

# PRIMARY CARE IN NOVA SCOTIA:

PATIENT  
EXPERIENCES  
AND TEAM-BASED  
PRIMARY CARE.

## **RESULTS FROM THE QUALITY AND COSTS OF PRIMARY CARE CANADA (QUALICOPC) STUDY**

Fred Burge, Beverley Lawson, Lynn Lethbridge

Primary Care Research Unit  
Dalhousie Family Medicine

*With thanks to Michelle Boudreau*

April 2016



**DALHOUSIE  
UNIVERSITY**

FACULTY OF MEDICINE  
Department of Family Medicine



# EXECUTIVE SUMMARY

## PRIMARY CARE IN NOVA SCOTIA: PATIENT EXPERIENCES AND TEAM-BASED PRIMARY CARE. RESULTS FROM THE QUALITY AND COSTS OF PRIMARY CARE CANADA (QUALICOPC) STUDY.

The Quality and Costs of Primary Care (QUALICOPC) Canada study is an extension of an international project in which primary care patients were asked to rate how important, or how they valued, various aspects of primary care, as well as their experience with primary care service delivery. Each participating primary care physician also completed a survey about their practice setting and the services they provide. Through this study design, patient experiences with care and how aspects of primary care are valued may be linked to individual physician services and practice delivery for a comprehensive source of patient-centred information.

This is the second of two reports where results from Nova Scotia participants of the QUALICOPC study are the focus. The first report (April 2016) provided an examination of what aspects of primary care, as represented by four dimensions of care developed in the literature (Access, Communication and Patient Centredness, Continuity and Coordination, Patient Activation) were valued most by primary care patients in Nova Scotia and reported on patient-reported experience of care associated with the aspects most valued.

In this study, whether the perspective of patients receiving care from Nova Scotia primary care team-based care practices differed from that of patients receiving non-team-based care was examined. The perspectives considered included how they ranked various aspects of primary care that, when combined, formed four dimensions (Access, Communication and Patient Centredness, Continuity and Coordination, Patient Activation), as well as their patient-reported experience of care associated with each of these dimensions.

For the purpose of this study, team-based care was defined as a practice where, at minimum, a physician, receptionist, and any type of nurse, including a nurse practitioner, worked together. A team practice could also include additional care providers such as a physiotherapist, dietician, or multiple nurses.

A total of 59 primary care providers (family physicians) and 636 patients participated. Of the providers, 58 provided information about the number of disciplines working within the practice. Based on these results, 31 practices (53 per cent) were identified as being "team-based."

Results indicate that team-based care in Nova Scotia is not substantially associated with how patients rank or attribute the importance of the various aspects or dimensions of primary care. However, findings suggest that patients associated with team-based care practices tend to have a small but more positive perception of the care experience, particularly with respect to care experiences that form the Continuity and Coordination dimension, such as the ability to see other doctors in the practice, having their information available and improved after-hours care (Access). Patients associated with non-team practices indicated greater positive experiences with respect to shared decision making (Communication and Patient Centredness).

It is encouraging to see early, albeit relatively small, positive benefits from this model of care. We suggest greater benefit may be found with further evaluation that allows for greater detailed definition of team-based care and larger sample sizes. For the future, it would be beneficial to build capacity for linkage of patient-reported experience outcome data with technical quality of clinical care, patient clinical outcome data, provider experience data, and costing information to provide a more complete picture of the association between models of care and outcomes.

# INTRODUCTION

The delivery of primary care is changing in Canada and around the world. As individuals live longer, primary care providers are seeing an increase in the prevalence of co-morbidities and complex cases (1–4). As a result, the traditional model of a single family physician and receptionist has become unsustainable. Quality care requires access to a broad range of skills and expertise, which often necessitates a multidiscipline approach. Additionally, from a health-system perspective, cost savings can be achieved with the addition of other health-care providers, such as nurse practitioners, nurses, and physician assistants, in a primary care practice (5). Health-care professionals in primary care settings have recognized this for many years, and practice models have been changing to adapt. Primary care settings are becoming centres where multiple clinicians and other health-care professionals deliver care as a coordinated team. Research is now just beginning to assess these changes (6).

The idea of teams in health-care delivery is not new. Settings including hospitals (7), homes (8), and hospices (9) have utilized a multidisciplined, coordinated approach to provide services. Teams that focus on individual chronic conditions, such as diabetes (10,11) as well as multimorbidities (12), have also been developed. Family physicians often manage the health needs of individual patients for many years; a large number of these patients will likely develop chronic conditions and require coordinated care from health professionals with specialized skills. Primary care providers can learn from those who have a longer history of providing care in a team-based setting.

What constitutes a “team” in a primary care setting continues to evolve as a wide range of definitions have been put forth. Wagner (13) cites Starfield (14) in defining a patient care team as “... a group of diverse clinicians who communicate with each other regularly about the care of a defined group of patients and participate in that care” (p 569). As Wagner (13) suggests, team members can include all staff members provided specific roles are identified. The literature suggests there are basic principles that underpin team-based care, including shared goals, leadership, defined roles, mutual trust, coordination, effective communication, measurable processes, and outcomes (1,2,4,15). Within this framework, effective teams also require flexibility for particular practice settings (2).

To examine the effectiveness of team-based systems, it is necessary to understand how effectiveness is defined. Following Donabedian (16), success is a function of how the structure of a system affects processes that, in turn, affect outcomes. Leadership has been identified as a key system input in order to affect positive change on processes that include aspects such as team member cohesion, communication, and trust (1,17). Strong leadership is particularly important given there are many barriers to implementation of new models in health care, including entrenched cultures, administrative rigidity, coordination challenges, and perceptions about professional roles (3,15,18,19). Outcomes can be measured from the perspective of staff, the organization, or patients. Since the ultimate goal in any health-care system is to improve patient outcomes, it may be argued staff and organizational outcomes can be measured as indirect measures of patient outcomes. It is only after the objectives of a system are defined that effectiveness can be measured.

Many approaches exist for evaluating team-based models in primary care. Generally, the literature suggests teams are an effective and efficient system for the delivery of care (5,20). Studies show teams foster a positive environment for staff and can lead to higher job satisfaction, lower turnover, and less burnout (3,6,21,22). The implementation of health teams in primary care has shown improvement in patient outcomes. For example, Russell et al (23) undertook a chart review and found disease management indicators that were superior in team-based community centres compared to other primary care models in Ontario. Fantini (10) showed similar results using administrative data sources. Vöhringer et al (24) reviewed the literature on models of care for depression and found all studies that implemented a team training program had efficacious results. Patient satisfaction has also been higher for those who received care from a team (25,26). However, some studies exist that suggest teams do not always result in improved outcomes. A recent systematic review by Stokes et al (27) failed to find clinically significant improvement in patient outcomes with the introduction of multidisciplinary teams for case management. Grace et al (19) showed insignificant differences across practice settings in outcomes such as functioning, readiness for change, and perceptions of skills.

What is clear is that ongoing evaluation is crucial in order to ensure the delivery of quality primary care.

As with any sector of health care, the demand for services can very often strain budgets; therefore, it is important to understand what programs are most effective given limited resources. A patient-centred approach is increasingly being recognized as key to greater satisfaction and symptom relief (28). When patients and providers work together they develop a mutual trust, and that encourages positive actions that benefit them both. However, it is important to understand the mechanisms that bring about this result. Information on patient-reported experiences linked to service models can be used to examine models of primary care, including team-based systems, to gain insights into how best to provide care.

# PURPOSE

The purpose of this study was to investigate the effectiveness of Nova Scotia primary care team-based structures from the patient's perspective. Specific objectives included a comparison between team-based and non-team-based practice settings with respect to 1) dimensions of primary care valued or deemed important by patients, and 2) patient-reported experiences of care.

## METHOD

Data used in this investigation came from the Nova Scotia component of the Quality and Costs of Primary Care (QUALICOPC) Canada study (<http://www.nivel.nl/en/qualicopc/>). Briefly, the QUALICOPC study was focused on a core health-care service: primary care. Administered in 34 countries, it was designed to benchmark and inform primary care policies. In total, four surveys were administered. Surveys administered collected information about each participating primary care physician and services provided (Family Physician Survey), their practice setting (Practice Survey), patient-reported experience (Patient Experiences Survey), and how important patients deemed various aspects of primary care (Patient Values Survey). Patients who completed the Patient Values Survey were not the same as those who completed the Patient Experiences Survey. The method used enabled the ability to compare patient experiences with care and how various aspects of primary care are valued, and link this information to individual physician services and practice delivery for a rich source of patient-centred information. Nova Scotia was one of ten participating provinces across Canada (29).

All physicians who were members of the College of Family Physicians of Canada were asked to participate. However, of those who expressed interest, only one from each practice was eligible to take part. Practice staff were asked to distribute one Patient Values Survey and nine Patient Experiences Surveys on a single day that represented the physician's regular practice population (and a second day if required).

## MEASURES

For this study, team-based care was defined as a practice where, at minimum, a physician, receptionist, and any type of nurse, including a nurse practitioner, worked together. A team practice could also include additional care providers such as a physiotherapist, dietician, or multiple nurses.

To understand which aspects of primary care were important to patients, the 56 statements from the Patient Values Survey were ranked by the proportion of respondents who answered “very important” and were then categorized into one of four previously defined primary care dimensions of care based on the framework by Wong and Haggerty (30). Details of the approach are described elsewhere (29, 31). The four dimensions of primary care include Continuity and Coordination, Communication and Patient Centredness, Patient Activation, and Access.

The Patient Experiences Survey was used to elicit information about primary care experiences and was administered among patients who were not asked to complete the Patient Values Survey. Participating patients were used to rate the care provided by the primary care provider with whom they had an appointment that day. Experience statements/questions were each mapped into one of the four dimensions of primary care in order to gain an understanding of how well their primary care provider was meeting expectations in terms of individual aspects and dimensions of primary care. To assess differences between the experiences of patients in a team-based practice and those in a non-team setting, the number of positive experiences reported by patients for each dimension and the total number overall were counted.

## ANALYSIS

Descriptive statistics were done to summarize physician and patient characteristics and patient survey responses by whether or not the associated practice was identified as providing team-based care. Differences of each by team-based care type were assessed using chi-square analysis. Poisson regression techniques were employed to assess differences in the number of positive experiences reported by patients (count data) and coefficients converted to incidence rate ratios. Univariate analyses were followed by multivariate where adjustments were made for patient characteristics and other factors that could be associated with the number of positive experiences. Adjustment covariates included sex, age group, employment status, education, income, Canadian born, cultural group, and whether children under 18 years were living in the household. The unit of observation in the regression models was the patient. By study design, there were multiple patients from each physician practice, so the non-independent effects of multiple respondents within practices were accounted for by using a random effects model (32). A random effects model adjusts the standard errors to reflect the clustering of observations within each level (i.e. family practice). Separate regression models were performed using the count of positive experiences reported within each dimension of primary care and overall to help gain an understanding of whether team-based care was associated with the experiences of patients.

# RESULTS

## PHYSICIAN CHARACTERISTICS

A total of 59 family physicians and 636 patients participated in the Nova Scotia component of the QUALICOPC Canada study. Almost all (n=58) family physicians completed the Practice Survey where information gathered included a report of the number of disciplines working within the practice. Based on these results, 31 practices (53 per cent) were identified as being “team-based.” Table 1 summarizes physician age and sex by whether their practice is team or non-team based. Physicians working in a non-team practice tended to be older than those in team-based practices. Seventy-one per cent of family physicians working in non-team practices were 55 years of age and older compared to 39 per cent involved with team-based care. Significantly, more physicians aged 65 years and older worked in a non–team-based practice. There was no statistical difference between team and non-team practices and physician sex.

**Table 1: Physician characteristics by team-based care**

	Team-based Care	
	Team (n=31)	Non-team (n=28)
<b>AGE GROUP</b>		
<=34	2 (6.5%)	–
35-44	7 (22.6%)	4 (14.3%)
45-54	9 (29.0%)	4 (14.3%)
55-64	9 (29.0%)	11 (39.3%)
>= 65	3 (9.7%)	9 (32.1%)*
Missing	1 (3.2%)	–
<b>SEX</b>		
Male	17 (54.8%)	16 (57.1%)
Female	14 (45.2%)	12 (42.9%)
Missing	–	–

\*Statistically different at the  $p < 0.05$  level

## PATIENT CHARACTERISTICS

Of the 636 participating patients, 92 responded to the Patient Values Survey and ranked the importance of various aspects of primary care. Five hundred forty-four reported their primary care experience that day by completing the Patient Experiences Survey. Table 2 summarizes the characteristics of patients completing each survey by whether or not their practice provided team-based care. Overall, patient profiles are similar between respondents associated with team and non-team practices for each survey. No statistically significant differences were found among those who completed the Patient Values Survey. However, patients who responded to the Patient Experiences Survey and were associated with a team-based practice were more likely to report having some post-secondary education (63.7 per cent versus 52.3 per cent) and an income that was below average (22.3 per cent versus 15 per cent).

**Table 2: Characteristics of patients responding to each survey by team-based care**

	Patient Values Survey (Importance of aspects of primary care) (n=90)		Patient Experiences Survey (n=533)	
	Team (n=43)	Non-team (n=47)	Team (n=273)	Non-team (n=260)
<b>AGE GROUP</b>				
<=34	3 (7.0%)	4 (8.5%)	30 (14.3%)	27 (10.4%)
35-44	5 (11.6%)	6 (12.8%)	23 (8.4%)	25 (9.6%)
45-54	11 (25.6%)	9 (19.2%)	57 (20.9%)	58 (22.3%)
55-64	8 (18.6%)	12 (25.5%)	64 (23.4%)	49 (18.9%)
>= 65	15 (34.9%)	11 (23.4%)	82 (30.0%)	87 (33.5%)
Missing	1 (2.33%)	5 (10.6%)	8 (2.9%)	14 (5.4%)
<b>SEX</b>				
Male	13 (30.2%)	12 (25.5%)	80 (29.3%)	86 (33.1%)
Female	30 (69.8%)	34 (72.3%)	188 (68.9%)	168 (64.6%)
Missing	–	1 (2.1%)	5 (1.8%)	6 (2.3%)
<b>CANADIAN BORN</b>	41 (95.4%)	43 (91.5%)	256 (93.8%)	241 (93.7%)
<b>ABORIGINAL</b>	0 (0%)	0 (0%)	20 (7.3%)	21 (8.1%)
<b>CHILD IN HOUSEHOLD</b>	13 (30.2%)	15 (31.9%)	65 (23.8%)	62 (23.9%)
<b>EMPLOYED</b>	38 (88.4%)	43 (91.5%)	244 (89.4%)	230 (88.5%)
<b>SOME POST-SECONDARY EDUCATION</b>	32 (74.4%)	31 (66.0%)	174 (63.7%)	136 (52.3%)*
<b>BELOW-AVERAGE INCOME</b>	11 (25.6%)	5 (10.6%)	61 (22.3%)	39 (15.0%)*

\*Statistically different at the  $p < 0.05$  level

# IMPORTANCE OF PRIMARY CARE DIMENSIONS OF CARE

Table 3 presents the proportion of respondents who ranked the various dimensions of primary care as being “very important” averaged across all aspects included in each. All patients ranked the dimensions of Communication and Patient Centredness as most important, and Access the lowest. Although a greater proportion of patients associated with team-based care practices ranked each dimension as “very important” than those with non-team practices, the difference was not statistically significant. The ranked order of the 56 aspects of primary care that form each dimension and the proportion of patients who ranked each as “very important” by team-based care is in Appendix A.

**Table 3: The average proportion of patients rating each dimension of primary care as “very important,” all and by team-based care**

Dimension of Primary Care	Team-based Care					
	All <sup>1</sup> (n=90)		Team (n=43)		Non-team (n=47)	
	per cent	rank	per cent	rank	per cent	rank
<b>COMMUNICATION AND PATIENT CENTREDNESS</b>	55.7%	1	58.5%	1	53.2%	1
<b>PATIENT ACTIVATION</b>	49.1%	2	51.7%	2	46.8%	3
<b>CONTINUITY AND COORDINATION</b>	48.7%	3	50.7%	3	46.9%	2
<b>ACCESS</b>	39.5%	4	44.2%	4	35.1%	4

<sup>1</sup> Excludes two Patient Values Survey observations where information pertaining to team-based care was not available for their associated practice

## PATIENT EXPERIENCE OF CARE

In total, 53 patient experience statements/questions were mapped into one of the four dimensions of primary care. The Continuity and Coordination dimension and the Communication and Patient Centredness dimensions included 19 questions each; the Access dimension, 9; and Patient Activation, 6. Overall, 90.4 per cent of all patient responses to all questions were positive. Patients associated with team-based care practices reported more positive experiences (91.2 per cent) compared to those with non-team practices (89.5 per cent).

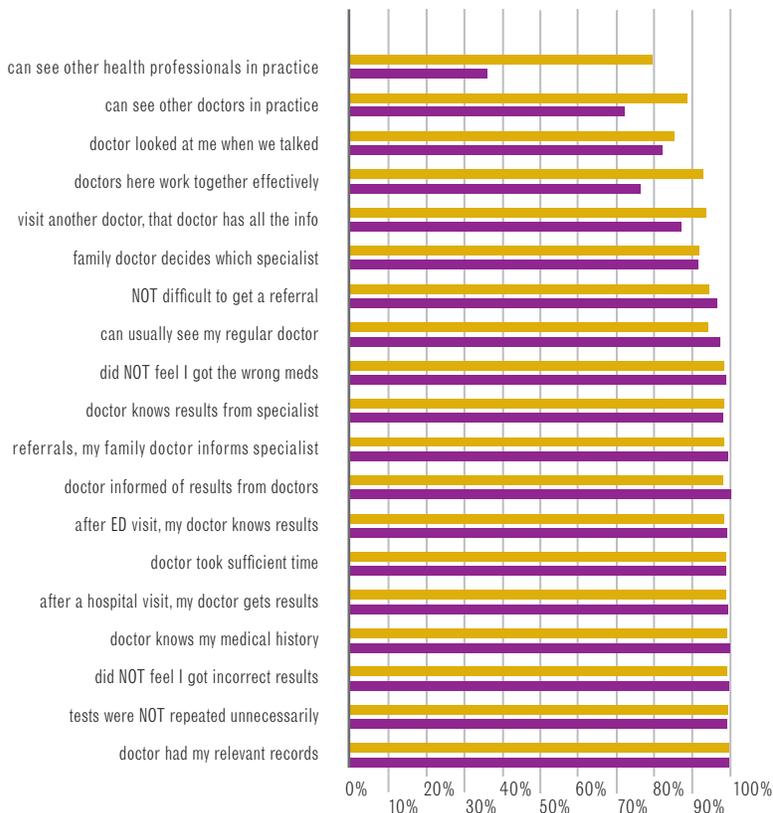
Figures 1 to 4 illustrate the proportion of patients who reported a positive experience to individual statements/questions associated with each of the four dimensions of primary care by whether or not their practice provided team-based care. Tables B1 to B4 in Appendix B provide the individual proportions. For the most part, the pattern of positive experiences is similar between the two practice groups. However, notable differences were found with respect to 7 of the 53 questions. Compared to patients receiving care from a non-team-based setting, a significantly greater proportion of patients associated with team-based care practices reported positive experiences on 6 of these 7 questions:

- Four Continuity and Coordination dimension questions
  - If I visit another doctor at this practice, that doctor has sufficient information
  - Different doctors at this practice work together effectively
  - I can see other doctors in this practice if my doctor is not available
  - I can see other health professionals in this practice without seeing a doctor
- Two questions targeting Access
  - There is a formal agreement/understanding that this doctor is my primary care physician
  - It is not too difficult to see a family doctor from this practice in evenings or weekends

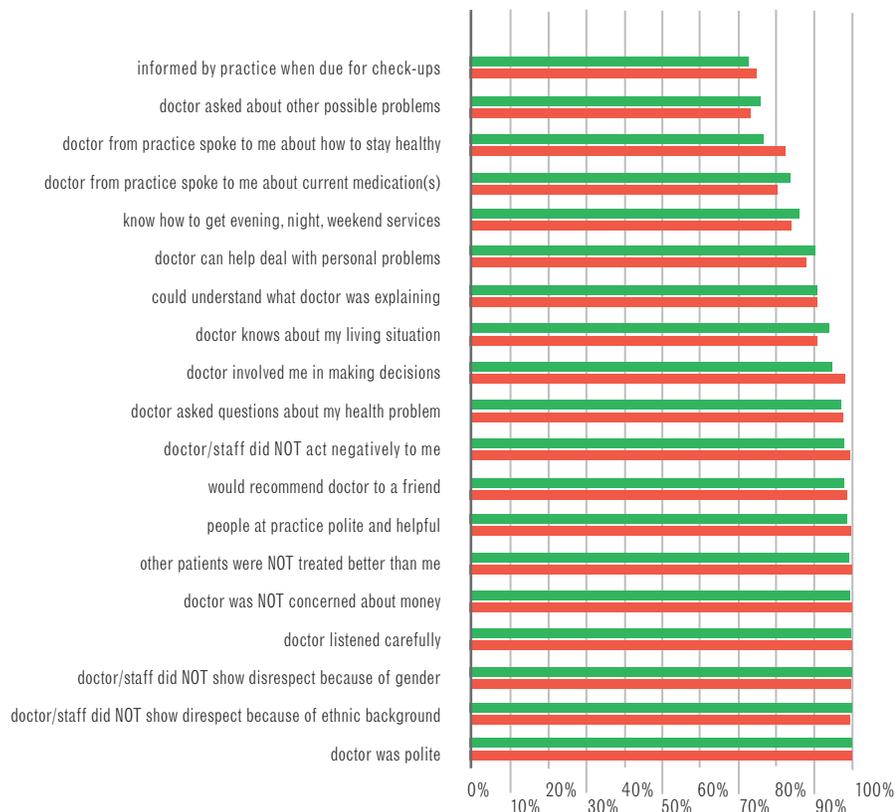
In one instance, a significantly greater portion of patients receiving care from a non-team setting reported positive experiences than patients associated with team-based.

- Communication and Patient Centredness
  - The doctor involved me in making decisions

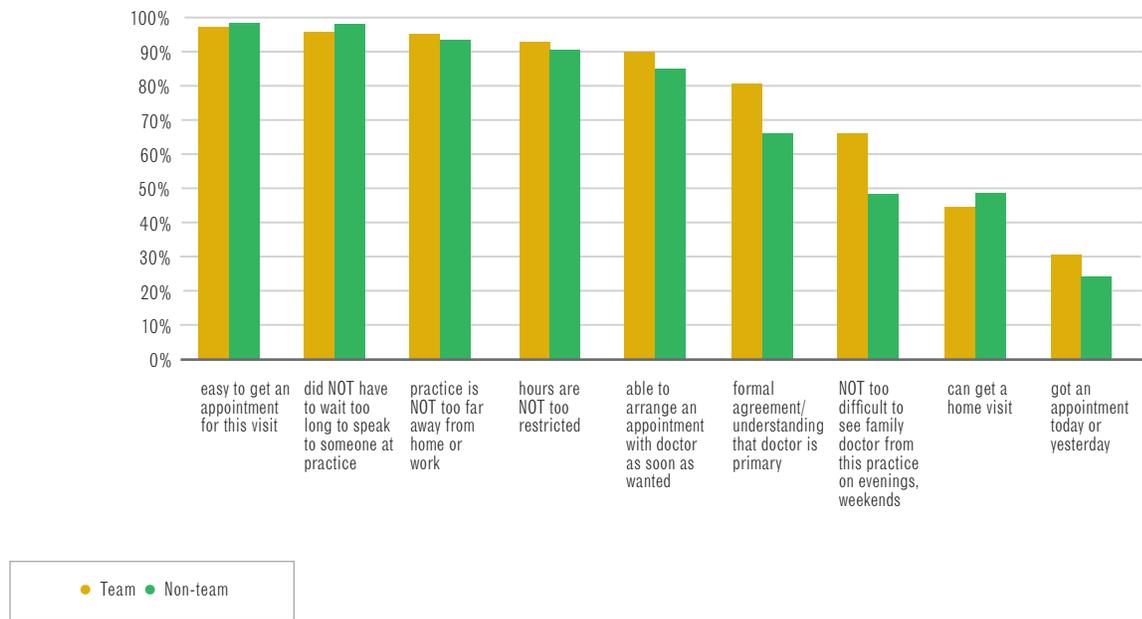
**Figure 1:**  
**Positive Experiences — Continuity and Coordination Dimension — team/non-team**



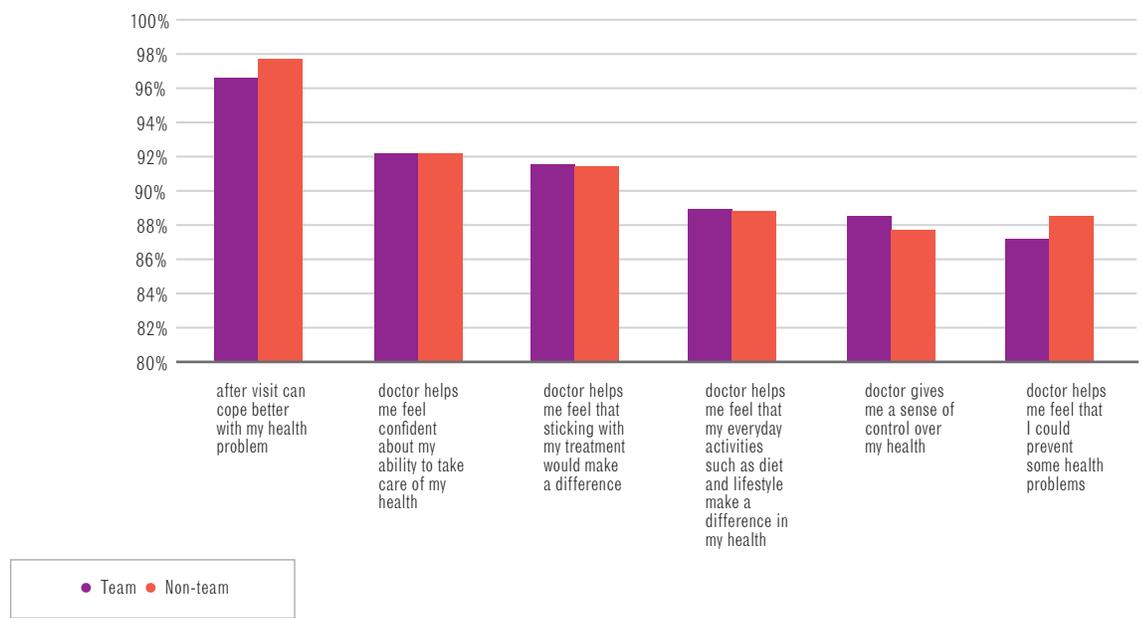
**Figure 2:**  
**Positive Experiences — Communication and Patient Centredness Dimension — team/non-team**



**Figure 3: Positive Experiences —  
Access Dimension — team/non-team**



**Figure 4: Positive Experiences —  
Patient Activation Dimension — team/non-team**



## POSITIVE EXPERIENCES ACROSS ALL DIMENSIONS OF PRIMARY CARE

Table 4 presents results of the regression analysis that tested whether patients in a team-based practice were more likely to report a higher number of positive experiences across all dimensions of primary care compared to those in a non-team setting. Incident rate ratios (IRR) and 95 per cent confidence intervals (95% CI) of reporting positive experiences, with and without adjustments for patient characteristics and other factors, are shown. Results indicate patients in a team-based practice were more likely to report a higher number of positive experiences. With and without adjusting for other factors, those in a team-based practice were 4 per cent more likely to report positive experiences (IRR 1.04; 95% CI 1.00–1.07).

**Table 4: Unadjusted and adjusted incidence rate ratio of reporting positive experiences across all dimensions of primary care (53 statements/questions asked)**

VARIABLE	Incidence Rate Ratio (95% confidence interval)	
	<i>Unadjusted</i>	<i>Adjusted</i>
<b>TEAM-BASED CARE (VS NON-TEAM PRACTICE)</b>		
<i>Yes</i>	1.04 (1.00–1.07) *	1.04 (1.01–1.07) *
COVARIATES		
<b>SEX (VS FEMALE)</b>		
<i>Male</i>	–	0.99 (0.96–1.02)
<b>AGE GROUP (VS &gt;= 65 YEARS)</b>		
<i>&lt;34</i>	–	0.93 (0.89–0.98) †
<i>35-44</i>		0.96 (0.91–1.01)
<i>45-54</i>	–	0.96 (0.92–1.00) *
<i>55-64</i>	–	0.98 (0.94–1.02)
<b>EMPLOYMENT STATUS (VS NOT EMPLOYED)</b>		
<i>Employed</i>	–	1.06 (1.01–1.11) *
<b>HIGHEST LEVEL OF EDUCATION</b>		
<i>Post-secondary Education</i>	–	1.01 (0.98–1.04)
<b>AVERAGE INCOME (VS AVERAGE OR ABOVE-AVERAGE)</b>		
<i>Below-average Income</i>	–	1.00 (0.96–1.03)
<b>CANADIAN BORN (VS NO)</b>		
<i>Yes</i>	–	0.99 (0.93–1.06)
<b>CULTURAL GROUP (VS NON-ABORIGINAL)</b>		
<i>Aboriginal</i>	–	1.01 (0.96–1.07)
<b>CHILDREN UNDER 18 YEARS IN HOUSEHOLD (VS NO)</b>		
<i>Yes</i>	–	1.02 (0.99–1.06)

\* $p < 0.05$ ; † $p < 0.01$  level of significance

## **PATIENT-REPORTED POSITIVE EXPERIENCES WITHIN A TEAM-BASED PRACTICE BY EACH DIMENSION OF PRIMARY CARE**

Table 5 summarizes the results of the examination of patient-reported positive experiences within a team-based practice for each dimension of primary care. A statistically significant difference was indicated only within the Continuity and Coordination dimension. Patients associated with a team-based care practice reported more positive experiences at a rate of 11 percent higher than those with a non-team practice for both adjusted (adj) and unadjusted models (adjIRR 1.11; 95% CI 1.06–1.17). Results also indicate that among all patients, age and employment status were significantly associated with the report of a higher number of positive experiences. Compared to patients aged 65 years and older, those younger than 55 years of age were significantly less likely to feel their experiences were positive after controlling for all other factors in the model. Patients under the age of 34 were 17 per cent less likely to report positive experiences (adjIRR 0.83; 95% CI 0.76–0.90), while those 35 to 44 years were 10 per cent less likely (adjIRR 0.90; 95% CI 0.82–1.0), and the likelihood of patients 45 to 54 years of age was 7 per cent less (adjIRR 0.93; 95% CI 0.87–1.00). After controlling for other factors in the model, the expected number of reporting positive primary care experiences was 11 per cent higher among patients who were employed versus those who were not (adjIRR 1.11; 95% CI 1.02–1.21).

**Table 5: Unadjusted and adjusted incidence rate ratios of patient-reported positive experiences within a team-based practice, by each dimension of primary care**

VARIABLE	Dimensions of Primary Care							
	Continuity and Coordination		Communication and Patient Centredness		Access		Patient Activation	
	Incidence Rate Ratio (95% confidence interval)							
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
<b>TEAM-BASED CARE (VS NON-TEAM PRACTICE)</b>								
Yes	1.11 <sup>‡</sup> (1.05–1.17)	1.11 <sup>§</sup> (1.06–1.17)	0.99 (0.76–1.30)	0.99 (0.74–1.31)	0.99 (0.76–1.30)	1.06 (0.66–1.70)	1.0 (0.62–1.61)	0.99 (0.61–1.62)
<b>COVARIATES</b>								
<b>SEX (VS FEMALE)</b>								
Male	–	0.99 (0.94–1.04)	–	0.99 (0.72–1.35)	–	1.00 (0.59–1.69)	–	1.01 (0.59–1.74)
<b>AGE GROUP (VS ≥ 65 YEARS)</b>								
<34	–	0.83 <sup>§</sup> (0.76–0.90)	–	0.98 (0.61–1.59)	–	0.99 (0.44–2.23)	–	0.99 (0.43–2.28)
35–44	–	0.90 <sup>*</sup> (0.82–1.00)	–	0.98 (0.55–1.74)	–	0.99 (0.38–2.59)	–	1.01 (0.37–2.71)
45–54	–	0.93 <sup>*</sup> (0.87–1.00)	–	0.98 (0.65–1.49)	–	0.96 (0.47–1.95)	–	0.97 (0.47–2.02)
55–64	–	0.97 (0.91–1.04)	–	0.99 (0.67–1.47)	–	0.98 (0.50–1.90)	–	0.97 (0.49–1.94)
<b>EMPLOYMENT STATUS (VS NOT EMPLOYED)</b>								
Employed	–	1.11 (1.02–1.21) <sup>*</sup>	–	1.04 (0.64–1.71)	–	1.04 (0.45–2.39)	–	1.04 (0.44–2.47)
<b>HIGHEST LEVEL OF EDUCATION</b>								
Post-secondary Education	–	0.98 (0.93–1.03)	–	1.03 (0.76–1.39)	–	1.02 (0.61–1.70)	–	1.04 (0.62–1.77)
<b>AVERAGE INCOME (VS AVERAGE OR ABOVE-AVERAGE)</b>								
Below-average Income	–	1.02 (0.96–1.08)	–	1.01 (0.70–1.45)	–	0.98 (0.53–1.82)	–	0.95 (0.50–1.80)
<b>CANADIAN BORN (VS NO)</b>								
Yes	–	0.98 (0.88–1.09)	–	0.99 (0.52–1.87)	–	1.01 (0.34–3.03)	–	1.02 (0.33–3.17)
<b>CULTURAL GROUP (VS NON-ABORIGINAL)</b>								
Aboriginal	–	1.02 (0.96–1.10)	–	1.02 (0.62–1.70)	–	0.95 (0.39–2.29)	–	1.02 (0.42–2.49)
<b>CHILDREN UNDER 18 YEARS IN HOUSEHOLD (VS NO)</b>								
Yes	–	1.06 (1.00–1.13)	–	1.00 (0.69–1.45)	–	0.99 (0.53–1.86)	–	0.99 (0.52–1.89)

\* $p < 0.05$ ; <sup>‡</sup> $p < 0.001$ ; <sup>§</sup> $p < 0.0001$  level of significance

# DISCUSSION

In this study we examined whether the perspective of patients receiving care from Nova Scotia primary care team-based care practices differed from that of patients receiving non-team-based care. The perspectives considered included how they ranked various aspects of primary care that, when combined, formed four dimensions (Communication and Patient Centredness, Patient Activation, Continuity and Coordination, and Access), as well as their patient-reported experience of care associated with each of these dimensions.

Results indicate that team-based care in Nova Scotia is not substantially associated with how patients rank or attribute the importance of the various aspects or dimensions of primary care. However, findings suggest that patients associated with team-based care practices tend to have a more positive perception of the care experience, particularly with respect to care experiences that form the Continuity and Coordination dimension.

Overall, patients with team-based care practices reported up 4 per cent more positive experiences across all dimensions of primary care compared to those associated with non-team practices. Following adjustment for patient characteristics, the overall likelihood of reporting team-based positive experiences remained at 4 per cent. This suggests the difference in experience between those in a team-based setting and those who are not is stable across patients with varying characteristics and circumstances. In this instance, age and employment status were the major factors influencing the overall perception of the team-based care experience. Patients younger than 65 years of age, in particular those less than 35 years, 7 per cent fewer report positive team-based care experiences, after accounting for other patient characteristics in the model. In contrast, patients who were employed, after controlling for age and other factors, reported 6 per cent more likely to report positive experiences. But, overall, after controlling or adjusting for all patient characteristics, those experiencing team-based care were 4 per cent more likely to report positive care experiences.

The examination of patient perception of care experience by the four dimensions of primary care reveal differences in overall team-based care are primarily due to positive experiences of care that form the Continuity and Coordination dimension. The likelihood of patients reporting a higher number of positive care experiences was 11 per cent higher among team-based practice patients than those from non-team practices. Although the influence of age and employment status was significant, their overall effect, combined with other characteristics in the model, did not result in a change in this estimate. It is not surprising that

questions garnering more positive results by team-based practice patients forming part of the Continuity and Coordination dimension centred on the ability to see other providers in the practice; the knowledge that when they saw a different provider, that provider had sufficient information about them; and a perception that the different doctors in the practice worked together effectively.

Patients receiving team-based care were also more positive about their ability to see a family doctor from their practice in the evenings or weekends. Although this question formed part of the Access dimension, we suggest it may also reflect their ability to see other providers in the same practice, a question associated with the Continuity and Coordination dimension as noted above. This finding supports results by Jesmin et al (33) who, using information from the 2007–08 Canadian Survey of Experiences with Primary Health, found patients with team-based care practices reported significantly greater access to after-hours care. However, Jesmin et al (33), also reported greater involvement in decision making among team-based care patients whereas the results from this study indicate greater decision-making involvement among patients with non-team practices.

A patient's receipt of team-based care did not significantly influence their ranking of how important the various aspects of primary care that form the four dimensions of primary care were to them. However, it is important to note that patients associated with practices providing team-based care ranked each dimension more highly than those associated with non-team practices. For instance, patients with team-based care practices ranked the Access dimension higher by 9 per cent. The relatively low sample size for the Patient Values Survey may have contributed to the inability to determine statistical differences.

Overall, providers in non-team practices were older: over 70 per cent of these providers were at least 55 years and older. Given the arrival of team-based care in Nova Scotia is relatively new, this is not surprising. What is somewhat surprising is that patients associated with these non-team practices did not differ from those associated with practice teams with respect to age and most other characteristics. Exceptions pertained to those who responded to the Experience of Care Survey, who tended to be better educated but a lower income. Why this is so, given the similarities between the groups such as age, employment status, and children in the home, is not known.

## LIMITATIONS

Primary care practice models are currently in a transition phase in Nova Scotia. As the traditional patient-doctor model of care shifts to a more team-based approach, the formation of collaborative interdisciplinary teams has differed. Any one team can include varying numbers and types of health professionals, such as physicians, nurse practitioners, family practice nurses, paramedics, midwives, and/or mental health workers (34). How the team works together can also vary. They could be in a community health centre, a collaborative care clinic, or collaborative emergency centre. Because of this variability and the relatively small number of practices taking part in the study, it was necessary to create a relatively crude measure of team-based care where, at a minimum, a physician, receptionist, and any type of nurse, including a nurse practitioner, worked together to enable our ability to make adjustments for patient characteristics. As such, it is possible that combining practices that meet the minimum requirement for team-based care with teams that include a larger number of disciplines working together collaboratively would have moderated the positive experiences outcome associated with team practices.

Potentially the most substantial limitation to this study arises from the representativeness of the sample. Two notions of representativeness need to be considered. The first is whether the survey respondents are representative of all citizens in Nova Scotia seeking primary care, and the second is whether those participating are representative of patients who generally attend primary care family practices in Nova Scotia. Although a survey sample is meant to represent a study population, to ensure results are generalizable to the population as a whole, in this study, participants were selected from patients who were at their family physician's office. These individuals, therefore, not only have a family doctor, but also have been for a visit at least once over the study period. In 2013, an estimated 15.5 per cent of Canadians ages 12 and older did not have access to a regular medical doctor (35). Because the QUALICOPC study design links patients to family physicians and practices, it dictates that the sample will not be representative of the overall population that have more variable access to a family doctor. With respect to the representativeness of patients who participated, the study sample was composed of a greater proportion of females and patients older than 55 years than the general population. Age and sex are factors that have been shown to be highly correlated with health and health-care utilization (36). Older individuals are generally more likely to see a family physician due to the associated decline in health status. Females tend to be the greater user of primary care and health services in general, and more likely to respond to surveys than males (37). Because of this, it is likely these survey results reflect the experiences of those most typically experiencing primary care in family physician/primary care offices.

# CONCLUSION

This report provides evidence to suggest that patients provided care within a team-based practice are perceiving early, albeit small, positive benefits from this model of care, in particular improved access to other providers in the practice and after-hours care. Greater benefit may be found with further evaluation that allows for greater detailed definition of team-based care and larger sample sizes. For the future, it would be beneficial to build capacity for linkage of patient-reported experience outcome data with technical quality of clinical care, patient clinical outcome data, provider experience data, and costing information to provide a more complete picture of the association between models of care and outcomes.

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# APPENDIX

## APPENDIX A

The ranked order of the 56 aspects of primary care and the proportion of patients who ranked each as “very important” by team-based care.

TEAM		NON-TEAM	
<i>Doctor knows information about my medical history and health</i>	95.3%	<i>That I understand clearly what this doctor explains</i>	93.5%
<i>Doctor asks if I have understood everything</i>	95.3%	<i>Doctor asks if I have understood everything</i>	91.3%
<i>That I understand clearly what this doctor explains</i>	88.4%	<i>Doctor asks questions about my health problems</i>	87.2%
<i>Doctor asks questions about my health problems</i>	83.7%	<i>Doctor knows info about my medical history and health</i>	85.1%
<i>That the doctor takes me seriously</i>	79.1%	<i>Doctor has my relevant medical records at hand</i>	78.3%
<i>I'm honest, not embarrassed, talking about my health problems</i>	79.1%	<i>Doctor involves me in making decisions about treatment</i>	71.7%
<i>Clear instructions what to do when things go wrong</i>	79.1%	<i>I cope better with health problems/illness after visit</i>	71.7%
<i>Doctor involves me in making decisions about treatment</i>	76.7%	<i>Clear instructions what to do when things go wrong</i>	69.6%
<i>Treats me as a person not just as a medical problem</i>	74.4%	<i>That the doctor takes me seriously</i>	68.1%
<i>That the doctor understands me</i>	74.4%	<i>That the doctor understands me</i>	68.1%
<i>Doctor has my relevant medical records at hand</i>	72.1%	<i>That the doctor listens attentively</i>	66.0%

TEAM		NON-TEAM	
<i>That the doctor listens attentively</i>	72.1%	<i>That this doctor is polite</i>	65.2%
<i>I have an agreed-upon treatment</i>	69.8%	<i>I'm honest, not embarrassed, talking about my health problems</i>	63.8%
<i>I adhere to the agreed treatment</i>	69.0%	<i>Doctor gives me all test results</i>	63.0%
<i>I cope better with health problems/illness after visit</i>	67.4%	<i>I adhere to the agreed treatment</i>	63.0%
<i>Doctor asks me if I have any questions</i>	67.4%	<i>Treats me as a person not just as a medical problem</i>	61.7%
<i>I can get an appointment easily at this practice</i>	65.1%	<i>That this practice has extensive opening hours</i>	57.8%
<i>That I know which doctor I will see</i>	62.8%	<i>I can get an appointment easily at this practice</i>	57.4%
<i>Doctor makes me feel welcome by making eye contact</i>	62.8%	<i>Not prejudiced by my age, gender, religion, cultural background</i>	57.4%
<i>The doctor does not make me feel under time pressure</i>	62.8%	<i>I inform the doctor how the treatment works out</i>	57.4%
<i>I can see my regular doctor every time</i>	61.9%	<i>People at reception desk are polite and helpful</i>	56.5%
<i>That this practice has extensive opening hours</i>	60.5%	<i>I can see my regular doctor every time</i>	55.3%
<i>Doctor gives me all test results</i>	60.5%	<i>The doctor does not make me feel under time pressure</i>	55.3%
<i>Doctor knows when to refer me to a medical specialist</i>	59.5%	<i>Doctor asks about possible other problems</i>	54.3%
<i>Not prejudiced by my age, gender, religion, cultural background</i>	58.1%	<i>Psychosocial issues can be discussed if needed</i>	54.3%
<i>I am open about my use of other treatments</i>	58.1%	<i>That I know which doctor I will see</i>	52.3%
<i>Psychosocial issues can be discussed if needed</i>	58.1%	<i>I have an agreed-upon treatment</i>	52.2%
<i>I inform the doctor how the treatment works out</i>	58.1%	<i>I am open about my use of other treatments</i>	50.0%
<i>I can see another doctor if I think it is necessary</i>	58.1%	<i>Doctor makes me feel welcome by making eye contact</i>	47.8%
<i>I know how to get evening, night, and weekend services</i>	53.7%	<i>Doctor asks me if I have any questions</i>	47.8%
<i>That this doctor is polite</i>	53.5%	<i>That the doctor asks how I prefer to be treated</i>	46.8%
<i>Doctor asks about possible other problems</i>	53.5%	<i>Respectful during physical exam by not interrupting me</i>	46.8%
<i>Respectful during physical exam by not interrupting me</i>	51.2%	<i>I can see another doctor if I think it is necessary</i>	44.4%
<i>People at reception desk are polite and helpful</i>	48.8%	<i>I know how to get evening, night, and weekend services</i>	41.3%
<i>I tell doctor what I want to discuss in consultation</i>	48.8%	<i>Doctor knows when to refer me to a medical specialist</i>	39.1%

TEAM		NON-TEAM	
<i>That my appointment is on schedule</i>	42.9%	<i>Can bring a family member/friend to consultation</i>	34.8%
<i>That the doctor asks how I prefer to be treated</i>	42.9%	<i>I tell doctor what I want to discuss in consultation</i>	34.8%
<i>Doctor offers telephone or email if I have questions</i>	42.9%	<i>Doctor knows about my living situation</i>	32.6%
<i>Practice shares info about me with other providers</i>	39.5%	<i>Don't need to tell reception/nurse details before seeing doctor</i>	32.6%
<i>I am prepared to ask questions and take notes</i>	39.5%	<i>That my appointment is on schedule</i>	31.1%
<i>Important: Different providers within practice share my info</i>	38.1%	<i>I am prepared to ask questions and take notes</i>	30.4%
<i>Informed when due for check-ups, tests, or screening</i>	37.2%	<i>This practice is close to where I live or work</i>	29.8%
<i>Doctor avoids disturbances of the consultation</i>	37.2%	<i>Doctor prepared for visit by reading my medical notes</i>	28.3%
<i>Don't need to tell reception/nurse details before seeing doctor</i>	35.7%	<i>A strong (formal) agreement with one physician</i>	27.9%
<i>Aware of my personal, social, cultural background</i>	32.6%	<i>Important: Different providers within practice share my info</i>	25.0%
<i>Doctor informs me about reliable sources of information</i>	31.0%	<i>Practice shares info about me with other providers</i>	23.9%
<i>A strong (formal) agreement with one physician</i>	28.6%	<i>Short waiting time on the phone when I call practice</i>	23.4%
<i>I can see other doctors if mine is not available</i>	28.6%	<i>I can see other doctors if mine is not available</i>	23.3%
<i>Short waiting time on the phone when I call practice</i>	27.9%	<i>Informed when due for check-ups, tests, or screening</i>	21.7%
<i>This practice is close to where I live or work</i>	25.6%	<i>Prepared by keeping a symptom diary or preparing questions</i>	21.7%
<i>Doctor prepared for visit by reading my medical notes</i>	25.6%	<i>Doctor avoids disturbances of the consultation</i>	21.7%
<i>Can bring a family member/friend to consultation</i>	23.3%	<i>Doctor offers telephone or email if I have questions</i>	21.7%
<i>Doctor gives me additional info about my health problem</i>	23.3%	<i>Aware of my personal, social, cultural background</i>	21.3%
<i>Prepared by keeping a symptom diary or preparing questions</i>	20.9%	<i>Doctor informs me about reliable sources of information</i>	13.0%
<i>Doctor knows about my living situation</i>	18.6%	<i>I can see other healthcare professionals in this practice without seeing my doctor</i>	11.4%
<i>I can see other healthcare professionals in this practice without seeing my doctor</i>	14.3%	<i>Doctor gives me additional info about my health problem</i>	10.6%

## APPENDIX B

**Table B1: Continuity and Coordination Experiences**

EXPERIENCE QUESTION/STATEMENT	Positive Ratings Number (per cent)		
	All	Team	Non-team
<i>Doctor had my relevant records on hand</i>	99.6%	99.6%	99.6%
<i>Tests or examinations were NOT repeated unnecessarily</i>	99.4%	99.6%	99.2%
<i>I did not feel I got incorrect results</i>	99.4%	99.3%	99.6%
<i>The doctor knew important information about my medical history</i>	99.4%	99.6%	99.2%
<i>After a hospital visit, my doctor knows about the reason, treatment, and results</i>	99.4%	98.9%	100.0%
<i>The doctor took sufficient time</i>	99.0%	98.9%	99.2%
<i>After an emergency department visit, my doctor knows about the reason, treatment, and results</i>	98.9%	98.4%	99.4%
<i>If I visit another doctor at this practice, my own doctor is fully informed</i>	98.8%	98.1%	100.0%
<i>When I'm referred, my family doctor informs the specialist about my illness</i>	98.8%	98.3%	99.5%
<i>After a consultation with a specialist, my family doctor knows the results</i>	98.7%	99.2%	98.1%
<i>I did NOT feel I got the wrong medications</i>	98.7%	98.5%	98.8%
<i>I can usually see my regular doctor every visit</i>	96.0%	94.4%	97.7%
<i>It is NOT difficult to get a referral to a medical specialist</i>	95.9%	95.1%	96.7%
<i>When I'm referred, my family doctor decides to whom I should go</i>	91.6%	91.7%	91.5%
<i>If I visit another doctor at this practice, that doctor has sufficient information*</i>	90.8%	93.6%	86.7%
<i>Different doctors at this practice work together effectively<sup>§</sup></i>	86.2%	92.9%	77.4%
<i>The doctor looked at me when we talked</i>	84.5%	85.9%	83.0%
<i>I can see other doctors in practice if my doctor is not available<sup>§</sup></i>	81.6%	88.7%	73.0%
<i>I can see other health professionals in this practice without seeing doctor<sup>§</sup></i>	61.0%	80.0%	37.0%

\* $p < 0.05$ ;  $^{\S}p < 0.0001$  level of statistical significance

**Table B2: Communication and Patient Centredness**

EXPERIENCE QUESTION/STATEMENT	Positive Ratings Number (per cent)		
	All	Team	Non-team
<i>The doctor was polite</i>	100.0%	100.0%	100.0%
<i>The doctor listened carefully</i>	99.8%	100.0%	99.6%
<i>The doctor/staff did NOT show disrespect because of ethnic background</i>	99.8%	100.0%	99.6%
<i>The doctor/staff did NOT show disrespect because of gender</i>	99.8%	99.6%	100.0%
<i>The doctor was NOT too concerned about money</i>	99.8%	99.6%	100.0%
<i>Other patients were NOT treated better than me</i>	99.6%	99.1%	100.0%
<i>People at the practice are polite and helpful</i>	99.1%	98.9%	99.2%
<i>I would recommend this doctor to a friend</i>	98.5%	98.1%	98.8%
<i>The doctor/staff did NOT act negatively to me</i>	98.3%	97.4%	99.2%
<i>The doctor asked questions about my health problem</i>	97.1%	96.6%	97.6%
<i>The doctor involved me in making decisions*</i>	96.3%	94.6%	98.0%
<i>The doctor knows about my living situation</i>	92.3%	93.7%	90.8%
<i>I could understand what the doctor was trying to explain</i>	90.9%	90.9%	90.9%
<i>The doctor can also help deal with personal problems</i>	88.9%	90.0%	87.8%
<i>I know how to get evening, night, weekend services</i>	84.9%	85.8%	83.8%
<i>The doctor from this practice spoke to me about my current medications</i>	82.1%	83.8%	80.3%
<i>The doctor from this practice spoke to me about how to stay healthy</i>	79.5%	76.6%	82.4%
<i>The doctor asked about other possible problems</i>	74.3%	75.1%	73.5%
<i>I am informed by the practice when check-ups are due</i>	73.7%	73.0%	74.5%

\* $p < 0.05$  level of statistical significance

**Table B3: Access**

EXPERIENCE QUESTION/STATEMENT	Positive Ratings Number (per cent)		
	All	Team	Non-team
<i>It was easy to get an appointment for this visit</i>	97.0%	96.9%	97.1%
<i>I did not have to wait too long to speak to someone at the practice</i>	96.3%	95.5%	97.2%
<i>This practice is not too far away from home or work</i>	93.5%	94.2%	92.8%
<i>The hours are not too restricted</i>	91.0%	92.2%	89.7%
<i>I was able to arrange an appointment with the doctor as soon as I wanted</i>	86.8%	89.1%	84.4%
<i>There is a formal agreement/understanding that this doctor is my primary care physician<sup>§</sup></i>	72.7%	79.9%	65.2%
<i>It is not too difficult to see a family doctor from this practice in evenings or weekends<sup>‡</sup></i>	57.1%	65.9%	48.2%
<i>I can get a home visit</i>	46.2%	44.2%	48.2%
<i>I got this appointment today or yesterday</i>	27.5%	30.9%	24.0%

<sup>‡</sup> $p < 0.001$ ; <sup>§</sup> $p < 0.0001$  level of statistical significance

**Table B4: Patient Activation**

EXPERIENCE QUESTION/STATEMENT	Positive Ratings Number (per cent)		
	All	Team	Non-team
<i>After my visit, I can cope better with my health problem</i>	97.3%	96.7%	97.9%
Over the past 12 months, the person I saw at this practice:			
<i>Helped me feel confident about my ability to take care of my health</i>	92.3%	92.3%	92.3%
<i>Helped me feel that sticking with my treatment would make a difference</i>	91.6%	91.6%	91.5%
<i>Helped me feel that everyday activities such as diet and lifestyle make a difference in my health</i>	88.9%	89.0%	88.8%
<i>Gave me a sense of control over my health</i>	88.2%	88.6%	87.7%
<i>Helped me feel that I could prevent some health problems</i>	87.8%	87.2%	88.5%



**DALHOUSIE  
UNIVERSITY**

FACULTY OF MEDICINE  
Department of Family Medicine

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