

# Report

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## Final Evaluation of the Collaborative Care Demonstration Project (CCDP)



Submitted to:  
Pharmacy Association of Nova Scotia

Date: April 25, 2019  
FINAL REPORT

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# Executive Summary

## Introduction

The Collaborative Care Demonstration Project (CCDP) was intended to test a new model of collaborative care between family physicians and community pharmacists focused on supporting patients with chronic conditions. The project was developed and implemented by the Pharmacy Association of Nova Scotia (PANS), Doctors Nova Scotia (DNS), and the Nova Scotia Department of Health and Wellness (DHW) from 2017 to 2019. The work involves pharmacists and physicians working together to provide collaborative care to their shared patients. Participating pharmacists meet with both physicians and patients to support communication and patient care.

This report presents the findings from the final outcome evaluation of the CCDP (an interim evaluation was conducted in 2018). It discusses the evidence related to how well the CCDP achieved its short-term outcomes, including patient outcomes, physician and pharmacist outcomes, and health system outcomes, as well as the lessons learned in implementing the project. The findings are based on data from focus groups and interviews with participating pharmacists, physicians and project staff; patient and project data collected through an online portal (e.g., physician/pharmacist meetings, patient health data); and surveys conducted with participating patients and physicians.

## Findings: Project Activities

Twenty-three teams of physicians and pharmacists were selected to participate in the CCDP, including 23 physicians and 41 pharmacists (most physicians worked with two pharmacies). Over the course of the project six physicians and sixteen pharmacists left the project (attrition rates of 26% and 39% respectively) for a variety of reasons, including personal factors (e.g., job change, move) and because their partner physician/pharmacist was no longer participating.

A total of 448 patients were recruited by the end of the enrollment period (January 2018). After attrition, 317 patients completed the full 12 months of the CCDP. The majority of patients were between 56 and 85 years old. Almost all patients (90%) have hypertension and half (52%) have diabetes, while only 35% of patients have IHD and 17% COPD. Half of patients were identified as being obese (50%), but only 16% of patients have the risk factors of smoking and 14% non-adherence to medication.

Patients were supposed to have an initial enrollment appointment with the pharmacist as well as six in person follow up appointments. However, only about 40% of patients had at least five follow up visits in person recorded in the patient database, while about half had between one and four in person visits. In terms of meetings between pharmacists and physicians, 18 in person meetings were supposed to be conducted (six for an hour and 12 for 30 minutes). However, only about 10% of pharmacists reported the required 18 in person meetings, and about 30% reported at least 15 in person meetings. In addition to regular formal, in

person meetings to discuss CCDP patients, many evaluation participants also indicated that pharmacists and physicians communicated regularly in a more informal manner, such as by email, phone, fax, or text, to address specific concerns or questions about a patient.

Throughout the project, pharmacists provided many important supports to patients in the CCDP. Some of the key supports identified by evaluation participants included providing education and information on a variety of topics; spending time talking with patients and listening to their needs, questions and concerns; helping to coordinate the patient’s overall care in collaboration with the physician; and providing patients with motivation, accountability and support to achieve health goals such as healthier eating, weight loss, or smoking cessation.

### Outcomes: Patients

The CCDP achieved many positive outcomes for patients. These outcomes included:

Outcome	Evidence
<b>Increased knowledge of and comfort with medications</b>	<ul style="list-style-type: none"> <li>• Half of patients responding to the survey improved their understanding of and comfort with their medications.</li> <li>• Many patients and pharmacists noted increased understanding and comfort as an important outcome.</li> </ul>
<b>More effective use of and increased adherence to medications</b>	<ul style="list-style-type: none"> <li>• Many pharmacists and some patients discussed medication-related issues they were able to resolve during the CCDP.</li> <li>• Identified 884 Drug Related Problems (DRPs), an average of 3 DRPs/patient. 68% of these DRPs were resolved, improved, or partially improved.</li> <li>• 63% of the 40 patients where medication adherence was formally tracked showed improvements in adherence by the end of the project. 30% of these patients moved from medium to high adherence, and no patients had low adherence by the end of the project.</li> </ul>
<b>Improved ability of patients to self-manage their health</b>	<ul style="list-style-type: none"> <li>• Three quarters of physicians and half of patients responding to the surveys indicated that their/the patient’s ability to self-manage their health had improved through the CCDP.</li> <li>• The majority of patients reported that the CCDP helped them to both understand the changes needed to improve their health and then make these changes.</li> <li>• Many physicians, pharmacists and patients noted improved patient self-management as a key project success and indicated that patients became more engaged in their health care.</li> </ul>
<b>Improved short-term health outcomes</b>	<ul style="list-style-type: none"> <li>• Many physicians, pharmacists and patients indicated that they saw positive changes in patient health as a result of the CCDP. Almost three quarters of patients indicated that they felt their health had improved. Some examples of these positive changes are:               <ul style="list-style-type: none"> <li>○ <b>Improved management of diabetes:</b> the proportion of patients with their hemoglobin A1c in control (&lt;7.0%) increased from 33% to 39%, and the proportion out of control (&gt;9.0%) decreased from 16% to 9%. The percentage of patients with diabetes with good blood pressure control (&lt;130/80) also improved by 10 percentage points.</li> </ul> </li> </ul>

Outcome	Evidence
	<ul style="list-style-type: none"> <li>○ <b>Improved management of IHD:</b> The percentage of patients with IHD with good blood pressure control improved from 41% to 54%, and about half of these patients were able to reduce their levels of LDL and total cholesterol.</li> <li>○ <b>Improved management of hypertension:</b> The percentage of patients with hypertension with good blood pressure control improved from 34% to 48%, and about half of these patients were able to reduce their levels of LDL and total cholesterol.</li> <li>○ <b>Reduced risk of cardiovascular disease (CVD):</b> almost half of patients reduced their risk of CVD.</li> <li>○ <b>Lost weight:</b> 54% of patients that wanted to lose weight reported that they did this.</li> <li>○ <b>Improved eating habits:</b> 82% of patients that wanted to make a healthy eating change reported that they did this.</li> <li>○ <b>Improved management of COPD:</b> 40% of patients reported improved symptom control.</li> <li>○ <b>Reduced smoking or quit completely:</b> about 40% of patients who smoked at the beginning of the project reduced or quit smoking by the end.</li> <li>○ <b>Increased physical activity:</b> 56% of patients that wanted to increase their physical activity reported that they did this.</li> </ul>
<b>Increased patient satisfaction with care</b>	<ul style="list-style-type: none"> <li>● Patients on the survey reported high levels of satisfaction with the care received in the CCDP.</li> <li>● 86% of patient survey respondents indicated that they prefer the CCDP model to usual care.</li> </ul>
<b>Improved access to care</b>	<ul style="list-style-type: none"> <li>● 75% of patients responding to the survey agreed that they had better access to health care while they were participating in the CCDP.</li> <li>● 63% of physicians also felt access to care was improved for patients.</li> <li>● Some pharmacists said that patients appreciated the additional time they had in their appointments with the pharmacists to discuss health concerns and questions.</li> <li>● Some pharmacists specifically noted that patients seemed to feel more comfortable asking questions or raising sensitive health issues (e.g., sex, drug use) with the pharmacist.</li> </ul>

### Outcomes: Physicians and Pharmacists

Several key outcomes for physicians and pharmacists were identified:

- **Improved collaboration and communication:** Many physicians and pharmacists reported that the project helped to improve collaboration between them. In some cases, this improved collaboration has also extended to other providers and patients not part of the CCDP. Most physicians agreed that they are more likely to collaborate with pharmacists in the future. Almost all patients (98%) indicated that the doctor and pharmacist worked well together to coordinate care.
- **Increased pharmacist knowledge, skills and confidence:** Some pharmacists reported that their knowledge, skills and confidence in working collaboratively with physicians and managing patients with complex needs increased as a result of participating in the CCDP. Key contributing factors

included the education sessions at the beginning of the project, and the opportunity to practice their skills regularly with CCDP patients.

- **Strengthened relationships between pharmacists and patients:** Some pharmacists indicated that the project has helped them strengthen their relationships with participating patients and this will continue going forward.
- **Increased pharmacist work satisfaction:** A few pharmacists noted that the clinical work involved in the CCDP was very personally and professionally rewarding for them.
- **Portability of the CCDP model to other pharmacy settings:** Most pharmacists did not feel that the project as it was structured could be rolled out broadly to pharmacies across Nova Scotia. They cited challenges with integrating project work into pharmacy workflow and recruiting patients as two key barriers. Some potential changes that may improve the portability of the model are discussed in the Lessons Learned section.

## Outcomes: Health System

Outcomes relevant to the health system include:

- **Effectiveness of the CCDP model and efficiencies in health care utilization:**
  - Evaluation participants were quite positive about the quality of care provided by the CCDP and felt that the project helped to provide more comprehensive patient care and contributed to improving patient outcomes. Almost three-quarters of physicians were positive about the quality of care provided and indicated that the quality of care provided to participating patients had improved.
  - Although the CCDP improved patient care, most pharmacists and physicians felt that the model was not necessarily more efficient overall and did not save them time as health care providers.
  - Patient-reported health care utilization data suggests that patients in the CCDP reduced their use of other health care resources (emergency rooms and walk-in clinics): the proportion of patients reporting that they used an ER or walk-in clinic at least once decreased during the CCDP compared to before.
- **Increased awareness of the value that pharmacists provide:**
  - Almost all patients responding to the survey (97%) agreed that they were more aware of how pharmacists can help them with health care needs as a result of participating in the CCDP.
  - Physicians also reported improved levels of awareness (65%), understanding (71%), and trust (56%) in the care that pharmacists provide.

## Lessons Learned

The key lessons learned during implementation of the CCDP are grouped into six sections and described in the table below.

Area	Suggestions
<b>Identifying participating physicians and pharmacists</b>	<ul style="list-style-type: none"> <li>• Work with the whole pharmacy team rather than a single individual pharmacist to ensure broad support for the project and minimize disruption that may occur with staff changes.</li> <li>• Adjust the application process to assess the motivation and commitment of applicants (e.g., asking why they want to participate and/or how the pharmacy will manage the administrative and clinical work involved in the project).</li> </ul>
<b>Patient recruitment</b>	<ul style="list-style-type: none"> <li>• Complete a rigorous assessment to identify the number of potential participants as part of the application process.</li> <li>• Widen the patient selection criteria. Focus on patients who are struggling with their health (i.e., conditions that are not well-managed (to the extent pharmacies are aware of this), many medications, complex needs, etc.), not just those with specific conditions.</li> <li>• Have pharmacies identify the patients that seem to need the most help based on the knowledge that they have about the patient and/or with the input of the patient’s primary care provider then determine which providers to collaborate with, and allow pharmacies to work in collaboration with more than one provider.</li> <li>• Implement the model in areas where access to family physicians/nurse practitioners is more limited.</li> <li>• Work with patients that already have a relationship with the pharmacy and know the participating pharmacists.</li> <li>• Assess patient engagement and willingness to change as part of the patient selection process.</li> <li>• Assess the patient’s ability to follow through with appointments as part of the patient selection process (e.g., identify potential barriers such as transportation, mobility issues, lack of support, etc.).</li> </ul>
<b>Managing workload in the pharmacy</b>	<ul style="list-style-type: none"> <li>• Engage the whole pharmacy team to support the project (pharmacists, assistants/ technicians, front cash, etc.).</li> <li>• Ensure sufficient staffing is available in the pharmacy to cover the dispensing workflow and allow the pharmacist to focus on CCDP.</li> <li>• Using a shared calendar to book patient appointments and manage follow up.</li> <li>• Streamline/reduce the paperwork and use electronic systems to gather/share data wherever possible.</li> </ul>
<b>Pharmacist-physician communication</b>	<ul style="list-style-type: none"> <li>• Select pharmacist-physician teams that have a good pre-existing relationship and are physically located close to one another.</li> <li>• Do not require as many face-to-face meetings and allow more frequent brief communication (e.g., via phone, email, texting, etc.).</li> <li>• Provide a tool to track and share patient information electronically that both providers can use equally, ideally a shared electronic health record (EHR) for the patient. At a minimum, pharmacists need direct access to accurate, up-to-date and comprehensive results from lab tests from both public and private blood collection clinics.</li> </ul>
<b>Patient care</b>	<ul style="list-style-type: none"> <li>• Allow the period of time for patient follow up to be flexible and based on patient needs.</li> <li>• Provide pharmacists with more education on nutrition and physical activity, as well as supporting patient behaviour change as these are newer areas of focus for many pharmacists.</li> </ul>

Area	Suggestions
	<ul style="list-style-type: none"> <li>• Find ways to support patients in getting bloodwork completed. (e.g., have physicians requisitions available at the pharmacy).</li> <li>• Better support pharmacists with managing patient health information and patient care activities (e.g., provide templates, instruction on how to use pharmacy software for this purpose, etc.).</li> <li>• Explore a more structured model such as a shared clinic where the physician would see the patient right after the pharmacist.</li> <li>• Prioritize patient health needs (especially for complex patients) and focus the “easy” wins that help patients feel better quickly first.</li> </ul>
<b>Project management and supports</b>	<ul style="list-style-type: none"> <li>• The online chronic disease management training provided at the beginning of the project was quite helpful, and in general, online training seems to be preferred.</li> <li>• The resources and supports provided by PANS (e.g., group orientation, pharmacist portal and resources, etc.) seemed to be helpful and appreciated by pharmacists.</li> <li>• In longer projects such as this one, consider bringing participants together again to share successes and lessons learned in person at the mid-point of the project.</li> <li>• Develop and implement a data quality assurance process with clearly outlined tasks, timelines, and the individual(s) responsible.</li> </ul>

## Conclusion

The CCDP accomplished some positive outcomes for patients, health care providers, and the health system including improved patient self-management, better medication management, improved clinical outcomes, enhanced access to care, improved pharmacist-physician collaboration, and increased awareness of the value that pharmacists can provide in patient care. Many lessons were learned in the course of implementing this project that can help to address some of the challenges participating pharmacists and physicians faced and support effective physician-pharmacist collaboration in Nova Scotia.

# Introduction

## Project Overview

The Pharmacy Association of Nova Scotia (PANS), Doctors Nova Scotia (DNS), and the Nova Scotia Department of Health and Wellness (DHW) planned and implemented the Collaborative Care Demonstration Project (CCDP). The goal of the CCDP is to develop and test a new model of collaborative care between family physicians and community pharmacists focused on supporting patients with chronic conditions. The project was developed in 2015 and 2016, and recruitment of pharmacists and physicians took place from February to May 2017. Each physician was paired with up to two pharmacists, generally at two different pharmacies. Participating pharmacists received training on chronic disease management and developing care plans, and both pharmacists and physicians attended an orientation to introduce them to the project.

Patient recruitment took place from July 2017 to January 2018. During the patient recruitment process, pharmacists developed a care plan for each participating patient with the input of the patient and the physician. Throughout the project, pharmacists follow up with patients regularly (at least every two months) to support achievement of the care plan. Patient follow up every two months was conducted in person, and in between those visits, pharmacists checked in with patients by phone as needed. Pharmacists also met with the participating physician once a month to discuss patient status and any supports required to improve their patients' health and wellness. Patients remained in the intervention for 12 months, and the final patients completed their 12 months in January 2019. Following completion of the project, patients returned to usual care from their pharmacist and physician.

A Working Group was established to guide the project, including representatives from PANS, DNS, and DHW. The CCDP was also managed and supported by a Project Manager. In order to evaluate the implementation and outcomes of the CCDP, PANS engaged an independent evaluator, Research Power Inc. (RPI), to plan and conduct evaluation activities. RPI first developed a project logic model, an evaluation matrix that identified the indicators used to assess the project outputs and outcomes identified in the logic model, and associated data collection tools. RPI conducted an interim process evaluation as well as this final outcome evaluation of the CCDP.

## Interim Evaluation Findings

In March and April 2018 RPI conducted an interim process evaluation to describe the CCDP's participants (including physicians, pharmacists, and patients) and key project activities, and to assess and describe the successes, facilitating supports, challenges, and suggestions for improvement for the project at the interim point. Some of the key successes identified in the interim evaluation included positive changes for patients such as behaviour changes, improvements in clinical outcomes, health issues that were identified and

treated, and/or improvements to patient care such as medication changes; improved collaboration between pharmacists and physicians; stronger relationships with the patients enrolled in the CCDP and better knowledge about their health and wellbeing; increased understanding and recognition of the pharmacist role in care among physicians and patients; and increased enjoyment among pharmacists of their expanded clinical role. The interim evaluation also identified some challenges with the project and made recommendations for the CCDP as it continued to move forward, including:

- Continue to share pharmacy progress and strategies for managing time and workflow among participating pharmacies.
- Explore opportunities to enhance pharmacist-physician communication such as through a shared electronic platform for patient information.
- Provide clear direction on addressing health conditions other than the four identified as patient enrollment criteria (diabetes, hypertension, COPD and IHD).
- Provide additional training and support for pharmacists related to patient care such as tools/ resources or training on supporting behaviour change.
- Assess suggestions for adapting the CCDP online data portal to better meet recording needs and implement changes that are required and feasible.
- Continue to engage and communicate with external stakeholders about the work of the CCDP, including organizations represented on the CCDP Working Group (DNS, DHW) and other health care providers.
- Review and improve CCDP patient data collection with regular audits to ensure data is as complete as possible prior to the final evaluation.

## **Purpose of this Report**

This report presents findings from the final outcome evaluation of the CCDP, conducted after the project ended (January to March 2019). The report describes project participants (including physicians, pharmacists, and patients) and activities (e.g., meetings with patients and physicians). It discusses the evidence related to how well the CCDP achieved its short-term outcomes, including patient outcomes, physician and pharmacist outcomes, and health system outcomes. The report also discusses the lessons learned in implementing the project. The findings of this outcome evaluation will be used to inform effective physician-pharmacist collaboration going forward.

# Methodology

## Overview

This final evaluation of the CCDP draws on data from several data sources, including both qualitative and quantitative data. Sources of qualitative data include focus groups and interviews with participating pharmacists, physicians and project staff; patient and project data collected through an online portal; and surveys conducted with participating patients and physicians. A more detailed description of each data source is provided below.

## Interviews and Focus Groups

In order to gather feedback from project participants, both focus groups and interviews were conducted. Focus group and interview guides were developed to help ensure all areas of interest were addressed (see Appendix A for a copy of the guides). All focus groups and interviews were conducted by telephone. Focus groups took approximately one hour and interviews 15-30 minutes. All focus groups and interviews were audio-recorded and transcribed verbatim, with permission from participants, with the exception of the exit interviews; instead, detailed notes were taken during these interviews.

### ▀ Focus Groups with Pharmacists and the Project Team

Three focus groups were conducted with 17 participating pharmacists. All pharmacists that were still engaged with the CCDP were invited to participate. Four pharmacists participated in interviews instead of the focus groups, five pharmacists were unable to attend a focus group and provided written feedback instead, and two pharmacists did not participate or provide written feedback. One focus group was also conducted with members of the project team to gather their input.

### ▀ Physician and Pharmacist Interviews

In order to gain a more in-depth understanding of factors influencing successful participation in this project, six individual interviews were conducted with four pharmacists and two physicians. The physicians and two of the pharmacists were selected from participants that appeared to be more successful in completing project activities, while two other pharmacists were selected from participants that seemed to experience greater challenges participating in the project. Each interview was approximately 30 minutes.

## ▀ Exit Interviews

Exit interviews were conducted with pharmacists and physicians who initially joined the CCDP but were not able to continue. A total of 24 individuals (16 pharmacists and eight physicians) who left the project were invited to participate in an interview. Four interviews (three with pharmacists and one with a physician) were conducted as part of the interim evaluation in February 2018 and findings from those interviews were incorporated into the interim evaluation report. An additional five exit interviews were conducted as part of the final evaluation (two with pharmacists and three with physicians) and included in the findings of this report. Interviews were brief, approximately 15 minutes each.

## Data Portal

An online data portal was developed and implemented to allow pharmacists to record project information. Pharmacists reported patient data at baseline (when patients were enrolled) and at the end of the 12-month intervention. Pharmacists also logged patient visits and meetings with physicians in the online portal.

## Surveys

Two surveys were conducted at the end of this project, one with patients and one with physicians who participated in the project (copies of the surveys are provided in Appendix A). For the patient survey, pharmacists provided each of their participating patients with a paper copy of the survey to complete at the end of the 12-month intervention. Patients returned the completed surveys to the pharmacy in sealed envelopes and then the pharmacies mailed the surveys to PANS for data entry. The patient's health card number was noted on each survey so that survey results could be matched with patient data. A total of 215 surveys were received (a response rate of 68% of all patients who completed the project), including six surveys that did not include a health card number and could therefore not be matched to an existing CCDP patient.

Physicians participating in the CCDP were also invited to complete a survey. The physician survey was available online only. It was completed by all 17 physicians that participated in the full project.

## Data Analysis

The qualitative information collected through the evaluation (i.e., transcripts, notes, written feedback) was thematically analyzed, which involves identifying common themes across sources. Sources were first coded to reveal broader themes, as well as sub-categories that illuminate the data in ways not provided by the main themes. The themes and sub-categories were then compared and contrasted across data sources to further develop the themes and categories. Systematic comparisons and verifications ensure that important categories are not overlooked, and that emerging categories and concepts are properly identified. The analysis was completed using the qualitative software NVivo (version 10).

Verbatim quotes from transcripts and notes that illustrate a particular theme are provided after the description of the theme. The strength of response is reflected in the use of descriptors such as “many”, “some” and “a few”.

Quantitative data from the data portal and the patient and physician surveys was analyzed and is integrated into the report along with the qualitative findings. Descriptive statistics such as frequencies and means are reported where relevant. [Appendix C](#) (p. 64) provides the detailed data tables for all of the quantitative data included in this report.

## Limitations and Considerations

- Patient data (i.e., demographic data, clinical data, drug related problems, lifestyle goals, etc.) include only patients that participated in the full 12 months of the intervention. Clinical indicators only include those who had both baseline and follow up data available for the clinical measure of interest. Therefore, the number of patients included in each indicator varies across indicators according to the availability of data, and this is noted in the text or figures throughout the report.
- All responses to the patient survey that were received are included in the analysis, including the small number of surveys that could not be matched to a specific patient.
- This report includes descriptive statistics only, and not a detailed statistical analysis of the significance of changes over time. Therefore, the results should be interpreted with some degree of caution.

# Findings

## Project Participants and Activities

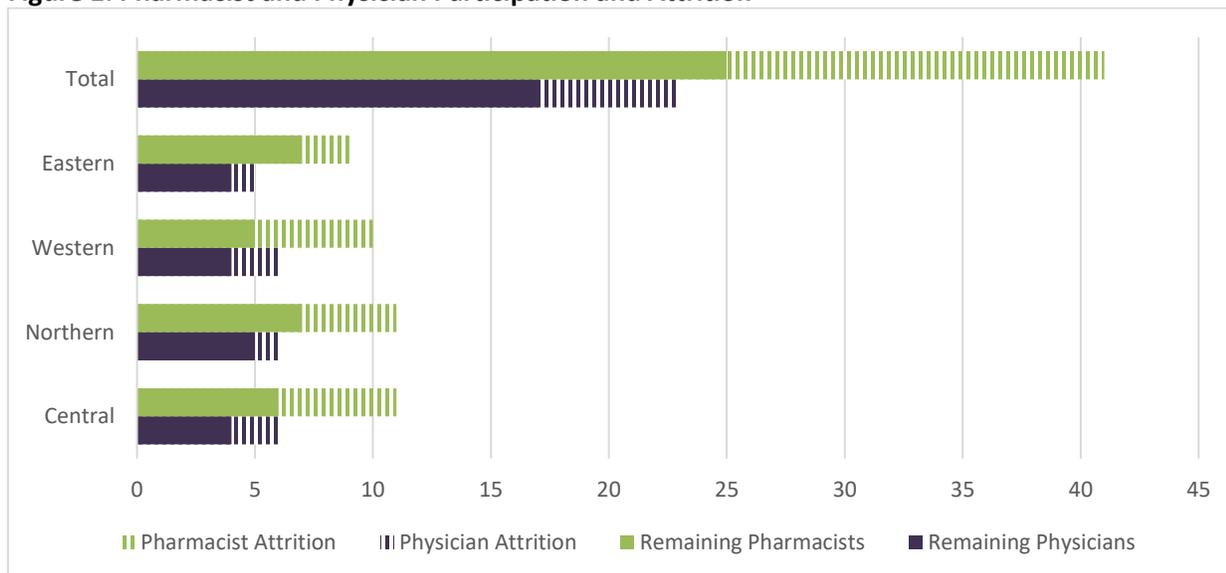
This section describes the pharmacists, physicians and patients participating in the CCDP.

### Pharmacists and Physicians

Twenty-three teams of physicians and pharmacists were selected to participate in the CCDP. This included 23 physicians and 41 pharmacists. While the intention was that each physician work with two different pharmacists, five physicians from smaller communities only had one pharmacist to work with in their area. In the initial recruitment, pharmacists and physicians were distributed fairly evenly across the four Nova Scotia Health Authority (NSHA) health management zones.<sup>1</sup> Of the 41 pharmacies that started the project, 17 (41%) were corporate pharmacies (Sobeys, Loblaws, Lawtons, Shoppers, Walmart) and the rest (59%, n=24) were independent/banner pharmacies.

Over the course of the project there was a high level of attrition of both physicians and pharmacists (see Figure 1).

Figure 1: Pharmacist and Physician Participation and Attrition



<sup>1</sup> Central Zone includes Halifax County and West Hants; Northern Zone includes East Hants and Colchester, Cumberland and Pictou counties; Western Zone includes Yarmouth, Shelburne, Digby, Queens, Annapolis, Lunenburg and Kings counties; Eastern Zone includes Guysborough, Antigonish, Richmond, Inverness, Victoria, and Cape Breton counties.

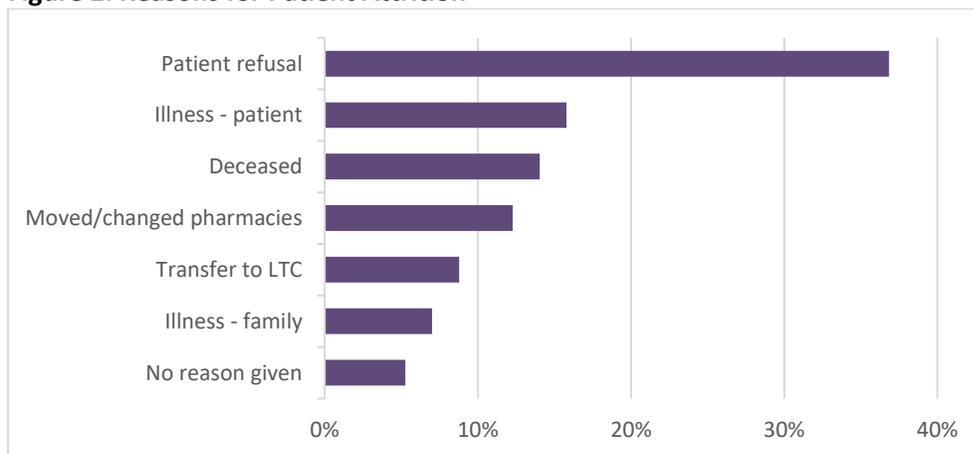
Six physicians and sixteen pharmacists left the project (attrition rates of 26% and 39% respectively). Because physicians and pharmacists worked in pairs, losing one part of the pair meant that the other participants could not continue either. One physician left because their only partnering pharmacist was no longer participating, and eight pharmacists left because their physician was no longer participating. The other reasons for leaving the project varied and included job changes, leaving the community (e.g., a physician moving to practice in another location), and other personal factors (e.g., illness, birth of a child). Attrition was higher in the Western and Central Zones.

## ▀ Patients

In order to participate in the CCDP, patients had to be registered with Nova Scotia Pharmacare and have either two specified chronic diseases (diabetes, ischemic heart disease (IHD), chronic obstructive pulmonary disease (COPD), hypertension) or one of the specified chronic diseases and one identified risk factor (obesity, smoking, or non-adherence to medication). Each physician-pharmacy team was expected to recruit 30 patients, 15 from each participating pharmacy. A total of 448 patients were recruited by the end of the enrollment period (January 31, 2018). Only about half of participating pharmacies (19 of 41) met the recruiting target of 15 patients, with 5 pharmacies dropping out early and recruiting no patients, and another 12 pharmacies that recruited fewer than 10 patients.

By the end of the project (January 31, 2019), 131 patients had left the project, an attrition rate of 29%. Over half of these patients (56%, n=74) left because their pharmacist or physician stopped participating in the project. The reasons for leaving of the remaining 57 patients are shown in Figure 2.

**Figure 2: Reasons for Patient Attrition**

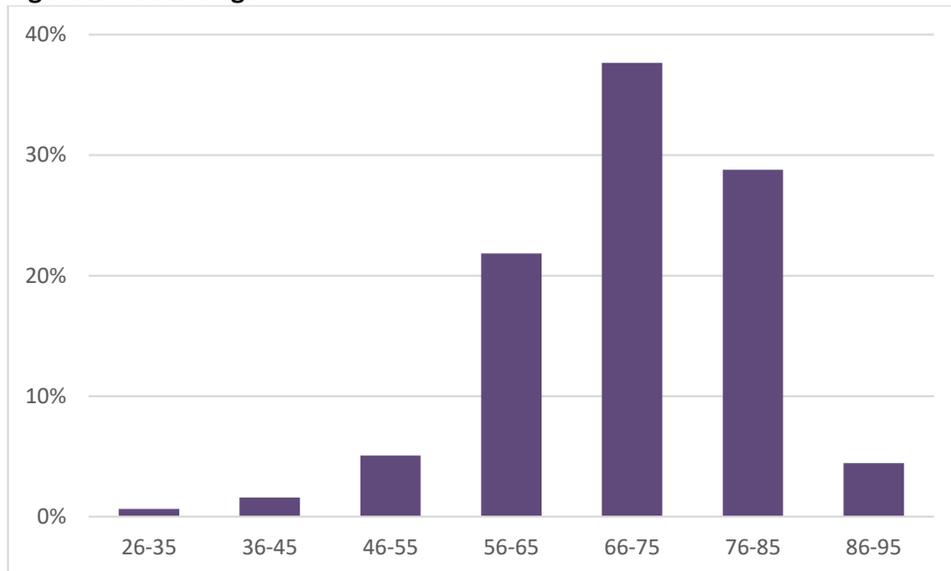


### **Patient Demographics**

Of the 317 patients that completed the full 12 months of the intervention<sup>2</sup>, patients were split evenly between men (50%, n=160) and women (50%, n=157). As seen in Figure 3, the majority of patients (89%, n=372 of 419) were between 56 and 85 years old, with 66-75 years old being the most common age category.

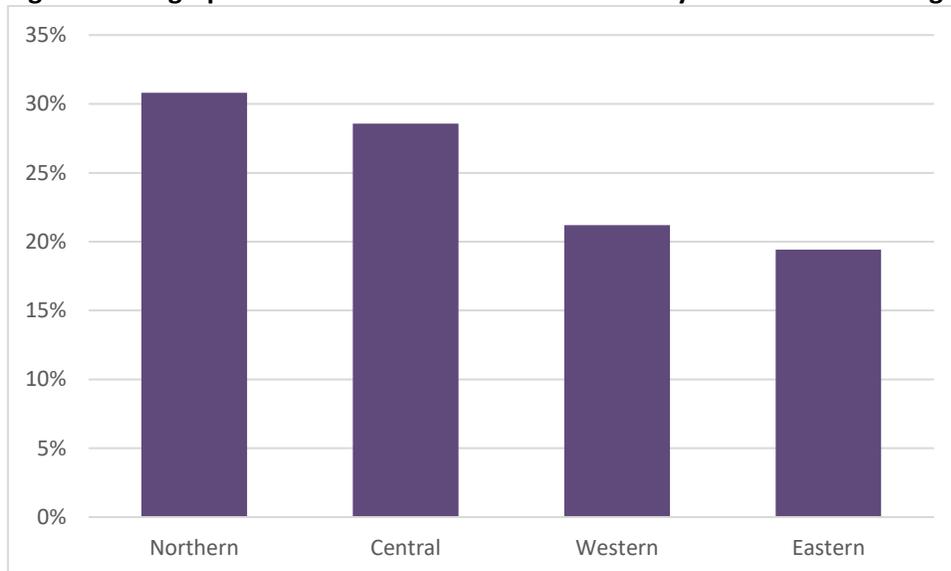
<sup>2</sup> Demographic data for all 448 patients enrolled in the project is provided in Appendix C: Data Tables (p. 23).

**Figure 3: Patient Age**



As seen in Figure 4, a slightly higher proportion of patients were from the Northern and Central Zones than Western and Eastern Zones.

**Figure 4: Geographic Distribution of Enrolled Patients by NSHA Health Management Zone**



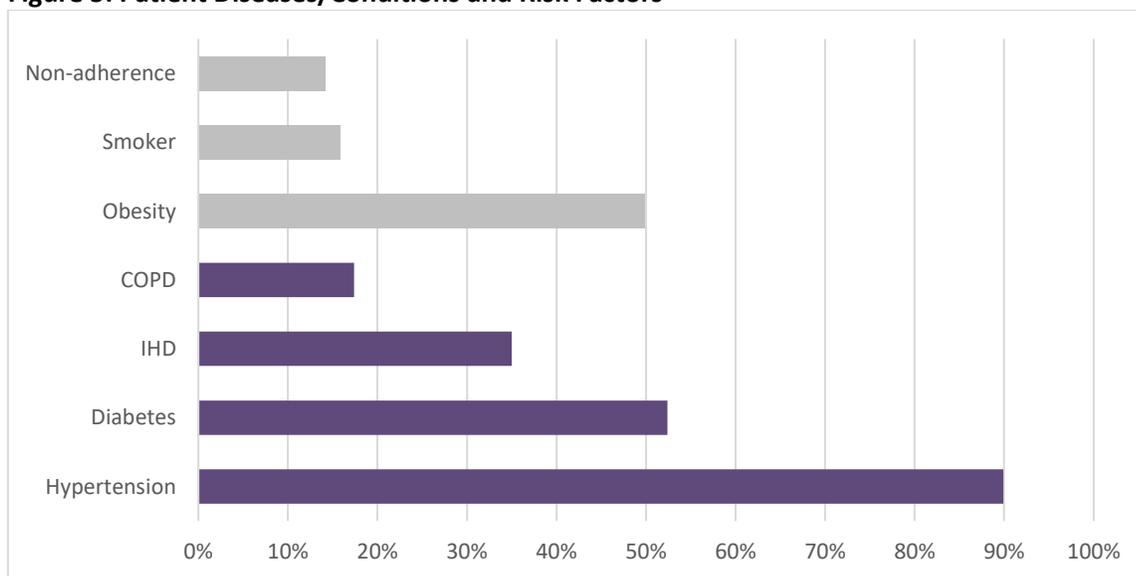
Patients who completed the patient survey<sup>3</sup> provided some additional demographic information on their location. Over half of patients (60%, n=112 of 190) reported that they live in a rural area, and the rest in an

<sup>3</sup> 197 of the 317 patients that completed the project completed patient surveys. A total of 215 surveys were received. See the data tables in Appendix C for more detailed information (p. 44).

urban area. The majority of patients were married or in a common-law relationship (61%, n=118 of 193), and in terms of their level of education, most patients (70%, n=135 of 194) had a high school diploma or less.

Figure 5 below shows the proportion of patients that completed the CCDP with each of the identified diseases/conditions or risk factors. Almost all patients (90%, n=285 of 317) have hypertension and 52% (n=166 of 317) have diabetes. Smaller proportions of patients have IHD (35%, n=111 of 317) or COPD (17%, n=55 of 317). Half of patients were identified as being obese (50%, n=158 of 317), while fewer patients have the risk factors of smoking (16%, n=50 of 317) or non-adherence to medication (14%, n=45 of 317). About three quarters of patients (76%, n=241 of 317) have at least two of the four identified diseases/conditions, most commonly hypertension and diabetes (49%, n=155 of 317). A small proportion of patients (16%, n=52 of 317) have three of the four diseases/conditions, and 1% (n=4 of 317) have all four conditions (diabetes, COPD, hypertension, and IHD).

**Figure 5: Patient Diseases/Conditions and Risk Factors**



Other health concerns were also identified for each patient (for example, osteoporosis, asthma, depression, allergies, sexual dysfunction, etc.). Most patients (84%, n=267 of 317) have at least one other health issue (other than the four conditions that are part of the patient enrollment criteria), and 23% of patients (n=74 of 317) have over 10 other health concerns.

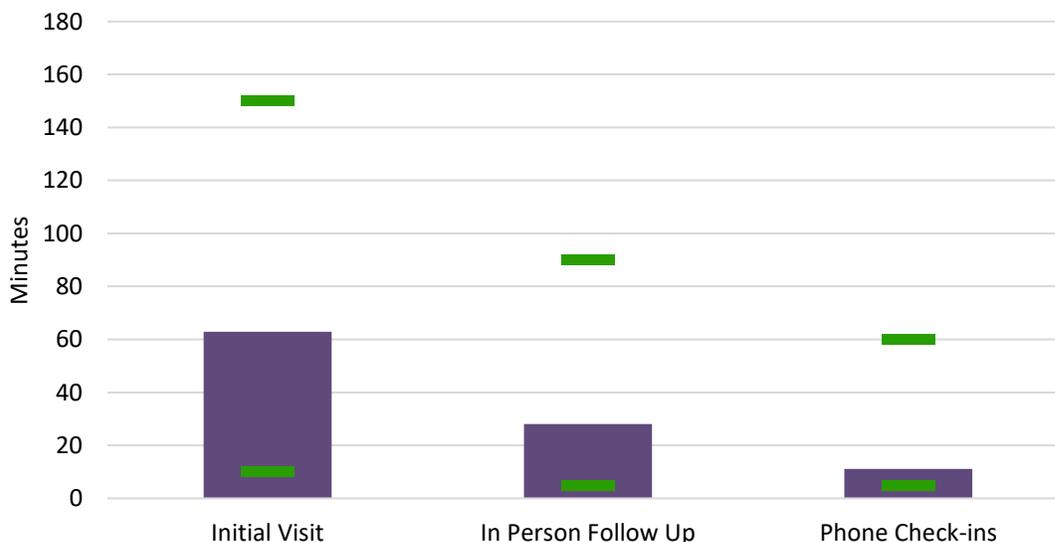
## ▀ Patient Interviews and Follow-Ups

Initial interviews were conducted with all of the patients enrolled in the CCDP. In person follow up visits with each patient were supposed to be conducted about every two months following enrollment. In between these visits, pharmacists could also check in with patients by phone. In actual practice, the number of in person follow up visits varied, with only 42% of patients (n=134 of 317) having at least five in person follow up visits recorded in the patient database, and 7% of patients (n=21 of 317) having no in person follow up recorded and 51% (n=162) with only one to four in person visits. A total of 1,709 follow up activities (phone

or in person) were conducted with 317 patients, an average of 5.4 contacts per patient, with an average of 4 in person contacts per patient.

Figure 6 shows the amount of time required for each type of contact with patients (initial visit, in person follow up, and phone check-in). As might be expected, initial visits took longer on average than follow up visits (about one hour), and phone check-ins tended to take less time (11 mins) than in person visits (28 minutes).

**Figure 6: Time Required for Initial and Follow Up Visits with Patients**



The purple bar shows the average length of time, green bars represent the maximum and minimum times reported.

### ▀ Pharmacist/Physician Meetings

The 25 pharmacists that completed the CCDP conducted a total of 287 meetings with physicians of more than 15 minutes to provide collaborative care to patients enrolled in the CCDP. This is an average of 11.5 meetings per participating pharmacist. Pharmacists and physicians were supposed to meet in person 18 times during the project, six meetings for one hour each, once a month during the first six months while patients were being enrolled and care plans were being developed, then 12 meetings for 30 minutes each, once each month while patients were in the intervention. Only 12% of pharmacists reported the required 18 in person meetings, and about 30% reported 15 in person meetings or more. Meetings were an average of 55 minutes, and only about half of pharmacies (56%) had at least the required six meetings that were at least an hour. Also, it appears that meetings were conducted less frequently as time went on, as the number of meetings across all pharmacist-physician pairs averaged 17 meetings per month from July 2017 to May 2018 and only 11 per month in the last seven months of the project (June 2018 to January 2019).

In addition to regular formal, in person meetings to discuss CCDP patients, many evaluation participants also indicated that pharmacists and physicians communicated regularly in a more informal manner, such as by email, phone, fax, or text, to address specific concerns or questions about a patient. The intention of the

meeting data reported by pharmacists was to include in person meetings only; however, it is possible that some pharmacists were including phone calls as well as in person meetings with the physician in the meeting data they captured.

### ▲ Supports Pharmacists Provided to Patients

Both patients and pharmacists were asked about the most important thing the pharmacist did to help the patient improve their health. In addition to reviewing medications and identifying and addressing drug related problems (discussed in a later section of this report, p. 12), the following key activities/supports were identified (in order of strength of response, i.e., most frequently mentioned is listed first):

- Provided a wide range of patient education and information on topics such as medications, health conditions/diagnoses (e.g., explaining diabetes and the problems with high blood sugar), healthy eating (e.g., diet reviews, meal planning support), physical activity (e.g., exercise programs, benefits of exercise), and improving sleep (e.g., sleep hygiene).
- Provided a listening ear and helped patients feel comfortable asking questions or raising their health concerns. Provided social support to some patients (i.e., someone to talk to), especially for those that are more isolated (e.g., live alone, limited family support).
- Helped to coordinate the patient's overall care (in collaboration with the physician), for example, connecting them to other supports in the community (e.g., dietitian), suggesting referrals to specialists.
- Provided patients with motivation and accountability for their health by setting health goals, providing support and encouragement to address barriers, and helping the patient celebrate success.
- Supported patients to quit smoking through education, motivation, and access to smoking cessation products and supports.

The following quotes are all from patients:

*The pharmacist made me feel more confident and assured me that I was doing everything I could to stay healthy. [They] also become special to me because [they] truly listened.*

*Provided alternative ways to improve diet based on likes and dislikes; ways to cut down on smoking with a goal to quit. Listened to all concerns and provided knowledgeable information regarding health issues and how to cope with them.*

*The pharmacist took the time to review my overall condition and discuss ways to improve. [They] also developed a good overall perspective of my prescriptions and was able to discuss changes with my family doctor and cardiologist.*

*The pharmacist showed me that by making small changes in my daily lifestyle over time, they would amount to larger achieved health goals.*

## Project Outcomes

This section describes how well the CCDP achieved its short-term outcomes. These desired outcomes were identified during the initial development of the project and evaluation plan, and are grouped into three sections: patient outcomes, physician and pharmacist outcomes, and health system outcomes. Within each section, data is drawn from a range of sources (e.g., patient survey, physician survey, focus groups and interviews, patient clinical data, etc.).

### ▀ Patient Outcomes

The evaluation findings show that many patients were able to achieve positive outcomes through their participation in the CCDP, including increased knowledge of and comfort with medications; more effective use of and increased adherence to medications; improved ability of patients to self-manage their health; improved short-term health outcomes such as weight loss, reduced smoking, and improved clinical outcomes (e.g., blood glucose levels, blood pressure, COPD symptom control, etc.); increased patient satisfaction with care; and improved access to care.

#### ***Increased Patient Knowledge of and Comfort with their Medications***

Patients responding to the survey indicated that they have improved their level of knowledge and comfort with their medications. About half of respondents indicated that by the end of the CCDP they had improved their understanding of the purpose of each medication they are taking (50%, n=103 of 206) and their comfort with all of the medications that have been prescribed to them (47%, n=95 of 204). Many patients and pharmacists also identified increased knowledge and comfort of patients with their medications as an important outcome in the qualitative feedback.

*That was a big thing. It seemed like people were on medication that they didn't really know why they were taking it. Once they got that understanding of what they were taking and why, they were more apt to want to try and decrease [medication] or [implement changes to] . . . exercise and diet to help with their problems instead of just the medication . . . (pharmacist)*

*I now have a better understanding of my medications and what they do for me. (patient)*

*My collaborative care pharmacist does an excellent job in explaining meds to me. (patient)*

#### ***Improved Patient Medication Use/Management/Adherence***

Many pharmacists and some patients noted that pharmacists were able to identify and address medication issues for participating patients. Examples of medication issues that were addressed include:

- Adding a needed therapy (e.g., starting a patient on insulin to manage diabetes);
- Reducing or eliminating unnecessary medications (e.g., tapering patients off anti-depressants that were no longer required);

- Changing medications to improve effectiveness, affordability or reduce symptoms (e.g., changing to a medication covered by Pharmacare);
- Adjusting the amount or timing of doses (e.g., eliminating a noon dose to improve convenience); and/or
- Identifying and addressing compliance issues (e.g., implementing compliance packaging).

*Started the blisterpack program - prior to that . . . dependent on patient's [senior] spouse for medication management. (pharmacist)*

*The pharmacist prevented 2 drugs – one of which could have been fatal – from being given to me. (patient)*

Overall, pharmacists identified a total of 884 drug related problems (DRPs)<sup>4</sup> across the 317 patients that completed the project (an average of almost 3 DRPs per patient, and a range of 0 to 12 DRPs per patient). As seen in Figure 7, the most commonly identified DRP was a need for additional therapy.

**Figure 7: Type of Drug Related Problems Identified**

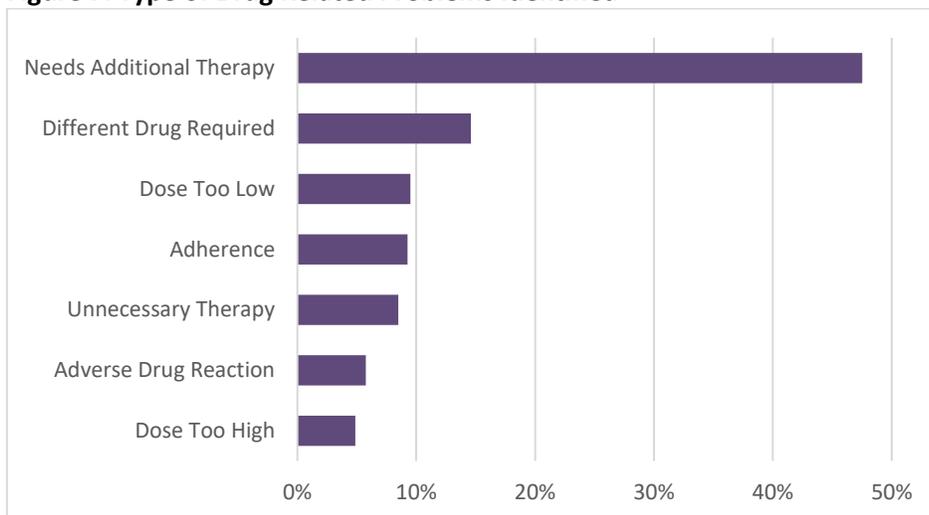
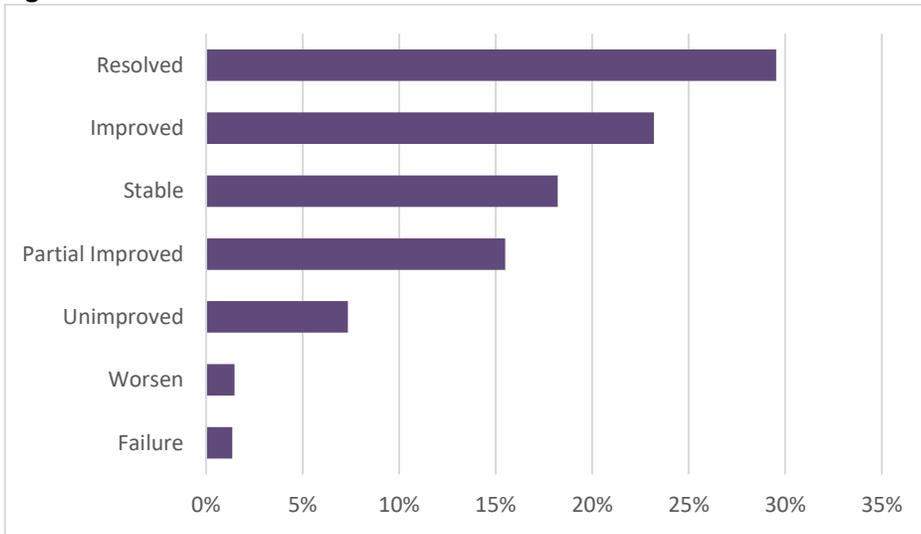


Figure 8 shows the outcomes for the identified DRPs. The majority of DRPs (68%) were resolved, improved or partially improved.

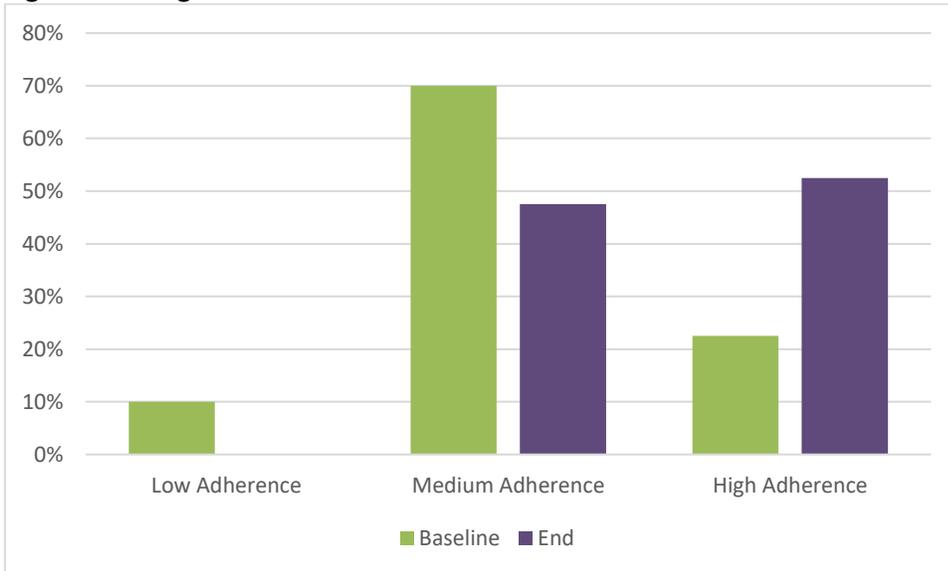
<sup>4</sup> An additional 436 non-medication interventions were also identified for CCDP patients, but these are not discussed here as they are not related to medication management.

**Figure 8: DRP Outcomes**



Based on available data, it appears that the project helped to improve patient adherence to medication. The 4-item Morisky Medication-Taking Adherence Scale-MMAS was used to assess patient adherence at baseline and project end. Data is available at both data points for 40 of the 45 patients who were identified as having non-adherence issues at enrollment into the CCDP. Almost two-thirds (62.5%, n=25) reported improved adherence at the end of the project. Figure 9 shows the shift to higher levels of adherence. Twelve patients (30%) moved from medium to high adherence, and 4 (10%) patients with low adherence moved to medium adherence.

**Figure 9: Changes in Patient Adherence**



Some patients and pharmacists also noted improvements in adherence as a key area of improvement for patients.

*The patient decreased their cardiovascular risks by improving compliance. (pharmacist)*

*The patient is starting to . . . recognize the benefit of compliance. Patient was missing medications from the blisterpack. (pharmacist)*

### **Improved Ability of Patients to Self-Manage their Health**

Patients, pharmacists, and physicians reported that patients participating in the CCDP improved their ability to self-manage their health. Almost three-quarters of participating physicians (71%, n=12 of 17) reported that the self-management skills and abilities of participating patients had improved. About half of patient survey respondents (48%, n=95 of 197) indicated that their ability to manage their health condition(s) was better at the end of the project compared to the beginning. The majority of patients also agreed/strongly agreed that the care and support they received through the CCDP helped them to better understand what changes they could make to improve their health (92%, n=193 of 210), and that the care and support they received through the CCDP actually helped them make changes to improve their health (85%, n=177 of 209). Many patients indicated in the qualitative feedback that their knowledge about their overall health, specific conditions, medications, and health-related behaviours increased as a result of participating in the project.

*[I have changed my] overall awareness of my health especially diabetes and the effects it has on my body. (patient)*

*I realize this [positive health changes] is not going to happen overnight [and will be] something I need to work at for the rest of my life. (patient)*

*I have learned what to do to control blood pressure and the importance of quitting smoking. (patient)*

Many physicians, pharmacists and patients providing qualitative feedback also noted that patients improved their ability to self-manage their health and became more interested and engaged in their health. For example, patients asked more questions about their conditions and/or treatments and took steps to start better managing their condition (e.g., making positive health behaviour changes – discussed further in the following section). In a few cases, pharmacists reported that patients were able to accept a diagnosis that they had previously refused to believe (e.g., diabetes, COPD), and therefore begin appropriately managing that condition (e.g., starting insulin for diabetes).

*I have a number of patients that were involved in the project that I really am quite happy, and I'll maybe even use the word astounded that they've really bought into taking care of themselves and looking after their health. (physician)*

*[Patients] became more active in their own health care . . . they would actually make the changes that we talked about and continue to make them, as opposed to not really understanding the reasoning behind things. (pharmacist)*

*My outlook on making positive changes certainly has changed. (patient)*

### **Improved Overall Short-term Health Outcomes Across All Patients**

Many physicians, pharmacists and patients indicated that they saw positive changes in patient health as a result of the CCDP. The majority of physicians responding to the physician survey said that they thought their patients' health had improved (65%, n=11 of 17). The majority of patients also reported that their health had improved participating in the CCDP (72%, n=149 of 208). In the qualitative feedback provided by patients and pharmacists, many positive patient health changes were also discussed. The most frequently mentioned changes include (strength of response noted in parentheses):

- Improved management of diabetes (many respondents) (discussed further in a later section)
- Reduced blood pressure (many respondents) (discussed further in a later section)
- Lost weight (many respondents)
- Improved eating habits (some respondents)
- Improved management of COPD (some respondents) (discussed further in a later section)
- Reduced smoking or quit completely (some respondents) (discussed further in a later section)
- Increased physical activity (some respondents)
- Identified a previously unknown/untreated health issue that could then be appropriately managed (some respondents)

*[The patient] made a great effort to start getting healthier. Eating more vegetables, walking more and the results were dramatic. (pharmacist)*

*Lost a lot of weigh and blood sugar is better controlled. Increase in activity and less need to reduce activity from fatigue. Sleeping better. Increase in energy. (patient)*

*[The patient's] health was assessed and managed with her input . . . referrals to specialists, vaccinations up to date, osteoporosis tested . . . and treatment started, anemia was discovered and treated, began mild exercises. (pharmacist)*

Other changes mentioned less frequently included supported/addressed mental health concerns (e.g., depression); ensured patients received needed vaccinations; improved pain management; reduced cholesterol; improved energy and/or sleep quality; identified and addressed risk of osteoporosis; and improved management of allergic rhinitis.

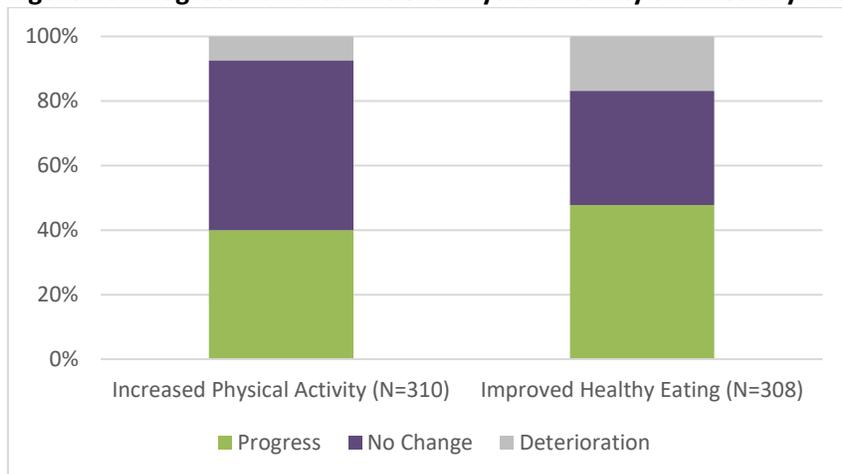
*Decrease in overall day to day pain for the first time in a long time resulted in not only improved physical mobility but improved mood. (pharmacist)*

*Emotional stability through understanding disease, medications and signs/symptoms of complications. (pharmacist)*

### Health Goals

Each patient worked with the pharmacist to establish relevant behaviour change goals related to healthy eating and physical activity. The specific goals in each area varied across patients (e.g., a healthy eating goal for one patient might be increasing consumption of fruits and vegetables, for another it could be reducing consumption of sugar-sweetened beverages). Pharmacists tracked patient progress towards their goals using the stages of change defined in the Transtheoretical Model (TTM see description in the Appendix, p. 70). The patient's stage of change related to each health goal was assessed at the beginning, middle, and end of the project. As seen in Figure 10, 40% of patients made progress on their physical activity goals, and 48% on their healthy eating goals. Of the patients who did not make progress on their goals, 46% (n=50 of 109) were already taking action in the area of healthy eating and 39% (n=64 of 163) in the area of physical activity (i.e., they were at the action or maintenance stages in the TTM).

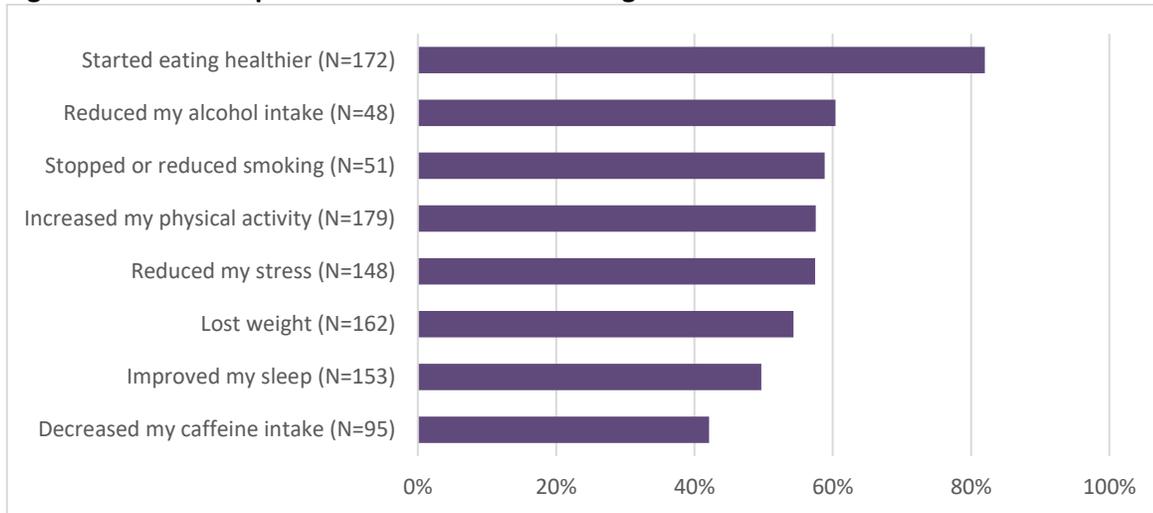
**Figure 10: Progress Towards Patient Physical Activity and Healthy Eating Goals**



### Changes in Patient Behaviour

On the patient survey, patients were asked whether they made changes such as stopping or reducing smoking, losing weight, increasing physical activity, improving their sleep, etc. Patients could respond yes, no, or indicate that they did not need to make the change. Figure 11 below shows that the majority of patients that thought they needed to make a change were able to start eating healthier (82%), reduce their alcohol intake (60%), stop or reduce smoking (59%), increase their physical activity (58%), reduce their stress (57%), and lose weight (54%).

**Figure 11: Patient-reported Health Behaviour Changes\***



\* This figure shows the percentage of patients that indicated they did make the change (i.e., selected “yes”) out of all patients responding either yes or not to the statement. It excludes patients that responded that they did not need to make that change. The number of yes/no respondents for each statement is noted after the statement.

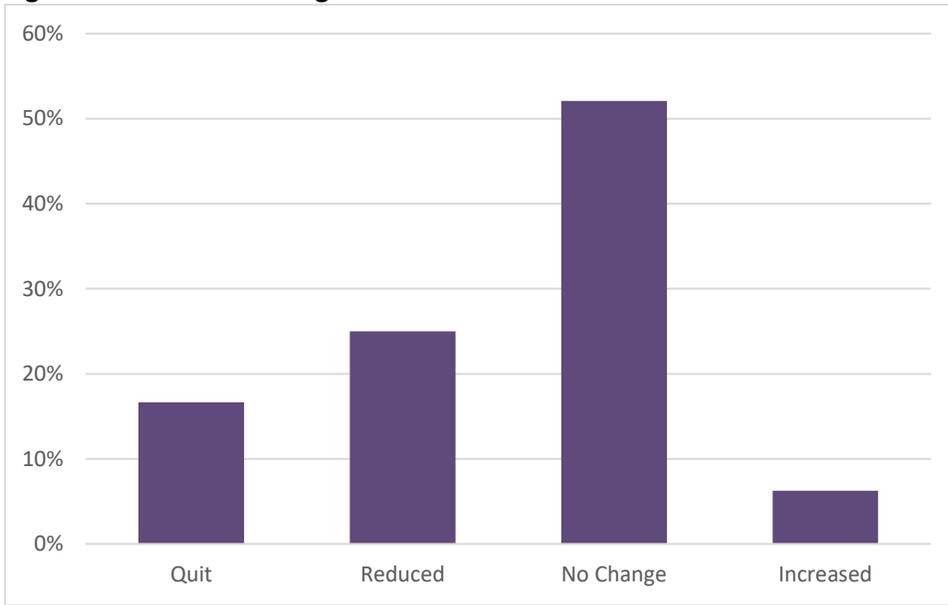
Some patients and pharmacists identified smoking cessation or reduction as an important patient health outcome.

*Quitting smoking and not returning. By quitting so early in the study it was helpful to be there for this patient all year to address triggers as they came up and coping strategies as they came up through normal day to day life. Because this patient now has a year under her belt with close support, I believe she is more likely to not return to smoking and she is young enough that she will have long term benefits from quitting now. (pharmacist)*

*Quitting/Cutting down smoking improved my health and getting support from pharmacists and doctors helped. (patient)*

Data specific to smoking behaviour was tracked for patients that reported that they smoked on enrollment. Baseline and endpoint data are available for 48 patients. As seen in Figure 12 below, 17% of these 48 patients quit smoking completely, and another 25% reduced the amount they smoked.

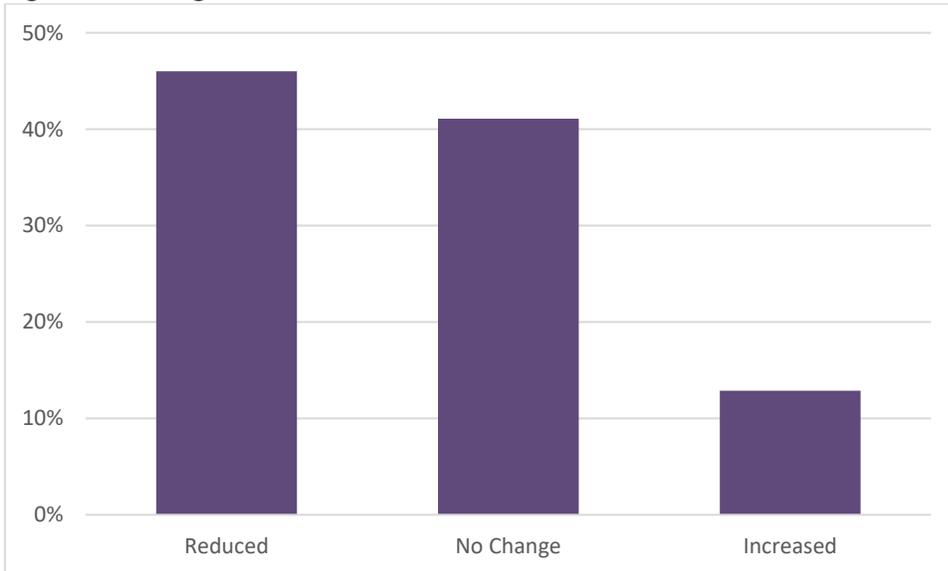
**Figure 12: Patient Smoking Cessation**



**Changes in Patient CVD Risk**

Cardiovascular disease (CVD) risk was also tracked for all participating patients using the Framingham Risk Score which calculates the risk of an individual developing coronary artery disease over the next 10 years. Data is available on the change in the CVD risk for 163 patients. Figure 13 shows that almost half of patients were able to reduce their CVD risk from the beginning to the end of the study.

**Figure 13: Change in CVD Risk**



***Improved Short-term Health Outcomes for Patients with Diabetes***

Many pharmacists and patients identified improved management of diabetes as an important change in patient health that occurred as a result of the CCDP. Respondents noted that patients had reduced their

blood glucose (sugar) levels and better managed the condition through improved diet and more effective use of medication.

*The main thing that I saw was improvements with diabetes. It seemed as though a lot of people that I was seeing were interested in getting their A1Cs down and trying to learn more about the drugs that they took. (pharmacist)*

*Started taking medication regularly which improved my sugar readings. (patient)*

*I am able to manage my type 2 diabetes much better. (patient)*

Blood sugar (hemoglobin A1c, A1C) was measured for patients with diabetes at the project’s start and end. Of the 166 patients with diabetes, data is available for 154 at baseline, 136 at endpoint, and for 132 patients at both baseline and endpoint. Figure 14 below shows that the proportion of patients with their diabetes in control (A1C of less than 7.0%) increased from the beginning to the end of the project, and the proportion with their diabetes out of control (A1C of more than 9.0%) decreased. Overall, 52% of patients (n=68 of 132) had lower blood sugar at the end of the project than they did at the beginning. Blood pressure control also improved for patients with diabetes, while control of cholesterol remained similar.

**Figure 14: Control of Blood Sugar, Blood Pressure, and Cholesterol in Patients with Diabetes**



### **Improved Short-term Health Outcomes for Patients with COPD**

Some pharmacists and patients identified better COPD control as a key patient health improvement resulting from the CCDP. Respondents noted that patients were more adherent to their medication, had a better understanding of the condition, and had better control of their breathing.

*[The patient's] breathing has improved because she is using her inhaler on a regular basis and she is also using it with an aerochamber. (pharmacist)*

*We were able to focus on the patient's control of her breathing: She was switched onto a new puffer which she tolerated well, and this encouraged her to quit smoking. Her once daily puffer encouraged her to be adherent to her medication and she is feeling much better. Her exacerbation of her COPD and chest infections has improved since becoming more adherent to her new puffer. (pharmacist)*

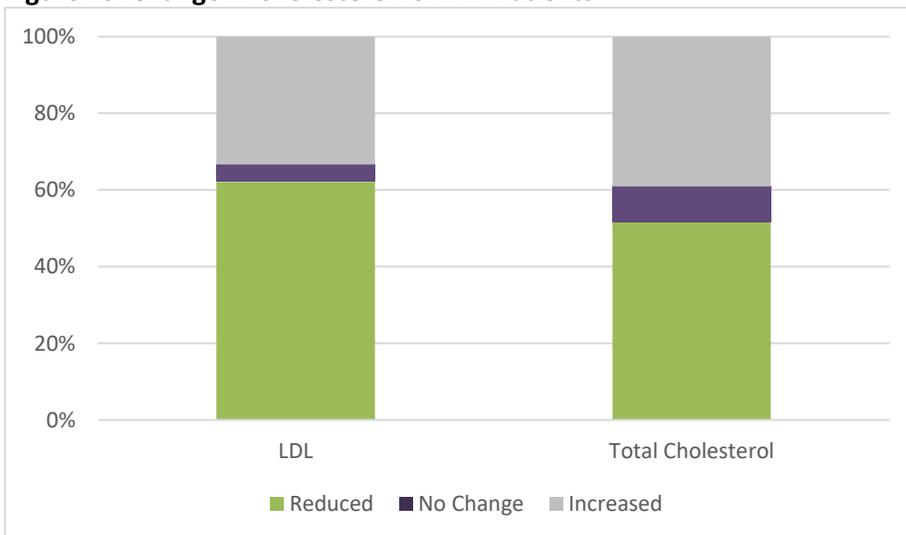
*My breathing has improved since I have been taking my pills for my lungs. (patient)*

Of the 55 patients with COPD, baseline and endpoint measures for symptom management are available for 34 patients. Of these patients, 41% (n=14) improved their symptom control, 50% (n=17) saw no change, and 9% (n=3) had symptoms worsen.

### **Improved Short-term Health Outcomes for Patients with IHD**

The clinical outcomes for patients with IHD include blood pressure and cholesterol (total cholesterol and LDL). There were 96 patients with IHD and blood pressure measured at both baseline and project end. Of these 96 patients, the proportion in control increased from 41% (n=39) to 54% (n=52). Figure 15 shows that over half of IHD patients with data available were also able to reduce their total cholesterol (52%, n=33 of 64) and their LDL cholesterol (62%, n=41 of 66).

**Figure 15: Change in Cholesterol for IHD Patients**



### **Improved Short-term Health Outcomes for Patients with Hypertension**

Many pharmacists and patients identified reduced blood pressure as an important outcome for CCDP patients. Respondents said that patients had better management of their blood pressure and were also able to reduce their blood pressure.

*Reduction of blood pressure through better control and maintenance. Better adherence. (pharmacist)*

*Was able to get both my diabetes and blood pressure under control. Had my pace maker checked regularly which helped in my understanding of its effect on my blood pressure readings. (patient)*

*The patient . . . was the first person to try the 24-hour ambulatory blood pressure monitor to assist in monitoring blood pressure. (pharmacist)*

Blood pressure and cholesterol (total cholesterol and LDL) was measured for patients with hypertension. There were 254 patients with hypertension that had their blood pressure measured at both baseline and project end. Of these 254 patients, the proportion in control increased from 34% (n=86) to 48% (n=123). There was a small decrease in the median systolic and diastolic blood pressure for patients with hypertension from baseline (median=136/75) to end (median=130/74). About half of patients with hypertension reduced their total cholesterol (56%, n=98 of 174) and their LDL cholesterol (56%, n=101 of 180).

### ***Increased Patient Satisfaction with Care***

Overall, patients seemed to be highly satisfied with the level of care they received in the CCDP. The feedback on the patient survey was almost all positive, with some patients indicating they wanted the collaboration to continue. As seen in Figure 16, patients indicated that they are satisfied with the care and education they received as part of the CCDP, and 86% of patients indicated that they preferred the CCDP model to usual care.

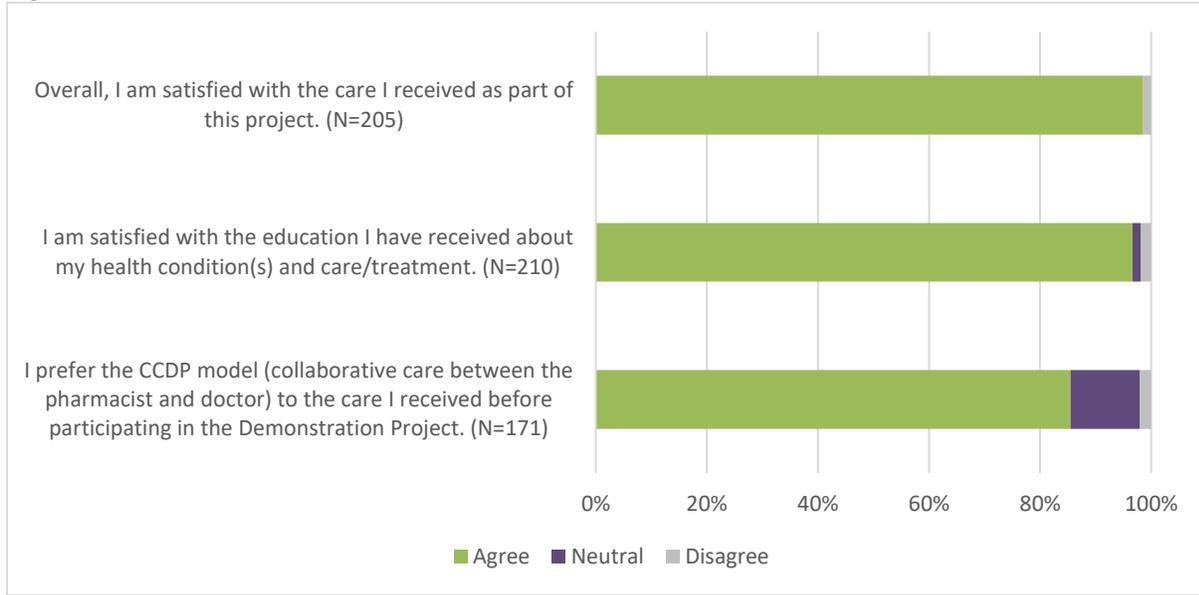
*There wasn't one of the people in my study that finished the study that didn't want to go on with the study. (pharmacist)*

*A couple of the patients were disappointed that the pharmacist intervention was no longer going to be formalized as it was. (physician)*

*I feel it was a wonderful experience. Top of the line with no improvements. Very professional. (patient)*

*It is a very good program and the people that took it are much better off for it. (patient)*

**Figure 16: Patient Satisfaction with Care in the CCDP**



**Improved Access to Care**

Three-quarters (75%, n=153 of 205) of patients responding to the survey agreed that they had better access to health care while they were participating in the CCDP. Most patients also agreed that it was easy to book appointments with the pharmacist (96%), that appointments were a good length of time (99%), and that they were able to see the pharmacist as often as they needed (97%). Two-thirds of physicians also felt that access to care improved for patients participating in the CCDP (63%, n=10 of 16). A few pharmacists and patients noted that they felt the project had helped improve access to health care in the qualitative feedback.

*We struggle in our community with access to our physicians . . . we didn't have enough physicians to cover the care that our community needed . . . a lot of people felt that they didn't have access to their health care professional. The CCDP was a really great opportunity to . . . let patients have that access to be able to have things identified . . . they felt like they had someone to go to when they had concerns, to be able to have them addressed and not have to wait six months to try to figure things out. (pharmacist)*

*My doctor was very inaccessible. My pharmacist was very helpful during this time. (patient)*

Some pharmacists also said that patients appreciated the pharmacy environment and the additional time they had in their appointments with the pharmacists to discuss their health concerns and questions. Some pharmacists specifically noted that patients seemed to feel more comfortable asking questions or raising sensitive health issues (e.g., sex, drug use) with the pharmacist.

*It was really nice to be able to have the time with the patients . . . they had the time to talk and get all of their concerns addressed at once. And they felt like they were able to come in, even if they didn't have a scheduled appointment, or call if there were any concerns. (pharmacist)*

*I found that our patients were asking a lot more questions. They were much more comfortable asking questions, and they were very happy that we work closer with their doctors. (pharmacist)*

*People were so appreciative . . . that someone was spending some time to talk to them about something that they really haven't been spoken to a lot in detail about before, and I think it was that extra time that people really could relate to. (pharmacist)*

## ► Physician and Pharmacist Outcomes

This section discusses physician and pharmacist outcomes including improved collaboration and communication; increased pharmacist knowledge, skills and confidence; strengthened relationships between pharmacists and patients; increased pharmacist work satisfaction; and the portability of the CCDP model to other pharmacy settings.

### ***Improved Collaboration and Communication***

Many physicians and pharmacists reported that the project helped to improve collaboration between them. On the physician survey, 71% (n=22 of 31)<sup>5</sup> of physicians indicated that their collaboration with their partner pharmacist(s) had improved. Many pharmacists also noted that their relationship with the physician had improved and strengthened (even if it was good to begin with). In some cases, this collaboration is extending to other patients (i.e., those not in the CCDP) and/or other providers (e.g., other colleagues in the physician's group practice). A quarter of physicians (23.5%, n=4 of 17) said they had also improved their collaboration with other pharmacists who were not participating in the CCDP, and 87% (n=13 of 15) agreed/strongly agreed that they are more likely to collaborate with pharmacists in the future. A few pharmacists and physicians reported that they really enjoyed the opportunity to discuss patients with a colleague.

*I found that it was a very positive way to build relationship with the family physician . . . we had one level of relationship before this whole experience and then I would say a different level of relationship now after. (pharmacist)*

*I always had a great relationship with my partnering physician and I never have an issue with calling him to discuss any needs with patients. But I do find since the implementation of the demonstration project, that he now calls me more often to ask me questions or just chat about patients, and not only the patients in our study. (pharmacist)*

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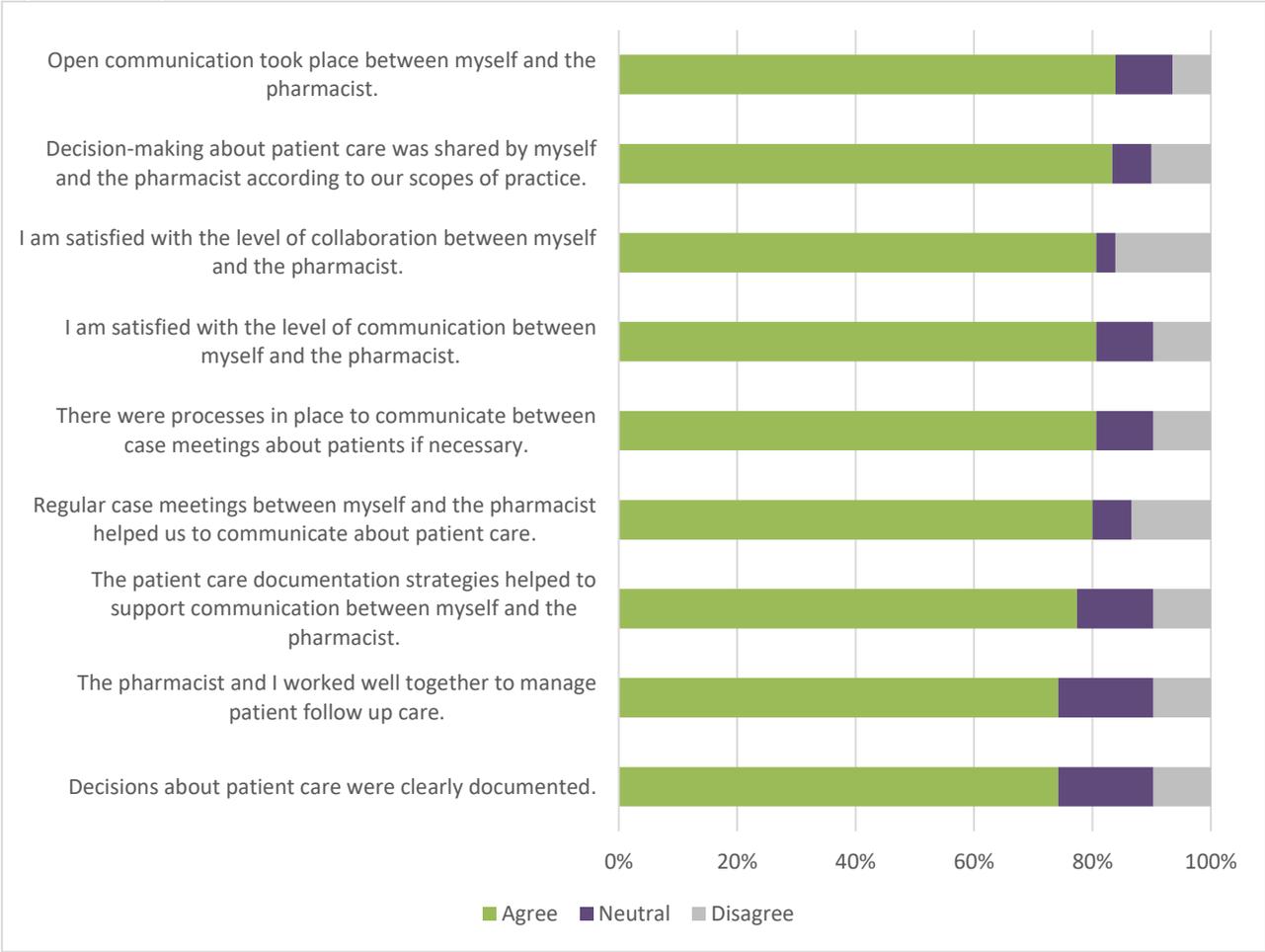
<sup>5</sup> Only 17 pharmacists completed the survey, but they answered this question separately for each pharmacist they partnered with, so there were a total of 31 responses to this question, and the subsequent questions related to collaboration with the pharmacist.

*I quite enjoyed the meetings with colleagues and collaboration about difficult or complex patients. I have many stubborn and challenging patients who like to do things in their own way. It was helpful for me to have colleagues identify those behaviours as treatment challenges as well. (physician)*

Patients responding to the survey also indicated that care was well-coordinated between the physician and pharmacist with the vast majority indicating that the doctor and pharmacist worked well together to provide care (98%, n=202 of 207), that they did not have to repeat information to the doctor or pharmacist (94%, n=194 of 206), and that information provided to them about their health was consistent and did not conflict between the doctor and pharmacist (96%, n=198 of 207).

As seen in Figure 17, most physicians participating in the CCDP indicated that they were satisfied with the communication and collaboration that took place between themselves and the pharmacists.

**Figure 17: Physician Satisfaction with Communication and collaboration**



Factors that supported communication and collaboration between physicians and pharmacists included access to the full patient health picture from the physician to provide insight into patient care; regular meetings/communication between the providers; clear roles and responsibilities for each provider; support

from the physician's office staff to access and share information (e.g., sharing lab values); and the pharmacist being organized with patient information and documentation (i.e., well prepared for meetings with the physician).

### ***Increased Pharmacist Knowledge, Skills and Confidence in Collaboratively Managing Complex Patients***

Some pharmacists reported that their knowledge, skills and confidence in working collaboratively with physicians and managing patients with complex needs increased as a result of participating in the CCDP. The training session at the beginning of the project was a great resource that improved pharmacists' knowledge. Pharmacists also benefitted from the opportunity to practice skills through this project such as supporting patients with behaviour change or conducting patient interviews. A few pharmacists noted that it was helpful to gain more insight into how a physician practices through the collaborative process. A few pharmacists also learned about resources and supports available in the community to which they could refer patients.

*I found that going through it, it improved your interview skills by doing it over and over again. (pharmacist)*

*For me, the training program that was provided initially really helped to make me feel more confident in terms of how I helped them with managing their medications. (pharmacist)*

*Excellent insight into the respective scopes. It was very helpful to look at the physician's patient care strategy and style.*

### ***Strengthened Relationships with Patients***

Some pharmacists indicated that the project has helped them strengthen their relationships with participating patients, and that this stronger relationship will help them continue to support the patient going forward.

*It was a good way to strengthen relationships with patients who already trusted you and respected you . . . it's great to build those relationships with them. I'm sure those will carry on long after the project's finished. (pharmacist)*

### ***Increased Pharmacist Work Satisfaction***

A few pharmacists noted that participating in the CCDP was very personally and professionally rewarding for them and they enjoyed the more clinical role that they filled as part of this project.

*I feel like this is more so what I wanted to do when I became a pharmacist. I feel like I'm actually helping people. (pharmacist)*

### ***Portability of the Model***

Some respondents thought that the CCDP model as it was structured in this project would be challenging to implement in pharmacies across Nova Scotia. Respondents cited challenges such as the amount of time

required, the challenge of integrating project work into pharmacy workflow, and the difficulty recruiting patients that met the project criteria as reasons why implementation would be difficult in many contexts. However, with some modifications, more respondents felt that a version of collaborative care could work effectively. Some of the suggested changes include loosening the patient selection criteria, partnering with more than one physician and ensuring the patients that participate are motivated to change. These suggestions and others are discussed in more detail in the Lessons Learned section, beginning on p. 31.

*I think if it was the exact same way we did it, it's too much of a time commitment to implement in most places . . . I think if it had been simplified a little bit, and if there was more motivated patients and less paperwork, it would be really awesome. (pharmacist)*

*I don't believe that it can be implemented as it exists today with only one physician per pharmacy, it would have to open up to all physicians. (pharmacist)*

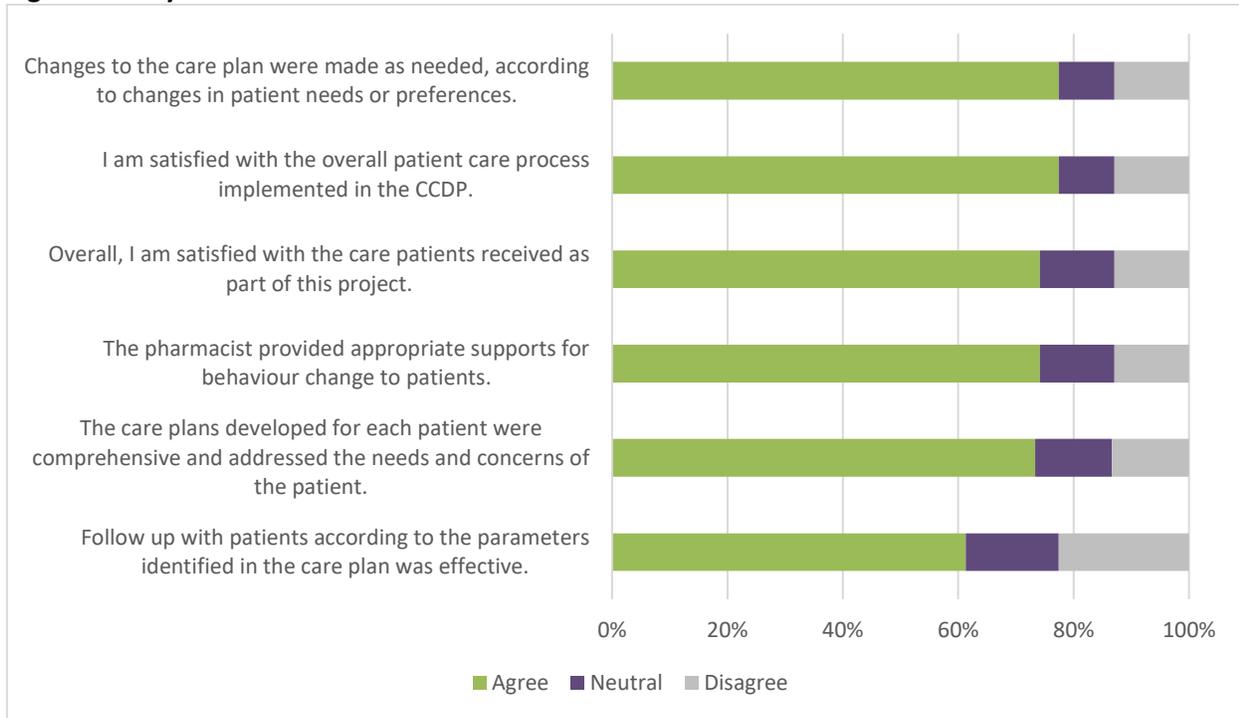
## ▲ Health System Outcomes

This section discusses outcomes relevant to the broader health system including the overall effectiveness of the CCDP model and efficiencies in health care utilization, and increased awareness of the value that pharmacists provide.

### ***Effectiveness of the CCDP Model and Efficiencies in Health Care Utilization***

Almost all pharmacists and most physicians (88%, n=15 of 17) indicated that the CCDP model was an effective way to provide more comprehensive patient care. As seen in Figure 18, physicians responding to the survey were positive about the quality of care provided through the collaborative project, and 71% (n=12 of 17) indicated that the quality of care provided to participating patients had improved. Physicians also agreed that the time they invested in the CCDP was worthwhile given the impact on patients (71%, n=12 of 17), and that the project had benefits to them as physicians (82%, n=14 of 17).

**Figure 18: Physician Satisfaction with Patient Care**



Pharmacists and physicians noted that the model was effective for supporting patients with complex needs, helping to identify areas of the patient’s care where there may have been gaps or missing information (e.g., medication side effects, missed immunizations, health concerns that had not been brought to the physician) and improving the quality of the care provided to patients.

*This project benefited me as a physician by keeping me on track with some patients whose annual, bi-annual, or quarter-annual bloodwork I had overlooked. (physician)*

*Collaboration with the pharmacist enabled me to provide a higher level of care to my patients. (physician)*

*We had patients going for more tests sooner, different parts of their health being addressed more often. I think the patients received better care. (pharmacist)*

*I definitely think it was worthwhile. I think for the patients, the majority of them, if they didn’t see improvements, they at least understood their medications and their medical conditions better, and how they could impact their own health with diet, exercise. (pharmacist)*

Although they felt that the model improved patient care, and physicians reported that collaboration became more efficient over time (74% of physicians on the survey agreed that collaboration took less time at the end of the project than at the beginning), most pharmacists and physicians still indicated that they did not feel that the CCDP saved them time overall as providers. The evaluation was not able to measure actual time

usage of health care providers and therefore cannot report objective data on this topic. A few respondents did suggest that collaborative care could help save time in the following ways:

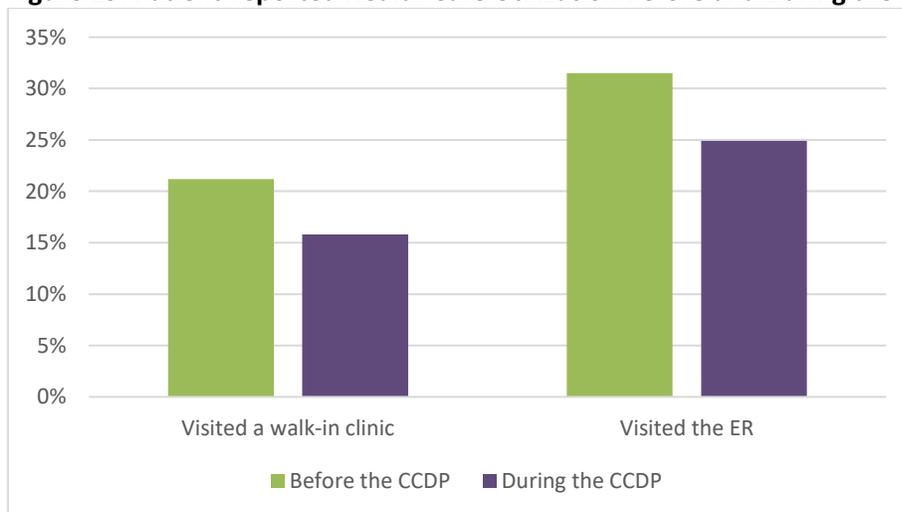
- Save pharmacist time as medication issues and concerns are addressed up front instead of after a patient drops off a prescription, and there is good access to the physician to resolve any issues efficiently.
- Save pharmacist time by making medication distribution more efficient for participating patients (e.g., starting patients on blisterpacks).
- Save physician time by having the pharmacist do patient education and counselling, which could help the physician at office visits.

*There was no time saved, but better comprehensive care was achieved. (physician)*

*. . . if you look at the issues that were resolved, and the smoking cessation and the good outcomes, it certainly saved time if those were going to be resolved. If you look at the outcomes, of course it was worthwhile if there's any good patient outcomes. (pharmacist)*

In terms of health care utilization, patients on the survey were asked about their health care utilization in the 12 months prior to participating in the CCDP and while they were participating in the project. Patients reported whether they used an emergency room (ER) or walk-in clinic, and if so, how many times. Figure 19 shows that the proportion of patients reporting that they used an ER or walk-in clinic at least once decreased during the CCDP compared to before. A few pharmacists also noted that they felt patients reduced their utilization of other types of health care such as walk-in clinics and the ER because they were now getting services at the pharmacy instead. The average number of visits per person using these services also declined slightly, from 1.7 visits to 1.4 visits for walk-in clinics, and from 1.5 visits to 1.4 visits per person for ERs.

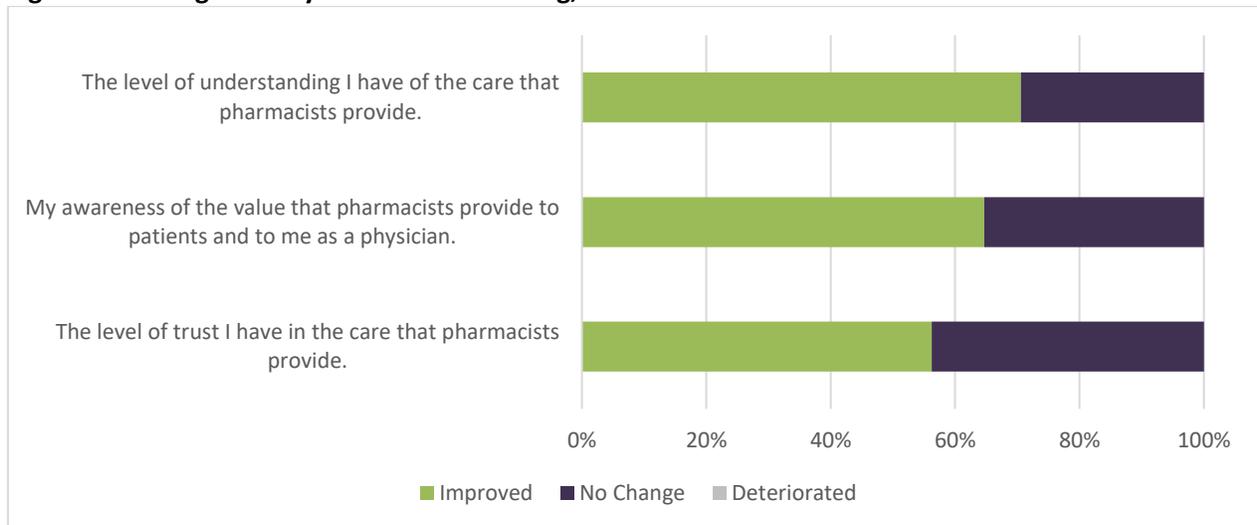
**Figure 19: Patient-reported Health Care Utilization Before and During the CCDP**



### ***Increased Awareness of the Value Pharmacists Provide***

Patients, physicians and pharmacists reported that patients and physicians had a better understanding of the role and skills of a pharmacist, and the value and support they can provide to patients as a result of participating in the CCDP. Almost all patients responding to the survey (97%, n=200 of 207) agreed that they were more aware of how pharmacists can help them with health care needs as a result of participating in the CCDP. Physicians also reported improved levels of awareness, understanding and trust in the care that pharmacists provide (Figure 20). Some pharmacists also indicated that they felt levels of trust and openness to collaboration had increased.

**Figure 20: Changes in Physician Understanding, Trust and Awareness of Pharmacist Role**



*[This project] let me know how well a pharmacist know and understands about drugs. (patient)*

*It was nice that patients were able to get a new respect for the ability of the pharmacist to go a little farther than just dispensing their medications and understand the extra knowledge that we do have to offer. (pharmacist)*

*I think with my physician it's been an improvement because by talking to him about all these patients . . . it's like he trusted that I could make decisions, and I knew more than what he thought I did. Now . . . there's more trust there than there was before. (pharmacist)*

*I think I appreciated more the real good amount of counselling and organization that the pharmacist can bring to our shared patients, so that was a success. (physician)*

*I got to better know my pharmacist colleagues and understood they could be a resource to assist me in providing optimum care to my patient. They also could identify issues or concerns about the patient that I may not have been aware of. (physician)*

## Lessons Learned

This section describes the key lessons learned during implementation of the CCDP and are drawn from discussions about project challenges, suggestions for improvement, and helpful supports. The evidence presented in this section is drawn primarily from the participating pharmacists and physicians, as well as the project implementation team at PANS. While patients were also invited to provide suggestions for improving the CCDP on the survey, very few did so. The lessons learned are grouped into six sections: identifying participating physicians and pharmacists, patient recruitment, managing the workload in the pharmacy, pharmacist-physician communication, patient care, and project management and supports. Within each section, the strength of response of the findings is noted where relevant.

### ▀ Identifying Participating Physicians and Pharmacists

During the initial application process PANS received over 60 applications from physicians and over 80 from pharmacies, so there appeared to be a high level of interest in working collaboratively. However, there was a high rate of attrition from the project in both physicians and pharmacists selected to participate (attrition rates of 26% and 39% respectively). Individuals left for a variety of reasons, including the personal reasons (e.g., job change, illness, etc.), due to the workload, and because the other part of their collaboration left (i.e., if the physician left, the pharmacist could not continue alone and vice versa). While personal and work circumstances certainly do change over time, more could be done at the early stages of the project to maintain a higher level of commitment to completing the full project. Suggestions include:

- Rather than engaging one individual pharmacist to complete the project, a whole pharmacy should be involved. This would allow the work to be better distributed across staff and also ensure that the project does not get lost if one staff person leaves.
- Ensure that the application process asks questions about the motivation for participating and how the pharmacy will manage the administrative and clinical work involved in the project so that these things can be considered when selecting participants. Ideally, those that are selected to participate will be highly motivated and interested in the project, rather than selecting individuals that may only be participating because their employer has told them to, or a colleague has asked them to participate.

*Definitely would do a more comprehensive application process . . . I think I would be far more directive on, why do you want to do this, how will you do it? Have you had a meeting to discuss how this will fit into your schedule? And really make sure they've thought this through. (project team)*

*I think a really good learning is you cannot in pharmacy, assign tasks to an individual. (project team)*

*I think it takes a certain type of pharmacist who is motivated and willing, and then you have to have an equally motivated and willing physician on the other end. (pharmacist)*

## ▀ Patient Recruitment

The goal was for each pharmacy to recruit 15 patients. Only 19 of the 41 participating pharmacies successfully recruited 15 patients, while five pharmacies recruited no patients and nine other pharmacies recruited only five or fewer patients. The pharmacies that had trouble recruiting patients identified challenges such as:

- Some stores had a limited number of patients shared between the physician and pharmacy that met the project's criteria (conditions of interest, MSI coverage, etc.) to begin with. In a few cases this is because a pharmacy was participating with a physician that they did not work frequently with in order to meet the need for two participating pharmacies per physician.
- The Pharmacare coverage criteria was a limiting factor as patients who might have benefitted from the CCDP were not eligible and did not want to join Family Pharmacare.
- Some pharmacists reported that even if they had enough eligible patients to recruit from, patients were not interested or did not see the value in participating. In some cases, this was because patients felt they were already well-managed by and had good access to their physician.
- A few pharmacists felt the specific conditions/risk factors required were too narrow, and a few specifically identified challenges with approaching people who qualified because they were obese (i.e., they felt uncomfortable explaining that a patient's weight was one of the criteria for inviting them to participate).

To address these challenges, the following are suggested:

- Ensure that participating pharmacies do a rigorous assessment with their partner physician of the patients that may qualify to participate as part of the application process, so that only those with enough patients to choose from are selected. Knowing that some patients will decline, there should be a greater number of potential patients available than the recruitment target.
- Change the patient selection criteria to focus on patients that are struggling in one or more areas and not necessarily those with specific medical conditions or that have Pharmacare coverage. For example, pain and mental health concerns were major issues for some of the participating patients.
- Have pharmacies first identify the patients that would benefit the most from this type of collaborative care based on the knowledge that they have about the patient and/or with the input of the patient's primary care provider, and then determine which providers would make the most sense to work with in collaboration. Allow pharmacies to work in collaboration with more than one care provider.
- Implement the model in areas where access to family physicians/nurse practitioners is more limited as patients may be more likely to participate and stay engaged if they are facing barriers to access.
- It may be easier to work with patients that already have an established relationship with the pharmacy and know the participating pharmacist(s).
- Pharmacists and physicians were asked what type of patients they thought were best suited to participate in a project like the CCDP. They identified the following as important considerations:
  - Identify a method for assessing patient engagement and willingness to change and work with those who are motivated to change and improve their health.
  - The focus should be primarily on patients who are struggling with their health, i.e., conditions that are not well-managed/in control, many medications they are having difficulty managing,

multiple health issues making them more complex, etc. It may be difficult for pharmacists to identify patients who are not well-managed as they only have access to a patient's medication list and would not know if a patient was outside of the recommended range for clinical measures related to their condition (e.g., A1C or cholesterol above a certain threshold). A final determination of patient need (i.e., those struggling with their health) would likely need to be done in collaboration with a patient's physician.

- The patient's ability to follow through with their participation should be a consideration. For example, those patients with transportation challenges or limited support at home, or those who are quite unwell and end up in hospital may not be as able to participate as others.

*For the purposes of the study, it made sense that it had to be with a specific physician. I think in actual practice it would be a lot more effective if it was based on patients. You found a patient that you said, this person needs a lot of help, and . . . I know I can do a lot for them. And then you contact the physician, and work through it that way as opposed to working with a specific physician and finding the patients between you who qualify for certain reasons. (pharmacist)*

*I really think the main [factor] was probably patient engagement . . . initially, you could always tell as we did our assessments, where [the patient] stood . . . whether it was something that they were going to be actively involved in making changes and implementing the things that are suggested for them, or whether it was going to be resistant . . . I think it'd be really important to make sure that in your initial assessment, that you are checking in with how engaged the patient is in their own health care in their ability to make changes that are suggested to them. And if by the third visit they haven't moved up on that scale to the point where they are actually being actively engaged to make changes, then there has to be an assessment along the way of whether it's beneficial or whether it's not, as opposed to, once you're in, you're in. (pharmacist)*

## ▀ Managing the Workload in the Pharmacy

Many pharmacists found the workload involved in implementing the CCDP was a challenge. This included both the time needed to conduct project activities (i.e., meeting with patients and with the physician), as well as the time for project administration and management (e.g., documentation, entering patient data in the portal, following up with patients, etc.). Some pharmacists reported that they had to complete CCDP work outside of their regular working hours, and in some cases this was unpaid time for the pharmacist. Some of the strategies that pharmacists found helpful during the project or suggested implementing in the future to help manage the workload include the following:

- As indicated earlier, engage the whole pharmacy team (i.e., pharmacists, assistants/ technicians, front cash, etc.) instead of having the project rest primarily/only with one pharmacist. Ensure the team is on board to support whoever is doing CCDP work.
- Ensure sufficient staffing is available in the pharmacy (e.g., pharmacist overlap, availability of a technician) so that the pharmacist working on CCDP tasks can focus on that instead of being pulled into the dispensing workflow.

- Using a shared calendar to book patient appointments and manage patient follow up so the whole team knows which patients are coming in when, and which patients may need a reminder or other follow up contact.
- Streamline the paperwork and use electronic systems to gather/share data wherever possible. Reduce the required paperwork if possible.
- A few pharmacies set aside a specific day that would be dedicated to CCDP activities. This worked well for some, but others found it challenging to do all patient follow up on the same day due to the varied schedules of patients.

*Pharmacists work side by side and instinctively collaborate very easily, directly in an effective manner on a daily basis. Involving the other pharmacists at the pharmacy in the project would enable seamless patient care and would be a fail-safe should any pharmacist re-locate or be given additional duties. (pharmacist)*

*Our workflow ability here was really great. Our staffing was really flexible, and they were really great to make sure that there was always coverage . . . that was really important in the background, to make sure that the pharmacy was adequately staffed, and that everyone was on the same page about the importance of the time being committed to this project. (pharmacist)*

*We had a registered technician, so that allowed me to go in the counseling room with the patient, because I don't think this is something that you can do full-time and be filling prescriptions at the same time. (pharmacist)*

## ▀ Pharmacist-Physician Communication

Overall, communication between pharmacists and physicians participating in the CCDP worked well. However, health care providers did face a few key challenges. Some respondents noted that it was difficult to schedule face-to-face meetings between the physician and pharmacist (only 57% of physician survey respondents indicated that meetings were easy to schedule), and the frequency of meetings between physicians and pharmacists declined over time. A few respondents also highlighted the lack of a shared electronic system for communication and patient management as a major challenge, especially as some participating pharmacies did not have access to SHARE to view lab test results. Even when SHARE was available, if the patient used a private blood collection lab, results are not included in SHARE, so the system does not necessarily provide pharmacists with complete results. Strategies for improving communication and collaboration between providers may include:

- When pharmacists and physicians had a pre-existing relationship, this seemed to strengthen communication and collaboration, or at least allow them to get off to a stronger start. Pharmacists and physicians who were physically located close to one another seemed to have an easier time meeting and communicating.
- Make the communication requirements less structured with fewer and/or shorter face-to-face meetings required. While participants felt the face-to-face meetings were helpful, they also

communicated a lot through other means (phone, email, texting, etc.), and some found this easier and more efficient.

- For face-to-face meetings, it was helpful to have a consistent day/time for the meeting if possible.
- Provide a tool to track and share patient information electronically that both providers can use equally. Ideally the pharmacist and physician would have access to a shared electronic health record (EHR) for the patient so that changes and updates could be communicated efficiently. At a minimum, pharmacists need direct access to accurate and up-to-date results from lab tests rather than getting this information from the physician as this was quite inefficient.
- Participants found it helpful to meet at the physician's office because they were able to access the most recent patient care data there. However, if patient information was readily available to both the physician and pharmacist, the meetings could take place at both the physician's office and the pharmacy.

*The other thing that led to our success is being really the only pharmacy in town. We [the physician and pharmacist] already had a close relationship, so we built upon already a strong foundation. (physician)*

*Collaborative care would have been improved by communicating more by phone rather than spending time trying to organize in person meetings, it was good to meet in person a couple of times but after this it was unnecessary. (physician)*

*It would have been useful if the physician and pharmacist could share the same EHR. (pharmacist)*

While the project provided templates for documenting patient care (i.e., care plan), nothing was specifically required, and pharmacists had to figure out their own approach to managing patient information. Pharmacists had to figure out the best way of tracking patient care information and sharing it with the physician. Some pharmacists indicated that they developed their own forms for summarizing information for their meetings with the physician. As mentioned above, having a place to record patient health information that was shared with the physician would have been helpful. It may also have been beneficial for PANS to provide pharmacists with more support and guidance in this area (e.g., sharing effective practices between participating pharmacies).

Some respondents also noted that broader changes in the culture and approach around health care so that pharmacists are considered an important part of the health care team would ultimately help to support communication and collaboration between different types of providers.

## ▀ Patient Care

The most frequently identified challenge related to patient care discussed by some pharmacists was that patients who were already relatively well-controlled with their conditions ended up being enrolled in the project. For example, at enrollment 35% of patients with hypertension already had a blood pressure in control and 33% of patients with diabetes already had an A1C in control (<7.0%). After a few visits, pharmacists felt

they did not have much more to offer these types of patients in terms of help and support. Another major challenge described by some pharmacists was patients who were very resistant to making any changes. In particular, a few pharmacists noted that it was difficult to motivate some patients to make changes to their lifestyle such as increasing physical activity or improving their diet. Some patients seemed to have challenges keeping appointments or getting bloodwork done when requested, and a few pharmacists noted that follow up actions required were sometimes lost between the pharmacist and the physician.

To address some of these issues and strengthen patient care, the following were suggested:

- The period of time for patient follow up should be more flexible. Some patients may only need a few months of support to address a few specific issues, while others may benefit from more ongoing support.
- A few pharmacists noted that they could have benefited from more education on nutrition and physical activity, as well as how to motivate patients to change and handle patient resistance (PANS did offer a workshop on behaviour change mid-way through the project, but no one signed up to participate).
- Find ways to support patients in getting bloodwork completed. One idea is to have requisition forms ready that pharmacists could give to the patient at their meeting rather than needing the patient to follow up separately with the physician.
- It may be beneficial to provide pharmacists with more supports to help them manage the patient care process (e.g., managing appointments, ensuring data is collected, gathering summary information for physician meetings, etc.). This could take the form of templates, tip sheets, instructional videos, etc.
- It may be helpful to explore a more structured model for some patients, where the pharmacist and physician actually see the patient at a shared clinic so that the physician can immediately act on any required follow up identified by the pharmacist.
- In some cases, patients had many health concerns to be addressed. It was helpful for the pharmacist, physician and patient to decide together which concerns should be prioritized and focus on those first. If the care can be structure to help patients get some “easy” wins that help them feel better quickly, this may help to open the door to other changes later.

*I think that it would be beneficial to not have a timeframe set on it, so depending on the needs of the patient, some of them benefitted most in the first three to four months . . . if it was a complex patient then we definitely needed a lot more time to see the results we were looking for, and implement the changes that weren't tolerated initially, and we had to make a few [smaller] changes along the way to get to our goal. I think the timeframe would have to be different for each patient, based on their needs. (pharmacist)*

*There's lots of capabilities within [pharmacy software] that could have organized pharmacists, could have given them prompts to tell them now it's time to follow up with this patient . . . we could have had some more training and education on how to actually implement the [care] process. (project team)*

*I think there is some benefit in trying to formalize, after you see the pharmacist then a report would go to the doctor, or we'd have our team meeting and then you'd make the appointment to see the doctor. Because then I think it would be more connected. (physician)*

## ▀ Project Management and Supports

While this final evaluation did not collect extensive data on project management and supports (this was discussed in more detail during the interim evaluation), a few lessons learned were described in relation to how the project was managed and supported:

- A few pharmacists noted that they found the online chronic disease management training provided at the beginning of the project quite helpful. Pharmacists indicated a preference for online training as it was more flexible and easier to fit into a busy schedule.
- The resources and supports provided by PANS (e.g., group orientation, pharmacist portal and resources, etc.) seemed to be helpful and appreciated by pharmacists.
- A few respondents suggested that it might have been helpful to bring participants together again to share successes and lessons learned in person at the mid-point of the project.

*It would have been nice to have another personal connection with people – some kind of pep talk or refresher. (physician)*

*I found that the information on the [CCDP] website with the handouts for patient information was helpful, especially for lifestyle changes and motivation either to get them to quit smoking or change their diet. (pharmacist)*

*The learning modules at the beginning of the project were fabulous. I thoroughly enjoyed them, although they were lengthy. (pharmacist)*

The project faced several data quality issues. Pharmacists found it difficult to get baseline and endpoint data for all patients, particularly when bloodwork was required. In addition, there were some minor data entry error issues. To address this, new projects should include a data quality assurance process with clearly outlined quality assurance requirements and tasks along with a timeline and the individual(s) responsible for each task. This could also help to address any project compliance/fidelity concerns (e.g., identifying pharmacies that have not collected patient data as required, identifying pharmacies and physicians that are not meeting as frequently as required) so that these could be addressed early on in the project.

# Conclusion

Overall, the CCDP has achieved positive outcomes for patients, health care providers, and the health system. Pharmacists participating in the CCDP provided patients with many supports, including health education/information, expert review of medications, motivation and accountability to make positive changes to health behaviours, and the space for patients to share their health concerns and questions. The CCDP successfully helped some of the participating patients improve their knowledge and ability to self-manage their health, introduce healthier behaviours, and improve their clinical outcomes such as blood pressure and A1C. Pharmacists also identified and addressed many patient drug related problems and helped patients to improve adherence. Participating patients appear to be highly satisfied with the project and report improved access to health care as a result of the CCDP. The project also helped to improve collaboration between pharmacists and physicians; increased pharmacist knowledge, skills and confidence in providing care to more complex patients; and strengthened pharmacists relationships with patients. There is clear evidence that the project also helped to increase awareness of the value that pharmacists can provide to patient care among project participants.

The project did face some challenges such as a higher-than-expected level of pharmacist and physician attrition, difficulty recruiting patients in some participating pharmacies, and challenges with integrating the work of the project into pharmacy workflow. Most evaluation participants noted that the model was able to improve the quality and comprehensiveness of care for participating patients; however, it did take an investment of time from both pharmacists and physicians to ensure this quality care was provided. Because of the time commitment required of pharmacists and the challenges some pharmacies experienced with integrating the CCDP work into their workflow, the exact model used in the CCDP may not be portable to all pharmacies in Nova Scotia. In spite of any challenges they experienced, there seems to be broad support among both pharmacists and physicians who participated in the CCDP in working more collaboratively with one another, as well as support from patients for participating in collaborative care. Many lessons learned were identified in the course of implementing this project that will contribute to building effective physician-pharmacist collaboration, and it is possible that with some adaptations a version of the CCDP could be implemented more widely in Nova Scotia pharmacies.

# Appendix A: Interview and Focus Group Guides

## Pharmacist Focus Group Guide

### Prior to the Meeting

- As participants join the focus group call, the facilitator will welcome them individually.

### Welcome and Introductions

- The facilitator will introduce herself and ask participants to introduce themselves.
- The facilitator will explain the purpose of the focus group as follows:

### Purpose

*As you know, the Collaborative Care Demonstration Project (CCDP) implemented by the Pharmacy Association of Nova Scotia (PANS) is now coming to an end. Evaluation is a critical part of this project, and the final evaluation will help us to assess the outcomes of the CCDP. As someone who participated in the CCDP your feedback is essential.*

*To help with the analysis of the information, I would like to audio record and transcribe this focus group. The transcript of the focus group will be kept confidential (i.e., only consultants from RPI will see it), and any identifying information (names, places, etc.) will be removed. The responses that you provide will only be reported in aggregate (summed together), and although individual responses may be used as quotations in the final report, you will not be personally identified.*

*Do you have any questions?*

*Do you consent to participate in the focus group?*

*Do I have your permission to record the focus group?*

### Questions

1. What were the greatest accomplishments or successes of the Collaborative Care Demonstration Project (CCDP)?

*Sub-questions:*

- What were the most important things that supported or helped you achieve these successes?

2. Given your experience with the CCDP, if you were speaking to another pharmacist who was about to begin a similar collaboration with a physician, what advice would you give that pharmacist?

*Sub-questions:*

- How would you address any challenges that occurred?

3. What strategies or approaches were most effective in supporting communication and collaboration with the physician?

*Sub-questions:*

- Were there any challenges to communication and collaboration with physicians? How were the challenges addressed, or how could they be addressed?

4. Has your relationship with your partner physician changed as a result of participating in this project? Please describe. (*Interviewer can probe by asking about trust, understanding, sharing of common goals and objectives, enhanced collaboration, etc.*)

5. How, if at all, has your collaboration or relationships with other health care providers (e.g., other physicians, dietitian, social worker, etc.) changed as a result of the CCDP?

6. Please describe some examples of the approaches you used to help support patients to change unhealthy behaviours.

*Sub-questions:*

- How effective do you feel the behaviour change counselling strategies you used were in helping patients make changes to their behaviour?

7. How satisfied are you overall with the care provided to patients during the CCDP?

*Sub-questions:*

- Please describe any changes in the ability of patients to access care in the collaborative model compared to usual care.

8. How, if at all, has your participation in the CCDP affected your level of knowledge, skills or confidence in managing complex patients and supporting patient behaviour change?

*Sub-questions:*

- What was the most important influencer in any changes to your confidence, skills or knowledge?

9. Is the CCDP an effective way to provide more comprehensive care to patients with complex needs? Why or why not?

*Sub-questions:*

- Excluding the time you spent on administrative and evaluation-related tasks for the CCDP, did this project save any time in providing patients with comprehensive care? Why or why not?
- Excluding the time you spent on administrative and evaluation-related tasks for the CCDP, given the impact the project has had/not had on patients, has the time you have invested in collaboration with the physician been worthwhile?

- How can collaboration between physicians and community pharmacists be made more efficient (i.e., take less time, reduce costs, etc.)?
10. Could a collaborative care process similar to that used in the CCDP be implemented widely in the existing workflow of pharmacies across Nova Scotia? Why or why not?
- Sub-questions:*
- Was the compensation provided to pharmacies for participation in the CCDP appropriate? Why or why not?
  - What supports are needed for collaborative patient management between physicians and pharmacists/pharmacies going forward? Who should provide these supports?
11. Do you have any additional feedback you would like to share?

## Pharmacist Interview Guide

### ▀ Pharmacy with Success

#### Introduction and Purpose

*As you know, the Collaborative Care Demonstration Project (CCDP) implemented by the Pharmacy Association of Nova Scotia (PANS) is now coming to an end. Evaluation is a critical part of this project, and the final evaluation will help us to assess the outcomes of the CCDP. As someone who participated successfully in the CCDP (i.e., good collaboration between the physician and pharmacist, higher number of patients enrolled), your feedback is very valuable to understanding how collaborative care can be successful.*

*To help with the analysis of the information, I would like to audio record and transcribe this interview. The transcript of the interview will be kept confidential (i.e., only consultants from RPI will see it), and any identifying information (names, places, etc.) will be removed. The responses that you provide will only be reported in aggregate (summed together), and although individual responses may be used as quotations in the final report, you will not be personally identified.*

*Do you have any questions?*

*Do you consent to participate in the interview?*

#### Questions

Your collaboration with a physician was identified as being successful because [ADD reasons for each individual, e.g., X # of patients enrolled, good collaboration with pharmacist, successfully implemented into workflow, etc.).

1. Are there any other successes from your participation in the CCDP that you would like to add to what I've listed?
2. Thinking of your involvement in the CCDP, what were the key factors that you think contributed to the successes we've described? *[interviewer to prompt re: pharmacist commitment, physician commitment, communication strategies, relationship with physician, impact on patients, type of patients, supports provided by PANS]*
3. What challenges, if any, did you experience in participating in the CCDP? *[interviewer to prompt re: time required to participate in the CCDP, not able to identify enough patients, not able to recruit enough patients, lack of corporate support, lack of support from colleagues, lack of participation or communication challenges with the physician, lack of training, lack of support from PANS, difficulty providing ongoing care to patients (e.g., scheduling, engaging patients, having patients follow up, etc.)]*

*Sub-questions:*

- How did you and/or the physician successfully address these challenges?

4. Is the CCDP an effective way to provide more comprehensive care to patients with complex needs? Why or why not?

*Sub-questions:*

- Excluding the time you spent on administrative and evaluation-related tasks for the CCDP, did this project save any time in providing patients with comprehensive care? Why or why not?
- Excluding the time you spent on administrative and evaluation-related tasks for the CCDP, given the impact the project has had/not had on patients, has the time you have invested in collaboration with the physician been worthwhile?
- How can collaboration between physicians and community pharmacists be made more efficient (i.e., take less time, reduce costs, etc.)?

5. How, if at all, will your participation in the CCDP change how you collaborate with physicians after the project ends?
6. If you were speaking to another pharmacist who was about to begin a similar collaboration with a physician, what advice would you give that pharmacist?
7. Do you have any additional feedback you would like to share?

## ▀ Pharmacy with Challenges

### Introduction and Purpose

*As you know, the Collaborative Care Demonstration Project (CCDP) implemented by the Pharmacy Association of Nova Scotia (PANS) is now coming to an end. Evaluation is a critical part of this project, and the final evaluation will help us to assess the outcomes of the CCDP. As someone who experienced challenges in participating in the CCDP your feedback is critical to give us a better understanding of the challenges and barriers pharmacies experienced so we know what to do differently next time.*

*To help with the analysis of the information, I would like to audio record and transcribe this interview. The transcript of the interview will be kept confidential (i.e., only consultants from RPI will see it), and any identifying information (names, places, etc.) will be removed. The responses that you provide will only be reported in aggregate (summed together), and although individual responses may be used as quotations in the final report, you will not be personally identified.*

*Do you have any questions?*

*Do you consent to participate in the interview?*

### Questions

1. What challenges prevented you from fully participating in the CCDP? *[interviewer to prompt re: time required to participate in the CCDP, not able to identify enough patients, not able to recruit enough patients, lack of corporate support, lack of support from colleagues, lack of participation or communication challenges with the physician, lack of training, lack of support from PANS, difficulty providing ongoing care to patients (e.g., scheduling, engaging patients, having patients follow up, etc.)]*

*Sub-questions:*

- What do you think might have helped to address these challenges?

2. Which parts of the CCDP, if any, worked well or were successful for you?

*Sub-questions:*

- What do you think made these aspects easier/more successful? *[interviewer to prompt re: pharmacist commitment, physician commitment, communication strategies, relationship with physician, impact on patients, type of patients, supports provided by PANS]*

3. Is the CCDP an effective way to provide more comprehensive care to patients with complex needs? Why or why not?

*Sub-questions:*

- Excluding the time you spent on administrative and evaluation-related tasks for the CCDP, given the impact the project has had/not had on patients, has the time you have invested in collaboration with the physician been worthwhile?
  - How can collaboration between physicians and community pharmacists be made more efficient (i.e., take less time, reduce costs, etc.)?
4. If you were speaking to another pharmacist who was about to begin a similar collaboration with a physician, what advice would you give that pharmacist?
  5. Do you have any additional feedback you would like to share?

## **Project Team Focus Group Guide**

### **Prior to the Meeting**

- As participants join the focus group call/enter the room, the facilitator will welcome them individually.

### **Welcome and Introductions**

- The facilitator will introduce herself and ask participants to introduce themselves.
- The facilitator will explain the purpose of the focus group as follows:

### **Purpose**

*The Pharmacy Association of Nova Scotia (PANS) is conducting an evaluation of the Collaborative Care Demonstration Project (CCDP). The purpose of this focus group is to gather your feedback about the outcomes of the CCDP. To help with the analysis of the information, I would like to audio record and transcribe this focus group. The transcript of the focus group will be kept confidential (i.e., only consultants from RPI will see them), and any identifying information (names, places, etc.) will be removed. The responses that you provide will only be reported in aggregate (summed together), and although individual responses may be used as quotations in the final evaluation report (which may be made publicly available), you will not be personally identified.*

*Do you have any questions?*

*Do you consent to participate in the focus group?*

*Do I have your permission to record the focus group?*

### **Questions**

1. Were you satisfied with the Collaborative Care Demonstration Project (CCDP)? Why or why not?

*Sub-questions:*

- What were the greatest accomplishments or successes of the project?
- What were the greatest challenges? How were the challenges addressed, or how could they be addressed?

2. How satisfied are you with the communication and collaboration between physicians and pharmacists?

*Sub-questions:*

- What supported communication and collaboration between physicians and pharmacists?
- Are you aware of any challenges to communication and collaboration between physicians and pharmacists?
- How could communication and collaboration between pharmacists and physicians be improved?

3. How satisfied are you with the patient care provided by the pharmacists? Please explain.

*Sub-questions:*

- Are you aware of any challenges related to patient care provided as part of the CCDP? How were the challenges addressed, or how could they be addressed?
- How could collaborative patient care be improved?

4. Please describe any new or strengthened partnerships across stakeholders as a result of the CCDP. How satisfied are you with the partnerships that have been developed or strengthened?

*Sub-questions:*

- Were there any challenges to developing new or strengthened partnerships? How were the challenges addressed, or how could they be addressed?
- How satisfied are you with communication processes used to share information about the project with stakeholders? How could this communication be improved?

5. In your opinion, has the evaluation strategy (including data collection tools/databases) been effective in monitoring and assessing the demonstration project? Why or why not? How could it be improved?

*Sub-questions:*

- How have the evaluation findings been used to inform project implementation? How will they be used going forward?

6. What lessons have been learned in relation to collaborative models of care between physicians and pharmacists? What advice would you give to an organization implementing a similar project? (*interviewer to probe about lessons related to: supports and training for pharmacies & physicians, administrative/technical support, project set up, pharmacy & physician recruitment, patient recruitment, patient care process, data capture, etc.*)

7. Could the CCDP model be implemented more widely in other pharmacies across Nova Scotia? Why or why not?

*Sub-questions:*

- Was the compensation provided to pharmacies for participation in the CCDP appropriate? Why or why not?

- How can collaboration between physicians and community pharmacists be made more efficient (i.e., take less time, reduce costs, etc.)?
- What supports are needed for collaborative patient management between physicians and pharmacists/pharmacies going forward? Who should provide these supports?

8. Do you have any additional feedback you would like to share?

## Physician Interview Guide

### Introduction and Purpose

*As you know, the Collaborative Care Demonstration Project (CCDP) implemented by the Pharmacy Association of Nova Scotia (PANS) is now coming to an end. Evaluation is a critical part of this project, and the final evaluation will help us to assess the outcomes of the CCDP. As someone who participated successfully in the CCDP (i.e., good collaboration between the physician and pharmacist, higher number of patients enrolled), your feedback is very valuable to understanding how collaborative care can be successful.*

*To help with the analysis of the information, I would like to audio record and transcribe this interview. The transcript of the interview will be kept confidential (i.e., only consultants from RPI will see it), and any identifying information (names, places, etc.) will be removed. The responses that you provide will only be reported in aggregate (summed together), and although individual responses may be used as quotations in the final report, you will not be personally identified.*

*Do you have any questions?*

*Do you consent to participate in the interview?*

### Questions

*Your collaboration with a pharmacist was identified as being successful because [ADD reasons for each individual, e.g., X # of patients enrolled, good collaboration with pharmacist, successfully implemented into workflow, etc.).*

1. Are there any other successes from your participation in the CCDP that you would like to add to what I've listed?
2. Thinking of your involvement in the CCDP, what were the key factors that you think contributed to the successes we've described? *[interviewer to prompt re: pharmacist commitment, communication strategies, relationship with pharmacist, impact on patients, type of patients, supports provided by PANS]*

3. What challenges, if any, did you experience in participating in the CCDP? *[interviewer to prompt re: time required to participate in the CCDP, not able to identify enough patients, not able to recruit enough patients, lack of participation or communication challenges with the pharmacist, lack of training, lack of support from Doctors NS]*

*Sub-questions:*

- How did you and/or the pharmacist successfully address these challenges?

4. Is the CCDP an effective way to provide more comprehensive care to patients with complex needs? Why or why not?

*Sub-questions:*

- Did this project save any time in providing patients with comprehensive care? Why or why not?
- Given the impact the project has had/not had on patients, has the time you have invested in collaborating with the pharmacist been worthwhile?
- How can collaboration between physicians and community pharmacists be made more efficient (i.e., take less time, reduce costs, etc.)?

5. How, if at all, will your participation in the CCDP change how you collaborate with community pharmacists after the project ends?

6. If you were speaking to another physician who was about to begin a similar collaboration with a pharmacist, what advice would you give that physician?

7. Do you have any additional feedback you would like to share?

## **Exit Interview Guide**

### **Introduction and Purpose**

*The Pharmacy Association of Nova Scotia (PANS) is conducting an evaluation of the Collaborative Care Demonstration Project (CCDP). As you know, this project involved developing a new model of collaborative care between physicians and pharmacists focused on supporting patients with multiple morbidities and risk factors. The interim evaluation will assess the project's initiation, progress, and outcomes, and identify areas for improvement as the project continues.*

*As someone who was not able to continue participating in the CCDP, we value your feedback about the project. To help with the analysis of the information, I would like to take notes during this interview. You will have an opportunity to review these notes to ensure accuracy and validate the information provided if you wish to do so. The notes from your interview will be kept confidential (i.e., only consultants from RPI will see them). The responses that you provide will only be reported in aggregate (summed together) in the evaluation*

*report, and although individual responses may be used as quotations in the final report, you will not be personally identified.*

*Do you have any questions?*

*Do you consent to participate in the interview?*

## **Questions**

1. Why did you have to stop participating in the CCDP?

*Sub-questions:*

- Is there anything that could have helped you to continue to participate in the project?
2. Based on the time you spent participating in the CCDP, what were the greatest accomplishments or successes of the project?
  3. Based on the time you spent participating in the CCDP, what were the greatest challenges with the project? How could these challenges be addressed?
  4. What else is needed to support collaboration between physicians and pharmacists to provide care for complex patients in a community pharmacy setting?
  5. Do you have any additional feedback you would like to share?

## **Physician Survey**

### **Purpose**

The Pharmacy Association of Nova Scotia (PANS) is conducting an evaluation of the Collaborative Care Demonstration Project (CCDP). As you know, this project involved developing a new model of collaborative care between physicians and pharmacists to better support patients with multiple morbidities and risk factors. The purpose of this survey is to give you an opportunity to reflect on your experiences with the project and to inform the final evaluation.

### **Who Should Complete this Survey?**

All physicians who took part in the CCDP should complete this survey. Physicians need to complete the survey in order to receive the final compensation payment from Doctors Nova Scotia.

The survey will take approximately 20 minutes to complete.

### **Confidentiality**

Because completion of this survey is a requirement for your final compensation payment from Doctors Nova Scotia, you will be asked to provide your name on the survey. However, your responses will not be associated with your name, and all responses will be kept confidential – only the consultant hired to conduct the survey will have access to the raw survey data (i.e., individual responses). Only aggregate survey data (across multiple respondents) will be reported to PANS or publicly. The survey data will be stored securely on a password protected server.

By completing the survey, you indicate that you have reviewed the information provided above and give your consent to participate. Thank you for your time and helping us to understand the CCDP.

***Thank you for your input!***

**Demographic Information**

1. Please enter your name: \_\_\_\_\_

2. For this demonstration project, I partnered with (select one only):

- One pharmacy throughout the project
- Two pharmacies throughout the project
- Two pharmacies initially, but changed to one pharmacy (e.g., because one of the participating pharmacists left the project)

3. Please enter the initials of the two pharmacists you worked with during the CCDP:

\_\_\_\_ Pharmacist A

\_\_\_\_ Pharmacist B

**Resources and Supports**

4. Thinking of the resources and supports provided over the course of the Collaborative Care Demonstration Project, please indicate how helpful each one has been, where 1 is not helpful at all and 5 is very helpful (select one option for each item):

Resources/Supports	Not Helpful at All					Did Not Use
	1	2	3	4	5	
a) Patient care plan	<input type="checkbox"/>					
b) Access to the Project Manager	<input type="checkbox"/>					

Resources/Supports	Not Helpful at All					Did Not Use
	1	2	3	4	5	
c) Online discussion forum	<input type="checkbox"/>					
d) Patient data portal	<input type="checkbox"/>					

5. Thinking of the resources and supports provided to you over the course of the CCDP, please rate your level of agreement with the following statement (select one option):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) I had all the resources and supports needed to participate in the project.	<input type="checkbox"/>				

### Communication, Collaboration and Partnerships

6. Thinking of the **communication** that has taken place between yourself and the pharmacist over the course of this project, please rate your level of agreement for each statement (select one option for each statement):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) The patient care documentation strategies developed for the project by the pharmacist and/or myself helped to support communication between myself and the pharmacist.	<input type="checkbox"/>				
b) Regular case meetings between myself and the pharmacist were easy to schedule.	<input type="checkbox"/>				
c) Regular case meetings between myself and the pharmacist helped us to communicate about patient care.	<input type="checkbox"/>				
d) There were processes in place to communicate between case meetings about patients if necessary.	<input type="checkbox"/>				
e) Decisions about patient care were clearly documented.	<input type="checkbox"/>				
f) Open communication took place between myself and the pharmacist.	<input type="checkbox"/>				
g) I am satisfied with the level of communication between myself and the pharmacist.	<input type="checkbox"/>				

7. Thinking of the **collaboration** that has taken place between yourself and the pharmacist over the course of this project, please rate your level of agreement for each statement (select one option for each statement):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) The roles and responsibilities of each provider (physician and pharmacist) were clearly defined.	<input type="checkbox"/>				
b) The pharmacist and I worked well together to develop each patient’s care plan.	<input type="checkbox"/>				
c) It was easy to determine who would implement each part of the patient’s care plan.	<input type="checkbox"/>				
d) The pharmacist and I worked well together to manage patient follow up care.	<input type="checkbox"/>				
e) Decision-making about patient care was shared by myself and the pharmacist according to our scopes of practice.	<input type="checkbox"/>				
f) I am satisfied with the level of collaboration between myself and the pharmacist.	<input type="checkbox"/>				
g) I will continue to work collaboratively with the pharmacist in some way after the project ends.	<input type="checkbox"/>				
h) Collaboration between myself and the pharmacist took less time at the end of the project than it did at the beginning.	<input type="checkbox"/>				

8. To what extent have the following elements changed over the course of the 18-month project?

	Improved	No Change	Deteriorated
a) Collaboration between myself and the <b>participating</b> pharmacist (pharmacist A if you worked with more than one pharmacist).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Collaboration between myself and the <b>second participating</b> pharmacist (pharmacist B).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Collaboration between myself and <b>other</b> pharmacists (who did not participate in the CCDP).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Patient Care**

9. Thinking of the care provided to patients collaboratively by yourself and the pharmacist over the course of this project, please rate your level of agreement for each statement (select one option for each statement):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) I am satisfied with the overall patient care process implemented in the CCDP (i.e., identification of patients, pharmacist completes the initial patient interview, pharmacist and physician collaboratively develop the care plan and determine follow up needs).	<input type="checkbox"/>				
b) All the necessary information to formulate the care plans was collected in the initial patient interviews.	<input type="checkbox"/>				
c) The care plans developed for each patient were comprehensive and addressed the needs and concerns of the patient.	<input type="checkbox"/>				
d) Changes to the care plan were made as needed, according to changes in patient needs or preferences.	<input type="checkbox"/>				
e) Follow up with patients according to the parameters identified in the care plan was effective.	<input type="checkbox"/>				
f) The pharmacist provided appropriate supports for behaviour change to patients.	<input type="checkbox"/>				
g) Overall, I am satisfied with how the care plans for each patient were implemented.	<input type="checkbox"/>				
h) Overall, I am satisfied with the care patients received as part of this project.	<input type="checkbox"/>				

10. Based on your experience, are there certain types of patients (or patients with certain characteristics) that benefitted more from participating in the CCDP?

**Overall**

11. Thinking about your overall experience with the Collaborative Care Demonstration Project, please rate your level of agreement for each statement (select one option for each statement):

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) The project has provided benefits to me as a physician.	<input type="checkbox"/>				
b) I learned new skills as a result of participating in this project.	<input type="checkbox"/>				
c) Participating in this project enhanced my knowledge.	<input type="checkbox"/>				
d) The collaborative model of care used in the project is an effective way to provide comprehensive patient care.	<input type="checkbox"/>				
e) The time I invested in this project has been worthwhile given the impact on patients.	<input type="checkbox"/>				
f) I am more likely to collaborate with pharmacists in the future.	<input type="checkbox"/>				

12. If you answered “Agree” or “Strongly Agree” to statements a, b, or c in the previous question, please describe the benefits provided to you as a physician or any new skills you learned or knowledge you acquired.

13. How will you incorporate what you’ve learned through participation in this project into your practice going forward?

14. To what extent have the following elements changed as a result of the CCDP?

	Improved	No Change	Deteriorated
a) The <b>quality of care</b> provided to participating patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) <b>Access to care</b> for participating patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The <b>self-management skills and abilities</b> of participating patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The <b>health outcomes</b> of participating patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) The level of understanding I have of the care that pharmacists provide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Improved	No Change	Deteriorated
f) My awareness of the value that pharmacists provide to patients and to me as a physician.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) The level of trust I have in the care that pharmacists provide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. How, if at all, did participating in the CCDP save you time?

16. If you were speaking to another physician who was about to begin a similar collaboration with a pharmacist, what advice would you give that physician? Consider elements such as which patients should participate, how to collaborate effectively, what resources and supports may be needed, etc.

17. Were there any unanticipated outcomes/consequences as a result of this project?

18. Please indicate which CanMEDS roles you felt were addressed during this educational activity:

- Expert
- Communicator
- Collaborator
- Manager
- Health Advocate
- Scholar
- Professional

19. Did you perceive any degree of bias in any part of this program?

Yes

No

## Patient Survey

Thank you for participating in the Collaborative Care Demonstration Project (CCDP). Your participation has helped the Pharmacy Association of Nova Scotia (PANS) evaluate the patient benefits of collaborative care between pharmacists and doctors. An important part of the evaluation is gathering your feedback on your experience in participating in this project. We have developed a brief questionnaire that we would like you to complete.

The survey will take approximately 15 minutes to complete.

All responses will be kept confidential – only the consultant hired to conduct the survey will have access to the raw survey data, and the survey data will be stored securely on a password protected server.

There are no right or wrong answers, and you are free to skip any questions you do not wish to answer.

By completing the survey, you indicate that you have reviewed this information and give your consent to participate. Thank you for your time and helping us to understand the CCDP.

Patient Health Card Number: \_\_\_\_\_

### **SECTION 1: Demographics**

Please answer a few demographic questions about yourself. This will help us understand the economic benefits of this project.

#### **1. Where do you live?**

Urban area

Rural area

**2. What is the highest level of education you have completed?**

- Less than secondary (high) school diploma
- Secondary (high) school diploma or equivalent
- Some post-secondary education (college/university/trade school)
- Post-secondary degree (college or university)
- Graduate degree (Masters, PhD)

**3. What is your marital status?**

- Single (never married)
- Married/Common-law
- Widowed
- Separated/Divorced

**4. Please indicate your ethnic background:** \_\_\_\_\_

**SECTION 2: The Care You Received**

**5. Thinking of the care you received throughout the CCDP, please select your level of agreement with each statement:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
i) The care plan developed with the pharmacist reflected my needs and preferences.	<input type="checkbox"/>				
j) My doctor and pharmacist worked well together to provide my care.	<input type="checkbox"/>				
k) I do not have to repeat information to the doctor or pharmacist as they know my medical history well.	<input type="checkbox"/>				

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
l) Information provided to me about my health conditions is consistent and does not conflict between the doctor and pharmacist.	<input type="checkbox"/>				
m) I am satisfied with the education I have received about my health condition(s) and care/treatment.	<input type="checkbox"/>				
n) Overall, I am satisfied with the care I received as part of this project.	<input type="checkbox"/>				
o) I prefer the Demonstration Project model (collaborative care between the pharmacist and doctor) to the care I received before participating in the Demonstration Project.	<input type="checkbox"/>				

**6. Thinking of the visits you had with the pharmacist during the CCDP, please select your level of agreement with each statement:**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) The process for booking appointments with the pharmacist worked well.	<input type="checkbox"/>				
b) Each appointment with the pharmacist was a good length of time.	<input type="checkbox"/>				
c) I was able to see the pharmacist as often as I needed.	<input type="checkbox"/>				

**7. If you selected “Disagree” or “Strongly Disagree” to statements b) (Each appointment with the pharmacist was a good length of time) or c) (I was able to see the pharmacist as often as I needed) in the previous question, please indicate why (select all that apply):**

- \_\_\_\_\_ a) The appointments with the pharmacist were **too long**.
- \_\_\_\_\_ b) The appointments with the pharmacist were **too short**.
- \_\_\_\_\_ c) I did not see the pharmacist often enough.
- \_\_\_\_\_ d) I was asked to see the pharmacist more often than I felt was needed.

**SECTION 3: How the Project Affected You**

8. Using the scale below, please select the option that best corresponds to where you are **NOW**.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) I understand the purpose of each medication I am taking.	<input type="checkbox"/>				
b) I feel comfortable with all of the medications that have been prescribed to me.	<input type="checkbox"/>				
c) I feel I am able to manage my health condition(s).	<input type="checkbox"/>				

9. Now, **THINK BACK** to before you participated in the Demonstration Project. Using the scale below, please select the option that best corresponds to where you were **BEFORE** participating:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) I understood the purpose of each medication I was taking.	<input type="checkbox"/>				
b) I felt comfortable with all of the medications that were prescribed to me.	<input type="checkbox"/>				
c) I felt I was able to manage my health condition(s).	<input type="checkbox"/>				

10. As a result of the care and support you received through the Demonstration Project, have you done any of the following (select “I do not need to do this” if you feel you did not need to make this change):

	Yes	No	I do not need to do this
d) Stopped smoking or reduced my smoking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Lost weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Increased my physical activity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Yes	No	I do not need to do this
g) Started eating healthier (e.g., consuming less pop, eating more fruits and vegetables, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Reduced my stress.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Reduced my alcohol intake.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Decreased my caffeine intake.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Improved my sleep (e.g., more sleep, better quality of sleep, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**11. Please describe any positive changes in your health that occurred as a result of your participation in the Demonstration Project:**

**12. Please describe any negative changes in your health that occurred as a result of your participation in the Demonstration Project:**

**13. In the 12 months before you began participating in the Demonstration Project, did you use any of the following health care services, and if yes, how many times:**

	Yes	If Yes, How Many Times?	Did Not Use	Do Not Remember
a) Emergency Room visit	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
b) Walk in clinic visit	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

14. Since you began participating in the Demonstration Project about a year ago, did you use any of the following health care services, and if yes, how many times:

	Yes	If Yes, How Many Times?	Did Not Use	Do Not Remember
a) Emergency Room visit	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
b) Walk in clinic visit	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 4: Overall**

15. Thinking about your overall experience with the Demonstration Project, please rate your level of agreement for each statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
g) The care and support I received through the Demonstration Project helped me <b>better understand</b> what changes I could make to improve my health.	<input type="checkbox"/>				
h) The care and support I received through the Demonstration Project helped me <b>make changes</b> to improve my health.	<input type="checkbox"/>				
i) My health has improved as a result of participating in the Demonstration Project.	<input type="checkbox"/>				
j) I had better access to health care while I was participating in this Demonstration Project.	<input type="checkbox"/>				
k) I am more aware of how pharmacists can help me with my health care needs as a result of participating in the Demonstration Project.	<input type="checkbox"/>				

16. What was the most important thing that your pharmacist did to help you improve your health during this Demonstration Project?

**17. Do you have any suggestions for improving the patient care provided by your pharmacist and doctor working together?**

# Appendix B: Project Description and Documentation

This section provides some additional descriptive information about the structure and activities of the CCDP. Copies of relevant documentation (e.g., patient selection criteria, pharmacy & physician application forms, etc.) can be found in Appendix B of the interim evaluation report.

## Project Administration

The CCDP is led and managed by PANS. A Working Group that includes representatives from PANS, DNS, and DHW provides advice and guidance to the project. The CCDP is also managed and supported by a Project Manager who was hired by PANS. The Working Group met regularly when planning and developing the project but has met less frequently since the CCDP was launched. The CCDP Project Manager works with other PANS staff as required to manage the day-to-day operation of the project.

### ▀ Pharmacy and Physician Compensation

#### *Pharmacies*

Pharmacies participating in the project are compensated based on the activities conducted:

- \$150 for the initial patient visit (approximately 60 minutes).
- \$55 for follow-up appointments (estimated at 30 minutes every two months for each patient).
- \$110 for each of seven one-hour meetings with the physician.
- \$55 for each of 12 thirty-minute follow-up meetings with the physician.
- \$36 per patient for non-in person communication related to the patient's care (i.e., phone calls).

Total compensation for a pharmacy that recruits 15 patients is approximately \$9,100.

#### *Physicians*

Physicians are compensated with a \$4,000 stipend, based on the assumption that they will recruit 30 patients (15 per pharmacy), meet with the lead pharmacist from each pharmacy monthly for an hour the first seven months, then for 30 min for the remaining 12 months, and be available for periodic calls and emails with the pharmacist(s).

## Pharmacist and Physician Recruitment

Recruitment of physicians and pharmacists to participate in the project took place from February to May 2017. Physicians and pharmacists were informed about the project through regular communication channels from DNS and PANS (e.g., newsletters, events, etc.) and invited to submit an application to participate. PANS received over 60 applications from physicians and over 80 from pharmacies, and 23 teams of physicians and pharmacists were selected to participate. The selection of pharmacies and physicians to participate in the project was completed by the project Working Group. The Working Group was provided with a blind list of applications that were identified only by region, payment type for physicians, and whether or not they were a joint application (joint applications with one physician and two pharmacies who would work together already identified were given preference over an application by a physician alone or by a pharmacy alone). The Working Group determined the desired allocation of physician and pharmacist participants from each region and then randomly selected from the potential participants in that region. Most evaluation participants in the interim evaluation thought the recruitment process worked well and was fair.

## Patient Recruitment

Patients had to meet specific criteria in order to participate in the CCDP. Patients had to be Pharmacare members (Seniors', Community Services, or Family Pharmacare), 18 or older, and have either two identified chronic diseases (diabetes mellitus, ischemic heart disease, chronic obstructive pulmonary disease, hypertension), or one chronic disease and one other risk factor (obesity, smoking, non-adherence). Other than ensuring that patients met the identified criteria, it was up to each physician-pharmacy team to determine how they wanted to proceed with the process of recruiting patients to participate in the CCDP. Teams did this in different ways, but typically either the pharmacist or physician generated a list of patients that met the criteria, and they reviewed it together to confirm which patients would be invited to participate. Then either the physician or the pharmacist approached patients initially to invite them to participate. If patients agreed, the pharmacist would follow up to complete the formal consent process and the initial patient interview.

## Processes for Patient Care

Each pharmacy structured their patient care processes as part of the CCDP in the way that would best suit the pharmacy. Pharmacists were provided with a care plan template that they could use to guide their work with patients and meetings with physicians. However, use of this specific template was not required. Pharmacists were required to report selected patient data (demographics, clinical data, DRPs) and project activities (meetings with patients and physicians) in the project online portal, but other than the data required for the project, and pharmacists could use their preferred method for recording the information they needed to provide patient care. Some pharmacists reported using strategies such as patient summary sheets and paper copies of files to help support patient care and organize information they wanted to share with the physician.

# Appendix C: Data Tables

This Appendix provides the detailed data tables to support the data reported in the body of the report. The data tables listed below are organized into five sections:

- [Patient Enrollment and Follow Up, Physician Meetings](#) (Table 1 to Table 4)
- [Patient Demographics from the Data Portal](#) (Table 5 to Table 9)
- [Patient Demographics from the Patient Survey](#) (Table 10 to Table 12)
- [Clinical Outcome Data](#) (Table 13 to Table 25)
- [Patient Survey Results](#) (Table 26 to Table 33)
- [Physician Survey Results](#) (Table 34 to Table 40)

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## Patient Enrollment and Follow Up, Physician Meetings

**Table 1: Patient Enrollment**

Enrollment	n	%
0 patients	5	12.2%
1-9 patients	12	29.3%
10-14 patients	5	12.2%
15 patients	11	26.8%
16 or more patients	8	19.5%
<b>Total</b>	<b>41</b>	<b>100%</b>

**Table 2: Patient Follow Ups with the Pharmacist**

Number of Follow Ups	In Person Visits		Telephone Follow Up		Total Follow Up Contacts	
	n	%	n	%	n	%
No follow ups	21	6.6%	120	37.9%	14	4.4%
1-4 follow ups	162	51.1%	181	57.1%	102	32.2%
5-7 follow ups	112	35.3%	13	4.1%	145	45.7%
8+ follow ups	22	6.9%	3	0.9%	56	17.7%
<b>Total</b>	<b>317</b>	<b>100%</b>	<b>317</b>	<b>100%</b>	<b>317</b>	<b>100%</b>

**Table 3: Pharmacist-Physician Meetings**

Meetings	n	%
No meetings	1	4.0%
4-14 meetings	17	68.0%
15-20 meetings	5	20.0%
21-30 meetings	2	8.0%
<b>Total</b>	<b>25</b>	<b>100%</b>
<b>18 or more meetings</b>	<b>3</b>	<b>12.0%</b>

\* Includes only those pharmacists who completed the project, and only meetings over 15 minutes.

**Table 4: Pharmacist-Physician Meetings at least 60 Minutes Long**

Meetings	n	%
No meetings recorded	3	12.0%
2-5 meetings	8	32.0%
6 meetings	4	16.0%
7-10 meetings	5	20.0%
11-19 meetings	3	12.0%
20+	2	8.0%
<b>Total</b>	<b>25</b>	<b>100%</b>
<b>6 or more meetings</b>	<b>14</b>	<b>56.0%</b>

## Patient Demographics from the Data Portal

**Table 5: Patient Gender**

Gender	All Patients Enrolled		Patients Completing the Project	
	n	%	n	%
Male	219	48.8%	160	50.5%
Female	225	50.2%	157	49.5%
<b>Total</b>	<b>444</b>	<b>99%*</b>	<b>317</b>	<b>100%</b>

\* 4 enrolled patients (1%) did not have a gender entered.

**Table 6: Patient Age**

Age	All Patients Enrolled		Patients Completing the Project	
	n	%	n	%
26-35	4	0.9%	2	0.6%
36-45	9	2.0%	5	1.6%
46-55	21	4.7%	16	5.0%
56-65	92	20.5%	69	21.8%
66-75	177	39.5%	119	37.5%
76-85	119	26.6%	91	28.7%
86-95	21	4.7%	14	4.4%
<b>Total</b>	<b>444</b>	<b>99%*</b>	<b>316*</b>	<b>100%</b>

\*5 patients did not have a birthdate/age entered.

**Table 7: Patient Location\***

NSHA Health Zone	All Patients Enrolled		Patients Completing the Project	
	n	%	n	%
North	138	30.8%	96	30.3%
Central	128	28.6%	84	26.5%
East	95	21.2%	71	22.4%
West	87	19.4%	66	20.8%
<b>Total</b>	<b>448</b>	<b>100.0%</b>	<b>317</b>	<b>100.0%</b>

\*Location is based on pharmacy location.

**Table 8: Patient Eligibility, Health Conditions and Risk Factors**

Condition/Risk Factor	All Patients Enrolled (N=448)		Patients Completing the Project (N=317)	
	n	%*	n	%*
Hypertension	394	87.9%	285	89.91%
Diabetes	240	53.6%	166	52.4%
Ischemic Heart Disease (IHD)	153	34.2%	111	35.0%
COPD	75	16.7%	55	17.4%
Obesity	215	48.0%	158	49.8%
Smoker	62	13.8%	50	15.8%
Non-adherence	62	13.8%	45	14.2%

\*Percentages do not sum to 100% as patients could have more than one condition.

**Table 9: Patient Other Health Conditions (Other than Enrollment Conditions)**

# of Other Conditions/Diseases	All Patients Enrolled (N=448)		Patients Completing the Project (N=317)	
	n	%*	n	%*
None	90	20.1%	50	15.8%
1	36	8.0%	26	8.2%
2	20	4.5%	18	5.7%
3	26	5.8%	15	4.7%
4	26	5.8%	18	5.7%
5	32	7.1%	23	7.3%
6	46	10.3%	37	11.7%
7	26	5.8%	19	6.0%
8	26	5.8%	17	5.4%
9	26	5.8%	20	6.3%
10 or more	94	29.7%	74	23.3%

\*Percentages do not sum to 100% as patients could have more than one condition.

## Patient Demographics from the Patient Survey

**Table 10: Patient Location (Urban or Rural)**

Location	n	%
Rural area	112	58.9%
Urban area	78	41.1%
<b>Total</b>	<b>190</b>	<b>100.0%</b>

**Table 11: Patient Marital Status**

Marital Status	n	%
Married/Common-law	118	61.1%
Widowed	41	21.2%
Single (never married)	20	10.4%
Separated/Divorced	14	7.3%
<b>Total</b>	<b>193</b>	<b>100.0%</b>

**Table 12: Patient Education Level**

Education Level	n	%
Less than secondary	85	43.8%
Secondary school diploma	50	25.8%
Some post-secondary education	41	21.1%
Post-secondary degree	12	6.2%
Graduate degree	6	3.1%
<b>Total</b>	<b>194</b>	<b>100.0%</b>

## Clinical Outcome Data

**Table 13: Patient Adherence**

Change in MMAS Score	n	%
No change	15	37.5%
1-point improvement	19	47.5%
2-point improvement	4	10.0%
3-point improvement	2	5.0%
<b>Total</b>	<b>40</b>	<b>100.0%</b>

Adherence was measured using the 4-item Morisky Medication-Taking Adherence Scale-MMAS. The MMAS is a generic self-reported, medication-taking behaviour scale that consists of four items with a scoring scheme of “Yes” = 0 and “No” = 1. The items are summed to give a range of scores from 0 to 4. The questions are:

1. Do you ever forget to take your medicine?
2. Do you ever have problems remembering to take your medication?
3. When you feel better, do you sometimes stop taking your medicine?
4. Sometimes if you feel worse when you take your medicine, do you stop taking it?

A score of 3 or 4 is considered low adherence, while a score of 0 is high adherence.

**Table 14: Drug Related Problems Identified**

DRP Type	n	% of all DRPs
Needs Additional Therapy	420	47.5%
Different Drug Required	129	14.6%
Dose Too Low	84	9.5%
Adherence	82	9.3%
Unnecessary Therapy	75	8.5%
Adverse Drug Reaction	51	5.8%
Dose Too High	43	4.9%
<b>Total</b>	<b>884</b>	<b>100.0%</b>
Non-medication intervention	436	

**Table 15: Drug Related Problems Outcomes**

DRP Outcomes	n	%
Resolved	261	29.5%
Improved	205	23.2%
Stable	161	18.2%
Partial Improved	137	15.5%
Unimproved	65	7.4%
No Outcome Recorded	30	3.4%
Worsen	13	1.5%
Failure	12	1.4%
<b>Total</b>	<b>884</b>	<b>100.0%</b>

Outcomes for non-medication interventions are also excluded as they are reported elsewhere.

**Table 16: Progress Towards Patient Health Goals**

Type of Goal	Progress		No Change		Deterioration		N
	n	%	n	%	n	%	
Increased Physical Activity	124	40.0%	163	52.6%	23	7.4%	310
Improved Healthy Eating	147	47.7%	109	35.4%	52	16.9%	308

The data in the table above is based on pharmacists assigning patient progress/attitude on their health goal to one of the five stages included in the Transtheoretical Model of Change<sup>6</sup>:

1. **Precontemplation** - In this stage, people do not intend to take action in the foreseeable future (defined as within the next 6 months). People are often unaware that their behavior is problematic or produces negative consequences. People in this stage often underestimate the pros of changing behavior and place too much emphasis on the cons of changing behavior.
2. **Contemplation** - In this stage, people are intending to start the healthy behavior in the foreseeable future (defined as within the next 6 months). People recognize that their behavior may be problematic, and a more thoughtful and practical consideration of the pros and cons of changing the behavior takes place, with equal emphasis placed on both. Even with this recognition, people may still feel ambivalent toward changing their behavior.
3. **Preparation (Determination)** - In this stage, people are ready to take action within the next 30 days. People start to take small steps toward the behavior change, and they believe changing their behavior can lead to a healthier life.
4. **Action** - In this stage, people have recently changed their behavior (defined as within the last 6 months) and intend to keep moving forward with that behavior change. People may exhibit this by modifying their problem behavior or acquiring new healthy behaviors.
5. **Maintenance** - In this stage, people have sustained their behavior change for a while (defined as more than 6 months) and intend to maintain the behavior change going forward. People in this stage work to prevent relapse to earlier stages.

Any move forward in the stages of change categories (i.e., precontemplation to contemplation, preparation to maintenance, etc.) was considered progress towards the patient's goal.

<sup>6</sup> Definitions from: Boston School of Public Health (2018). The Transtheoretical Model (Stages of Change). Available at <http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories6.html>, accessed March 5, 2019. A sixth stage, termination, where people have no desire to return to their unhealthy behaviors and are sure they will not relapse, is also included in the model. However, this stage was not included as a progress category in the CCDP as it is rarely reached, and people tend to stay in the maintenance stage.

**Table 17: Change in Patient Smoking Status**

Change in Smoking	n	%
Quit	8	16.7%
Reduced smoking amount	12	25.0%
No change	25	52.1%
Increased	3	6.3%
<b>Total</b>	<b>48</b>	<b>100.0%</b>

Tobacco consumption is measured in packs per day.

**Table 18: Change in Patient CVD Risk**

Change in CVD Risk	n	%
Decreased	75	46.0%
No change	67	41.1%
Increased	21	12.9%
<b>Total</b>	<b>163</b>	<b>100.0%</b>

**Table 19: Diabetes Control for patients with Diabetes**

Control Measure	Baseline		Endpoint		N
	n	%	n	%	
A1C of <6.0%	8	6.1%	6	4.5%	132
A1C of <7.0%	44	33.3%	52	39.4%	132
A1C of >9.0%	21	15.9%	12	9.1%	132
BP < 130/80	35	25.4%	48	34.8%	138
LDL cholesterol $\leq$ 2.0 mmol/L	79	68.1%	81	69.8%	116

**Table 20: Changes to Hemoglobin A1c for Patients with Diabetes**

Change in A1C	n	%
Decreased	68	51.5%
No change	13	9.8%
Increased	51	38.6%
<b>Total</b>	<b>132</b>	<b>100.0%</b>

**Table 21: Changes to COPD Symptom Control**

Change in COPD Symptom Control	n	%
Improved control	14	41.2%
No change	17	50.0%
Worse control	3	8.8%
<b>Total</b>	<b>34</b>	<b>100.0%</b>

The Clinical COPD Questionnaire (CCQ) was the tool designated to be used for assessing COPD symptom control for all COPD patients. However, due to some miscommunication about the process for this, some pharmacists used a different symptom measurement tool, the COPD Assessment Test (CAT). The results from both measures (whether the patient improved or worsened) are combined in the table above.

**Table 22: Blood Pressure Control for Patients with IHD**

Control Measure	Baseline		Endpoint		N
	n	%	n	%	
BP < 130/80 (DM)	13	37.1%	13	37.1%	35
BP < 135/85 (no DM)	26	42.6%	39	63.9%	61
<b>BP in control</b>	<b>39</b>	<b>40.6%</b>	<b>52</b>	<b>54.2%</b>	<b>96</b>

**Table 23: Changes to Cholesterol for Patients with IHD**

Change in Cholesterol Level	LDL		Total Cholesterol	
	n	%	n	%
Lower	41	62.1%	33	51.6%
No change	3	4.5%	6	9.4%
Higher	22	33.3%	25	39.1%
<b>Total</b>	<b>66</b>	<b>100.0%</b>	<b>64</b>	<b>100.0%</b>

**Table 24: Blood Pressure Control for Patients with Hypertension**

Control Measure	Baseline		Endpoint		N
	n	%	n	%	
BP < 130/80 (DM)	35	25.4%	48	34.8%	138
BP < 135/85 (no DM)	51	44.0%	75	64.7%	116
<b>BP in control</b>	<b>86</b>	<b>33.9%</b>	<b>123</b>	<b>48.4%</b>	<b>254</b>

**Table 25: Changes to Cholesterol for Patients with Hypertension**

Change in Cholesterol Level	LDL		Total Cholesterol	
	n	%	n	%
Lower	101	56.1%	98	56.3%
No change	12	6.7%	18	10.3%
Higher	67	37.2%	58	33.3%
<b>Total</b>	<b>180</b>	<b>100.0%</b>	<b>174</b>	<b>100.0%</b>

## Patient Survey Results

**Table 26: Statements Related to the Quality of Care Received in CCDP**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
The care plan developed with the pharmacist reflected my needs and preferences.	3	1.4%	4	1.9%	201	96.6%	208
My doctor and pharmacist worked well together to provide my care.	1	0.5%	4	1.9%	202	97.6%	207
I do not have to repeat information to the doctor or pharmacist as they know my medical history well.	4	1.9%	8	3.9%	194	94.2%	206
Information provided to me about my health conditions is consistent and does not conflict between the doctor and pharmacist.	5	2.4%	4	1.9%	198	95.7%	207
I am satisfied with the education I have received about my health condition(s) and care/treatment.	4	1.9%	3	1.4%	203	96.7%	210
Overall, I am satisfied with the care I received as part of this project.	3	1.4%	0	0.0%	205	98.6%	208
I prefer the Demonstration Project model (collaborative care between the pharmacist and doctor) to the care I received before participating in the Demonstration Project.	4	2.0%	25	12.5%	171	85.5%	200

**Table 27: Statements Related to Visits with the Pharmacist**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
The process for booking appointments with the pharmacist worked well.	3	1.4%	7	3.4%	197	95.2%	207
Each appointment with the pharmacist was a good length of time.	1	0.5%	2	1.0%	205	98.6%	208
I was able to see the pharmacist as often as I needed.	2	1.0%	5	2.5%	197	96.6%	204

**Table 28: Statements Related to Patient Outcomes**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
The care and support I received through the Demonstration Project helped me better understand what changes I could make to improve my health.	0	0.0%	17	8.1%	193	91.9%	210
The care and support I received through the Demonstration Project helped me make changes to improve my health.	3	1.4%	29	13.9%	177	84.7%	209
My health has improved as a result of participating in the Demonstration Project.	4	1.9%	55	26.4%	149	71.6%	208
I had better access to health care while I was participating in this Demonstration Project.	5	2.4%	47	22.9%	153	74.6%	205
I am more aware of how pharmacists can help me with my health care needs as a result of participating in the Demonstration Project.	0	0.0%	7	3.4%	200	96.6%	207

**Table 29: Patient Behaviour Changes**

Patient Behaviour	Yes			No		I do not need to do this		N
	n	% of total	% excluding "do not need"	n	% of total	n	% of total	
Started eating healthier.	141	68.1%	82.0%	31	15.0%	35	16.9%	207
Reduced my alcohol intake.	29	14.4%	60.4%	19	9.5%	153	76.1%	201
Stopped smoking or reduced my smoking.	30	15.2%	58.8%	21	10.6%	147	74.2%	198
Increased my physical activity.	103	50.0%	57.5%	76	36.9%	27	13.1%	206
Reduced my stress.	85	42.3%	57.4%	63	31.3%	53	26.4%	201
Lost weight.	88	43.1%	54.3%	74	36.3%	42	20.6%	204
Improved my sleep.	76	39.0%	49.7%	77	39.5%	42	21.5%	195
Decreased my caffeine intake.	40	20.1%	42.1%	55	27.6%	104	52.3%	199

**Table 30: Changes in Patient Self-management and Medication Understanding**

Statement	Improved		No change		Deteriorated		N
	n	%	n	%	n	%	
I understand the purpose of each medication I am taking.	103	50%	101	49%	2	1%	206
I feel comfortable with all of the medications that have been prescribed to me.	95	47%	105	51%	4	2%	204
I feel I am able to manage my health condition(s).	95	48%	100	51%	2	1%	197

Patients were asked to rate their level of agreement with each of the three statements in this question on a scale of Strongly Disagree-Disagree-Neutral-Agree-Strongly Agree. Patients were asked to do this thinking about where they are now, and then to reflect back and think about where they were prior to starting the CCDP. If patients moved up the scale (e.g., disagree to neutral, disagree to strongly agree, etc.), this is considered an improvement. If the patient stayed the same, they were categorized as “no change”, and if they moved down the scale, this represents a deterioration.

**Table 31: Patient-reported Health Care Utilization: Emergency Room**

	ER Use Before CCDP		ER Use During CCDP	
	n	%	n	%
Did Not Use	125	61.6%	142	70.6%
Do Not Remember	14	6.9%	9	4.5%
Yes	64	31.5%	50	24.9%
<b>Total</b>	<b>203</b>	<b>100%</b>	<b>201</b>	<b>100%</b>

**Table 32: Patient-reported Health Care Utilization: Walk-in Clinic**

	Walk-in Clinic Use Before CCDP		Walk-in Clinic Use During CCDP	
	n	%	n	%
Did Not Use	141	73.1%	147	77.4%
Do Not Remember	11	5.7%	13	6.8%
Yes	41	21.2%	30	15.8%
<b>Total</b>	<b>193</b>	<b>100%</b>	<b>190</b>	<b>100%</b>

**Table 33: Patient-reported Health Care Utilization: Total and Average # of Visits**

	ER		Walk-in Clinic	
	Before CCDP	During CCDP	Before CCDP	During CCDP
Total Visits	94.5	69	71.5	43
Average Visits per Person	1.5	1.4	1.7	1.4

## Physician Survey Results

**Table 34: Statements Related to Communication**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
The patient care documentation strategies developed for the project by the pharmacist and/or myself helped to support communication between myself and the pharmacist.	3	9.7%	4	12.9%	24	77.4%	31
Regular case meetings between myself and the pharmacist were easy to schedule.	7	23.3%	6	20.0%	17	56.7%	30
Regular case meetings between myself and the pharmacist helped us to communicate about patient care.	4	13.3%	2	6.7%	24	80.0%	30
There were processes in place to communicate between case meetings about patients if necessary.	3	9.7%	3	9.7%	25	80.6%	31
Decisions about patient care were clearly documented.	3	9.7%	5	16.1%	23	74.2%	31
Open communication took place between myself and the pharmacist.	2	6.5%	3	9.7%	26	83.9%	31
I am satisfied with the level of communication between myself and the pharmacist.	3	9.7%	3	9.7%	25	80.6%	31

**Table 35: Statements Related to Collaboration**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
The pharmacist and I worked well together to manage patient follow up care.	3	9.7%	5	16.1%	23	74.2%	31
Decision-making about patient care was shared by myself and the pharmacist according to our scopes of practice.	3	10.0%	2	6.7%	25	83.3%	30
I am satisfied with the level of collaboration between myself and the pharmacist.	5	16.1%	1	3.2%	25	80.6%	31
I will continue to work collaboratively with the pharmacist in some way after the project ends.	3	9.7%	1	3.2%	27	87.1%	31
Collaboration between myself and the pharmacist took less time at the end of the project than it did at the beginning.	4	12.9%	4	12.9%	23	74.2%	31

**Table 36: Statements Related to Patient Care**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
I am satisfied with the overall patient care process implemented in the CCDP.	4	12.9%	3	9.7%	24	77.4%	31
All the necessary information to formulate the care plans was collected in the initial patient interviews.	4	12.9%	0	0.0%	27	87.1%	31
The care plans developed for each patient were comprehensive and addressed the needs and concerns of the patient.	4	13.3%	4	13.3%	22	73.3%	30
Changes to the care plan were made as needed, according to changes in patient needs or preferences.	4	12.9%	3	9.7%	24	77.4%	31
Follow up with patients according to the parameters identified in the care plan was effective.	7	22.6%	5	16.1%	19	61.3%	31
The pharmacist provided appropriate supports for behaviour change to patients.	4	12.9%	4	12.9%	23	74.2%	31
Overall, I am satisfied with how the care plans for each patient were implemented.	7	22.6%	2	6.5%	22	71.0%	31
Overall, I am satisfied with the care patients received as part of this project.	4	12.9%	4	12.9%	23	74.2%	31

**Table 37: Statements Related to Overall Project Benefits**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
The project has provided benefits to me as a physician.	1	5.9%	2	11.8%	14	82.4%	17
I learned new skills as a result of participating in this project.	3	17.6%	9	52.9%	5	29.4%	17
Participating in this project enhanced my knowledge.	3	17.6%	5	29.4%	9	52.9%	17
The collaborative model of care used in the project is an effective way to provide comprehensive patient care.	2	11.8%	0	0.0%	15	88.2%	17
The time I invested in this project has been worthwhile given the impact on patients.	1	5.9%	4	23.5%	12	70.6%	17
I am more likely to collaborate with pharmacists in the future.	0	0.0%	2	13.3%	13	86.7%	15

**Table 38: Physician Perception of Changes over Time**

Statement	Improved		No Change		Deteriorated		N
	n	%	n	%	n	%	
Collaboration between myself and the participating pharmacist.	22	71.0%	7	22.6%	2	6.5%	31
Collaboration between myself and other pharmacists (who did not participate in the CCDP).	4	23.5%	13	76.5%	0	0.0%	17
The quality of care provided to participating patients.	12	70.6%	5	29.4%	0	0.0%	17
Access to care for participating patients.	10	62.5%	6	37.5%	0	0.0%	16
The self-management skills and abilities of participating patients.	12	70.6%	5	29.4%	0	0.0%	17
The health outcomes of participating patients.	11	64.7%	6	35.3%	0	0.0%	17
The level of understanding I have of the care that pharmacists provide.	12	70.6%	5	29.4%	0	0.0%	17
My awareness of the value that pharmacists provide to patients and to me as a physician.	11	64.7%	6	35.3%	0	0.0%	17
The level of trust I have in the care that pharmacists provide.	9	56.3%	7	43.8%	0	0.0%	16

**Table 39: Statements Related to Resources and Supports**

Statement	Strongly Disagree & Disagree		Neutral		Strongly Agree & Agree		N
	n	%	n	%	n	%	
I had all the resources and supports needed to participate in the project.	1	5.9%	4	23.5%	12	70.6%	17

**Table 40: Helpfulness of Resources/Supports**

Resource	1		2		3		4		5		N	Did not use	
	n	%	n	%	n	%	n	%	n	%			
Patient care plan	0	0.0%	1	5.9%	4	23.5%	1	5.9%	8	47.1%	14	3	17.6%
Access to the Project Manager	0	0.0%	1	3.2%	4	12.9%	2	6.5%	2	6.5%	9	8	25.8%
Online discussion forum	0	0.0%	4	13.3%	5	16.7%	2	6.7%	0	0.0%	11	6	20.0%
Patient data portal	0	0.0%	1	3.3%	3	10.0%	2	6.7%	4	13.3%	10	7	23.3%

1= Not Helpful at All; 5=Very Helpful