BEST PRACTICE MEDSCHECK ANNUAL SERVICE: A MULTI-CASE STUDY

by

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A thesis submitted in conformity with the requirements for the degree of Master of Science
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ABSTRACT

Purpose: To identify and describe factors that contribute to best practice adherence-focused medication reviews (MRs) in the community pharmacy.

Methods: A multi-case study, following Yin’s approach, was conducted in two community pharmacies in Ontario referred for their exemplary MR services. Data sources included interviews, pharmacy observations, and service-relevant documents. Data were coded and analyzed thematically. A work systems model, the Systems Engineering Initiative for Patient Safety, served as the conceptual framework.

Results: In both pharmacy cases, MR processes were systematic and normalized. Common work system features included the use of appointments, overlapping pharmacists, task delegation, and e-technologies. Both pharmacies had service leaders/champions and a clinically oriented culture focused on relationship-building with patients and healthcare providers.

Conclusion: Based on common cross-case features, a conceptual definition and recommendations for best practice adherence-focused MRs were provided. Study findings will inform the development of quality improvement initiatives for medication review services in community pharmacies.
I would like to thank my thesis supervisor, Dr. Linda MacKeigan, for her patience and guidance during this research project. You continuously challenged me to consider (and reconsider) my thought processes and word choices. Thank you for sharing your immense knowledge of pharmacy practice research with me. I am leaving this experience as a better person, both academically, and personally. I would also like to thank my thesis committee members:

Dr. Sara Guilcher, for her expertise in case study design, and words of encouragement during my research.

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<tbody>
<tr>
<td>ACC</td>
<td>Anti-Coagulation Clinic</td>
</tr>
<tr>
<td>ACO</td>
<td>Accountable Care Organization</td>
</tr>
<tr>
<td>BPSQ</td>
<td>Best Practice Screening Questionnaire</td>
</tr>
<tr>
<td>CBC</td>
<td>Canadian Broadcasting Centre</td>
</tr>
<tr>
<td>CDTM</td>
<td>Collaborative Drug Therapy Management</td>
</tr>
<tr>
<td>CFIR</td>
<td>Consolidated Framework for Implementation Research</td>
</tr>
<tr>
<td>CIHI</td>
<td>Canadian Institute of Health Information</td>
</tr>
<tr>
<td>CPS</td>
<td>Cognitive Pharmacy Services</td>
</tr>
<tr>
<td>CQI</td>
<td>Continuous Quality Improvement</td>
</tr>
<tr>
<td>DTP</td>
<td>Drug Therapy Problem</td>
</tr>
<tr>
<td>ERIC</td>
<td>Expert Recommendations for Implementing Change</td>
</tr>
<tr>
<td>MCA</td>
<td>MedsCheck Annual</td>
</tr>
<tr>
<td>MM</td>
<td>Medication Management</td>
</tr>
<tr>
<td>MR</td>
<td>Medication Review</td>
</tr>
<tr>
<td>MOHLTC</td>
<td>Ministry of Health and Long Term Care</td>
</tr>
<tr>
<td>MRF</td>
<td>Medication Review and Follow-Up</td>
</tr>
<tr>
<td>MR-PC</td>
<td>Medication Review – Pharmacist Consultation</td>
</tr>
<tr>
<td>MR-S</td>
<td>Medication Review – Standard</td>
</tr>
<tr>
<td>MTM</td>
<td>Medication Therapy Management</td>
</tr>
<tr>
<td>MUR</td>
<td>Medicines Use Review</td>
</tr>
<tr>
<td>ODB</td>
<td>Ontario Drug Benefit</td>
</tr>
<tr>
<td>OPA</td>
<td>Ontario Pharmacists Association</td>
</tr>
<tr>
<td>OPEN</td>
<td>Ontario Pharmacy Evidence Network</td>
</tr>
<tr>
<td>PMR</td>
<td>Personal Medication Record</td>
</tr>
<tr>
<td>SEIPS</td>
<td>Systems Engineering Initiative for Patient Safety</td>
</tr>
<tr>
<td>TDSPA</td>
<td>Transparent Drug Systems for Patients Act</td>
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CHAPTER 1: INTRODUCTION

Background

According to a 2017 report from the Public Health Agency of Canada, more than 20% of Canadian adults are living with one or more chronic disease(s). Indeed, the World Health Organization (2017) stated recently that, “chronic diseases, such as heart disease, stroke, cancer, chronic respiratory diseases, and diabetes, are by far the leading cause of mortality in the world, representing 60% of all deaths”. The burden of chronic disease is expected to continue to increase, in part because of aging populations that are living longer. Thus, the management of chronic disease has become a primary focus of much healthcare policy (Institute of Medicine, 2001; Romanow, 2002; World Health Organization, 2013).

Medications are commonly used to manage chronic diseases. A 2014 report from the Canadian Institute of Health Information (CIHI) about drug use in Canada found that 66% of seniors (aged 65 or older) were taking 5 or more prescription medications, with much of this drug use associated with the management of chronic conditions (CIHI, 2014). However, prescription medications are not always prescribed or administered optimally. According to the same CIHI report, 24% of Canadian seniors were taking potentially inappropriate medications. The annual cost of prescription medication misuse has been estimated to be between 2 billion and 9 billion Canadian dollars (Blueprint for Pharmacy, 2008).

Medication Therapy Management (MTM) is defined as “programs of drug therapy management whose goal is to ensure that medications provided to the eligible beneficiaries are appropriately used to (1) optimize therapeutic outcomes through improved medication use and (2) to reduce the risk of adverse events.” (Academy of Managed Care, 2008). A medication review is the cornerstone of the MTM model (Academy of Managed Care, 2008), and is one intervention that can be used to optimise drug therapies for persons with chronic diseases.
medication review has been defined as “a structured evaluation of a patient’s medicines with the aim of optimising medicine use and improving health outcomes. This entails detecting drug-related problems and recommending interventions” (Pharmaceutical Care Network of Europe, 2016). These drug-related problems can include non-adherence to a medication, suboptimal or unnecessary medications, dosage issues, adverse reactions, or a need for additional medications. Public drug plans in several countries are reimbursing community pharmacies for providing medication review services (Houle et al., 2014).

In Canada, public drug plans in 8 of the 10 provinces fund community pharmacist-led medication review programs. Ontario’s MedsCheck program was the first, launched in 2007 (Houle et al., 2014). The flagship service, a MedsCheck Annual (MCA), consists of an in-person one-on-one consultation between the patient and their community pharmacist to review the patient’s prescription and non-prescription medications. The goal of the service is to support optimal health outcomes by helping patients better understand their medications and ensuring that medications are taken as prescribed (Ontario Ministry of Health and Long Term Care, 2016b). As such, MCAs are an adherence-focused medication review service (Clyne et al., 2008). Community pharmacies are currently paid $60 per MCA consultation.

Policy Context for MedsCheck Annual

In 2006, Ontario enacted the Transparent Drug System for Patients Act (TDSPA). Two of the main goals of the TDSPA were to 1) improve value to the health care system, primarily by leveraging the Ontario Drug Benefit (ODB) Plan’s purchasing power with prescription drug manufacturers, and 2) promote appropriate use of drugs (Ontario Ministry of Health and Long Term Care, 2006). The TDSPA (and its amendments/regulations) resulted in significant changes to community pharmacy revenues (Ontario Ministry of Health and Long Term Care, 2012). It: 1) Increased the dispensing fee for ODB prescriptions from $6.54 to $7.00.
2) Decreased prescription drug mark-ups on the ODB price from 10% to 8%.

3) Eliminated rebates\(^1\) (payments made to pharmacies from generic drug manufacturers in proportion to the amount of the drugs the pharmacy purchased from that manufacturer), estimated to be 40% of generic drug costs (Ontario Pharmacists Association, 2006).

4) Replaced rebates with ‘professional allowances’, which were capped at 20% of ODB’s reimbursable generic drug costs. Professional allowances were required to be reported to ODB and could only be spent on “direct patient care” activities as outlined in the regulations.

5) Decreased the price that ODB would pay for generic drugs from 70% of the brand name drug for the first generic drug (and 90% of the first generic drug price for subsequent generic drugs) to 50% of the brand name drug for all generic drugs.

These changes were expected to save the Ontario government $277 million per year (Ontario Ministry of Health and Long Term Care, 2015). The government planned to reinvest its savings into the provincial drug system by “recognizing the valuable role of pharmacists in patient care by paying them for enhanced patient counselling and other professional service” (Ontario Ministry of Health and Long Term Care, 2015). The TDSPA created a bipartisan Pharmacy Council to assist “in the definition and implementation of pharmacists’ professional services” (Ontario Ministry of Health and Long Term Care, 2006a).

In 2010, Ontario enacted the Creating the Foundation for Jobs and Growth Act, which made further changes to community pharmacy revenues. This Act initiated a second round of ODB generic drug price decreases (from 50% to 25% of the brand name product price) and eliminated professional allowances (Ontario Ministry of Finance, 2010). New provisions

\(^{\text{1}}\)“In order to be competitive, manufacturers would give pharmacies a substantial rebate to induce them to buy their products. The price that manufacturers charged — and customers [and ODB] paid — was thereby artificially increased to the extent of the rebates.” (Supreme Court of Canada, 2013)
mandated that generic drugs in the private market could not be sold for more than the ODB price; therefore, affecting both public (ODB) and private markets (Frelick, 2010).

In April 2007, one year after the TDSPA was enacted, the Ontario Ministry of Health and Long Term Care (MOHLTC), the Ontario Pharmacy Council, and the Ontario Pharmacists Association (OPA) collaboratively launched the annual MedsCheck medication review program. This was followed by a MedsCheck Follow-Up service in November 2007 (Ontario MOHLTC, 2016c). In September 2010, specialized MedsCheck services for patients with diabetes, residents of long-term care homes and home-bound patients were introduced. In April 2011, the Pharmaceutical Opinion Program was initiated, providing remuneration to pharmacies for pharmacist recommendations sent to prescribers to resolve drug therapy problems for ODB beneficiaries, (Ontario MOHLTC, 2016c).

From 2007 to 2013, nearly 1.5 million Ontarians received an MCA service, with an upward trend in service provision over time, and a total cost to the Ontario government of $130 million (Dolovich et al., 2016). The increase in MCA service claims was particularly sharp in 2010, likely because of the further decreases to community pharmacy revenues caused by the Creating the Foundation for Jobs and Growth Act (Dolovich et al., 2016). As of 2013, almost all Ontario community pharmacies were providing MCA services (Dolovich et al., 2016).

Suboptimal MedsCheck Annual Practices

Indicators of sub-optimal MCA service practices have been found in both research and gray literature. For example, the Canadian Broadcasting Centre (CBC) Marketplace (2015) investigated medication review practices, which found that Ontario chain pharmacists admitted to ‘cherry-picking’ less complex patients for MCAs. The pharmacists blamed pressure put on them by corporate head offices to meet quotas/targets put in place to ensure continual revenues from professional services (CBC Marketplace, 2015). The investigation highlighted
pharmacists’ "concerns about the quality of care they were able to deliver while being asked to perform medication reviews as often as possible" (CBC Marketplace, 2015). Indeed, corporate pharmacy executives have described implementation strategies for MCA services that focused on increasing service volume and efficiency rather than service quality (MacKeigan et al., 2017).

In terms of patient selection, recipients of MCA services were more likely to be younger, less medically complex (taking fewer medications), and urban dwelling, indicating that the service possibly was not being delivered to those patients most in need (Pechlivanoglou et al., 2016; Dolovich et al., 2016; Ignacy et al., 2015).

Furthermore, a recent ethnographic study of 4 Ontario community pharmacies found that medication reviews were highly variable in nature. Some consultations were described to be 1) of a short duration (2-5 minutes), 2) conducted by technicians, 3) conducted at the prescription pick-up counter, or 4) were non-comprehensive in nature (Patton et al., 2017). When comparing the detailed descriptions of ‘medication review’ services provided by Patton and colleague to the Program Guidebook (Ontario MOHLC, 2016c), it was evident that some services were not meeting the MOHLTC minimum standards. For example, according to the Guidebook, MCAs must be conducted in an acoustically private space by a pharmacist or student/intern pharmacist and patients must be given their complete personal medication record form (Ontario MOHLC, 2016c) all of which failed to occur to varying degrees in the medications reviews observed.

To some extent, suboptimal MCA service can be attributed to barriers to service implementation and to a quality focus on safe dispensing processes rather than quality services provision (Warholak and Nau, 2010). Identified barriers to medication reviews in community pharmacies include a lack of time, space, and staff as well as workflows that are not conducive to medication review services provision (Dolovich et al., 2016; Latif and Boardman, 2008;
McDonald et al., 2010; Lee et al., 2008). It has been suggested that, in addition to external environmental changes, such as reimbursement for services, “pharmacists must also make both physical and workflow-related changes to their practices” to be able to accommodate pharmacy services such as MCA (Houle et al., 2014).

In 2016, the MOHLTC implemented MedsCheck ‘program enhancements’. These changes were based on a program review by the Ontario Pharmacy Council, and were implemented to “help improve the quality and ensure standards are met” (Ontario MOHLTC, 2016a). These MCA program changes enforced a more structured and uniform service and included the addition of mandatory standardized forms and required that pharmacists send the patient’s updated personal medication record to the patient’s primary prescriber (Ontario MOHLTC, 2016a). Because of these changes, MCA is now likely a more time-consuming service that places further demands on community pharmacists. When considered in combination with previously identified barriers to service provision and acknowledged sub-optimal MCA practices, it becomes evident that pharmacists and pharmacy corporations would benefit from updated work systems to support their MCA services.

**Problem Statement**

The Ontario government has invested a significant amount of health care dollars into the MCA program, and community pharmacies have embraced this new revenue source as shown by widespread program uptake (Dolovich et al., 2016). However, there are indicators that the quality of MCA services has been sub-optimal. As the often-quoted health care improvement saying goes “every system is perfectly designed to get the results it gets” (Mitchell, 2015). Work system optimization within the community pharmacy is needed to support the provision of quality MCA services. Descriptions of best practice MCA service are proposed as a useful tool to do so. In fact, national pharmacy organizations in North America have made calls to
determine ‘best practices’ for MTM services (Canadian Pharmacists Association, 2016; Academy of Managed Care Pharmacy, 2008; National Association of Pharmacy Regulatory Authorities, 2009), yet a precise definition of ‘best practice’ in relation to MTM pharmacy service do not exist. Globally, there has been no research on best practices for any MTM service in community pharmacy.

**Study Purpose**

The purpose of this study was to identify and describe factors that contribute to the provision of a best practice adherence-focused medication review service, including how best to integrate the service into community pharmacy workflow.

**Research Objectives**

1. Define ‘best practice’ in relation to adherence-focused medication reviews in Ontario community pharmacies.

2. Describe how adherence-focused medication review services have been integrated with prescription dispensing and other professional services in Ontario pharmacies.

3. Describe how the study pharmacies’ work systems affect the efficiency, quality, and impact of their best practice adherence-focused medication review services.

4. Make recommendations to Ontario community pharmacies regarding how to achieve best MCA practice.

**Conceptual Framework**

These objectives were accomplished with the aid of the System Engineering Initiative for Patient Safety (SEIPS) Model as a conceptual framework. This model has 3 domains: the work system (structure), processes, and outcomes. The work system is comprised of 5 components. At the center is 1) the person, who uses 2) tools and technologies to perform 3)
tasks of various difficulties/complexities for the 4) organization in a specific 5) environment. The model conceptualizes the work system as a whole, impacting care processes, and patient, employee, and organizational outcomes (Carayon et al., 2009).

The SEIPS model was selected as the conceptual framework for this study for three reasons. First, the model focuses on quality care as is evident in its purposeful use of Donabedian’s structure-process-outcome model of quality care as its backbone (Carayon et al., 2009). Second, the SEIPS model demonstrates a systems orientation of interconnected organizational components comprising the work system domain. Applying a systems-orientation (as opposed to a linear orientation) allows for the exploration of the interconnectivity of work system features driving pharmacy workflows (e.g. dispensing, MCA, and other professional service workflows). Also, many of the barriers identified to medication review services originate in work systems. Thus, work system descriptions of pharmacies with best practice medication review services may prove insightful for pharmacies looking to improve their medication review services. Last, the model was created specifically for health care and has been successfully applied in community pharmacy (Chui et al., 2013; Bacci et al., 2016), providing clear examples of its utility in this setting.

**Significance of the Research**

The MCA medication review service has the potential to improve medication-related health outcomes and to decrease medication-related health care costs (Blueprint for Pharmacy, 2009). These outcomes are probable only if pharmacists are able to provide quality medication reviews to patients likely to benefit from the service.

To the knowledge of this researcher, this is the first study globally to investigate best practices in adherence-focused medication review services and to put forward a definition of ‘best practice’ in the community pharmacy context. This research identifies and describes
workflow efficiencies that can drive enhanced quality and impact of medication review services. Further, this study puts forth recommendations to community pharmacists and pharmacy corporations in Ontario, and in other jurisdictions, on how to achieve best practice adherence-focused medication review services. Pharmacists and pharmacy corporations may choose to incorporate these workflow efficiencies and recommendations into their practice to improve and expand their MedsCheck services. Finally, study findings may encourage and inform the development of quality improvement initiatives for medication review services in community pharmacies.
CHAPTER 2: LITERATURE REVIEW

This chapter provides the background for the research topic, starting with an overview of the types of medication review programs. The next section outlines the dearth of information on best practices in relation to non-dispensing clinical services in the community pharmacy, and describes ‘best practice’ research in other health care settings. This is followed by a review of Ontario’s MedsCheck program and a short description of similar adherence-focused medication review services provided internationally through public funding. Next, barriers to medication review services and medication review service implementation strategies are discussed. The next section provides a review of case studies of medication therapy management (MTM) services conducted in the community pharmacy setting. The final section describes the Systems Engineering Initiative for Patient Safety (SEIPS) model and explains why this model was chosen to guide the study design and data analysis.

Overview of Medication Reviews

A medication review has been defined as “a structured evaluation of a patient’s medicines with the aim of optimising medicine use and improving health outcomes. This entails detecting drug-related problems and recommending interventions.” (Pharmaceutical Care Network of Europe, 2016). The United Kingdom National Prescribing Centre’s 2008 Guide to Medication Reviews lists three types of medication reviews (Clyne et al., 2008), which are described in Table 2.1.
Table 2.1. Types of medication review programs

<table>
<thead>
<tr>
<th>Type 1: Prescription Review</th>
<th>Purpose</th>
<th>Patient Present</th>
<th>Access To Clinical Notes</th>
<th>Includes Rx and Non-Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Address technical issues relating to the prescription</td>
<td>No</td>
<td>Possibly</td>
<td>No, Rx only</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 2: Concordance and Compliance Review</th>
<th>Purpose</th>
<th>Patient Present</th>
<th>Access To Clinical Notes</th>
<th>Includes Rx and Non-Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Address issues relating to the patient’s medication taking behavior</td>
<td>Usually, (depends on the program)</td>
<td>Possibly</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type 3: Clinical Medication Review</th>
<th>Purpose</th>
<th>Patient Present</th>
<th>Access To Clinical Notes</th>
<th>Includes Rx and Non-Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Address issues relating to the patient’s use of medicines in the context of their clinical condition</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Rx = Prescription

Provision of medication review services is consistent with the philosophy of pharmaceutical care as “the responsible provision of drug therapy [by a pharmacist] for the purpose of achieving definite outcomes that improve a patient’s quality of life” (Hepler and Strand, 1990).

Best Practices in Health Care

The aim of this study is to assist community pharmacies in improving the efficiency, quality, and impact of their adherence-focused medication review services. In order to accomplish this, each community pharmacy selected as a case had to demonstrate best practice MCA service, which in turn requires a conceptual or operational definition of ‘best practice’ in the health care context. Therefore, a literature search was undertaken to identify a working definition of best practice.
Best Practice Definitions in the Health Care Professions

A search in PubMed, Medline, and International Pharmaceutical Abstracts using the key words ‘best practice*’, ‘health care’, and ‘defin*’ or ‘concept’ produced 52 articles. Title and abstract reviews yielded 3 relevant articles that mentioned the concept of best practice.

An article by Goes et al. (2015) discussed the creation and diffusion of international ‘best practices’ in health care. After acknowledging the lack of a universal definition of ‘best practice’ in the health care setting, the authors put forth a working definition based on a literature review:

“What is best at a point in time, based on existing knowledge, experience, and research evidence, and within the context and setting in which any particular “best” is established”

Because this definition implied best practice was unchanging, and therefore would stifle innovation, the authors enhanced the definition to emphasize the continual evolution of best practice based on new ideas, technologies, and processes:

“Practices that are truly best result from the interaction of context, opportunity, and need in the moment; not following a static benchmark but continuously building on current practices through experience, learning, and innovation.”

In addition to the definition provided, the authors noted that it is not sufficient to have or know ‘best practices’. Rather, the authors argued, ‘best practices’ need to be followed despite challenges in implementation. Common components of best practice include: 1) a process of continual innovation; 2) enhancing current practices; 3) context-specific, and 4) evidence/experience-based.

In 2001, Perleth et al. wrote about improving the effectiveness and efficiency of the European health care system through the application of ‘best practices’. The article focused mainly on a framework created to describe the preferred types of evidence that guide best
practice and implementation tools that aid dissemination of evidence which can be measured through specific outcomes. The authors provided a definition with their framework in mind:

“...the best way to identify, collect, evaluate, disseminate, and implement information about, as well as to monitor the outcome of, healthcare interventions for patients/ population groups and defined indications or conditions.”

This definition provided a link between health policy and clinical evidence, and was not created for use by health care professionals in a clinical setting; and is, therefore, not of use for this researcher’s study. Key elements of ‘best practice’ such as applying evidence and measuring outcomes were present in the definition; however, no mention of quality was made.

A 2003 report by Grol and Grimshaw described the translation of clinical evidence (systematic reviews and randomized controlled trials) into physician practices to improve patient care. Three ‘issues’ were found in implementing evidence-based practices: attributes of the evidence (e.g. evidence strength, evidence accessibility), barriers and facilitators to practice change, and the effectiveness of implementation strategies. This article did not focus on best practice; however, the authors strongly implied that the optimal translation of best evidence led to best practice. The report did not expand on the concept of ‘best practice’, nor did it provide other attributes or a definition of the term.

Nursing

Additional articles on best practices were identified in the nursing literature. The in-depth analysis of best practice provided in these articles led to a further article search. MedLine, PubMed, and International Pharmaceutical Abstracts were searched using the key words “best practice*” AND the MeSH headings “nursing”, AND “delivery of health care”, AND “quality health care”, yielding 91 articles. Titles and abstracts were scanned and disease specific best practice ‘guidelines’ (e.g. wound care, cardiovascular disease, vaccine administration etc.) were disregarded. Relevant articles were also found through secondary sources such as referrals from
MedsCheck Project researchers. Following are 4 articles that discuss ‘best practice’ in the context of nursing.

Nelson (2014) wrote a concept analysis paper to clarify the use of ‘best practice’ in the nursing literature and to distinguish the term from other related terms (e.g. evidence-based practice, standard of care). Through a literature search, it was determined that the term ‘best practice’ was applied to the nursing literature in 4 domains: educational, administrative, clinical, and theoretical/conceptual. As a noun, best practice was used interchangeably with ‘optimal care’, but best practice was also used as an adjective (e.g. best practice guidelines). Nelson touched on the importance of who decides what is ‘best’, explaining that ‘best’ may differ in depending on their role (e.g. physician, nurse, patient). Thus, simply being based in evidence is not enough to be called ‘best practice’. Nelson provided the following definition of best practice:

“…represents quality care which is deemed optimal based on a prevailing standard or point of view.”

Further, Nelson defined the attributes of best practice as: 1) directive, an instruction or guidance of operation; 2) evidence-based, derived from research; and 3) quality-focused, resulting in excellent outcomes. The definition and defining attributes offered by Nelson failed to describe what quality is, how quality should be measured, or how one knows when quality has been achieved.

In 2002, Driever compared evidence-based practice and ‘best practice’ to produce a working definition of both terms. Driever defined best practice as:

“…the incorporation of evidence-based practice into guidelines that are followed in a clinical setting to achieve desired patient outcomes. This process requires continual monitoring and evaluation, emphasizing quality care.”
Driever concluded that evidence-based practice informs ‘best practice’, which are in turn, used in the benchmarking process for continual quality improvement.

Kingston’s (1999) article described trends in health care that have encouraged the movement towards best practices. Kingston felt that ‘best practices’ were important for achieving value in health care by improving patient outcomes at the lowest possible cost. This author defines ‘best practice’ as:

“… a process or service that has been successfully implemented and fine-tuned to set a new standard or create a new wave of innovation.”

The author focused on benchmarking of ‘best practices’ as improvement initiatives for processes and organizational systems; therefore, this article focused primarily on quality improvement initiatives and the role of ‘best practices’ in that context. While quality improvement may be an important component of ‘best practices’, this researcher believes it is not the only important component.

Smith and Sutton (1999) challenged the modernist values associated with the concept of best practice. The authors argued against best practices founded in certainty, objectivity, and unitary beliefs; following a positivist paradigm, searching for the one ‘best’. The authors argued differing social, political, and cultural contexts in which ‘bests’ are developed, coupled with the high frequency of change and innovation inherent in health care provision required a less positivist approach. The author’s failed to provide a definition for best practice. However, they did explain what best practice is not:

“…it is not a neutral state that can be defined, measured and empirically verified…best practices must be subjected to ongoing critique to expose the gaps, silences and ambiguities that render it problematic.”

The authors of this paper provided an argument against using ‘best practices’ in a universal manner. They argued that best practices must be context specific, having limited transferability between organizations, and being of limited value for benchmarking for quality improvement.
The views of the authors cited in the nursing literature differ when it comes to ‘best practices’. Driever (2002) and Nelson (2014) provided a definition that focused on quality care, while Smith and Sutton (1999) argued that best practices only feign a focus on the patient’s best interests. Smith and Sutton’s (1999) view of ‘best practices’ having limited utility because of their context-specificity directly contradicted Kingston’s view of benchmarking in which organizations need not be identical in order to benefit from each other’s ‘best practices’. This researcher believes that if the context is taken into account, ‘best practices’ can be helpful quality improvement initiatives.

In summary, the literature search identified the following common concepts pertaining to best practice: ‘Best practices’ are: 1) evidence-based; 2) setting-specific; 3) patient outcome-focused; 4) quality driven; 5) directive; 6) iterative in process; and 7) shared. None of the definitions provided in the literature search contained all these concepts.

**Best Practice Definitions in Community Pharmacy**

*Published Research*

In a PubMed search the terms ‘best practice*’ and ‘community pharmac*’ yielded 27 articles. The same search was undertaken in MedLine, which yielded 25 articles. Articles were also gathered through secondary sources including referrals from other researchers, references from pertinent articles, and further literature searches using pertinent article key words. The term ‘best practice’ was used multiple times in all of these articles; however, no definitions were provided. Four representative articles and 1 commentary are discussed further below.

Bacci et al. (2014) described the implementation of medication adherence interventions, including interventional and organizational structure adaptations, in community pharmacies in Pennsylvania by comparing practices of “early adopters” to “traditionalists”. Interviews were conducted with 15 pharmacists recruited from the 118 Pennsylvania Project pharmacies. Five
themes were derived from these interviews, one of which was the need to establish and share best practices during the implementation process. Specifically, the pharmacists shared ‘best practices’ for patient identification, patient recruitment, and increasing the pharmacists’ exposure to the patient. In this sense, the term ‘best practice’ was being used to convey innovation and effectiveness in the implementation processes. While it was interesting that best practices arose as a theme, the authors did not discuss what best practice entailed, and no definition of ‘best practice’ was given.

In 2011, a USA study assessed the impact of a telephone MTM service on patient outcomes, medication adherence, and Medicare Part D drug costs by comparing an intervention group who received the service to a randomly selected control group who were eligible for, but did not receive it (Moczygemba et al., 2011). Best practices were not an integral part of this study; however, the researchers argued that MTM best practices must rely on evidence-based program evaluations. The researchers also explained that up to the point of their study, no MTM best practices had been established, yet they fell short of making any best practice suggestions or providing a more comprehensive definition of the term.

Rupp and Warholak (2008) made best practice recommendations for the improvement of e-prescribing in American community pharmacies. The surveys were completed by pharmacists, pharmacy technicians and student interns. A total of 1094 completed surveys were returned from 7 chain pharmacies in 6 unnamed USA states. The researchers made 11 E-prescribing best-practice recommendations designed to improve the quality and efficiency of the e-prescribing process. Most of the recommendations were specific to the innovation and were primarily focused on the use of technology (e.g. error checking software, electronic responses to physicians, standard electronic formats, etc.) and the delegation of tasks (e.g. physician enters the e-prescription and an assistant performs accuracy check). It is noteworthy that the authors
chose to call their recommendation list ‘best practices’ despite providing no definition of the term. While e-prescribing is not an MTM service, it fits into the scope of professional pharmacy services as an innovation to the dispensing process.

A 2015 commentary by Hawes and Tong provides insight into the role of ambulatory care pharmacists in MTM and chronic disease management through the implementation of evidence-based guidelines. The authors noted that best practice protocols are necessary for management of chronic diseases in the pharmacy setting. Similar to the Moczygemba et al. study, Hawes and Tong explained that best practices are a result of evidence-based clinical and process guidelines. Additionally, the authors distinguished between ‘best practice’ and usual care, emphasizing the need to “close the gaps between best practice and usual care” (Hawes and Tong, 2014).

Brummel et al. (2014) have highlighted best practices for comprehensive MTM services in their case report of Fairview Pharmacy Services, which are provided through an Accountable Care Organization (ACO) model. They imply that ‘best practices’ are those activities that improved patient outcomes and costs because these are the two main aims of ACOs. The authors described service-specific facilitators including: using standardized MTM forms, establishing patient-specific care plans with therapeutic goals, providing pharmacist training, and applying a team-based approach with effective communication. The use of technology was also an important facilitator (i.e. using electronic health records to identify eligible patients, using telemedicine to facilitate patient meetings, and electronic communication channels for interprofessional communication). Remarkably, the authors did not categorize these facilitators as ‘best practice’ components. Instead, the term best-practice was used most frequently as an adjective to describe Fairview’s MTM services. The authors implied that Fairview’s MTM services were best practice because they improved patient outcomes (or intermediary indicators
of outcomes such as blood pressure, blood sugar levels, etc.) with a positive return on investment.

The term best practice in relation to professional pharmacy services in community pharmacy seems to be used either as an adjective to describe a service in a positive light or as a noun, followed by a list of service facilitators. The term best practice sometimes implies a sense of innovation, quality, or effectiveness. The extent to which the term ‘best practice’ is applied in pharmacy practice research is surprising given that limited operational or conceptual definitions of the term could be found within the community pharmacy scope. More specifically, no definitions of best practice exist for pharmacist-led medication review services provided in a community pharmacy. This study aims to address this literature gap within community pharmacy.

*Grey Literature*

A search for a definition of best practice for professional pharmacy services was undertaken in the grey literature, starting with Ontario’s Ministry of Health and Long Term Care (MOHLTC) Professional Pharmacy Services Guidebook 3.0, which provides guidelines for MCA and other services. Best practice was only mentioned in reference to the Smoking Cessation Program, specifying one ‘best practice’ feature: informing the patient that documentation would be shared with other health care providers. Instead, the guidebook offered only minimum standards for specific pharmacy services (Ontario MOHLTC, 2016).

A definition of ‘best practice’ was found in a 2008 consensus document of the American Academy of Managed Care Pharmacy. The Sound Medication Therapy Management (MTM) Programs 2.0 defines ‘best practice’ as:

“…actual practices in use by qualified providers following the latest treatment modalities that produce the best measurable results on a given dimension”. (Academy of Managed Care Pharmacy, 2008)
This broad definition does not indicate what ‘results’ should be measured or what ‘actual practices’ should be based on (e.g. evidence-based). The consensus document acknowledged that, as of 2008, no best practices in MTM existed, and that it was necessary to distinguish between “good/best practices” and “floor requirements” for these services. In an attempt to move towards ‘best practice’, the document outlined “important features, principles, and approaches” of a “sound MTM program”. Included in this list were broad topics such as: patient-centered approaches, team-based approaches, communication, specific targeted patient population, program flexibility, evidence-based best practices, and promotion of MTM services.

The document also listed more specific operational aspects of sound MTM services:

1. Processes for identification and recruitment of patients (who identifies them and how is it done)

2. Services to meet the needs of individual patients

3. Services tailored for setting and cultural differences

4. Coordination of care (through health information technologies)

5. Appropriate documentation (outcome measurements to determine program effectiveness)

6. Quality assurance

7. Communication within the MTM program (between plan members and providers)

8. Identifying the best practitioner to deliver the service (including continuing education)

9. Adoption of standardized documentation, billing and payment systems

While this list was more comprehensive than the ‘important elements’ list, it was not created to be prescriptive. This researcher believes that the important elements, operational aspects and definition provided in this document fell short of specification of ‘best practice’, likely because the MTM umbrella is too large to have one set of ‘best practices’ as a whole. Instead, ‘best practices’ are better determined for individual MTM programs/services.
Next, the Blueprint for Pharmacy for the Vision for Pharmacists and Implementation Plan were reviewed. The 2008 Vision for Pharmacists described a profession-wide vision of “optimal drug therapy outcomes for Canadians through patient-centred care”. It set expectations for pharmacists and pharmacy technicians. Interestingly, the document stated that pharmacists were expected to contribute to best practices in patient care, but no definition of best practice was provided.

The Implementation Plan (2009) explained how the Pharmacy Vision was to be enacted, including action steps, priorities, timelines, and suggested leadership groups. The Implementation Plan described 5 macro-level (i.e. institutional and policy level) areas that needed to be addressed before individual practitioners would be able to fully realize their potential. There was no mention of best practices at the pharmacy level. While the term ‘best practice’ was used in both the Vision for Pharmacy and Implementation Plan documents, neither identified factors contributing to, nor a definition of best practice.

The National Association of Pharmacy Regulatory Authorities’ (NAPRA) 2009 Model Standards of Practice (MSOP) for Canadian Pharmacists sets forth the minimum standards for dispensing and MTM services. The document was based on ‘best practices’ identified in reports and frameworks from different countries, through input from the National Advisory Committee on Pharmacy Practice, and other stakeholders. Interestingly, the reports and frameworks that the MSOP drew from included the terms ‘good’, ‘standard’ or ‘minimum’, which does not lead this researcher to believe they were indeed ‘best practices’. No definition or list of important factors contributing to best practice was given.

In 2011, FIP and the World Health Organization collaborated and created the Guidelines on Good Pharmacy Practice: Standards for Quality of Pharmacy Services. The authors defined good pharmacy practice as “the practice of pharmacy that responds to the needs of the people
who use the pharmacists’ services to provide optimal, evidence-based care”. The guidelines included the role of pharmacists as providers of effective MTM and described ways pharmacists could improve access to care, health promotion, and the use of medication on behalf of the patients they serve. This document encouraged pharmacy associations to take part in creating their own minimum pharmacy requirements, and as such provided no tangible best practice factors or a definition for the term.

In summary, the grey literature described minimum standards for quality pharmacy services. Many also commented on the necessity of ‘best practices’ that go beyond floor requirements. Interestingly, certain best practice attributes were described frequently in the above documents. These attributes included offering patient-centered services, assessing patient’s drug therapies for appropriateness and efficacy and resolving any issues, monitoring and documenting patient outcomes, and applying a team-based or interprofessional collaborative approach. While minimum standards are important to have, it is equally as important to strive for continual improvement in MTM services.

**Ontario’s MedsCheck Annual Program**

Ontario’s MCA is an in-person one-on-one consultation with a community pharmacist to discuss prescription and over-the-counter medications and natural health products. The aim of the service is to improve patient’s medication knowledge and adherence and to ensure patients are receiving “the most benefit from their medications” (Ontario Ministry of Health and Long Term Care, 2016c). As such, MCA is an adherence-focused medication review.

Ontario residents with a health card, taking three or more prescription medications for a chronic condition(s) are eligible for one MCA per year. MedsCheck Follow-Ups can be conducted within the annual time-frame for specific reasons: 1) hospital discharge, 2) planned hospital admission, 3) referral from a physician, or 4) pharmacist-identified need (i.e. significant
medication changes, evidence of non-compliance, or transfer of prescription records to the pharmacy). Community pharmacies are currently reimbursed $60 per MCA and $25 per MCA Follow-Up (Ontario Ministry of Health and Long Term Care, 2016c).

According to the Ontario Ministry Of Health and Long Term Care (MOHLTC), MCAs are recommended to be appointment-based, lasting 20-30 minutes (excluding preparation time), and they must be conducted in an acoustically private area of the pharmacy. Pharmacy students or interns may conduct the consultation under the authorization of a pharmacist. Pharmacy technicians are encouraged to play a non-clinical role, managing appointments or preparing documentation for the medication review (Ontario MOHLTC, 2016b). Pharmacists are required to create an accurate and complete medication list, including prescription medications, and over-the-counter medications, and natural health products. A copy of this list is given to the patient following an MCA (Ontario MOHLTC, 2016c).

Amendments to the MedsCheck Annual Program

In July 2016, Ontario’s MOHLTC announced substantial amendments to the MCA program. The new program guidelines, along with other pharmacy service guidelines, are outlined in the Professional Pharmacy Services Guidebook 3.0 (Ontario MOHLTC, 2016c). The guidebook directly links professional pharmacy services, including MCAs, to Ontario’s Patients First Action Plan for Health (Ontario MOHLTC, 2016c), emphasizing that the focus of these pharmacy services is to improve patients’ health care experience and health outcomes.

The MCA program changes included the addition of new standardized forms and a requirement to share patients’ medication records with his/her prescriber (Ontario MOHLTC, 2016c). To support the service, the Ontario MOHLTC has provided:

1) A standardized MedsCheck brochure to foster patient awareness of the MCA program.

2) Mandatory standardized forms to ensure consistency between pharmacies:
a. MedsCheck Patient Acknowledgement of Professional Pharmacy Services: A form that describes the MedsCheck service and its voluntary nature, which must be signed by the patient prior to an MCA to acknowledge he/she understands and agrees to participate in the service. This form replaces the previously required patient signature on the personal medication record form after an MCA consultation.

b. Pharmacists Worksheet: A form that specifies the standardized information that must be collected by the pharmacist and includes a checklist of topics to be discussed with the patient. This completed form may be shared with the patient and the primary prescriber on request. No such form previously existed.

c. Personal Medication Record: A standardized form that details a patient’s medications, including natural health products and over the counter medications. This completed form must be shared with the patient and the primary prescriber. No standardized form previously existed, although a complete medication list was required to be given to the patient following an MCA.

d. Healthcare Provider Notification of MedsCheck Services: A standardized form that must be used when sending the primary prescriber the Personal Medication Record form, indicating whether prescriber action(s) is required or not. Previously, distribution of the patient’s MCA service information to primary prescribers was optional.

3) Optional standardized forms:

a. Patient Take-Home Summary: This form may be completed for an MCA and is encouraged in the event that a follow-up is needed. This form includes a summary of the MCA discussion and medication therapy-related goals. No such form previously existed.
Evaluation of Ontario’s MedsCheck Annual Program

PubMed, Medline, and International Pharmaceutical Abstracts databases were searched from the year 2007 to present, using the search terms ‘MedsCheck*’, ‘medication review’, ‘community pharmacy’, and ‘Ontario’ yielding 13 articles. One additional relevant article was obtained through a co-investigator. Commentaries, pilot studies, articles not specific to Ontario’s MedsCheck Annual service, and a study that described pharmacy students learning experiences with MedsCheck were excluded. The 5 remaining articles are discussed below.

Two months after the MCA program was initiated, Dolovich et al. (2008) explored pharmacists’ initial experience with MCA using a mailed survey and semi-structured interviews. The study sampled pharmacists from a small region of Ontario and reported on their perceived barriers to, and facilitators of, program implementation and service provision. Pharmacists reported improved job satisfaction and improved relationship with physicians. They perceived improvements in patient’s medication knowledge, adherence, and health outcomes. The MCA program had negative effects on the workload of pharmacists and other pharmacy staff. MCA barriers identified by pharmacists included lack of time, staff, and consultation space in the pharmacy as well as lack of patient awareness and interest in the service. Many of these barriers were at the organizational level, requiring work system changes in order to be improved. While it was important to understand early barriers to MCA, it is possible that some of these barriers no longer exist and that new barriers have arisen. Generalizability of this study is limited due to the small number of surveys (80) and interviews (13) and the small geographic area of the study.

A subsequent study by Dolovich and colleagues (2016) expanded on trends in MCA services and recipient characteristics using a cohort study of linked administrative claims data of the first 6 years (2007-2013) of the program. Nearly half of Ontario community pharmacies made a MCA claim during the first month of the program, and, by 2013, nearly 95% of
Pharmacies were providing MCAs. Over 6 years, almost 1.5 million unique patients received the service. MCA recipients were generally urban dwellers, had at least moderate level of morbidity, and had hypertension. Overall, the Ontario MCA program had wide uptake and many Ontarian received the service. The increasing trend of MCA claims was encouraging, however, 66% of MCA recipients received only 1 MCA service over the 6 year period, representing many potential missed opportunities. The findings of this study are limited by the lack of drug information for non-ODB patients (those under 65 years of age).

Pechlivanoglou et al. (2016) identified patient, community, and pharmacy level predictors of MCA service utilization for eligible seniors using a regression analysis of a random 20% sample of MCA services using linked administrative claims data from 2012 to 2013. Those seniors who had recent hospitalizations, were prescribed high risk medications, or were on new medications were more likely to have received an MCA. Seniors were also more likely to receive a MCA if they had previous MCA experience, were younger, taking fewer medications, or were urban dwellers. As a pharmacy’s prescription volume increased, the probability of a patient of that pharmacy receiving an MCA decreased. The authors concluded that the MCA program had a mixed record of reaching those patients most in need of the service and recommended that policies be put in place to encourage service provision to those patients who could benefit most from an MCA.

MacKeigan et al. (2017) described MCA implementation strategies identified through interviews with 42 corporate executives, pharmacy owners, and pharmacy managers in chain and independent pharmacies. Five overarching themes were identified: an initial unpreparedness for the MedsCheck program; the use of multifaceted implementation strategies; the evolution of strategies over time; the perception that strategies were generally successful; and commonality of strategies used across pharmacy ownership types. Corporate and pharmacy level
implementation strategies included mandating the service, setting targets/quotas, using incentives (whether financial or motivational), applying technology, changing job descriptions and delegating specific MedsCheck related tasks (e.g. patient identification and recruitment), and training staff (both formally and informally). The most common strategies focused on efficiencies that could be gained rather than service quality. For example, software was programmed to identify patients that met the minimum program eligibility requirements, rather than patients in high risk target groups. Also, the use of mandates, quotas and financial or other motivational strategies were used to increase the quantity of MCA services, while the quality of the services was generally left to the discretion of the pharmacist. Based on their findings, the authors recommended future research on ergonomic/work systems-based approaches to medication review service delivery with a focus on optimizing system performance and elaborating on the concept of quality service.

Patton et al. (2017) sought provider and patient perceptions of medication review services in 4 Ontario community pharmacies (2 urban and 2 “smaller residential communities”) using an ethnographic study design with observations, semi-structured interviews, and shorter ethnographic interviews. Three major themes were found: 1) variation in the “anatomy” of medication review services; 2) the importance of “local embedding” in the immediate community (i.e. relationships with patients and other healthcare providers); and 3) difficulties with “system embedding” (i.e. with the healthcare system). The researchers found MCA services to be highly variable in duration, interaction type, location, and health care provider type (i.e. technician, student, or pharmacist). Pharmacists described that they valued relationships with clients and health care providers but had variable success in maintaining these relationships depending on their external environment. Pharmacists also felt that a lack of formal information connections between pharmacies and other health care providers was a
barrier to high quality medication reviews. While the authors classified the study as an ethnography, a total of only 72 hours of field research (18 hours per pharmacy) was conducted, raising the possibility that the researchers did not fully immerse themselves in the setting. The authors failed to describe how pharmacies were recruited or selected for the study. Because of the limited number of pharmacies included in the study the generalizability of this research is limited. Also, it seems possible that the authors did not differentiate between different types of medication review services (i.e. MedsCheck Annuals, MedsCheck Diabetes, or MedsCheck Follow-ups) or prescription counselling (e.g. information on a dispensed medication), further limiting generalizability.

Taken together the above studies outline sub-optimal MCA practices in terms of targeting patients who could benefit most from the service, corporate support for pharmacists to provide quality services, and deficiencies in meeting the MOHLTC’s minimum MCA standards. These studies indicate that there remains room for improvement in MCA service provision in Ontario community pharmacies. The optimization of service delivery while maintaining quality service standards should be sought by community pharmacies.

Because of the limited number of studies on Ontario’s MedsCheck program, a literature review on comparable publicly funded adherence-focused medication review services outside of Canada was conducted.

**Other Adherence-Focused Medication Review Programs in Community Pharmacy**

Community pharmacies are being paid by third parties (i.e. public drug plans or private insurance plans) across Europe and much of the developed world for providing medication review services (Houle et al. 2014). A review of remunerated community pharmacist-led services conducted by Houle et al. (2014) concluded that medication review programs were the most common remunerated community pharmacy service.
Three prominent, publicly funded medication review programs from different countries are described below. Each of these programs is provided by a community pharmacist with the aim of improving patient’s medication knowledge and adherence. As such, they are comparable to the Ontario MedsCheck Annual Program.

In 2005, the United Kingdom (UK) introduced the Medicines Use Review (MUR) program (Pharmaceutical Services Negotiating Committee, 2013). The UK’s National Health Service (NHS) remunerates community pharmacies £28 (approximately $48 Canadian) per MUR up to a maximum of 400 MURs per year. The service consists of an annual one-on-one consultation with a pharmacist in a private area in the pharmacy, at the patient’s home, or occasionally, over the phone (with NHS approval). Pharmacists must be accredited to provide the service. Patient eligibility has changed through successive rounds of program amendments over the past 5 years. Currently, patients are eligible for the service if they are taking at least 1 medication; however, 70% of MUR claims must be conducted with patients in a national target group (i.e. taking high risk medications, having cardiovascular or pulmonary diseases, or recent hospital discharge) (Pharmaceutical Services Negotiating Committee, 2016).

In 2007, some New Zealand district health boards began remunerating community pharmacies for MURs. Remuneration varied across district health boards (Pharmacy Council of New Zealand, 2014). Eligible patients must be independent community dwelling individuals with one or more chronic conditions who also meet one of the following criteria: 3 or more medications (or one high risk medication); multiple prescribers; recent hospital discharged; or known medication non-adherence/literacy problems (New Zealand National Pharmacist Services Framework, 2014). MURs may be conducted in the community pharmacy, at a patient’s home or by telephone (Hatah et al., 2014). Similar to the UK MUR, New Zealand
community pharmacists must complete MUR training to become accredited. Up to 4 MURs may be conducted per patient per year (Pharmaceutical Society of New Zealand Incorporated, 2014).

In 2012, Australia introduced the publicly funded MedsCheck program. Eligible patients must be community-based Medicare or Department of Veterans’ Affairs members, on 5 or more medications, with a recent significant medical event (e.g. new diagnosis). No additional pharmacist education is necessary; however, pharmacies must be approved by the Pharmacy Guild of Australia to provide MedsChecks. No more than 10 MedsCheck services can be reimbursed per calendar year per patient. A record of current medications and an action plan are provided to the patient following the MedsCheck (Pharmacy Guild of Australia, 2015).

Evaluation

Research on remunerated medication review services in the community pharmacy has been extensive. Studies have focused on medication review effectiveness (e.g. based on primary and secondary clinical outcomes), barriers and facilitators, and to some extent, service implementation strategies.

Effectiveness

MedLine, PubMed, and International Pharmaceutical Abstracts were searched using the following combination of key words: ‘community pharmacy’, AND ‘pharmacist-led’, AND ‘medication review’ OR the MeSH headings ‘medication therapy management’ OR ‘community pharmacy services’. Because of the abundance of research in this area, the search was limited to journal articles published between 2013 to January 2018 and resulted in 94 articles. The titles and abstracts of all articles were reviewed. The two most relevant research articles are described in detail below:

Jokanovic et al. (2016) conducted an overview of 31 systematic reviews of studies on pharmacist-led medication reviews in community settings between 1995 and 2005. For the
purpose of this overview, a community setting included outpatient, ambulatory, and specialist clinics in addition to community pharmacies. Systematic reviews were excluded if they related primarily to the provision of education (i.e. Type 1 medication reviews) or if a pharmacist did not participate in the medication review. The 31 systematic reviews included in this overview represented medication review services in the USA, Canada, Australia, and the UK. All study designs and outcome measures were considered for the overview. The outcomes were grouped into three categories: intermediary clinical outcomes (e.g. blood pressure, diabetes control measures, and cholesterol levels), “humanistic outcomes” (e.g. medication adherence and quality of life), and economic outcomes (e.g. health care costs and changes in medication).

Thirty systematic reviews measured intermediary clinical outcomes, most of which found favorable results. Meta-analyses included in 12 of the systematic reviews also supported positive impacts of pharmacist-led medication reviews on intermediary clinical outcomes. Humanistic outcomes were reported in 24 systematic reviews, of which 21 indicated improved medication management. Improvements in medication adherence were found in 14 of the 19 reviews that measured this intermediary outcome. Fifteen reviews included economic evaluations, 9 of which were favorable. Mortality and hospitalization rates across the systematic reviews were mixed; however, these were not a primary outcome measure of the majority of the systematic reviews. The authors concluded that overall, pharmacist-led medication reviews in community settings were a successful strategy for improving clinical, humanistic, and economic outcomes. There were some limitations to this study. First, only 20 of the 31 systematic reviews included had at least one study conducted in a community pharmacy setting. Outcomes were not provided based on service settings. In addition, the authors were unable to provide outcomes based on the type of medication review (i.e. type 2 or 3; see Table 2.1.). Lastly the systematic reviews were conducted over a 20 year timeframe, during which many of the medication review
services included may have undergone substantial changes. Thus, combining their outcomes in may not be valid.

In 2016, Kolhatkar et al. conducted an interrupted time series study on the impact of British Columbia’s pharmacist-led medication review services: the ‘standard’ (MR-S) and the ‘pharmacist consultation’ (MR-PC). A total of 147,770 MR-S patients and 16,006 MR-PC patients were included in the study. Outcomes were measured for each patient for the 18 months prior to their first medication review and for the 12 months following. Measured outcomes included drug utilization, drug costs, potentially inappropriate medications, and medication persistence. A statistically significant increase in both the number of drugs and the drug costs were observed per patient per month following the first medication review for both services. No reductions in potentially inappropriate drugs or substantial changes in the number of dispensed of long-term drugs were observed following either an MR-S or an MR-PC. The authors concluded that the MR-S and MR-PC medication reviews had no meaningful impact on drug utilization, drug costs, the number of potentially inappropriate medications, or medication persistence. There were several limitations to this study. First, is the lack of data on patients’ use of other health care services (e.g. physician visits, hospital visits) where savings may have been observed. Another limitation is the lack of data collected on the control of patients’ disease states (e.g. intermediary health outcomes) or medication adherence.

While the evidence on the effectiveness of medication review programs remains equivocal, trends across Europe and the developed world show increasing instances of pharmacist-led medication review programs (Bulajeva et al., 2014; Houle et al., 2014).

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2 If, while conducting an MR-S, the pharmacist identifies a drug therapy problem (DTP) that requires resolution with the patient’s prescriber, then the consultation is billed as an MR-PC. The identification of the DTP is the only difference between the two services.
Barriers and Facilitators

The community pharmacy business model is shifting from the distribution of products to patient centered-care (Mossialos et al., 2015; Hepler and Strand, 1990). This “re-professionalization” has led to much research into barriers and facilitators of medication therapy management program uptake. A literature search was undertaken to identify barriers and facilitators of adherence-focused medication reviews in the community pharmacy. A search in Medline, PubMed, and International Pharmaceutical Abstracts using key words ‘barrier*’ OR ‘facilitator*’ AND ‘community’ AND the MeSH heading ‘pharmacists’ AND ‘medic* review*’ OR the MeSH heading ‘medication therapy management’ OR ‘drug utilization review’. The search resulted in 124 articles. Titles and abstracts were screened for relevance. Articles focusing on interprofessional collaboration, physicians’ perspectives of medication reviews, post-hospitalization medication reconciliation, and drug specific (i.e. warfarin), or disease-specific (i.e. diabetes) medication review services were not considered. Additional articles were found through MedsCheck project team members and reviewing reference lists of relevant articles obtained in the database search. Four studies on barriers and two studies on facilitators are described below.

A postal survey of New Zealand pharmacists was undertaken by Lee et al. (2009), to understand attitudes towards MURs shortly after the program’s inception. The census questionnaire was distributed to 68 of the 71 MUR- accredited pharmacists across the country, and 54 pharmacists returned the questionnaire (79% response rate). Barriers identified included documentation burden, insufficient funding and contract difficulties with the district health board, and insufficient time. Strengths of this study included the census nature of the survey and the high response rate; however, the total number of completed surveys was low. The financial incentives and funding contract barriers identified by pharmacists in this study are unique in that
the MUR services are not nationally funded, instead individual district health boards in are given the authority to create contracts and fund MUR services directly with pharmacists.

A similar study in the UK was conducted by Latif and Boardman (2008) to gain insight into community pharmacists’ attitudes towards MURs, one year post program implementation. Likert scaled-questionnaires were mailed to a convenience sample of MUR-accredited pharmacists from 1 chain pharmacy. One hundred and sixty-seven questionnaires were returned (response rate of 60%). Time and staffing constraints, deficient consultation rooms, insufficient financial incentives, and low physician opinion of the program were all identified as barriers. The authors concluded that the MUR service was generally viewed positively by MUR-accredited pharmacists; however, decreased pharmacist workload and increased support staffing could improve the growth of the service. Two limitations of this study are the rigid structure of the questionnaire with no open-ended questions, and the narrow scope within only 1 pharmacy chain.

In 2010, MacDonald et al. conducted a qualitative study of community pharmacists’ perceived ability and willingness to provide MUR services. Forty-nine interviews were conducted with pharmacists from two regions in England. Pharmacists were recruited opportunistically and through snowballing techniques, and included independent pharmacists, chain pharmacists, and locum pharmacists. The barriers identified included incompatibility between medication-dispensing and MUR workflow, made worse by pharmacists’ wariness of their dispensing staff’s capabilities in the pharmacist’s absence (while conducting the MUR). The MUR workload was especially a concern in independent pharmacies with more limited resources. Chain pharmacists noted pressure from management to complete a targeted number of MURs. Also, pharmacists held little clinical data on patients and rarely retrieved information from patient medication profiles for MURs, limiting the application of pharmacists’ clinical
skills. Many pharmacists expressed unease when asking patients to sign the MUR form. Additional patient-related barriers included frequently missed MUR appointments and low patient demand for the service despite advertising attempts. The researchers concluded that pharmacists’ workload pressures limited their ability to provide MUR services and that quotas in chain pharmacies encourage pharmacists to conduct MURs based on commercial needs (i.e. revenues) rather than patient needs (i.e. benefit from the service). Strengths of this study include the large number and variety of pharmacists interviewed.

Houle et al. (2016) conducted a randomized controlled trial of 10 Alberta community pharmacies to describe the needs of community pharmacists in the provision of medication management (MM) and to determine how practice facilitation could assist MM services. Two publicly funded services were studied: a Comprehensive Annual Care Plan and a Standard Medication Management Assessment, both of which involved the collection of patient medical history and current medications as well as the identification and resolution of drug-related problems. Pharmacies were recruited from one pharmacy chain in two metropolitan areas of Alberta. Selection was based on interest in providing MM service without having fully integrated MM services into the pharmacy. Five of the 10 pharmacies were randomly assigned task-focused facilitation (the intervention group), a tailored intervention to make tasks associated with MM service easier. The remaining 5 pharmacies continued with usual practice. At the intervention sites, practice facilitators interviewed dispensary staff and observed pharmacy workflow, physical layout, and resource availability to identify current practices and barriers to MM service provision. Four barriers were identified in the intervention sites: 1) dispensing workflow disruptions (lack of time and manpower), 2) quantity of, and time to complete, documentation including lack of technological assistance, 3) deficiencies in quality, and a focus on quantity of MM services provided, and 4) uncertainty about how to integrate MM
services. The researchers concluded that community pharmacists who wish to implement MM services could benefit from implementation science strategies such as practice facilitation when overcoming barriers to service implementation.

All of these studies focused on barriers to medication review and medication management services finding that pharmacists’ heavy workload and pharmacy dispensing workflows are incompatible with the provision of such services. These barriers are driven by a common perception of insufficient time and pharmacy staff. All of these studies concluded that changes to community pharmacy practice are necessary to facilitate service provision. These findings are consistent with the barriers to MCA as identified previously (Dolovich et al., 2008).

Two studies focusing on practice change and facilitators to medication review service provision in the community pharmacy are discussed below.

A study conducted by Roberts et al. (2005) focused on the process of practice change and identified facilitators of this process in Australian community pharmacies. Interviews were conducted with 36 key informants including pharmacy owners, managers, pharmacists, and dispensary staff selected for their experience with two innovative community pharmacy programs: the Home Medicines Review and the Quality Care Pharmacy Program. The study was guided by organizational theory, with the community pharmacy as the unit of analysis. Themes identified from the interviews were: 1) different types of change strategies; 2) key people/organizations involved in change; 3) drivers of change; 4) motivators (value based) of change; and 5) facilitators of change. Change strategies were divided into pragmatic/mechanical changes (e.g. mandating the change) and behavioural (e.g. training). The ‘facilitators of change’ theme was further divided into specific factors such as incentives/remuneration, mentors, reorganization of the pharmacy (e.g. new staff, reallocating tasks, changing physical layouts), communication and teamwork, and leadership. The researchers concluded that the study’s
organizational framework provided rich data. They also highlighted a need to study “facilitators for pharmacists and pharmacies at different stages of practice change with different motivations or values”.

A study by Doucette et al. (2012) also applied organizational theory (specifically, entrepreneurial orientation and resource allocation) to understand practice change in pharmacies in the USA. The survey was mailed to 1847 randomly selected pharmacists, and 347 usable surveys were completed and returned (response rate of 19%). An aggregate practice change index for each pharmacy was calculated based on 12 ‘practice change’ items identified by the researchers. Five organizational change variables were assessed using regression models: proactiveness, risk taking, work ethic, autonomy, and adequacy of resources. The skills/knowledge of the pharmacist (84%) and the responsibilities/activities of pharmacy technicians (82%) were the most commonly reported changes. The information collected about patients and the patient care documentation systems were also “identified as changed” in more than 75% of the surveys. The researchers categorized these changes as incremental and architectural innovations that facilitate the implementation of new pharmacy services. Regression analysis found that proactiveness and autonomy, as well as adequacy of financial and operational resources and pharmacy technician staffing were significantly associated with practice change. The researchers concluded that pharmacy practice change is a complex process and that aspects of organizational theory, such as entrepreneurial orientation, play a role in practice change.

Both of these studies, while not specific to medication reviews, provide a description of the change process, moving from a product-driven pharmacy practice model to a more patient-care oriented model. Taken in consideration with the organizational barriers to medication reviews in community pharmacies that were previously identified, this researcher believes that
the use of organizational theory in the study of new patient-care services in the community pharmacy setting is needed.

**Implementation Strategies**

Based on the barriers outlined in the above section, providing medication therapy management services alongside dispensing services are challenging. While there is ample research into barriers and facilitators to the provision of patient-care services, very few articles address successful implementation strategies for incorporating medication review services or other patient-care services into the traditional workflow of the community pharmacy.

A combination of the key words “community pharmacy”, “medication review”, “medication management”, “implementation strategies”, “integrate” and the MeSH heading “pharmaceutical services” and “medication therapy management” were searched in PubMed, Medline, and International Pharmaceutical Abstracts yielding 36 articles. All articles were scanned for relevance to steps/stages, factors, or strategies used to implement patient-care services in the community pharmacy setting. Articles were excluded if they focused on only one implementation strategy (i.e. training), clinical guideline implementation, interprofessional collaboration, or if the programs were implemented in settings other than community pharmacy. Four articles were found that met the above criteria, one of which was previously discussed in the section titled Ontario’s MedsCheck Annual Program (MacKeigan et al., 2017). The remaining 3 are discussed below.

Moulin et al. (2016) explored pharmacists’ perceptions of the implementation process of MedsCheck services in Australian community pharmacies. Twenty-five pharmacists were interviewed from 21 pharmacies with differing levels of MedsCheck service implementation (based on the number of MedsCheck claims in the first year of the program). Six stages of implementation were found: 1) development or discovery of new services; 2) exploration –
assessing value and fit within the organization; 3) preparation – creating organizational capacity (e.g. workflow, staffing, and training) and fostering community awareness; 4) testing – trials of the service; 5) operation – refining procedures and resource allocation; and 6) sustainability – monitoring, adaptation, and improvement. Five implementation influences were also noted: 1) the pharmacy’s vision and leadership; 2) staff communication; 3) staff capacity (e.g. manpower, skill levels, and confidence); 4) community fit (e.g. patient needs); and 5) external support. Each of these influences positively or negatively affected service implementation, depending on its presence. The authors concluded that the implementation strategies described by the pharmacists varied by pharmacy; however, pharmacies that had completed more implementation stages tended to have greater service integration.

Pestka et al. (2016) sought to identify and describe implementation steps and strategies used to integrate medication management (MM) into community pharmacies. Interviews and focus groups were conducted with pharmacy managers/leaders and pharmacists respectively from 4 Minnesota pharmacies that were selected based on “demonstrated engagement in medication management services”. No explanation was provided of what “demonstrated engagement” involved. Five sequential implementation stages/themes (the authors used both terms) were found. Each stage/theme had multiple sub-themes that were considered drivers of success. The first stage, “deciding to act”, involved responding to the external environment, aligning with the pharmacy’s vision statement, leveraging pharmacists’ skills and knowledge, and diversifying business lines. The second stage, “setting the stage”, involved subthemes such as creating a business plan, garnering leadership support, assembling a team, creating a shared vision, organizing task distribution, and gaining staff support. The third stage, “executing the service”, involved engaging the team, strategically allocating resources, selecting target populations, and creating accountability for service delivery and quality. Sub-themes for the
fourth stage, “sticking to it”, included persistence with the service, slowly building momentum, adapting and diversifying operations, and learning as you go. The last stage, “continuing to grow”, involved ensuring process improvement and sustainability, developing professional growth and satisfaction, integrating with care teams, and measuring and reporting results. The authors concluded that each stage was necessary for program implementation of MM in the pharmacies studied.

Bacci et al.’s (2014) study (described in the Best Practices section) described the implementation process of medication adherence interventions in community pharmacies in Pennsylvania through interviews with 15 pharmacists. Five main themes were identified as key steps for program implementation: 1) integrate the intervention into the corporate vision; 2) provide “continual support and mentoring” for staff; 3) anticipate and resolve program barriers; 4) promote active patient-engagement; and 5) identify and share best practices among peers. Implementation facilitators included the use of technology for patient identification and peer mentorship for pharmacy staff. Only low and medium prescription volume pharmacies participated in this study, and these pharmacies were located in close proximity to each other in central and western regions of the state. A limited number of interviews of short durations were conducted and views of non-pharmacist staff were not sought.

All three of the above studies applied qualitative interviews to explore the implementation of medication therapy management programs in the community pharmacy setting. The strength of evidence of the individual studies was low as each study had selection and recruitment limitations including interviewees from: few pharmacies (Pestka et al., 2016), the same chain pharmacy (Bacci et al., 2014), a small geographic area (Moulin et al., 2016). However, there was much convergence in the findings across the studies, as they all set out steps or stages to follow for implementing a service into the community pharmacy setting. Many of
the steps/stages identified overlapped, such as tying the service to the pharmacy vision, persevering, and overcoming barriers. Taken together, these studies underline the importance of garnering support from staff within the pharmacy and making changes to the pharmacy operations in order to support the service (i.e. training staff, delegating tasks).

**Case Studies in Community Pharmacy**

In 2009, Dupotey and de Oliveira published a commentary encouraging the use of qualitative research approaches to understand pharmaceutical care practices in community pharmacies. The authors argued that the humanistic nature of these services requires a contextualized assessment, instead of focusing solely on measurable health and economic outcomes. For example, community pharmacy-specific characteristics such as ownership type, location, patient demographics, and prescription volumes, among others, can influence a pharmacy’s ability to provide pharmaceutical care services. Yet many common study designs ‘control out’ these characteristics to limit the heterogeneity of independent variables. The opposite is true with case study research. The case study design facilitates a holistic, in-depth study of a phenomenon in real world conditions (Yin, 2003). Therefore, the case study approach proves a more relatable comparison for community pharmacy owners/managers.

A literature review was conducted to find applications of case study research designs to the study of medication therapy management services a community pharmacy setting. A search in MedLine, PubMed, and International Pharmaceutical Abstracts was undertaken using various combinations of the key words ‘medication review’, ‘medication adherence’, ‘community pharmacy’, as well as the MeSH heading ‘medication therapy management’ and ‘community pharmacy services’. The researcher reviewed titles and abstracts to find research articles that used the case study methodology. Additional articles were found through prior literature searches and through secondary sources including pertinent article reference list review and
referrals from MedsCheck Project researchers. Four relevant articles focusing on both medication review services and practice change in community pharmacies are described below:

Latif et al. (2011) conducted a case study on the contribution of MURs to patient counselling practices in two community pharmacies in the UK. Pharmacies that provided MUR services were identified via personal contacts, and one chain and one independent pharmacy were chosen (no selection criteria provided). The study involved 5 weeks of unstructured observation at each pharmacy and interviews with patients and dispensary staff to gain insight into their experiences with the MUR service. Detailed notes on behaviours and conversations were taken to uncover behavioural patterns. No framework or model was followed in this case study. Data analysis occurred concurrently with data collection to incorporate emerging ideas into subsequent observations and interviews. Thematic analysis of researcher’s field notes and interview transcripts included coding, meaning condensation, and constant comparison to refine themes. Data analysis was inductive and followed a grounded theory-type approach. Because the unit of analysis was the MUR service, no comparison between the findings in the independent pharmacy and chain pharmacy was conducted. Pharmacists used close-ended questions to rapidly complete the MUR consultation and closely followed the checkbox-style MUR form. Patients rarely asked questions during the MUR consultation and there was little opportunity for an open conversation about the patient’s medicines. The researchers concluded that the service was poorly integrated into the workflow of the dispensary, noting that substantial changes to current practice were necessary. The researchers claimed that this is the first observational study of the MUR service in its natural setting. The authors explained in detail the data collection and analysis methods, and included their interview guides and a sample coding framework in the article.
As part of a larger study, Garcia-Cardenas et al. (2017) used a case study design to evaluate the implementation process of a non-publicly funded medication review and follow-up (MRF) service that was pilot tested in a Spanish community pharmacy. The study used an effectiveness-implementation hybrid framework that divided the implementation process into 4 stages: exploration and adoption, program installation, initial implementation, and full implementation. Data were collected on the implementation process and resulting implementation outcomes through interviews, patient questionnaires, and review of service documentation. In total, six implementation outcomes were measured, 3 of which were analyzed at the level of the community pharmacy: penetration (level of integration), implementation cost, and feasibility (extent to which the service can be carried out). The researchers reported positive implementation outcomes for all measures with the exception of cost, due to high start-up costs and a lack of reimbursement for the service. They identified several necessary changes for the integration of the service into the community pharmacy including: physical structure, internal organization, resource allocation, staffing, and patient awareness. The authors concluded that the implementation of MRF into routine practice is a complex process that requires a holistic approach to be successfully achieved. Because the MRF service was not funded by a third party payer study findings may not generalize to funded medication review services. Limited methodological information was provided in this article and a non-case study publication of a sister study that the authors referenced for their methods also failed to adequately describe the study methods (Ocampo et al., 2015).

The unit of analysis in each study was the medication review service, rather than the community pharmacy, which limited their applicability to this researcher’s study. Two cases studies are reported below that used a multi-case design in a community pharmacy setting of

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3 The MRF was “characterized as an on-going and structured assessment of the patient’s pharmacotherapy, aiming at detecting drug-related problems in order to identify, prevent and solve negative outcomes related to medicines”.
previously implemented and on-going services. Both of these studies described their study methods in depth.

Doucette and Koch (2000) used a multi-case study design to compare resource allocation and practitioner activities relating to the provision of non-dispensing pharmacy services in 6 community pharmacies in Iowa. The study involved: 1) an assessment of the pharmacy’s status as a ‘change’ or ‘no change’ pharmacy based on a set of 14 practice change criteria, and 2) an assessment of 40 influencing factors on practice change. Both the practice change criteria and the list of influencing factors on practice change were determined a priori, based on literature reviews and input from faculty members and practitioners, and were used as the conceptual framework for the study. Potential pharmacies were identified by pharmacy faculty members. Three pharmacies that had adopted new pharmacy services (i.e. ‘change’ pharmacies) and 3 that had not (i.e. ‘no change’ pharmacies) were selected. Survey and interview data were gathered from the owners of each pharmacy. The 3 ‘change’ pharmacies met all of the 14 practice change criteria, while 2 of the ‘no change’ pharmacies met none of them. The remaining ‘no change’ pharmacy appeared to be in the midst of change and met 6 of the 14 criteria. Case descriptions were created for each pharmacy including services offered, changes the pharmacy had made, and factors that influenced the practice change(s). Based on the case descriptions, each investigator assigned a numerical value, using a 3 point scale (1 = low, 3 = high), to each of the 40 influencing factors. Differences were discussed among the team until a single rating was assigned. Comparisons of the mean ratings between the ‘change’ and ‘no change’ pharmacies were conducted. While the authors identified factors associated with practice change, there was no observational component in the study; therefore, factors perceived and reported by the pharmacy owner may be different than those that actually existed. Also, the framework used in this study was restrictive in that both the criteria for practice change and the potential
influencing factors were identified a priori from a literature review prior to the study, limiting
data collection. The scope of their study did not allow for additional factors to be identified.

Snyder et al. (2015) sought to understand how collaborative drug therapy management
(CDTM), in which pharmacists are authorized by a partnering physician to assess patients, order
laboratory tests, administer drugs, and initiate/monitor/adjust drug regimens, had been
implemented in three community pharmacy settings: an independent, a chain, and a pharmacy
located within a health center. Ten sites were referred to the study from experts, from which 3
sites were selected for variation in the duration, scope, and reach of their CDTM services. Data
collection included key informant interviews (with 3 individuals within each team) and onsite
observations. A case description was presented for each site, describing site characteristics and
the CDTM service. Cross-case comparisons described common and differing features of CDTM
policy implementation, to identify barriers and facilitators. The authors found that CDTM was
tailored to the needs of staff and patients in each site. Snyder et al. followed a ‘bottom up’
approach to data collection, whereby many staff in the pharmacy were interviewed to gain a
holistic and comprehensive understanding of the service.

In each study, case selection was purposeful, selecting community pharmacies on either
end of two pre-determined relevant spectrums (i.e. change vs. no change and sustained vs non-
sustained service). Both studies followed a conceptual model/framework to guide and focus data
collection. Doucette and Koch used a rather quantitative form of data analysis, assigning a
numerical value to the influence of each of their 40 potential factors. In contrast, Snyder et al.
applied a qualitative thematic analysis of their data focusing on triangulation of data sources.
Both studies included case comparisons as part of their data analysis.

These studies establish that the use of the multi-case study design has proved suitable for
exploring and describing medication management services and change processes in community
pharmacies. Specifically, the use of observational, interview (group and individual), and survey data collection methods resulted in rich data for analysis and data triangulation. None of the case studies discussed above aimed to identify best practices services. The methods used in each of these case studies informed this researcher’s multi-case study.

**Study Frameworks Considered**

Multiple models and frameworks were considered for this study. Organizational culture models (e.g. Scahill et al., 2009; Jacobs et al., 2011) were not considered because of their narrow focus. Two models (i.e. Leavitt’s model and the Star model) that were seriously considered, and the model that was finally selected (i.e. the SEIPS model) on are described below:

A study conducted by Hopp et al. (2005) used semi-structured interviews with Danish community pharmacy staff and owners from “professionally active” pharmacies to investigate the implementation process of Cognitive Pharmaceutical Services (CPS). CPS are a suite of activities that include medication reviews, which aim to promote safe drug therapy and health promotion. This study was guided by Leavitt’s extended model of an organization. This model illustrated a systems approach, consisting of 5 interconnected variables: 1) tasks; 2) technology; 3) structure; 4) participants, and 5) environment. Fifty-one implementation factors were identified, with the majority being facilitators. Each implementation factor was easily categorized using the variables of Leavitt’s extended model of an organization. However, Leavitt’s tasks and technology variables had relatively few (n=6 and n=2, respectively) associated factors when compared to the other variables. The authors commented on the utility of Leavitt’s model as a framework for implementation analysis. They indicated strengths of Leavitt’s model, including the systems approach of interconnectivity between the variables. Leavitt’s model was not chosen for this study because of its restrictive implementation focus.
The best practice cases in this researcher’s study were well past the implementation phase. Therefore, this model was discarded.

Golden and Martin (2004) developed the Star Model of an organization. This model was also systems-oriented and consisted of five interdependent subsystems. Each subsystem was visualized as the star’s points: 1) goals and tasks; 2) structure; 3) human resources; 4) incentives; 5) technology. Culture and values of the organization were at the center of the star, indicating that it is only possible to change them indirectly through the system or points on the star. The Star Model was applied to Canadian Radiation Oncology Services, a private for-profit (now defunct) healthcare organization, outlining the organization’s systematic design. Ultimately, the decision to discard this model was based on its limited application in community pharmacy settings. While the authors indicated that the model could be useful in other healthcare settings, literature of the Star Models use was severely limited.

The interconnectivity of a systems approach that was praised by Hopp et al. (2005) and Golden and Martin (2004) is also present in the work system of the System Engineering Initiative for Patient Safety (SEIPS) model (Carayon et al., 2006). Additionally, the SEIPS model is more focused on quality as is evident by the purposeful use of Donabedian’s Structure-Process-Outcome as the model backbone (Carayon et al., 2006).

The Systems Engineering Initiative for Patient Safety Model

The SEIPS model was chosen to guide the study design and interpretation of study results. The SEIPS model was created at the Center for Quality and Productivity Improvement at the University of Wisconsin to provide a model “for understanding the structures, processes, and outcomes in health care” (Carayon et al., 2006). The SEIPS model was deliberately based on Donabedian’s Structure-Process-Outcome model of quality care. It expands the scope of ‘structure’ from organizational structure, material resources, and human resources to include the
entire work system (Carayon et al. 2006). See Appendix A for a visualization of the SEIPS model.

The SEIPS model has 3 domains: the work system (structure), processes, and outcomes. The work system is comprised of 5 components. At the center is 1) the person, who uses 2) tools and technologies to perform 3) tasks of various difficulties/complexities for the 4) organization in a specific 5) environment (Carayon, 2009). The process and outcome domains are not elaborated as fully as the work system domain. For example, according to the model the process domain is composed of ‘care process’ and ‘other processes’ (e.g. maintenance, cleaning). The outcome domain is divided into patient outcomes, which are quality of care and patient safety, and employee/organizational outcomes. The model conceptualizes the work system as a whole, impacting care processes, and patient, employee, and organizational outcomes (Carayon, 2009). Furthermore, the SEIPS model describes feedback pathways for system redesign akin to a continuous quality improvement (CQI) cycle whereby processes and outcomes affect future changes to the work system design (Holden et al., 2013).

Human factors engineering principles and Balanced Theory of Job Design also contributed to the development of SEIPS (Smith and Carayon, 2000). Three human factors engineering principles: systems orientation (interconnectedness of work system components), human centeredness (‘person’ is at the center of the work system), and design-driven improvements (feedback CQI loops) are evident in the model. The Balanced Theory of Job Design, rooted in traditional psychology and ergonomic theories, was the origin of the SEIPS model work system domain (Smith and Carayon, 2000). Balanced Theory acknowledges that working conditions affect an individual’s ability to perform their job. Thus, the goal of the theory was to ‘balance’ the positive and negative elements of the 5 interconnected work system components to improve working conditions for the individual resulting in improved employee
performance, safety and health. Smith and Carayon (2000) have explained that the work system model derived from Balanced Theory provided a framework from which a holistic description of unique characteristics of the organization, workforce, products and services, and customers could be derived.

The SEIPS model domains parallel a program logic model (Cooksy et al., 2001). A program logic model includes specification of necessary resources (i.e. the SEIPS work system domain) to perform required activities (i.e. the SEIPS process domain) in order to produce specific outputs and outcomes (i.e. the SEIPS outcome domain). However, the SEIPS model facilitates a more in-depth description of the necessary resources by providing a framework of 5 work system components. See Appendix B for a program logic model for a best practice MCA service created by the researcher.

A literature search of the application of the SEIPS model in a health care setting was undertaken to understand how the model has been applied to research. Specifically, this researcher was looking for application of the model 1) outside of a patient safety context, and 2) to study two concurrent workflows within one organizational setting. The key words ‘SEIPS’, ‘Health Care’, and the MeSH heading ‘patient care’ were searched in PubMed, Medline, and International Pharmaceutical Abstracts yielding 22 articles. No limitations on the publication years were used for this literature search. Three USA studies applied SEIPS in community pharmacy. A brief description of each study and their application of the SEIPS model are provided below.

Chui et al. (2013) sought to identify and describe work system elements that were perceived by Wisconsin community pharmacists as important to the provision of CPS. Eight semi-structured interviews were conducted with pharmacists working in community pharmacies that were participating in a demonstration phase of the Wisconsin Pharmacy Quality
Collaborative. The components of the SEIPS model work system domain were included as guiding concepts in the interview guide and for subsequent qualitative thematic analysis. The authors focused primarily on describing elements of the work system components that were perceived as barriers or facilitators to the provision of CPS. No description of how the work system components played into the CPS workflow (SEIPS process domain) or desired outcomes (SEIPS outcome domain) was provided. The authors did not discuss how the CPS workflow and the prescription dispensing workflow were able to run concurrently, although reference to this barrier was evident in the interviewee quotes.

Bacci et al. (2016) conducted 19 interviews with staff and manager pharmacists at 8 different chain pharmacies in 4 USA states (not including Wisconsin) to describe elements affecting the implementation of collaborative practice agreements (CPAs)¹ and the implementation strategies used. The interview guide and qualitative analysis followed an updated SEIPS 2.0 model, which divided the ‘environment’ work system component into the ‘internal’ and ‘external’ environment. Interviewees discussed elements relating to the ‘person’ and ‘organization’ components of the SEIPS work system domain most often. Interestingly, the authors considered the implementation strategy of ‘changing workflows’ to be an element of the ‘tasks’ component of the work system domain, rather than a component of the process domain, contrary to the authors’ SEIPS 2.0 model description that specifically notes workflow being isomorphic to the process domain (Holden et al., 2013). This categorization of ‘changing workflows’ is indicative of the occasionally conflicting application of the SEIPS model.

Odukoya et al. (2015) investigated work system elements relating to the resolution of e-prescription errors in 5 Wisconsin community pharmacies. The researchers conducted 9 hours of

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¹ A collaborative Practice Agreement (CPA) is a formal relationship between a licensed prescriber and a pharmacist. The prescriber delegates authority to the pharmacist to perform specific patient care functions such as immunizations, ordering laboratory tests, performing patient assessments, or adjusting patients medication regimens.
observation in each community pharmacy and interviewed 27 pharmacists and technicians. Barriers and facilitators to the recovery from e-prescribing errors were identified. The 5 components of the SEIPS model work system were used as sensitizing concepts to guide data collection. Transcripts of the interviews and field notes underwent deductive thematic analyses. Ten themes were drawn from the data and were organized into the 5 SEIPS work system components. The authors concluded that the SEIPS model proved useful in capturing elements of the work system relevant to recovery from e-prescription errors. Successful recovery from these errors requires appropriate working conditions involving all aspects of the work system.

Although the SEIPS model was created with a focus on patient safety, each of these studies applied the model successfully in contexts other than patient safety. All three studies applied the SEIPS model in a similar fashion: the components of the work system domain were used as sensitizing concepts for data collection, and as a framework for coding during thematic analysis. They described elements of the SEIPS work system in great detail but did not describe the SEIPS process and outcome domains relating to their work system. Thus, in this researcher’s opinion, none of these studies used the SEIPS model to its fullest potential. The objective of all three studies was to identify or describe elements of the work systems components. For example, the objective of the Chui et al. study was to identify and describe work system characteristics important to the provision of CPS. They did not describe how these characteristics affected pharmacy processes (e.g. dispensing or cognitive services) or outcomes (e.g. quality of care, errors etc.). Furthermore, none of these studies described the interplay among the work system components despite the systems orientation of the SEIPS model, though the authors noted this limitation. Finally, and most importantly, none of the articles described how two workflows could interface or run concurrently; therefore, the focus of these articles
was too narrow for the needs of this researcher. Because of this, a review of the SEIPS model in other health care settings was warranted.

Ozkaynak et al. (2015) explored the process of complex patient care in 6 anti-coagulant clinics (ACC) through observations, interviews, and document collection. All clinics were affiliated with the Veterans Health Administration and were located in different USA states. The SEIPS model was used as a framework for data collection and thematic analysis. The SEIPS work system components were used to characterize each ACC in a case description. An assessment was conducted of the interface (tasks and resource allocation) between two care processes: 1) for complex patients and 2) for non-complex patients. The researchers found that the process of complex patient care affected clinic operations regularly and unpredictably causing disturbances in the system’s ability to provide care for both complex and non-complex patients. The SEIPS model facilitated identification of similarities and differences in workflows for complex patients and non-complex patients care processes in each ACC. With this knowledge, researchers created a workflow design framework to “support high quality, effective, efficient, and safe healthcare” for both complex and non-complex patients in an ACC setting. This study applied the SEIPS model to explore two concurrent workflows (i.e. complex and non-complex patient care processes) within the same organizational work system. As with the application of SEIPS in community pharmacy settings, Ozkaynak et al. (2015) used the SEIPS work system components as a framework to create case descriptions; however, they also described how the work system of each ACC improved or hindered patient care processes. They explicitly linked the work system to the care process and outcomes. A similar use of the SEIPS model was applied to the design of this thesis research.
CHAPTER 3: METHODS

This chapter is divided into several sections starting with a description of the study design and conceptual framework, including why each was selected. This is followed by a description of the study participants. Next, is a description of the screening and data collection tools, with an explanation of how the tools were developed and pilot tested. Then the sampling procedure is described, followed by the recruitment and three stage screening procedure, explaining how pharmacies thought to have exemplary MedsCheck Annual (MCA) services were selected. Data collection and analysis procedures are described, along with study rigour, and ethical considerations.

Study Design

A multi-case study approach was used to explore best practices in the provision of MCA services in select Ontario community pharmacies. Two pharmacies were selected as cases for this study. Yin (2003) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (pg. 13). Yin classifies the case study as an explanatory design that answers ‘how’ and ‘why’ research questions relating to a phenomenon in situations where the researcher has little control over the environmental conditions in which it occurs. A multi-case study design, according to Yin (2003), is similar to a single case study design, with the sole difference being the addition of more cases, permitting cross-case comparisons.

Conceptual Framework

The Systems Engineering Initiative for Patient Safety (SEIPS) model was used as a conceptual framework and guided the study design and the descriptive analysis of the qualitative
data (Appendix A depicts the SEIPS model). A description of the SEIPS model is provided elsewhere (Chapter 2, Theoretical Framework).

The organizational theory and work systems orientation of the SEIPS model was thought to be a suitable guide for all aspects of this study. Indeed, the SEIPS model inspired the work systems perspective from which 2 of the 4 research questions were derived: how the pharmacy’s work system affects the efficiency, quality, and impact of MCA services, and how two professional service processes (MCA and prescription dispensing) are operationalized concurrently in the same work system. The SEIPS model also acted as a framework for developing the data collection tools as well as for identifying and organizing descriptive codes during the beginning stages of data analysis. Finally, it served as an organizing framework for the descriptive case reports.

In addition to the SEIPS model, sensitizing concepts from the Consolidated Framework for Implementation Research (CFIR), a health service implementation science framework, was used to inform thematic analysis (Damschroder et al., 2009). This framework encompasses 5 domains: implementation characteristics, inner setting, outer setting, characteristics of individuals, and implementation process (Damschroder et al., 2009). Within these domains, the CFIR offers 37 constructs to promote health service implementation. According to the authors, the CFIR “offers an overarching typology – a list of constructs to promote theory development and verification about what works where and why” (Damschroder et al., 2009). A description of how CFIR was used is provided in the Data Analysis section.

Participants

Two community pharmacies in the Greater Toronto Area with exemplary MCA services were selected as cases. Participants in each pharmacy included staff/student/intern pharmacists who conducted the MCA consultations, the owner, the designated manager (when applicable),
registered technicians, pharmacy assistants, and patients who attended the pharmacy for an MCA.

**Screening and Data Collection Tools**

According to Miles and Huberman (1994), one way of focusing and bounding a study is to use data collection tools. The use of data collection tools is especially important in case studies as this study design generally uses multiple data sources. This study used a variety of tools to screen pharmacies and guide data collection. They are described below.

- **MCA Best Practice Screening Questionnaire (Appendix C)** – This highly structured tool was created to assess characteristics of the community pharmacy layout, resources, and MedsCheck Annual processes and outputs as proxy measures for quality of service. It included two types of questions: (1) ‘critical questions’, which, based on the response selected, could result in the pharmacy being screened out, and (2) ‘non-critical questions’ that were scored based on responses selected. Questionnaire responses were assessed according to pre-established criteria (Appendix D) to determine a pharmacy’s eligibility to participate in the study.

- **MCA Service Form Evaluation Checklist (Appendix E) and Implementation Guide (Appendix F)** – This structured checklist guided the evaluation of completeness and clinical significance of the Pharmacist Worksheet and Personal Medication Record (PMR) forms. The guide had two sections – one was filled out by the researcher (a non-pharmacist) to assess the completeness of important fields in the forms; the second section was completed by one or two experienced pharmacists (adjudicators) to evaluate the clinical significance of the service as documented on the forms. Reasoning for the use of 1 versus 2 adjudicators is provided in the Recruitment and Screening Procedures section. The Implementation Guide (Appendix F) accompanied the Checklist (Appendix E) to ensure consistency in scoring.
• Pharmacy Orientation Checklist (Appendix G) – This checklist includes activities and topics covered during the researcher’s pharmacy orientation.

• Pharmacy Owner/Manager Interview Guide (Appendix H) – A semi-structured guide was used to gather information about the pharmacy’s history, external environment, clientele, organizational, and human resources, as well as the organization’s professional services including MCA service. The interview guide consisted mostly of direct questions focused on fact-finding rather than the participant’s experiences or opinions.

• Pharmacy Staff Interview Guide (Appendix I) – A semi-structured guide, designed to be used for both the MCA pharmacist and a registered technician/pharmacy assistant. The guide includes questions about the interviewees’ accounts of the MCA services delivered in their pharmacy and about his/her opinions about best practice MCA characteristics. The interview guide included broad, open-ended questions.

• Pharmacy Observational Checklist (Appendix J) – This checklist was divided into three sections: external environment, pharmacy environment, and dispensary environment. The guide directed the researcher’s observational field notes of pharmacy structure and operations.

• MCA Observational Checklist (Appendix K) – A highly structured checkbox style checklist was used to assess the comprehensiveness of the consultation and the format of the patient–pharmacist interaction.

Development of Tools

The standardized data collection tools were developed to adequately address the research objectives while facilitating cross-case comparisons during analysis. The tools created for this study varied from structured questionnaires to semi-structured interview guides. The screening and data collection tools were created based on published literature on medication review
services, including studies on barriers to, and facilitators of, service provision. Specific requirements and suggestions for conducting MCAs were gathered from the Ontario MOHLTC website and the ministry’s Professional Pharmacy Services Guidebook 3.0 (Ontario MOHLTC 2016a; Ontario MOHLTC, 2016c). As previously mentioned, the SEIPS model guided the creation of the data collection tools. In addition to these sources, the development of some of the tools had additional influences:

- The MCA Best Practice Screening Questionnaire (Appendix C) was informed by a program logic model for a best practice MCA service (Appendix B), which was created by the researcher during the study planning process. The program logic model outlined the anticipated resources, main activities, outputs, and outcomes of a best practice MCA service.
- The MCA Service Form Evaluation Checklist (Appendix E) was adapted from a tool created in a prior study for evaluating the clinical impact and overall quality of pharmacists’ pharmaceutical opinions (Dolovich et al., 2007). It included a measure of MCA comprehensiveness based on the MOHLTC requirements laid out in the Program Guidebook (Ontario MOHLTC, 2016c).
- The Pharmacy Observational Checklist (Appendix J) was guided by a study on safe dispensing systems in a community pharmacy (Harvey et al., 2015).
- The MCA Observational Checklist (Appendix K) drew from the program logic model.

Pilot Testing of Tools

The screening and data collection tools were pilot tested across 3 pharmacies known to the research team. A description of the pilot testing methods is provided below.

The MCA Best Practice Screening Questionnaire (Appendix C), both Interview Guides (Appendix H; Appendix I) and the Pharmacy Observational Checklist (Appendix J) were pilot tested. Each tool was pilot tested twice with participants from both independent/banner and
chain/franchise community pharmacies that provided MCA services. For each tool, the researcher took notes about the participants’ ability to answer the questions, any points of confusion, misunderstanding, or perceived difficulties and any questions that require further probing. Following administration of each tool, the researcher debriefed the participant and asked for his/her opinion on the content, clarity, and length of the tool. During the pilot testing, the researcher used scripts and asked standardized debriefing questions (Appendix L).

The researcher refined each tool following each pilot test and the refined tool was used for subsequent pilot testing. Pilot testing of one tool was completed before moving on to the next tool to decrease the burden at any one pharmacy on a single site visit and to help focus the researcher’s attention on refining each individual tool.

Pilot testing of the MCA Observational Checklist (Appendix K) and the MCA Service Form Evaluation Checklist (Appendix E) tools was not conducted prior to the study. Pilot testing of the MCA Observational Checklist was considered too intrusive to the pharmacy and the patient because of the patient consent requirement. Thus, refining of this tool took place following MCA service observations at the first study pharmacy. Similarly, the MCA Service Form Evaluation tool was pilot tested during the recruitment and screening process with slight refinements made following the assessment of the first two pharmacies who submitted MCA service forms. Minor revisions were made to both interview guides (Appendix H; Appendix I) and the MCA Service Form Evaluation (Appendix E) tools following their use in the first study pharmacy.

Case Selection

Two community pharmacies in the Greater Toronto Area with exemplary MCA services were selected as cases. In addition to providing exemplary MCA service, pharmacy eligibility criteria included: a minimum of 3 MCAs conducted per week, a minimum of 1 MedsCheck
follow-up conducted per month, and the majority of MCAs conducted by staff pharmacists (not student or consultant pharmacists). The decision to require a minimum of 3 MCAs per week was made to ensure that there would be sufficient MCAs to observe over a short period of time while avoiding the exclusion of independent community pharmacies that might conduct fewer MCAs than larger chain pharmacies. This decision also took into account the October 2016 program changes implemented by the Ontario Ministry of Health and Long Term Care (MOHLTC), which were anticipated to decrease the number of MCAs conducted in most pharmacies.

**Recruitment and Screening Procedures**

This study screened for community pharmacies with exemplary MCA services and selected cases for variation in pharmacy characteristics: ownership type (independent/banner vs. chain/franchise pharmacy), prescription volume (high vs. low), and location (urban vs. suburban). Each of these characteristics might be a potential influencing factor for the provision of MCAs. For example, chain pharmacies may have access to more resources for MCAs; pharmacists working at pharmacies with higher prescription volumes may perceive that they have less time to conduct MCAs; and pharmacies located in rural or urban centers likely have different clientele with differing needs regarding MCAs.

Recruitment and screening took place from April to October 2017. See Figure 3.1 for a depiction of the process and results. The selection process was conducted in three stages outlined below.
Stage 1 – Recommendations/referrals: In total, 51 community pharmacies were referred to the study because they were thought to have exemplary MCA services. Referrals came from participants in the MedsCheck Key Informant Interviews Study (MacKeigan et al., 2017), the Ontario Pharmacy Evidence Network (OPEN), the Leslie Dan Faculty of Pharmacy’s Office of Experiential Education, the University of Waterloo’s Patient Care Rotations Office, and the Ontario Pharmacists Association (OPA). Community pharmacies employing recipients of relevant professional practice awards from the OPA (https://www.opatoday.com/professional/membership/awards) were also included in the referrals list.

**Figure 3.1.** Pharmacy recruitment results

BPSQ = Best Practice Screening Questionnaire
The researcher used the Ontario College of Pharmacists website (http://www.ocpinfo.com/) to determine each pharmacy’s ownership type and location. The researcher selected pharmacies with differing characteristics to move forward to stage 2. In the end, 27 pharmacies were screened out in stage 1 because of their location (i.e. either located too far away to be feasible study sites or because a case had already been selected in a similar type of location).

Stage 2 – MCA Best Practice Screening Questionnaire (Appendix C): The researcher telephoned the owner/manager of 24 referred pharmacies using a script (Appendix M), inviting him/her to complete a short questionnaire about his/her pharmacy’s layout, resources, MCA service processes, and outputs. The researcher explained that based on responses to the questionnaire, the owner/manager could be invited to participate in a best practice study. In total, 6 owners declined to complete the questionnaire: 3 declined because they no longer conducted MCAs at their pharmacy (possibly because of the October 2016 MCA program changes), 2 were too busy, and 1 did not respond to multiple contact attempts.

After completion of the questionnaire, the questionnaire responses were assessed according to pre-established criteria (Appendix D). Follow-up telephone calls were conducted for clarifications of responses as needed. Nine of the 18 pharmacies whose owners completed the questionnaire were screened out due to a combination of factors: insufficient MCA volume, MCAs completed predominantly by floater/consultant pharmacists, having no pharmacist overlap, and conducting MCAs in a non-private location (e.g. at the dispensary counter).

The researcher used a telephone script (Appendix N) to notify all owners/managers who completed the questionnaire of the results. Owners/managers of the 9 community pharmacies that received high scores were invited to continue to the next stage, and, if interested, were emailed the Study Information Sheet (Appendix O) and a Consent Form (Appendix P). For further information on the consent process see the Participant Consent section. The owners of 6
pharmacies declined the invitation to move forward to stage 3: 3 owners said they were too busy to accommodate a researcher on site, 2 owners said that they did not believe they had best practice processes in place, and 1 owner gave no reason.

For all pharmacies that did not move forward to stage 3 (i.e. were screened out, or the owners refused to complete the questionnaire or declined to proceed), replacement pharmacies with similar pharmacy characteristics (i.e. ownership type and location) from the referrals list were invited to complete the screening questionnaire. This ‘replacement’ process was repeated until the referrals list was exhausted.

Stage 3 – MCA Service Document Assessment: Following the consent process, the researcher requested that owners/managers fax the research team redacted copies of the Pharmacist Worksheet and Personal Medication Record (PMR) forms for 3 MCA consultations. The owners/managers were asked to select forms for MCA consultations: 1) for complex patient (e.g. 6+ medications, ≥ 75 years old, many chronic conditions), 2) conducted by different staff pharmacists, when possible, and 3) conducted in the 2 months preceding study recruitment. The forms were assessed by a study co-investigator and a University of Toronto professor, both of whom are pharmacists, using the MCA Service Form Evaluation Checklist and Implementation Guide (Appendix E; Appendix F) for completeness and clinical significance. Each pharmacy owner was contacted by the researcher to inform him/her of the results of the document assessment using a telephone script (Appendix Q).

The research team selected the first study pharmacy by comparing the results from the Best Practice Screening Questionnaire and the MCA service form evaluation from the first 2 pharmacies whose owners completed the entire screening process. The second case was selected in a similar fashion, through a comparison of results of the two remaining pharmacies, one of which had marginally more favorable results than the other.
After the screening process, the researcher and consenting owners/managers agreed on a written site visit schedule (Appendix R) that accommodated the needs of the researcher with minimal disruption to the workflow of the community pharmacy. The site visit schedule and the Study Information Sheet (Appendix O) were provided to all dispensary staff.

After data collection and descriptive analysis for the first two study pharmacies, the research team deemed the quality and volume of data to be sufficient. It was agreed that a third study pharmacy was not necessary. The owner of the last pharmacy who completed the screening process was informed that they would not be moving forward with the study. Thus, 2 pharmacies were selected as cases.

Data Collection Procedures

Four site visits to each study pharmacy were conducted from June to November 2017. In Pharmacy A, 4 site visits were conducted, of approximately 4 hours duration each. In Pharmacy B, 3 site visits were originally conducted, ranging between 4 to 6 hours each. The site visit schedule was shortened at this pharmacy (i.e. from 4 visits to 3 visits) because of the researcher’s lengthy commute to the site. However; during the original 3 site visits, only 2 MCAs were observed, so a fourth site visit was necessary in order observe the desired 3-5 MCA consultations. In total, the researcher conducted approximately 38 hours of field work. Four data collection methods were used. The researcher wrote reflexive notes for all data collected.

Semi-Structured Interviews

Seven semi-structured interviews were conducted with staff across both pharmacies. In Pharmacy A, interviews were conducted with the pharmacy owner, the staff pharmacist who was observed conducting MCAs, and a registered technician. In this pharmacy, a registered technician was chosen for an interview over a pharmacy assistant based on the owner’s recommendation. These interviews were approximately 30 minutes each.
In Pharmacy B, interviews were conducted with the pharmacy owner, the designated manager, a staff pharmacist who was observed conducting MCAs, and a pharmacy assistant. An interview with the designated manager was conducted in addition to the interview with pharmacy owner because the owner was only present in the pharmacy for 14 hours per week. The purpose of this interview was to supplement the MCA service description given by the owner; therefore, the manager was interviewed using the pharmacy staff interview guide (Appendix I) instead of the owner interview guide, which focused more heavily on work systems and less on accounts of MCA service. A pharmacy assistant was chosen for an interview over a registered technician in this pharmacy because assistants are more involved in the MCA process. All interviews were conducted during pharmacy site visits in a private area of the pharmacy, with the exception of the interview with the designated manager, which was conducted by telephone (as per the manager’s request). The researcher purposely chose to interview multiple individuals with different roles in each pharmacy to provide different perspectives of the MCA service. This facilitated a comprehensive and holistic description of the service in each pharmacy.

All interviews followed semi-structured guides (Appendix H; Appendix I) and lasted approximately 30 minutes, with the exception of the interview with the owner of Pharmacy B, which took about 1 hour. With interviewee consent, the interviews were audio-recorded and transcribed verbatim. The researcher took detailed written notes of one interview (in Pharmacy A, with the registered technician) in lieu of audio-recording, as per the interviewee’s request.

Follow-Up Questions

In both pharmacies, questions arose during data analysis necessitating brief follow-up interviews with some participants. In Pharmacy A, the researcher conducted two follow-up telephone calls with pharmacy owner. The owner’s responses were hand-written during the call.
In Pharmacy B, additional questions arose for the pharmacy owner, manager, and a pharmacist who was observed conducting MCAs. The follow-up with the owner was conducted by telephone, and the researcher took hand written notes. The follow-up questions for the manager were asked during his/her interview, which was conducted by telephone (by the manager’s request) and audio recorded. The follow-up with the pharmacist was conducted in person during the fourth site visit and the researcher took hand-written notes. All hand-written notes from follow-up phone calls and in-person discussions were transcribed. Follow-up phone calls generally lasted 30 minutes each.

Non-Participatory Observation

The researcher conducted non-participatory observations of the pharmacy environment, dispensary workflow, and MCA consultations. The purpose of the observations was to gain better understanding of the interplay between MCA service workflow and dispensing workflow, and the extent to which they were integrated within the community pharmacy. To this end, a floor plan of each pharmacy’s dispensary was created on which the workflows were visualized.

Detailed observational field notes of the dispensary workflow and interactions amongst pharmacy staff and between pharmacy staff and patients were taken using a semi-structured checklist (Appendix J). Field notes included descriptions of the work system components and the workflow of prescription dispensing. The field notes included written observations and the researcher’s reflections. The researcher also took field notes on the pharmacy’s structure and external environment.

The researcher documented the comprehensiveness of each observed MCA consultation using a structured checklist (Appendix K) and took detailed field notes about the encounter. In total, the researcher observed 7 MCA consultations: 4 in Pharmacy A, ranging between 25 to 50 minutes in length, and 3 in Pharmacy B, ranging between 15 to 25 minutes. In Pharmacy A, all 4
consultations were conducted with the patient, 2 were conducted by a staff pharmacist and 2 were conducted by a student/intern pharmacist. In Pharmacy B, all observed MCAs were conducted by a staff pharmacist. Two MCAs were with a caregiver and one was with a patient.

Document Collection

The researcher collected, photocopied, and de-identified select pharmacy documents. MCA-related operational/procedural documents identified by the owner/manager were collected during the first site visit. These documents included: advertising materials (e.g. pamphlets and magnets), MCA training materials, pharmacy-specific MCA procedural documents, pharmacy mission statements/philosophies/values and beliefs statements, sample staff schedules, and employee job descriptions. The researcher reviewed these documents to inform data collection for subsequent site visits.

MCA service forms for all 7 observed consultations were de-identified and collected for assessment for completeness and clinical relevance. In Pharmacy A, MCA service forms were adjudicated by a study co-investigator and a University of Toronto professor, both of whom are pharmacists. Because of the lengthy process of coordinating two adjudicators, only 1 adjudicator was used to assess the forms for Pharmacy B. The overall comprehensiveness of the PMR and the overall clinical significance of drug therapy problems detected as recorded on the Pharmacist Worksheet form, were assessed using a 5-point scale per an Evaluation Checklist and an Implementation Guide (Appendix E; Appendix F). See Table 3.1 for the assessment results.
Table 3.1. Assessment of MedsCheck Annual service forms

<table>
<thead>
<tr>
<th></th>
<th>Pharmacy A</th>
<th>Pharmacy B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall Quality of PMR</td>
<td>Overall Clinical Significance</td>
</tr>
<tr>
<td>1st MCA</td>
<td>Very Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>2nd MCA</td>
<td>Excellent</td>
<td>Very Good</td>
</tr>
<tr>
<td>3rd MCA</td>
<td>Very Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>4th MCA</td>
<td>Excellent</td>
<td>Very Good</td>
</tr>
</tbody>
</table>

PMR = Personal Medication Record

Overall Quality of PMR and Overall Clinical Significance assessed on a 5-point scale: 1 = Poor; 2 = Fair; 3 = Good; 4 = Very Good; 5 = Excellent

Internet Searches

Google Maps satellite view searches of pharmacy locations were used to supplement observational notes about the pharmacy’s external environment. The researcher used Google search to review both pharmacy websites.

Participant Consent Procedures

Written consent was obtained from the owner of the pharmacy for conducting observations in the pharmacy, collecting pharmacy documents relating to MCA services, collecting de-identified MCA service forms (because the owner is the legal guardian of said forms), and for participating in an interview with the researcher (Appendix P). The researcher obtained written consent (Appendix S; Appendix T) from each MCA pharmacist(s) prior to observation of his/her first MCA consultation. Individual written consent was obtained from each pharmacy staff member prior to his/her interview (Appendix S; Appendix U).

Patient consent was obtained for two purposes. First, prior to each MCA, the pharmacist used a script (Appendix V) to obtain and document oral consent from the patient to allow the researcher to be present during the consultation. Following the consultation, the researcher
sought written consent (Appendix W) from the patient to collect de-identified copies of his/her MCA service forms. This consent was obtained while the pharmacist was photocopying the PMR form, which is always given to the patient following an MCA. This post-consultation approach was taken to limit service workflow interruption for the MCA pharmacist.

**Data Analysis Procedures**

Descriptive data analysis was conducted concurrently with data collection, allowing emergent concepts to be further investigated in subsequent data collection (e.g. through follow-up questions and/or through revisions to interview guides). Thematic analysis was conducted after data was collected. Data analysis followed the steps outlined by Miles and Huberman (1994): data reduction (i.e. descriptive coding), data display (i.e. within-case and cross-case thematic analysis), and conclusion drawing/verification. The researcher’s theoretical orientation is described in the Researcher Reflexivity section.

**Descriptive Coding and Case Reports**

The researcher started by familiarizing herself with the data by transcribing all interview audio-recordings and hand-written field notes. The researcher and her supervisor then independently descriptively coded each interview transcript from the first case. Coding was compared, differences were reconciled, and a coding key was created with definitions for each code (Appendix X). The researcher subsequently coded her field notes for the first case independently using NVivo 10 software. The coding key was revised as new codes arose and old codes changed. Codes were organized into parent codes, which were based on, but were not limited to, the SEIPS model domains and work system components.

Upon completion of descriptive coding for the first case, a descriptive case report was prepared (Appendix Y). The SEIPS model provided the organizing framework for describing the pharmacy’s work system, as well as prescription dispensing and MCA service processes and
outcomes. A case analysis meeting was held with the researcher’s thesis committee to discuss the case report before data collection in the second case started (Miles and Huberman, 1994). Potential coding changes and/or alternative or rival explanations were discussed and the case report was revised accordingly. The case report was then sent to the pharmacy owner for validation to ensure its accuracy and completeness (i.e. member checking), resulting in minor edits.

The second case followed the same process; however, interviews and field notes were coded independently by the researcher. Coding was conducted iteratively cross-cases; sections of the first case were re-coded as new descriptive codes arose in the second case. Minor changes to the first case report were made to reflect the coding changes. A case report was created for the second pharmacy (Appendix Z). The researcher made minor edits to the case report based on feedback from the case analysis meeting with the researcher’s thesis committee. The case report was sent to the pharmacy owner for member checking. The feedback from the owner was non-substantive, and no further changes were made.

**Cross-Case Thematic Analysis**

Cross-case comparisons were conducted to identify similarities and differences in pharmacy features that contributed to best practice MCA services. Descriptive codes were organized into themes in an inductive manner, that is, arising from the data. Within-case and cross-case matrices were used for data visualization, connecting supporting raw data, descriptive codes, and themes (Miles and Huberman, 1994) to develop a thematic framework. During thematic analysis, it became evident that the SEIPS model was too rigid in its categorization of the individual work system components (i.e. people, tools/technology, tasks, environment, and organization), thereby restricting interpretations of the interconnectivity of these components. Thus, another framework was sought to aid the thematic analysis: the CFIR. Its domains and
components were used as sensitizing concepts for the development of the study themes. The 5 CFIR domains were used to organize and present the study themes.

For a visualization of the how the CFIR framework and SEIPS model were used during data analysis, an example of how descriptive codes, SEIPS work system components, interpretive themes, and CFIR domains were mapped is provided in Table 3.2 for one of the study themes. As a summary, data (interview and observational) from each pharmacy was descriptively coded and sorted into SEIPS components and domains to create the case reports. Cross-case comparisons of the descriptive codes resulted in themes. Themes were often based on descriptive codes from several different SEIPS components and domains.
Table 3.2. Example of mapping of SEIPS components, descriptive codes, study themes, and CFIR domains in data analysis

<table>
<thead>
<tr>
<th>SEIPS Component (Parent Code)</th>
<th>Descriptive Code</th>
<th>Pharmacy A Data (Paraphrased by the researcher)</th>
<th>Pharmacy B Data (Paraphrased by the researcher)</th>
<th>Themes</th>
<th>CFIR Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Organization</td>
<td>Early MR Adopter</td>
<td>- Had a MR service before MC</td>
<td>- Had a MR service before MC (Med. Rec. with MD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pts paid for service out of pocket</td>
<td>- Free of charge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Organization</td>
<td>Motivational Strategies</td>
<td>- Intrinsically motivated pharmacists</td>
<td>- Goal setting and feedback used by owner as motivational strategy</td>
<td>Pre-Existing</td>
<td>Pharmacy Inner Setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No MCA quotas/targets</td>
<td>- No MCA quotas/ targets</td>
<td>Clinically-</td>
<td>Focused Practice</td>
</tr>
<tr>
<td>The Organization</td>
<td>Professional Services</td>
<td>- Large number and variety of clinical services</td>
<td>- Large number and variety of clinical services</td>
<td>Practice</td>
<td></td>
</tr>
<tr>
<td>Tools &amp; Technology</td>
<td>Promotional Strategies</td>
<td>- Extensive marketing of clinical services</td>
<td>- Extensive marketing of clinical services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People</td>
<td>Owner Experience &amp; Education</td>
<td>- Owner’s entry to practice PharmD</td>
<td>- Owner has CDE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEIPS = Systems Engineering Initiative for Patient Safety; CFIR = Consolidated Framework for Implementation Research; Med. Rec. = Medication reconciliation; Pts. = Patients; MR = Medication review; MC = MedsCheck; CDE = Certified diabetes educator
Researcher Reflexivity

I approached this study from a pragmatic theoretical orientation. According to pragmatists, the world has many external realities and knowledge can be obtained both objectively and subjectively, depending on what is being studied and what research goals are being addressed (Onwuegbuzie, 2009). In my analysis, I tried to be objective in determining features contributing to best practice MCA services, following a rather positivist approach. However, I know that my views have been influenced by the literature that I have read and the conversations that I have had with my thesis committee. As a non-pharmacist researcher, I brought a unique perspective to the study that likely differed from those with preconceived notions of what does and does not ‘work’ in a community pharmacy setting. I believe that this strengthened my study by incorporating different perspectives to address my research objectives.

I believe it is important to briefly discuss my past, in order to understand how it has influenced my research. I am relatively positivist in nature, with an undergraduate degree in Cellular and Molecular Biology and Health and Disease and previous employment in the financial industry. In my final year of my undergraduate studies, I focused heavily on social science and humanities-related courses to round out my education, allowing me to appreciate less positivist viewpoints.

My interest in pharmacy practice research stems from my belief that pharmacists are an underutilized resource in our society. From my past personal experience, as well as that of my peers and family, I believe that public perception of pharmacists (and perhaps pharmacists’ perceptions of themselves) is one generally focused on product-dispensing rather than service provision or knowledge sharing.
**Study Rigor**

Efforts were taken to ensure a rigorous study. First, case selection and recruitment, as well as data collection and analysis processes were described in-depth to ensure transparency of the research process. The researcher’s thesis committee approved all processes. The researcher also divulged her personal opinions and views that helped shape the results of the study (see Researcher Reflexivity Section).

Structured and semi-structured screening and data collection tools were created and pilot-tested for this study. The use of these tools improved the consistency of data collected across the two cases. However, flexibility in data collection was still possible. For example, after the first case, the interview guides were revised to better address the research objectives. The researcher also took unstructured filed notes to ensure no aspect of best practice MCA service was omitted.

Consistency in coding of interview transcripts and observational field notes was gained through reliability testing. As previously mentioned the researcher and her supervisor independently coded all interview transcripts from Pharmacy A and then compared coding and reconciled differences. The researcher coded the remaining qualitative data independently and conducted reliability testing of her coding (i.e. independently re-coding sections of previously coded data to compare coding). A coding key was created with definitions of each code to improve consistency (Appendix X). The coding key was revised regularly throughout the iterative process of data analysis.

Data triangulation was used during analysis to improve study rigour. Individual case analysis included triangulation of data collected from different methods (i.e. observation, interviews). For example, when possible, accounts given in interviews were verified through observations, with more weight given to themes that were supported by multiple types of data.
Individual case analysis also included triangulation of data collected through different sources (i.e. owner, pharmacy assistant interviews). For example, data collected from different pharmacy staff were compared for convergent and divergent accounts of best practice MCA service. Finally, cross-case comparisons of the two pharmacies were conducted and became the basis for recommendations made for achieving best practice medication review services.

Other mitigating actions were taken to improve study rigour. For example, the full case report for each pharmacy (Appendix Y; Appendix Z) were reviewed and validated by the pharmacy’s owner for accuracy and completeness. The researcher revised the reports according to the feedback obtained. Each case report was presented and discussed with the researcher’s thesis committee. Suggestions for coding changes and/or alternative or rival explanations were discussed and the case reports were revised accordingly.

**Ethical Considerations**

This study was approved by the University of Toronto Research Ethics Board (protocol reference# 33914 (Appendix AA)). Ethical aspects of this study are discussed below.

During the screening process, pharmacy owners/managers who submitted MCA service documents for assessment, but were subsequently not included as a case in the study, were given a $25 gift card in recognition of their time. Pharmacies that passed the screening process and were included as a case in the study were given a $200 honorarium. The clinical pharmacists who adjudicated the MCA service forms were offered an honorarium of $100. Both of the adjudicators waived the payment.
CHAPTER 4: RESULTS OF STUDY

This chapter commences with a descriptive summary of each case, including a detailed description the work system of each pharmacy. This is followed by the results of the thematic cross-case comparison, where themes and subthemes along with supporting evidence are presented. The chapter concludes with a summary of the results.

Descriptive Case Summaries

Select characteristics of participating pharmacies are shown in Table 4.1. See Appendix Y and Appendix Z for detailed case reports for Pharmacy A and Pharmacy B, respectively. Case summaries for each pharmacy are provided below.

Table 4.1. Participating pharmacy characteristics

<table>
<thead>
<tr>
<th>Location</th>
<th>Pharmacy A</th>
<th>Pharmacy B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership Type</td>
<td>Independent</td>
<td>Franchise</td>
</tr>
<tr>
<td>Years in Operation</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Hours Open Per Week</td>
<td>Weekday: 55</td>
<td>Weekday: 120</td>
</tr>
<tr>
<td></td>
<td>Weekend: 12</td>
<td>Weekend: 48</td>
</tr>
<tr>
<td>Approximate Pharmacy Size (sq. ft.)</td>
<td>Approximately 1,060</td>
<td>Approximately 11,800</td>
</tr>
<tr>
<td>Approximate Dispensary Size (sq. ft.)</td>
<td>Approximately 360</td>
<td>Approximately 1800</td>
</tr>
<tr>
<td>Average Daily Prescription Volume</td>
<td>125 without blister packaged drugs; 175 with blister packaged drugs</td>
<td>350 without blister packaged drugs; 550 with blister packaged drugs</td>
</tr>
<tr>
<td>Estimated Weekly MCA Volume</td>
<td>6-10</td>
<td>6-10</td>
</tr>
<tr>
<td>Dispensary Staffing Expressed as Full Time Equivalents (FTE)*</td>
<td>1 Owner 0.75 3 Staff Pharmacists 1.70 1 Reg. Technician 1.00 4 Phm. Assistants 2.55 1 Student/Intern 1.00 1 Front Store Manager Variable</td>
<td>1 Owner 0.35 1 Designated Manager 0.83 7 Staff Pharmacists 4.48 3 Reg. Technician 0.55 9 Phm. Assistants 5.50 3 Student/Intern Variable</td>
</tr>
</tbody>
</table>

* One FTE is based on a 40 hour work week (Ontario Ministry of Labour, 2016)

Sq. ft. = Square Feet; Reg. = Registered; Phm. = Pharmacy
Pharmacy A: Case Summary

Pharmacy A has a small dispensary area that encompasses approximately one third of the pharmacy’s square footage. It has a relatively low prescription volume and a relatively high MCA volume. The pharmacy employs 8 dispensary staff (excluding the owner and the front store manager who occasionally works in the dispensary as a pharmacy assistant). Staff turnover in the pharmacy is low, with average dispensary staff tenure of about 9 years (range: 5 to 12). Table 4.2 presents the salient work system features of Pharmacy A with supporting data organized by the Systems Engineering Initiative for Patient Safety (SEIPS) model work system components.
### Table 4.2. Pharmacy A work system features with supporting data organized by SEIPS work system components

<table>
<thead>
<tr>
<th>Pharmacy A Work System Features</th>
<th>Supporting Data</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. People</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low dispensary staff turnover</td>
<td>“we have been together as a staff for approximately ten... twelve years, just under twelve years”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>and long tenure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experienced pharmacists</td>
<td>Over 64 years of community pharmacy experience among the 4 pharmacists (including owner)</td>
<td>Orientation</td>
</tr>
<tr>
<td>Owner’s prior clinical education and experience</td>
<td>“I graduated with a PharmD … my practical work that I did for my PharmD is what set me up so nicely to provide the clinical services. Umm, I had focused in community pharmacy… so I was actually teamed up with some fantastic preceptors that were doing these clinical programs… So I got to develop them with them and implement them”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Multilingual dispensary staff</td>
<td>“…we speak probably around ten languages within our staff. So that we are able to provide service to quite a few different patient populations, so that anyone that comes in that may not speak English, that we hopefully will be able to help them in their native languages.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Dispensary staff-patient</td>
<td>Staff and patients were often observed greeting each other by first name. Patients came in to discuss health concerns with pharmacists without purchasing product.</td>
<td>Researcher</td>
</tr>
<tr>
<td>relationships</td>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>Pharmacists’ effective patient</td>
<td>Pharmacists used easy to understand vocabulary, open-ended questions, active listening skills during MCAs</td>
<td>Researcher</td>
</tr>
<tr>
<td>communication skills</td>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td><strong>II. Tools and Technology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation room has computer</td>
<td>Pharmacist used the computer in the office during the MCA to access the patient’s profile</td>
<td>Researcher</td>
</tr>
<tr>
<td>with access to the internet</td>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>and patient profile system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff share computers in</td>
<td>Dispensary staff did not have assigned work stations with computers; instead staff shared the two computers in the dispensary on an as-needed basis. Staff seemed comfortable working in close physical proximity and sharing computers.</td>
<td>Researcher</td>
</tr>
<tr>
<td>dispensary</td>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>Pharmacy A Work System Features</td>
<td>Supporting Data</td>
<td>Data Source</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Web-based MCA appointment scheduling system</td>
<td>“…another thing that we use is our online scheduling. So it's basically an online calendar that keeps track of the appointments…”</td>
<td>Pharmacist Interview</td>
</tr>
<tr>
<td></td>
<td>“Patients can actually go onto our website and book their own MedsCheck, whenever they want.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Dispensary software that supports MCA processes</td>
<td>“We use [dispensing software], and with MedsCheck services, we use it quite a bit…First of all it… print[s] us out our MedsCheck forms…we also use [dispensing software] for umm, for running reports as to, to tell us who is due for a MedsCheck and who qualifies for a MedsCheck… And like I said before, [dispensing software] will also prompt us if someone is due for a MedsCheck.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Advertising materials for clinical services</td>
<td>“So we do it on any of our fliers that we distribute, anything that's mailed out. Umm, on our website, uhh, we have promotional items, or promotions, umm or advertising for MedsChecks … it's on any type of, any type of advertising that I do, it's on there as one of our services.”</td>
<td>Owner Interview</td>
</tr>
</tbody>
</table>

### III. Tasks

| Support staff participate in MCA process                            | “It's usually one of the dispensary staff that does the phone calls to schedule the appointments.”                                                                                                                                                                                                                                                                    | Pharmacist Interview                                                                             |
| Dispensary staff share responsibility for completing routine tasks  | Staff (including pharmacists) were observed stocking medication shelves and taking prescriptions from patients                                                                                                                                                                                                                                                               | Researcher Observations                                                                          |
| Registered technicians’ expanded dispensing role                   | “[Registered technicians] are fantastic in helping us to free up our time, in order so that we can conduct these clinical services… this is why we encouraged our staff to become umm registered technicians.”                                                                                                                                                                                      | Owner Interview                                                                                 |
| Informal, evolving job descriptions                                | There are no formal, written job descriptions. Some tasks are assigned, to specific individuals, generally based on individual strengths. Even when tasks are assigned, it is expected that dispensary staff who are not busy, help other with task completion.                                                                                                                          | Follow-Up Interview with Owner                                                                   |
### IV. The Organization

<table>
<thead>
<tr>
<th>Pharmacy A Work System Features</th>
<th>Supporting Data</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early medication review adopter</td>
<td>“We have been doing MedsChecks without the name 'MedsChecks' for diabetes patients ever since we started here… I've been doing for over 12 years and we were actually charging patients for that service… it seems that we're a bit ahead of the game because we were doing them before the government start[ed] to implement”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Distinct pharmacists’ leadership styles</td>
<td>Two pharmacists were observed in charge of the dispensary. They had very different styles: one was hands-off with the dispensing process, and instead actively delegated tasks to staff; the other was more hands-on, working as part of the team and leading by example. Staff seemed comfortable with both leadership styles.</td>
<td>Researcher Observations</td>
</tr>
<tr>
<td>Scheduling pharmacist overlap</td>
<td>“Scheduling helps, for sure. So, when myself and [the owner] are here, the two of us, it makes it a lot easier. So we try to do it umm when we are both available.”</td>
<td>Pharmacist Interview</td>
</tr>
<tr>
<td>Intrinsically clinically-focused pharmacists</td>
<td>“We don't have any incentives actually for MedsChecks.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td></td>
<td>“It’s services that we provide anyways… It’s usually broken into bits and pieces during counseling… so it's sort of nice to dedicate sufficient time to discuss all their issues and do it in a more formal interview.”</td>
<td>Pharmacist Interview</td>
</tr>
<tr>
<td>Customer service-focused dispensary</td>
<td>The number one priority of staff in the pharmacy is the customer/patient who is always addressed immediately, even when staff were busy doing other tasks. Patients are never rushed, even when other customers/patients are lined up.</td>
<td>Researcher Observations</td>
</tr>
<tr>
<td>Written pharmacy philosophy and mission statements</td>
<td>The owner created a written Pharmacy Philosophy and Mission Statement, both of which start with customer-focused topics.</td>
<td>Pharmacy Documents</td>
</tr>
<tr>
<td>Teamwork</td>
<td>“…we have a fantastic staff that works together. Umm, and I think it is our way of working together that provides good service for the… patients… we know how everybody works”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Extensive professional services</td>
<td>“… we offer a lot of clinical services…we're not just a dispensary… we have a travel clinic… that is run by a pharmacist. We do regular educational sessions, seminars, for patients… as you know vaccinations, pharmacists can administer, so we've been doing that for a couple years.”</td>
<td>Owner Interview</td>
</tr>
</tbody>
</table>
### Pharmacy A Work System Features

<table>
<thead>
<tr>
<th>Supporting Data</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCA-specific training for dispensary staff</td>
<td>Support staff are trained on patient identification and recruitment processes. This includes a telephone script created for booking MCA appointments using the online appointment system.</td>
</tr>
</tbody>
</table>

### V. Internal Environment

<table>
<thead>
<tr>
<th>Private consultation room</th>
<th>MCAs are conducted in the office, which is a private room next to the dispensary</th>
<th>Researcher Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calm and inviting environment</td>
<td>The pharmacy seems spacious with bright lighting, light colored paint, and low retail shelves. Near the dispensary is a stand with fresh coffee and free cookies.</td>
<td>Researcher Observations</td>
</tr>
</tbody>
</table>

### VI. External Environment

| Stable dispensary clientele | “This area is very family oriented...we have a lot of families, but, umm, we also have a lot of elderly patients, that are in their primary home, or in their first home and have stayed in their home and they're with us pretty much until they need to move to an apartment or a retirement or a nursing home...the people who move into this neighborhood umm, tend to stay.” | Owner Interview |
| Established interprofessional relationships | “We work with a lot of health care professionals, umm, we work with physicians, physiotherapists, uhh, different physician specialists, [mostly in strip mall where pharmacy is located] especially with our travel vaccinations... we are able to provide a nice continuum of care for patients that we have here.” | Owner Interview |
The dispensing workload in this pharmacy generally requires 2-4 staff. The dispensing workflow follows a linear assembly line process (See Appendix Y, Figure 2 for a depiction of the dispensing workflow). Dispensary staff members share responsibility for many of the steps involved in the dispensing process. For example, all dispensary staff, including the pharmacist, take prescriptions from patients at the drop off counter. A pharmacy assistant generally enters the prescription(s) into the computer and prints the necessary paperwork (i.e. drug information pamphlets) and label(s). An assistant or registered technician fills the prescription(s), although student and staff pharmacists may assist. A pharmacist checks the prescription(s) and any member of the dispensary team places the dispensed prescription drug(s) in a bag, which is filed in a drawer. A pharmacy assistant or the front store manager generally hands out prescription drugs to patients at the pick-up counter. The pharmacist counsels patients on their medications as needed at the pick-up counter. Teamwork and shared responsibility for task completion are the dominant characteristics of the dispensing process.

The MCA service workload also involves all dispensary staff; however, individual tasks are allocated to specific dispensary staff (See Appendix Y, Figure 3 for a depiction of the MCA service workflow). Pharmacy assistants and registered technicians identify eligible patients. This is generally completed using two computer-generated monthly reports (i.e. one of patients who received an MCA one year prior, and one of patients taking 3 or more chronic medications). Occasionally, eligible patients are also identified by a computer prompt when entering a medication(s) into the patient profile during prescription drop off. Assistants and technicians book MCA appointments using an online scheduling platform. All MCAs are conducted by a staff or student pharmacist in the consultation room/office after printing the necessary MCA forms and reviewing the patient’s profile. The pharmacist completes the Personal Medication Record (PMR) form during the consultation. As per program requirements, both the patient and
the patient’s physician are given copies of the PMR, in hard copy and fax format, respectively. The pharmacist completes the remaining required MCA service form (i.e. the Pharmacist Worksheet) after the consultation. An assistant scans the completed MCA service forms into the patient’s profile and files the paper copies of the forms. Pharmacists conduct remunerated in-person MCA follow-ups with eligible patients as needed (i.e. recent hospital discharge, planned hospital visit, or known non-compliance to a medication). They also conduct telephone ‘touch-points’ following an MCA to check on the effectiveness of the pharmacist’s suggestions. The owner periodically solicits feedback about MCA service from patients and pharmacy staff; and also conducts spot-checks of select MCA forms for completeness.

**Pharmacy B: Case Summary**

Pharmacy B is physically large with the dispensary encompassing approximately 15% of the pharmacy’s square footage. The pharmacy has a high prescription volume and a high MCA volume. The pharmacy employs 20 dispensary staff (excluding the owner), over half of whom are part-time employees. Six of the 7 staff pharmacists started their careers in this pharmacy. Table 4.3 presents the salient work system features of Pharmacy B with supporting data organized by the SEIPS model work system components.
Table 4.3. Pharmacy B work system features with supporting data organized by SEIPS work system components

<table>
<thead>
<tr>
<th>Pharmacy B Work System Features</th>
<th>Supporting Data</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. People</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loyal, recently graduated</td>
<td>7 of the 8 pharmacists started, and have continued, their careers in this pharmacy</td>
<td>Orientation</td>
</tr>
<tr>
<td>pharmacists</td>
<td></td>
<td>Information</td>
</tr>
<tr>
<td>Large staff with many part</td>
<td>20 dispensary employees of which 11 work part-time</td>
<td>Orientation</td>
</tr>
<tr>
<td>time employees</td>
<td></td>
<td>Information</td>
</tr>
<tr>
<td>Owner’s prior clinical</td>
<td>“I was hired as a student … that's where I started thinking out of the box, because that owner</td>
<td>Owner</td>
</tr>
<tr>
<td>education and experience</td>
<td>though out of the box… So, that's kind of where I learned everything. So that's what I do now…</td>
<td>Interview</td>
</tr>
<tr>
<td></td>
<td>for her it was all about relationships too, and I think that's probably where I learned it from.”</td>
<td></td>
</tr>
<tr>
<td>Pharmacists’ effective patient</td>
<td>“…our pharmacists actually take the time. And they do care about the patients’ health. I'm</td>
<td>Assistant</td>
</tr>
<tr>
<td>communication skills</td>
<td>not just saying that because I work here and I know them. But they do.”</td>
<td>Interview</td>
</tr>
<tr>
<td></td>
<td>Pharmacists used open-ended questions, had inviting body language (facing the patient,</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>shoulders tilted forward) and made frequent eye contact during MCAs</td>
<td>Observations</td>
</tr>
<tr>
<td>Dispensary staff-patient</td>
<td>“Unless you're going to truly care about the patient and do more than what a transaction</td>
<td>Owner</td>
</tr>
<tr>
<td>relationships</td>
<td>would do then you’re not going to be able to build that relationship.”</td>
<td>Interview</td>
</tr>
<tr>
<td><strong>II. Tools and Technology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation room with</td>
<td>The office had a computer that was used during MCAs.</td>
<td>Researcher</td>
</tr>
<tr>
<td>computer access to the internet</td>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td>and patient profile system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff have assigned computers</td>
<td>Each dispensary employee is designated a station with a computer. Five stations existed:</td>
<td>Researcher</td>
</tr>
<tr>
<td></td>
<td>prescription drop off, filling, checking, pick-up, and blister packaging/inventory</td>
<td>Observations</td>
</tr>
<tr>
<td></td>
<td>management.</td>
<td></td>
</tr>
<tr>
<td>Dispensary software that</td>
<td>“And now technology is making it a little bit faster… so you could pre-populate, that sort of</td>
<td>Owner</td>
</tr>
<tr>
<td>supports MCA processes</td>
<td>thing. Things where you are allowed to pre-populate. Make it a little bit faster.”</td>
<td>Interview</td>
</tr>
<tr>
<td>Advertising materials for</td>
<td>“…refrigerator magnets… I make pamphlets, sometimes as a company, if we are doing</td>
<td>Owner</td>
</tr>
<tr>
<td>clinical services</td>
<td>something nationally, they'll give us some advertising,…oh, and newspaper, so I have</td>
<td>Interview</td>
</tr>
<tr>
<td></td>
<td>that.”</td>
<td></td>
</tr>
<tr>
<td>Pharmacy B Work System Features</td>
<td>Supporting Data</td>
<td>Data Source</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>III.</td>
<td>Support staff participate in MCA process</td>
<td>“So my team has to be involved. So my assistants are involved. They see every patient… It's the assistant that needs to create the relationship to screen the person [for an MCA].”</td>
</tr>
<tr>
<td></td>
<td>Explicit, written employee job descriptions</td>
<td>“I usually enter all the time. Like, I would normally do all stations [in other pharmacies], but at this particular store, it's, it's you have to stick to your station, otherwise it's a mess.”</td>
</tr>
<tr>
<td></td>
<td>Registered technicians’ expanded dispensing role</td>
<td>“If [the pharmacy technician is] signing on the technical aspect of the prescription, then that frees up the pharmacist.”</td>
</tr>
<tr>
<td>IV.</td>
<td>Early medication review adopter</td>
<td>“So basically we were doing a MedsCheck and then sending it to the doctor before this even all started.”</td>
</tr>
<tr>
<td></td>
<td>Designated manager’s directive leadership style</td>
<td>The designated manager often instructed staff, actively delegating tasks and moving support staff to different work stations (e.g. from ‘entry’ to ‘dispensing’)</td>
</tr>
<tr>
<td></td>
<td>Clinically-focused environment</td>
<td>“…to be honest, I didn't believe that the pharmacist should be reimbursed just for dispensing. I thought we were - we should be involved in the outcome of what happens.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“So what I say is, I'm not going to count how many MedsChecks you do. It's not about that. It's not about the number, but what I want you to do is have an impact on someone's life at least once a day… So when you wake up in the morning, you know you're going to come to work, you're going to have an impact on someone's life.”</td>
</tr>
<tr>
<td></td>
<td>Customer service-focused dispensary</td>
<td>Assistants at the pick-up and drop off counters try to ensure all patients leave the pharmacy satisfied. They always greeted patients (occasionally by first or last name) and let patients know that they will ‘be right with you’</td>
</tr>
<tr>
<td></td>
<td>Extensive professional services</td>
<td>“…we implemented a bunch of services, trying to keep our customer base”</td>
</tr>
<tr>
<td></td>
<td>Positive, unrushed patient-pharmacist interactions</td>
<td>“I definitely have to say that the pharmacists are number one. I really think that it makes a difference when you have pharmacists who care about the patients and they're not just, umm, answering the questions and sending them off”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“And I can spend as much time with them as they need. To answer any of their questions…”</td>
</tr>
<tr>
<td>Pharmacy B Work System Features</td>
<td>Supporting Data</td>
<td>Data Source</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Positive organizational climate</td>
<td>“So, any even when my assistants want to become technicians, I pay for their training, or the schooling, I also pay for the licenses afterwards. So, for the pharmacists I pay for, so for example, we do methadone, so I pay for them to go get the training…anything that's work related I will pay for.” Obvious sense of group cohesiveness amongst dispensary staff. They were efficient and worked well together amicably.</td>
<td>Owner Interview</td>
</tr>
</tbody>
</table>
| Effective dispensary staff communication systems | “It's very intimate in the pharmacy. So, you're always talking and learning from each other and that sort of thing.”  
“We do a full out huddle every Monday…there's a huddle sheet…[that] everybody has to read. So it just keeps them up to date if there's any Health Canada warnings that have come out. Any that's happening, even giving some knowledge about what's happening in the front store.”  
“And then we … usually communication through texting.”  
“…[the group chat’s] a good thing we have that because we can do it fast without interrupting anything too much.” | Owner Interview     |
| Scheduled pharmacist overlap    | “We're a busier pharmacy so there are times where we have an extra pharmacist. I never use my extra pharmacist with the dispensing part… I never use my extra people for dispensing.”  
“…my focus [as an overlapping pharmacist] would just be to do MedsChecks… I don't have to sign [prescriptions]. I'm not under, under any pressure to do any other tasks but MedsChecks. So I can focus on the patients a lot more.” | Owner Interview     |
<p>| Management that encourages relationship building | “I like to preach at my store anyways, it's all about people and relationships. So not about product. Anybody can sell what you sell, anybody can do what you do. But nobody can replace the relationships that you create. So, I'm big on creating those relationships with people. Uh, everybody in the store, not just the pharmacists… Their job is to create relationships…Whether it's with patients, with the doctors, it's all about relationships” | Owner Interview     |</p>
<table>
<thead>
<tr>
<th>Pharmacy B Work System Features</th>
<th>Supporting Data</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>V. Internal Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private consultation room and office</td>
<td>Two private spaces where MCA’s are provided: the office and a separate consultation room</td>
<td>Researcher Observations</td>
</tr>
<tr>
<td>Open concept dispensary</td>
<td>Located at the center of the back wall, level with the front store (not raised) and has a low front counter, enabling patients to easily see into the dispensary</td>
<td>Researcher Observations</td>
</tr>
<tr>
<td><strong>VI. External Environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affluent and loyal dispensary clientele</td>
<td>“We are lucky in that there is - I would say - we are more affluent than other areas of Canada.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td></td>
<td>“But we were getting customers from [named 5 cities/towns nearby], so we are getting people from all around and that's what has sustained our growth.</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Established interprofessional networks</td>
<td>“So, the hospital also recognizes the services we provide. So they’re actually referring people to our pharmacists for nutrition counseling. I'm a CDE [Certified Diabetes Educator], so they refer people to me for the diabetes part of it… we are 1 of 2 stores that are designated as insulin start-ups for [Town].”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td></td>
<td>“So, umm, then those DECs [Diabetes Education Centres], if new patients get referred to them, they will refer back to us.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td></td>
<td>“We're just a satellite pharmacy. So, if [the long term care home’s] pharmacy is closed - so over night because we are 24 hours - ... we'll supply them with medication.”</td>
<td>Owner Interview</td>
</tr>
<tr>
<td>Located near a hospital and other health services</td>
<td>In a plaza with a dental office, walk-in medical clinic, optometrist and metabolic clinic (specializing in nutrition/diet and fitness). Nearby a hospital and long term care home.</td>
<td>Researcher Observations</td>
</tr>
</tbody>
</table>
The dispensing workload in this pharmacy generally requires a minimum of 4 dispensary staff on duty at the same time. The dispensing workflow follows a linear assembly line process (See Appendix Z, Figure 2 for a depiction of the dispensing workflow). Dispensary staff have distinct written job descriptions based on their job title and primary role (e.g. ‘entry’ pharmacy assistant, ‘pick-up’ pharmacy assistant) which are rigorously adhered to. Briefly, prescriptions are received by the ‘entry’ pharmacy assistant who enters the medication(s) into the computer and prints the necessary paperwork (i.e. medication information pamphlets) and label(s). A second pharmacy assistant fills the prescription(s) and a pharmacist checks it. A third pharmacy assistant bags the dispensed drug(s) and hands the bagged drugs to the patient at the pick-up counter. The pharmacist counsels patients on their medications as needed at the pick-up counter. An employee specialization strategy for task completion is the dominant characteristic of the dispensing process.

The MCA service workload in this pharmacy involves two pharmacy assistants and two pharmacists (See Appendix Z, Figure 3 for a depiction of the MCA service workflow). Either the ‘entry’ assistant or the dispensing pharmacist identifies eligible patients during the dispensing process and prints the necessary MCA forms. In addition, eligible patients are identified through hospital discharge forms that the nearby hospital faxes to the pharmacy or off a list of blister pack patients. The MCA forms are paper-clipped to the prescription drug bag indicating that the ‘pick-up’ assistant should invite the patient to schedule an MCA appointment. Appointments are scheduled during a day/time when a second, clinical pharmacist is present. If those dates/times are inconvenient for the patient, then the assistant forwards the patient’s contact information to the clinical pharmacist who schedules an appointment for a time convenient for them both. The clinical pharmacist reviews the pharmacy’s patient profile and the MCA paperwork before the consultation, which generally occurs in the consultation room or
the office. The clinical pharmacist completes the PMR form during the consultation. The PMR is shared with the patient and the patient’s physician. The clinical pharmacist completes the Pharmacist Worksheet form after the consultation and files all completed forms in binders, alphabetically by the patient’s last name. Clinical pharmacists conduct remunerated in-person MCA follow-ups with eligible patients as needed (i.e. recent hospital discharge, planned hospital visit, or known non-compliance to a medication). They also conduct telephone ‘touch-points’ following an MCA to check on the effectiveness of the pharmacist’s suggestions. The owner actively solicits feedback about MCAs (and other services) from patients. Positive ‘life changing moments’ are celebrated by the pharmacy staff. The owner also spot-checks the documentation for 3 or 4 MCAs per month and provides feedback in one-on-one coaching sessions when quality is deficient.

Best Practice MedsCheck Annual Features

During the interviews, pharmacy staff identified features that they thought contributed to best practice MCAs. These features, related to pharmacy structure as well as MCA process. They are summarized in Table 4.4. Each of these features was corroborated by researcher observations.
Table 4.4. Features contributing to best practice MedsCheck Annuals identified by interviewees

<table>
<thead>
<tr>
<th>Best Practice Features</th>
<th>Pharmacy A Interviews (n = 3)*</th>
<th>Pharmacy B Interviews (n = 4)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointment-based</td>
<td>Consensus</td>
<td>—</td>
</tr>
<tr>
<td>Thorough, lengthy consultations</td>
<td>Consensus</td>
<td>Consensus</td>
</tr>
<tr>
<td>Constructive, engaging conversations</td>
<td>—</td>
<td>Consensus</td>
</tr>
<tr>
<td>Strong patient-pharmacist relationships</td>
<td>—</td>
<td>Consensus</td>
</tr>
<tr>
<td>Staffing/staff scheduling to support the service</td>
<td>Consensus</td>
<td>Majority</td>
</tr>
<tr>
<td>Use of technology</td>
<td>Partial</td>
<td>Partial</td>
</tr>
<tr>
<td>Support staff participation and teamwork</td>
<td>Partial</td>
<td>Majority</td>
</tr>
<tr>
<td>Private consultation space</td>
<td>—</td>
<td>Partial</td>
</tr>
</tbody>
</table>

*Number of interviewees who discussed exemplary MCA features
Level of agreement: Not identified (—), Partial (less than 50% of interviewees), Majority (more than 50% of interviewees), Consensus (all interviewees)

Cross-Case Themes

The themes that arose from the cross-case comparison were based on descriptive codes from several different SEIPS work system components. Not all descriptive codes were included in a theme (i.e. when cross-case comparisons were not possible). The Consolidated Framework for Implementation Research (CFIR) was used to interpret and present study findings. This framework “promote[s] theory development and verification about what works where and why” (Damschroder et al., 2009). The CFIR domains are: 1) Intervention Characteristics, 2) Outer Setting (i.e. external pharmacy environment), 3) Inner Setting (i.e. internal pharmacy environment), 4) Characteristics of Individuals (i.e. staff), and 5) Implementation Process. These domains and the study themes are depicted in Figure 4.1 and are described below with supporting data.
Figure 4.1. Study themes mapped on to the CFIR domains
Intervention Characteristics

Four themes relating to MCA intervention characteristics were identified: Consultation Description; Systematic, Normalized Process; Post-Service Activities; and MCA Adaptability (i.e. how the service is tailored to fit the setting).

Consultation Description

The face-to-face consultations in both pharmacies were similar in their location, duration, and topics discussed. The observed MCAs were conducted almost exclusively in a private room with a closed door. Indeed, a designated manager noted “the fact that we have a designated area where we can actually sit down with the patient” [B2] as an important pharmacy feature. This view was also expressed by other pharmacy staff who talked about a “quiet area” [B3] where the pharmacist can “sit down with the patient” [B3]. However, one observed MCA took place in the patient waiting area (when no other patients were present) at the request of the caregiver with whom the MCA was being conducted.

Each face-to-face consultation was lengthy, lasting between 15 and 50 minutes depending on the complexity of the patient. Staff in both pharmacies talked about the importance of “take[ing] the time” [A4] with the patient to thoroughly discuss their medications. Indeed, the observed MCAs were never rushed.

All MCAs started with the pharmacist introducing him/herself and explaining the purpose of the consultation. The information that the pharmacist collected from the patient during the consultation closely mimicked the information required on the Pharmacist Worksheet and PMR forms, including:

- Overall health status and medication allergies;
- Lifestyle questions including smoking status, alcohol consumption, exercise regimen, and sometimes diet and recreational drug use;
• Prescription medications including what they were, and when, why, and how medications were taken;
• Specific common side-effects for each medication;
• Natural health products or over-the-counter medications, including what they were, and when, why, and how these were taken.

Pharmacists were observed giving patients advice on their medications and providing training for medical devices. Pharmacists often referred patients back to their physician and were observed confirming the date and time of a patient’s next scheduled physician appointment.

**Systematic, Normalized Process**

Processes for identifying, selecting, and recruiting patients that were eligible for an MCA were systematic and normalized into daily work routines. While these steps were systematic and consistent, flexibility was also observed.

In both pharmacies, the service was offered to “all our patients that qualify” [A2]. Identification of eligible patients was systematic. In Pharmacy A, pharmacy assistants and registered technicians printed two reports: one to identify past MCA recipients who were due for their next annual service, and one of patients taking 3 or more chronic medications. Occasionally, eligible patients were identified through computer prompts when a dispensary staff member entered a prescription into the patient’s profile. In Pharmacy B, a pharmacy assistant generally identified patients by manually reviewing patient profiles while entering new prescriptions; though, occasionally, a pharmacist identified eligible patients when checking prescriptions. In addition, patients were identified when reviewing hospital discharge forms and prescriptions faxed from the nearby hospital, and from a list of blister package patients. Staff in both pharmacies said that patients also requested medication reviews, often with specific pharmacists.
Once a dispensary staff member had identified an eligible patient, he/she invited the patient to have an MCA. In both pharmacies eligible patients were recruited both in-person during prescription pick-up or drop off, and by telephone. In Pharmacy A, telephone recruitment was conducted using a standardized script. MCAs in both pharmacies were almost always conducted by appointment, enabling assistants to schedule consultations at times convenient for both the pharmacy and the patient. Indeed, a pharmacy owner said, “we try to do most of our MedsChecks Monday to Friday because we have more staff” [A1]. Occasionally, if time permitted, a dispensing pharmacist conducted MCAs on-the-spot. In preparation for an MCA, the pharmacist who was about to conduct the service almost always reviewed the patient profile and, as needed, pharmacists were also observed searching for medication interactions on the internet.

Post-Service Activities

Both pharmacies added steps to the MCA process following the consultation. Specifically, both pharmacies performed ‘touch-point’ telephone calls, as needed, and had quality monitoring measures.

Informal follow-ups were conducted, as needed, via telephone as ‘touch-points’ to discuss the patient’s success with implementing pharmacist suggestions. As one pharmacist said, “it's a simple phone call” [B3]. These ‘touch-points’ were conducted with patients who did not qualify for a drug plan-reimbursed follow-up. Drug plan-reimbursed follow-ups were generally not appointment-based at either pharmacy. These follow-ups were conducted when a patient was recently discharged from a hospital, had a planned hospital visit, or was non-compliant to a medication.

The owners of both pharmacies conducted informal quality assessments of their MCA services. For example, patient feedback was solicited in both pharmacies. One owner talked
about “celebrat[ing] all of the good ones where customers talk about it” [B1]. This owner showcased exemplary MCA service and shared positive feedback with his pharmacy staff. Both pharmacy owners also talked about reviewing MCA service forms for completeness and to “ensure that our standard stays the same” [A1]. One pharmacy owner also talked about coaching pharmacists individually when documentation quality was lacking.

Service Adaptability

Service adaptability is “the degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs” (Damschroder et al., 2009). While MCAs were often provided as a standalone service, both pharmacies had also incorporated the MCA service into a previously existing disease management clinic held in the pharmacy, thereby adapting the service. In Pharmacy A, MCAs are provided as part of the pharmacy’s quarterly clinic days. Each clinic is dedicated to a specific disease (e.g. osteoporosis, heart disease, diabetes). Patients with the disease are contacted by pharmacy staff and offered appointments with a nurse for point of care testing specific to the disease, and then with a pharmacist for a medication review. For eligible patients, these medication reviews are billed as MCAs. In Pharmacy B, MCAs were occasionally conducted as part of the nutrition counseling clinics that were held by appointment every second Friday. A staff pharmacist, who holds a Bachelor’s degree in nutrition, provided one-on-one counseling with patients to discuss both their medication history and medical conditions, including how each relates to diet. All nutrition counseling patients who are eligible for an MCA receive the service during their appointment.

Following the MCA, patient profiles in both pharmacies were typically updated to reflect changes to patient’s medical conditions, physician information, and discontinued medications. This integration of information from the MCA service into the patient profile system demonstrates another adaptation of the service, providing a richer and more detailed patient
record system. Pharmacy B demonstrated another way in which the MCA system was integrated with the prescription dispensing system: MCA recipients were identified during the dispensing process. Pharmacy assistants or the dispensing pharmacist screened patients for MCA eligibility while entering their prescription drugs into the patient profile or while checking prescriptions. If a patient was eligible, pre-populated MCA forms were printed and paper-clipped to the patient’s prescription to inform all staff participating in the dispensing process that the service should be offered. In these cases, the MCA consultation often occurred either when a patient arrived to pick up a prescription or while a patient was waiting for a prescription to be filled.

**Pharmacy Outer Setting**

The Pharmacy Outer Setting domain is defined as the “economic, political, and social context within which an organization resides” (Damschroder et al., 2009). One theme relating to the Pharmacy Outer Setting was identified.

**Interprofessional Networks**

The pharmacy owners and many of the pharmacists in both pharmacies had extensive interprofessional networks. These seem to have been facilitated by the pharmacies’ location near other healthcare providers including medical clinics, physiotherapy offices, dental offices, hospitals, and long term care facilities. The owner of Pharmacy A said, “We work with a lot of health care professionals, umm, we work with physicians, physiotherapists, uhh, different physician specialists, especially with our travel vaccinations… I think that we are able to provide a nice continuum of care for patients...” [A1].

Both pharmacy owners said that they had good working relationships with their respective neighbouring medical clinics. Indeed, dispensary staff physically attended the clinics for different reasons. In Pharmacy A, the main entrance into the medical clinic was accessed
through the inside of the pharmacy. Dispensary staff were frequently observed walking into the clinic to address questions about physicians’ prescriptions, likely because of this close proximity. The owner of Pharmacy B said that he/she often spent a full day in the medical clinic doing A1C point of care testing for clinic patients because, “it’s building relationships. Whether it’s with patients, with doctors, it’s all about relationships.” [B1].

Both pharmacy owners established relationships with health care providers outside of their immediate strip-mall or plaza. In Pharmacy A, all 3 pharmacists (including the owner) had a medical directive from a physician for prescribing Hepatitis A, Hepatitis B, and Shingles vaccinations. This same physician also participated in travel clinics held in the pharmacy by appointment. The physician assessed the patient and wrote travel medication prescriptions; the pharmacist administered injections, as needed, and provided medication counseling. This relationship with the physician was established by the owner during a pharmacy conference in 2012.

In pharmacy B, the owner and staff had interprofessional relationships with health care providers in the nearby hospital and long term care facilities, as well as with the local Diabetes Education Center. Physicians in the nearby hospital regularly faxed patient discharge papers (including prescriptions) to the pharmacy. According to a dispensary staff member, these faxes were sent a day or two in advance of patient discharge, so that the pharmacist would have sufficient time to review and prepare the medications. These faxes often led to the provision of MCA services. Physicians at the hospital referred patients to specific pharmacists at this pharmacy for nutrition and insulin start-up counseling services. The pharmacy owner also had close ties to the mental health unit at the hospital. Each month, he/she sent a cosmetician to this unit to provide information on beauty products and product application. The owner also fundraised and arranged the transportation of mental health patients to the local YMCA for
exercise. The pharmacy provided overnight dispensing services on an on-call basis for two nearby long term care homes, relationships that were set up by the pharmacy owner. Lastly, this pharmacy was one of two locations in the town to be affiliated with, and have staff trained by, the local Diabetes Education Center for counseling patients starting insulin.

Both pharmacy owners used advertising as a strategy to facilitate integration with local health care clinics and institutions. For example, in Pharmacy A, postcard sized advertising materials were co-created with the nearby medical clinic and physiotherapy office, listing services offered in each facility. These cards were handed out to patients in each location. In Pharmacy B, the owner used to distributed newsletters to nearby physician offices, providing updates on “changes to ODB [Ontario Drug Benefit Plan] coverage or a new drug coming out on the market that they may be aware of, but maybe not know how to place it into practice” [B1]. These letters were sent out every 2 months; however, due to time constraints the owner no longer distributes this newsletter.

Pharmacy Inner Setting

The Pharmacy Inner Setting domain is defined as the “structural, political, and cultural contexts through which the implementation process will proceed” (Damschroder et al., 2009). Four themes emerged from the data that related to the Pharmacy Inner Setting domain: Customer Service-Focus, Pre-Existing Clinically-Focused Practice, Human Resource Strategies for Clinical Services, and Use of E-Technology Applications (e.g. web-based appointment platform, e-technology communication systems).

Customer Service-Focus

Both pharmacies placed high importance on serving pharmacy customers. The owner of Pharmacy A created two guiding documents for the pharmacy: the ‘Pharmacy Philosophy’ and
the ‘Pharmacy Mission Statement’; the first topics on these documents were “value-added services” and “superior quality service” respectively. Following these guiding documents, pharmacy staff were observed consistently greeting clientele and addressing their needs, whether it be prescription medication or retail product-related. The pharmacy also offered free coffee and cookies on a table beside the dispensary, creating an inviting environment for patients. Similarly, in Pharmacy B, dispensary staff was observed greeting patients immediately, informing them that they would be helped shortly, and giving each patient his/her undivided attention at the pick-up or drop off counter. Again, the customer-focus seemed a top-down initiative as this pharmacy’s ‘Values and Beliefs’ document began with the goal of “dominat[ing] in customer service”. This pharmacy also provided children’s toys in the waiting area, and staff gave young children cartoon stickers at the prescription pick-up counter.

Pre-Existing Clinically-Focused Practice

Both pharmacies had clinically-focused practices in advance of MCA service implementation. The owners of both pharmacies had clinically-focused backgrounds. The owner of Pharmacy A completed an entry to practice PharmD degree in the USA, choosing community pharmacy-focused experiential training. This owner cited exceptional preceptors with clinically-focused practices as being influential in developing his/her current practice. The owner of Pharmacy B became a Certified Diabetes Educator (CDE), a designation for licenced health care professionals, requiring a minimum of 800 hours in diabetes education experience and the successful completion of the CDE examination (The Canadian Diabetes Educator Certification Board, 2018). Both owners’ educations were contributing factors to their pharmacy’s clinically-focused practice.

When asked to describe their pharmacies, one of the first topics that both owners discussed was the diverse and numerous clinical services offered in addition to the MCA
service. As one owner said, “we offer a lot of clinical services... we're not just a dispensary.” [A1]. Clinical services in Pharmacy A included disease-specific ‘clinic days’, disease-specific seminars, travel clinics (in partnership with an off-site physician), prescribing of Hepatitis A, Hepatitis B, and the Shingles vaccine (through a medical directive), and immunizations. Similarly, in Pharmacy B, an extensive list of clinical services was offered: nutrition counseling, vaccinations, smoking cessation, prescription adaptations/renewals, methadone monitoring services, point of care screening (i.e. for cholesterol, A1c, and atrial fibrillation), and injection training. Indeed, besides MCAs, pharmacists in this pharmacy were observed independently renewing prescriptions, providing Pharmaceutical Opinions, providing device training (i.e. diabetes blood sugar monitors and Epipens), administering the flu vaccine, and conducting nutrition counseling. Both pharmacies were also early adopters of medication reviews, providing this service before the introduction of the MedsCheck program in 2007.

Neither pharmacy used quotas or targets to increase the number of MCA services. In Pharmacy A, it seemed that the pharmacists were intrinsically clinically-focused and required no external motivation to provide MCAs. Similarly, in Pharmacy B, the owner said, “I’m not going to count how many MedsChecks you do, it’s not about that.” [B1]. Instead, this owner used a different approach to goal setting as motivation to provide MCA (and other clinical) services. The owner asked that staff “have an impact on someone’s life at least once a day” [B1], which may involve MCAs. Patients were encouraged to share their experiences with the pharmacy owner. In these cases, the staff members’ photo(s), name(s), and a description of the exceptional service were put on to a plaque and placed in the staff lounge area as a ‘Life Changing Moment’. The aim was to celebrate these ‘Life Changing Moments’ and to highlight the exemplary work of the staff to encourage further positive patient interactions.
Lastly, both pharmacies extensively marketed their clinical services. In Pharmacy A, clinical services, including medication reviews, were advertised on the pharmacy’s website, in patient pamphlets, on sandwich boards placed on the sidewalk in front of the store, and on bulletin boards in the front entrance. In Pharmacy B, clinical services, including medication reviews, were advertised in patient pamphlets and on posters on stands near the dispensary. The pharmacy also gave out refrigerator magnets that advertised ‘home visits and consultations’ which include the MedsCheck at home service. The owner also placed biweekly advertisements in the local newspaper indicating the pharmacy’s achievements (i.e. awards for best pharmacist and best pharmacy) as well as a list of available clinical services.

_Human Resource Strategies for Clinical Services_

Both pharmacies managed their dispensary staff scheduling in ways to facilitate MCA service provision while minimizing disruption to the prescription dispensing workflow. Both pharmacies preferentially conducted MCAs when there was pharmacist overlap. In Pharmacy A, this overlap almost always consisted of a staff pharmacist and the owner. As one pharmacist said, “When myself and [the owner] are here, the two of us, it makes it a lot easier. So we try to do it when we are both available.” [A2]. Similarly, in Pharmacy B, a second pharmacist was scheduled “not to handle the prescription load, but to handle the counseling load.” [B1], including MCA services. Both pharmacies often had student/intern pharmacists who were “considered kind of overlap” [B2], providing additional opportunity to provide MCAs. Indeed, the pharmacy owners are both affiliated with the pharmacy schools at the University of Toronto and the University of Waterloo, and at least one staff pharmacist at each pharmacy was a preceptor for student/intern pharmacists.

Dispensary staff job descriptions also changed to support MCAs. In Pharmacy A, registered technicians took on an expanded dispensing role. The owner said, “they are fantastic
in helping us to free up our time… so that we can conduct these clinical services” [A1]. Similarly, the owner of Pharmacy B said, “if [registered technicians are] signing on the technical aspect of the prescription, then that frees up the pharmacist.” [B1]. Pharmacy assistants indirectly freed up pharmacists for MCAs, as a technician said, “the pharmacy assistants are helpful too because they help in the dispensary making orders while the pharmacist is busy with the medication review” [A4]. In pharmacy A, pharmacy assistants were scheduled to accommodate MCA services: “if a MedsCheck is going to be done, there will be at least two pharmacy assistants present” [A1]. In both pharmacies, assistants and registered technicians identified and recruited MCA patients, scheduled MCA appointments, and, in Pharmacy A, scanned and filed completed service forms.

Use of E-Technology Applications

Both pharmacies used e-technology to improve MCA workflows. The dispensing software in Pharmacy A, greatly assisted in the identification of patients eligible for an MCA both through report printing capabilities and MCA eligibility prompts. According to the owner the pharmacy staff “use[d the dispensing software] quite a bit” [A1] to identify eligible patients. The dispensing software in both pharmacies populated specific sections of the mandated MCA service forms by pulling information from the patient profile. Medication-specific information (i.e. name, dosage, indication, and directions for use) were populated on the PMR and the Pharmacist Worksheet forms in both pharmacies. In Pharmacy A, the patient, primary care provider, and pharmacy information were also populated on the Pharmacist Worksheet. According to the owner of Pharmacy B, the auto-population functionality made the MCA process “a little bit faster” [B1]. As previously mentioned, Pharmacy A used a web-based appointment software system for scheduling MCA and other professional services. Scanners
were placed at each computer terminal in this pharmacy, enabling staff to easily and quickly create PDF versions of MCA service documents and attach them to patient profiles.

Both pharmacies also used e-technology to facilitate communications among dispensary staff. In Pharmacy A, emails were used to disseminate administrative information (e.g. upcoming meetings, updated or new policies/procedures) from the owner to the dispensary employees. In Pharmacy B, all dispensary staff, including the owner and designated manager, participated in a group text/chat through an application on their personal smartphones. The group chat was used to transfer information both vertically (i.e. top-down or bottom-up) and horizontally, and was particularly useful because of the large number and part-time nature of the dispensary staff. In regards to the group chat, the owner said, “they’re not obligated to answer or reply. They can look at it any time. They can come to work to look at it, but at least the option is there for them.” [B1]. Indeed, staff seemed to appreciate this communication method, and an assistant said, “it's a good thing we have [the group chat] because we can do it fast without interrupting anything too much” [B5]. During site visits, dispensary staff had their phones on their person, or placed on a counter in the dispensary; however, only the designated manager was observed frequently using his/her phone.

Characteristics of Individuals

Four themes relating to the Characteristics of Individuals (i.e. pharmacy staff) were identified: Positive Staff Opinions of MCA; Staff Identify with the Pharmacy; Relationships with Patients; and Pharmacists’ Interviewing Skills.

Positive Staff Opinions of MedsCheck Annual

As discussed in Chapter 2, in 2016, the Ontario Ministry of Health and Long Term Care (MOHLTC) made changes to the MedsCheck program. Dispensary staff in each pharmacy talked about the increased time commitment necessary to complete the new mandated service
forms; however, most staff in each pharmacy also perceived the changes positively. For example, in Pharmacy A, the staff pharmacist spoke about how the detailed forms assisted in gathering information about the patient and included “some good prompts to make sure that we ask all the necessary questions” [A2]. Indeed, staff in pharmacy B also expressed this view, saying: “one big benefit that I like is the fact that it sort of outlines the requirements for it, it becomes much more simple and it reminds you of every single thing you need to do in order to have a complete MedsCheck.” [B2]. This pharmacist also appreciated the additional forms created for communicating with prescribers. When discussing the increased documentation load, the owner of pharmacy B said, “I don't see it as a hindrance… all they're trying to say is we're making sure that you need to sit down and have time to build the relationship with the patient.” [B1].

Staff Identify with the Pharmacy

Both pharmacies had positive environments for staff, encouraging a sense of belonging in the organization. Dispensary staff in both pharmacies appeared to be cohesive and family-like. In Pharmacy A, the registered technician said he/she felt trusted by the owner and pharmacist because “they know that I wouldn’t do anything outside of my scope of practice.” [A4]. The owner and managing pharmacists generally did not actively direct staff; instead, staff were trusted to adequately complete their tasks. Staff also said they felt they were an important part of the dispensary team and felt valued. Furthermore, staff turnover at this pharmacy was low, with dispensary staff having 9 years’ tenure on average, demonstrating dedication to the pharmacy. Pharmacy B, had a positive relationship-focused organizational climate that appeared to be passed down from the pharmacy owner to the pharmacy staff; for example, as described in the next section, the pharmacy owner’s focus on customer relationships and services rather than products was embraced by staff. Again, staff displayed dedication to the pharmacy with 7 of the
8 staff pharmacists (including the designated manager) having started, and continued their careers in this pharmacy. The owner said that many of the student pharmacists completing placements in the pharmacy expressed a desire to continue working in the pharmacy after graduation.

*Relationships with Patients*

According to the owner of Pharmacy B, community pharmacy is “all about people and relationships” [B1]. Indeed, all dispensary staff interviewed in this pharmacy talked about the importance of building relationships, specifically with patients. Relationships with patients were viewed as both a precursor to effective MCA services and a result of MCA services. The owner believed that, “…without a relationship, you’re not going to change someone’s behaviour” [B1], conveying that the impact of an MCA increased when there was an established relationship between pharmacists and patients. A staff pharmacist separately affirmed this belief, saying that, “making that relationship to have the patient be more comfortable opening up to you.” [B3] was important. This same pharmacist also said that the MCA service helps retain patients, “because it builds that relationship with the patient” [B3]. Staff interviewed in Pharmacy A, did not mention relationships with patients during the interviews; however, evidence of dispensary staff-patient relationships were observed. Patients and dispensary staff often greeting each other by first name. Some patients came to the pharmacy simply to talk with the pharmacist about health-related topics; for example, a patient was observed discussing the results of recent blood work and to ask about potential dietary changes. This patient left the pharmacy without purchasing products or dropping off prescriptions. The pharmacy also seemed to be a social gathering place for the local community and when dropping off prescriptions, patients were observed chatting or to telling jokes to the dispensary staff.
Pharmacists’ Interviewing Skills

At both pharmacies the MCA consultations consisted of an in-depth conversation between the staff/student pharmacist and the patient/caregiver. The pharmacists used open-ended questions to engage the patient or caregiver. During the consultation, the pharmacist encouraged the patient to provide a detailed account of his/her health, lifestyle, and medications. Pharmacists were observed prompting patients in order to gather as much information as possible, for example, when a patient responded that they did not take any over-the-counter medications, the pharmacist asked, ‘what do you take for headaches?’, thereby jogging the patient’s memory. Pharmacists in both pharmacies were observed using active listening skills, demonstrated verbally (by repeating patient’s responses back to them) and through body language (shoulders facing the patient, leaning forward, making frequent eye contact). One pharmacist talked about “asking a little bit more” and “digging deeper into the patient” [B3] during the consultation to identify and resolve drug therapy problems.

Implementation Process

The only theme categorized into the Implementation Process domain was the use of leaders and champions.

Leaders / Champions

Both pharmacy owners were leaders who promoted clinical services. As previously mentioned, both pharmacies had clinically-focused practices that were attributed to the clinical orientation of the owners. Both owners valued clinical services and believed that their pharmacies were more than dispensaries, creating an organizational culture that encouraged service provision beyond prescription dispensing. This environment encouraged staff to also be clinically-focused.
A champion is an individual who is dedicated to the implementation of a service (Damschroder et al., 2009). Pharmacy B had an MCA service champion that was in charge of the MCA service. This ‘MedsCheck Queen’, as she was called by other staff, was a recently graduated PharmD student with obvious enthusiasm for the service. The owner gave this champion the authority to modify MCA processes. For example, the champion created and maintained a list of pharmacy patients whose medications were dispensed in blister packages. This list included the date of patients’ last MCA and was a novel process for identifying and tracking a group of patients eligible for an MCA to ensure the service was provided annually.

**Summary of Results**

As previously stated, the 14 themes that arose from cross-case comparisons were mapped onto the 5 CFIR domains. Each of these themes included one or more features of best practice MCA service or features of the pharmacy that supported their best practice MCA service. Table 4.5 displays the study themes by CFIR domain. It displays the descriptive codes (see Appendix X for code definitions) that developed each theme and includes the SEIPS domains/work system components in which each code was categorized. Effectively, this table displays the interface between the thematic use of the CFIR framework and the descriptive use of the SEIPS model.
<table>
<thead>
<tr>
<th>CFIR Domain</th>
<th>Theme</th>
<th>Cross-Case Comparisons – Similarities and Differences</th>
<th>Descriptive Code</th>
<th>SEIPS Domain / Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation Description</td>
<td>Both pharmacies: MCA consultations lasted 15-50 minutes depending on patient complexity; discussed all topics required by funder (medication allergies, lifestyle questions, prescription and non-prescription medications)</td>
<td>Consultation</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>Both pharmacies: Almost exclusively conducted in a consultation room; uninterrupted, private meetings</td>
<td>MCA Service Setting</td>
<td>Work System: Internal Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systematic, Normalized Process</td>
<td>Both pharmacies: Almost always review patient profile in preparation for an MCA</td>
<td>Documentation</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>Both pharmacies: Multi-faceted patient identification and selection processes; all eligible patients are offered the service</td>
<td>Patient Selection or Identification</td>
<td>Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both pharmacies: Patient recruitment processes were part of daily staff work routines; appointments were scheduled at the time of recruitment</td>
<td>Patient Recruitment</td>
<td>Process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Service Activities</td>
<td>Both pharmacies: Telephone ‘touch points’ to discuss the patient’s success with implementing the pharmacist’s suggestion(s)</td>
<td>Patient Follow-Up</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>Both pharmacies: Solicited informal feedback from patients; owner spot-checked completed MCA forms</td>
<td>Quality Assessment</td>
<td>Process</td>
<td></td>
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<tr>
<td>MCA Adaptability</td>
<td>Both pharmacies: MCA tailored to service setting (e.g. provided alongside pre-existing disease management clinic; information gathered during MCAs used to update patient profiles)</td>
<td>Process</td>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>Pharmacy Outer Setting</td>
<td>Interprofessional Networks</td>
<td>Both pharmacies: Networked with nearby external health care organizations; relationships with nearby health care professionals</td>
<td>Professional Networks</td>
<td>Work System: External Environment</td>
</tr>
<tr>
<td>CFIR Domain</td>
<td>Theme</td>
<td>Cross-Case Comparison – Similarities and Differences</td>
<td>Descriptive Code</td>
<td>SEIPS Domain / Component</td>
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<tr>
<td>Preexisting Clinically-Focused Practice</td>
<td>Pharmacy Inner Setting</td>
<td>Both pharmacies: Offered medication review services prior to the MCA program</td>
<td>Early Adopter</td>
<td>Work System: Organization</td>
</tr>
</tbody>
</table>
| | | Both pharmacies: No quotas/targets for MCA  
Pharmacy A: No motivational strategies; pharmacists seemed intrinsically motivated  
Pharmacy B: Goal setting and feedback motivational strategies | Motivational Strategies | Work System: Organization |
| | | Both pharmacies: Large number and variety of clinical services | Professional Services | Work System: Organization |
| | | Both pharmacies: Extensively marketed their clinical services using an array of media  
Pharmacy B: materials targeted both patients and physicians | Promotional Strategies | Work System: Tools & Technology |
| | | Both pharmacies: Owners’ clinical education  
Pharmacy A: PharmD, specializing in community pharmacy and clinical services  
Pharmacy B: CDE certified | Owner’s Education | Work System: People |
| Customer Service-Focus | | Both pharmacies: Staff immediately acknowledge patients at the dispensary counter  
Both pharmacies: Inviting atmosphere for customers:  
Pharmacy A: Free coffee/cookies  
Pharmacy B: Toys in waiting area and stickers for children | Customer Service Focus | Work System: Organization |
<p>| HR Strategies for Clinical Services | | Both pharmacies: Schedule overlapping pharmacist/pharmacy student shifts | Staffing | Work System: Organization |
| | | Both pharmacies: Pharmacy assistants job descriptions include MCA tasks; expanded registered technicians’ dispensing role | Support Staff | Work System: Tasks |
| Use of E-Technology Applications | | Both pharmacies: Use dispensing software to identify patients eligible for an MCA | Dispensing Software Support for MCA | Work System: Tools &amp; Technology |</p>
<table>
<thead>
<tr>
<th>CFIR Domain</th>
<th>Theme</th>
<th>Cross-Case Comparison – Similarities and Differences</th>
<th>Descriptive Code</th>
<th>SEIPS Domain / Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pharmacy A: Web-based appointment scheduling platform&lt;br&gt;Pharmacy B: Group chats/texting to improve staff communications</td>
<td>Technologies</td>
<td>Work System: Tools &amp; Technology</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Positive Staff Opinions of</td>
<td>Both pharmacies: MCA viewed by pharmacy staff as a good use of pharmacists’ skills; 2016 MCA program changes viewed positively</td>
<td>Impact of MCA</td>
<td>Work System: External Environment</td>
</tr>
<tr>
<td>of Individuals</td>
<td>MCA</td>
<td>Both pharmacies: Loyal dispensary staff&lt;br&gt;Pharmacy A: Average tenure 9 years&lt;br&gt;Pharmacy B: 7 of the 8 pharmacists started their careers at this pharmacy</td>
<td>Regulation Changes</td>
<td>Work System: Internal Environment</td>
</tr>
<tr>
<td></td>
<td>Staff Identify with the</td>
<td>Both pharmacies: Dispensary staff cohesive and family-like</td>
<td>Organizational</td>
<td>Work System: Internal Environment</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>Pharmacy</td>
<td>Both pharmacies: Strong relationships between dispensary staff and patients</td>
<td>Communication/</td>
<td>Work System: People</td>
</tr>
<tr>
<td></td>
<td>Relationships with</td>
<td>Both pharmacies: Open-ended questions and active listening skills effectively engaged patients in a discussion about their medications</td>
<td>Relationships with Patients</td>
<td>Work System: People</td>
</tr>
<tr>
<td>Pharmacists’</td>
<td>Patients</td>
<td>Both pharmacy owners were strong leaders with a focus on clinical services&lt;br&gt;Pharmacy B: A staff pharmacist was “the MedsCheck Queen”</td>
<td>Owner / Staff</td>
<td>Work System: People</td>
</tr>
<tr>
<td>Interviewing</td>
<td></td>
<td>Both pharmacy owners were strong leaders with a focus on clinical services&lt;br&gt;Pharmacy B: A staff pharmacist was “the MedsCheck Queen”</td>
<td>Owner / Staff</td>
<td>Work System: People</td>
</tr>
<tr>
<td>Skills</td>
<td></td>
<td>Both pharmacy owners were strong leaders with a focus on clinical services&lt;br&gt;Pharmacy B: A staff pharmacist was “the MedsCheck Queen”</td>
<td>Owner / Staff</td>
<td>Work System: People</td>
</tr>
</tbody>
</table>

SEIPS = Systems Engineering Initiative for Patient Safety; CFIR = Consolidated Framework for Implementation Research; WS = work system; CDE = Certified diabetes educator; HR = human resource; RT = registered technician
CHAPTER 5: DISCUSSION AND CONCLUSION

This chapter concludes the thesis. It starts with a discussion of the work system features and service processes that supported a best practice adherence-focused medication review in the two study pharmacies. It then puts forth a definition of best practice in relation to adherence-focused medication review services in the community pharmacy and offers recommendations for achieving best practice. The final section discusses the significance of the research, identifies study limitations, suggests areas of future research, and states study conclusions.

Discussion of Study Findings

This in-depth study of two community pharmacies reveals key features of their work systems that supports best practice, adherence-focused medication review services. Consistent with the Systems Engineering Initiative for Patient Safety (SEIPS) model (Carayon et al., 2006), these key features are interconnected and complemented each other to create a balanced work system that contributed to effective implementation of a quality medication review service.

Smith and colleagues describe a balanced work system as one that offsets possible negative work system components (e.g. pharmacists’ long work hours with frequent interruptions) with positive work system components (e.g. delegating technical tasks to support staff) (Smith and Carayon, 2000). This balanced work system is especially important to support a medication review service, because medication reviews are a complex intervention in that it requires changes to existing patterns of behaviour as well as multiple technological and organizational components (May et al., 2007; Latif et al., 2016). As has been suggested by multiple studies, changes to work systems and workflows are required to incorporate a patient-focused service into a predominantly product-focused pharmacy (Latif et al., 2016; Doucette et al., 2012; Roberts et al., 2008).
Best Practice Work System Features for Medication Reviews

In the study pharmacies, key best practice features were found in each of the 5 SEIPS work system components (i.e. people, tools and technology, tasks, organization, environment). The interconnectivity of these features and their contribution to effective service implementation is discussed below.

One of the key features of both study pharmacies was the owner’s decision to schedule 2 pharmacists simultaneously (i.e. pharmacist overlap) during busy pharmacy hours to support clinical services. A second staff pharmacist, the pharmacy owner, and/or a student/intern pharmacist provided the overlap. It is noteworthy that scheduling pharmacist overlap was a practical suggestion that researchers offered in a 2008 study of pharmacists’ initial experience with MCA (Dolovich et al., 2008). Inadequate pharmacist staffing has been identified as a major barrier to medication review services in many jurisdictions, including Ontario (Latif et al., 2008; Houle et al., 2016; Dolovich et al., 2008). Scheduling pharmacist overlap in the study pharmacies was important to the provision of MCA services by appointment because both prescription dispensing (i.e. the clinical prescription check and patient medication counseling) and a quality MCA service require a pharmacist’s undivided attention.

Contrary to the findings of a recent qualitative study with Ontario community pharmacy decision makers (MacKeigan et al., 2017), staff in both pharmacy A and B conducted most MCA services by appointment. Doing so is consistent with the payer’s recommendations as described in the service guidebook (Ontario Ministry of Health and Long Term Care, 2016c). Interestingly, studies conducted in several jurisdictions including Ontario, have indicated that pharmacies had given up on appointment systems due to frequent patient ‘no-shows’ (McDonald et al., 2010; Latif et al., 2016; Houle et al., 2016; MacKeigan et al., 2017). Staff in the two study pharmacies either took steps to avoid (Pharmacy A), or did not appear to be
concerned about (Pharmacy B), ‘no-shows’. For example, in Pharmacy A, assistants placed reminder phone calls to patients the day before their appointments. Conducting reminder phone calls was also a recommendation from the 2008 MedsCheck study (Dolovich et al., 2008).

Both study pharmacies used e-technologies to support their MCA services. For example, Pharmacy A used a web-based system for scheduling service appointments. This scheduling software was accessible to patients on the pharmacy’s website to book clinical services (e.g. immunizations and medication reviews). In Pharmacy B, appointments were scheduled on paper; however, texting/group ‘chats’ were used to improve staff communications about appointments. The use of clear communication channels, such as in Pharmacy B, is noted in the Consolidated Framework for Implementation Research (CFIR) as important for implementation of innovative services (Damschroder et al., 2009). Such use of technology (i.e. appointment systems and group ‘chats’ used by pharmacy staff) has also been discussed frequently in relation to best practices in health care (Kingston, 1999; Perleth et al., 2001; Rupp and Warholak, 2008; Brummel et al., 2014) and facilitating clinical patient services in community pharmacy (Bacci et al., 2014; Doucette et al., 2012). In the study pharmacies the use of communication technology and pharmacist overlap strategies facilitated provision of MCA service by appointment.

Support staff in both pharmacies carried out the majority of the non-clinical tasks in the MCA workflow (i.e. identifying and recruiting eligible patients). By allocating MCA tasks to employees, the pharmacy corporation/owner at both pharmacies demonstrated that the service is a priority. This is noteworthy because inadequate staffing has been identified as a major barrier to medication review services (Latif et al., 2008; Houle et al., 2016; Dolovich et al., 2008) and human resource management (i.e. overlapping pharmacists, expanded dispensing role for registered technicians) has often been identified as a facilitator to service provision in the community pharmacy setting (Doucette et al., 2012; Garcia-Cardenas et al., 2016; Moullin et al.,
In this study, the (re)allocation of tasks from the pharmacist to support staff (e.g. assistants identifying and recruiting eligible MCA patients and registered technicians conducting the technical aspects of medication dispensing) further supported the provision of a best practice medication reviews and other clinical pharmacy services (e.g. flu shots).

Both study pharmacies were located near other health care providers, facilitating interprofessional networks. The CFIR states that the degree to which an organization networks with other external organizations, also known as cosmopolitanism, influences the success of intervention implementation (Damschroder et al., 2009). Staff in the study pharmacies felt that participation in the MCA service enriched their interprofessional networks and relationships with physicians. They attributed this, in part, to the 2016 program requirement that the pharmacy share the patient’s personal medication record (PMR) with the patient’s physician. Interestingly, the early survey of pharmacists’ initial experiences with MedsCheck also found that pharmacists perceived an improvement in relationships with physicians as a result of the service (Dolovich et al., 2008). Similarly, studies of adherence-focused medication review services in other jurisdictions have found that strong relationships with physicians were facilitators to service provision (Latif et al., 2016; Bradley et al., 2008; Roberts et al., 2008).

Advertising was used to improve and build on existing interprofessional networks in the study pharmacies. In Pharmacy A, interprofessional networking with the neighbouring medical clinic and physiotherapist office resulted in co-created advertising materials to promote their clinical services to patients. In Pharmacy B, the owner developed and distributed a quarterly newsletter to nearby physicians highlighting information about prescription medications. The development of professional networks, as demonstrated by the study pharmacies, has been identified in the health care service implementation literature as an important strategy to improve implementation and acceptance of a service (Powell et al., 2015; Damschroder et al., 2009).
Furthermore, interprofessional networks have been identified as facilitators for medication review services in several jurisdictions (Patton et al., 2017; Doucette et al., 2012; Roberts et al., 2005).

The identification and empowerment of a service leader or champion was a salient feature of both study pharmacies. In Pharmacy B, the so-called ‘MedsCheck Queen’ was scheduled on certain days to provide clinical services only. The pharmacy owner had given her the authority to create and improve MCA service processes. It is important to note that she was not the only pharmacist who provided MCA services in the pharmacy; she encouraged all pharmacists to provide MCA services. The identification of a service champion has been recognized as a key strategy in the implementation literature both within pharmacy and more broadly in health care (Brummel et al., 2014; Bacci et al., 2016; Powell et al., 2015; Damschroder et al., 2009). In Pharmacy A there was no overt MCA champion. However, as might be expected in an independent pharmacy, the owner of this pharmacy was the service leader. The owner attributed the clinical focus of the study pharmacy to her previous clinical experience and education. Her views and values drove the pharmacy’s service focus, which supported the provision of MCA services as a regular part of the daily workflow. The Expert Recommendations for Implementation Research (ERIC) typology indicates that using a leader to influence colleagues to adopt an innovation is an effective service implementation strategy (Powell et al., 2015).

Many of the key pharmacy features discussed above complemented each other to create a work system that supported MCA service. For example, the study data suggested that scheduling pharmacist overlap (SEIPS ‘work system’ domain, ‘Organization’ component), allocating non-clinical MCA tasks (SEIPS ‘work system’ domain, ‘Tasks’ component), and using appointment systems (SEIPS ‘work system’ domain, ‘Tools/Technology’ component)
were all inter-related and as a whole contributed to a conducive work system for MCA. Another example of the interconnectivity of work system components was physical proximity to other health care providers (SEIPS ‘work system’ domain, ‘Environment’ component), which led to development of interprofessional networks (SEIPS ‘work system’ domain, ‘Environment’ component) and joint service advertising strategies (SEIPS ‘work system’ domain, ‘Tools/Technology’ component).

Keys to Success

The previous section discussed more tangible features of pharmacy structure; however, both pharmacies also had underlying organizational cultures that supported a best practice adherence-focused medication review service. The CFIR defines organizational culture as the values, norms, and beliefs that are shared by staff in an organization (Damschroder et al., 2009). Specific features of the study pharmacies’ organizational culture that contributed to, and likely further developed concurrently with, the MCA service are described below.

The CFIR notes that the compatibility of an innovation’s characteristics (i.e. adherence-focused medication reviews) with the service setting (i.e. the community pharmacy work system) is an important factor for successful implementation (Damschroder et al., 2009). In this study, both pharmacies had pre-existing clinically-focused practices that facilitated the implementation of MCA. For example, both pharmacies were providing medication review services in advance of the MCA program, and offered a wide variety of clinical services. Indeed, previous studies have found that being an early adopter of a medication review service enabled pharmacy staff members to learn from their previous experiences (Bacci et al., 2014; Powell et al., 2015).

Neither pharmacy owner felt the need to use quotas/targets or financial incentives to encourage staff to provide MCA services. This could potentially be a result of their pre-existing
clinical focus or the pharmacy owner’s human resource management philosophy (e.g. hiring pharmacists who valued clinical services). The lack of quotas/targets is especially notable because previous studies have suggested that quotas and financial incentives are often used to increase the number of medication reviews, sometimes at the expense of service quality (MacKeigan et al., 2017; McDonald et al., 2010; Bradley et al., 2008; Canadian Broadcasting Corporation, 2015). The use of quotas is well-documented in ‘multiples’, as chain pharmacies are called in the UK, where pharmacists have said that in order to meet quotas they feel pressured into providing services to patients who are less complex, i.e. less time consuming (Sukkar E., 2013; Bradley et al., 2008).

Staff in both pharmacies identified with, and felt a sense of belonging to, the pharmacy. Both pharmacies took steps to cultivate this ‘organizational citizenship’ or internal community within the organization (Damschroder et al., 2009). Staff with a strong sense of ‘organizational citizenship’ may be more likely to put forth extra effort and contribute to service implementation. For example, both pharmacy owners displayed leadership that promoted organizational citizenship by encouraging pharmacy assistants to pursue further education to become registered technicians. By encouraging this employee growth within the organization, the owners instilled staff with a stronger sense of belonging and loyalty to the organization. The organization also benefited because these registered technicians can conduct the technical medication check during prescription dispensing, allowing the pharmacists’ time to be redirected to conducting MCAs (Ontario College of Pharmacists, 2017). Another example of cultivation of organizational citizenship was demonstrated by the owner of Pharmacy B by offering flexibility in scheduling of dispensary staff hours (e.g. part-time hours), and by using goal setting and feedback-based motivational strategies (e.g. improve one patient’s life and showcasing ‘Life Changing Moments’). Such strategies are known to contribute to a positive
working climate by demonstrating attention to employees’ wants/needs, creating employee loyalty (Saks, 2014).

Dispensary staff’s overall positive perception of the MCA program likely contributed to best practice services. According to the CFIR, staff attitudes towards, and value placed on, the innovation affect the implementation process (Damschroder et al., 2009). Dispensary staff also had positive perceptions of the 2016 program changes that mandated use of multiple structured service forms, despite the increased workload these forms represented. It seems likely that the pre-established clinical orientation of both pharmacies and the role of service champions contributed to positive staff perceptions of MCA. However, a positive perception of the service is only one of many potentially contributing factors to providing quality medication reviews.

Another key factor was the obvious relationships between pharmacy staff and patients in the study pharmacies. Pharmacist-patient relationships have been identified as facilitators to MCA services in two Ontario pharmacy studies (Dolovich et al., 2008; Patton et al., 2017). Pharmacists in both studies felt that pre-established relationships improved trust between pharmacists and patients. Interestingly, staff in Pharmacy A and B also identified the MCA service as a way to enhance and further develop pharmacist-patient relationships.

**Service Process Features that Contribute to Best Practice**

Certain features of service process that contributed to a best practice medication review were identified in the study pharmacies. In both study pharmacies the service process was systematic and normalized, meaning that it was integrated into daily workflows (May et al., 2007). The service processes in the study pharmacies was in keeping with the philosophy of pharmaceutical care and followed many of the steps in the pharmaceutical care process; specifically, assessment, identification of drug therapy problems, and follow-up evaluation (Cipolle et al., 2004, p. 9).
Identification and recruitment of eligible patients used multi-faceted strategies. Patients were recruited both in person and by telephone. Pharmacy assistants or registered technicians were responsible for technical tasks such as identifying and recruiting eligible patients. This task delegation freed up pharmacists’ time for clinical tasks and encouraged a teamwork approach to the medication review process. Significantly, teamwork has been identified as a facilitator to medication review service provision, and practice change in general, in community pharmacies (Dolovich et al., 2008; Roberts et al., 2008). A recent study of the implementation of a medication management service in Minnesota found that engaging the team in the service process was key to ‘setting the stage’ for service implementation (Pestka et al., 2016).

In addition, patient identification and recruitment processes were systematic to ensure all eligible patients were offered the service. It is noteworthy that both study pharmacies offered MCAs to all eligible patients. Although there seems to be a commonly held belief in pharmacy that insufficient pharmacist time forces pharmacy staff to be selective (i.e. target certain subset of patients) when offering MTM service (Dolovich et al., 2008; MacDonald et al., 2010; Lee et al., 2009), both study believed that all eligible patients could benefit from the service.

MCA services in both pharmacies were generally conducted by appointment, in keeping with the recommendation in the program guidebook (Ontario MOHLTC, 2016c). Staff in Pharmacy A rarely used opportunistic recruitment and provision of the service at the time of prescription drop off or pick-up. In Pharmacy B, recruitment was occasionally opportunistic; however, patients were often asked to return to the pharmacy for an MCA appointment instead of conducting the service on-the-spot. The appointment strategy was beneficial for these pharmacies in terms of managing staffing and workflow for other dispensary functions, and also allowed pharmacists the time to prepare for an MCA (i.e. by printing the necessary forms, reviewing the patient profile, and conducting a preliminary assessment of any drug interactions).
Oddly, a recent ethnographic study of the operationalization of MCA in 4 Ontario pharmacies did not identify any preparatory tasks for an MCA service (Patton et al., 2017). Yet, in keeping with the pharmaceutical care process, pharmacists in this study were always observed to prepare for MCA consultations the ‘assessment’ beginning with the ‘identification of drug therapy problems’ steps in advance of the service (Cipolle et al., 2004; p. 10).

Both study pharmacies regularly conducted activities beyond those required in the program guidebook (Ontario Ministry of Health and Long Term Care, 2016c). For example, pharmacists conducted ‘touch-point’ follow-ups with patients. These brief touch-point telephone calls are notable because they have the potential to improve the impact of an MCA, for example on patients’ medication taking behavior. This type of follow-up is consistent with the pharmaceutical care process, which includes following-up with patients to determine outcomes resulting from the service (Cipolle et al., 2004, p. 16). Both pharmacy owners also conducted informal quality monitoring. They routinely solicited feedback from patients and spot checked completed MCA service forms, which occasionally led to one-on-one employee coaching sessions to improve quality and modify pharmacist behavior. This type of informal audit and feedback is in the ERIC list of implementation strategies for health care innovations (Powell et al., 2015).

We also found that the MCA process was tailored to the service setting. Both the ERIC list and the CFIR identify adapting the intervention as an implementation strategy (Powell et al., 2015; Damschroder et al., 2009). For example, while MCAs were usually provided as a standalone service, both pharmacies also integrated the service into their existing disease management clinics. The core components of the MCA remained intact, but the “adaptable periphery” was changed (i.e. different patient identification and recruitment strategies were employed) (Damschroder et al., 2009). Another example of service adaptation was using the
information gathered during an MCA to update the patient’s profile in the dispensing database to reflect changes or gaps in patient’s medical conditions, physician information, and medication lists (i.e. prescriptions filled at other pharmacies, discontinued, and non-prescription).

Service process modifications and tailoring the service are examples of activities that demonstrate an advanced stage of service implementation, according to two studies on the implementation of medication management and medication review services respectively (Moullin et al., 2016; Pestka et al., 2016). An advanced stage of service implementation is what one would expect for pharmacies with best practice MCA services.

**Definition of Best Practice for Adherence-Focused Medication Reviews**

Based on study findings (see Table 4.4 for interviewee identified best practices) and the literature on best practices in health care, a conceptual definition of best practice for adherence-focused medication reviews in the community pharmacy is suggested.

Best practice adherence-focused medication reviews are:

1. Patient-focused (Brummel et al., 2014; Bacci et al., 2014; Academy of Managed Care Pharmacy, 2008) in order to meet patients’ medication-related needs;

2. Pharmacy context-specific (Goes et al., 2015; Academy of Managed Care Pharmacy, 2008) and are designed so that medication review processes can easily become part of daily work routines;

3. Supported by all components of the organization’s work system (i.e. people, tools/technology, tasks, environment, organization) (Carayon et al., 2006);

4. Quality-focused (Academy of Managed Care, 2008; Nelson, 2014) with quality assessments used to continuously improve service quality;

5. Shared within and between pharmacies to promote process improvements (Bacci et al., 2014; Driever, 2002; Kingston, 1999; Academy of Managed Care Pharmacy, 2008);
6. Continually evolving (Smith and Sutton, 1999), that is to say, there is no finite ‘best practice’ end point.

**Recommendations to Achieve Best Practice**

The recommendations put forth in this study drew on pharmacy work system and service process features that contributed to best practice MCAs in both study pharmacies, as well as on the above conceptual definition of best practice. Table 5.1 presents the recommendations.

**Table 5.1. Recommendations to achieve best practice adherence-focused medication reviews**

<table>
<thead>
<tr>
<th>Pharmacy Level</th>
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<tbody>
<tr>
<td><strong>Human Resources</strong></td>
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<tr>
<td>- Schedule overlapping pharmacists or pharmacy students/interns</td>
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<tr>
<td>- Include medication review tasks/responsibilities in employee job descriptions</td>
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<tr>
<td>- Involve support staff in the non-clinical steps of the service</td>
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<td>- Provide training for pharmacists (e.g. interviewing and communication; clinical documentation)</td>
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<tr>
<td>- Provide training to ensure support staff are knowledgeable about service procedures (e.g. for identifying and recruiting eligible patients)</td>
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<tr>
<td><strong>Technologies</strong></td>
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<tr>
<td>- Use the prescription dispensing software to identify eligible patients; automate this process when possible</td>
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<tr>
<td>- Use a patient-facing, web-based appointment system</td>
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<tr>
<td>- Build systems to ensure the information gathered during a medication review is easily accessible to staff during dispensing processes</td>
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<tr>
<td><strong>Professional Networks</strong></td>
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<tr>
<td>- Develop professional relationships with local physicians and other health care providers</td>
<td></td>
</tr>
<tr>
<td>- Promote the service to local physicians and other local health care providers</td>
<td></td>
</tr>
<tr>
<td><strong>Service Promotion/Champions</strong></td>
<td></td>
</tr>
<tr>
<td>- Promote/advertise the service to customers/potential customers</td>
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<tr>
<td>- Ensure all pharmacy staff understand the service and promote it to patients</td>
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<tr>
<td>- Identify a service champion who is passionate about the service</td>
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<tr>
<td>- Empower the champion to improve processes and suggest (re)allocations of resources as needed</td>
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</table>
**Individual Level**

**Pharmacist Skills**
- Use open-ended questions and active listening skills to engage patients and enhance information retrieval
- Ensure the patient understands the information you provide
- View the service as information sharing between patient and pharmacist instead of a one way transmission of information from the pharmacist to the patient

**Service Level**

**Service Structure**
- Conduct consultations in a private room
- Provide uninterrupted consultations
- Individualize the service - focus on the patient’s needs, encourage questions

**Service Process**
- Create systematic processes for identification and recruitment of patients
- Normalize processes so that they are conducted as part of daily work routines
- Integrate the service into current dispensary workflows
- Conduct the service by appointment
- Make reminder telephone calls to patients the day before their consultation
- Use terminology that the patient understands
- Follow-up with patients, as needed
- Update the patient’s profile with new information from the service
- Develop and implement a quality monitoring system; use these data to improve/affirm service quality
- Tailor the service to the service setting

While Table 5.1 provides specific recommendations for achieving a best practice medication review service, it must be reiterated that it is the pharmacy work system as a whole that contributes to the achievement of best practice. Changes to one work system component may affect other components and consequently, medication review service processes and outcomes. Thus, it may be beneficial to implement the recommendations slowly over a period of time with complementary recommendations being implemented in succession.

It is important to note that this list of recommendations is not meant to be prescriptive or all-encompassing and should not be viewed as a formula for the achievement of best practice.
Indeed, it may not be necessary to adopt all of these recommendations in order to achieve best practice. Instead, these recommendations should be considered a starting point from which best practice can develop. Furthermore, these recommendations need to be considered in the context of a pharmacy’s current work system. It is suggested that pharmacy owners/manager/decision makers initially act on recommendations that are feasible in the short term before moving on to longer term recommendations.

**Study Strengths and Limitations**

This study has several strengths and limitations. First, while we have put forth the two case study pharmacies as having best practice MCA services, the absence of literature on best practice medication reviews or best practice for any medication therapy management service makes this claim difficult to substantiate. However, the three stage screening process appears to have been successful in selecting pharmacies that have exemplary MCAs. Characterizing the study pharmacies’ MCA services as best practice by no mean implies that they have reached an end point or are the ultimate in best practice. Instead, we found that the study pharmacies were providing a high quality service, very likely above that found in most other Ontario pharmacies.

The study consists of only two cases located in one urban region of Ontario, limiting the generalizability of study findings. Furthermore, this study was specific to adherence-focused medication review services and therefore does not generalize to clinical or comprehensive medication reviews.

Originally, the aim was the recruit 4 community pharmacies; however, few pharmacy owners were interested in participating. Some pharmacy owners said that they were too busy to participate. This is possibly because data collection was conducted during busy summer months when many pharmacy staff/owners take holidays, and only 9 months after the October 2016 MCA program changes. Other pharmacy owners declined to participate because they had
reservations about calling their MCA service or service process ‘best practice’. It is also possible that pharmacy owners may have declined because of the potential intrusiveness or disruption to pharmacy services that would have been caused by the researcher’s presence.

Some could consider the subjective nature of qualitative data collection and analysis to be a study limitation. It is possible that interviewees provided answers that they had anticipated the interviewer wanted (i.e. exhibited social desirability response bias) or that participants who were being observed changed their behaviours because of the researcher’s presence (i.e. the Hawthorne effect). Conducting multiple shorter site visits helped mitigate these 2 forms of bias by enabling the researcher to build a rapport with the participants and by setting them at ease with her presence.

This study’s qualitative case study approach is also a strength, in that rich descriptions of best practice medication review services were created based on real-world context (Yin, 2003). The use of interviews provided insider accounts of best practice services. Researcher observations and document reviews were used to corroborate these accounts through data triangulation, strengthening the study findings.

Another potential issue is researcher bias. However, the researcher disclosed her theoretical orientation as well as personal worldviews and background in this thesis to help readers better understand her interpretation of the study findings. Bias in data analysis was mitigated by initially having two independent coders (the researcher and her supervisor) who compared and reconciled their coding to create the initial coding scheme. Subsequent coding was conducted individually with feedback from the thesis committee.
Study Significance

To the best of our knowledge, this is the first study to identify best practice features of adherence-focused medication review services in the community pharmacy setting. Its detailed case descriptions explain how work systems were designed in the study pharmacies to support the provision of MCA services alongside other professional services. This study also puts forth the first conceptual definition of best practice adherence-focused medication reviews in the community pharmacy and makes study and literature-based recommendations for the achievement of such services. It is hoped that the results of this study will inspire community pharmacy owners, manager, and corporate executives to improve the quality and success of their adherence-focused medication review services.

Recommendations for Future Research

This multi-case study identified factors that contribute to best practice MCA services in pharmacies that were purposefully selected for their service quality. It would be of interest to conduct contrasting case studies of pharmacies that were not necessarily considered to have best practice MCAs (e.g. those who were screened out of this study). Such a comparison would further distinguish features of best practice and may also strengthen or refute the recommendations for achieving best practice adherence-focused.

Studies are needed to further develop the definition of best practice adherence-focused medication reviews in community pharmacies. The conceptual definition put forth in this study can be considered a starting point, with an ultimate goal of obtaining a practical, applied definition that owners, managers, and pharmacists can use in their daily practice to improve service efficiency, quality, and impact. To such an end, methods such as concept mapping (Scahill et al., 2010), Delphi process, or focus groups could be used to gather expert opinions and to come to a consensus on defining ‘best practice’ for medication review services. It would
also be of interest to understand what a best practice medication review service means to patients. This could be achieved through in-depth interviews or qualitative surveys. Results from such a study could contribute to furthering the definition of best practice put forth in this study.

The recommendations for achieving best practice adherence-focused medication reviews made in this study should be validated by a panel of experts. The practicality and usefulness of the recommendations should then be tested in different types of community pharmacies. Ultimately, further development of a practical definition of best practice and validation/extension of this study’s recommendations for achieving best practice could lead to the development of a tool to help community pharmacists assess their attainment of best practice medication review services.

Business case studies of best practice adherence-focused medication reviews in community pharmacies are also needed to convince pharmacy corporations and owners of the benefit of providing such services. A profitability study that demonstrates revenues versus costs, and includes less tangible benefits of the service, such as attracting new customers, or retaining and improving relationships with current customers is needed. Alternatively, a service costing study can be conducted for the provision of adherence-focused medication reviews, similarly to those complete by Marra and colleagues (2012) for prescription adaptation and McDonough and colleagues (2010) for medication therapy management services. This type of study would clearly describe the out of pocket costs and opportunity costs that community pharmacies might expect as a result of providing such services.

**Conclusion**

The in-depth description of two Ontario community pharmacies in this multi-case study enabled the identification of many pharmacy and service process features that contributed to a best practice, adherence-focused medication review service. These features in the study
pharmacies were interconnected and contributed to a balanced work system that supported medication review service processes alongside regular dispensing processes. Both study pharmacies successfully incorporated this complex patient-focused service into their workflows, providing examples of pharmacy work systems that support quality patient care. Based on the best practice features identified in this study, a conceptual definition of ‘best practice’ for adherence-focused medication review services in the community pharmacy setting was put forth. Further, actionable recommendations to achieve best practice were provided. Pharmacy decision makers (i.e. owners, managers, and corporate executives) can use the findings from this study when considering how to better incorporate an adherence-focused medication review service into their pharmacy workflow. It is hoped that this study will inspire an improvement in adherence-focused medication review services by demonstrating that best practices are achievable.
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Appendix A: System Engineering Initiative for Patient Safety Model

(Carayon P et al., 2006 Image reproduced with permission of the rights holder, BMJ Q&S)
**Appendix B: Program Logic Model for Best Practice MedsCheck Services**

Target population: Ontarians taking 3 or more medications for chronic conditions  
Setting: ‘Best practice’ Ontario community pharmacies

<table>
<thead>
<tr>
<th>Necessary Resources</th>
<th>Ideal Main Activity</th>
<th>Implementation Objectives</th>
<th>Implementation Output Measures</th>
<th>Short Term Outcomes</th>
<th>Long Term Outcomes</th>
</tr>
</thead>
</table>
| - Electronic records system with reporting and/or eligible patient identification capabilities  
- Trained dispensary personnel to identify and recruit eligible patients  
- Scheduling and appointment reminder system and procedure  
- Formal MC identification and recruitment systems and procedures | 1. Patient Identification | - To identify high need patient groups that will be targeted for the MC service  
- To provide MC to x% of patients in target group(s)  
- To achieve self-referral or MD-referral for MC services | - Recipient characteristics (#meds, age, sex) compared to target group  
- Existence of promotional MC material in the pharmacy  
- # of patients requesting a MC  
- # of MD-referred MCs  
- RPh self-reported positive relationship with MDs | - MC services are offered to all patients in the target group  
- Increase uptake of MC services within the target group(s) | - The optimization of the impact of medications on patient health  
- Increased patient medication safety |
| - Modified pharmacy workflow to permit RPh time to prepare for MC consultation | 2. Patient Recruitment | - To identify methods of recruitment directed at target group(s)  
- To schedule appointments and issue appointment reminders  
- To avoid patient no-shows for MC consultations | - % of MC patients recruited while in the pharmacy and who receive an immediate MC vs. patients recruited via phone calls and have an appointment set  
- % of target group patients offered the service vs. those who agree to the service  
- # of appointment cards distributed  
- # of email/phone call appointment reminders  
- # of missed appointments | - Patients agree to a scheduled time in which they can interact one-on-one with RPh  
- Reduced drug related problems (DTPs, DRPs)  
- Reduced drug-related MD and ED visits  
- Increase pharmacy clientes’ perception of RPhs as health care providers in addition to dispensers of meds |
| 4. MC Consultation | 4.1 Medication Reconciliation (including BPMH) | - To enquire about patient’s current meds including Rx, OTC, and NHPs and - To accurately document a complete list all patient meds including name, indication, strength, quantity, and directions for use - To compare the patient record with the list of current medications as identified by the patient | - # of MC forms noting Rx, OTC, and herbal/NHP - % comprehensiveness of med lists (assessed using the checklist from the MC Pharmacy Audit Study) - % of service recipients taking correct medications - # of meds on patient record that are identified and documented as not current - % of patient records that are amended following a MC | - Patient’s medication information is communicated consistently between points of care through the BPMH - Enhanced relationships between RPhs and MDs through increased collaboration - Increased pharmacy revenues from MC - Improved RPh job satisfaction - Improved patient satisfaction |
| | 4.1 Medication Reconciliation (including BPMH) | For Scheduled MCs: - To perform review of patient record prior to MC service - To print necessary forms | - % reviewed in advance | - Enhanced efficiency of the visit (decreased appointment time) - An increase in patient’s understanding of and confidence with meds - An increase in patient adherence to med regimens - Improved patient satisfaction |
| | 4.2 Medication Adherence Assessment and Education | - To inquire about patients medication taking behaviour - To assess patient understanding of meds and educate to fill-in the gaps - To identify and address patient questions or concerns | - % of MC forms documenting assessment of patient’s knowledge and skills - % of MC forms documenting education provided if a deficit was identified - # of MC forms documenting patients current medication taking behaviour - % of service recipients administering medications properly - # of MC forms documenting the RPh offering compliance aids | |
| | 4.3 Pharmaco-therapeutic Review | - To address issues related to the patient’s use of medication in the context of their clinical condition | - # of MC forms documenting an inquiry of and/or results of laboratory values or monitoring results as they relate to disease states or med regimen | - An reduction of inappropriate medication usage based on the patient’s clinical condition |
| 5. Intervention | - To resolve DRPs and DTPs  
- To develop and implement a treatment plan including follow-ups  
- To issue recommendations to the patient and/or MD | - # of POs issued  
- % of POs accepted by MD  
- # of follow-ups recommended  
- # of documented DRPs or DTPs per patient  
- # of documented actions  
- # of med lists sent to MD with purpose clearly labelled (E.g.: FYI or Action Needed) | - Patients are getting the most from their med regimen  
- A reduction in potential DRPs or DTPs  
- An increase in communication and collaboration with MDs |
| 6. Follow-Up | - To monitor/assess effectiveness of MC intervention  
- To provide further resolutions to any outstanding DRPs and DTPs  
- To reassess the prior MC consultation based on new information (E.g.: hospital admission or discharge, MD request) | - % of MC reports with a follow-up plan  
- % of those in need of follow-up that receive a follow-up | - The resolution of DRPs and DTPs  
- Formal follow-up systems and procedures  
- Second RPh or adequate personnel to cover dispensary during follow-up consultations |
| - Formal CQI systems and procedures for continual assessment and improvement of the MC services  
- Time for data collection and analysis  
- Dispensary personnel trained on CQI  
- Financial resources for the CQI process | 7. Continual Quality Improvement of MC Services  
- To undergo a continuous and systematic cycle of MC service assessments and improvements | - Presence of a clearly documented CQI Model (E.g.: LEAN, PDSA, Six Sigma)  
- Presence of clearly defined quality improvement goal(s)  
- Presence of a system or program for gathering and evaluating data on the quality improvement goal(s)  
- Examples of changes implemented through CQI initiatives  
- A MC policies/procedures document that has undergone revisions based on CQI process | - An improved MedsCheck service is offered to pharmacy clientele  
- Shared improvement suggestions with other pharmacies  
- Improved sustainability of MC service within the pharmacy |

BPMH = Best Possible Medication History; MC = MedsCheck; PO = Pharmaceutical Opinion; Rx = Prescription; RPh = Pharmacist; MD = Medical Doctor; Med/Meds = Medication(s); MOHLTC = Ministry of Health and Long Term Care; ED = Emergency Department; ODBP = Ontario Drug Benefit Program; DRPs = Drug related problems; OTC = Over the counter; NHP = Natural Health Products; DTP = Drug Therapy Problem; CQI = Continual Quality Improvement

Note: The ideal main activity number 4. MC consultation is broken down into three sub-components based on Ontario’s MOHLTC MedsCheck description: “[4.1-Medication Reconciliation including BPMH]…to review the patient’s prescription and non-prescription medications. [4.2-Medication Adherence Assessment and Education]…will encourage patients to better understand their medication therapy and help to ensure their medications are taken as prescribed and [4.3-Pharmacotherapeutic Review] that patients are getting the most benefit from their medications.”

Reference:
Appendix C: MedsCheck Annual Best Practice Screening Questionnaire

Pharmacy ID Code: __________
Participant ID Code: __________

Questionnaire Information:

This questionnaire aims to gather information about your pharmacy’s characteristics, structure and resource availability, MedsCheck Annual processes, and MedsCheck Annual outcomes. Based on your responses to these questions, a researcher may contact you to determine your interest in participating in a larger multi-case study.

The information you provide in this questionnaire will be treated as confidential and will be retained for up to 5 years. If, after completing this questionnaire, you wish to withdraw the information you have provided, simply contact me and I will remove your questionnaire from our data. [Provide contact information]

Community Pharmacy Characteristics:

1) What is your pharmacy’s average daily prescription volume?
   □ 1 - 99 / day   □ 100 - 199 / day   □ 200-399 / day   □ 400+ / day

2) How many MedsCheck Annuals are conducted per week in your pharmacy?
   □ 1 - 2 / week   □ 3 - 5 / week   □ 6 - 10 / week   □ 11+ / week

Structure/Resource Availability:

3) In an average week, how often does your pharmacy have overlapping pharmacists?
   □ Never   □ Rarely   □ Sometimes   □ Often
   Are these overlaps generally scheduled?
   □ YES   □ NO

4) What type of patient consultation space does your pharmacy use for conducting MedsCheck Annuals?
   □ Private room with a door   □ Semi-private area, please describe:
   □ At the dispensary counter
   Is this consultation space always used for MedsCheck Annuals?
   □ YES   □ NO   □ SOMETIMES

5) In the patient consultation space, does the pharmacist have access to a computer, tablet, or other electronic device that has (check all that apply):
   □ Internet access   □ Access to the patient’s profile
   □ None of the above
MedsCheck Annual Process:

6) Does your pharmacy explicitly target a sub-set of patients for MedsCheck Annuals?

□ YES □ NO

If yes, what types of patients are targeted for MedsCheck Annuals? (Check all that apply)

□ Patients with specific diseases □ Patients with known adherence issues
□ Patients on high risk medications □ Patients whose medications have changed
□ Patients recently discharged from a hospital □ Other, please describe:

__________________________________________________________

7) Who conducts most of the MedsCheck Annual reviews in your pharmacy? (Check all that apply)

□ Staff pharmacists □ Pharmacy students / interns
□ “Floater”/ consultant pharmacists □ Other: _________________________

8) Does your pharmacy have any written guidelines, policies, or procedures available for conducting a MedsCheck Annual? (e.g. MOHLTC, OPA, OCP)

□ YES □ NO

If yes, what are they/where do they come from:

________________________________________________________________________

________________________________________________________________________

9) Are the guidelines/policies/procedures accessible to your staff when conducting MedsCheck Annual?

□ YES □ NO

10) How do you ensure the quality of MedsCheck Annuals? (For example, by spot checking completed MedsCheck forms or by getting feedback about the service from dispensary staff or patients.) Please describe:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

11) Is it usual practice for your pharmacists to retrieve and review the patient’s prior MedsCheck documents before conducting a MedsCheck Annual?

□ YES □ NO
12) How are documentation records for MedsCheck Annual services filed in your pharmacy?
   □ In paper-based patient case files
   □ Electronically, in the patient’s profile (e.g. scanned and attached to profile)
   □ Paper-based form filed by service date
   □ Other, please describe: ______________________________

MedsCheck Annual Output Measures:

13) How many MedsCheck Annual Follow-Ups are conducted per month in your pharmacy?
   □ 0  □ 1 – 2  □ 3 - 5  □ 6+

14) Approximately what proportion (%) of MedsCheck Annual reviews at your pharmacy typically result in a drug therapy recommendation to the prescriber? (Out of 100%)
   □ 0 – 5%  □ 6 – 10%  □ 11 – 20%  □ 21 – 100%

   Approximately what proportion of these drug therapy recommendations are claimed as Pharmaceutical Opinions? (Out of 100%)
   □ 0 – 25%  □ 26 – 50%  □ 51 – 75%  □ 76 – 100%

Final Comments:

15) Is there anything else you would like to tell us about the patient-focused services you offer in your pharmacy? (I.e. what makes your pharmacy great!?)
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________
   __________________________________________________________
   __________________________________________________________
Appendix D: Application of the MedsCheck Annual Best Practice Screening Questionnaire

Community Pharmacy Characteristics:
[Looking for variation in pharmacy characteristics that affect MedsCheck Annual services]

1) What is your pharmacy’s average daily prescription volume?
   □ 1 - 99 / day  □ 100 - 199 / day  □ 200-399 / day  □ 400+ / day
   
   Select 2 pharmacies between 1-199  Select 2 pharmacies between 200-400+

2) [Critical Question] How many MedsCheck Annuals are conducted per week in your pharmacy?
   □ 1 – 2 / week  □ 3 - 5 / week  □ 6 - 10 / week  □ 11+ / week
   SCREEN OUT

3) Ownership type will be determined prior to screening. Pharmacies will be selected for diversity in ownership type.

Structure/Resource Availability:

3) [Critical Question] In an average week, how often does your pharmacy have overlapping pharmacists?
   □ Never  □ Rarely  □ Sometimes  □ Often
   SCREEN OUT
   
   Are these overlaps generally scheduled?
   □ YES (+)  □ NO

4) What type of patient consultation space does your pharmacy use for conducting MedsCheck Annuals?
   □ Private room with a door (+)  □ Semi-private area, please describe:
   □ At the dispensary counter
   
   Is this consultation space always used for MedsCheck Annuals?
   □ YES (+)  □ NO  □ SOMETIMES
   if private room w/door selected above

5) In the patient consultation space, does the pharmacist have access to a computer, tablet, or other electronic device that has (check all that apply): [Note: Max of two (+) for this question]
   □ Internet access (+)  □ Access to the patient’s profile (+)
   □ None of the above
MedsCheck Annual Process:

6) Does your pharmacy explicitly target a sub-set of patients for MedsCheck Annuals?

□ YES (+) □ NO

If yes, what types of patients are targeted for MedsCheck Annuals? (Check all that apply)

□ Patients with specific diseases □ Patients with known adherence issues

□ Patients on high risk medications □ Patients whose medications have changed

□ Patients recently discharged from a hospital □ Other, please describe:

7) [Critical Question] Who conducts most of the MedsCheck Annual reviews in your pharmacy? (Check all that apply)

□ Staff pharmacists □ Pharmacy students / interns SCREEN OUT

□ “Floater”/consultant pharmacists □ Other, please describe:

SCREEN OUT

Study MCA consultation observations are of the pharmacy’s staff pharmacists only (no students, interns, or ‘floaters’).

8) Does your pharmacy have written guidelines, policies, or procedures available for conducting a MedsCheck Annual? (e.g. MOHLTC, OPA, OCP)

□ YES (+) □ NO

If yes, what are they/where do they come from:

__________________________________________________________________________

__________________________________________________________________________

9) Are the guidelines/policies/procedures accessible to your staff when conducting a MedsCheck Annual?

□ YES (+) □ NO

10) [Critical Question] How does your pharmacy ensure the quality of MedsCheck Annuals? (For example, by spot checking completed MedsCheck forms or by requesting feedback about the service from dispensary staff or patients.) Please describe:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Respondent must provide an answer to this question, or SCREEN OUT.

11) Is it usual practice for your pharmacists to retrieve and review the patient’s prior MedsCheck documents before conducting a MedsCheck Annual?

□ YES (+) □ NO
12) How are documentation records for MedsCheck Annual services filed in your pharmacy?
   [Note: Max of one (+) for this question]
   - □ In paper-based patient case files (+)
   - □ Electronically, in the patient’s profile (e.g. scanned and attached to profile) (+)
   - □ Paper-based form filed by service date
   - □ Other, please describe: _________________________

**MedsCheck Annual Output Measures:**

13) **[Critical Question]** How many MedsCheck Annual follow-ups are conducted per **month** in your pharmacy?
   - □ 0 SCREEN OUT  □ 1 – 2  □ 3 - 5  □ 6+

14) **[Critical Question]** Approximately what proportion (%) of MedsCheck Annual reviews at your pharmacy typically result in a drug therapy recommendation to the prescriber?
   - □ 0 – 5% SCREEN OUT  □ 6 – 10%  □ 11 – 20%  □ 21 – 100%

   Approximately what proportion of these drug therapy recommendations are claimed as Pharmaceutical Opinions?
   - □ 0 – 25%  □ 26 – 50%  □ 51 – 75%  □ 76 – 100%
Appendix E: MedsCheck Annual Service Form Evaluation Checklist

Assessment of Completeness (Completed by Student Researcher)

<table>
<thead>
<tr>
<th>Pharmacist Worksheet Form:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Lifestyle</strong></td>
</tr>
<tr>
<td><strong>2. Clinical Need for Service</strong></td>
</tr>
<tr>
<td><strong>3. Sources Consulted to Conduct MCA</strong></td>
</tr>
<tr>
<td><strong>4. Checklist for Completeness</strong></td>
</tr>
<tr>
<td>Number of lifestyle activity boxes checked _______ / 4 boxes</td>
</tr>
<tr>
<td>How many ‘yes’ answers have written-in frequency counts? □ All □ Some □ None □ N/A</td>
</tr>
</tbody>
</table>

Personal Medication Record (PRM) Form:

<table>
<thead>
<tr>
<th><strong>5. Current Medication List – Prescription and non-prescription products</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prescription Medications:</strong> N = _______ □ No OTCs or NHPs</td>
</tr>
<tr>
<td>What I take N = _______</td>
</tr>
<tr>
<td>Why I take it N = _______</td>
</tr>
<tr>
<td>How I take it N = _______</td>
</tr>
<tr>
<td><strong>Non-Prescription Products:</strong> N = _______</td>
</tr>
<tr>
<td><strong>6. Overall Quality of PMR</strong></td>
</tr>
<tr>
<td>□ Poor □ Fair □ Good □ Very good □ Excellent</td>
</tr>
<tr>
<td>Rationale:</td>
</tr>
</tbody>
</table>

Evaluation of the Clinical Significance of the MCA (Completed by Adjudicators)

<table>
<thead>
<tr>
<th>Pharmacist Worksheet Form:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7. Therapeutic Issue(s) Identified - Adequacy of Documentation</strong></td>
</tr>
<tr>
<td><strong>Pharmacist Recommendation(s)/Action(s) Taken</strong></td>
</tr>
<tr>
<td><strong>8. Strength of Impact</strong></td>
</tr>
<tr>
<td><strong>9. Justifiability</strong></td>
</tr>
<tr>
<td>□ Poor □ Fair □ Good □ Very good □ Excellent □ Not applicable □ Unable to assess</td>
</tr>
<tr>
<td>□ Negative impact □ No impact □ Mild impact □ Moderate impact □ Marked impact □ Not applicable □ Unable to assess</td>
</tr>
<tr>
<td>□ Yes □ No □ Not applicable □ Unable to assess</td>
</tr>
<tr>
<td>Rationale:</td>
</tr>
</tbody>
</table>

Rationale:

**If more than 1 therapeutic issue (Section 7) or recommendation/action (Sections 8 & 9), use back of sheet**
<table>
<thead>
<tr>
<th>7. Therapeutic Issue(s) Identified - Adequacy of Documentation</th>
<th>Pharmacist Recommendation(s)/Action(s) Taken</th>
<th>8. Strength of Impact</th>
<th>9. Justifiability Based on Literature Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue # 2&lt;br&gt;☐ Poor &lt;br&gt;☐ Fair &lt;br&gt;☐ Good &lt;br&gt;☐ Very good &lt;br&gt;☐ Excellent &lt;br&gt;☐ Not applicable &lt;br&gt;☐ Unable to assess</td>
<td>☐ Negative impact &lt;br&gt;☐ No impact &lt;br&gt;☐ Mild impact &lt;br&gt;☐ Moderate impact &lt;br&gt;☐ Marked impact &lt;br&gt;☐ Not applicable &lt;br&gt;☐ Unable to assess</td>
<td>☐ Yes &lt;br&gt;☐ No &lt;br&gt;☐ Not applicable &lt;br&gt;☐ Unable to assess</td>
<td>Rationale:</td>
</tr>
<tr>
<td>Issue # 3&lt;br&gt;☐ Poor &lt;br&gt;☐ Fair &lt;br&gt;☐ Good &lt;br&gt;☐ Very good &lt;br&gt;☐ Excellent &lt;br&gt;☐ Not applicable &lt;br&gt;☐ Unable to assess</td>
<td>☐ Negative impact &lt;br&gt;☐ No impact &lt;br&gt;☐ Mild impact &lt;br&gt;☐ Moderate impact &lt;br&gt;☐ Marked impact &lt;br&gt;☐ Not applicable &lt;br&gt;☐ Unable to assess</td>
<td>☐ Yes &lt;br&gt;☐ No &lt;br&gt;☐ Not applicable &lt;br&gt;☐ Unable to assess</td>
<td>Rationale:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. # of Therapeutic Issues Identified</th>
<th>11. Overall Clinical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>By Pharmacist: __________</td>
<td>Rationale: ☐ Poor &lt;br&gt;☐ Fair &lt;br&gt;☐ Good &lt;br&gt;☐ Very good &lt;br&gt;☐ Excellent</td>
</tr>
<tr>
<td>By Adjudicators: __________</td>
<td></td>
</tr>
</tbody>
</table>
Appendix F: MedsCheck Annual Service Form Evaluation – Implementation Guide

A. Assessment of Completeness

Section 1 – Lifestyle
(Completed by Student Researcher)
Count the number of lifestyle activity boxes that were checked. Count a row as 1 if at least one box in that row is checked or if a written in response was provided. Do NOT count the row for ‘smoking cessation status’ or ‘other’ as they are not required for all patients.

For each ‘yes’ answer checked, note whether a frequency count was provided (e.g. cig/day). Include ‘Exercise Regimen’ as a ‘yes’ answer if the lifestyle activity box is checked, as we think that exemplary practitioners will note exercise frequency.

| All = All ‘yes’ answers have frequencies |
| Some = Some ‘yes’ answers have frequencies |
| None = None of the ‘yes’ answers have frequencies |
| N/A = None of the ‘yes’ answers were checked |

⇒ Selection preference = All lifestyle activities checked (i.e. 4/4 boxes) is a best practice indicator AND frequency counts for all lifestyle activities with ‘yes’ answers

Section 2 – Clinical Need for Service
(Completed by Student Researcher)
Count the number of boxes checked by the pharmacist indicating clinical need. Do NOT count the first box as it indicates eligibility, which is a program requirement. If entries are provided in the open text field section (i.e. ‘why are you [the pharmacist] conducting this MC service?’), then count each discrete clinical need entry as a box checked.

⇒ Selection preference = at least one clinical need indicator checked. However, the more boxes checked, the better because this indicates selection of a more complex patient

Section 3 – Sources Consulted to Conduct the MCA
(Completed by Student Researcher)
Count the number of boxes checked by the pharmacist.

⇒ Selection preference = 2 or more sources checked because, at a minimum, the pharmacist should be gathering information from both the patient (or caregiver) and their pharmacy profile (or another pharmacy profile) to be considered best practice

Section 4 – Checklist for Completeness
(Completed by Student Researcher)
Count the number of boxes checked for mandatory activities. Do NOT count checked boxes for optional activities (e.g. activities that are qualified by ‘if applicable’, ‘as appropriate’ or ‘other’ (fixed response options # 2, 7, 9, 11)).

⇒ Selection preference = mandatory activities checked (i.e. 7/7 boxes)
**Section 5 – Current Medication List** *(Personal Medication Record (PMR) Form)*
*(Completed by adjudicators)*

Record the number of prescription medications AND the number of non-prescription products (NPPs) indicated in the patient’s current medication list. Do not count discontinued meds or meds that the patient is no longer taking.

For current prescription medications: document the number of medications with all necessary information (per the table below) provided in the ‘WHAT I TAKE’ column. Repeat this step for the ‘WHY I TAKE IT’ and ‘HOW I TAKE IT’ columns.

For NPPs: do as above, unless no NPPs are listed, in which case check the appropriate box.

<table>
<thead>
<tr>
<th>Column in Current Medication List:</th>
<th>WHAT I TAKE</th>
<th>WHY I TAKE IT</th>
<th>HOW I TAKE IT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necessary information to be provided:</td>
<td>▪ Name</td>
<td>▪ Disease, condition or symptoms</td>
<td>▪ Quantity</td>
</tr>
<tr>
<td></td>
<td>▪ Strength</td>
<td></td>
<td>▪ Route</td>
</tr>
<tr>
<td></td>
<td>▪ Form</td>
<td></td>
<td>▪ Frequency</td>
</tr>
</tbody>
</table>

**RULE:** if the pharmacist indicated only 1 of the necessary components for the ‘What I take’ or ‘How I take it’ columns, then the information is considered incomplete and is NOT counted

→ Selection preference = all prescription and NPPs listed have all necessary information in each column (what I take, why I take it, how I take it) *(OR comment indicating that the RPh enquired about NPPs, but the patient didn’t know OR RPh indicated no NPPs were being taken)*

**Section 6 – Overall Quality** *(Personal Medication Record (PMR) Form)*
*(Completed by adjudicators)*

Rate the overall quality of the Current Medication List table, considering both prescription and non-prescription medications in your rating. The rating only includes the ‘WHAT I TAKE’, ‘WHY I TAKE IT’, and ‘HOW I TAKE IT’ columns. Rate the overall quality using the guidelines below:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>▪ Under 50% of active cells have content</td>
</tr>
<tr>
<td>Fair</td>
<td>▪ 50% - 99% of active cells have content</td>
</tr>
<tr>
<td>Good</td>
<td>▪ 100% of active cells have content; however, ▪ Necessary information in the active cells is consistently lacking (e.g. missing form of product in ‘what I take’ column, see table in section 5)</td>
</tr>
<tr>
<td>Very Good</td>
<td>▪ 100% of active cells have content; however, ▪ Necessary information in the active cells is sometimes lacking (e.g. missing form of product in ‘what I take’ column, see table in section 5)</td>
</tr>
<tr>
<td>Excellent</td>
<td>▪ 100% of active cells have content AND ▪ Necessary information is included in all active cells (see table in section 5)</td>
</tr>
</tbody>
</table>

**Note:** ‘active cells’ in the Current Medication List table are determined by:

*Total # of Rx and NPPs (# of rows) × 3 (# of columns) = # of active cells*

Provide justification for rating in the rationale section.

**B. Evaluation of the Clinical Significance of the MCA** *(Completed by adjudicators)*
Section 7 – Therapeutic Issue(s) Identified – Adequacy of Documentation *(pg. 3 of Pharmacist Worksheet - first line of ‘Therapeutic Issue Identified’ Section)*

Rate each therapeutic issue documented by the RPh on a 5-point scale:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
</table>
| Poor       | ▪ Failed to describe the therapeutic issue  
▪ Failed to suggest a therapy or action                                                        |
| Fair       | ▪ Described the therapeutic issue  
▪ Failed to suggest a therapy or action *(or vice-versa)*                                     |
| Good       | ▪ Described the therapeutic issue  
▪ Suggested a therapy or action                                                                    |
| Very Good  | ▪ Everything in the ‘Good’ rating PLUS  
▪ One of the following:  
  ▪ Described other actions considered  
  ▪ Reasons for selecting action taken  
  ▪ Therapeutic issue categorized as one of the 8 DTP types on the MOH Pharmaceutical Opinion website |
| Excellent  | ▪ Everything in the ‘Good’ rating PLUS  
▪ Two or more of the following:  
  ▪ Described other actions considered  
  ▪ Reasons for selecting action taken  
  ▪ Therapeutic issue categorized as one of the 8 DTP types on the MOH Pharmaceutical Opinion website |
| Not applicable | ▪ The RPh did not identify any therapeutic issue(s) (DRPs)                                      |
| Unable to assess | ▪ The information provided in the MCA forms is insufficient to assess the therapeutic issue (DRP) |

If you selected the ‘unable to assess’ or ‘poor’ ratings, use the rationale section to explain why you selected that rating.


→ Selection preference = explanation graded at good or above
Section 8 – Pharmacist Recommendation(s)/Action(s) Taken – Strength of Impact
(pg. 3 of Pharmacist Worksheet - ‘Therapeutic Issue Identified’ section)

Rate EACH distinct recommendation/action taken on a 5 point scale:

| Negative impact | ▪ Cause harm to patient
|                 | ▪ Reduce clinical benefit to patient compared to current regimen
| No impact       | ▪ Recommendation/action not implemented
|                 | ▪ No change to the clinical situation
| Mild impact     | ▪ Change to a more convenient regimen (compliance increase)
|                 | ▪ Monitor to determine if a patient is at risk
|                 | ▪ Cause slight improvement in health outcomes
| Moderate impact | ▪ Reduce the risk of a potential mild/moderate adverse effect
|                 | ▪ At least a mild improvement in existing symptoms
|                 | ▪ Reduce uncontrolled episodes of the medical condition
|                 | ▪ Improve clinical biomarkers (e.g. BP, A1c)
|                 | ▪ Improve patient’s quality of life
| Marked impact   | ▪ Reduce mortality/hospitalizations/hard clinical outcomes (e.g. fractures, GI bleeds)
|                 | ▪ Reduce the risk of a potentially severe adverse effect
|                 | ▪ Marked improvement in patient’s clinical biomarkers (e.g. BP, A1c)
| Not applicable  | ▪ Recommendation/action was not for the stated DRP
| Unable to assess| ▪ Based on the information in the form (e.g. Conditional recommendations: discontinue ‘X’ if ‘Y’)

[Adapted from: Pharmacy Audit – Pharmaceutical Opinion Adjudication Guide]

Use the rationale section to explain why you selected that rating.

⇒ Selection preference = mild impact or higher

Section 9 – Pharmacist Recommendation(s)/Action(s) Taken – Justifiability Based on Literature Evidence

Rate EACH distinct recommendation/action taken:

| Yes          | Recommendation/action is supported by:
|             | ▪ Level 1 evidence - meta-analysis, systematic review or RCT
|             | ▪ Level 2 evidence – cohort studies, practice guidelines
|             | ▪ Level 3 evidence – opinions of respected authorities, based on clinical experience, descriptive studies
| No          | There is no reasonable rationale/evidence that justifies pharmacist’s recommendation/action or evidence is not relevant
| Not applicable | Rationale/evidence is not relevant to the recommendation (e.g. recommendation is based on common sense)
| Unable to Assess | Based on the information available in the forms

[Adapted from: Pharmacy Audit – Pharmaceutical Opinion Adjudication Guide]

Use the rationale section to explain why you selected that rating.
Selection preference = yes, the recommendation is justified

**Section 10 - # of Therapeutic Issues Identified** *(pg. 3 of Pharmacist Worksheet)*
Record the number of therapeutic issues (DRPs) identified by the pharmacist on the worksheet (pg.3). Assess all documentation to determine the number of therapeutic issues (DRPs) you can identify. Use the rationale section to identify/explain differences.

Selection preference = no discrepancy between adjudicator’s and pharmacist’s counts (excluding “unable to assess” therapeutic issues)

**Section 11 – Overall Clinical Significance**
Rate the overall clinical significance of the consultation based on the documentation provided. Take into account the therapeutic issues identified, and the pharmacist’s recommendation(s)/action(s) taken and their anticipated strength of impact, justifiability and likely implementation in practice.

Guidelines:
- The order of listing of individual criteria in the instructions does not reflect the order importance of a criterion related to overall clinical significance. Please use the list of criteria as an aid to rate the overall clinical significance.
- This overall rating includes any additional issues you feel are important beyond the individually rated items of: strength of impact, basis in evidence, and likely implementation in practice (feasibility).
- Use the both the Pharmacist Worksheet and the Personal Medication Record forms to assess overall quality.

[Adapted from: Pharmacy Audit – Pharmaceutical Opinion Adjudication Guide]

Selection preference = quality graded at good or above
Appendix G: Pharmacy Orientation Checklist

☐ Hours of Operation:

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
</table>

☐ Proximity to and affiliation with other Health Care offices, hospitals, LTC homes

☐ Dispensary staff list (see last page)
☐ Introduction to pharmacy staff
☐ Tour of Dispensary

☐ Step-by-step walk through of Rx dispensing process
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.

☐ Does your pharmacy have a contract to provide medications to one or more long term care home or retirement home? If yes, please describe them.

☐ Can you give me a more exact estimate of this pharmacy’s daily prescription volume (both with and without compliance packaging)
Step-by-step walk through of MCA service
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.

Are patients asked to bring their medications (incl. OTC & NHP) to the MCA consultation?

Estimated pharmacy square footage: ____________
Estimated dispensary square footage: ____________
Diagram of Dispensary Floor Plan (on blank page)
<table>
<thead>
<tr>
<th>Employee Position/Role</th>
<th>FT / PT Status¹</th>
<th>Average Work Hours per Week</th>
<th>Tenure at this Pharmacy (Yrs.)</th>
<th>Experience in Community Pharmacy (Yrs.)</th>
<th>Education/Training /Certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner/manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff pharmacist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff pharmacist</td>
<td></td>
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<td>Staff pharmacist</td>
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<td>Staff pharmacist</td>
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<td>Staff pharmacist</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Staff pharmacist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Technician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Technician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy Assistant</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy Assistant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy Assistant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ FT = full time; PT = part time
Appendix H: Pharmacy Owner/Manager Interview Guide

Pharmacy ID Code: __________
Participant ID Code: __________
Date Completed: __________

Start Time: _______________ Interview Location: _____________________
Position: □ Designated Manager □ Pharmacy Owner

Introduction (pre-audio recording):

Thank you for agreeing to participate in this interview. The interview is expected to take 30 minutes and its purpose is to supplement my orientation to this pharmacy.

As per the consent form you previously signed, this interview will be audio recorded and the recording will be transcribed verbatim. Your name and any other identifying information will be excluded from the transcript. Direct quotations from your interview will only be used with your permission.

I would like to reiterate that you have the right to refuse to answer any of my questions and to stop the interview at any time.

Do you have any questions before we begin?

Overview:

1. Tell me about the history of this pharmacy.
   a. Probe: How did this pharmacy become established?
   b. Probe: How long has there been a pharmacy in this location?
   c. Probe: How long have you been here as the owner/manager?
   d. Probe: [If purchased pharmacy] what changes did you make when you bought/began managing this pharmacy?

2. Please describe this pharmacy in relation to others in the area.
   a. Probe: What sets this pharmacy apart from others in the area?

Pharmacy External Environment:

3. Please describe the other pharmacies in this area.
   a. Probe: How many and of what are their ownership type, size and proximity?

4. Please describe demographics such as age, ethnicity and socioeconomic status of the people who live in this part of the [city/town]?

Clientele:

5. Please describe demographics such as age, ethnicity and socioeconomic status of this pharmacy’s clientele.
   a. Probe: Are they locals or do they work/vacation in the area?

6. What approximate percent of the pharmacy’s clientele have difficulty speaking or understanding English?
   a. Probe: How does your pharmacy staff communicate with these patients?
7. What approximate percent of your pharmacy’s patients has prescription drug coverage (from ODB or private insurance)?

**Pharmacy Professional Services:**

8. Please describe the dispensing services offered in this pharmacy including those reimbursed by a third party payer, those charged to the patient, and free services.
   a. E.g. compliance packaging, home delivery, etc.

9. Please describe the non-dispensing professional services offered in this pharmacy including those reimbursed by a third party payer, those charged to the patient, and free services
   a. E.g. vaccinations, point of care blood testing, blood pressure measurements, etc.

10. Which types of MedsCheck services does your pharmacy provide?
   a. Probe: Annual, Diabetes, at Home, Long Term Care
   b. Why (or why not) are these specific MedsCheck services offered?

11. Do your pharmacists renew or adapt prescriptions?
   a. [If yes]: how often (per week)?
   b. [If no]: why not?

**MCA Service:**

12. What is the main reason you offer MedsCheck Annuals in this pharmacy?
   a. Probe: Are there any other reasons?

13. Why do you think MedsCheck Annual service has been successful in this pharmacy?
   a. Probe: Consider patients, pharmacy staff, and the pharmacy organization

14. In your opinion, what factors are key to providing an exemplary MedsCheck Annual service?
   a. Probe: Consider pharmacy features (tools, technology), service processes, patient populations, etc.

15. How have the October 2016 changes to the MedsCheck Annual program affected this pharmacy?
   a. Probe: What accommodations have been made in this pharmacy to meet the new service requirements?
   b. Probe: What did the service look like before the changes, compared to now?

**Human Resources:**

16. Please describe your staffing on a day when MedsCheck Annuals are likely to be provided.
   a. Probe: How is this different than days when no MedsCheck Annuals occur?

17. How do the registered technicians or pharmacy assistants employed in this pharmacy help with the MedsCheck Annual service?
   a. E.g. patient recruitment, appointment scheduling (if used), preparing paperwork, etc.

18. Going back to 2007, when MedsCheck was first implemented, what types of training, either formal or informal, has your dispensary personnel received for the service?
   a. Probe: either at this pharmacy or elsewhere?
   b. Probe: Including pharmacists, registered technicians, and pharmacy assistants
19. In general, does staff in this pharmacy receive formal job performance feedback?
   a. [If yes]: What does this look like? What is discussed? How often is feedback given?
   b. [If yes]: Is feedback on MedsCheck Annual service discussed? What does this look like?
   c. [If no]: Why not?

Organizational Resources:

20. How have you motivated your pharmacy staff to provide MedsCheck Annuals or other clinical services?
   a. Probe: How have you changed your motivational strategies over time?

21. Have you ever used targets, quotas, or financial incentives to encourage MedsCheck Annual service provision?
   a. [If yes]: Which employees did these incentives target?
   b. [If yes]: Do you still use these incentives? How well do you feel these targets/quotas work at your pharmacy?
   c. [If no]: Why not?

22. Please describe the staff communication systems in this pharmacy including both written and verbal communications.
   a. Probe: How do you disseminate formal information to your dispensary personnel?
   b. Probe: How do your dispensary personnel communicate with you when face-to-face communication isn’t possible?
   c. Probe: How do your dispensary personnel share information amongst themselves when verbal, face-to-face communication isn’t possible?
   d. E.g. through an intranet, through a communications book, emails, at staff meetings

23. What dispensing software system does your pharmacy use?

24. How does this software support the MedsCheck Annual service?
   a. Probe: What functions does it perform?
   b. E.g. patient eligibility, pre-populating MedsCheck Annual forms

25. What other software or applications does your pharmacy use that supports the MedsCheck Annual process?

26. What, if any, advertising materials are used to promote the pharmacy’s clinical services?
   a. E.g. promotional posters, pamphlets, bag stuffers, newsletters etc.
   b. Probe: Please describe the messaging and format of each of these materials
      i) Probe: Who is the intended audience? (Patients? Physicians?)
      ii) Probe: Where do these promotional materials come from?
   c. Probe: What advertising materials are used to promote MedsCheck Annual, in particular?

Interviewee’s Background:

27. How long have you been the owner/manager of this pharmacy?

28. [For chains]: How long have you worked for this pharmacy organization?

29. How many years’ experience do you have in community pharmacy?
a. Probe: What portion has been in Ontario?
b. Probe: what portion has been as an owner/manager?

30. How many hours per week do you work in the pharmacy, excluding any administrative activities that are performed at home?

31. How many of these hours involve direct patient care? (vs. administrative tasks)

End time: ______________ Interview duration (minutes): ______________
Appendix I: Pharmacy Staff Interview Guide

Pharmacy ID Code: _________
Participant ID Code: _________
Date Completed: _________

Start Time: __________________ Interview Location: ____________

Position: □ MCA Pharmacist   □ Registered Technician   □ Pharmacy Assistant

Introduction (pre-audio recording):

Thank you for agreeing to participate in this interview. The interview is estimated to take 30 minutes. Its purpose is to obtain your account of the MCA service that is offered in this pharmacy and your opinion on factors that contribute to best practice MCA service provision.

As per the consent form you previously signed, this interview will be audio recorded and the recording will be transcribed verbatim. Your name and any other identifying information will be excluded from the transcript. Direct quotations from your interview will only be used with your permission.

I would like to reiterate that you have the right to refuse to answer any of my questions and to stop the interview at any time.

Do you have any questions before we begin?

Overview:

1. Please walk me through your typical workday at this pharmacy.
2. What is your role in the professional services that are offered in this pharmacy? I am interested in both dispensing-related and non-dispensing services.
   a. Dispensing-related services (e.g. prescription filling, compliance packaging)
   b. Non-dispensing services (e.g. medication reviews, vaccinations)

MCA Service Workflow:

3. Please describe the MedsCheck Annual service process in this pharmacy.
   a. Probe: What is your role in the MedsCheck Annual process? (e.g. recruiting, prep-time, patient interviews, documentation, follow-up steps, etc.)
4. How well you think the MedsCheck Annual service has been accommodated in this pharmacy? Why?
   a. Probe: How do you provide the MedsCheck Annual service while minimizing interference with other professional pharmacy services, such as dispensing?
   b. Probe: Have changes to other pharmacy operations been made to accommodate MedsCheck Annual?
5. How have the recent October 2016 changes to the MedsCheck Annual program affected this pharmacy or this pharmacy’s MedsCheck Annual service?
   a. Probe: What accommodations have been made in this pharmacy to meet the new service requirements?
   b. Probe: What did the service look like before the changes, compared to now?
Staff Opinion of MCA:

6. Why do you think the MedsCheck Annual service is offered in this pharmacy?
   a. Probe: What purpose do you think it services?

7. What is your opinion of the quality of the MedsCheck Annual service offered in this pharmacy?
   a. Probe: How do you think it the MedsCheck Annuals offered in this pharmacy differ from those offered in other pharmacies?

8. Why do you think the MedsCheck Annual service has been successful in this pharmacy?
   a. Probe: You might want to consider patients, pharmacy staff, and the pharmacy organization
   b. Probe: What do you think is the value of providing the service? (e.g. value to the patient, value to the pharmacy organization, value to staff)

9. In your opinion, what features are key to providing an exemplary MedsCheck Annual service?
   a. Probe: You might want to consider pharmacy features (tools, technology, structure), services processes, patient populations, etc.
   b. Probe: Which of these features does this pharmacy have?

Outcomes:

10. How does the MedsCheck Annual service affect you and your job?
    a. [Pharmacist only] Probe: What do you, personally, get out of providing MedsChecks?

11. Could you give me a few examples of how an individual patient has benefited from a MedsCheck Annual at this pharmacy?

Interviewee’s Background:

12. How long have you worked in this pharmacy?
    a. What positions have you held while working here?

13. [For chains]: How long have you worked for this chain/franchise?

14. How many years’ experience do you have in community pharmacy?
    a. Probe: What portion has been in Ontario?

End time: _______________   Interview duration (minutes): _______________
Appendix J: Pharmacy Observational Checklist

Pharmacy ID Code: _________
Date(s) Completed: _________

**External Environment:**
- Description of neighborhood
  - Residential (condos/apartments vs. townhomes vs. houses)
  - Commercial (what types, density)
  - Foot/car traffic
- Proximity to other HCP offices, hospitals, LTC homes
- Networks* (with other pharmacies/pharmacy organizations/other HCPs/prescribers)
  - External communications (when, how, why, with whom)
  - Information sharing (with whom and what content)

**Pharmacy Environment:**
- Retail environment:
  - Size (sq. ft.), type of items
  - Sub-stores* (e.g. Canada post, photo shop, groceries)
- Promotional materials relating to pharmacy services (what services, for whom, educational vs. promotional, made by whom (pharmacy, MOHLTC, drug company))
- Front shop staff
- # of cash registers

**Dispensary Environment:**
- Size (sq. ft.), location of dispensary in pharmacy, consultation room
- Equipment in dispensary (e.g. computers, photocopiers, phones, fax machine)

1) People:
- # of pharmacists / dispensing staff on duty during observations
  - Workforce configuration*
  - Division of labor*
  - Staff compatibility
- Owner / manager presence, approachability* for staff & patients
- Patients (types of pts., why they are there, what they do, how long they wait for Rxs or services)

2) Services & Actors:
- Dispensing process: order entry, filling, verification, dispensing
- Other staff activities (e.g. self-care product questions, inventory management, student teaching)
- Range of observed pharmaceutical care services (e.g. prescribing, vaccinations, MC, POs)
- Work prioritization (by individuals)
3) Organization:
- Organizational priorities (if observable)
- Reporting structures* & organizational hierarchies* / social architecture*
- Culture: values / norms, competitiveness, innovativeness, supportiveness
- Internal communication
  - Management-staff, staff-staff, staff-patient
  - Information sharing (with whom and what content)
  - Consulting each other, motivating/encouraging each other
  - Conflict resolution
  - Feedback
- Internal teamwork (e.g. trust, respect, common goals, conflict resolution)

4) MCA Processes (describe who, where, when, and how):
*Note: some of these items may be observed as part of the MCA service observations.*
- Patient identification (eligible +/- target groups)
- Patient recruitment and appointment scheduling
- MCA consultation preparation steps (i.e. printing forms, reading profile)
- MCA follow-ups (i.e. how this is tracked)
- Communications with prescribers as a result of MCA

Additional Notes:
*Examples next to items in the checklist are not meant to be exhaustive*
*Operational definitions of terms with an asterisk (*) are provided on the next page*

Operational Definitions of Terms:

1. Networks – social interactions (and perceived relationships) between individuals in the dispensary and those outside of the dispensary
2. Sub-Stores – discrete retail units within the pharmacy building
3. Workforce configuration – how staff in the dispensary system are physically arranged in the dispensary (e.g. work stations, movement around the dispensary)
4. Labor division – task allocation; what task and to whom
5. Reporting structures – which dispensary staff report to whom
6. Organizational hierarchies – perceived ranking of dispensary staff within the organization according to status or authority or tenure
7. Social architecture – how dispensary staff are clustered into smaller differentiated groups (often based on divisions of labor or professional coalitions); how the actions of the differentiated groups are coordinated to produce a holistic product/service
# Appendix K: MedsCheck Annual Observational Checklist

**Start time: _____ ; End time: _____**

**Pharmacy ID Code: __________**

**Participant ID Codes: __________**

<table>
<thead>
<tr>
<th>1. Structure</th>
<th>2. Overview of Patient’s Health</th>
<th>5. Personal Medication Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation Location:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Private office OR □ Semi-Private space</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Resources:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Computer in consultation location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ With internet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ With access to patient medication profile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation Components:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ RPh introduces themselves &amp; greets patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ RPh explains the purpose of the MCA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ RPh answers patients questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ RPh indicates that med record is shared with GP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation Format:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ One-sided discussion OR □ Two-way discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Close-ended Qs OR □ Open-ended Qs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RPh – Patient Interaction:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Patient has RPh’s undivided attention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Patient appears engaged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal communication:</td>
<td></td>
<td></td>
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<td>□ Easily understandable terminology</td>
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<td>□ Empathetic tonality</td>
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<td>□ Authoritative OR □ Conversational</td>
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<td>Non-verbal communication:</td>
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<tr>
<td>□ Eye contact</td>
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<td>□ Welcoming body language</td>
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<td>Notes:</td>
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</table>

| RPh Inquires About the Patient’s: |
| □ Medical conditions |
| □ Perceived health status |
| □ Med allergies / intolerances |
| □ Problems with meds |
| Notes: |

| RPh Inquires About: |
| □ Tobacco use |
| □ Alcohol use |
| □ Recreational drug use |
| □ Weight concerns |
| RPh Offers Lifestyle Advise On: |
| □ Smoking cessation |
| □ Acceptable alcohol intake |
| □ Acceptable caffeine intake |
| □ Other: _______________________________ |
| Notes: |

| RPh Inquires About: |
| □ Why are you taking it? |
| □ When are you taking it? |
| □ How are you taking it? |
| □ How well is it working? |
| □ Do you have any problems with it? |

| Consultation Format: |
| □ Close-ended Qs OR □ Open-ended Qs |
| RPh – Patient Interaction: |
| □ Patient has RPh’s undivided attention |
| □ Patient appears engaged |
| Verbal communication: |
| □ Easily understandable terminology |
| □ Empathetic tonality |
| □ Authoritative OR □ Conversational |
| Non-verbal communication: |
| □ Eye contact |
| □ Welcoming body language |
| Notes: |

| RPh Inquires About: |
| □ Changes to Rx / OTC / NHP meds |
| □ Strategies for managing side-effects |
| □ Referral to physician / specialist |
| □ Suggests monitoring plan / follow up |
| Notes: |

<p>| Optional Counseling Points |
| □ Support groups / additional resources |
| □ Optional med compliance aids |
| □ Non-Rx options for condition |
| □ Additional information about condition |
| □ Tips to obtain best results from meds |
| Notes: |</p>
<table>
<thead>
<tr>
<th>8. Additional Notes</th>
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Appendix L: Pilot Test Scripts and Debriefing Questions

Pilot Test Scripts

Common Introduction:

Thank you for agreeing to participate in this pilot test. We are interested in your feedback on a(n) _________ (questionnaire/interview guide) to help improve its quality. Specifically, we are seeking your feedback on the content, clarity, and length of the _________ (questionnaire/interview).

This pilot test will be completed in two steps. First, we will complete the ______ (oral questionnaire/interview). This portion of the pilot test will be timed, so I ask that you hold back any comments pertaining to the quality of the _________ (questionnaire/interview questions). Here is a copy of the _________ (questionnaire/interview guide). You can use it to jot down any comments you may have so that we can discuss them afterwards.

If you require any clarifications in order to properly answer a question during the _________ (questionnaire/interview), then please ask.

After we have completed the _________ (questionnaire/interview), I will ask you a series of questions about the content, clarity and length of the _________ (questionnaire/interview). During this time, I will also ask you for your recommendations or suggestions for improving the tool.

Do you have any questions about this process?

Common Introduction to Debriefing:

Thank you for completing the _________ (questionnaire/interview). I have a series of questions for you about the content of the _________ (questionnaire/interview).

Questionnaire Debriefing Questions

1) How did you find the length of the questionnaire? How do you think it would be best administered? (I.e. over the phone, via email/fax, etc.)

2) Were there any questions where you would have liked there to be different response option(s)? If so, what questions were they and what different response options would you suggest?

3) Were there any questions that could have been more clearly stated? If so, what were they and how could they be made more clear?

4) Are there other indicators of MedsCheck Annual service quality/impact/significance that were not included in this questionnaire that you think would be relevant?

5) Do you have any other comments or suggestions for improving the screening questionnaire, or processes for administering it?
Interview Debriefing Questions

1) How did you find the length of the interview?

2) Were there any questions that could have been more clearly stated? If so, what were they and how could they be made more clear?

3) Can you suggest any other participant demographic questions that we should be asking?

4) Can you suggest any additional question(s) we should be asking if our aim is to…
   a. [O/M interview] obtain information about your pharmacy set up, equipment, staffing and dispensary procedures including MCA in particular?
   b. [Staff interview] obtain a description of MCA service provision in your pharmacy and to obtain opinions about factors that contribute to best practice medication reviews?

5) Do you have any other comments or suggestions for improving the interview guide?
Appendix M: Telephone Script – First Pharmacy Contact

Hello, may I please speak with ____________ (owner/manager’s name). Thank you.

Good morning/afternoon, my name is Amanda Everall. I am a Master’s Student at the Leslie Dan Faculty of Pharmacy, University of Toronto. Do you have a few minutes to hear about a study I am working on with Linda MacKeigan and Lisa Dolovich?

If no: Is there a better time for me to call back?

If yes: Excellent, thank you. I am conducting a study to gain insight into best practices for MedsCheck Annual Services. The purpose of the study is to identify and understand factors that contribute to the provision of exemplary MedsCheck Annual services, including how best to integrate this service into the pharmacy workflow.

I am contacting you today because your pharmacy was referred to us by ____________ (name of key informant, if key informant agreed that their name could be shared or by a member of the LDFP Office of Experiential Education) for being innovative and/or providing exemplary MedsCheck services.

Would you be willing to complete a 5-10 minute over-the-phone questionnaire about your pharmacy and in particular your MedsCheck processes?

If no: Thank you for your time.

If yes: Excellent. Is now a good time to complete the questionnaire? (If no, schedule a more convenient time. If yes, administer the questionnaire.)

Thank you for your time and participation in this study. Have a good day.
Appendix N: Telephone Script - Stage 2 Screening Results and Invitation to Stage 3

Hello, may I please speak with __________ (owner/manager’s name). Thank you.

Good morning/afternoon, this is Amanda Everall from the Leslie Dan Faculty of Pharmacy calling. Do you have a few minutes to discuss the Best Practice Questionnaire that you recently completed?

Excellent, thank you. Our research team has reviewed your responses to the questionnaire.

**If screened out:** We will not be including your pharmacy in the larger study. We are seeking pharmacies with a diversity of characteristics and your pharmacy did not fit into the selection criteria. I would like to emphasize that this does not indicate that your pharmacy is below best practice standards. I’m reaching out to you today to thank you for your time in filling out the questionnaire. Do you have any questions for me?

**If screened in:** Based on the responses you provided, your pharmacy may be eligible for participation as one of two best practice MedsCheck Annual cases. Participation in the study as a best practice case would involve a researcher visiting your pharmacy on multiple occasions to gain an understanding of how your pharmacy manages to provide exemplary MedsCheck Annual services. Is this something you might be interested in learning more about?

**If no:** Thank you for your time.

**If yes:** Excellent. I would like to send you the Study Information Sheet. If, after reading the Study Information Sheet, you decide you would like to participate, please sign the Consent Form and return it to me using the instructions provided on the form.

Would you prefer that I fax or email you these documents? [Gather owner/manager’s email address and/or fax number]

[If the participant asks questions about the study, responses will be provided as per the Study Information Sheet.]
Appendix O: MedsCheck Annual Best Practice Multi-Case Study - Study Information Sheet

Please retain a copy of this information sheet for your records and reference. It will provide you with a basic understanding of what the research is about and what your participation will entail. If you wish to have more details about any aspect mentioned here, or information not included here, please feel free to contact the researcher; contact information is provided below. Please read this document carefully.

PRE-STUDY SCREENING INFORMATION

Who is being asked to participate?
Your community pharmacy has been recommended to our research team because of the exemplary MedsCheck Annual services you offer. You have completed a Best Practice Screening Questionnaire, and based on your responses, you have been invited to advance to the final step of the screening process.

What is involved?
This step involves a review of both the Pharmacist Worksheet and the Personal Medication Record forms for three (3) MedsCheck Annual consultations conducted in your pharmacy. We ask that you remove any personal identifiers of the patient, pharmacist, pharmacy, and/or physician from each of these forms. We ask that these forms be:
- MedsCheck Annual consultations only
- Conducted by a selection of staff pharmacists (not a student or consultant pharmacist), when possible
- Completed in the last 2 months
- Completed for complex patients (e.g. 6+ medications, ≥ 75 years old, many chronic conditions)

Consent before participation
Informed consent to participate in the study is required before we can review your MedsCheck Annual service documents. Please ensure that you read the entire Study Information Sheet and sign the Consent Form. The signed Consent Form can be returned to the researcher via fax or email along with the redacted MedsCheck Annual service forms.

Who will be selected to participate in the study?
Only 2 pharmacies will be selected as best practice MedsCheck Annual cases for the study. If your pharmacy is not selected to continue with the study, it does not necessarily indicate that your pharmacy is below best practice standards. Rather, it is possible that your pharmacy was not selected because the research team was purposefully seeking variation in certain pharmacy characteristics such as prescription volume, MedsCheck Annual volume, location, ownership type etc.

Will my identity and the information I provide be kept confidential if I participate?
Your identity and the information you provide will be kept confidential to the extent permitted by law. The name(s) of your pharmacy, dispensary employees, or patients will not be used in any research presentations, formal reports, or publications, regardless of whether your pharmacy continues as a case in this study.

If I don't agree to participate or my participation is not needed in the study, what will happen to the service forms I submitted?
The redacted MedsCheck Annual forms that you submit to us as part of screening process will be considered confidential and will not be shared outside of the research team. The researchers will retain these documents in locked research office at the Leslie Dan Faculty of Pharmacy building for up to 5 years from the completion date of the study, after which point they will be destroyed.
STUDY INFORMATION

What is the purpose of this study?
The purpose of this study is to identify and describe factors and processes that facilitate to the quality, efficiency, and impact of best practice MedsCheck Annual medication review services in community pharmacies. The interface between best practice MedsCheck Annual services and dispensing activities in each community pharmacy will be observed and discussed to determine how the services are managed at an operational level. The findings from this study will inform Ontario community pharmacists about strategies that could enhance the quality and efficiency of their medication management services and may encourage them to adapt and use such strategies in their practice.

Who is being asked to participate?
Two community pharmacies in or adjacent to the Greater Toronto Area that provide exemplary MedsCheck Annual services will be included as cases in this study. Pharmacies will be selected for diversity in ownership type, prescription volume, location and MedsCheck Annual service volume. Participants in each community pharmacy will include pharmacy dispensary staff and select patients who consent to having their MedsCheck Annual consultation observed by the researcher.

When and where will the study take place?
The study will take place in community pharmacies in or adjacent to the Greater Toronto Area over the next six months. It is expected that data collection will require approximately four site visits per community pharmacy. Each site visit will take no more than four hours. The researcher will work with you to determine the best possible site visit schedule to accommodate the needs of the research without impeding the workflow in your pharmacy. The researcher will provide you with the agree upon schedule with dates, times, and research activities outlined for each visit. You will be asked to share this information with your dispensary staff.

What will the participants be asked to do?
Participation in this study is voluntary. If you agree to participate, you and your staff will be asked to do the following:

During Screening:
1) The owner/manager (you) will be asked to:
   a. Participate in the screening process by sending the researcher redacted forms for 3 MedsCheck Annual consultations as outlined in the above Pre-Study Screening Information Section.

During Participation in the Study:
1) The owner/manager (you) will be asked to:
   a. Provide the researcher access to the community pharmacy dispensary to observe dispensing and other patient care services. The researcher will seek to identify factors that relate to best practice MedsCheck Annual service, as well as MedsCheck service integration with dispensing and other patient care activities.
   b. Permit the collection, photocopying and de-identification of documents by either the researcher or dispensary personnel, as preferred by you. Required documents will include:
      i. Completed MedsCheck service forms (Personal Medication Record form and the Pharmacist Worksheet form) for all MedsCheck Annual consultations that the researcher observes in your pharmacy.
      ii. MedsCheck-related operational/procedural documents (e.g. service policies/procedures, dispensary role descriptions, sample staff schedule).
   c. Provide the researcher with an orientation to the pharmacy, including an introduction to dispensary staff at the first site visit. You will be asked to make suggestions about which pharmacy staff should be interviewed by the researcher.
d. Participate in a 30 minute audio-recorded interview at the first site visit. The interview will occur at a time and place convenient to you.

2) Pharmacist(s) conducting MedsCheck Annual consultations will be asked to:
   a. Permit researcher observation of MedsCheck Annual consultations with patients. The pharmacist will also be asked to suggest suitable patient consultations for observation and will be responsible for obtaining oral consent from the patients for such observations. Between 3 and 5 consultations will be observed in your pharmacy.
   b. Participate in a 30 minute audio-recorded interview to explore the pharmacist’s role in, and factors that contribute to, best practice MedsCheck service processes in your pharmacy. Only one MedsCheck Annual pharmacist will be interviewed, as per the owner/manager’s recommendations. The interview will occur at a time and place convenient to the participant.

3) One registered technician / pharmacy assistant will be asked to:
   a. Participate in a 30 minute audio-recorded interview to explore the participant’s role in, and factors that contribute to, best practice MedsCheck service processes in your pharmacy. The most tenured registered technician/pharmacy assistant will participate, as per the owner/manager’s recommendation. The interview will occur at a time and place convenient to the participant.

4) Patients will be asked to:
   a. Permit researcher observation during their MedsCheck Annual consultation. The focus of this observation is on best practice MedsCheck Annual service processes. No detailed notes on the patient will be gathered. The researcher will approach patients for written consent to collect de-identified copies of their MedsCheck Annual service forms for all observed consultations.

What are the risks and benefits of the study?
The investigators do not anticipate any negative consequences from your participation in this study nor from a decision not to participate. Your decision to participate or not will not be known to the University of Toronto or the Leslie Dan Faculty of Pharmacy.

There will be no direct benefit to you from participating in this study. However, you may derive some indirect benefit from systematically thinking about the processes involved in providing MedsCheck Annual services in your community pharmacy. Upon completion of the study, a summary of the results will be provided to you by e-mail or mail, if you are interested.

Will I be compensated for participating in this study?
We value your time and appreciate your contribution to our research study. If your pharmacy is one of the two cases in this study, your pharmacy will receive an honorarium of $200 to compensate you and your staff for time spent on the study.

Will my identity and the information I provide be kept confidential, if I participate?
Both your identity and the information you provide will be kept confidential to the extent permitted by law. The name of your pharmacy, dispensary employees, or patients will not be used in any research records, except the consent form (which will be stored separately from the other research records). All documents collected at your pharmacy including operational/procedural documents and completed MedsCheck Annual service forms will be de-identified by the researcher or a pharmacy staff member prior to their removal from the pharmacy. In order to ensure patient confidentiality and anonymity all identifiers pertaining to the patients, pharmacists, and/or physicians (including names, OHIP numbers, addresses, and phone numbers) will be removed from the research copies of relevant documents before they are taken out of the pharmacy. The interview transcripts and researcher’s field notes gathered at your pharmacy will contain no identifying information about individuals or organizations discussed in the interview.
All data will be kept securely stored in a locked research office at the Leslie Dan Faculty of Pharmacy building for up to 5 years from the completion date of the study, after which they will be destroyed. The interview audio recordings will be destroyed once they have been transcribed and the transcripts have been checked for accuracy. Study information transferred to a computer or electronic storage device will be password-protected. All of the research materials will be accessible only to the research team.

Any information reported in presentations, formal reports, or publications will not disclose your personal identity. Quotations from interview transcripts may be used with your permission, but will not be associated with interviewee name or other identifying information. Despite these precautions, there is a small possibility that quotation(s) may be identifiable to others.

What if I change my mind about participating in the study?
If you make the decision to withdraw from the study prior to the first site visit by the researcher, you simply need to notify the researcher and your pharmacy’s participation in the study will be cancelled. If you decide during or after the first site visit that you do not wish to continue with the study, then you will be given the option of permitting the researcher to retain any data collected up to that point, or you may ask the researcher to destroy all data from your pharmacy. Your decision to continue participating or not will not affect your relationship with the University of Toronto.

How can I learn more about my rights as a participant?
If you have any questions about your rights as a participant, please do not hesitate to contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or at 416-946-3273.

How can I obtain further information about the study?
Please feel free to contact the researcher to obtain further information.

Amanda Everall, BSc, MSc Student
Leslie Dan Faculty of Pharmacy, University of Toronto
Tel: <Study Phone Number>
Fax: <Study Fax Number>
<Study Email>

I am interested in participating - what should I do next?
If you are interested in participating in this study, please complete the consent form on the following page and fax or email it to Amanda Everall (fax: <Study Fax Number>; <Study Email>).

Please keep a copy of this Study Information Sheet for your record.
Appendix P: Pharmacy Owner/Manager Consent for Pharmacy Participation

MedsCheck Annual Best Practice Multi-Case Study

CONSENT STATEMENT

By signing below, I agree to participate in the research study “MedsCheck Annual Best Practice Multi-Case Study”. I understand that this consent includes:

During Screening:
- Sending the researcher de-identified copies of service forms for 3 MedsCheck Annual consultations

During the Study:
- Providing the researcher access to the community pharmacy dispensary for observation
- Collecting, photocopying and de-identification of completed MedsCheck Annual service forms for consultations that the researcher observes
- Collecting, photocopying and de-identification of MedsCheck-related operational/procedural documents
- Participation in an approximately 20-25 minute interview

I have read and understood the attached Study Information Sheet. Any questions I had have been answered to my satisfaction. I understand that my participation in this study is voluntary and at any time I have the right to withdraw my pharmacy from the entire study or from any individual aspect of the study mentioned above without any consequences to me or my relationship with the University of Toronto’s Faculty of Pharmacy. My decision to participate or not will be kept confidential.

NAME OF PHARMACY: ________________________________________________

DESIGNATED OWNER/MANAGER:

NAME: ______________________________________________________________

SIGNATURE: _________________________________________________________

DATE (DD/MM/YYYY): ________________________________________________

Please check here if you do not want your interview audio recorded. [ ]

I would like a summary of the study results e-mailed to me: [ ] YES [ ] NO

Mail or e-mail address: _________________________________________________

Please e-mail this form to <Study Email> or fax it to <Study Fax Number> (ATTN: Amanda Everall) at your convenience.

Please keep a copy of this consent form for your records.
Appendix Q: Telephone Script - Communication of Screening Results +/- Invitation to be a Study Case

Hello, may I please speak with ____________ (owner/manager’s name). Thank you.

Good morning/afternoon, this is Amanda Everall from the Leslie Dan Faculty of Pharmacy. Do you have a few minutes to discuss the Best Practice MedsCheck Annual Case Study?

If screened out: I’m calling today to thank you for your participation in the screening process for the MedsCheck Annual study. Based on the information you have provided us, we will not be asking you to proceed with the study. We will keep your screening questionnaire and MedsCheck Annual service documents on file and will reach out to you in the event that further participation is needed. The time and effort that you have put forth in completing the screening process is greatly appreciated. We would like to send you a $25 gift card as a token of our appreciation. [Confirm mailing address] Thank you again.

If screened in: Based on our review of the MedsCheck Annual service documents that you sent me, I am pleased to offer you the opportunity to participate in our MedsCheck Annual Best Practice Case Study. Are you interested in moving forward as a case in our study?

If no: We are sorry to hear that you are no longer interested in participating. Nonetheless, we do want to thank you for your time and effort in the screening process. We would like to send you a $25 gift card as a token of our appreciation. [Confirm mailing address]

If yes: Excellent! The next step is for you and I to arrange a site visit schedule that will satisfy the needs of the study without hindering the workflow in your pharmacy. [Agree on site visit schedule] Also, if your pharmacy has a confidentiality form for me to sign, please email or fax me the form so that I can review, sign, and return it to you before the first site visit.

[If the participant asks questions about the study, responses will be provided as per the Study Information Sheet.]
### Appendix R: Sample Site Visit Schedule

**MedsCheck Annual Best Practice Multi-Case Study**

<table>
<thead>
<tr>
<th>Site Visit</th>
<th>Date</th>
<th>Time</th>
<th>Research Activity</th>
<th>Pharmacy Participants</th>
</tr>
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</table>
| 1          | Wednesday June 21, 2017 | 8am-noon   | - Site orientation with owner/manager including pharmacy tour and introduction to dispensary staff  
- Creation of floor plan  
- 25 minute interview with owner/manager  
- Copy, collect, and de-identify MCA-relevant policies/procedures and operational documents | - Owner/manager  
- Pharmacy staff member to aid with collection and de-identification of documents (or completed by researcher, as preferred by the owner/manager) |
| 2          | Friday June 23, 2017 (must end by 4pm) | TBA        | - Non-participatory observation of MCA consultations  
- Copy, collect, and de-identify completed MCA forms  
- Non-participatory observation of dispensary workflow | - MCA pharmacist and patient  
- Pharmacy staff member to aid with collection and de-identification of documents (or completed by researcher, as preferred by the owner/manager) |
| 3          | Tuesday June 27, 2017 | TBA        | - Non-participatory observation of MCA consultations  
- Copy, collect, and de-identify completed MCA forms  
- Non-participatory observation of dispensary workflow  
- 30 minute interview with a MCA pharmacist | - MCA pharmacist and patient  
- Pharmacy staff member to aid with collection and de-identification of documents |
| 4          | Thursday June 29, 2017 | 1pm-5pm    | - 30 minute interview with a registered technician/pharmacy assistant | - MCA pharmacist  
- Registered tech. or pharmacy assistant |
Appendix S: Pharmacist Consent for Interview and Observation of MedsCheck Annual Consultations

MedsCheck Annual Best Practice Multi-Case Study

STUDY INFORMATION

Study Purpose:
The purpose of this study is to identify and describe factors and processes that facilitate to the quality, efficiency, and impact of best practice MedsCheck Annual medication review services in community pharmacies. The interface between best practice MedsCheck Annual services and dispensing activities in each community pharmacy will be observed and discussed to determine how the services are managed at an operational level. The findings from this study will inform Ontario community pharmacists about strategies that could enhance the quality and efficiency of their medication management services and may encourage them to adapt and use such strategies in their practice.

Your Involvement in the Study:
One component of this study includes observations of MedsCheck Annual consultations. The focus of this observation is on the comprehensiveness of MedsCheck Annual service provision, not on the patient or their medical conditions. You will be asked to suggest suitable patients for consultation observations and will be responsible for obtaining and documenting oral consent from the patient using a provided information script and consent form. Between 3 and 5 consultations will be observed.

Another component of this study is an interview with the community pharmacist most familiar with MedsCheck Annual services. The interview will take approximately 30 minutes and will be conducted at a place and time that is convenient for you. With your consent, the interview will be audio-recorded and transcribed verbatim.

Confidentiality:
The researcher will not record personally identifiable information during either the transcription of the interview or the MCA consultation observation field notes. Should the researcher wish to use quotations from your interview transcript, your permission will be sought. Quotations will not be associated with your name or other identifying information. Despite these precautions, there is a small possibility that (a) quotation(s) may be identifiable to others.

Right to Withdraw:
If, at any time during the MCA consultation observation or the interview, you (or your patient) state that you would like to end the observation or interview, then the researcher will end that activity immediately. The researcher will either retain or destroy data collected up to that point, as you (and/or your patient) prefer.

Data Security
Data collected will be kept securely stored in a locked research office at the Leslie Dan Faculty of Pharmacy building for up to 5 years from the completion date of the study, after which they will be destroyed. The interview audio recordings will be destroyed once it has been transcribed and the transcript has been checked for accuracy. Study information transferred to a computer or electronic storage device will be password-protected. All of the research materials will be accessible only to the research team.
CONSENT STATEMENT

By signing below, I agree to participate in the research study “MedsCheck Annual Best Practice Multi-Case Study”. I understand that this consent includes:

- Observation during MedsCheck Annual consultations
- Participation in an approximately 30 minute interview

I have read and understood the above Study Information section. Any questions I had have been answered to my satisfaction. I understand that my participation in this study is voluntary and at any time I have the right to withdraw my consent without any consequences to me or my relationship with the University of Toronto’s Faculty of Pharmacy. My decision to participate or not will be kept confidential.

NAME OF PHARMACY: ______________________________________________

PHARMACIST:

NAME: ____________________________________________________________

SIGNATURE: ______________________________________________________

DATE (DD/MM/YYYY):______________________________________________

NAME AND SIGNATURE OF INDIVIDUAL OBTAINING CONSENT

_______________________________________________________

DATE (DD/MM/YYYY) _______/_______/__________ (to be dated by individual obtaining consent)

Please check here if you do not want your interview audio recorded.    

I would like a summary of the study results e-mailed to me:  YES  NO

E-mail address: _____________________________________________________

If you have any questions about your rights as a participant, please do not hesitate to contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or at 416-946-3273.

Please feel free to contact the Investigator (Amanda Everall) at <Study Phone Number> or <Study Email> to obtain further information.

Please keep a copy of this consent form for your records.
Appendix T: Pharmacist Consent for Observation of MedsCheck Annual Consultations

MedsCheck Annual Best Practice Multi-Case Study

STUDY INFORMATION

Study Purpose:
The purpose of this study is to identify and describe factors and processes that facilitate to the quality, efficiency, and impact of best practice MedsCheck Annual medication review services in community pharmacies. The interface between best practice MedsCheck Annual services and dispensing activities in each community pharmacy will be observed and discussed to determine how the services are managed at an operational level. The findings from this study will inform Ontario community pharmacists about strategies that could enhance the quality and efficiency of their medication management services and may encourage them to adapt and use such strategies in their practice.

Your Involvement in the Study:
One component of this study includes observations of MedsCheck Annual consultations. The focus of this observation is on the comprehensiveness of MedsCheck Annual service provision, not on the patient or their medical conditions. You will be asked to suggest suitable patients for consultation observations and will be responsible for obtaining and documenting oral consent from the patient using a provided information script and consent form. Between 3 and 5 consultations will be observed.

Confidentiality:
The researcher will not record personally identifiable information in the MCA consultation observation field notes.

Right to Withdraw:
If, at any time during the MCA consultation observation, you (or your patient) state that you would like to end the observation, then the researcher will immediately cease observations. The researcher will either retain or destroy data collected up to that point, as you (and/or your patient) prefer.

Data Security:
Data collected will be kept securely stored in a locked research office at the Leslie Dan Faculty of Pharmacy building for up to 5 years from the completion date of the study, after which they will be destroyed. Study information transferred to a computer or electronic storage device will be password-protected. All of the research materials will be accessible only to the research team.

CONSENT STATEMENT

By signing below, I agree to participate in the research study “MedsCheck Annual Best Practice Multi-Case Study”. I understand that this consent includes:

- Observation during MedsCheck Annual consultations

I have read and understood the above Study Information section. Any questions I had have been answered to my satisfaction. I understand that my participation in this study is voluntary and at any time I have the right to withdraw my consent without any consequences to me or my relationship with this pharmacy or the University of Toronto’s Faculty of Pharmacy. My decision to participate or not will be kept confidential.
NAME OF PHARMACY: ____________________________________________

PHARMACIST:

NAME: _________________________________________________________

SIGNATURE: _______________________________________________________________________

DATE (DD/MM/YYYY): ____________________________________________

NAME AND SIGNATURE OF INDIVIDUAL OBTAINING CONSENT
_____________________________________________________________________

DATE (DD/MM/YYYY) ______/______/______ (to be dated by individual obtaining consent)

I would like a summary of the study results e-mailed to me: ☐ YES ☐ NO

E-mail address: ___________________________________________________________________

_______________________________________________________________________________

If you have any questions about your rights as a participant, please do not hesitate to contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or at 416-946-3273.

Please feel free to contact the Investigator (Amanda Everall) at <Study Phone Number> or <Study Email> to obtain further information.

Please keep a copy of this consent form for your records.
Appendix U: Registered Technician/Pharmacy Assistant Consent for Interview

MedsCheck Annual Best Practice Multi-Case Study

STUDY INFORMATION

Study Purpose:
The purpose of this study is to identify and describe factors and processes that facilitate to the quality, efficiency, and impact of best practice MedsCheck Annual medication review services in community pharmacies. The interface between best practice MedsCheck Annual services and dispensing activities in each community pharmacy will be observed and discussed to determine how the services are managed at an operational level. The findings from this study will inform Ontario community pharmacists about strategies that could enhance the quality and efficiency of their medication management services and may encourage them to adapt and use such strategies in their practice.

Your Involvement in the Study:
One component of this study is an interview with the registered technician or pharmacy assistant with the most experience at this pharmacy. The interview will take approximately 30 minutes and will be conducted at a place and time that is convenient for you. With your consent, the interview will be audio-recorded and transcribed verbatim.

Confidentiality:
The researcher will not transcribe personally identifiable information from the interview. Should the researcher wish to use quotations from your interview transcript, your permission will be sought. Quotations will not be associated with your name or other identifying information. Despite these precautions, there is a small possibility that (a) quotation(s) may be identifiable to others.

Right to Withdraw:
If, at any time during the interview, you state that you do not wish to continue, then the interview will terminate immediately. The researcher will either retain or destroy data collected up to that point, as you prefer.

Data Security:
Data collected will be kept securely stored in a locked research office at the Leslie Dan Faculty of Pharmacy building for up to 5 years from the completion date of the study, after which they will be destroyed. The interview audio recording will be destroyed once it has been transcribed and the transcript has been checked for accuracy. Study information transferred to a computer or electronic storage device will be password-protected. All of the research materials will be accessible only to the research team.

CONSENT STATEMENT

By signing below, I agree to participate in the research study “MedsCheck Annual Best Practice Multi-Case Study”. I understand that this consent includes:

- Participation in an approximately 30 minute interview

I have read and understood the above Study Information Section. Any questions I had have been answered to my satisfaction. I understand that my participation in this study is voluntary and at any time I have the right to withdraw my consent without any consequences to me or my relationship with this pharmacy or the University of Toronto’s Faculty of Pharmacy. My decision to participate or not will be kept confidential.
NAME OF PHARMACY: __________________________________________

Position: □ Registered Technician □ Pharmacy Assistant

PARTICIPANT NAME: __________________________________________

PARTICIPANT SIGNATURE: ______________________________________

DATE (DD/MM/YYYY): __________________________________________

NAME AND SIGNATURE OF INDIVIDUAL OBTAINING CONSENT
______________________________________________________________

DATE (DD/MM/YYYY) _______/________/__________ (to be dated by individual obtaining consent)

Please check here if you do not want your interview audio recorded. □

I would like a summary of the study results e-mailed to me: □ YES □ NO

Mail or e-mail address: __________________________________________

_________________________________________________________________________________

If you have any questions about your rights as a participant, please do not hesitate to contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or at 416-946-3273.

Please feel free to contact the Investigator (Amanda Everall) at <Study Phone Number> or <Study Email> to obtain further information.

Please keep a copy of this consent form for your records.
Appendix V: MedsCheck Annual Observation - Patient Information and Oral Consent Record

MedsCheck Annual Best Practice Multi-Case Study

[The pharmacist that will be conducting the consultation will use this script to seek oral consent from the patient for the researcher to observe the encounter]

Our pharmacy is participating in a research study about the services offered in this pharmacy, other than medication dispensing. As part of this study, a researcher student would like to observe our medication review today.

The student researcher will be a silent observer and will not disrupt our consultation. She will be taking notes on how I conduct the consultation and about the general topics discussed. The notes will not include your name or personal health matters.

Your participation in this study is voluntary. I am seeking your permission to allow the student researcher to observe our consultation. Your decision, or not, to participate in this study will not affect the quality of the service you will receive today, nor will it affect your relationship with myself or this pharmacy.

If you agree to allow our consultation to be observed, but later change your mind, please let me know and I will ask her to leave the consultation space. If you change your mind after our consultation, please contact me and I will have the researcher destroy the data collected about your consultation.

Will you permit the researcher to observe our consultation today?

____________________________________________________________________________________

Record of Patient’s Consent to the Observation of Their MedsCheck Annual Consultation

I, _______________________________ (pharmacist conducting the MedsCheck Annual consultation) have received consent from _______________________________ (the patient) for the researcher, Amanda Everall, to observe the consultation. The patient understands the purpose of the observation and his/her right to request the researcher to remove herself from the consultation space at any time.

NAME OF PHARMACY: ______________________________________________________________

PHARMACIST OBTAINING PATIENT CONSENT:
NAME: __________________________________________________________
SIGNATURE: ______________________________________________________
DATE (DD/MM/YYYY): ____________________________________________
Appendix W: Patient Consent for MedsCheck Annual Service Form Collection Following Consultation Observation

MedsCheck Annual Best Practice Multi-Case Study

STUDY INFORMATION

Study Purpose:
The purpose of this study is to identify and describe factors and processes that facilitate to the quality, efficiency, and impact of best practice MedsCheck Annual medication review services in community pharmacies. The findings from this study will inform Ontario community pharmacists about strategies that could enhance the quality and efficiency of their medication management services and may encourage them to adapt and use such strategies in their practice.

Your Involvement in the Study:
One component of this study includes collection and assessment of MedsCheck Annual service forms. The focus of this assessment is on the quality and comprehensiveness of the MedsCheck Annual service, not on you or your medical conditions. You are being asked to permit the researcher to remove copies of your MedsCheck Annual service forms from the pharmacy for assessment. Two forms will be collected: the Pharmacists Worksheet form and the Personal Medication Record form.

Confidentiality:
Your name, address, and any information that could be used to identify you will be deleted from the forms before they are removed from the pharmacy.

Right to Withdraw:
If you decide that you no longer wish to participate in the study and would like the researcher to destroy the MedsCheck Annual service forms collected, please contact the researcher. The contact information is provided at the bottom of this consent form.

Data Security:
All collected service forms will be kept securely stored in a locked research office at the Leslie Dan Faculty of Pharmacy building for up to 5 years from the completion date of the study, after which they will be destroyed. Study information transferred to a computer or electronic storage device will be password-protected. All of the research materials will be accessible only to the research team.

CONSENT STATEMENT

By signing below, I agree to participate in the research study “MedsCheck Annual Best Practice Multi-Case Study”. I understand that this consent includes:

• The collection of my MedsCheck Annual service forms

I have read and understood the above Study Information section. Any questions I had have been answered to my satisfaction. I understand that my participation in this study is voluntary and will not result in any negative consequences to me or my relationship with this pharmacy or the University of Toronto’s Faculty of Pharmacy. My decision to participate or not will be kept confidential.
NAME OF PHARMACY: ____________________________________________

PATIENT:

NAME:___________________________________________________________

SIGNATURE:______________________________________________________

DATE (DD/MM/YYYY):________________________________________________________________________

NAME AND SIGNATURE OF INDIVIDUAL OBTAINING CONSENT
______________________________________________________________________________________

DATE (DD/MM/YYYY) ______/_______/__________ (to be dated by individual obtaining consent)

______________________________________________________________________________________

If you have any questions about your rights as a participant, please do not hesitate to contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or at 416-946-3273.

Please feel free to contact the Investigator (Amanda Everall) at <Study Phone Number> or <Study Email> to obtain further information.

Please keep a copy of this consent form for your records.
### Code Summary

#### MCA Best Practice Multi-Case Study

<table>
<thead>
<tr>
<th>Source Type</th>
<th>Number of Sources</th>
<th>Number of Coding</th>
<th>Number of Words</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nodes\Codes\1 - People</td>
<td>0</td>
<td>0</td>
<td></td>
<td>PARENT CODE: Attributes/qualities of the pharmacy employees/staff</td>
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<tr>
<td>Nodes\Codes\1 - People\Designated Manager</td>
<td>1</td>
<td>2</td>
<td>313</td>
<td>Designated manager’s work experience and educational background.</td>
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<tr>
<td>Nodes\Codes\1 - People\Designated Manager\Teachable Moments</td>
<td>1</td>
<td>19</td>
<td>865</td>
<td>Impromptu opportunities to provide education to student/intern pharmacists.</td>
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<tr>
<td>Nodes\Codes\1 - People\Owner</td>
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<td>9</td>
<td>1,547</td>
<td>Owner’s work experience and educational background.</td>
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<tr>
<td>Nodes\Codes\1 - People\Staff</td>
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<td>6</td>
<td>833</td>
<td>Pharmacy staff’s work experience and educational backgrounds.</td>
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<tr>
<td>Nodes\Codes\1 - People\Staff\Communication and relationship with patients</td>
<td>9</td>
<td>57</td>
<td>3,079</td>
<td>Pharmacy staff’s communication skills and relationships building skills (with customers/patients). Note that communication and relationships were coded together because observations were indistinguishable</td>
</tr>
<tr>
<td>Source Type</td>
<td>Number of Sources</td>
<td>Number of Coding</td>
<td>Number of Words</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Nodes\Codes\2 - Tools and Technology</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>PARENT CODE: Tools and technology in the pharmacy that contribute to the provision of the MCA service</td>
</tr>
<tr>
<td>Nodes\Codes\2 - Tools and Technology\Computer Access</td>
<td>5</td>
<td>7</td>
<td>290</td>
<td>Access to computers in the dispensary for professional services and examples of how/when computers are used.</td>
</tr>
<tr>
<td>Nodes\Codes\2 - Tools and Technology\Dispensing Software Support for MCA</td>
<td>7</td>
<td>15</td>
<td>1,803</td>
<td>Function(s) of the dispensing software that support MCA process.</td>
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<tr>
<td>Nodes\Codes\2 - Tools and Technology\MCA-specific Technologies</td>
<td>3</td>
<td>6</td>
<td>629</td>
<td>Structural and functional descriptions of applications/technologies used for MCA service provision (e.g. web-based appointment system and disease specific applications). This does not include processes (coded as MCA Process).</td>
</tr>
<tr>
<td>Nodes\Codes\2 - Tools and Technology\Promotional Strategies</td>
<td>5</td>
<td>8</td>
<td>903</td>
<td>How professional services, including MCA, are promoted in the pharmacy. (e.g. websites, pamphlets, posters, sandwich boards etc.)</td>
</tr>
<tr>
<td>Nodes\Codes\3 - Tasks</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>PARENT CODE: Job content, workload and task allocation (e.g. difficulty, how tasks are completed, job descriptions).</td>
</tr>
<tr>
<td>Nodes\Codes\3 - Tasks\General Dispensary Activities</td>
<td>8</td>
<td>25</td>
<td>1,849</td>
<td>Non-MCA related tasks completed by dispensary staff</td>
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Nodes \ Codes \ 3 - Tasks \ Support Staff
Aggregated: No

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<th>15</th>
<th>857</th>
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</table>
| PARENT CODE: Support staff job content relating to MCA.

Nodes \ Codes \ 3 - Tasks \ Support Staff \ MCA-Related Tasks
Aggregated: No

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<thead>
<tr>
<th>Document</th>
<th>4</th>
<th>9</th>
<th>551</th>
</tr>
</thead>
</table>
| Direct and indirect roles support staff play in the MCA workflow

Nodes \ Codes \ 3 - Tasks \ Support Staff \ RT Expanded Dispensing Role
Aggregated: No

<table>
<thead>
<tr>
<th>Document</th>
<th>4</th>
<th>9</th>
<th>551</th>
</tr>
</thead>
</table>
| How registered technicians support the MCA service through expanded dispensing roles (e.g. managing the dispensary while the pharmacist is conducting the MCA)

Nodes \ Codes \ 3 - Tasks \ Task Allocation
Aggregated: No

<table>
<thead>
<tr>
<th>Document</th>
<th>6</th>
<th>23</th>
<th>2,102</th>
</tr>
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</table>
| How staff know which tasks are to be completed by whom for MCA and dispensing workflows. Includes job descriptions, task delegation etc.

Nodes \ Codes \ 3 - Tasks \ Workload Because of MCA
Aggregated: No

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<th>Document</th>
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<th>7</th>
<th>349</th>
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</table>
| How the MCA service has affected dispensary staff workload.

Nodes \ Codes \ 4 - The Organization
Aggregated: No

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<tr>
<th>Document</th>
<th>2</th>
<th>25</th>
<th>1,366</th>
</tr>
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</table>
| Staff activities/actions that demonstrate a customer service-focus. This does not include staff verbal communication skills with patients (coded People --> Staff --> Communication and Relationship skills).

Nodes \ Codes \ 4 - The Organization \ Customer Service Focus
Aggregated: No

<table>
<thead>
<tr>
<th>Document</th>
<th>2</th>
<th>25</th>
<th>1,366</th>
</tr>
</thead>
</table>
| Staff activities/actions that demonstrate a customer service-focus. This does not include staff verbal communication skills with patients (coded People --> Staff --> Communication and Relationship skills).

<table>
<thead>
<tr>
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<th>Number of Coding</th>
<th>Number of Words</th>
<th>Description</th>
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</table>
| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No

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<tr>
<th>Source Type</th>
<th>Number of Sources</th>
<th>Number of Coding</th>
<th>Number of Words</th>
<th>Description</th>
</tr>
</thead>
</table>
| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No

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<tr>
<th>Source Type</th>
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</table>
| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No

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</table>
| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No

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| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No

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<th>Number of Words</th>
<th>Description</th>
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</table>
| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No

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<tr>
<th>Source Type</th>
<th>Number of Sources</th>
<th>Number of Coding</th>
<th>Number of Words</th>
<th>Description</th>
</tr>
</thead>
</table>
| Nodes \ Codes \ 4 - The Organization \ Early MCA Adopter
Aggregated: No
Indicators that the pharmacy was an early medication review adopter

**Nodes\Codes\4 - The Organization\Leadership**

Aggregated: No

Document 8 31 1,659 Leadership styles of owners, managers and pharmacists.

**Nodes\Codes\4 - The Organization\MCA Training**

Aggregated: No

Document 2 6 1,120 Informal or formal MCA training/education for dispensary staff.

**Nodes\Codes\4 - The Organization\Motivational Strategies**

Aggregated: No

Document 6 13 1,569 Ways of improving productivity and motivating dispensary staff, including encouragement (e.g. paying for continuing education).

**Nodes\Codes\4 - The Organization\Motivational Strategies\MCA Incentives**

Aggregated: No

Document 2 6 1,304 Pharmacy owners’ use (or not) of incentives or punishments to encourage MCA service provision.

**Nodes\Codes\4 - The Organization\Organizational Climate**

Aggregated: No

Document 7 41 1,494 General pharmacy climate (e.g. extent to which staff getting along and enjoy working together and enjoy working in the pharmacy, evidence of trust, and staff feeling valued).

**Nodes\Codes\4 - The Organization\Pharmacy History**

Aggregated: No

Document 2 4 517 When established, duration under current management, etc.
| Nodes\Codes\4 - The Organization\Professional Services\Key features of BP MCA  |
|-----------------------------|-----------------------------|-----------------------------|
| Professional services offered in the pharmacy (including clinical and non-clinical) |

| Nodes\Codes\4 - The Organization\Staffing  |
|---------------------------------------------|-----------------------------|-----------------------------|
| Direct interviewee responses to the interview question about what makes an exemplary MCA service |

| Nodes\Codes\4 - The Organization\Team Communications  |
|---------------------------------------------------------|-----------------------------|-----------------------------|
| How the pharmacy owner ensures sufficient staff to provide MCA services alongside other professional services (e.g. scheduling/staffing). |

| Nodes\Codes\4 - The Organization\Teamwork  |
|---------------------------------------------|-----------------------------|-----------------------------|
| Examples of employees working together to complete a dispensary tasks. |

| Nodes\Codes\5 - Internal Environment\Dispensary Environment  |
|-------------------------------------------------------------|-----------------------------|-----------------------------|
| Physical features of the dispensary (size, layout, lighting, etc.) |

| Nodes\Codes\5 - Internal Environment\Front Store  |
|-------------------------------------------------|-----------------------------|-----------------------------|
| Physical features of the front store (size, layout, lighting, etc.) |
Nodes\Codes\5 - Internal Environment\MCA Service Setting
Aggregated: No

Features of the MCA service setting (size, layout, noise, impressions of privacy).

Nodes\Codes\6 - External Environment
Aggregated: No

PARENT CODE: Features of the environment outside of the pharmacy, which the pharmacy owner can not change (e.g. pharmacy's physical location, clientele, other health care professionals, government policies).

Nodes\Codes\6 - External Environment\Clientele
Aggregated: No

Attributes of the pharmacy clientele (e.g. age, SES, Insurance coverage, etc.)

Nodes\Codes\6 - External Environment\Impact of MCA Regulation Changes
Aggregated: No

How the October 2016 changes to the MCA program have affected service provision in the pharmacy. This does not include specific challenges or facilitators to service provision caused by the 2016 changes (coded in the child codes Challenges and Facilitators).

Nodes\Codes\6 - External Environment\Impact of MCA Regulation Changes\Implementation
Aggregated: No

Challenges to MCA service delivery caused specifically by the Oct 2016 program changes.

Nodes\Codes\6 - External Environment\Impact of MCA Regulation Changes\Implementation
Aggregated: No

Facilitators of MCA service delivery caused specifically by the Oct 2016 program changes.

Nodes\Codes\6 - External Environment\Pharmacy Location
Aggregated: No

External setting of the pharmacy

Nodes\Codes\6 - External Environment\Professional Networks
<table>
<thead>
<tr>
<th>Source Type</th>
<th>Number of Sources</th>
<th>Number of Coding</th>
<th>Number of Words</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Nodes\Codes\MCA Process\Patient Recruitment\Appointment Setting</td>
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<td>24</td>
<td>1,151</td>
<td>Scheduling appointments for MCA services. This includes aspects related to scheduling appointments such as no-shows and reminder telephone calls.</td>
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<tr>
<td>Nodes\Codes\MCA Process\Patient Recruitment\Opportunistic</td>
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</tr>
</tbody>
</table>
### Conducting MedsChecks as a patient drops off or picks up a prescription.

How (i.e. criteria) and by whom patients are selected for an MCA. This includes selection by pharmacy staff, self selection (patients requesting a medication review) or referral (from a prescriber).

How the pharmacy assesses the quality of MCA services.

PAREBT CODE: Bucket code for capturing MCA and dispensing observations that do not fit into other codes.

Actions and discussions observed during the prescription dispensing observations.

Actions and discussions observed during the MCA observations.

PARENT CODE: Outcomes resulting from an MCA service relating to the patient.

Staff perceptions of patients benefiting from an MCA. This includes both direct benefit (e.g. DRP identification/resolution) and indirect benefit (e.g. ...
patient directed to follow-up with physician). This also includes caregiver benefit (information, piece of mind).

<table>
<thead>
<tr>
<th>Nodes\Codes\Outcomes - Patient\Impact on Other Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document 2 2 153 How the absence of the pharmacist during an MCA impacts other patients.</td>
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</table>

<table>
<thead>
<tr>
<th>Nodes\Codes\Outcomes - Patient\Patient Satisfaction</th>
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<tbody>
<tr>
<td>Document 8 12 532 Indicators of patients' being satisfied with the MCA or that staff perceive patients to be satisfied (e.g. patients being receptive to the service, frequency of repeat MCA recipients, overt comments about patient satisfaction with MCA)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nodes\Codes\Outcomes - Pharmacy and Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 PARENT CODE: Outcomes of the MCA service relating to the pharmacy organization or employees.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nodes\Codes\Outcomes - Pharmacy and Employees\Increased Inter-professionalism</th>
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</thead>
<tbody>
<tr>
<td>Document 3 5 379 MCA consultations leading to improved interprofessional collaboration with physicians and other health care providers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source Type</th>
<th>Number of Sources</th>
<th>Number of Coding</th>
<th>Number of Words</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nodes\Codes\Outcomes - Pharmacy and Employees\MCA Sustainability</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document 6 8 370 Indicators that the service is sustainable (e.g. frequency of service provision, longevity of service, number of repeat MCA recipients, financial benefit to the pharmacy)</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nodes\Codes\Outcomes - Pharmacy and Employees\Pharmaceutical Opinions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document 1 4 276 Pharmaceutical opinions resulting from an MCA</td>
</tr>
<tr>
<td>Document</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>
Appendix Y: Pharmacy A: Case Report

Table of Contents

A. Overview of the Pharmacy
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      – Catchment Area and Pharmacy Clientele
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      – Dispensary (Figure 1)
      – Consultation Room
   5. Pharmacy Staffing

B. Dispensary Work System (Table 2) (Organized according to SEIPS model)
   1. People
   2. Tools / Technology
   3. Tasks
   4. The Organization
   5. Internal Physical Environment
   6. External Environment

C. Workflows
   1. Dispensing Workflow (Figure 2)
   2. MCA Workflow (Figure 3)
   3. Integration of MCA Process within the Dispensary

D. Implementation of MCA

E. MCA Outcomes
   1. Pharmacy and Employee Outcomes
   2. Patient Outcomes
A. Overview of the Pharmacy

Table 1: Pharmacy Characteristics

<table>
<thead>
<tr>
<th>Location</th>
<th>Urban, Greater Toronto Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership Type</td>
<td>Independent</td>
</tr>
<tr>
<td>Years in Operation</td>
<td>12 years</td>
</tr>
<tr>
<td>Hours Open per Week</td>
<td></td>
</tr>
<tr>
<td>Weekday Hours</td>
<td>55 hours</td>
</tr>
<tr>
<td>Weekend Hours</td>
<td>12 hours</td>
</tr>
<tr>
<td>Pharmacy Size</td>
<td>Approx. 1060 sq. ft.</td>
</tr>
<tr>
<td>Dispensary Size</td>
<td>Approx. 360 sq. ft.</td>
</tr>
<tr>
<td>Average Daily Prescription Volume</td>
<td>100-150 without blister packaged drugs; 150-200 including blister packaged drugs</td>
</tr>
<tr>
<td>Average Weekly MCA Volume</td>
<td>6-10</td>
</tr>
<tr>
<td>Total Full Time Equivalent (FTE)*</td>
<td></td>
</tr>
<tr>
<td>Dispensary Staffing</td>
<td>1 Owner 0.75 FTE</td>
</tr>
<tr>
<td></td>
<td>3 Staff Pharmacists 1.70 FTE</td>
</tr>
<tr>
<td></td>
<td>1 Registered Technician 1.00 FTE</td>
</tr>
<tr>
<td></td>
<td>4 Pharmacy Assistants 2.55 FTE 2 Full Time**; 2 Part Time</td>
</tr>
<tr>
<td></td>
<td>1 Student/Intern 1.00 FTE</td>
</tr>
<tr>
<td></td>
<td>1 Front Store Manager Floater (Periodically throughout the day)</td>
</tr>
<tr>
<td>Appointment Scheduling Software</td>
<td>Web-based, accessible to the public and pharmacy staff for booking clinical appointments</td>
</tr>
<tr>
<td>Non-Dispensing Patient-Care Services Offered</td>
<td>• MedsCheck Annual, MedsCheck at Home,</td>
</tr>
<tr>
<td></td>
<td>• Disease-Specific Clinics, Disease-Specific Seminars,</td>
</tr>
<tr>
<td></td>
<td>• Travel Clinic,</td>
</tr>
<tr>
<td></td>
<td>• Prescribing for Vaccinations (under a medical directive),</td>
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<tr>
<td></td>
<td>• Vaccinations (e.g. flu),</td>
</tr>
<tr>
<td></td>
<td>• Natural Health Product Counseling</td>
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</tbody>
</table>

* Total FTE is calculated at 40 hours/week based on an 8 hour day, 5 days per week

** Full time or part time status was determined by the owner who considered 30 hours/week or more to be full time.

Pharmacy and Owner History

The current owner purchased this pharmacy in 2005; however, a pharmacy has been in this location for 30 to 40 years. Much of the staff was retained after the change in ownership; however, many did not

remain at the pharmacy under the new leadership for long. Only 1 pharmacist and 3 front store clerks remain from the time of the prior owner.

The owner of this pharmacy has an entry to practice PharmD degree from the USA, with most program-based experiential training in the community pharmacy. The owner cited exceptional preceptors with clinically-focused practices as being influential in developing his/her current practice. After graduation, the owner worked as a consultant pharmacist in Ontario for 3 years, and then purchased this pharmacy. The owner attributes the PharmD program and consultant experience as being instrumental in setting this pharmacy up for successful MCA services.

Pharmacy Environment

Location

The pharmacy is located in the center of a commercial L-shaped strip mall off a busy main street. The strip mall parking lot accommodates many cars but there is little foot traffic. The strip mall also has a medical clinic with 4 family physicians, a physiotherapy clinic, a dentist’s office, and an animal hospital. Non-health care stores include a bank, a restaurant, and other retail shops.

The surrounding neighbourhood is predominantly residential. Single family detached homes dominate; however, there are also 2 medium density apartment towers. Nearby are 2 schools and a golf course.

Catchment Area and Pharmacy Clientele

The population of the pharmacy catchment area is varied in age and ethnicity. The area is very family oriented. Young families move into the area and the adults generally stay until a move to a retirement home or assisted care facility becomes necessary. Thus, the catchment area population is stable.

The pharmacy clientele is drawn almost entirely from the catchment area. During pharmacy site visits, only 1 new patient was observed attending the dispensary (as noted by the additional questions asked by the pharmacist while adding the patient into the prescription profile system). The pharmacy caters to patients of varying ages from young children to the elderly. The majority of patients have drug insurance, either through the Ontario Public Drug Benefit Plan or through a third party insurer.
Pharmacy Structure

Front Store

One enters the pharmacy through 2 sets of double doors. On the left are shelves with a selection of magazines and newspapers. On the right is an interior door leading into the neighboring medical clinic. The medical clinic has an exterior entrance as well, but the vast majority of patients enter the medical clinic through the pharmacy. At the front of the pharmacy, near the door to the medical clinic, is a small counter with a cash register and an Ontario Lottery and Gaming (OLG) advertisement. Immediately ahead of the entrance is a Canada Post outlet with exterior shelves containing shipping envelopes and boxes. To the right, past the cash register are five hexagonal standalone shelves that are short enough to see over so most customers can be seen from anywhere in the pharmacy. The shelves hold dental and personal hygiene products as well as non-personal care products such as cards, chocolates and teas. On the right wall is a taller shelf holding natural health products. To the left is a public blood pressure machine with body mass index and blood oxygen level measurement capabilities. Next to the blood pressure machine are shorter stands with walking canes and compression socks.

The inside of the pharmacy seems spacious, possibly because of bright lighting, light colored paint, and the low height of the retail shelves. A radio station plays quietly over the intercom. Closer to the dispensary is a stand with fresh coffee and cookies.

Dispensary

See Figure 1 for the floor plan of the dispensary. The dispensary comprises the whole back wall of the pharmacy. A small sitting area with 3 chairs is located directly in front of the dispensary. Three public health/pharmacy service promotional posters are visible from the sitting area. To the left of the dispensary is a small room used for filling blister packs which also has access to the back delivery door and to the basement stock room/storage area. To the right of the dispensary is the office. It is used for provision of clinical professional services and conducting administrative tasks.
The counter runs the full length of the dispensary between the blister packing room and the office. An overhead Prescription Pick Up sign is located near the blister packing room and the dispensary cash register, and an overhead Prescription Drop Off sign is near the center of the counter. The floor level of the dispensary is raised up about a foot above the front store ground level, with the exception of the area around the dispensary cash register, which is the same height as the front shop floor. Sitting on the edge of the raised portion of the dispensary counter is an approximately 2 foot tall wooden divider that separates the front shop with the dispensary and limits what a patient can see on the counter. There is an opening in the wooden divider under the Prescription Drop Off sign.

On the dispensary counter, behind the wooden divider, are 2 computers, each with its own scanner and telephone. The primary printer is located centrally on a stand behind the computers and next to the stock medication shelves. The fax machine, which also acts as a secondary printer, is on the end of the counter closest to the office. At the pickup counter is a cash register, under which is a bin containing bags of dispensed prescription medications organized alphabetically according to patients’ last name. The 2 computers and the cash register create 3 distinct work stations. A fourth work station exists at the empty space in between the 2 computers at the dispensing counter.

Under the dispensary counter are 2 safes for narcotics, empty prescription vials, liquid bottles, and ointment jars, as well as a shredding bin and garbage bin. On the dispensary counter are warning labels for the prescription vials, 2 small boxes in which the hard copy prescriptions (1 for narcotics, 1 non-narcotic medications) are placed after they are filled, a weighing scale, prescription pill counters and various other office supplies (e.g. pens, scissors, stapler) . On a small shelf above the counter are the most frequently used stock medication bottles.

Behind the dispensary cash register counter are shelves holding over-the-counter medications. On the raised platform, behind the dispensary counter are shelves holding stock bottles of prescription medications. On the wall near the office is a space with a fridge, sink, filing cabinet, and staff mailboxes.
Consultation Room

See Figure 1 for the floor plan of the consultation room. The consultation room, which also serves as an office, is completely enclosed with a door. It is divided into two sections by a central two-sided shelving unit, which is filled with text books and pharmacy documents. One side of the office is mostly empty, while the other has an L-shaped desk facing the corner and a computer with a scanner. All items on the desk are organized: papers are in piles; a box contains needles, alcohol swabs, and other necessary vaccination supplies. Under the desk is a garbage bin and a ‘sharps’ bin. The consultation room has 3 chairs, 1 at the desk, 1 next to the desk – where patients sit for MCAs, and a third chair on the empty side of the office.
Figure 1: Dispensary Floor Plan
Pharmacy Staffing

See Table 1 for full time equivalents. In addition to the owner who works 30+ hours per week, there are 3 staff pharmacists (2 of which work 30+ hours per week), 1 full time registered technician (40 hours per week), and 4 pharmacy assistants (2 work 40 hours per week; 2 work part time). Up until recently, the pharmacy employed 2 registered technicians; however, one passed away recently, a fact that could not be overlooked because of a plaque with her photo and the caption ‘in loving memory’ located on a prominent wall in the dispensary. The pharmacy also employs 7 front store clerks and 1 front store manager.

During each of the four site visits, a minimum of 4 staff were working in the dispensary. Typically, this included 1-2 pharmacy assistants, 1 registered technician, 1 pharmacist, and 1 student pharmacist (completing experiential training in his/her final year of schooling). At a minimum 2 front store clerks were present, one in the Canada Post kiosk, and one at the front cash register. When more than 2 staff members were working in the front store, the front store manager became a ‘floater’ and acted as a pharmacy assistant cashing out patients at the cash register behind the dispensary counter as well as performing other front store duties.

B. Dispensary Work System

See Table 2 for a list of the pharmacy characteristics that support best practice MCAs categorized according to SEIPS work system components.

People

Dispensary staffing: Pharmacy staff is stable. Staff turnover at this pharmacy is low, with dispensary staff having an average of 8.9 years tenure (range: 5 to 12 years). The 4 pharmacists combined (including the owner) have 64+ years of experience in community pharmacy.

Dispensary staff language skills: Among the dispensary staff, the owner estimates that approximately 10 languages are fluently spoken, enabling the staff to communicate with almost all patients in their native tongue. Indeed, this was observed during the site visits on more than one occasion.
Pharmacists’ interview skills: During MCAs, both the pharmacist and student pharmacist were observed communicating with patients in a positive and engaging fashion. They asked open-ended questions, encouraging the patient to be an equal contributor to the conversation. If a patient seemed distant or uncooperative, the pharmacist/student pharmacist slowed the pace of the interview and re-engaged the patient. If a patient was confused, the pharmacist/student pharmacist reworded their comments using less complex language and repeated back patient’s responses to ensure mutual understanding. No negative or potentially alarming comments addressed towards patients were observed, including when patients chose to stop prescription medication(s) without discussing this decision with their physician or pharmacist first.

Relationships with patients: Strong relationships exist between the pharmacy staff and the pharmacy customers or dispensary patients. Pharmacy staff members are often on a first name basis with their customers/patients. Patients were observed attending the dispensary for conventional reasons such as to ask for advice on medications as well for non-conventional reasons such as to discuss non-medication related issues (e.g. test results) and as social outings.

Patient-pharmacist interactions: Patient-pharmacist interactions were never rushed; as one staff member said, “It’s really important to make sure [the pharmacist] take[s] the time” [A4]. This philosophy was observed both during the MCA service and during other professional interactions. The observed MCA consultations averaged 39 minutes in length (range: 25 to 50 minutes). Other patient-pharmacist interactions were observed during counseling for prescription medications. These interactions were not rushed, even when other patients were queued to speak with the pharmacist. Patients were observed attending the pharmacy to ask for advice from the pharmacist about recent blood work or to ask for disease-specific advice. Again, the interactions were never rushed. The pharmacist didn’t interrupt the patient, instead he/she took the time to address all of the patient’s questions.

Owner’s education and prior clinical experience: As mentioned in Section A, the owner’s clinically-focused education and prior consulting experience greatly influenced the MCA service provided in this pharmacy.
Tools/Technology

Computer access in the dispensary: The dispensary’s 2 computers did not appear to be assigned to specific staff members. Instead, all dispensary staff shares access to the computers. Dispensary staff were never observed waiting for a computer (or requesting access to a computer), leading the researcher to believe that there are sufficient computers in the dispensary to ensure staff can access one as needed to complete dispensary tasks. All computers have access to the pharmacy’s patient profiles as well as to the internet. All computers have their own scanner.

Computer access in the consultation room: The consultation room has a computer with access to the pharmacy’s patient profiles as well as to the internet. Indeed, the pharmacist was observed using the computer to look up information on the patient’s profile during an observed MCA consultation.

Dispensing software’s MCA functions: The dispensary software has 4 important features relating to the MCA service. First, the software has reporting capabilities to assist in identifying patients who are eligible for an MCA. Two reports are regularly printed: 1 identifying patients who received an MCA during the same month in the previous year and one identifying patients who are currently taking 3 or more prescription medications. Second, the software prompts dispensary staff during prescription drop-off or pick-up if a patient meets the eligibility criteria for an MCA. Third, the dispensary software auto-populates the MCA service forms based on the information selected by the pharmacist (e.g. patient-specific information and medication information). Lastly, the dispensary software affixes a unique barcode on all MCA service forms so that the completed, scanned forms can be filed into the correct patient profile automatically by the software.

Appointment scheduling software: This pharmacy uses web-based appointment scheduling software for all clinical services including MCAs. This application can be accessed by the public and by dispensary staff members through the pharmacy website.

Promotional materials: The pharmacy website and paper-based advertising materials (e.g. pamphlets, fliers) promote clinical pharmacy services, including medication reviews. Pharmacy services are also
advertised on sandwich boards on the sidewalk in front of the pharmacy, and on the bulletin boards between the sets of double doors at the pharmacy entrance.

Tasks

This section describes characteristics/features relating to task completion in the dispensary. See Section C for detailed dispensing and MCA workflows.

Job descriptions: This pharmacy does not have formal written dispensary staff job descriptions. Instead, task assignment evolves organically and, according to the owner, tasks are delegated based on the strengths and the weaknesses of the individual staff members. For example, one pharmacy assistant performed most housekeeping tasks (e.g. cleaning, stocking prescription vials), while the other performed more technical tasks (e.g. scanning in filled prescriptions), which seemed to play into the strength/preference of each employee. Both assistants shared responsibilities during the prescription dispensing process (e.g. entering the prescription into the computer and filling prescriptions). This model of continually evolving job descriptions is facilitated by the low turnover of dispensary staff. As a result, staff members feel they play a unique and important role in the smooth running of the dispensary and are empowered to take on expanded responsibilities.

Responsibility for completion of daily tasks: Staff shared responsibility for many dispensary tasks. For example, the assistants, the technician, and the student pharmacist were observed simultaneously stocking the shelves with inventory orders to ensure medications were stocked as quickly as possible. There was no obvious leader among the staff members during this task. Instead, staff seemed to know what was expected of them and responsibility for the task was shared. Also, all dispensary team members, including the pharmacists, share responsibility for greeting patients, answering phones, as well as answering back door for delivery calls.

Registered technician expanded dispensing role: The registered technician is encouraged and enabled to perform an expanded dispensing role. For example, she does medical device demonstrations for patients and checks the accuracy of dispensed prescriptions when the pharmacist is not present. The registered technician also dispenses some refill prescriptions, when no counseling is required if the pharmacist is
not available. She is also responsible for managing patient’s expectations in regards to wait times for prescriptions while the pharmacist is conducting an MCA (when no other pharmacist is present).

Support staff role in MCA process: As described in Section C, the pharmacy assistants, technicians and pharmacy students all participate in the MCA process. For example, the technician said that she often prints out the monthly eligibility reports from the dispensing software, while the assistants (and sometimes the front store manager) telephone patients to schedule MCA appointments. An assistant is also responsible for scanning and filing the completed MCA service forms.

The Organization

What distinguishes this pharmacy: The owner considers this pharmacy to be special for 4 reasons: 1) the pharmacy is “ahead of the game” [A1] with clinical services, as they were offered and were remunerated by patients for diabetes-specific medication reviews before the MedsCheck program existed; 2) the diversity and number of clinical services offered; 3) extensive inter-professional relationships; and 4) abundant natural health products and product knowledge.

Written pharmacy philosophy and mission statement: This pharmacy has both a written pharmacy philosophy and a mission statement. Both of these documents emphasize that the pharmacy is service-focused. These documents introduce “value-added services” and “superior quality service” respectively, as their first topic.

MCA incentives: Quotas, targets and other incentives are not used in this pharmacy to encourage large volumes of MCA services.

Motivational strategies: The pharmacists are intrinsically clinically-focused. They view the MCA service as an opportunity to provide patients with all their medication information at one time. Indeed, one pharmacist stated:

“Its services that we provide anyways, you know. It's usually broken into bits and pieces during counselling, and patients will come in with questions. So it's sort of nice to dedicate sufficient time to discuss all their issues and do it in a more formal interview.” [A2]
The attitudes and mindset of pharmacists has resulted in a situation where the pharmacy has no need for quotas/targets or other incentives to encourage MCA service provision. As the owner said “…we offer a lot of clinical services […] we’re not just a dispensary.” [A1]

**Pharmacy professional services:** This pharmacy offers extensive professional services. For example, disease specific (e.g. osteoporosis, diabetes, cardiovascular disease) clinic days are held multiple times per year offering patients the opportunity to schedule an appointment to see a nurse and a pharmacist about their condition. A more detailed description of these clinics is provided in Section D under MCA Implementation. Disease-specific seminars are also held as a more informal information dissemination and discussion-based service. The seminars are generally focused on the same disease as the clinic and are offered in the same month. This pharmacy also partners with an off-site family physician (not associated with the clinic next door) to offer a travel clinic. Patients schedule an appointment to meet both the physician and a pharmacist at the pharmacy. The physician is responsible for prescribing the travel medications while the pharmacist is responsible for preparing, vaccinating (when necessary), and counseling the patient. This same physician provides 3 pharmacists (including the owner) with a medical directive to prescribe certain vaccinations (for Hepatitis A, Hepatitis B, and Shingles). Patients directly pay the pharmacy for both travel clinics and vaccinations. The pharmacy also offers flu vaccinations, which are remunerated by the provincial government. However, the only non-dispensing professional service observed during the site visits was the MCA service.

**Organizational climate:** The organizational climate of this pharmacy was very positive. The owner and the pharmacists displayed trust that employees would complete their tasks. A staff member said that he/she felt trusted not work outside of the scope of practice of his/her job description. Patients also exhibit trust in the pharmacists when asking for advice on medical conditions or specific medications. Staff also said they felt they were important to the dispensary team and felt valued. There was a visible sense of group cohesiveness among the dispensary staff, with staff joking, laughing, and discussing personal topics (e.g. vacations, children, etc.).
**MCA training:** The pharmacy provides dispensary staff with formal in-house MCA-specific training. Patient recruitment training includes a telephone script for scheduling an MCA appointment for a patient. The pharmacy also has in-service sessions, for example, to discuss the October 2016 changes to the program and the effects these changes would necessitate in the MCA service provided by the pharmacy. Finally, the pharmacy also encourages pharmacists to take continuing education courses for MedsCheck so that they are up to date with service requirements.

**Customer-focused staff:** The dispensary and pharmacy staff members are very customer-focused. Whether patients are approaching the dispensary counter or simply looking at retail products on the shelves, the number one priority of all pharmacy staff was to greet the patient/customer and address their needs.

**Pharmacist leadership styles:** The 2 pharmacists that were observed during the site visits have very different leadership styles. The first pharmacist is hands-on with dispensary tasks and offers little unsolicited guidance to staff, while the second pharmacist is more hands-off with dispensary tasks, assuming a supervisory role and delegating tasks to staff. Despite these two different styles, both pharmacists had an amicable relationship with all dispensary staff. Staff members were observed chatting and laughing while completing their dispensary tasks when either pharmacist was managing the dispensary. The owner was not observed interacting with the dispensary staff during any of the site visits.

**Teamwork:** Facilitating the dispensary’s customer service-focus is the obvious teamwork among dispensary staff. The dispensary staff members were observed to work well as a team, even with minimal oral communication. For example, during the medication dispensing process, pharmacists often came to the cash register to counsel patients on medications without being asked by the pharmacy assistant. The dispensary is not large, therefore, pharmacists are likely able to overhear the conversation between the pharmacy assistant dispensing the medication and the patient. In addition, the front store manager is often found helping in the dispensary without being asked, cashing out patients with refill prescriptions when the dispensary is busy. Indeed, the first characteristic the owner described about the pharmacy was
the “fantastic staff that works together” [A1]. Teamwork and staff cohesiveness were observed in the dispensary during each of the researcher’s 4 site visits.

Communication systems: Dispensary staff was observed communicating effectively. For example, staff always announced to the team that he/she was leaving the dispensary floor, whether for a break or to complete a task elsewhere (i.e. the office). The pharmacist would acknowledge the announcement and occasionally other staff would as well. Interestingly, neither pharmacist was observed making similar announcements when they left the dispensary floor. Dispensary staff were also observed asking questions in a unique manner: he/she would ask a question aloud, to no one in particular, and anyone in the dispensary who knew the answer would reply. All dispensary staff, including the pharmacists, were observed asking questions in this manner. Effective verbal conflict resolution in the dispensary was also observed. Conflicts were either resolved directly between the individuals, or on one occasion, through a group huddle led by the pharmacist. Each conflict was resolved quickly, without any observable hurt feelings (i.e. the individuals involved were observed chatting or laughing shortly afterwards).

Three different communication strategies are employed in this pharmacy when face-to-face discussions are not possible. First, the owner uses e-mails to disseminate administrative information to staff, for example, to inform staff of an in-service meeting or to notify them about a policy/procedure change. The second method, also used for administrative information, is the use of staff mailboxes. For example, information pamphlets that might be of interest to a staff member are placed in his/her mailbox. The third communication method, leaving a hand written note, tends to be used for patient or medication-specific information. Patient prescription-specific notes are placed in a medication basket and other notes (e.g. regarding inventory or a task to be completed by the next dispensary team on shift) are placed next to the computer nearest the office.

Staffing: The owner of this pharmacy ensures sufficient dispensary staffing to provide MCA services while maintaining prescription dispensing processes. Monday through Friday, more staff are present in the dispensary, so MCAs are scheduled during this time. The owner indicated that MCAs were preferentially scheduled for times when there would be pharmacist overlap, either because the owner or a
student pharmacist is present. When no pharmacist overlap is possible, then MCAs can only be conducted if a registered technician is present. The owner also said that MCAs were only conducted when 2 pharmacy assistants were present.

**Internal Physical Environment**

Briefly, as described in Section A, 3 components of the pharmacy’s internal environment are relevant: 1) the private, quiet consultation room; 2) the calm and inviting dispensary environment; 3) the open concept front store.

**External Environment**

The physical description of the pharmacy location and a description of the pharmacy clientele were provided in Section A. Other aspects of the external environment are discussed below.

*Professional Networks:* Relationships between the dispensary staff and other health care providers is evident. For example, the dispensary staff has strong working relationships with the physicians at the medical clinic next door. The student pharmacist was observed walking over to the medical clinic twice to discuss changes to patients’ prescriptions with clinic physicians. Indeed, the pharmacy also co-distributes advertising materials with the physiotherapy and medical clinic located in the same strip mall indicating a business relationship. The pharmacy also has a partnership with a physician who is not located in the strip mall. This physician participates in travel clinics held at the pharmacy and also provides 3 pharmacists (including the owner) with a medical directive for prescribing 3 immunizations (for Hepatitis A, Hepatitis B, and Shingles). The relationship between the owner and this physician was established at a pharmacy conference in 2012. In addition, 2 of the pharmacists in this pharmacy have connections to the Ontario pharmacy community as Ontario Pharmacists Association members.

*Impact of MCA regulation changes:* The external regulatory environment of the MCA program changed in October 2016 when the Ontario Ministry of Health and Long Term Care (MOHLTC) implemented new documentation and procedural requirements for MCA services. The dispensary staff members who were interviewed spoke of the impact that these changes had on their MCA service. All mentioned the
increased burden of documentation, for example, redundancies on the Personal Medication Record and the Pharmacists Worksheet. They also mentioned the increased time needed to complete an MCA. The pharmacist interviewed said:

“… [The documentation] does take time… With the current forms, I always feel that there is a need to do it after the interview just to catch up” [A2].

Regarding completion of the documentation, the pharmacist said that his focus during the MCA was on updating the Personal Medication Record so that a copy could be given to the patient at the end of the consultation. Indeed, during the MCA observations, much of the pharmacists’ time was occupied with writing. The remaining forms were completed after the consultation.

Further, the 2016 changes led to a perceived decrease in professional autonomy. The owner said:

“I find that the documentations has almost brought us down a level with our professionalism, saying that the government is not convinced of our professionalism and thus has to check certain things.” [A1]

Although most of the discussion surrounding the 2016 changes involved challenges to service provision, 1 facilitator was noted. A pharmacist said that the level of detail and the prompts offered on the forms were helpful for service provision.
Table 2: Work System Factors Supporting MedsCheck Service

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>PHARMACY A FEATURES</th>
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<tbody>
<tr>
<td>People</td>
<td>- Owner with clinically-focused education (PharmD)</td>
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<td>- Few dispensary staff with low turnover and long tenure</td>
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<td>- Experienced pharmacists</td>
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<td>- Pharmacists’ engaging interviewing skills</td>
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<td>- Dispensary staff-patient relationships</td>
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<td>- Positive, lengthy patient-pharmacist interactions</td>
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<td>- Dispensary staff language skills (10 different languages)</td>
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<td>Tools/technology</td>
<td>- Computer with internet and patient profile access in the consultation room</td>
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<td>- Staff share computers in the dispensary (i.e. not assigned)</td>
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<td>- Web-based MCA appointment scheduling system</td>
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<td>- Dispensary software with MCA functions</td>
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<td>- Extensive advertising materials (e.g. pamphlets, flyers, website)</td>
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<td>Tasks</td>
<td>- Support staff participate in MCA process</td>
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<td>- Shared responsibility for daily tasks</td>
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<td>- Registered technician expanded dispensing role</td>
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<td>- Informal, evolving job descriptions</td>
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<td>Organization</td>
<td>- Early adopter of medication review</td>
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<td>- Strong, unique pharmacists’ leadership styles</td>
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<td>- Intrinsically clinically-focused pharmacists (no incentives)</td>
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<td>- Highly customer service-focused staff</td>
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<td>- Written pharmacy philosophy and mission statement</td>
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<td>- Extensive professional services</td>
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<td>- Formal MCA-specific training for all dispensary staff</td>
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<td>- Positive organizational climate</td>
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<td>- Cohesive teamwork</td>
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<td>- Effective dispensary staff communication systems</td>
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<td>- Sufficient dispensary staffing with occasional pharmacist overlap</td>
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<tr>
<td>Internal physical</td>
<td>- Private consultation room</td>
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<td>environment</td>
<td>- Calm and inviting dispensary environment</td>
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<td>- Open concept front store</td>
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<td>External</td>
<td>- Stable dispensary clientele</td>
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<td>environment</td>
<td>- Established inter-professional networks</td>
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C. Workflow

Prescription Dispensing Workflow

See Figure 2 for visualization of the prescription dispensing workflow superimposed on the dispensary floor plan. Dispensary staff in this pharmacy share do not explicit roles. Thus, to coordinate labour, this pharmacy follows a mutual adjustment strategy in which informal verbal communications are used to coordinate tasks between individuals. Prescription dispensing in this pharmacy is completed by 2-4 dispensary staff and follow a relatively linear process. Below is a narrative description of the process.
1. **Prescription Intake**

Prescriptions are received at the pharmacy over-the-phone, by fax, and in person from a patient or their representative. All members of the dispensary team accept prescriptions from patients. Upon receipt, the prescription is checked to ensure all necessary information is present, and legible. When necessary information is missing, a pharmacist will contact the prescriber. By patient request, pharmacists will contact physicians to request authorizations of refills.

2. **Prescription Entry into the Dispensary Software**

A pharmacy assistant generally enters the prescription into the dispensary software using either of the computers in the dispensary and then prints the prescription label. Both the prescription(s) and the medication label(s) are placed in a medication basket on the left side of the counter. A colored basket system is used to indicate the priority of the prescription: red baskets for immediate pick up; green or yellow baskets for pick up in the near future; white baskets for delivery.

3. **Prescription Filling**

A pharmacy assistant retrieves the stock medication(s) bottle(s) from the storage shelves and an empty medication vial(s)/bottle(s), from under the dispensary counter. A pharmacy assistant (either the same or a different assistant) then fills and labels the medication vial(s)/bottle(s) and places them in the medication basket with the stock bottle(s) and the paper prescription(s).

4. **Prescription Checking**

A pharmacist checks that the prescription is therapeutically appropriate (indication, dose, duration, interactions), the medication in the vial is correct, and the medication label on the vial match. If the prescription is filled correctly, the pharmacist signs the paper prescription and the prescription basket is moved to the right. At times, the registered technician will check and sign the technical aspect of the prescription, leaving the pharmacist to check and sign for the therapeutic components.

5. **Prescription Bagging**

A registered technician or pharmacy assistant returns the stock medication bottle to the storage shelf. The medication and relevant medication information inserts are placed in a bag. Again a coding system is
used: clear bags indicate new medications requiring pharmacist counseling, paper bags indicate refill medications. Bagged medication(s) are filed in a drawer under the cash register by the patients’ last name. Medication(s) for delivery are placed in a box behind the cash register. The paper prescriptions from the narcotic and non-narcotic containers are sorted separately for future scanning and filing.

6. **Prescription Pick-Up**

Medication(s) are picked-up by the patient (or representative) at the dispensary pick-up counter. When the pharmacy is busy, a staff member, generally a pharmacy assistant, will remain at the cash register to hand out prescription bags. When necessary, the pharmacist will come to the cash register to provide medication counseling to a patient. Often the front store manager will come into the dispensary to take payment and hand out refill prescriptions.

7. **Paperwork**

Once per day, a pharmacy assistant will scan all prescription hard copies that were left in the box on the counter. Each prescription has a unique barcode associated with the patient prompting the computer software to file the prescription appropriately. The hard copies are then filed according to the prescription number and are stored in the basement.
Figure 2: Dispensary Floor Plan with Prescription Dispensing Workflow
MCA Workflow

See Figure 3 for a visualization of the MCA workflow superimposed on the dispensary floor plan.

The process for conducting an MCA in this pharmacy is standardized. All staff members assist in different stages of process. Below is a narrative description of the process.

1. Patient Selection

This pharmacy uses a systematic process to proactively identify and select pharmacy patients who are eligible for an MCA. A registered technician or pharmacy assistant uses the dispensing software system to generate a list (report) of the pharmacy’s MCA recipients in the same month, the previous year. A second report, which is confirmed by a pharmacist, lists patients taking 3 or more medications for chronic conditions. Spousal patient profiles are also reviewed for MCA eligibility. Some patients are also identified opportunistically by computer prompts when a new or refill prescription is entered into the dispensing software system, or by patients requesting a medication review service.

2. Patient Recruitment

A member of the pharmacy staff (generally a registered technician, pharmacy assistant, or the front store manager) telephones patients on both lists inviting them to make an appointment for an MCA. The staff member then schedules the appointment on the web-based software. When telephoning patients to schedule MCA appointments, the pharmacy staff add hand-written notes in the margins of both printed reports indicating the recruitment status of each patient (e.g. MCA appointment scheduled [date, staff initials]; or telephoned – no answer [date, staff initials]). The reports with hand-written notes are filed in a folder chronologically.

Patients who request an MCA or who are identified via computer prompts during prescription drop-off or pick-up are generally are asked to schedule an appointment unless enough staff are present to adequately manage the dispensary. All patients are called 1-2 days before their appointment as a courtesy reminder. Patients are asked to bring all of their medications to the MCA, including prescription, natural health products, and over-the-counter medications.
3. **MCA Preparation**

The day of the MCA, the pharmacist reviews the patient’s profile and previous MCA service forms. The pharmacist then selects which fields (personal patient information and medications) of the MCA service forms he/she wants populated by the software and prints all MCA service documents. The printed documents are left in the office in advance of the MCA. Occasionally, the registered technician completes this MCA preparation step.

4. **MCA Consultation**

   a. **Introduction:** All MCAs start with the pharmacist or student pharmacist introducing him/herself and explaining the purpose of the consultation. The MedsCheck Patient Acknowledgement of Professional Pharmacy Service form is then given to the patient to sign.

   b. **Information Collection:** The flow of the MCA generally follows the MOHLTC’s Pharmacist Worksheet form: starting with overall health status, lifestyle, and medication allergy questions. Next, the pharmacist asks the patient about their prescription medications, including questions on when, why, and how the medication is taken. The pharmacist asks if the patient is having any difficulties with each medication, and offers specific possible side-effects that the patient may be experiencing. This same process is followed for natural health products and over-the-counter medications. Then the pharmacist asks about any medications or antibiotics that have been discontinued in the last 3 months.

   c. **Advice/Training:** The pharmacist offers suggestions to help the patient deal with any difficulties that he/she might be experiencing with their medications. The pharmacist also provides training for any medical devices.

   d. **Referrals:** When serious concern(s) about medications arise, the pharmacist asks the patient to book an appointment with their physician and tells the patient that he/she will also follow-up with the physician.

   e. **Documentation:** The pharmacist’s main focus during the MCA is the completion of the Personal Medication Record Form because a photocopy of this form must be given to the patient at the end of the consultation. Before photocopying, the pharmacist reviews its content with the patient.
to ensure that the patient understands and agrees with all the information (e.g. medication names) on the form.

The face-to-face portions of the observed MCAs took 25-50 minutes. The average time of the 4 observed MCAs in this pharmacy was 39 minutes. This is consistent with the time estimates given by an interviewed pharmacist.

5. Post-MCA

As time permits after the MCA, the pharmacist completes the redundant sections of the documentation and updates the patient’s profile based on the MCA consultation. The pharmacist faxes the Personal Medication Record form to the patient’s physician indicating if follow-up issues were identified in the MCA. The fax delivery confirmation sheet is retained and added to the MCA forms. The hard copies of all MCA forms are then placed in a box on a counter in the dispensary. The pharmacy assistant scans them into the patient profile and files them in boxes in the basement when time permits.

6. Follow-Up

Formal, remunerated MCA Follow-ups are not scheduled and generally occur on an as-needed basis when a patient drops off or picks up their prescription. Follow-ups are conducted when a patient was recently discharged from a hospital, has a planned hospital visit, or is non-compliant to a medication. Informal follow-ups to discuss an unresolved patient question immediately following an MCA are generally conducted over-the-phone.

7. Quality Assessment

The pharmacy also has quality control measures. The owner stated that feedback about the MCA service is solicited from both patients and pharmacy staff. The owner also said that he/she conducts spot checks of completed MCA service forms to ensure consistency of quality across MCA documentation. Also, the owner has MCA quality control measures specific to student pharmacists. Student pharmacists in their last year of their studies are permitted to conduct MCAs independently with the approval from a pharmacist. All service forms for MCAs conducted by a student pharmacist are reviewed for quality.
Integration of MCA Process with Other Professional Services

The MCA service appears to be well established in this pharmacy, provided alongside dispensing and non-dispensing services. The MCA process is not integrated into the dispensing process; instead, the two processes are separate and distinct.

The MCA service was, however, integrated into one professional service: the pharmacy’s clinic days. This pharmacy’s clinic days were held 3-4 times per year and were each dedicated to a specific disease (e.g. osteoporosis, heart disease, diabetes). Patients with the disease in question were contacted by pharmacy staff and offered appointments with both a nurse, for point of care testing specific to the disease, and with a pharmacist for a medication review. For eligible patients, the medication review was billed as MCAs.
Figure 3: Dispensary Floor Plan with MCA Workflow
D. Implementation Strategies

Four MCA implementation strategies were observed in this pharmacy:

1) The first is that the MCA service is systematically offered to all eligible patients. The pharmacy’s dispensing software supports this strategy by having report printing capabilities to identify eligible patients. All pharmacy staff members are trained to recruit patients for the service and are given a telephone recruitment script to ensure consistency in recruiting. Any available staff, generally a pharmacy assistant or front store manager, telephones each patient listed on the reports to offer them the service.

2) The second implementation strategy is the use of an appointment system. MCAs are scheduled when sufficient dispensary staff is available (generally Monday to Friday) to simultaneously maintain the dispensing processes. To support this strategy, a pharmacy assistant or front store manager places reminder telephone calls to minimize the number of patients who miss their appointments. If an appointment is missed, the patient is contacted to re-schedule.

3) Dispensary staff scheduling is a key MCA implementation strategy in this pharmacy. The owner schedules sufficient staff Monday to Friday to manage the increased workload caused by MCA consultations. Efforts are made to ensure either a second pharmacist (usually the owner) or an experienced student pharmacist is present in the pharmacy when MCAs are conducted. If the owner or a student pharmacist is not available, the registered technician runs the dispensary and manages patients’ expectations about wait times for their prescriptions to be dispensed (e.g. estimates how long the pharmacist will be occupied with the MCA and relays this information to the waiting patient).

4) The fourth MCA implementation strategy is to conduct MCAs as part of the pharmacy’s disease-specific clinics (e.g. diabetes, cardiovascular disease and osteoporosis). Like MCAs, these clinics are appointment based with a telephone reminder. Pharmacy patients with the disease in question are contacted and invited to book an appointment with a nurse for point of care testing (e.g. blood sugar levels, blood pressure, bone density T-scores) and to answer patient’s disease-specific questions. A second appointment is booked to for the patient to speak with a pharmacist, which, for eligible patients,
results in an MCA. The clinics are generally about 6 hours long and are held 3-4 times per year. Clinic costs (e.g. hiring the nurse) are paid by the pharmacy. Clinics are not sponsored by drug companies or affiliated with any associations (e.g. Heart and Stroke, Diabetes Canada).

E. MCA Outcomes

Employee and Pharmacy Outcomes

Staff satisfaction: Although not discussed in detail, most pharmacy staff indicated that providing MCAs was rewarding. For example:

“… it is rewarding because that’s when you… it feels like you are making the most impact on the patient’s health.” [A2]

Sustainability: The MCA service in this pharmacy seems normalized in that it is incorporated into the daily routine of the pharmacy. As one staff member said:

“[MCA] is part of practice here. So we try to continually implement it, and umm, have MedsChecks happen during every day of our practice. It doesn’t always happen like that, but it’s a part of the – a part of our day, for the most part” [A2]

Another factor supporting sustainability is the frequency of the MCAs. The owner indicated that 6-10 MCAs are conducted per week. Indeed, this pharmacy also has a large number of repeat MCA recipients. Pharmacy staff deliberately recruits patients who are prior MCA recipient. Indeed, during 2 of the observed MCAs, the patient commented on previous MCAs they had received in the pharmacy. While the pharmacy does keep written (notes in the margins of printed MCA reports, which are filed in the pharmacy) and electronic records (on each patients’ profile) of MCA services, the pharmacy does not have a systematic method of quantifying repeat MCA recipients (e.g. a spreadsheet) or of quantifying the number of refused services.

Patient Outcomes

Patient satisfaction: MCA recipients seem to like the MCA service that they receive in this pharmacy. Following an observed MCA consultation, the patient told the researcher that she appreciates the time and knowledge of the pharmacist during the consultation (note that this was unsolicited feedback). Also,
all dispensary staff interviewed said that patients are generally receptive to the service. Indeed, some patients directly request to have a medication review.

Another indicator of patient satisfaction with MCAs is the large number of repeat MCA recipients. If patients were not satisfied with the service they would not return for another one, nor would they directly request to have a medication review.

*Staff perception of patient benefit:* The ultimate goal of MCA is to “support optimal patient health outcomes”\(^1\). All pharmacy staff interviewed identified patient benefits from an MCA. Examples of patient benefits identified included improved medication adherence through simplified medication regimens or provision of compliance aids, identification and resolution of drug interactions and improved usage of medical devices – such as glucometers and inhalers - as a result of observation and feedback. Indeed, during the MCA observations, the researcher observed the pharmacist identifying drug-related problems, checking and correcting patients’ device techniques, and providing education or suggestions aimed at improving the patient’s medication compliance. Each of these activities has the potential to benefit the patient through improved medication outcomes.

Appendix Z: Pharmacy B: Case Report

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A. Overview of the Pharmacy

Table 1: Pharmacy Characteristics

<table>
<thead>
<tr>
<th>Location:</th>
<th>Suburban, Greater Toronto Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership Type:</td>
<td>Franchise</td>
</tr>
<tr>
<td>Years in Operation:</td>
<td>12 years</td>
</tr>
<tr>
<td>Hours Open per Week:</td>
<td>Open 24 hours/day (168 hours/week)</td>
</tr>
<tr>
<td>Pharmacy Size:</td>
<td>Approx. 11,800 sq. ft.</td>
</tr>
<tr>
<td>Dispensary Size:</td>
<td>Approx. 1800 sq. ft.</td>
</tr>
<tr>
<td>Average Daily Prescription Volume:</td>
<td>350 without blister packaged drugs; 550 including blister packaged drugs</td>
</tr>
<tr>
<td>Average Weekly MCA Volume:</td>
<td>6-10</td>
</tr>
<tr>
<td>Total Full Time Equivalent (FTE)* Dispensary Staffing:</td>
<td>1 Owner 0.35 FTE (in this pharmacy)² 1 Manager 0.83 FTE 7 Staff Pharmacists 4.48 FTE 3 Full Time**; 4 Part Time 3 Registered Technicians 0.55 FTE 3 Part Time 9 Pharmacy Assistants 5.50 FTE 5 Full Time; 4 Part Time 3 Students/Interns Unknown¹</td>
</tr>
<tr>
<td>Appointment Scheduling Software:</td>
<td>None - appointments are managed by individual pharmacists</td>
</tr>
<tr>
<td>Non-Dispensing Patient-Care Services Offered:</td>
<td>• MedsCheck Annual, MedsCheck at Home, MedsCheck Diabetes, Pharmaceutical Opinions, Nutrition Counseling, Vaccinations (e.g. flu), Prescription Adaptations and Renewals, Smoking Cessation, Methadone Services, Point-of-Care Screening (i.e. A1c, Cholesterol, Atrial Fibrillation), Injection Training (e.g. for Biologic), Insulin Start-Up Counseling, Call Back Program for children prescribed antibiotics</td>
</tr>
</tbody>
</table>

* Total FTE is calculated at 40 hours/week based on an 8 hour day, 5 days per week³  
** Full time or part time status was determined by the owner who considered 33 hours/week or more to be full time.  
¹ Some interns are international student volunteers.  
² The owner works 1.05 FTE total across all of his/her pharmacies.  
Pharmacy and Owner History

In 2004, the pharmacy was built on the outskirts of a suburban town in the Greater Toronto Area. It was the first building erected, in what is now a plaza. The pharmacy was originally surrounded on 3 sides by open fields. Indeed, when first built, the pharmacy owner attempted to have a celebratory pizza party for the staff and was told that the pharmacy was located outside of the delivery area for the town. According to the owner, the pharmacy has been increasingly profitable year over year.

The owner of this pharmacy received a BScPhm in 1999, and has worked in the same community pharmacy franchise since 1996, starting as a pharmacy student. Since 2002, the owner has owned 5 franchise pharmacies. Currently, he/she owns 3 pharmacies, of which the case pharmacy was the first.

The owner’s work philosophy is focused on relationship building with patients and other health care professionals. This owner attributes this work philosophy to the clinically-minded mentor and owner of the first pharmacy in which he/she worked as a student. Upon graduation, he/she continued to work for this mentor who encouraged the design and implement innovative programs in the pharmacy, including disease-specific presentations for pharmacy patients and an educational program for school children to improve health literacy. The owner is now a Certified Diabetes Educator (CDE) and is affiliated with both the University of Toronto and the University of Waterloo.

Pharmacy Environment

Location

The plaza is located near the intersection of a main street and a secondary highway. There is little foot traffic in the plaza and all observed customers arrived at the pharmacy via automobile. The plaza consists of an extensive parking lot with a bank, a gas station, a discount grocer and 2 large commercial buildings housing approximately 20 businesses. The pharmacy is located in one of the large commercial buildings with a dentist’s office and a walk-in medical clinic with 2 primary care physicians. The other commercial building has an optometrist and a metabolic clinic with nutritionists/dieticians and fitness/mindfulness instructors, as well as retail shops and restaurants.
Across the highway from the plaza is a new acute care hospital with 457 beds. The area behind and surrounding the hospital is not yet developed. Nearby the pharmacy is a full service long term care home with 133 beds. According to the owner, there are approximately 12 competing community pharmacies located near the pharmacy.

The surrounding neighbourhood is predominantly residential with a mix of row houses and detached homes. There are two elementary schools, one secondary school, a soccer club as well as several public parks and walking trails nearby.

_Catchment Area and Pharmacy Clientele_

According to the owner, the population of the pharmacy catchment area consists of predominately younger, affluent families. However, according to the owner, the pharmacy’s clientele includes customers from the catchment area as well as patients from neighboring cities and towns who travel upwards of 40 kilometers to attend the pharmacy. The owner attributes the willingness of the clientele to travel to the pharmacy to the patient-pharmacy staff relationships. The pharmacy is also located in very close proximity to a hospital that specializes in diabetes, drawing patients from out of town. Many of these patients also attend the pharmacy. The vast majority of the pharmacy’s clientele speak and understand English. The owner estimated that 10% of the dispensed prescriptions are paid in cash, 30% are covered by the Ontario Drug Benefit Plan and 60% covered by private insurers.

_Phrarmacy Structure_

The pharmacy is the second largest store in the plaza. The front wall of the pharmacy is fully windowed with a separate entrance and exit. The front windows have advertisements as follows: open 24 hours, ATM inside, “Food Essentials”, and the Pharmacy’s Corporate Loyalty Points.

_Front Store_

The pharmacy’s front store departments and services include a beauty boutique, a digital photo lab, an ATM, and a food section with both frozen and fresh foods. The front store has 7 large rectangular shelves, which are arranged perpendicular to the front of the store. These shelves carry cosmetics, dental and personal hygiene products, over-the-counter drug products and seasonal products. On the opposite
side of the pharmacy are the food products located on 6 smaller shelves. The natural health products are located on the back wall in a large U-shaped display. At the front of the store is a long shelf with greeting cards. There are 5 cash registers, of which 3 are self-serve.

The walls of the pharmacy are painted bright white with large light blue and yellow rectangles near the tops of the walls, advertising different departments. Despite the tall shelves, the front store feels large, possibly because of the high ceiling and the ample natural light. Music is playing quietly over the intercom with occasional store announcements.

On either side of the dispensary on the back wall is an associate’s office and a consultation room, both of which are accessed from outside of the dispensary. In front of the associate’s office is a patient waiting area with 5 chairs, a table and some children’s toys. The blood pressure machine is also located in the waiting area. An ‘Information Center’ with disease and service specific information pamphlets is on the edge of the dispensary counter, facing the waiting area. Additional advertising near the dispensary includes posters for clinical services and prescription fee discounts for ODB patients. Upon flu season, 3 signs were added advertising influenza immunizations.

Dispensary

See Figure 1 for the floor plan of the dispensary. The dispensary is located at the center of the back wall of the pharmacy. It is level with the front store (not raised) and has a low front counter, enabling patients to easily see into the dispensary.
Figure 1: Dispensary Floor Plan
The front counter runs the full length of the dispensary. Signs on the counter indicate prescription drop off, near the waiting area, and prescription pick-up, near the consultation room. The pick-up and drop off counters each have two stations separated by 2 foot fogged glass dividers. Under the center portion of the counter are large drawers holding filled prescriptions, filed by the patient’s last name.

The prescriptions dispensing counter is located behind the front counter. In front of the dispensing counter is a tall display holding over-the-counter medications obscuring patients’ view the dispensing counter. The dispensing counter holds a weighing scale, pill counter trays, auxiliary labels, prescription bags and a small raised shelf for ‘fast moving’ medications. It also has three trays: one for logs (prescriptions given to the pharmacy that are not yet filled), and two for paper prescriptions (one for narcotics and one for non-narcotics). Under the dispensing counter are empty medication bottles/vials, dispensing cups and carry bottles (for methadone) as well as filing drawers. All items on and under the counter are organized and neatly labeled. The printer is located under the dispensary counter directly behind the prescription drop off station. Above the printer is a plastic compartmentalized stand that is used to organize prescriptions into a queue based on pick-up times. On each end of the dispensing counter is a computer. The fax machine is also located behind the drop off station.

Behind the dispensing counter is a wall with shelves holding stock bottles of prescription medications. The dispensary also has two safes, two fridges, a sink and a small compliance packaging room. In total, the dispensary has 6 computers and two cash registers.

Consultation Room

See Figure 1 for the floor plan of the consultation room. The consultation room is completely enclosed and has a sliding door, accessed externally of the dispensary. Inside the room are two filing cabinets, a fridge for vaccines, a small desk and two chairs. The room is small, accommodating only 2 people. The desk is pushed into the corner of the room and holds vaccination supplies that are organized in trays and are neatly labeled. Under the desk are a garbage and a ‘sharps’ bin.

During flu season the consultation room is reserved for administering flu immunizations, so MCAs are conducted in the associate’s office. The associate’s office has a large desk in the middle of the room,
separating the pharmacist from the patient. The room also has a computer with access to the internet and the patient’s profile. A large wall storage unit covers the back wall behind the pharmacist’s chair.

**Dispensary Staffing**

See Table 1 for full time equivalents. In addition to the owner, the dispensary has a full-time\(^1\) designated manager. The dispensary employs 7 staff pharmacists, 3 of whom are full-time employees. There are also 3 part-time registered technicians and 9 pharmacy assistants, 5 of whom are employed full time.

According to the owner and the manager, the dispensary often has student/intern pharmacists. Students/interns were present during each site visit.

During each of the 4 site visits, a minimum of 4 staff were working in the dispensary. This typically included 1 pharmacist, 2-3 assistants and 1-3 student/intern pharmacists. However, on busier days (usually Mondays and Fridays) more staff members were scheduled, including an overlap clinical pharmacist. Indeed, 3 of the site visits occurred on Fridays and staff included 2-3 pharmacists (1 dispensing pharmacist and 1-2 clinical pharmacists), 4-5 pharmacy assistants, and 1-3 student pharmacists/interns. Despite the number of employees, the dispensary never seemed crowded.

**B. Dispensary Work System**

See Table 2 for a list of the pharmacy characteristics that support best practice MCAs categorized according to SEIPS work system components. Below are descriptions of these characteristics.

**People**

*Dispensary Staffing:* This dispensary employs a total of 19 staff members (excluding the owner and manager), of which 11 are part-time employees. Part-time employees seem to fit well into the workflow of the dispensary, in part because job descriptions are relatively static and many jobs only require a part time commitment. Putting away inventory orders, for example, is a job that is completed by 1 pharmacy assistant and requires only 3 half days per week. Other dispensary staff members work part-time by choice. For example, all 3 registered technicians are part-time employees because they all chose to work

\(^1\) The owner considers 33 hours per week (or more) to be full time for pharmacists.
at the hospital as well. In the pharmacy, these part-time technicians are responsible for filling compliance packaging, which only requires part-time hours.

Staff pharmacists: Pharmacists seem committed to the pharmacy. Seven of the 8 staff pharmacists (including the designated manager) started, and have continued, their careers in this pharmacy. Indeed, the owner said that many of the student pharmacists completing placements in the pharmacy express a desire to continue working in the pharmacy after graduation. Pharmacists are also relatively recent graduates. Seven of the 8 pharmacists have graduated in the past 8 years, 4 of whom did so in the last 2 years. In total, the pharmacists have an average of 6 years of community pharmacy experience (Range: 2 to 18 years).

Dispensary staff-patient relationships: The owner stressed that staff-patient relationships positively impact outcomes for both the pharmacy (i.e. customer retention) and the patient (i.e. more likely to follow health advice). Indeed, all 3 of the staff interviewed in this pharmacy stressed the importance of relationships with patients. Also, during observations, patients and pharmacy staff were observed acknowledging each other by name (either first or last). Pharmacy assistants manning the pick-up and drop-off counters were often observed chatting with patients. For example, ‘How are you doing today?’ was a frequent question posed to patients, in attempts to make the interaction personable, and start or strengthen a relationship.

Pharmacists’ interviewing skills: Two different pharmacists were observed conducting MCAs in this pharmacy. During the consultation, both pharmacists asked open-ended questions and provided the patient the opportunity to ask additional questions. Both pharmacists ensured the information provided to the patient/caregiver was understandable to them (e.g. ‘does this make sense to you?’). Pharmacist body language during the MCAs was inviting: facing the patient, with shoulders tilted forward. Both pharmacists made frequent eye-contact (when not writing) with the patient/caregiver. Both pharmacists also demonstrated active listening by repeating back patients’ comments, asking questions and showing genuine empathy to the patient’s struggles.
*Patient-pharmacist interactions:* The observed patient-pharmacist interactions were never rushed. Indeed, all dispensary staff interviewed talked about the importance of ‘taking the time’ and ‘sitting down with the patient’. The observed MCA services were un-interrupted face-to-face interactions, averaging 20 minutes (range: 15 to 25 minutes). If the MCA took place while a prescription was being filled, the pharmacist who conducted the MCA also matched the dispensed medications to those listed on the Personal Medication Record form with the patient (this activity was excluded from the calculated time of the MCA consultation, as it occurred at the pick-up counter). Other patient-pharmacist interactions were observed during counseling for prescription medications. These interactions were not rushed, even when other patients were queued to speak with the pharmacist. For example, when counseling on a medication at the pick-up counter, pharmacists were observed spending up to 5 minutes answering patient’s questions without ever exhibiting impatience.

*Owner:* As mentioned in Section A.2, the owner focused on innovative clinical services as well as relationship-building. This innovativeness and relationship-focus has been carried over to this pharmacy and contributes to the comprehensiveness of the pharmacy’s clinical services. For example, the owner, manager and staff pharmacist all talked about the point-of-care testing (e.g. A1c, cholesterol, blood pressure) that often accompanies MedsChecks, especially MedsCheck Diabetes.

The owner also fosters a work atmosphere that encourages growth in pharmacy staff. The owner talked about promoting front store clerks to pharmacy assistants and encouraging (and funding) pharmacy assistants to become registered technicians. The pharmacy manager also talked about how the owner is grooming him/her to become an associate in the future.

*Designated Manager:* In addition to the owner, this pharmacy has a designated manager. The manager graduated in 2008 with a BSc. Pharm. and has worked in this pharmacy since she was a student pharmacist. The manager is one of the pharmacy’s three preceptors for pharmacy students and interns. During the observations, the manager was often observed coaching the students, asking the students/interns to explain their through their though process for different scenarios. The topics of these
teachable moments varied between medication interactions, patient counseling and physician communications.

**Tools/Technology**

*Computer access in the dispensary:* Each dispensary staff member had an assigned work station with a designated computer associated with their job description. Generally, computers are not shared between staff members; however, the manager shared his/her computer with the student/intern pharmacists.

*Computer access in the consultation room:* Three MCA consultations were observed, all of which were conducted in different locations: the consultation room, the associate’s office and the patient waiting area (the caregiver was on crutches and preferred not to walk to the consultation room). Computer access and use was only observed during the MCA that was conducted in the associate’s office. All pharmacists used a computer in the dispensary to review the patient’s profile and research possible medication interactions before the consultation.

*Dispensing software’s MCA functions:* The prescription software in this pharmacy pre-populates the ‘current medications’ section of the Personal Medication Record form with prescription information only. According to the owner, the software does not have eligibility prompting or reporting capabilities to assist with identification of patients for MCA services.

*Pharmacy website and advertising:* The pharmacy has a website that advertises flu shots and availability of a certified diabetes educator on site. The website does not advertise medication review services. However, near the dispensary is a poster advertising the services offered, which include ‘Medication Reviews’. Also, the ‘Information Center’ on the dispensary counter facing the waiting area contains both health service pamphlets (which include ‘Medication Review’ services) and medication review-specific pamphlets. The pharmacy also hands out fridge magnets that advertise services including ‘Patient Counseling’ and ‘Home Visits & Consultations’. Lastly, the pharmacy has a bi-weekly advertisement in the local newspaper promoting the pharmacy’s 12 year record of receiving the Best Pharmacy Award and the Best Pharmacist Award for their town.
Tasks

This section describes characteristics/features relating to task completion in the dispensary. See Section C for detailed dispensing and MCA workflows.

*Job descriptions:* Dispensary employees in this pharmacy are designated explicit jobs, and these jobs are designed so that each worker specializes in a type of work. For example, posted in the dispensary are descriptions of the different pharmacy assistant jobs: 1) stocking inventory orders; 2) prescription entry; 3) prescription filling; and 4) bagging and handing prescriptions to patients (see Section C.1 for a more detailed description of the dispensing process). Indeed, different assistants were observed in each of these 4 distinct jobs. A pharmacy assistant said that assistants almost always perform the same job each shift.

Pharmacists also have explicit jobs in this pharmacy. For example, overlap pharmacists are scheduled at specific times every week with the sole role of conducting clinical services. Another pharmacist job is to check prescriptions during dispensing. The owner encourages pharmacists to provide services relating to his/her area of specialization (when applicable). For example, one pharmacist has a nutrition degree, so this pharmacist’s job includes holding nutrition counseling clinics.

While the owner and the designated manager do not have written job descriptions, they both have distinct roles. The owner is responsible for interacting with corporate head office, creating yearly business plans, the pharmacy’s financials and the macro-level oversight of the entire pharmacy including the front store and the dispensary. The owner is responsible for hiring and firing employees and for creating the employee schedules. The manager has a supervisory role in the dispensary, ordering supplies and drug inventory, managing changes to staff schedules (e.g. vacations, staff calling-in sick), resolving minor employee conflicts and managing non-patient related appointments in the dispensary (e.g. drug representatives, health and safety inspections).

*Responsibility for completion of daily tasks:* Responsibility for task completion is based on employee job descriptions and exhibits a horizontal division of labour, similar to an assembly line. Staff members do
not share responsibility for task completion; however, dispensary staff were observed asking for, and receiving, assistance when needed, in order to ensure smooth running of the dispensary.

Registered technician expanded dispensing role: All three registered technicians are part-time employees with the primary responsibility of filling and checking compliance packages. The owner said that registered technicians occasionally also complete the technical check of the prescription, freeing up pharmacists for clinical services such as MCAs. However, no registered technicians were observed during the site visits.

Support staff role in MCA process: Identification of eligible patients for MCAs is primarily accomplished during the dispensing process by 1) the pharmacy assistant at the drop-off counter when entering a prescription into the patient profile, and 2) by the dispensing pharmacist while checking prescriptions. Indeed, both the assistants and the pharmacists were observed identifying eligible MCA patients. The pharmacy assistant who was interviewed also said that she assists with MCA documentation by obtaining patient signatures on the Acknowledgement of Service form; however, this was not observed.

The Organization

What distinguishes this pharmacy: The owner of the pharmacy noted three important features that distinguish this pharmacy: relationships with patients, the number and variety of professional services offered and the integration of the pharmacy into the local health care system. In regards to staff-patient relationships the owner said:

“…it's all about people and relationships. So not about product. Anybody can sell what you sell, anybody can do what you do. But nobody can replace the relationships that you create. So, I'm big on creating those relationships with people. Uh, everybody in the store, not just the pharmacists. So, the assistants, the cashiers, the cosmetician, the merchandiser - everybody. Their job is to create relationships.” [B1]

Indeed, as previously mentioned, all dispensary staff interviewed discussed the importance relationships with patients. The owner also noted the multiple different clinical services offered in the pharmacy and new services that will soon be offered (e.g. genomic testing). Lastly, the owner talked about the
importance of integrating the pharmacy into the local health care system. For example, the owner established the pharmacy as one of 2 designated insulin start-ups through the Diabetes Education Center in the town. He/she also supports the local hospital’s mental health ward through: 1) fund-raisers, 2) coordinating transportation of patients to the local YMCA for exercise and 3) through monthly hospital visits by a cosmetologist teach patients about beauty products and their application.

**Pharmacy professional services:** The owner noted the numerous different clinical services offered in the pharmacy – many of which are provided free of charge to the patient (e.g. nutrition counseling, point of care testing and home visits for medication counseling; see Table 1 for a complete list of clinical services). Besides MCA services, pharmacists were observed independently renewing prescriptions, providing Pharmaceutical Opinions, providing device training (i.e. diabetes blood sugar monitors and Epipens), administering the flu vaccine and conducting nutrition counseling. The owner believes that these professional services help build staff-patient relationships.

**Early adopter of medication reviews:** This pharmacy began providing medication consultations before 2007, when the MedsCheck program came into effect through a program created in the pharmacy called ‘Seamless Care’. Student pharmacists conducted medication review consultations with patients recently discharged from a hospital. A medication reconciliation was completed, comparing the patient’s medication list from the hospital discharge and the patient’s profile. The student pharmacist would communicate the changes with the patient’s family doctor to ensure he/she was informed of, and understood, the changes to the patient’s medication regimen. Indeed, the Ontario Ministry of Health\(^2\) identifies patients recently discharged from a hospital as a target demographic for both MCAs and MedsCheck follow-ups. In addition to this service, the pharmacy also offered home visits for medication reviews before the provincial government provided re-imbursements for this service.

Motivational Strategies: The pharmacy owner does not use quotas or targets for MCA services. Instead, a goal of having a positive effect on a patient’s life at least once per shift is set by the owner. In the dispensary, these positive experiences often include clinical services such as MCAs and Pharmaceutical Opinions. Patients are encouraged to share their positive experiences with the pharmacy owner. When a patient shares a positive experience and the name of the dispensary staff with whom the interaction took place (an indicator of a staff-patient relationship, according to the owner), the owner celebrates the experience with the staff. The staff members’ photo(s) and a description of the patient’s feedback are put onto a plaque and are showcased in the staff area as a ‘Life Changing Moment’. The aim is to celebrate these ‘Life Changing Moments’ and to highlight the work of the staff, thereby encouraging further positive patient interactions.

The owner has other extrinsic motivational strategies, most of which include the acknowledgement and sharing of achievements, whether personal (e.g. birth of a child, new home purchase) or work related (e.g. completed education, external award recipients). Other strategies are financial, for example, offering an annual $500 scholarship for staff or children of staff based on grades and extra-curricular activities or, as previously mentioned, paying for extracurricular training (e.g. methadone dispensing), education (e.g. continuing education courses for pharmacist) and professional licenses (e.g. technician licence fees).

Organizational climate: This pharmacy has a positive people-oriented organizational climate that appears to be passed down from the pharmacy owner and embraced by pharmacy staff, for example, the pharmacy owner’s focus on relationships and services rather than products. In addition, the pharmacy owner encouraged the employees to continue to develop professionally, as discussed above.

There was an obvious sense of group cohesiveness amongst dispensary staff. Staff seemed to be efficient and worked well together. They were also often observed chatting with each other (while working) about non-work related topics such as children, food and beverage preferences, and personal health. Good-humoured jokes were also shared between the pharmacist and the assistants. One assistant in particular
seemed to be the brunt of most jokes; however, the assistant always either contributed to the joke or laughed along and never seemed put off.

*Customer-focused staff:* The dispensary staff members are very customer-focused. Because of the pharmacy’s high daily prescription volume (350 prescriptions/day), patients are often waiting in line to either drop off or pick up their prescriptions. Despite the lineups, the pharmacy assistants and pharmacists ensure that all patients leave the dispensary satisfied. To this end, two strategies used by pharmacy staff were observed: 1) greeting patients immediately and letting them know they will be helped shortly, and 2) ensuring that each patient has their undivided attention when it is his/her turn at the counter. For example, an elderly patient dropped off a prescription at the pharmacy and asked the assistant to have her medications synchronized. The pharmacy assistant seemed happy to help with the request and asked that a second assistant come help the other patients waiting in line to drop off prescriptions so that he/she could properly focus on the medication synchronization, uninterrupted. Indeed, the customer-focus seemed a top-down initiative as a document titled [Pharmacy Name] Values and Beliefs was found in the dispensary near the prescription bagging area. The first topic of the document was to “dominate in customer service”.

*Pharmacist leadership style:* During the site visits, both the designated manager and a staff pharmacist were observed supervising the dispensary with two very different leadership styles. The designated manager had a directive leadership style in that he/she was observed instructing staff, actively delegating tasks and switching pharmacy assistants’ jobs (e.g. the prescription filling assistant was asked to switch jobs with the prescription entry assistant). The manager also took personal responsibility for educating and testing student/intern pharmacists’ knowledge and to seek out opportunities for clinical services. The pharmacist, on the other hand, was friendly and approachable but seemed to have a laissez-faire leadership style, letting staff do their jobs without delegating tasks. The pharmacy owner was observed in the pharmacy on one shift; however, he/she seemed to leave the day-to-day management of the pharmacy to the pharmacy manager or pharmacist and did not participate in clinical activities.
Communication systems: This dispensary has a complex set of communication systems. Staff members use formal and informal methods of communication. Formal communications include Monday morning group huddles, conducted to discuss new drugs, Health Canada alerts and current front store promotions. Employees that are not present during the group huddle are expected to read and sign the huddle sheet, located on the side of the fridge near the compliance packaging room. Old huddle sheets are filed in a binder that is kept in the dispensary for easy access. Top-down communications from the corporate office are provided through the corporate intranet. The pharmacy owner includes these communications in the weekly group huddles. Formal communications specific to compliance packaging are written down in a binder that is kept in the compliance packaging room and all technicians are required to review the communications binder before starting their compliance pack duties. A less formal horizontal communication strategy uses a group chat/text message system involving all employees in the dispensary. Employees use this messaging system to ensure everyone is comprised of the on-goings in the dispensary. When necessary, staff members also send text messages to each other and to the owner. Patient specific information is not sent in the group messaging system or via text. The staff members seem to appreciate this group messaging system and texting communication strategy. As one employee said, “…it's a good thing we have that because we can do it fast without interrupting anything too much.” [B5]

Adequacy of staffing: Scheduled pharmacist overlap is common in this pharmacy, with at least 16 hours of scheduled overlap per week. Two staff pharmacists are scheduled on busy days, specifically to conduct clinical services. This overlap occurs on the same days and times each week to facilitate appointment scheduling for clinical services. During these times, another staff pharmacist is scheduled to manage the prescription dispensing process. Indeed, the pharmacy is continuing to increase their pharmacist overlap hours, with a third pharmacist who was recently added to the clinical overlap schedule. In addition, the pharmacy manager said that the pharmacy hosts 4 or 5 APPY students/interns per year, resulting in further pharmacist overlap. Once students/interns have been assessed and are comfortable in the dispensary, they can assist with either managing prescription dispensing or conducting clinical services. See Section A.5 for more details on staffing.
Internal Physical Environment

Two features of the pharmacy’s internal environment are relevant to the pharmacy work system: 1) the private consultation room and office; and 2) the open concept dispensary. These are described in detail in Section A.

External Environment

The physical description of the pharmacy location and a description of the pharmacy clientele were provided in Section A. Other aspects of the external environment are discussed below.

Professional networks: The owner and employees of this pharmacy have substantial professional networks. First, the pharmacy employees have inter-professional relationships with some of the physicians in the nearby hospital. Patient hospital discharge papers, including prescriptions, are regularly sent to this pharmacy to be filled, often leading to the provision of an MCA. Physicians at the hospital also refer patients to specific pharmacists at this pharmacy for nutrition counseling and for insulin start-up counseling. The owner of the pharmacy has close ties to the mental health ward at the hospital. Each month, he/she sends a cosmetician to this ward to provide education on beauty products and product application. The owner also fundraises for, and arranges, transportation for mental health patients to the local YMCA for exercise. Second, the pharmacy acts as a satellite pharmacy for two nearby, long term care homes, providing overnight services on an on-call basis. Third, to initiate new relationships with physicians, the owner used to mail newsletters to physicians’ offices, providing information on new drugs and guidance on how to incorporate the drugs into the physician’s practice. This pharmacy also became one of two pharmacies in the town to be affiliated with, and trained by, the local Diabetes Education Center for counseling patients starting insulin. Lastly, the owner is affiliated with both the University of Toronto and the University of Waterloo. The owner, the manager and a staff pharmacist are all preceptors for pharmacy students.

Proximal community pharmacies: The owner estimated that there are 12 community pharmacies within 5 kilometers of the study pharmacy, making competition for patients in the area rather fierce. This hyper-
competitive environment has likely affected the number and quality of services this pharmacy offers in
efforts to attract and retain clients.

*Impact of MCA regulation changes:* While all pharmacy staff commented on the increased
documentation (and, therefore, time), overall, the 2016 changes to the MCA program were discussed in a
positive manner. For example, the manager said:

> “I like how it breaks down everything into lifestyle, non-medication related, medication-related. So, there are certain aspects that I do like. It is longer and it takes more time. Umm, which can be cumbersome. But I think that the net result is more thorough MedsChecks, which is good.” [B2]

After the changes were implemented, the owner of the pharmacy said that MCA numbers initially
decreased, but, as pharmacists became more accustomed to the new process, the numbers have
rebounded, surpassing averages before the program changes were implemented.
Table 2: Work System Factors Supporting MedsCheck Service

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<thead>
<tr>
<th>COMPONENTS</th>
<th>PHARMACY B FEATURES</th>
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<tbody>
<tr>
<td>People</td>
<td>- Owner’s prior clinical education (CDE) and experience</td>
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<td>- Teaching-oriented designated manager</td>
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<td>- Large dispensary staff with many part time employees</td>
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<td>- Loyal, recently graduated pharmacists</td>
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<td>- Pharmacists’ engaging interviewing skills</td>
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<td>- Dispensary staff-patient relationships</td>
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<td></td>
<td>- Positive, lengthy patient-pharmacist interactions</td>
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<tr>
<td>Tools/technology</td>
<td>- Computer with internet and patient profile access for MCAs</td>
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<td>- Assigned computers in the dispensary</td>
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<td>- Extensive advertising materials (e.g. newsletters to physicians, pamphlets, posters)</td>
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<tr>
<td>Tasks</td>
<td>- Support staff participate in MCA process</td>
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<td>- Written, detailed job descriptions</td>
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<td>- Individual dispensary staff responsible for completion of specific tasks</td>
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<td>- Registered technician expanded dispensing role</td>
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<tr>
<td>Organization</td>
<td>- Early adopter of medication review</td>
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<td>- Designated manager’s directive leadership style</td>
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<td>- No quotas/targets for MCAs, instead positively affect a patient once per day</td>
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<td>- Highly customer-focused staff</td>
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<td>- Extensive professional services</td>
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<td>- Positive people-focused organizational climate</td>
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<td>- Effective dispensary staff communication systems</td>
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<td>- Scheduled pharmacist overlap</td>
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<tr>
<td>Internal physical environment</td>
<td>- Private consultation room and office</td>
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<td>- Large open concept dispensary (minimal visual barriers)</td>
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<tr>
<td>External environment</td>
<td>- Affluent and loyal dispensary clientele</td>
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<td>- Established inter-professional networks</td>
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<td>- Located near a hospital and other health care professional practices</td>
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<td>- Located near many other community pharmacies (competition)</td>
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C. Workflow

Prescription Dispensing Workflow

See Figure 2 for visualization of the prescription dispensing workflow superimposed on the dispensary floor plan. Each dispensary staff has his/her own routine job that is completed in a relatively linear assembly line process. In order to coordinate the labour completed by each dispensary staff, prescription dispensing follows a standardized work process. Below is a narrative description of the process.

1. Prescription Intake

Prescriptions are received over-the-phone, by fax, and in person from a patient or their representative.

The prescription drop off station (or ‘entry’ station) is manned by a pharmacy assistant that is responsible
for receiving and checking prescription to ensure all necessary information is present and legible. By patient request, refill authorization requests are also sent to physicians.

2. *Prescription Entry into the Dispensary Software*

The same pharmacy assistant then enters the prescription(s) into the dispensary software system and prints the necessary label(s) and paperwork. A colored basket system is used to indicate the priority of the prescription: red baskets for immediate pick up (patient is waiting in the pharmacy); blue baskets for pick-up in the near future; and white baskets for delivery. Prescriptions for immediate pick up are placed in the red basket along with the label(s) and paperwork. Prescriptions for pick up later in the day or for delivery are binder clipped together with the label(s) and paperwork are binder clipped and are placed into the prescription queue (a plastic stand with labeled time slots) arranged by pick-up time. When there are no red basket prescriptions, either this assistant or the ‘next assistant pulls a prescription from the queue and place its paperwork in the appropriate colored basket.

3. *Prescription Filling*

The next pharmacy assistant in the process is responsible for prescription filling based on prescription priority. The assistant pulls the stock medication bottle(s) for the prescription(s), scans the stock bottle label(s), his/her ID badge and the prescription(s) paperwork. Next, the assistant fills the prescription. The medication(s) is placed in an empty medication vial(s)/bottle(s) retrieved from under the dispensing counter, and the printed label is attached. The colored basket with the filled medication vial(s)/bottle(s), the stock medication bottle(s) and the paperwork is again moved to the left towards the center of the dispensing counter.

4. *Prescription Checking*

A pharmacist checks that the prescription, the medication in the vial(s)/bottle(s), and the medication label(s) on the vial(s)/bottle(s) match. If the prescription is filled correctly, the pharmacist signs the prescription and places it in either the narcotic or non-narcotic prescription box on the dispensary counter.
to be filed. The colored prescription basket is moved to the left side of the dispensing counter. Either the pharmacist or a third pharmacy assistant returns the stock medication bottle(s) to the shelf.

5. **Prescription Bagging**

The third pharmacy assistant is responsible for bagging the prescription vial(s)/bottle(s) as they accumulate on the left side of the dispensing counter. A clear bag indicates a new medication that will require pharmacist counseling and a paper bag indicates a refill medication. Bagged medication(s) are filed in a drawer under the front counter by the patients’ last name. Medications for delivery are placed in a designated area of the back counter.

6. **Prescription Pick-Up**

The third assistant also hands out dispensed medications to patients or their representatives in the prescription pick-up area. When counseling is necessary, the pharmacy assistant asks the pharmacist to come to the front counter. The pharmacist either stops checking prescriptions to counsel the patient, or asks a pharmacy student to provide the counseling.

7. **Paperwork**

The paper prescriptions from the narcotic and non-narcotic containers are sorted separately according to prescription number into batches of 100. The batches are filed in a locked drawer in the dispensary.
Figure 2: Dispensary Floor Plan with Dispensing Workflow
MCA Workflow

See Figure 3 for a visualization of the MCA workflow superimposed on the dispensary floor plan. MCAs in this pharmacy are conducted both opportunistically and by appointment. Below is a narrative description of the process. Note that because of the flexibility in the MCA identification and recruitment process, steps 2, 3 and 4 may vary in sequence.

1. **Patient Identification and Selection**

   The majority of eligible patients are identified during the prescription dispensing process by a pharmacy assistant upon entry of the new or refill prescription in the dispensing database or by a pharmacist when checking prescriptions. Also, patients starting or currently using blister packs are selected and recruited directly by the pharmacist. Other patients are identified and selected for an MCA when the neighbouring hospital faxes patient discharge papers to the pharmacy, initiating new medications. Indeed, this was observed during the site visits.

2. **MCA Recruitment**

   The MCA forms are printed by the staff member who identifies the eligible patient and are binder clipped with prescription paperwork. If the clinical overlap pharmacist is working, then he/she is notified of the eligible patient and invites the patient to have an MCA (if the patient declines, then the MCA forms are shredded). If there is no pharmacist overlap, the dispensing pharmacist assess if he/she has time to conduct an MCA. If the pharmacist does not have time for an MCA, then the pharmacy assistant at the pick-up counter asks the patient if they are willing to book an appointment or to be contacted by a pharmacist at a later point to book an appointment. If the patient agrees, then the MCA service forms are filed for future use in a folder under the ‘drop off’ counter. If the patient refuses, then the MCA forms are shredded.
3. **MCA Preparation**

Regardless of patient selection or recruitment method, the pharmacist were always observed reviewing the patient profile prior to conducting an MCA to become acquainted with the patient’s medications. Occasionally, a pharmacist would also look up specific medications for interactions.

4. **MCA Consultation**

   a. **Introduction:** All MCAs start with the pharmacist introducing him/herself to the patient and by explaining the purpose of the consultation.

   b. **Information Collection:** The information collection step generally starts with the pharmacist asking about medication-specific allergies. This is followed by a review of the prescription medications: when they are taken, why they are taken and how they are taken. The pharmacist asks about specific common side-effects for each medication. The pharmacist asks about prescriptions filled at other pharmacies and about frequently forgotten medications (e.g. inhalers, sprays and eye drops). Next, the pharmacist asks the patient if they take any natural health products or over the counter medications. If the patient replies ‘no’, then the pharmacist asks if the patient takes any non-prescription medications for specific ailments (e.g. upset stomach, headache). The medication-specific conversation is followed by questions about the patient’s lifestyle including diet, smoking status, alcohol intake and exercise regimen.

   c. **Advice/Training:** The pharmacist offers encouragement for patients to be compliant with medications and makes suggestions to help the patient deal with symptoms (e.g. taking a prescription medication for chronic constipation instead of an over the counter medication).

   d. **Referrals:** When serious concern(s) about medications arise, the pharmacist tells the patient to follow-up with their physician, inquires when they are next due for a visit and tells the patient that he/she will also follow-up with the physician. Pharmacists were observed asking patients to keep up-to-date on certain testing (e.g. cholesterol, blood pressure).

   e. **Documentation:** The pharmacist’s main focus during the MCA is the completion of the Personal Medication Record Form because a photocopy of this form must be given to the patient at the
end of the consultation. The pharmacist makes sure to review the Personal Medication Record form with the patient.

The face-to-face portion of the observed MCAs took an average of 20 minutes (range: 15 to 25 minutes). Two of the observed MCAs were conducted with caregivers following hospital discharge of their relative, and one was conducted with the patient. Two different pharmacists were observed conducting MCAs.

5. **Post-MCA**

After the MCA, the pharmacist completes the documentation and updates the patient’s profile for: medication allergies, patient’s health conditions, physician information, discontinued medications, medications filled elsewhere, over the counter medications and natural health products. The pharmacist faxes the Personal Medication Record form to the patient’s physician indicating if follow-up issues were identified in the MCA. The pharmacist files the hard copies of the MCA forms by the patient’s last name in binders in the dispensary and submits the claim to ODB for remuneration.

6. **Follow-Up**

MCA follow-ups are conducted with many patients. Formal, remunerated MCA Follow-ups are not scheduled and occur on an as-needed basis when a patient drops off or picks up their prescription. Follow-ups are conducted for patients recently discharged from hospital, with a planned hospital visit, or who are non-compliant to a medication. Informal, over-the-phone follow-ups are conducted as a quick touch-point to discuss how a patient is getting on with recommendations or suggestions that arose in the MCA.

7. **Quality Assessment**

The pharmacy owner solicits feedback from dispensary patients about the professional services they receive, including MCAs. Positive feedback is shared with the pharmacy team through the owner’s ‘Life Changing Moments’ initiative. Both the staff member who identified the patient and the pharmacist who conducted the MCA are celebrated for their efforts. The owner said he has not received negative feedback from a patient regarding MCA services.
MCA service forms are also spot-checked for completeness. The owner or the designated manager reviews 3 to 4 sets of forms per month. Feedback is given to the pharmacist who completed the paperwork, as needed, in a one-on-one coaching meeting.

Integration of MCA Process with other Professional Services

The MCA service appears to be well established in this pharmacy and is integrated with the dispensing process. Indeed, the identification of eligible MCA recipients is an outcome of the dispensing process. Pharmacy assistants or the dispensing pharmacist manually screen patients for MCA eligibility while entering prescriptions into the patient profile or while checking prescriptions. Pre-populated MCA forms for eligible patients are printed and binder clipped to the patient’s prescription paperwork so that all staff along the dispensing workflow are aware that the service should be offered. The MCA consultations often occur either when a patient arrives to pick up a prescription or while a patient is waiting for a prescription to be filled. Other than the identification of eligible patients and printing the MCA forms, most of the MCA workflow is completed by the pharmacist who conducts the MCA.

MCAs are also occasionally conducted as part of the nutrition counseling clinics that are held by appointment every second Friday. A staff pharmacist who holds a bachelor’s degree in nutrition, provides one-on-one counseling with patients to discuss the patient’s medication history, medication conditions and how they relate to diet. MCAs are also conducted for eligible patients.
Figure 3: Dispensary Floor Plan with MCA Workflow (depicting opportunistic service provision during pharmacist overlap)
D. Implementation Strategies

Four main MCA implementation strategies were observed in this pharmacy:

1) Over the past year, the owner has started scheduling pharmacist overlap specifically for the provision of clinical services such as MCAs in addition to the dispensing pharmacist. Schedules remain consistent week over week, and overlap generally occurs between Mondays and Fridays from noon to 4:00 pm. Because of the success of this strategy, another clinical pharmacist has recently started being scheduled for overlap shifts on other days. When possible, patients are asked to return to the pharmacy for an MCA appointment during these overlap times. All appointments are relayed to the overlap pharmacist, who is responsible for managing his/her calendar. Another pharmacist is scheduled for 8 hours on Fridays specifically for nutrition counseling, which, for eligible patients, involves an MCA (see implementation strategy #4). None of these overlap pharmacists are responsible for checking prescriptions during these shifts; however, they were observed providing other professional services such as independent prescription renewals and administering flu vaccinations. This strategy of scheduling pharmacist overlap was a direct result of the MCA program changes in 2016 and the increase in the pharmacy’s prescription volumes which were previously barriers to MCA service provision.

2) The second strategy is to have an MCA champion. The MCA service is championed by a dedicated overlap pharmacist. This pharmacist seems to have embraced this opportunity and has created his/her own calendar for appointments (filed in a binder in the prescription drop off area) and has taken the initiative to systematically review specific groups of patients for the service (see implementation strategy #3). While other pharmacists also provide MCA services, it seems as though this pharmacist conducts the majority of MCAs. Indeed, when talking with pharmacy staff, this pharmacist was identified as ‘the Queen of MedsCheck’.

3) The third implementation strategy is having systematic methods of identifying patients for an MCA. This pharmacy has three patient identification methods. The first is during the dispensing process, either by the assistant upon entering a new prescription in the dispensing software, or by the pharmacist checking prescriptions. The MCA champion said that the dispensary staff members provide excellent
support in patient identification. The second identification strategy is to conduct MCAs with patients who are currently on or are starting compliance packaging. The MCA champion ensures that all medication compliance packaging patients receive a yearly MCA. The third strategy involves conducting MCAs for eligible hospital discharge patients, when the hospital faxes the pharmacy the patient’s discharge forms, including new prescriptions.

4) The fourth MCA implementation strategy is to conduct MCAs as part of the nutrition counseling clinics that are held by appointment every second Friday. While the researcher was unable to observe any nutrition counseling sessions, she did discuss the service at length with the owner and the manager. A staff pharmacist, who also holds a bachelor’s degree in nutrition, provides one-on-one counseling with patients who are interested in improving their nutrition. This clinic is held for 8 hours, during which the pharmacist conducts half hour individual sessions with patients. The service provides a more holistic approach to improving patients’ lives through non-prescription means. The following topics are discussed in each session: medication history, medication conditions and how they relate to diet, and a review of medications. Eligible MCA patients also receive an MCA as part of the nutrition counseling session. Nutrition counseling sessions are conducted in the Associates Office, where the pharmacist has a computer with access to the patient’s profile and the internet.

E. MCA Outcomes

Employee and Pharmacy Outcomes

Staff satisfaction: The owner of the pharmacy believes strongly in affecting patients’ lives through pharmaceutical services. The pharmacy manager and staff have embraced this belief:

    So, as a pharmacist, there's a lot of value for us because, you feel like you are making an impact on a patient's life, on their well-being... So, it affects me and my job, just in terms of, honestly, job satisfaction. [B2]

Indeed, the other staff members interviewed agreed: “I think that the satisfaction is, is seeing the patients well. And being compliant with taking the medications. Umm, getting better.” [B5]. The MCA champion also found it rewarding to use his/her therapeutic knowledge during MCAs.
*Improved professional networks:* The MCA champion talked about how her professional network has improved because of the MCA service. She said:

“…and it gives you a chance to just kind of communicate and work inter-professionally with the doctors as well. Especially, if there’s a change that needs to be done or if there’s a suggestion that you want to do… when it comes to writing recommendations, the more they see your name, the more, kind of like, you build that relationship.” [B3]

This pharmacist went on to say that she found the MCA service to be beneficial for both the patients and the physicians. The pharmacy manager also felt that MCA improved interprofessionalism:

“It will help with, as a pharmacist and as our profession to help with interprofessionalism. So communicating with other health care providers, nurses, doctors, umm, kind of having that circle of care… So it's really essential to have that communication and the MedsCheck program is one way to help make sure that we're all on the same page and sharing that information.” [B2]

*Sustainability:* The frequency of MCAs contributes to service sustainability. Between 6 and 10 MCA services are conducted per week in this pharmacy and the owner noted that the number of MCA services has increased over time. The MCA champion also indicated that the service helps retain patients, specifically through relationship building.

**Patient Outcomes**

*Patient satisfaction:* An indicator of patient satisfaction with the MCA service is the fact that patients specifically request to have medication reviews. Also, patients request that a specific pharmacist, with whom they have an established relationship conduct the MCA:

“…I actually have patients coming in requesting for appointments with certain pharmacists. Because they want to sit down and have it with the… and that's like multiple times. Or any time they get a new medication they want to sit down with the pharmacist and go over everything…” [B5]

In addition, the MCA champion said that patient’s often express gratitude and appreciation during the consultation and follow-up phone calls.

*Staff perception of patient benefit:* Pharmacy staff members perceive that patients benefit from the MCA service. When asked about patient benefits resulting from the MCAs, the first topic the manager and the
MCA champion mentioned was the identification and resolution of drug therapy problems. Both the manager and the pharmacy assistant noted improved medication compliance and medication knowledge as two key areas of patient benefit. Also, the MCA champion related how the MCAs gave him/her the opportunity to suggest de-prescribing to patients and their physicians, especially for medications for insomnia. Indeed, the pharmacy owner estimated that over 50% of MCAs resulted in Pharmaceutical Opinions. As the manager said, “So it really does help overall with patient health. So the ultimate goal is, is that, that's really the real reason why we are doing it.” [B2]. Lastly, the MCA champion said that she felt MCAs were beneficial for caregivers in alleviating uncertainty about the medications they are giving the person they are caring for.
Appendix AA: University of Toronto Research Ethics Board Approval Letter

Protocol Reference # 33914

January 25, 2017

Dr. Linda MacKeigan          Mrs. Amanda Everall
FACULTY OF PHARMACY         FACULTY OF PHARMACY

Dear Dr. MacKeigan and Mrs. Amanda Everall,

Re: Your research protocol entitled, “MedsCheck annual best practice multi-case study”

<table>
<thead>
<tr>
<th>ETHICS APPROVAL</th>
<th>Original Approval Date: January 25, 2017</th>
<th>Expiry Date: January 24, 2018</th>
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<td>Continuing Review Level: 1</td>
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We are writing to advise you that the Health Sciences Research Ethics Board (REB) has granted approval to the above-named research protocol under the REB’s delegated review process. Your protocol has been approved for a period of one year and ongoing research under this protocol must be renewed prior to the expiry date.

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events in the research should be reported to the Research Oversight and Compliance Office - Human Research Ethics Program as soon as possible.

Please ensure that you submit an Ethics Renewal Form or a Study Completion/Closure Report 15 to 30 days prior to the expiry date of your current ethics approval. Note that ethics renewals for studies cannot be accepted more than 30 days prior to the date of expiry.

If your research is funded by a third party, please contact the assigned Research Funding Officer in Research Services to ensure that your funds are released.

Please note, all approved research studies are eligible for a routine Post-Approval Review (PAR) site visit. If chosen, you will receive a notification letter from our office. For information on PAR, please see http://www.research.utoronto.ca/wp-content/uploads/documents/2014/09/PAR-Program-Description-1.pdf.

Best wishes for the successful completion of your research.

Yours sincerely,

Elizabeth Peter, Ph.D.
REB Chair

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