 0.5180	0.71-1.95		1.20, 0.4780	0.72-2.00
Born in Canada	0.06, 0.8050	1.06, 0.8050	0.66-1.70	0.12, 0.7270	1.07, 0.7270	0.73-1.58	0.07, 0.7870	1.05, 0.7870	0.72-1.54
Practice Setting	19.25, 0.0010			41.57, <0.0001			42.28, <0.0001		
Large City Centre		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A
Suburbs		0.88, 0.5850	0.55-1.40		0.82, 0.2630	0.57-1.17		0.83, 0.2980	0.58-1.18
Small Town		2.08, <0.0001	1.38-3.12		2.10, <0.0001	1.53-2.88		2.092 <0.0001	1.53-2.85
Mixed Urban-Rural		1.67, 0.0270	1.06-2.62		1.61, 0.0060	1.15-2.26		1.64, 0.0050	1.161-2.310
Rural		1.62, 0.0170	1.09-2.40		1.95, <0.0001	1.43-2.65		1.96, <0.0001	1.44-2.66
Occupation Status	2.04, 0.3600			1.08, 0.5820			1.71, 0.4250		
Employed		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A
Unemployed		1.16, 0.7360	0.50-2.68		1.45, 0.3040	0.71-2.96		1.57, 0.2030	0.79-3.12
Not in the Labour Force		0.81, 0.1810	0.60-1.10		0.99, 0.9590	0.80-1.24		0.983 0.8810	0.79-1.23
Education	2.56, 0.2780			2.55, 0.2800			2.84, 0.2420		
< grade 10		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A
grade 10-12		0.94, 0.7970	0.57-1.55		0.82, 0.2790	0.57-1.18		0.79, 0.2150	0.55-1.15
Post-secondary		1.19, 0.4810	0.73-1.95		0.97, 0.8620	0.68-1.39		0.94, 0.7510	0.66-1.35
Income	0.47, 0.7890			3.16, 0.2060			2.99, 0.2240		

Below average		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A
Average		1.05, 0.7740	0.76-1.44		1.08, 0.5430	0.84-1.39		1.09, 0.4910	0.85-1.40
Above average		0.93, 0.7310	0.60-1.43		0.83, 0.2880	0.59-1.17		0.85, 0.3440	0.60-1.19
Health status	0.54, 0.9110			2.49, 0.4770			2.584, 0.460		
Very good		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A
Good		1.14, 0.5010	0.78-1.67		1.17, 0.3150	0.86-1.57		1.19, 0.2610	0.88-1.59
Fair		1.13, 0.5880	0.73-1.76		1.30, 0.1330	0.92-1.83		1.30, 0.1280	0.93-1.823
Poor		1.21, 0.5810	0.61-2.40		1.07, 0.7970	0.64, 1.79		1.07, 0.7890	0.64-1.793
Longstanding condition	0.93, 0.3340	1.17, 0.3340	0.85-1.60	0.31, 0.5780	1.07, 0.5780	0.84-1.36	0.25, 0.6150	1.06, 0.6150	0.84-1.347

Table 3.3: QUALICO-PC multivariate logistic regression model results: Independent variables

	Model 1 (N=1174, 44.1%)			**Model 2 (N=2002, 75.2%)**			**Model 3 (N=2002, 75.2%)**		
	Model Effects	**Parameter Estimates**		**Model Effects**	**Parameter Estimates**		**Model Effects**	**Parameter Estimates**	
Variable	**χ2, p-value**	**OR, p-value**	**Confidence Interval**	**χ2, p-value**	**OR, p-value**	**Confidence Interval**	**χ2, p-value**	**OR, p-value**	**Confidence Interval**
Days wait from the time you tried to make an appointment (PES 13)	10.61, 0.0140			11.69, 0.0200					
Made appointment today		1.00, N/A	N/A		1.00, N/A	N/A			
Made appointment yesterday		0.59, 0.0330	0.36-0.96		0.63, 0.0290	0.42-0.96			
Waited 2-7 days		0.53, 0.0020	0.35-0.79		0.59, 0.0010	0.43-0.80			
Waited more than a week		0.68, 0.0750	0.44-1.04		0.68, 0.0220	0.49-0.95			
I Don't Know		N/A	N/A		0.67, 0.0760	0.44-1.04			

Able to arrange and appointment as soon as possible (PES 14)	8.72, 0.0030	0.60, 0.0030	0.43-0.84	19.06, <0.0001	0.542 <0.0001	0.41-0.71	21.27, <0.0001	0.56, <0.0001	0.43-0.71
Difficult to see a family doctor during evenings, nights, and weekends (PES 15)	22.00, <0.0001			32.83, <0.0001			32.19, <0.0001		
No		1.00, N/A	N/A		1.00, N/A	N/A		1.00, N/A	N/A
Yes		2.01, <0.0001	1.50-2.69		2.11, <0.0001	1.60-2.79		2.08, <0.0001	1.58-2.74
I Don't Know		N/A	N/A		1.21, 0.1700	0.92-1.60		1.19, 0.2030	0.91-1.57
How accessible is the practice for wheelchair or stroller (PRA8)	4.76, 0.1910								
Very easy		1.00, N/A	N/A						
Easy		1.33, 0.0470	1.00-1.75						
Difficult		0.91, 0.7330	0.51-1.61						
Impossible		1.42, 0.5430	0.46-4.36						

3.2 Primary survey research results

3.21 Population Characteristics

Due to low response rate and time constraints the survey data collection ended in April 2016, after approximately 4 months. Only 67 surveys were returned completed and 3 did not have a regular family physician and therefore were not included in the study, giving a total of 64 patients.

52.4% of patients (n=33) sampled from the ED were female, with a mean age of 44.6 years (range: 19-93). Patients sampled in the ED averaged 1.7 visits (range: 0-15) in the previous 12 months. For patients who were attending the ED for non-urgent reasons compared to those there for other reasons, there were more females attending for non-urgent reasons (75.0% vs. 44.7%), and the average age was lower for non-urgent users (39.9 vs. 46.2) (Table 3.3).

Table 3.4: St. John's, NL ED user demographic information

Patient Characteristic	**ED for non-urgent visit?**		**Total (N=64)**
	No (N=48)	**Yes (N=16)**	
Gender [n(%)]			**63***
F	21 (44.7%)	12 (75.0%)	33 (52.4%)
M	26 (55.3%)	4 (25.0%)	30 (47.6%)
Age (Mean, Range) n=64	**46.2 (19-93)**	**39.9 (20-75)**	**44.6 (19-93)**
Average visits to ED in past 12 months (Mean, Range) n=63	**1.8 (0-15)**	**1.5 (0-4)**	**1.7 (0-15)**

* Total of patients who had complete data

3.22 Frequency comparisons

Among patients who were attending the emergency room for non-urgent reasons, compared to those who were attending for other reasons, a higher proportion answered that restricted hours of operation (62.5% vs. 25.0%), difficulty getting an appointment (50.0% vs. 25.0%), the length of time before being able to see a doctor (50.0% vs.

27.0%), waiting time (12.5% vs. 4.2%), and the number of consultations in a day (18.75% vs. 4.2%) influenced their decision to attend the ED rather than seeing their family physician. Although the proportions were higher for all of these factors only restricted hours of operation was significantly higher for those who went to the ED for non-urgent reasons than those who went for other reasons (χ^2= 7.48, p=0.0083) (Table 3.4).

Table 3.5: Frequency of access factors influencing ED use in St. John's, NL

Access Factor	Non-urgent ED visit?		Significance
	No (n=48)	Yes (n=16)	
Language barriers	0	0	
Restricted hours of operation	12 (25.0%)	10 (62.5%)	P=0.0083
Difficulty getting an appointment	12 (25.0%)	8 (50.0%)	P=0.0620
Availability of evening, night and weekend services	23 (47.9%)	5 (31.25%)	
Length of time before being able to see a doctor	13 (27.0%)	8 (50.0%)	P=0.0708
Convenience of office	4 (8.3%)	0	
In office waiting time	2 (4.2%)	2 (12.5%)	P=0.2582
Doctor patient interactions	4 (8.3%)	0	
Accessibility of office	0	0	
Number of consultations in a day	2 (4.2%)	3 (18.8%)	P=0.0949
Length of usual consultation	1 (2.1%)	0	
Availability of same day appointment or walk-ins	9 (18.8%)	1 (6.3%)	
No nurse practitioner at physician's office	4 (8.3%)	0	
Access to laboratory testing	12 (25.0%)	2 (12.5%)	
Access to x-ray facilities	16 (33.3%)	3 (18.8%)	

* percentages do not add up to 100 as patients could indicate more than one option

3.3 Comparison of analyses

In regression analysis of the QUALICO-PC data, access factors of "the length of time before being able to see a doctor" and "availability of evening, night and weekend

services" were significant predictors in whether patients attended the ED in the past 12 months for non-urgent reasons. Among those who attended the ED at the Health Sciences Centre for non-urgent reasons there were significantly higher proportions who indicated that restricted hours of operation influenced their decision to attend the ED rather than their family physician, compared to those who attended for other reasons (Table 3.5).

Table 3.6: Significant access factors associated with non-urgent ED use in QUALICO-PC data and St. John's, NL ED data

Significant factors from QUALICO-PC data analysis (χ^2, p-value)	Significant access factors from St. John's, NL ED data analysis (p-value)
Length of time before being able to see a doctor (21.27, <0.0001)	Restricted hours of operation (p=0.0083)
Availability of evening, night and weekend services (32.19, <0.0001)	

Although neither factors indicated in regression analysis were significant in the primary survey data, length of time before being able to see a doctor did have a higher proportion of responses in those attending the ED for non-urgent reasons than those attending for other reasons, indicating it as an important factor to non-urgent ED use. Although availability of evening, night and weekend services was indicated by a higher proportion of people who went to the emergency room for other reasons than for non-urgent users it was still indicated as an influencing factor by 31.3% (n=5) of non-urgent users, which is a substantial amount. Result may vary between the QUALICO-PC data and primary survey analyses due to differences in populations as well as a small sample size in the primary survey data. There were no additional influencing factors indicated in the other sections of non-urgent ED users.

4. Discussion

4.1 Findings and implications

Access to primary care can influence a person's decision to seek care at an ED rather than a family physicians office. Investigations into what specific aspects of access to primary care influence this behaviour are necessary to help improve patient care as well as the healthcare system. In this study it was found that 812 of 2748 (29.5%) of patients from family physicians' offices across Canada who had attended the ED in the past 12 months had attended for non-urgent reasons. This is a substantial percentage of people from a population who do have some access to primary care as they were attending a primary care physician, but it is congruent with non-urgent ED user populations in the literature which range from 8% to 65% (Bianco et al., 2003; Callen et al., 2008; Carret et al., 2007; Lang et al;, 1996; Liu et al., 1999; Martin et al., 2002; Rieffe et al., 1999; Rocovich and Patel, 2012; Sempere-Selva et al., 2001; St. Maurice and Kuo, 2012; Uscher-Pines et al., 2013). Many of these studies were completed using samples of patients from ED populations and not those from primary care population. However, a study done in Guelph, Ontario by St. Maurice and Kuo (2002), which linked primary care physician records to ED records, found that over a three year period 13.9% of patients (n=1931) who were seeing one of eight physicians at a clinic had been to the ED for non-urgent reasons (indicated as a score of 4 or 5 on the Canadian Triage and Acuity Scale). Data from those at the ED in St. John's NL also support this as 16 (25.0%) of the 64 patients surveyed were self-reported non-urgent users.

Within those surveyed form the QUALICO-PC survey in family physician offices across Canada, results from multivariate analysis show that non-urgent ED users are almost twice as likely to be female, and from small towns, mixed urban rural areas, or rural communities. Existing literature indicates that non-urgent ED users tend to be female. This literature also finds that these patients are generally younger (Bianco et al., 2003; Carret et al; 2007; Uscher-Pines et al., 2013) which was not found in the analysis of the QUALICO-PC sample but was indicated in the analysis of the ED sample from St. John's NL where the mean age of non-urgent users was 39.9 years compared to 46.2 for other users. The QUALICO-PC multivariate analysis may not have found this due to the sample being from primary care physician offices rather than an ED, and Canadian males and females, aged 20 to 34, had the highest rate of being without a regular medical doctor, in 2013 (Stats Canada, 2015). As for those in small towns, mixed urban and rural areas, and rural communities, being almost twice as likely to attend the ED for non-urgent reasons compared to large city centers could be explained by the fact that EDs in smaller towns and especially rural communities may be integrated with the PC system. A study by Haggerty et al. (2007) found that physicians in this area often spend less time in their family practice than urban physicians, because they more frequently practice in other areas such as the ED and also provide hospital inpatient services (Haggerty et al., 2007).

Patients at practices in NL and NS were more likely to be non-urgent ED users, compared to those in ON. This difference may be explained by NL having a considerably higher percent of the population in rural areas who, as mentioned above, use EDs more often (Stats Canada, 2011). According to the Newfoundland and Labrador Medical Association

(NLMA), NL has the highest percentage of residents in Atlantic Canada without a family doctor and there are issues with the recruitment and retention of these physicians, especially in rural areas (NLMA, 2010). All of these factors can increase non-urgent ED use. NS also has a higher percentage of its population in rural areas than ON (Stats Canada, 2011) and they face similar issues of recruitment and retention of family physicians in rural areas (Physician recruitment and retention action team, 2014). These differences may be due to rurality, but this was controlled for during analysis indicating either that the adjustment was incomplete or that there are other unknown factors affecting non-urgent ED use between provinces. Attending a practice in Quebec was found to lower the odds of being a non-urgent ED user, compared to ON (OR=0.71, CI: 0.52-0.99), which may be a result of cultural differences or other factors. Further investigation into provincial differences in non-urgent ED use should be undertaken to determine if there are specific factors related to provinces that increase or decrease non-urgent ED use.

From the analyses of the Canadian wide QUALICO-PC data set, two aspects of primary care access were found to be associated with non-urgent ED use. Being able to get an appointment as soon as the patient wanted reduced the chances of going to the ED by just over half. Also, patients who found it difficult to see their family physician on evenings, nights, and weekends were just over two times more likely to have attended the ED for non-urgent reasons. When relating these back to Levesque et al's (2013) and Penchansky and Thomas' (1981) frameworks describing access to care, these aspects are part of the availability and accommodation dimensions, which are dimensions of access that are

more easily modifiable. Similar results were found in other studies; Lowe et al. (2005) found that patients at practices with 12 or more evening hours during the week had 20% less visits to the ED. Though they were not looking at non-urgent patients specifically, it does indicate that difficulty seeing a family physician on evenings, nights, and weekends is an influencing factor in ED use. Similarly, Guttman et al. (2003) found that limited availability of after-hours consultations was also associated with non-urgent ED use. Difficulty getting an appointment as soon as the patient wanted was also a factor in why non-urgent patients chose the ED in a study by Afialo et al. (2004) as well as in the general ED users (Guttman et al., 2003; Roberge et al., 2007; Rust et al., 2008). Also, in a study by Field and Lantz (2006), inability to obtain timely access was a factor in non-urgent ED use of one quarter of survey respondents.

During the primary survey research conducted in St. John's NL, similar variables to those that were statistically significant in the QUALICO-PC data analyses were found in the answers by non-urgent patients. Difficulty getting an appointment, length of time before being able to be seen by a doctor, waiting time, and number of consultations in a day were all more prevalent in the response from non-urgent ED users; however, restricted hours of operations was the only statistically significant variable. This reinforces the theory that having limited hours in primary care offices can influence people to use the ED instead. This factor is similar to that of "difficulty being able to see a family physician during evening, nights and weekends" which was a significant predictor of non-urgent ED use from the QUALICO-PC survey research. EDs are able to compensate for limited primary care hours as they are open 24/7, therefore allowing people to see a doctor when

it best fits their schedule. Even when wait times in EDs are long, patients can generally see a physician within the same day which is preferred or possibly needed therefore, if they are not able to get a same day or next day appointment with their family physician they may be more likely to use ED services. Similar influencing factors have also been found throughout much of the literature (Afialo et al., 2004; Alyasin and Douglas, 2005; Carret et al., 2007; Guttman et al., 2003; Lowe et al., 2005; Rieffe et al., 1999; Rust et al., 2008). As found by Carret et al. (2007) demonstrating that those who reported that primary healthcare clinics were open for shorter periods in the day were more likely to be non-urgent ED users.

Direct comparisons between studies are difficult. Most of the studies cited above were not completed in Canada and different healthcare system organization between different jurisdictions may cause some variability between studies. There is also some discrepancy in the definitions of non-urgent ED use between studies, although all study subjects were adults.

Based on the results of this study, implementing a model of care which decreases wait time to get an appointment, like the advanced primary care access model mentioned by Murray et al. (2003), would limit the use of EDs for non-urgent care. This model focuses on same day appointments, regardless of the medical reason. A study completed by Hudec et al. (2010) in Cape Breton, NS found that advanced access increased patient and provider satisfaction while also lowering non-urgent ED visits. In the QUALICO-PC and primary survey research studies, patients also found physicians' offices had limited

offices hours as well as reporting difficulties accessing their family physicians on evening, nights, and weekends, implying the need for offices to be open longer and after regular hours (9 a.m.-5 p.m.). In some areas, this has been achieved by groups of physicians being open/ on-call on a rotating basis (Strumpf et al., 2012). Howard et al. (2008) found that Family health networks (which are required to provide shared responsibility between physicians of after-hours care and are funded through blended models) had lower ED visits than Family Health Groups (which are required to provide shared after hours care but are still mainly fee-for-service funded) and Fee-for-Service (which are not required to provide after-hours care) in Ontario. Integrating non-physicians into these networks, such as nurses and other primary healthcare professionals, may also increase availability for patients (Contandriopoulus et al., 2016). This would ensure that there is someone available during more hours of the day without putting as much burden on each individual practice or physician.

Implementing change into primary care practices is difficult, especially on a national scale, as physicians must be willing to fully participate and implement the changes. To make this easier to implement for physicians and on such a large scale changes must be manageable and add as little extra work and burden on physicians as possible. If this can be done throughout practices across Canada there is a potential to lower non-urgent ED use and not only improve healthcare access for patients but also improve the quality of their healthcare and the healthcare system at the same time.

4.2 Future research

Future research in this area can look more in depth at these access factors. Further investigations into whether the implementation of primary healthcare models, which include advanced access and expanded hours, actually decrease non-urgent ED use affecting patient care, cost of care and the healthcare system in Canada. In a systematic review by Morgan et al. (2013) only 6 studies investigated physicians changing scheduling and hours as an intervention to reduce ED utilization, with the only one from Canada being that of Hudec et al. (2010), and many being retrospective studies. The next progression is to determine which models are effective in decreasing ED use and determine which is the best for our healthcare system. A more detailed comparison of access factors between provinces could also be completed to be sure that changes made to primary care will reflect the need of the provinces population and their specific health system needs.

4.3 Limitations and strengths

The main limitation of this study is the definition of non-urgent ED use. There are many definitions used in studies of non-urgent ED use, which vary depending on whether it is based on the patients' views or ED provider views, which also vary depending on the criteria they use for selection. In this study, the description used equates people who would have gone to their family physician if it was available to a non-urgent ED case. Only two options from PES23 were chosen to indicate non-urgent ED use due to limited access to a family physician, which may exclude other non-urgent users and may include some urgent users but based on the question was the best indicator for non-urgent ED use.

This definition may not be all encompassing of all non-urgent visits to the ED, but as there is no gold standard to determine non-urgent status, most definitions of this population will have similar issues.

The variables used in the national survey analyses were limited to those from the QUALICO-PC study surveys. This limited the potential variables available to be investigated as the surveys were used for a different research question and may not have asked about important causes of unnecessary use of the ED. Using the open ended "other" option during the ED primary survey component of the work reported here allowed for the addition of factors that may have been missed. Also, the number of completed surveys collected did not meet the intended target sample size of 327 which indicates limited generalizability due to a small sample from a single ED. It should be noted that despite these limitations, there is a high degree of consistency between both analyses reported here and other published studies (Afialo et al., 2004; Alyasin and Douglas, 2005; Carret et al., 2007; Field and Lants, 2006; Guttman et al., 2003; Lowe et al., 2005; Rieffe et al., 1999; Roberge et al., 2007; Rust et al., 2008).

Other potential issues with QUALICO-PC survey data are recall bias, where patients may not remember answers to questions since it asked about ED use in the past 12 months, and missing data due to unanswered questions which affects data analysis as many statistical methods exclude missing data. General issues with both sets of survey data include reliability of questions and answers, as patients may interpret them differently than is intended by the researcher, and selection bias due to the voluntary nature of survey data collection.

Multivariable regression analysis only shows an association. The variables used in the model may only have an association with a person going to the emergency room rather than their family physician, but it may not be causative.

Strengths of this research include using survey data to collect a wide range of variables from a cross section of patients across Canada. Also, using open ended questions in the primary survey research allowed us to capture factors which may have been missed. Using multivariable analysis allows for an actual association to be determined and allows a quantification of the relative contribution of several different factors in predicting the outcome of interest.

5. Conclusion

Lack of access to primary care is a common and important influencing factor in non-urgent ED use. Depending on which aspects of access are found to be the most notable, it will determine the course of action that needs to be taken. The dimensions of availability and accommodation were found to be associated with non-urgent versus other ED use. Problems with not being able to get an appointment as soon as the patient wanted, restricted hours of operation, and not being able to see a family physician on evenings, nights, and weekends were the most significant influencing factors. Based on these and other results, practices should work on accommodating patients' needs and schedules by improving out of regular hours care and should adopt primary care models which allow for more immediate care, such as the advanced access primary care model. If primary care across the country can improve these access points for patients, non-urgent ED use may be lowered, allowing for better patient care and a better functioning healthcare system with lower costs.

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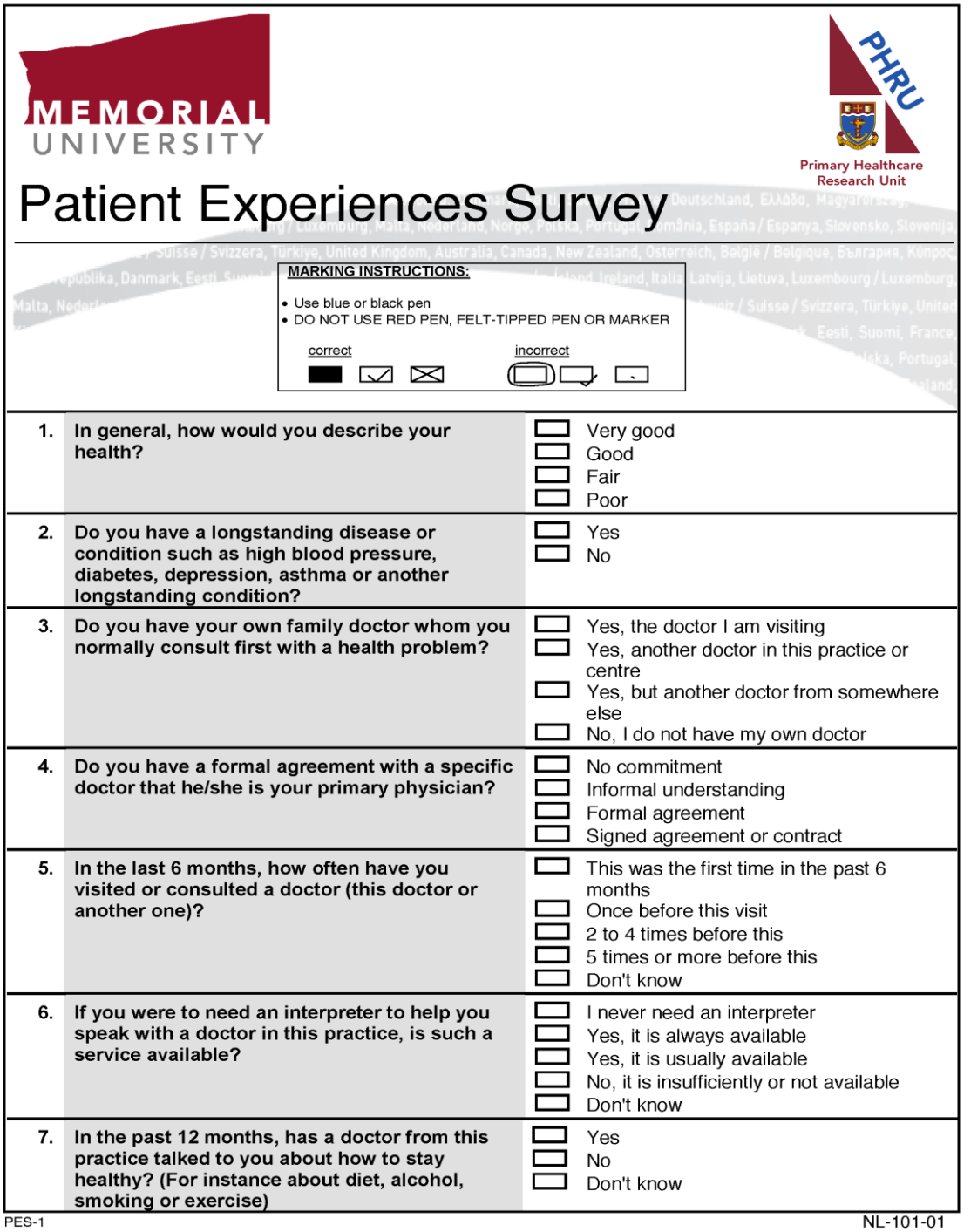
Appendix A- QUALICO-PC surveys



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PHRU Primary Healthcare Research Unit

Patient Experiences Survey

MARKING INSTRUCTIONS:

- Use blue or black pen
- DO NOT USE RED PEN, FELT-TIPPED PEN OR MARKER

correct ■ ☑ ☒ incorrect ⊡ ⊟ -

1.	**In general, how would you describe your health?**	☐ Very good ☐ Good ☐ Fair ☐ Poor
2.	**Do you have a longstanding disease or condition such as high blood pressure, diabetes, depression, asthma or another longstanding condition?**	☐ Yes ☐ No
3.	**Do you have your own family doctor whom you normally consult first with a health problem?**	☐ Yes, the doctor I am visiting ☐ Yes, another doctor in this practice or centre ☐ Yes, but another doctor from somewhere else ☐ No, I do not have my own doctor
4.	**Do you have a formal agreement with a specific doctor that he/she is your primary physician?**	☐ No commitment ☐ Informal understanding ☐ Formal agreement ☐ Signed agreement or contract
5.	**In the last 6 months, how often have you visited or consulted a doctor (this doctor or another one)?**	☐ This was the first time in the past 6 months ☐ Once before this visit ☐ 2 to 4 times before this ☐ 5 times or more before this ☐ Don't know
6.	**If you were to need an interpreter to help you speak with a doctor in this practice, is such a service available?**	☐ I never need an interpreter ☐ Yes, it is always available ☐ Yes, it is usually available ☐ No, it is insufficiently or not available ☐ Don't know
7.	**In the past 12 months, has a doctor from this practice talked to you about how to stay healthy? (For instance about diet, alcohol, smoking or exercise)**	☐ Yes ☐ No ☐ Don't know

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8.	**In the past 2 years, has a doctor from this practice ever asked you about <u>all</u> the medications you take (including any prescribed by other doctors)?**	☐ Yes ☐ No ☐ Don't know

		Yes	No	Don't know
9.	**Think about the practice that you are visiting today. Do you agree with the following:**			
1	The opening hours are too restricted	☐	☐	☐
2	If I need a home visit I can get one	☐	☐	☐
3	The practice is too far away from where I am living or working	☐	☐	☐
4	When I called this practice, I had to wait too long to speak to someone	☐	☐	☐
5	I know how to get evening, night and weekend services	☐	☐	☐
6	People were polite and helpful at the reception desk	☐	☐	☐
7	I can usually see my regular doctor every time I visit	☐	☐	☐
8	I can see other doctors in this practice if my doctor is not available	☐	☐	☐
9	I can see other healthcare professionals in this practice (e.g. nurse practitioner, nurse, dietician or pharmacist), without having to see a doctor	☐	☐	☐
10	Different doctors or healthcare professionals that I see in this practice work together effectively on my care	☐	☐	☐
11	I am informed by the practice when I am due for the recommended check-ups, tests or preventative screening	☐	☐	☐

10.	**How long does it usually take you to travel from your home to this practice?**	☐ Less than 20 minutes ☐ 20-40 minutes ☐ 40-60 minutes ☐ More than 1 hour ☐ Don't know
11.	**Did you make an appointment for this visit to your doctor?**	☐ Yes ☐ No → Go to question 15
12.	**Was it easy to get the appointment?**	☐ Yes ☐ No
13.	**How many days did you wait for this visit from the time that you tried to make an appointment?**	☐ I made the appointment earlier today ☐ I made the appointment yesterday ☐ I waited 2-7 days ☐ I waited more than a week ☐ Don't know
14.	**Were you able to arrange an appointment with the doctor as soon as you wanted to?**	☐ Yes ☐ No
15.	**Do you think it is too difficult to see a family doctor from this practice during evenings, nights and weekends?**	☐ Yes ☐ No ☐ Don't know

16.	**In the past 12 months, has one of the following happened to you in this practice?**	**Yes**	**No**	**Don't know**	
1	The doctor or staff acted negatively to you	☐	☐	☐	
2	Other patients were treated better than you	☐	☐	☐	
3	The doctor was much too concerned about money	☐	☐	☐	
4	The doctor or staff showed disrespect because of your ethnic background	☐	☐	☐	
5	The doctor or staff showed disrespect because of your gender	☐	☐	☐	
17.	**In the past 12 months, have you ever had the following experiences in this practice:**	**Yes**	**No**	**Don't know**	
1	I thought tests or examinations were repeated unnecessarily	☐	☐	☐	
2	I thought I got the wrong medication or wrong dose	☐	☐	☐	
3	I thought I got incorrect results of a test or X-ray	☐	☐	☐	
18.	**In the past 12 months, did you postpone or abstain from a visit to this doctor or another family doctor when you needed one?**	☐ Yes ☐ No → Go to question 20			
19.	**What was the most important reason why you did not visit a family doctor? (Mark all that apply)**	☐ I did not have insurance ☐ Other financial reasons ☐ I could not get there (physically) ☐ I was too busy ☐ I could not get an appointment ☐ Other			
20.	**How many times in the past 12 months have you consulted or been referred to a medical specialist for yourself?**	☐ None ☐ Once or twice ☐ 3 to 5 times ☐ 6 to 10 times ☐ More than 10 times			
21.	**Do you agree with the following statements:**	**Yes**	**No**	**Don't know**	**Not applicable**
1	If I visit another family doctor in this practice (besides my own doctor), that other doctor has the necessary information about me	☐	☐	☐	☐
2	When I have visited another doctor in this practice, my own doctor is fully informed about the visit and results	☐	☐	☐	☐
3	After an emergency department visit, my doctor knows about the reason, treatment and results	☐	☐	☐	☐
4	After a hospitalization, my family doctor knows about the reason, treatment and results	☐	☐	☐	☐
5	When I am referred, my family doctor informs the medical specialist about my illness	☐	☐	☐	☐
6	When I am referred, my family doctor decides to whom I should go	☐	☐	☐	☐
7	After a consult with a medical specialist, my family doctor knows the results	☐	☐	☐	☐
8	It is difficult to get a referral to a medical specialist from my family doctor	☐	☐	☐	☐

22.	**In the last 12 months, how often did you visit a hospital emergency department for yourself?**	☐ Never → Go to question 24 ☐ 1 time ☐ 2 or 3 times ☐ 4 or more times

23. Why did you go to the emergency department instead of going to a family doctor? (Mark all that apply)

☐ It was an urgent issue or an emergency	☐ At the emergency department, I expected a shorter waiting time
☐ I had something family doctors do not treat	☐ The emergency department provides better care
☐ There was no family doctor available at the time	☐ The emergency department is more convenient to reach
☐ For financial reasons	☐ Other reason(s)

24.	**In the past 12 months, have you been examined or treated by a nurse at your family doctor's practice?**	☐ Yes ☐ No ☐ Don't know

	25. Would you visit a family doctor for the following?	**Yes**	**Probably yes**	**Probably not**	**No**	**Don't know**
1	Cut finger that needs to be stitched	☐	☐	☐	☐	☐
2	Removal of a wart	☐	☐	☐	☐	☐
3	Routine health checks	☐	☐	☐	☐	☐
4	Deteriorated vision	☐	☐	☐	☐	☐
5	Help to quit smoking	☐	☐	☐	☐	☐
6	A child with a severe cough	☐	☐	☐	☐	☐
7	Stomach pain	☐	☐	☐	☐	☐
8	Blood in the stool	☐	☐	☐	☐	☐
9	Sprained ankle	☐	☐	☐	☐	☐
10	Anxiety	☐	☐	☐	☐	☐
11	Domestic violence	☐	☐	☐	☐	☐
12	Sexual problems	☐	☐	☐	☐	☐
13	Relationship problems	☐	☐	☐	☐	☐
14	Advice for choosing the best hospital or specialist for a certain treatment	☐	☐	☐	☐	☐

	26. How important would it be for you to see a doctor if you had:	**Extremely important**	**Rather important**	**Somewhat important**	**Not important**
1	Weight loss of more than 2 kilograms in a month when not dieting	☐	☐	☐	☐
2	Shortness of breath with light exercise or light work	☐	☐	☐	☐
3	Chest pain when exercising	☐	☐	☐	☐
4	Loss of consciousness, fainting or passing out	☐	☐	☐	☐
5	Headache for more than one day	☐	☐	☐	☐
6	Abdominal pain for more than one day	☐	☐	☐	☐
7	Severe worries for more than a month	☐	☐	☐	☐

27.	**Do you expect to benefit from a family doctor visit for:**	**Yes**	**No**	**Don't know**	
1	Stomach problems	☐	☐	☐	
2	Shoulder and neck pain	☐	☐	☐	
3	Feeling nervous	☐	☐	☐	
4	Diarrhoea	☐	☐	☐	
5	Sore throat	☐	☐	☐	
6	Headache	☐	☐	☐	
7	Feeling tired	☐	☐	☐	
8	Flu	☐	☐	☐	
9	Feeling nauseous	☐	☐	☐	

28.	**Do you agree with the following statements:**	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
1	In general, doctors can be trusted	☐	☐	☐	☐
2	In general, people can be trusted	☐	☐	☐	☐

29.	**Over the past 12 months, did the person you saw most at this practice...**	**Yes, definitely**	**Yes, to some extent**	**No, not really**	**No, not at all**
1	Help you feel that your everyday activities such as diet and lifestyle make a difference in your health?	☐	☐	☐	☐
2	Help you feel that you could prevent some health problems?	☐	☐	☐	☐
3	Give you a sense of control over your health?	☐	☐	☐	☐
4	Help you feel that sticking with your treatment would make a difference?	☐	☐	☐	☐
5	Help you feel confident about your ability to take care of your health?	☐	☐	☐	☐

30.	**Over the past 12 months, were there times when staff from this practice did not seem to know who should be doing what in your healthcare?**	☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ All the time

31.	**Over the past 12 months, were there times when...**	**Never**	**Rarely**	**Some-times**	**Often**	**Very often**	**I did not need or use any services**
1	You did not take medicines prescribed by a doctor because of their costs?	☐	☐	☐	☐	☐	☐
2	You found it difficult to get health care because you had to take time off work?	☐	☐	☐	☐	☐	☐
3	You found it difficult to get health care services because of the additional costs it involved? (babysitting, parking, etc.)	☐	☐	☐	☐	☐	☐
4	You did not take laboratory tests or exams because of their costs?	☐	☐	☐	☐	☐	☐
5	You did not get services recommended by your doctor that aren't covered by health insurance because of their costs? (such as physiotherapy, psychotherapy, dietetic...)	☐	☐	☐	☐	☐	☐

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32.	**On a scale of 0-10, how confident are you that you could get the primary healthcare services you need?**	**Not at all confident** 0 1 2 3 4 5 6 7 8 9 10 **Totally confident**
33.	**How well do you know how to prevent problems with your health?**	☐ Completely ☐ Very well ☐ Moderately ☐ A little ☐ Hardly confident at all ☐ I don't have any health problems
34.	**How confident are you that you can maintain the changes in your health habits, like diet and exercise, even during times of stress?**	☐ Totally confident ☐ Very confident ☐ Moderately confident ☐ A little confident ☐ Hardly confident at all

Finally we would like to ask you some questions about your personal background

35.	**Are you male or female?**	☐ Male ☐ Female
36.	**What is your year of birth? Please fill in:**	Year of birth : 19 _____
37.	**Where were you born?**	☐ In Canada ☐ USA, Mexico, Australia or New Zealand ☐ In an EU country ☐ In a European country outside the EU ☐ In another country
38.	**Where was your mother born?**	☐ In Canada ☐ USA, Mexico, Australia or New Zealand ☐ In an EU country ☐ In a European country outside the EU ☐ In another country

39. **To which ethnic or cultural groups did your ancestors belong? (For example: French, Scottish, Chinese, East Indian) Mark all that apply.** An ancestor is usually more distant than a grandparent.

☐ Canadian (➔What were the other ethnic or cultural origins of your ancestors, who first came to North America? Please mark below.)

☐ Aboriginal - First Nations
☐ Aboriginal - Métis
☐ Aboriginal - Inuk/Inuit
☐ Of European descent
☐ Chinese
☐ South Asian (East Indian, Pakistani, Sri Lankan)
☐ Other Asian (Japanese, Korean, Thai)
☐ Black or African
☐ Other - Specify ☐

40.	**Are there other adults in your household (including children older than 18)?**	☐ Yes ☐ No
41.	**Are there any children under 18 in your household?**	☐ Yes ☐ No

42.	**How would you describe your current occupation or employment status? (Mark all that apply)**	☐ Employed (including civil service) ☐ Self employed or family business ☐ Student ☐ Looking for a job (unemployed) ☐ Unable to work due to illness or disability ☐ Retired ☐ Mainly homemaker (including looking after children, etc.)
43.	**What is the highest level of education that you have achieved?**	☐ No qualifications, pre-primary, primary, or lower secondary education (less than grade 10) ☐ Upper secondary education (grades 10-12) ☐ Post-secondary education (includes college, undergraduate or higher)
44.	**How well do you speak French or English?**	☐ Fluently/native speaker level ☐ Sufficiently ☐ Moderately ☐ Poorly ☐ Not at all
45.	**Compared to the average in this country, would you say your household's income is:**	☐ Below average ☐ Around average ☐ Above average

****** Please complete the rest of this survey AFTER your appointment! ******

46.	**What was the main reason for your visit to this doctor today? (Mark all that apply)**	☐ Because you were ill or didn't feel well ☐ For a routine medical check-up or physical ☐ To get a repeat prescription ☐ To get a referral ☐ To get a medical certificate or letter ☐ For a second opinion ☐ Doctor requested follow-up ☐ Other reason
47.	**What was the urgency of your visit today?**	☐ Urgent – needed to be seen today ☐ Somewhat urgent – wanted to be seen today ☐ Not that urgent, wanted to be seen within a few days ☐ Not urgent
48.	**How long did you wait today between the scheduled time of your appointment and the consultation?**	☐ Less than 15 minutes ☐ 15-30 minutes ☐ 31-45 minutes ☐ 46-60 minutes ☐ More than an hour ☐ Don't know

49.	**Think about the consultation that you just finished. Do you agree with the following:**	**Yes**	**No**
1	The doctor had my relevant medical records at hand	☐	☐
2	The doctor was polite	☐	☐
3	The doctor listened carefully to me	☐	☐
4	The doctor hardly looked at me when we talked	☐	☐
5	The doctor asked questions about my health problem	☐	☐
6	I couldn't really understand what the doctor was trying to explain	☐	☐
7	The doctor took sufficient time	☐	☐
8	The doctor involved me in making decisions about treatment and/or health related goals	☐	☐
9	I would recommend this doctor to a friend or relative	☐	☐
10	The doctor asked about possible other problems besides the one I just came for	☐	☐

50.	**Think about the doctor you visited today. Do you agree with the following:**	**Yes**	**No**	**Don't know**
1	He/she knows important information about my medical history and health issues	☐	☐	☐
2	He/she knows about my living situation	☐	☐	☐
3	This doctor doesn't just deal with medical problems but can also help with personal problems and worries	☐	☐	☐
4	After this visit, I feel I can cope better with my health problem/illness than before	☐	☐	☐

51.	**If you were unhappy with the treatment you received, do you think this doctor would be prepared to discuss it with you?**	☐ Yes ☐ No ☐ Don't know

***

To understand how primary care may be related to other health outcomes, the researchers would like to link this survey with other health information using your Newfoundland and Labrador Medical Care Plan (MCP) card number.

Please read and complete the separate sheet entitled:
"Health Information Linkage"

Please note that your privacy will be entirely protected whether or not you choose to fill in that form.

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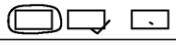
PHRU
Primary Healthcare Research Unit

Practice Survey

MARKING INSTRUCTIONS:

- Use blue or black pen
- DO NOT USE RED PEN, FELT-TIPPED PEN OR MARKER

correct  incorrect 

1.	**Total number of patients asked to participate in our PHC survey**	_____ patients
2.	**Number of patients that have participated**	_____ patients
3.	**Opening hours are clearly indicated outside the office entrance**	☐ Yes ☐ No
4.	**How to get care outside of regular office hours is clearly indicated outside the office entrance**	☐ Yes ☐ No
5.	**The practice has a parking space for disabled people**	☐ Yes ☐ No
6.	**Is the practice on the ground floor?**	☐ Yes → continue to Q8. ☐ No
7.	**Is an elevator available for patients?**	☐ Yes ☐ No
8.	**How accessible is the practice for patients using a wheelchair or stroller?**	☐ Very easy ☐ Easy ☐ Difficult ☐ Impossible to access
9.	**Is a toilet available for patients with disabilities?**	☐ Yes ☐ No
10.	**How clean does the waiting room look?**	☐ Very clean ☐ Rather clean ☐ Not clean
11.	**Can people in the waiting room hear what is being said at the reception desk?**	☐ Yes ☐ No ☐ Not applicable (no reception desk)

Please continue on the reverse side >>

12.	**Can people in the waiting room hear or see what happens in the doctor's office or in examination rooms?**	☐ Yes ☐ No
13.	**How many of the following disciplines are working in your practice/centre?** ***For each, please check None or fill in the FTEs (Full-Time Equivalents).***	**None** **FTE**
1	Receptionist/med. secretary	☐ _____
2	Family Practice nurse	☐ _____
3	Psychiatric nurse	☐ _____
4	Other specialized nurse (e.g. Disease Management Nurse)	☐ _____
5	Community/home care nurse	☐ _____
6	Nurse practitioner (function between physician and nurse)	☐ _____
7	Assistant for laboratory work	☐ _____
8	Manager of the centre or practice (not a physician)	☐ _____
9	Midwife	☐ _____
10	Physiotherapist	☐ _____
11	Dentist	☐ _____
12	Pharmacist	☐ _____
13	Social worker	☐ _____
14	Dietician	☐ _____
15	Psychologist/Psychiatrist	☐ _____
16	Other (specify) ☐	☐ _____
14.	**How many consultation rooms are available for use by physicians in this practice?**	_____
15.	**How many consultation rooms are available for use by nurses or other practice staff?**	_____

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Family Physician Survey

MARKING INSTRUCTIONS:

- Use blue or black pen
- DO NOT USE RED PEN, FELT-TIPPED PEN OR MARKER

Correct ■ ☑ ☒ incorrect ▭ ▭ ▭

1.	**Are you male or female?**	☐ Male ☐ Female
2.	**What is your year of birth? Please fill in:**	Year of birth : 19 _____
3.	**Were you born in this country?**	☐ Yes ☐ No
4.	**How would you characterize the place where you are currently practising?**	☐ Large city centre ☐ Suburbs ☐ (Small) town ☐ Mixed urban-rural ☐ Rural
5.	**Is your clinic part of a new model of primary health care benefiting from special funding or part of a governmental lead reform** *(for example, Family Medicine Groups or Network clinics in Quebec, Family Health Teams in Ontario, Primary Care Network in Alberta, etc.)***?**	☐ Yes ☐ No → Go to Q7.
6.	**How long has this practice been part of this model?**	_____ Years _____ Months
7.	**What is the (estimated) size of your practice population?** *(In a joint practice: estimate your share of the population.)* **If you do not have a formal list, please estimate the number of people that normally rely on you for primary medical care.**	Number of patients: _____
8.	**How many of these patients are formally rostered to your practice?**	Number of patients: _____

9.	**To what extent do you think your practice population compares to other practices in your province with respect to the following categories:**	**Below average**	**Average**	**Above average**	**Don't know**
1	Elderly people (over 70 years)	☐	☐	☐	☐
2	Socially disadvantaged people	☐	☐	☐	☐
3	Ethnic minority people	☐	☐	☐	☐

10.	**To what extent do you think that the patient turnover in your practice compares to other practices in your province?**	**Below average**	**Average**	**Above average**	**Don't know**
		☐	☐	☐	☐

11.	**How many hours per week do you work as a FP/GP** *(excluding additional jobs and on-call or out-of-hours services)***?**	_____ total hours per week _____ hours per week in this practice
12.	**How many of these hours do you spend on direct patient care** *(consultations, home visits, telephone consultations)***?**	_____ hours per week
13.	**How many patient contacts do you have on a normal working day?**	
1	Face-to-face in your office (number)	_____ per day
2	By telephone	_____ per day
3	By e-mail	_____ per day
14.	**How long does a regular patient consultation in your office usually take?**	_____ minutes
15.	**How long does a "Long" appointment usually take?** *(e.g. full physical)*	_____ minutes
16.	**What proportion of visits in a day (or week) is for "Long" appointments?**	_____ %
17.	**In a normal working week, how many patients do you see:**	
1	At home visits	_____ per week
2	In hospital	_____ per week
3	In homes for the elderly	_____ per week
4	In other institutions or settings	_____ per week
18.	**In the past 3 working months** *(excluding holidays, etc.)*, **how often and for how long did you have on-call duties during evenings, nights and weekends:**	
1	During evening(s)	_____ times; in total _____hours
2	During night(s)	_____ times; in total _____hours
3	During weekend days	_____ times; in total _____hours
19.	**Besides your work as a FP/GP in this practice, do you have any other paid professional activities?** ***(Please mark all that apply)***	☐ No ☐ Yes, as a physician for privately paying patients ☐ Yes, in a residential setting (e.g. nursing home, prison) ☐ Yes, as a company doctor ☐ Yes, in teaching/ medical education ☐ Yes, Research ☐ Yes, other
20.	**As a FP/GP, are you self-employed or in salaried employment?**	☐ Salaried employment with centre or authority ☐ Salaried employment with other FP/GP ☐ Self-employed with contract(s) with health service, insurance or authority ☐ Self-employed without contract

21.	**For each of the following components, please estimate whether they contribute to your income as a FP/GP at this practice, and if so, up to what percentage?**	☐ Salary/contract ☐ Capitation payments (a fixed sum per patient for a certain period of time) ☐ Fee for services from third party payer ☐ Out of pocket payments from patients ☐ Performance payments (for instance related to targets) ☐ Other sources	_____ % _____ % _____ % _____ % _____ % _____ %

22.	**Can you receive an extra financial incentive or bonus for:**	**Yes**	**No**	**Don't know**
1	Management of patients with diabetes	☐	☐	☐
2	Management of patients with hypertension	☐	☐	☐
3	Management of patients with other chronic diseases	☐	☐	☐
4	Achievement of targets for screening or prevention	☐	☐	☐
5	Referral rates below a certain level	☐	☐	☐
6	Having socially disadvantaged patients in your practice	☐	☐	☐
7	Working in a remote area	☐	☐	☐
8	Collaboration with other providers	☐	☐	☐

23.	**Do you work alone or in shared accommodation with one or more FP/GPs and/or medical specialists?** **Please indicate the number of physicians and also fill in the total number of Full Time Equivalents (FTEs).** *(For instance: one doctor working 5 days a week and 1 other doctor working 2.5 days a week makes 1.5 FTEs.)*	☐ Alone ☐ With ____ other FP/GPs in shared accommodation counting for ____ FTEs ☐ With ____ medical specialist(s) in shared accommodation counting for ____ FTEs ☐ With other non-physician healthcare providers in shared accommodation

24.	**Do you use clinical guidelines for the treatment of the following?**	**Yes**	**No**	**Guideline not available**
1	Chronic heart failure	☐	☐	☐
2	Asthma	☐	☐	☐
3	COPD	☐	☐	☐
4	Diabetes	☐	☐	☐

25.	**In the past 12 months, have you been involved in a disease management program for patients with the following chronic conditions?** *(Such programs are multidisciplinary approaches across practices, often based on protocols.)*	**Yes**	**No**
1	Chronic heart failure	☐	☐
2	Asthma	☐	☐
3	COPD	☐	☐
4	Diabetes	☐	☐

26.	**In the past 12 months, has the following occurred in your practice/centre:**	**Yes**	**No**
1	Feedback on your prescriptions or referrals by health authority or insurer?	☐	☐
2	Feedback from colleague FP/GPs (peer review or practice visitation)?	☐	☐
3	Feedback on the satisfaction of your patients?	☐	☐

27. **In case of referral, who usually decides about where the patient is referred to?**

☐ I do
☐ The patient does
☐ It is a shared decision

28.	**In case of referral, to what extent do you take into account the following considerations:**	**Always**	**Sometimes**	**Never**
1	The patient's preference where to go	☐	☐	☐
2	The travel distance for the patient	☐	☐	☐
3	Your previous experiences with the medical specialist	☐	☐	☐
4	Comparative performance information on medical specialists	☐	☐	☐
5	Waiting time for the patient	☐	☐	☐
6	Costs for the patient	☐	☐	☐

29. **Please indicate the equipment used in your practice by yourself or your staff**
(Please mark all that apply)

Laboratory
☐ Hemoglobinometer
☐ Any blood glucose test set
☐ Any cholesterol meter
☐ Blood cell counter

Imaging
☐ Ophthalmoscope
☐ Proctoscope
☐ Otoscope
☐ Gastroscope
☐ Sigmoidoscope
☐ X-ray
☐ Ultrasound for abdomen/fetus
☐ Microscope

Functions
☐ Audiometer
☐ Bicycle ergometer
☐ Eye tonometer
☐ Peak flow/PEF meter
☐ Spirometer
☐ Electrocardiograph
☐ Blood pressure meter
☐ Infusion set
☐ Doctor's bag for emergencies and home visits

Other
☐ Urine catheter
☐ Point of Care INR
☐ Set for minor surgery
☐ Suture set
☐ Defibrillator
☐ Disposable syringes
☐ Disposable gloves
☐ Refrigerator for medicines
☐ Resuscitation equipment

30.	**How do you have access to laboratory facilities?**	☐ Within my practice/centre ☐ Easy access outside my practice/centre ☐ Insufficient access
31.	**How do you have access to X-ray facilities?**	☐ Within my practice/centre ☐ Easy access outside my practice/centre ☐ Insufficient access

32.	**What is the distance by road from your (main) practice building to:**	**In the same building**	**Less than 10 kms**	**11-20 kms**	**More than 20 kms**
1	The nearest FP/GP practice (not in your group or centre)	☐	☐	☐	☐
2	The nearest consultant/outpatient clinic (independent or part of hospital)	☐	☐	☐	☐
3	The nearest general or university hospital	☐	☐	☐	☐

33.	**How many hours on an average working day is your practice/centre open for patient care** *(lunch breaks excluded)*?	_____ hours per working day
34.	**Does your practice/centre offer clinic hours:**	
1	After 18h00	☐ No ☐ Once/week ☐ 2-3 times /week ☐ 4+ times/week
2	On a weekend day	☐ No ☐ 1 day/month ☐ 2-3 days/month ☐ 4+ days/month
35.	**During evenings and nights on weekdays, how do you provide access to your patients for (non-emergency) medical services?**	☐ Not applicable (I am always available for my patients) ☐ I am available on rotating basis with a group of FP/GPs ☐ I am not available, but other FP/GPs are available (on a rotating basis) ☐ Other physicians (not FP/GPs) provide out-of-hours care ☐ Other arrangements
36.	**On Saturdays and Sundays, how do your patients have access to (non-emergency) medical services?**	☐ Not applicable (I am always available for my patients) ☐ I am available on a rotating basis with a group of FP/GPs ☐ I am not available, but other FP/GPs are available (on a rotating basis) ☐ Other physicians (not FP/GPs) provide out-of-hours care ☐ Other arrangements
37.	**What percentage of your patient consultations is by appointment?**	About _____%
38.	**Do you allow walk-in visits or same-day appointments?**	☐ Yes ☐ No

39.	**In the past 12 months, have you ever done the following to reduce financial obstacles to disadvantaged patients:**	**Yes**	**No**
1	Provide free samples of medication	☐	☐
2	Prescribe the cheapest equivalent medicine	☐	☐
3	Not charge the patient (e.g. for co-payments)	☐	☐

40.	**In the past 12 months, how often have you noticed that patients delayed their visits for financial reasons?**	☐ Frequently ☐ Occasionally ☐ Never
41.	**If new patients enter your practice, do you receive their medical records from their previous doctor?**	☐ Yes, always or usually ☐ Only occasionally ☐ Rarely or never
42.	**Which restrictions do you apply to accepting new patients?** ***(Please mark all that apply)***	☐ No restrictions (everyone is accepted) ☐ No new patients are taken above a maximum number ☐ No new patients are taken above a certain age ☐ No new patients are taken outside my geographical working area ☐ I use a wait period for new patients ☐ Acceptance depends on patients' medical history ☐ Acceptance depends on patients' insurance status ☐ Acceptance depends on patients' complexity/number of conditions ☐ Only family members of existing patients ☐ Urgent patients
43.	**Do you provide health care to people when you are not remunerated for this (for example uninsured)?**	☐ Yes, (almost) always ☐ Yes, but only in urgent cases ☐ Yes, sometimes ☐ No ☐ No such people show up in my practice ☐ Not applicable (in this country such care is remunerated)
44.	**Do your medical files normally include the following information:** ***(Please mark all that apply)***	☐ Living situation ☐ Ethnicity ☐ Patients' family history (e.g. depression, cancer) ☐ Patients' weight and height ☐ Smoking ☐ Blood pressure ☐ Reason for encounter ☐ Diagnosis ☐ Prescribed medications ☐ Test results

45. How do you keep patient medical records? ***(Please mark all that apply)***

- ☐ I keep records except for minor or trivial complaints
- ☐ I only keep records of regularly attending patients
- ☐ I keep records, unless it is too busy
- ☐ I keep records routinely of all patient contacts
- ☐ Don't know

46. In the past 2 years, have you used your medical record system to list a selection of patients on the basis of age, diagnosis or risk? ***(Please mark all that apply)***

- ☐ No
- ☐ Yes, by age (e.g. those above age 50)
- ☐ Yes, by diagnosis or health risk (e.g. diabetes or hypertension)
- ☐ Yes, by medications they take (e.g. patients on multiple medications)
- ☐ Yes, to send reminders for prevention or follow-up

47. For which of the following purposes do you use a computer in your practice? ***(Please mark all that apply)***

- ☐ Not applicable (I don't use a computer)

- ☐ Making appointments
- ☐ Issuing invoices
- ☐ Issuing drug prescriptions
- ☐ Sending prescriptions to the pharmacy
- ☐ Sending referral letters to medical specialists
- ☐ Keeping records of consultations
- ☐ Storing diagnostic test results
- ☐ Searching medical information on the internet
- ☐ To maintain and use Electronic Health Records

48. How often do you meet face-to-face with the following professionals *(either professionally or socially)*:

		Seldom or never	Every 1-3 months	More than once a month
1	Other FP/GP	☐	☐	☐
2	Practice nurse	☐	☐	☐
3	Ambulatory medical specialist	☐	☐	☐
4	Hospital medical specialist	☐	☐	☐
5	Pharmacist	☐	☐	☐
6	Home care nurse	☐	☐	☐
7	Midwife	☐	☐	☐
8	Physiotherapist	☐	☐	☐
9	Social worker	☐	☐	☐
10	Dietician	☐	☐	☐

49.	**How often do you ask for advice including by telephone from the following medical specialists?**	**Seldom or never**	**Every 1-3 months**	**More than once a month**
1	Paediatrician	☐	☐	☐
2	Internist	☐	☐	☐
3	Gynaecologist	☐	☐	☐
4	Surgeon	☐	☐	☐
5	Neurologist	☐	☐	☐
6	Dermatologist	☐	☐	☐
7	Geriatrician	☐	☐	☐
8	Psychiatrist/ mental health professional	☐	☐	☐
9	Radiologist	☐	☐	☐

50.	**Does your practice nurse or assistant independently provide:**	☐ Not applicable *(No nurse or assistant in my practice)*		
		Yes	**No**	
1	Immunization	☐	☐	
2	Health promotion (e.g. giving lifestyle or smoking cessation advice)	☐	☐	
3	Routine checks of chronically ill patients (e.g. diabetes)	☐	☐	
4	Minor procedures (e.g. ear syringing, wound treatment)	☐	☐	

51.	**To what extent do you use referral letters** *(including details on provisional diagnosis and possible test results)* **when you refer patients to a medical specialist? I use letters:**	☐ For all patients that I refer ☐ For most patients that I refer ☐ For a minority of patients that I refer ☐ Seldom or never
52.	**To what extent do medical specialists inform you after they have finished the treatment or diagnostics of your patients?**	☐ (Almost) always ☐ Usually ☐ Occasionally ☐ Seldom or Never
53.	**After a patient has been discharged, how long does it usually take to receive a (summary) discharge report from the hospital most frequented by your patients?**	☐ 1 - 4 days ☐ 5 - 14 days ☐ 15 - 30 days ☐ More than 30 days ☐ I rarely or never receive a discharge report

54.	In case of the following health problems, to what extent will your own patients *(in your practice population)* contact you as the first health care provider?	(Almost) always	Usually	Occasionally	Seldom/ Never
1	Child with severe cough	☐	☐	☐	☐
2	Child aged 8 with hearing problem	☐	☐	☐	☐
3	Woman aged 18 asking for oral contraception	☐	☐	☐	☐
4	Man aged 24 with stomach pain	☐	☐	☐	☐
5	Man aged 45 with chest pain	☐	☐	☐	☐
6	Woman aged 50 with a lump in her breast	☐	☐	☐	☐
7	Woman aged 60 with deteriorating vision	☐	☐	☐	☐
8	Woman aged 60 with polyuria	☐	☐	☐	☐
9	Woman aged 60 with acute symptoms of paralysis/paresis	☐	☐	☐	☐
10	Man aged 70 with joint pain	☐	☐	☐	☐
11	Woman aged 75 with moderate memory problems	☐	☐	☐	☐
12	Man aged 35 with sprained ankle	☐	☐	☐	☐
13	Man aged 28 with a first convulsion	☐	☐	☐	☐
14	Anxious man aged 45	☐	☐	☐	☐
15	Physically abused child aged 13	☐	☐	☐	☐
16	Couple with relationship problems	☐	☐	☐	☐
17	Woman aged 50 with psycho-social problems	☐	☐	☐	☐
18	Man aged 32 with sexual problems	☐	☐	☐	☐
19	Man aged 52 with alcohol addiction problems	☐	☐	☐	☐

55.	To what extent are you involved in the treatment and follow-up of your own patients *(in your practice population)* with the following diagnoses?	(Almost) always	Usually	Occasionally	Seldom/ Never
1	Chronic bronchitis/ COPD	☐	☐	☐	☐
2	Hordeolum (Stye)	☐	☐	☐	☐
3	Peptic ulcer	☐	☐	☐	☐
4	Herniated disc lesion	☐	☐	☐	☐
5	Congestive heart failure	☐	☐	☐	☐
6	Pneumonia	☐	☐	☐	☐
7	Peritonsilar abscess	☐	☐	☐	☐
8	Parkinson's disease	☐	☐	☐	☐
9	Uncomplicated diabetes (type II)	☐	☐	☐	☐
10	Rheumatoid arthritis	☐	☐	☐	☐
11	Depression	☐	☐	☐	☐
12	Myocardial infarction	☐	☐	☐	☐

56.	**To what extent are the following activities carried out in your practice population by you (or your staff) and not by a medical specialist?** *(Practice population means people normally applying to you for primary medical care.)* **For example, if fundoscopy is (almost) always done by you, mark that box.**	**(Almost) always**	**Usually**	**Occasionally**	**Seldom/ Never**
1	Wedge resection of ingrown toenail	☐	☐	☐	☐
2	Removal of sebaceous cyst from the hairy scalp	☐	☐	☐	☐
3	Wound suturing	☐	☐	☐	☐
4	Excision of warts	☐	☐	☐	☐
5	Insertion of IUD	☐	☐	☐	☐
6	Fundoscopy	☐	☐	☐	☐
7	Joint injection	☐	☐	☐	☐
8	Strapping a sprained ankle	☐	☐	☐	☐
9	Cryotherapy (warts)	☐	☐	☐	☐
10	Setting up an intravenous infusion	☐	☐	☐	☐

57.	**When do you, or your staff, measure blood pressure?** ***(More than one answer possible)***	☐ In connection with relevant clinical conditions ☐ On request ☐ Routinely in office contacts with adults (regardless of the reason for visit) ☐ In adults invited for this purpose
58.	**When do you, or your staff, measure blood cholesterol level?** ***(More than one answer possible)***	☐ In connection with relevant clinical conditions ☐ On request ☐ Routinely in office contacts with adults (regardless of the reason for visit) ☐ In adults invited for this purpose ☐ No such measures

59.	**To what extent are you involved in patient health education as regards the following topics:** ***(More than one answer possible)***	**Not involved**	**In connection with normal patient contacts**	**In group sessions or special programs**
1	Smoking	☐	☐	☐
2	Diet	☐	☐	☐
3	Problematic use of alcohol	☐	☐	☐
4	Physical exercise	☐	☐	☐
5	Chronic disease self-management strategies	☐	☐	☐

60.	**Are you or your practice staff involved in the following activities?**	**Involved**	**Not involved**
1	Routine antenatal care	☐	☐
2	Immunization of children (as part of a program)	☐	☐
3	Paediatric surveillance of children under 4 years	☐	☐
4	Influenza vaccination (as part of a program)	☐	☐
5	Palliative care	☐	☐

61.	**During the past 12 months, have you offered (a) special session(s) or clinics for the following groups?**	**Yes**	**No**
1	Diabetic patients	☐	☐
2	Hypertensive patients	☐	☐
3	Pregnant women	☐	☐
4	Elderly	☐	☐
5	Persons with multiple chronic conditions	☐	☐

62.	**If you were confronted through your patient contacts with the following occurrences, would you report this** ***(for instance to an authority)*****?**	**Yes**	**Probably yes**	**Probably not**	**No**	**Don't know**
1	Repeated accidents in an industrial setting	☐	☐	☐	☐	☐
2	Frequent respiratory problems in patients living near a certain industry	☐	☐	☐	☐	☐
3	Repeated cases of food poisoning among people living in a certain district	☐	☐	☐	☐	☐

63.	**In the past 12 months, about how many weeks altogether have you been away from the practice due to:**	
1	Attending conferences or other educational activities	_____ weeks
2	Research activities	_____ weeks
3	Vacations	_____ weeks
4	Illness	_____ weeks

64.	**To what extent do you agree with the following statements?**	**Strongly agree**	**Agree**	**Disagree**	**Strongly disagree**
1	I feel that some parts of my work do not really make sense	☐	☐	☐	☐
2	My work still interests me as much as it ever did	☐	☐	☐	☐
3	My work is overloaded with unnecessary administrative detail	☐	☐	☐	☐
4	I have too much stress in my current job	☐	☐	☐	☐
5	Being a FP/GP is a well-respected job	☐	☐	☐	☐
6	In my work there is a good balance between effort and reward	☐	☐	☐	☐

65.	**How strongly do you agree or disagree that you and your practice staff are aware of community resources that are accessible to patients?**	☐ Strongly disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree

66.	**For your most complex patients** *(e.g. patients with multiple chronic conditions or significant social issues impacting their health)…*	
a.	**To what extent are you able to co-ordinate care with service organizations in the community in planning and providing care?**	☐ Unable to ☐ Occasionally unable to ☐ Sometimes able to ☐ Usually able to ☐ Always or almost always able to
b.	**To what extent do all providers caring for these patients** *(within and outside of your practice)* **have the same information available to them when working with the patient?**	☐ Not at all ☐ Not really ☐ Unsure ☐ Somewhat ☐ Very much
c.	**To what extent do you collaborate with all providers caring for these patients** *(within and outside of your practice)* **in establishing goals for treatment or management and plans?**	☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Almost always
67.	**Can you generate an up-to-date patient panel list for your practice?** *(An accurate list of patients for whom you are the most accountable primary care physician)*	☐ Yes ☐ No
68.	**Is this panel systematically validated by patients?** *(Patients are systematically asked to confirm whether you are their most accountable primary care physician)*	☐ Yes ☐ No
69.	**Do you have a formal agreement with your patients that you are their most accountable primary care physician?**	☐ No commitment between patient and physician ☐ Informal understanding ☐ Formal agreement ☐ Signed agreement or contract

Thank you for completing this survey!

Appendix B- QUALICO-PC patient experiences survey questions 22 and 23

22.	**In the last 12 months, how often did you visit a hospital emergency department for yourself?**	☐ Never → Go to question 24 ☐ 1 time ☐ 2 or 3 times ☐ 4 or more times
23.	**Why did you go to the emergency department instead of going to a family doctor? (Mark all that apply)**	
	☐ It was an urgent issue or an emergency	☐ At the emergency department, I expected a shorter waiting time
	☐ I had something family doctors do not treat	☐ The emergency department provides better care
	☐ There was no family doctor available at the time	☐ The emergency department is more convenient to reach
	☐ For financial reasons	☐ Other reason(s)

Appendix C- Variable coding for QUALICO-PC data analysis

Variable name	Question #	Values	SPSS Values	Survey questions combined
Gender	PES35	Female	0	
		Male	1	
Age	PES36			
Born In Canada	PES37	No	0	All other countries
		Yes	1	
Province of practice	N/A	ON	1	
		BC	2	
		NL	3	
		QC	4	
		AB	5	
		NB/PEI	6	
		SK	7	
		NS	8	
		MB	9	
Practice Setting	FPS4	Large city centre	1	
		suburbs	2	
		small town	3	
		mixed urban-rural	4	
		rural	5	
Occupation Status	PES42	Employed	1	Employed and Self employed
		Unemployed	2	
		Not in work force	3	Retired, Student, Not able to work due too disability, and mainly homemaker
Education	PES43	<10th grade	1	
		10 to 12	2	
		post-secondary	3	
Income	PES45	Below average	1	
		Average	2	

		Above average	3	
Health status	PES1	Very good	1	
		good	2	
		fair	3	
		poor	4	
Chronic condition	PES 2	No	0	
		Yes	1	
Regular family physician	PES3	Yes the one I am seeing today	0	
		yes, in another practice	1	
		yes, somewhere else	2	
		No	3	
Interpreter available	PES6	No	0	
		Yes	1	Yes, always available and yes, usually available
		never needed one	2	Never needed one and I don't knows
Restricted hours of operation	PES9_1	No	0	
		Yes	1	
Waiting to speak to someone on the phone	PES9_4	No	0	
		Yes	1	
Travel time	PES10	< 20 mins	0	
		20-40 min	1	
		40-60 min	2	
		>1hr	3	
Ease of getting an appointment	PES 12	No	0	
		Yes	1	

Time before appointment available	PES13	Today	0	
		Yesterday	1	
		2-7 days	2	
		> 1 week	3	
		I Don't Know	4	
Able to arrange appointment as soon as wanted	PES14	No	0	
		Yes	1	
Difficulty in seeing FP on evenings, nights and weekends	PES15	No	0	
		Yes	1	
		I Don't Know	2	
Waiting time	PES48	< 15 min	0	
		15-30 min	1	
		31-45 min	2	
		46-60 min	3	
		> 1 hr	4	
Doctor was polite	PES49_2	No	0	
		Yes	1	
Doctor listened carefully	PES49_3	No	0	
		Yes	1	
Doctor hardly looked at me when we talked	PES49_4	No	0	
		Yes	1	
Couldn't understand what the doctor was trying to explain	PES 49_6	No	0	
		Yes	1	
Doctor taking sufficient time	PES49_7	No	0	
		Yes	1	

Doctor involved patient in making decision	PES49_8	No	0	
		Yes	1	
Practice has parking for space for disabled people	PRA5	No	0	
		Yes	1	
Is an elevator available for patients	PRA7	No	0	
		Yes	1	
		Not applicable	2	Those who responded yes to the practice being on the ground floor
Accessibility for wheelchairs and strollers	PRA8	Very easy	0	
		Easy	1	
		Difficult	2	
		Impossible	3	
Nurse practitioner working in the practice	PRA13_6	No	0	
		Yes	1	
Physician born in Canada	FPS3	No	0	
		Yes	1	
Size of practice population	FPS7			
Hours spent on direct patient care	FPS12			
Number of face to face patient contacts in normal day	FPS13_1			
Length of regular patient consultation	FPS14			

Number of hours on call in evenings in past 3 months	FPS18_1			
Number of hours on call during nights in past 3 months	FPS18_2			
Number of hours on call on weekends in past 3 months	FPS18_3			
Access to lab facilities	FPS30	In practice	0	
		easy outside practice	1	
		insufficient access	2	
Access to X-ray facilities	FPS31	In practice	0	
		easy outside practice	1	
		insufficient access	2	
Hours practice is open	FPS33			
Walk in visits available	FPS38	No	0	
		Yes	1	
How do you provide access to medical services for your patients on evenings and nights	FPS35	NA-Always available	0	
		available on rotating basis	1	
		other	2	Other family physicians available on rotating basis, other non FP's available , other arrangements.

How do you provide access to medical services for your patients on weekend days	FPS36	NA-Always available	0	
		available on rotating basis	1	
		other	2	Other family physicians available on rotating basis, other non FP's available, other arrangements.

Appendix D- St. John's, NL ED survey and information page

Research Study Information for Patients

***Study Title**: Factors associated with people going to the emergency department for non-urgent visits rather than attending a family physician.*

Introduction: You are being invited to be in a research study. This study is being done by **Allison Maybank** from Memorial University of Newfoundland. You were chosen to be in this study because you are 18 years or older and are attending the emergency department (ED) at the Health Sciences Centre. Many people go to the ED instead of their family physician for care, sometimes when it is not necessary. This research study is looking at factors related to the family physicians practice which might make people choose the emergency room over their family physician for non-urgent problems.

Task: If you agree to take part in this study, you are asked to fill-out the survey on the next page. This questionnaire will ask you some simple patient information; age, gender, number of times you have been to the ED in the past 12 months, and if you have a regular family physician, as well as your reason for attending the ED instead of your family doctor. It should take you about 5 minutes to finish.

You may not directly benefit from this research. We hope that your participation in the may be used to help address issues within family practices that prevent patients from using them. **The survey is anonymous; please do not write your name on the survey.** To the best of our ability your answers in this study will remain confidential. All information will be stored in a locked cabinet or on a password protected computer. Individual results will not be shared, only general data.

Your participation in this study is completely voluntary. You can skip any question or not complete the survey at any time.

By continuing to the survey on the next page you are saying you;

- are 18 years of age or older,
- have read and understood this consent form
- and agree to participate in this research study

By returning the survey you will be consenting to take part in the research. Please keep this page for your records and return the survey to the researchers.

If you have questions about this project or if you have a research-related problem, you may contact the researcher or supervisor,
Researcher- Allison Maybank, BSc, Email: akm406@mun.ca
Supervisor- Kris Aubrey-Bassler, Phone: 709-777-8304, Email: kaubrey@mun.ca

Or you can talk to someone who is not involved with the study at all, but can advise you on your rights as a participant in a research study,

Ethics Office, Health Research Ethics Authority
Telephone: 709-777-6974, Email: info@hrea.ca

Patient Characteristics and Questionnaire

Please write the appropriate response to each of the following questions.

Date: _____ Time:_____

Part 1: Patient Characteristics

1. What is your age? _____
2. What is your gender(M/F)? _____
3. How many times in the past 12 months have you been to the emergency department?

_____

4. Do you have a regular family physician?
   - ☐ Yes
   - ☐ No → Please return the survey without completing part 2.

Part 2: Research Questions

1. Concerning your current visit to the emergency department, why have you come to the emergency department instead of going to a family doctor? (Mark all that apply).

- o It was an urgent issue or an emergency
- o I have something my family doctor does not treat
  - o What do you have? _____
- o There was no family doctor available within a reasonable time
- o At the emergency department, I expected a shorter waiting time
- o The emergency department provides better care
- o The emergency department is more convenient to reach
- o Other

If other, please explain below

_____
_____
_____
_____
_____

2. Concerning your current visit to the emergency department, which factors influenced you to come to the emergency department instead of going to a family doctor? (Mark all that apply).

- Language barriers
- Restricted hours of operation
- Difficulty getting an appointment (ie. contacting the office/scheduling appointment)
- Availability of evening, night and weekend services
- Length of time before being able to see a doctor
- Convenience of office (distance to office)
- Waiting time (in office)
- Doctor patient interactions
- Accessibility of office
- Number of consultations in a day (how busy the office is)
- Length of usual consultation
- Availability of same day appointment or walk-ins
- No nurse practitioner at physicians office
- Access to laboratory testing
- Access to x-ray facilities
- Other

If other, please explain below

_____
_____
_____
_____
_____
_____
_____
_____

3. How long would you have waited to see a family physician for the problem you are here for today? _____

Appendix E- St. John's, NL ED survey advertisement poster

You Are Invited to Fill Out a Survey on:

Factors associated with people going to the emergency department for non-urgent visits rather than seeing a family physician.

- Research study by Memorial University graduate student in Clinical Epidemiology.
- Looking at factors related to the family physicians practice which might make people choose the emergency room over their family physician for non-urgent problems.
- Survey includes: patient information (age, gender, etc.) and your reason for attending the ED instead of your family doctor.
- **Short, VOLUNTARY and ANONYMOUS!**
- We hope that your participation may be used to help address issues within family practices that prevent patients from using them.
- Survey available in waiting room or at the registration desk.

Return Survey to Registration Desk

Thank You!

Appendix F- Bivariate binary logistic regression analysis results from QUALICO-PC data

Variable name	Survey and question #	Variable response categories	Test of model effects (χ2, p-value)	Coefficient	P-value	Odds ratio	Confidence interval	N	% of data missing
Gender	PES35	Female	27.73, p=<0.0010	0	N/A	1.00	N/A	2610	2.0
		Male		-0.48	<0.00010	0.62	.52-.74		
Age	PES36		1.002, p=.317	0.003	0.317	1.00	.998-1.007	2530	5.0
Born In Canada	PES37	No	3.00, p=.0830	0	N/A	1.00	N/A	2602	2.3
		Yes		0.25	0.0830	1.28	0.97-1.70		
Province of practice	N/A	ON	53.78, p<0.0001	0	N/A	1.00	N/A	2662	0.0
		BC		-0.14	0.5440	0.87	.57-1.35		
		NL		0.95	<0.0001	2.58	1.74-3.83		
		QC		-0.02	0.8900	0.98	.76-1.26		
		AB		0.00	0.9890	1.00	.76-1.33		
		NB/PEI		0.49	0.0030	1.63	1.18-2.23		
		SK		-0.36	0.3290	0.70	.34-1.14		
		NS		0.78	0.0001	2.18	1.51-1.15		
		MB		0.17	0.45	1.19	.76-1.85		
Practice Setting	FPS4	Large city centre	x2=60.35, p<0.0001	0	N/A	1.00	N/A	2543	4.5
		suburbs		-0.25	0.1140	0.78	.57-1.06		
		small town		0.72	<0.0001	2.05	1.59-2.66		
		mixed urban-rural		0.44	0.0030	1.55	1.16-2.07		
		rural		0.63	<0.0001	1.87	1.45-2.42		
Occupation Status	PES42	Employed	2.66, p=0.2640	0	N/A	1.00	N/A	2574	3.3
		Unemployed		0.39	0.1660	1.48	.85-2.58		

		Not in work force		0.09	0.2950	1.09	.92-1.30		
Education	PES43	<10th grade	2.05, p=.3590	0	N/A	1.00	N/A	2580	3.1
		10 to 12		-0.20	0.1660	0.82	.61-1.12		
		post-secondary		-0.12	0.3860	0.89	.67-1.17		
Income	PES45	Below average	6.87, p=.0320	0	N/A	1.00	N/A	2578	3.2
		Average		-0.06	0.5220	0.94	.77-1.1		
		Above average		-0.34	0.0110	0.72	.55-.93		
Health status	PES1	Very good	7.44, p=.0590	0	N/A	1.00	N/A	2642	0.8
		good		0.21	0.1020	1.23	.96-1.58		
		fair		0.35	0.0080	1.42	1.10-1.84		
		poor		0.29	0.1310	1.34	.92-1.96		
Chronic condition	PES 2	No	3.17, p=.0750	0	N/A	1.00	N/A	2629	1.2
		Yes		0.16	0.0750	1.17	.98-1.40		
Regular family physician	PES3	Yes the one I am seeing today	.96, p=.8110	0	N/A	1.00	N/A	2653	0.3
		yes, in another practice		-0.10	0.7020	0.91	.54-1.51		
		yes, somewhere else		-0.06	0.8240	0.95	.57-1.57		
		No		0.23	0.3950	1.25	.75-2.10		
Interpreter available	PES6	No	1.75, p=.4180	0	N/A	1.00	N/A	2647	0.6
		Yes		-0.31	0.3360	0.73	.39-1.38		
		never needed one		-0.32	0.1870	0.72	.45-1.17		
Restricted hours of operation	PES9_1	No	7.84, p=.0050	0	N/A	1.00	N/A	2447	8.1
		Yes		0.39	0.0050	1.47	1.12-1.93		
Waiting to speak to someone on the phone	PES9_4	No	2.69, p=.1010	0	N/A	1.00	N/A	2583	3

		Yes		0.28	0.1010	1.33	.95-1.86		
Travel time	PES10	< 20 mins	6.76, p=0.0800	0	N/A	1.00	N/A	2640	0.8
		20-40 min		-0.13	0.2190	0.88	.72-1.08		
		40-60 min		-0.19	0.3100	0.83	.57-1.20		
		>1hr		-0.75	0.0280	0.47	.24-.92		
Ease of getting an appointment	PES 12	No	9.04, p=.0030	0	N/A	1.00	N/A	2348	11.8
		Yes		-0.46	0.0030	0.63	.46-.85		
Time before appointment available	PES13	Today	9.25, p=.05500	0	N/A	1.00	N/A	2322	12.80%
		Yesterday		-0.35	0.0620	0.71	0.49-1.02		
		2-7 days		-0.29	0.0420	0.75	0.57-0.99		
		> 1 week		-0.04	0.7690	0.96	0.73-1.26		
		I Don't Know		-0.36	0.0660	0.70	0.49-1.02		
Able to arrange appointment as soon as wanted	PES14	No	36.94, p<0.0001	0	N/A	1.00	N/A	2392	10.1
		Yes		-0.69	<0.0001	0.50	0.40-0.63		
Difficulty in seeing FP on evenings, nights and weekends	PES15	No	47.9, p<0.0001	0	N/A	1.00	N/A	2627	1.30%
		Yes		0.72	<0.0001	2.04	1.64-2.54		
		I Don't Know		0.20	0.0910	1.22	0.97-1.53		
Waiting time	PES48	< 15 min	13.31, p=.0100	0	N/A	1.00	N/A	2511	5.7
		15-30 min		0.21	0.0430	1.23	1.01-1.50		
		31-45 min		0.47	0.0010	1.60	1.21-2.13		
		46-60 min		0.31	0.1420	1.36	.90-2.04		

		> 1 hr		0.37	0.1100	1.45	.92-2.28		
Doctor was polite	PES49_2	No	Not enough no's (n=4)						
		Yes							
Doctor listened carefully	PES49_3	No	0.55, p=.4590	0	N/A	1	N/A	2564	3.7
		Yes		-0.43	0.4590	0.65	.21-2.03		
Doctor hardly looked at me when we talked	PES49_4	No	.16, p=.6910	0	N/A	1.00	N/A	2537	4.7
		Yes		-0.05	0.6910	0.95	.75-1.21		
Couldn't understand what the doctor was trying to explain	PES 49_6	No	.08, p=.7800	0	N/A	1.00	N/A	2553	4.1
		Yes		0.04	0.7790	1.04	.78-1.41		
Doctor taking sufficient time	PES49_7	No	2.66, p=.1030	0	N/A	1.00	N/A	2569	3.5
		Yes		-0.44	0.1030	0.64	.38-1.09		
Doctor involved patient in making decision	PES49_8	No	3.28, p=.0700	0	N/A	1.00	N/A	2538	4.7
		Yes		-0.35	0.0700	0.70	.48-1.03		
Practice has parking for space for disabled people	PRA5	No	0.05, p=.8230	0	N/A	1.00	N/A	2549	4.2
		Yes		0.03	0.8230	1.03	.78-1.37		
Is an elevator available for patients	PRA7	No	.47, p=.7920	0	N/A	1.00	N/A	2546	4.4
		Yes		-0.13	0.5840	0.88	.56-1.39		
		Not applicable		-0.07	0.7520	0.93	.60-1.45		

Accessibility for wheelchairs and strollers	PRA8	Very easy	2.82, p=.4210	0	N/A	1.00	N/A	2561	3.8
		Easy		0.14	0.1750	1.15	.94-1.39		
		Difficult		0.10	0.6570	1.11	.71-1.74		
		Impossible		-0.33	0.4100	0.72	.33-1.57		
Nurse practitioner working in the practice	PRA13_6	No	1.32, p=.2510	0	N/A	1.00	N/A	2506	5.9
		Yes		-0.12	0.2510	0.89	.72-1.09		
Physician born in Canada	FPS3	No	.00, p=.9530	0	N/A	1.00	N/A	2542	4.5
		Yes		0.01	0.9530	1.01	.82-1.23		
Size of practice population	FPS7		1.31, p=.2530	-0.00	0.2530	1.00	1.00- 1.00	2509	5.7
Hours spent on direct patient care	FPS12		2.35, p=.1260	0.00	0.1260	1.00	1.00-1.01	2481	6.8
Number of fae to face patient contacts in normal day	FPS13_1		.09, p=.7620	0.00	0.7620	1.00	.99-1.01	2537	4.7
Length of regular patient consultation	FPS14		.23, p=.6340	0.00	0.6340	1.00	.99-1.02	2550	4.2
Number of hours on call in evenings in past 3 months	FPS18_1		7.91, p=.0050	0.00	0.0050	1.00	1.00-1.00	2125	20.2
Number of hours on call during nights in past 3 months	FPS18_2		3.39, p=.0660	0.00	0.0660	1.00	1.00-1.00	2040	23.4
Number of hours on call on weekends in past 3 months	FPS18_3		2.33, p=.1270	0.00	0.1270	1.00	1.00-1.00	2158	18.9

Access to lab facilities	FPS30	In practice	2.49, p=.2890	0	N/A	1.00	N/A	2570	3.5
		easy outside practice		0.17	0.1150	1.18	.96-1.45		
		insufficient access		0.12	0.6220	1.13	.70-1.80		
Access to X-ray facilities	FPS31	In practice	.12, p=.9420	0	N/A	1.00	N/A	2550	4.2
		easy outside practice		0.03	0.797	1.030	.817-1.301		
		insufficient access		0.077	0.757	1.080	.662-1.763		
Hours practice is open	FPS33		3.363, p=0.067	-0.038	0.067	0.963	.923-1.003		
Walk in visits available	FPS38	No	.03, p=.8540	0	N/A	1.00	N/A	2565	3.6
		Yes		0.05	0.8540	1.05	.65-1.70		
How do you provide access to medical services for your patients on evenings and nights	FPS35	NA-Always available	4.03, p=.1330	0	N/A	1.00	N/A	2517	5.4
		available on rotating basis		0.19	0.5620	1.20	.64-2.25		
		other		0.36	0.2620	1.43	.77-2.67		
How do you provide access to medical services for your patients on weekend days	FPS36	NA-Always available	3.40, p=.1820	0	N/A	1.00	N/A	2538	4.7
		available on rotating basis		0.23	0.4770	1.25	.67-2.34		
		other		0.38	0.2370	1.46	.78-2.72		

***** Highlighted numbers indicate p-value <0.2