PHARMACY STUDENT PERCEPTIONS OF VOLUNTEERING AT A MEDICATION ASSESSMENT CLINIC LOCATED WITH A PHARMACY SCHOOL

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Abstract

Context

In 2011 the College of Pharmacy and Nutrition (University of Saskatchewan) opened a patient care clinic on campus known as the Medication Assessment Centre (MAC). The primary purpose of the MAC is to offer a faculty supervised experiential training opportunity for pharmacy students in all years of study. The early experiential education model that the MAC utilizes had not been previously evaluated in the literature.

Objective

The purpose of this study was to explore the experiences of MAC student volunteers.

Design

The perspectives of students who had volunteered at the MAC at least once between January and November 2015 were gathered through focus groups. Students were assigned to one of five focus groups based on their volunteer title and number of MAC volunteer experiences. A semi-structured focus group guide was developed and used to gather the students' perceptions on their experiences and learning as a result of volunteering at the MAC. The focus groups were recorded and transcribed. The transcripts were analyzed by three researchers using thematic analysis. The final themes were approved by the student participants and then reviewed by an additional researcher.

Results

A total of 29 students participated in this study. Students perceived that the MAC had a positive effect on their learning and competence in the following areas: (1) clinical skills (patient interviewing and communication), (2) confidence, (3) clinical and therapeutic knowledge, and (4) professional socialization. Students felt the post discussion, patient care environment and actively participating were most beneficial to their learning. The aspects of the MAC that students liked most were: (1) structure of the learning experience, (2) perceived benefit to the patient, and (3) patient care environment. Students identified several challenges to participating: (1) sign up process, (2) quality of the technology, (3) remote observation, (4) limited student knowledge, (5) clarity of student role, and (6) student initial confidence.

Conclusions

MAC student volunteers felt that the MAC is a valuable learning experience that had a positive effect on their learning and competence. Further research should focus on confirming these findings in a larger sample and using additional methodologies such as quantitative assessments of student learning and competency.

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List of Abbreviations

AFPC	Association of Faculties of Pharmacy of Canada
BSP	Bachelor of Science in Pharmacy
CanExEd	Canadian Experiential Education Project for Pharmacy
CCAPP	Canadian Council of Accreditation of Pharmacy Programs
CMM	Comprehensive medication management
CPhA	Canadian Pharmacists Association
CSHP	Canadian Society of Hospital Pharmacists
FTE	Full-time equivalent
MAC	Medication Assessment Centre
MSCL	MAC Student Clinical Leader
NAPRA	National Association of Pharmacy Regulatory Authorities
PCC	Patient-centered care
PharmD	Entry-level Doctor of Pharmacy
SCPP	Saskatchewan College of Pharmacy Professionals
SK	Saskatchewan
SMAP	Saskatchewan Medication Assessment Program
SPEP	Structured Practice Experience Program
U of S	University of Saskatchewan
US	United States

Glossary

Comprehensive Medication Management (CMM): The standard of care which ensures each patient's medications (whether they are prescription, nonprescription, alternative, traditional, vitamins, or nutritional supplements) are individually assessed to determine that each medication is appropriate for the medical condition being treated, that the medication is being effective and achieving the goals established, that the medication is safe for the patient in the presence of the co-morbidities and other medications the patient may be taking, and the patient is able and willing to take the medications as intended.

Patient-Centered Care (PCC): A philosophy of practice and model of care that focuses the patient's health and quality of life as the primary beneficiary of the pharmacist's actions, and promotes individualized treatment through the empowerment of willing and able patients (and possibly family members) to actively make decisions about their wellbeing. Patient empowerment is promoted by the health professional respecting the patient's values, expressed needs and preferences while providing personalized medical guidance.

Objective Structured Clinical Examination (OSCE): An OSCE is comprised of a series of timed interactive and non-interactive stations where a standardized patient or client (trained actor) poses a complex problem or task for the health professional to address and/or complete using a variety of basic clinical skills in a professional and ethical manner. A trained examiner observes and evaluates the student using a standardized marking key typically broken down into two sections; content (clinical skills) and communication (communication and professionalism).

Chapter One

Introduction

1.1 Overview of the Problem

The roles and responsibilities of pharmacists have undergone considerable change since the turn of the millennium. The traditional dispensing pharmacist is being replaced with the clinical pharmacist who provides patient-centered care (PCC) through enhanced clinical services such as comprehensive medication management (CMM).[1-10] Pharmacists who have successfully integrated PCC into their practices, including CMM, have been identified as being proficient in the following skills: communication, critical thinking, decision-making under conditions of uncertainty, reflectivity, collaboration, confidence, professionalism and motivation to provide PCC.[4,11-13] Conversely, pharmacists have commonly cited a deficiency in the same skills as a personal barrier to integrating PCC into their practices.[14-19]

In 2008, a national Canadian taskforce known as the *Blueprint for Pharmacy* recommended that education and training provided during the early pharmacy education be targeted as a key action item to support the provision of enhanced clinical services by pharmacists.[20,21] In particular, the Blueprint proposed an expansion of both early and advanced experiential education opportunities for pharmacy students. Although advanced experiential education is typically credited with the refinement of the clinical and professional skills, well-designed, early experiential education programs have also been shown to positively affect student learning.[22-33]

In 2007, the Canadian Council of Accreditation of Pharmacy Programs (CCAPP) announced its intention to stop accrediting Baccalaureate Pharmacy programs and released draft accreditation standards for entry-to-practice Doctor of Pharmacy (PharmD) programs, which became effective in 2013.[31,32] The importance of experiential education was reflected in these new standards, which increased minimum requirements from 160 to 480 hours of early experiential education and from 320 to 960 hours of advanced experiential education.[32,33] Many pharmacy schools struggle to meet these requirements primarily due to the limited number of high quality sites capable and willing to accept large numbers of students.[30,31,34-36] High quality clinical sites are

frequently allotted to advanced experiential education due to its timing in the curriculum and perceived superiority in preparing students for practice.[25,31,35] This may leave few high quality clinical sites for early experiential education. As a result, many institutions have to partially fulfill the early experiential education requirements with community engagement, volunteerism, and service learning. Consequently, development and exploration of new and expanded models of early experiential education programs in Canada would be useful. This need for new models of high quality experiential education became evident as a national priority when the Canadian Experiential Education Project for Pharmacy (CanExEd) was tasked to develop best practice guidelines and prototype initiatives to increase the accessibility, quality, quantity, and variety of experiential education learning opportunities for pharmacy students.[30]

In 2011, the University of Saskatchewan (U of S) College of Pharmacy and Nutrition implemented a faculty supervised experiential teaching clinic, known as the Medication Assessment Centre (MAC). The MAC is physically located on campus and provides care to patients from across Saskatchewan on a referral basis. The MAC uses reflective learning strategies, a low student to faculty ratio, and peer-teaching models to facilitate an active learning environment. Pharmacy students are encouraged to volunteer throughout their four years in the program. The experiential education model that the MAC uses has the potential to expand access to early experiential education for pharmacy students. However, this model of pharmacy-school based experiential education has not been evaluated in the literature.

1.2 Purpose of the Study

The purpose of this study was to explore the experiences of pharmacy students who volunteered at the Medication Assessment Centre (MAC).

1.3 Research Questions

The following research questions were defined to achieve the study purpose:
1) What are pharmacy students' experiences with the MAC?
   a. What do pharmacy students enjoy about the MAC?
   b. What do pharmacy students dislike about the MAC?

c. What are the challenges that exist for pharmacy students to be involved in the MAC?

d. What recommendations do pharmacy students have to improve the MAC experience?

2) What do pharmacy students perceive they learn from their involvement with the MAC?

a. What activities or experiences at the MAC do the students describe as helping them with their learning?

3) Does the number of experiences that individual students have at the MAC influence their reaction to the program, their perceived learning or their recommendations?

4) Does the student volunteer's year within the pharmacy program (e.g., 1st year, 2nd year, 3rd year or 4th year) influence their reaction to the program, their perceived learning or their recommendations?

Chapter Two

Background and Literature Review

<u>2.1 The Canadian Pharmacist</u>

      The roles and responsibilities of the Canadian pharmacist have undergone considerable change since the turn of the millennium. The traditional dispensing pharmacist is being replaced with the clinical pharmacist who provides outcomes-focused, patient-centered care (PCC) through enhanced roles and responsibilities, such as minor ailment prescribing, influenza vaccination, drug therapy monitoring, and comprehensive medication management (CMM).[1-4] CMM is one clinical pharmacist service that has gained significant public awareness and also positively affected patient health,[5] decreased costs,[6] and improved appropriateness, effectiveness, safety, and compliance with medications.[4,6-10]

      To successfully deliver PCC a pharmacist must possess skills, which include: communication, critical thinking, decision-making under conditions of uncertainty, reflectivity, collaborative intra- and inter-professional practice skills, confidence, professionalism, and motivation.[4,11-13] Several barriers have been identified for providing PCC, such as: personal reservations, time constraints, limited remuneration, public perception and support, lack of employment opportunities, collaboration, trust and respect, pharmacist presence and visibility, and hierarchical structure of the health care system.[14-17] Personal reservations of pharmacists have been argued as the fundamental barrier to practice change, which include a lack of confidence, practice experience, communication skills, clinical knowledge, reluctance to take on new responsibilities, and discomfort with ambiguous decisions.[17-19]

      The *Blueprint for Pharmacy* was a task force led by the Canadian Pharmacists Association (CPhA) to help advance the profession and achieve the national vision of pharmacists providing PCC to optimize drug therapy. It recommended a focus on education and continuing professional development for pharmacists as one of five key areas to target to overcome pharmacists' personal barriers to practice change. Specifically, the Blueprint recommended experiential education as a key item of action to: "increase in the accessibility, quality, quantity and variety of experiential education

learning opportunities [for pharmacy students]."[20] This action item has also been endorsed by key stakeholders across North America.[20,30,31,34-38]

2.2 Experiential Education

Experiential education as defined by the American College of Clinical Pharmacy (ACCP) is "a methodology in which educators engage learners in direct experience and targeted reflection in order to increase knowledge, and to develop skills, behaviours, and values (p.220)".[39] In its simplest terms, it is a dynamic process where a student gains additional knowledge after participating in a practical, real-world activity. In combination with traditional classroom teaching methods, experiential education has been shown to be effective for adult learners.[29,40] Consequently, experiential education continues to be a curriculum cornerstone and licensure requirement for many health professional education programs.[1,29]

To understand the process of experiential education, the works of Dewey and Kolb are commonly referenced in the literature.[29] Although Kolb's learning cycle (see figure 2-2-1) has been criticized,[41,42] it is useful in understanding health professional experiential education models.[27,43,44] Kolb's Experiential Learning Theory defines learning as a "process whereby knowledge is created through the transformation of experience (p. 41)".[45] Kolb's learning cycle is a well-known cyclical model in health professional education that describes the four stages that Kolb believes learners experience to create knowledge and personal meaning from experiences. The cycle begins with the "concrete experience", then moves through two complex learning processes: "reflective observation" and then "abstract conceptualization".[45] The latter two learning processes require the learner to make sense of the experience, relate it to previous knowledge, become aware of performance gaps, identify future learning needs, and assimilate the learned lessons into their existing knowledge. The cycle ends with "active experimentation", where the learner trials the knowledge they just gained in a similar subsequent situation. Kolb emphasizes that the cycle must be completed and supported (or supervised) by someone more educated in the field to allow the learner to appreciate the experience and be successful in gaining practical knowledge.[45] Dewey's writings complement Kolb's learning cycle and outline the importance of a "concrete

experience" or engaging the learner in active participation and a guided reflection process to allow learners to acquire practical rather than abstract knowledge.[46,47]
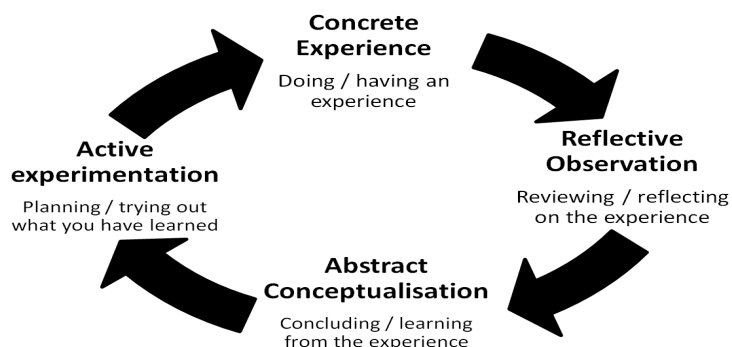
Figure 2-2-1.

Socio-cultural perspectives, although not as commonly referenced, expand on the aspect of supported learning. Socio-cultural theory emphasizes that although individuals construct their own personal knowledge from an experience, each learning experience is a collective experience between the learner and educators.[29,48] These perspectives are increasingly relevant as peer-mentorship and interdisciplinary experiential education models are becoming more common in health professional education. These theories argue the importance of considering the social environment that is created by all the individuals involved in the experience in the design of experiential education programs.[29,48]

2.2.1 Types of Experiential Education

Two types of experiential education exist in pharmacy schools - early and advanced.[29] Advanced experiential education, also known by terms such as clerkship, practicum, or apprenticeship, occurs when students engage in independent practice with limited supervision and access to supportive guidance within direct patient care workplace environments after obtaining all necessary course-based knowledge and skills. The purpose of advanced experiential education is to prepare students for their roles and responsibilities as independent practicing professionals.[29] Conversely, early experiential education occurs when students engage in a closely supervised, structured experience within a direct patient care environment, at anytime prior to completion of

their classroom-based portion of their program. The purpose of early experiential education is to give students the opportunity to gradually apply the clinical skills and knowledge learned in classroom/laboratory activities. [25,28,32,49]

To successfully deploy an experiential education program, it is recommended to rigorously plan a framework that incorporates multiple aspects of the learning cycle as outlined by the previous theories.[28,29,48] Although the learning theories previously described apply to both early and advanced experiential education, each are suggested to have slightly different frameworks to complement the skill level of the student. Since this study focuses on early experiential education opportunities for pharmacy students, the features of previously studied early experiential education programs are described in greater detail.

2.2.2 Features of Previously Studied Early Experiential Education Programs

In an effort to develop validated experiential education models (both early and advanced) for pharmacy students, the Association of Faculties of Pharmacy of Canada (AFPC) developed a national multi-stakeholder steering committee known as the CanExEd. The CanExEd recently initiated several studies and programs that will provide evidence and validated program designs when their work is complete in 2018. To assist in their investigations, they also developed a list of best practices for experiential education programs. However, this list is not specific to early experiential education programs and was primarily based on previous studies performed on advanced experiential education programs.[30,50-53]

Currently, no validated or "gold standard" framework for providing early experiential education exists within health professional training programs. However, evidence suggests effective early experiential education programs have common features that are consistent with the learning theories of Dewey, Kolb, and socio-cultural theorists. These features of previously studied early experiential education programs include: (1) exposure to a "concrete, direct patient care clinical experience", (2) reflection on the clinical experience immediately after it has been completed, (3) close supervision and guidance provided by an experienced mentor, and (4) opportunity for

the student to apply the knowledge and skills gained in another similar direct patient care clinical situation.[25,29,30,45-48] These four features are discussed in more detail below.

1. A "concrete, direct patient care, clinical experience" is thought to be essential to the student experience in an early experiential education program. The direct patient care experience must be set within a functioning practice that provides exemplary care (i.e. pharmacists providing care within their full scope of practice) in which students can be actively involved. In addition, the practice is encouraged to involve students in core components of patient care, be inter or intra-professionally collaborative, and have adequate physical space and supportive technology for student involvement.[30,53] Various degrees of active participation are noted to be useful, from direct to indirect patient care through passive observation to active involvement.[25,26,28,29,35,49,54-57] Regardless of the degree of active participation, students should be encouraged to accept some degree of responsibility and be held accountable for some extent of the patient's care. To facilitate a rich learning environment that protects patient safety, students must be assigned skill appropriate and challenging tasks that can increase in complexity as they gain experience and progress through their didactic education.[25,26,28-30,35,48,49,54-57] If these features are incorporated in the early experiential education framework, students are more likely to have a successful and motivating experience that will help them gain confidence and internalize the practice philosophy.[25-28,35,49,54-57]

2. A supported reflective practice, where the mentor and the students reflect on the experiences in a social environment immediately after it has been completed is also thought to be critical, especially when the level of active student participation is low.[25,28,29,31,35,37,45,46,49,50,54,55,58-61] The reflective process facilitates the personal integration of the experience into applied knowledge, allowing the student to gain a thorough, long-lasting understanding of the experience. Supported reflection also facilitates the development of reflective, self-assessment and life-long learning skills. Life-long learners are considered highly flexible and creative practitioners that view each life experience as an opportunity for professional

growth and assessment.[30,50] As such, life-long learning is a critical skill for any health professional and in particular it is a National Association of Pharmacy Regulatory Authorities (NAPRA) practice competency for Canadian pharmacists.[11] To further instill the skill of reflection, careful parallel integration of the experience with coursework is a preferred feature to an early experiential education framework. The sequence of classroom-based knowledge acquisition promptly followed by application reinforces of the value of the theoretical coursework.[25,26,29,31,35,55,56]

3. The third feature noted in previously studied early experiential education programs includes close supervision and guidance provided by an experienced mentor combined with the use of an effective learner-mentor model. The guidance should continue throughout the experience, and is lead by an experienced and student-focused mentor.[29,30,35,39,45,47,48,51] Mentorship provides supplemental guidance on clinical and reflective processes to facilitate a deeper learning and improvement in clinical and reflective skills.[47,50] Furthermore, the student-to-mentor ratio should be relatively low (not exceed 4:1), use a flexible model, and include an aspect of peer learning if possible. Maintaining a low student-to-mentor ratio ensures students have access to individualized guidance. Using a flexible model ensures that the learning experience can be modified to complement the direct patient care experience. Peer learning allows students to be exposed to several different role models at various levels of professionalism within a social environment. Social interactions encourage open discussion and provide opportunity to become a flexible learner, develop a personal identity, and become a more patient-centered practitioner.[25,26,29,39,48,55,56,61-64]

4. The final feature noted in previously studied early experiential education programs is the ability for the program to provide subsequent similar direct patient care situations where the student can apply the knowledge and skills that they have gained. This final feature completes the learning cycle and allows the student to solidify their knowledge and skills.[45] The early experiential education program is advised to take place within a permanent practice that employs

practitioners and peer-mentor teams in direct patient-care activities to ensure ongoing opportunities for students to be exposed to direct patient care experiences.[25,26,29,53] Although the program is advised to provide ongoing opportunities for students, the amount a student should be exposed to these learning experiences is uncertain. A high degree of controversy exists over the optimal duration and frequency of exposure to early experiential education in the health professional literature.[25,26,29,35,39,62] The current guiding principle encourages a personalized duration and frequency of the experience based on the degree of active participation and presence of other aspects of the early experiential education program.[25]

2.2.3 Benefits of Early Experiential Education in Health Professional Training

The majority of studies regarding the benefits of early experiential education of health professionals utilized qualitative and descriptive methodologies and primarily involved medical students. The studies reported outcomes based primarily on students' self-assessed perceptions of benefit. These studies found that early experiential education provided benefits in nine distinct categories, as described below.[22-24]

2.2.3.1 Confidence with patient interactions

Exposure to early experiential education can increase student's comfort and confidence in patient interactions.[65-83] Research methodologies utilized included reflective journaling,[65,72,73,82] interviews (including written program feedback)[67,68,71,75-77], focus groups,[69,71,75,82] and questionnaires[66,70,74,77-81,83]. The experiences studied varied in duration, timing, and degree of participation (from as few as 6 x 1-2 hour intermittent sessions throughout the academic year[74] to as much as 320 consecutive hours [66] of mixed observation and active participation over a summer).

2.2.3.2 Knowledge of professional roles

Early exposure to practice experiences in community sites, hospital settings, primary care, and peer shadowing programs have been shown to increase health

professional students' understanding of the health care system,[84] understanding of the role of their own profession,[67,72,74,80-83,85-88] and the role of other health professionals (when exposed to interdisciplinary settings).[83,87] The experiences studied were highly variable and included junior pharmacy students shadowing senior pharmacy students during their final clerkship for a single day,[86] first year medical students shadowing third year medical students during their clerkship for seven afternoons per year,[74] and second year pharmacy students performing medication reconciliation under supervision for three-five hour shifts.[80] Qualitative methods were primarily used, including reflective journaling,[72,80,82,87,88] interviews,[67] focus groups,[82,85] and questionnaires.[74,81,83,84,86]

2.2.3.3 Knowledge and perceived value of patient-centered care (PCC)

Health professional students with a variety of exposures to early experiential education have a stronger understanding of the importance of PCC,[65] appreciation of the individual needs of the patient,[81,82,87] empathy,[72,73,87,89] and awareness and importance of direct patient interactions.[67,73,79,80,85] Methodologies used in these studies included reflective journaling,[65,73,82,87] interviews,[67,72] focus groups,[72,82,85,89] and questionnaires.[79,81]

The degree of student exposure to early experiential education varied, such as: ten hours of active participation in a partnering program for first and second year pharmacy students with senior citizens,[79] and 60 hours of active participation with direct patient care in a community pharmacy setting.[65]

2.2.3.4 Student Attitude

Several studies identified improvements with respect to students' attitude towards their education, including increased overall motivation to learn,[67,70,81,85,89] enhanced motivation to continue their formalized training after graduation,[76,87] and increased satisfaction with the overall quality of their educational program.[68,70,76,85,90] The methods used in these studies included reflective journaling,[87] interviews,[67,68,76] focus groups,[85,89] and questionnaires.[70,79,81,89] Only one comparative study was identified that used a scaled questionnaire.[90] This study found that first year medical

students who had a combination of observation and active participation in at least five days of early clinical experience were more satisfied with their overall education program than students with fewer early experiences.[90]

2.2.3.5 Patient communication skills

After being taught interview skills within a lecture setting, health professional students who had the opportunity to actively perform patient interviews and education sessions in a variety of early experiential learning settings self-reported an improvement in patient communication skills[68,70,72,75,80-82,84,89,91-93] and preparedness to perform patient care tasks independently.[70,91] The methods used in these studies included reflective journaling,[72,80,82,93] interviews,[68] focus groups,[75,82,89] and questionnaires.[70,79-81,89-92]

Studies that used quantitative measures, such as objective structured clinical examination (OSCE) scores, to assess the impact of early clinical experiential education programs showed mixed results. Two American studies found a statistically significant improvement in medical student OSCE scores in students who actively participated in early experiences for 4 weeks after being taught the skills in the classroom[94] or via on-site instruction.[95] Another American study showed no difference in OSCE scores between medical students who were provided an additional one half-day per week of early experiential learning and those who were not.[96]

Although most studies had students actively participate in direct patient contact, one American study examined the impact of observation only. This study found a modest improvement in communication skills between second year medical students who were exposed to a clinical practice for a total of 50 hours of observation during their first year of study and those who were not.[97]

2.2.3.6 Clinical skills

Each healthcare profession has an individualized set of clinical skills that students are required to demonstrate they can proficiently perform prior to licensure. These clinical skills are commonly referred to as competencies in health professional

literature and are generally introduced in a classroom setting, developed during early experiences, and refined during advanced clinical experiences. Qualitative studies have shown that medical students who actively participated in direct patient care during their early experiential training showed an improvement in the following competencies: clinical reasoning,[81,83,85,94] physical examination,[69,72,81,94,96] generating differential diagnoses,[72] and general clinical skills.[66,70,81,83,98] Not all studies showed a positive improvement after student exposure to early experiential education programs. One American study found no difference in physical exam scores between second year medical students who had exposure to a single experiential clinical exercise and those who did not.[99] Methods used in these studies included reflective journaling,[72] focus groups,[69,85] OSCEs,[94,96,99] and questionnaires.[66,70,81,83,98]

Three pharmacy specific studies were identified (utilizing focus groups, reflective journaling, and questionnaires), which found that early experiential education has a positive impact on competency development related to recognition of relevant patient data required for problem-solving,[79,100] ability to organize data to facilitate decision-making,[100] and clinical skills needed to perform medication management and reconciliation services.[79,80,100] The degree of participation varied between these studies from 10 to 15 hours of direct patient contact,[79,80] and limited patient engagement but a heavily supervised and mentored reflective discussion.[100]

2.2.3.7 Knowledge of subject matter and study skills

A variety of early clinical experiences have been found to: (1) enhance students' knowledge of subject matter and study skills by making diseases "come alive" by seeing it first hand,[74,81,101] (2) help students learn lessons that cannot be taught through lectures,[69,72,74,85] (3) provide context for application and comprehension of didactic subject matter,[65,67,71-73,80,81,85,89,98,101] (4) facilitate knowledge retention,[72,80,81,100] and (5) build students' enthusiasm to independently seek additional knowledge.[71-73,81,102] Methodologies used in these studies included reflective journaling,[65,72,73] interviews,[67] focus groups,[69,85,89,101] and questionnaires.[74,80,81,89,98,100,101]

Three studies in the medical education field compared exam scores in an effort to measure the impact of early experiential education on student knowledge. Two out of

the three studies that used *Introduction to Clinical Medicine (ICM)* scores found statistically significant higher exam scores in medical students who had exposure to early experiences compared with those who did not.[94,102] The third study compared clerkship scores in medical students who had an additional one half day per week of early experiences versus those who did not and showed no differences.[103]

2.2.3.8 Reflective skills

One longitudinal study from the Netherlands used the *Groningen Reflection Ability Scale (GRAS)* survey to measure the first to third year medical students' personal reflection abilities. The first year students showed a steady rise in scores throughout the year, and the second and third year students plateaued in the third year. The study concluded that students exposed to early experiential education have a significantly faster growth in reflection abilities than those who do not ($P < .001$), however the effect size was notably small (0.18).[104]

2.2.3.9 Professional socialization

Hammer et al.[105] defines professional socialization as "the *transformation* from students to professionals that are able to understand and then internalize the attitudes, behaviors and values of the profession (p.552)" and professionalism as "the active demonstration of the traits of a professional (p. 552)." Professional socialization, which is believed to begin the moment students begin their educational journey, can be positively or negatively influenced through observations, interactions, and active involvement with other students, role models, academic instructors, and inter and intra professional practitioners within the health care and academic environment.[25,36,105-107] Although a list of ten traits exist to define a professional,[106] each health professional has an individualized definition of professionalism that contains a description of tailored attitudes, behaviors, characteristics, and values that uphold the fundamental principles of health care and patient safety. Due to the connection to patient safety, professionalism is a major emphasis in health professional education and research.[35,106,108]

A number of descriptive studies found that early experiential education had a positive impact on students' professional socialization in regards to developing a positive attitude toward the profession,[66,72,73,84] a sense of responsibility to the patient,[69,72] enhanced sense of self-awareness,[72,73,87] increased poise and maturity in patient interactions,[71-73,88] respect towards patients,[82,89] affirmation of their decision to become a health professional,[72,73] desire to practice to their full scope,[73] and initiating their professional development through acculturation with interactions with practicing professionals and other students.[72,74,75,80,85,88,109] Faculty members and mentors also observed an increase in students' maturity with patient and professional interactions,[67,71,77] development of behavioral and attitudinal factors associated with patient care,[71,77] and empowerment of students to take charge of their own learning.[71] Students felt that the quality of the mentor or supervisor was largely influential in their professional socialization and their enjoyment of the experience.[69-71,85,100] The early experiential education programs that were studied varied from seven-one half days every six weeks in a shadow program[74] to four full clinical days in a progressive participation role from observation to active participation.[88] The methodologies used in these studies included reflective journaling,[73,80,82,87,88,109] interviews,[67,71,75] focus groups,[69,71,82,89] and questionnaires.[66,74,84,89]

2.3 Pharmacist Education in Canada

Prior to 2007, all Canadian pharmacy schools were baccalaureate programs that offered a Bachelor of Science in Pharmacy degree. In 2007, the Canadian Council of Accreditation of Pharmacy Programs (CCAPP) announced its intention to stop accrediting baccalaureate pharmacy programs by 2020 and released draft accreditation standards for entry-to-practice Doctor of Pharmacy (PharmD) programs, which became effective in 2013.[31,32] As of 2015, approximately half of the Canadian pharmacy schools had transitioned to a PharmD program, which is designed to increase the students' baseline knowledge for the management of a broader scope of disease states and complex patients, develop cooperative abilities to work on inter-professional teams, provide more training in management and communication, and provide more clinical practice experiences.[20,31-33,110]

Although the PharmD is an overall curriculum reform, the importance of experiential education is reflected in the increased minimum requirements from 160 to 480 hours of early experiential education and from 320 to 960 sustained hours of advanced experiential education. Additional stipulations were also attached to each type of experiential education in the accreditation standards. The advanced experiential education hours must occur near the end of the program and must take place within a direct patient-care setting. The early experiential education hours are only "encouraged" to take place within direct patient care settings. If needed, early experiential education hours can be fulfilled through non-direct patient care setting such as community engagement, volunteerism, and service learning.[32,33]

Many pharmacy schools across Canada struggle to meet these experiential education requirements due to several challenges, including: site capacity, staff workload, financial/staff support and mentor recruitment, training, and retention.[30,31,34-36] However, the primary challenge for many Canadian institutions continues to be a limited number of qualified and equipped sites capable and willing to accept pharmacy students.[30,31,34-36] High quality clinical sites are frequently given priority to advanced experiential education due to its timing in the curriculum, perceived superiority in preparing students for practice, and accreditation requirements that mandate advanced experimental education take place exclusively in direct patient care settings.[25,31,35] This often leaves fewer high quality clinical sites available for early experiential education placements, requiring many schools to partially fulfill the early requirements through community engagement, volunteerism, and service learning. Although these experiences and are an integral part of the curriculum that initiate the students' professional socialization and clinical skills (e.g. communication), early clinical experiences that align with the features previously described in Section 2.2.2 (i.e., guided reflective learning, active participation in direct patient care) are required to further develop and refine these skills within a professional pharmacy setting. Consequently, the development and evaluation of new early experiential education models that closely follow the features of previously studied early experiential education programs may facilitate improved access to high quality experiential education for pharmacy students enrolled in Canadian pharmacy schools. This need for new high

quality experiential education sites with access to direct patient care became evident as a national priority when the CanExEd was tasked to develop best practice guidelines and prototype initiatives to increase the accessibility, quality, quantity, and variety of experiential education learning opportunities for pharmacy students.[30]

2.4 Medication Assessment Centre (MAC)

The University of Saskatchewan (U of S) currently offers a Bachelor of Science in Pharmacy (BSP) program, but will transition to a PharmD program in 2017. (See Appendix A for a full outline of the current baccalaureate pharmacy degree program curriculum at the U of S). The new PharmD program will place pressure on College of Pharmacy and Nutrition to significantly expand both early and advanced experiential education opportunities. To partially fulfill these expanded experiential education needs, particularly with respect to early experiences, the College of Pharmacy and Nutrition created the Medication Assessment Centre (MAC).

2.4.1 What is the MAC?

The MAC is a faculty supervised patient care clinic, physically located on campus (within the College of Pharmacy and Nutrition, in the Health Sciences Building) that provides experiential education opportunities for pharmacy students from all years of study. Faculty members, who are also licensed pharmacists, provide clinical pharmacist services (e.g., comprehensive medication management, chronic pain management) on a referral basis to patients from across Saskatchewan. Referrals to MAC are accepted from any health provider, caregiver, family member, or patients themselves. Pharmacy students either volunteer to take part in the clinical activities in between their classes (early experiential training for first to fourth year students) or are assigned to a five-week long clinical rotation as part of their final internship (advanced experiential training for fourth year students who have completed their course requirements).

The MAC was piloted from 2011 to 2013 on a limited basis, offering patient appointments only one day per week and involving a small number of fourth year pharmacy students for five-week long advanced experiential training opportunities. Based on an evaluation of the pilot program that found the patient care process to be

effective and valuable[111] the MAC began offering patient appointments on a full time basis (e.g., Monday through Friday) in February 2014. Soon after, in September 2014, the MAC integrated pharmacy students from all years of study, offering both early and advanced experiential education opportunities.

2.4.1.1 Vision and Mission of the MAC

The vision of the MAC is to *demonstrate national leadership in the education of health professionals while optimizing the health of our community.*[112]

The mission of the MAC is to *provide students and practicing pharmacists with an enriched clinical environment in which to refine their skills, and to enhance patient health through empowerment, medication optimization, and collaboration with health care teams.*[112]

2.4.1.2 MAC Patient care process

MAC patients are highly medically complex (mean age of 62 years, taking 13.8 chronic medications, having 6.9 chronic medical conditions).[113] Each patient appointment is initiated by a referral, either by the patients themselves or a health professional. Patients are contacted via phone to schedule appointments and are mailed out appointment reminder brochures (Appendix B) along with parking passes, if needed. The clinical services provided at the MAC (e.g., comprehensive medication management) aim to mirror services currently provided within community pharmacies in Saskatchewan under the *Saskatchewan Medication Assessment Program* (SMAP). Patients come to the clinic for an initial assessment and typically two additional follow-ups. Additional follow up appointments are completed based on the complexity of the patients and their individual needs. Patients also typically return on an annual basis to complete an annual medication review. Specific details on the appointment process are further outlined in *Section 2.4.3 Structure of the Learning Environment.*

2.4.1.3 Location

The MAC has two locations. The primary location is on the U of S campus at 104 Clinic Place, Health Sciences Building, Saskatoon, SK. This location has two private interview rooms furnished with multiple chairs that maximize the number of persons able to sit in the room (e.g., patient, pharmacist, students). The rooms are also equipped with audio/visual recording systems. The campus location is open Monday to Friday from 9:00am to 4:00pm.

In February 2015, a satellite location was opened at the Student Wellness Initiative Toward Community Health (SWITCH) Clinic to expand services to Saskatoon's inner-city population. The MAC satellite is located at 528 20th Street West. The clinic has one private interview room furnished with chairs and a computer. The satellite site offers services on Wednesday evenings from 5:30pm – 8:30pm.

2.4.1.4 The MAC team

The MAC staff includes a program director (who is also a pharmacy faculty member who sees some patients in the clinic), one full-time pharmacist, one part-time (0.2 FTE) pharmacist, and one part-time administrative assistant (0.2 FTE). All three pharmacists have additional training beyond a baccalaureate pharmacy degree program (e.g., acute care hospital residency, post baccalaureate PharmD). MAC pharmacists are responsible for delivering clinical services to patients while facilitating an enriched learning environment for undergraduate pharmacy students. To prepare MAC pharmacists for their duties, didactic and experiential training on the standardized patient care process that the MAC utilizes and how to create a desirable learning environment is provided (e.g., reading modules, peer observation, and supervised practice). In addition, ongoing support for MAC team members is available through regular team meetings. These team meetings are frequently used to discuss particularly complex patients and opportunities to improve student learning and participation.

<u>2.4.2 MAC Students</u>

Since September 2014, students from all years of the pharmacy program have been encouraged to participate in the MAC, which uses a variety of learner-mentorship models that involve a high degree of peer teaching. These include a combination of the paired model of two learners at the same level with one mentor, three or more learners with one mentor, and the tiered learner-as-mentor model of one or more senior learners providing guidance to more junior students.[30,36,51] The details of these learner-mentorship models are described in subsequent sections. The MAC offers both early and advanced experiential opportunities for pharmacy students.

2.4.2.1 Early Experiential Education Opportunities

The MAC offers early experiential education opportunities on a voluntary basis for pharmacy students in first, second, and third year, as well as in term one of fourth year (prior to the start of their final internship rotations in term two). To volunteer, students must be registered as Interns with Saskatchewan College of Pharmacy Professionals (SCPP). Different categories of student volunteers were established to increase the diversity of student participants, with the overall goal of having students from multiple years of the pharmacy program involved at each patient appointment. This diversity of students is meant to facilitate peer-to-peer learning and encourage students to be more actively involved in the patient care process. There are three categories of student volunteers who can take part in the early experiential opportunities at the MAC: junior students, senior students, and MAC Student Clinical Leaders (MSCL).

Pharmacy students in their first to third year of study are arbitrarily considered "junior students", while pharmacy students in term 1 of their fourth year of study are considered "senior students". Junior and senior student volunteers are given the opportunity to fulfill multiple roles including indirect observer (i.e., observe the patient interaction from an adjacent room through the audio/video capture system), direct observer (i.e., observe the patient interaction in the room with the patient, but do not lead the interview), or patient interview leader (i.e., take the lead to interview the

patient). Typically, two students are in the patient interview room as direct observers/ interview leaders, while any additional students will indirectly observe the interview.

These opportunities are progressive in nature and allow the students' responsibilities to increase in complexity as they gain experience and go through the program. All student volunteers initially fulfill the role of (indirect or direct) observer, until they are confident enough to take on more active roles in the patient interview process. For example, a student who volunteers for the first time in their second year of study will start off by fulfilling the role of indirect observer, but by their third or fourth year could advance to leading a patient interview. All students actively participate in a pre and post patient interview group discussion and reflection session that takes place immediately prior to and after each patient interaction. A more detailed description of junior and senior student volunteer involvement is outlined in Section 2.4.3 *Structure of the Learning Environment.*

In September 2015 the MSCL positions were created to further encourage senior students to take on a more active role in patient care and peer-mentorship. This position was offered to select senior students with a high number of previous MAC volunteer experiences who had demonstrated excellence in patient care skills. MSCL are trained and then given the opportunity to prepare and conduct minimally supervised (i.e., the pharmacist is across the hall in a different room) telephone patient follow up appointments, while providing mentorship to up to four other student volunteers who observe the telephone based appointments. A more detailed description of the MSCL role and experience is outlined in Section 2.4.3 *Structure of the Learning Environment.*

2.4.2.2 Advanced Experiential Education Opportunities

The MAC offers an advanced experiential education opportunity for fourth year pharmacy students during term two of each year (i.e., from January to April), as part of their final internship. After successfully completing their course work at the end of term one, fourth year pharmacy students are assigned to three consecutive five-week long advanced experiential education clinical rotations. One rotation must be in a community pharmacy, one in a hospital, and one in a specialty practice setting. The MAC is considered a "specialty practice setting " and accepts two students during each of the

three five-week rotation blocks. In total, six students are able to have an advanced experiential education opportunity at the MAC each year. These students participate in the MAC on a full-time basis for each five-week block, along with the student volunteers described previously. They are expected to take on a leadership role in both patient care and in mentoring the student volunteers.

2.4.3 Structure of the Learning Environment

2.4.3.1 Orientation and Announcements

Student volunteers are required to independently complete a MAC orientation prior to volunteering for the first time. The orientation includes a YouTube video that describes and illustrates the patient care process that is used at the MAC. Student volunteers are also required to read and acquaint themselves with the *MAC Learner Responsibilities and Expectations* document that is in the *MAC Policy and Procedures Manual* (Appendix C). MSCL are provided additional training and orientation (e.g., how to use the patient chart). Prior to the first patient interaction, the MAC pharmacist also gives a brief introduction to the patient care process and the roles and responsibilities of the student. Students are notified of any updates or announcements regarding MAC student learner policies or procedures via email.

2.4.3.2 MAC Volunteer Responsibilities

All MAC volunteers are required to adhere to responsibilities and expectations as outlined in the *MAC Learner Responsibilities and Expectations* within the *MAC Policy and Procedures Manual* (Appendix C). These include signing and adhering to privacy and confidentiality agreements, protecting the anonymity and confidentiality of the patients, being on time for appointments, participation in pre and post patient appointment discussions, and registering as a pharmacy Intern with the Saskatchewan College of Pharmacy Professionals (SCPP). The MAC pharmacist and director ensure all student learners are held accountable for their involvement and actions during and outside the patient care appointments.

2.4.3.3 Sign-up Process for Student Volunteers

Up to four students (typically two junior and two senior) are able to volunteer for each patient appointment. To facilitate the scheduling of student volunteers (i.e., early experiential education), a web-based sign up sheet was created using "Google Docs". The sign up sheet identifies the type of patient appointment (e.g., initial assessment, follow up), but does not contain any patient information or identifiers to maintain the confidentiality of MAC patients. Therefore, students sign up for a certain type of MAC experience and not for a specific patient.

In order to allow equal opportunity for all students to participate, students are limited to volunteer for one patient appointment per week. Each MAC experience provides the opportunity for two senior or MSCL and two junior students to participate. However, to ensure all student volunteer opportunities are filled, any student (junior or senior) is allowed to sign up for any slot that remains unfilled within 24 hours of a patient appointment, even if that student had volunteered within the last week.

From September 2014 to November 2015, the sign up sheet was updated immediately after patient appointments were made and students were required to intermittently check for new volunteer opportunities. Starting in November 2015, the sign up sheet was updated regularly every Wednesday and Friday afternoon, to provide more predictability for students to check the schedule for new volunteer opportunities.

2.4.3.4 Pre Patient Interview Discussion

The MAC pharmacist takes responsibility for the entire patient care process as well as facilitating an enriched learning environment for the students present. Student volunteers are required to arrive fifteen minutes prior to the scheduled patient appointment time for a brief pre-interview discussion. This includes an introduction to the patient case (e.g., reason for referral, chief complaint, progress from previous appointments) and a review of the patient care process. During this time, student volunteer roles are also discussed and assigned (e.g., indirect observer, direct observer or patient interview leader).

2.4.3.5 Patient Interview

The MAC pharmacist and all students greet the patient prior to entering the patient interview room. At this time, verbal consent is obtained from the patient for students to be present. Students who directly observe are encouraged to ask questions or contribute to the patient interaction. To encourage more active participation from the students, the pharmacist leading the interaction may invite the student learners to ask additional questions of the patient or provide some patient education.

All patient interviews (i.e., initial assessments and follow up appointments) use a standardized systematic procedure to collect information and provide patient-centered education. Patients are encouraged to participate in the interview by asking questions, discussing concerns, and deciding with the pharmacist and/or learner which recommendations they feel are appropriate and feasible for them. All patient appointments have a maximum 60-minute time limit that is not always used, but is strictly maintained.

2.4.3.6 Post Patient Interview Discussion

After the completion of the patient interview, learners are asked to stay for a reflective, debriefing group discussion. The discussions last 15-30 minutes and are lead by the MAC pharmacist, who engages students in a discussion that requires students to reflect on what happened during the interview, from both a clinical skills perspective (e.g., How could the pharmacist have been more empathetic? How could the interview have been better organized?) and a therapeutic knowledge perspective (e.g., What is an ACE inhibitor?). The pharmacist ensures that all students contribute to the discussion and that each student is able to understand the topics. Since students with various levels of knowledge, skills and experiences are often involved in the same discussion, the MAC pharmacist typically has the more senior students play a "peer-mentorship" role by explaining key topics to the more junior students.

2.4.3.7 Care Plan Development and Implementation

Following the patient interview, the MAC pharmacist often collects additional patient history by accessing provincial electronic databases (e.g., laboratory results, prescription drug dispensing records) and by requesting it from the family physician, community pharmacist, and/or specialist physicians. Once a complete patient history is collected, the pharmacist uses this information to identify any drug therapy problems and to develop care plans to ensure the problems are managed. Student volunteers are generally not directly involved in these steps due to the large amount of time required. However, all students have the opportunity to participate in follow up patient appointments when the care plan is discussed with the patient. These follow up appointments allow students to participate in presenting and negotiating the details of the care plan with the patient either through active participation or observation.

2.4.3.8 MSCL experiences

All patients receive at least one follow up phone call from a MAC team member (typically after a consultation letter has been faxed to their physician that includes recommendations to adjust drug therapy) to assess if the proposed recommendations were implemented and how they are tolerating the changes. When a MAC pharmacist completes this task, student volunteers are generally not involved as the phone calls are not scheduled and take place intermittently during the day. However, student volunteers are involved if the phone follow up is completed by a MSCL.

MSCL experiences began in October 2015 for the purpose of creating more opportunities for student involvement, enhancing student active participation, and enhancing patient care. MSCL experiences are two hour sessions in which up to four student volunteers (two senior and two junior) can volunteer to participate in patient follow ups. MSCLs prepare and conduct unsupervised (i.e., the MAC pharmacist is not present, but is in the next room if needed) telephone-based follow-ups, complete clinical documentation, update patient care plans, and debrief with the MAC pharmacist at the end of their session. In addition, they mentor the more junior students in attendance by discussing the patient cases as well as the process they use to prepare

and conduct the patient interaction. MSCL have access to complete MAC patient charts and are held accountable for their contributions made to the care of the patient.

2.4.4 Evidence to Support the Value of a Patient Care Clinic Located Within a Pharmacy School

Two other University-affiliated patient care clinics, physically located on campus and supervised by pharmacy faculty, exist in Canada. The University of British Columbia and the Memorial University of Newfoundland opened similar clinics in 2013 and 2016 respectively. There does not appear to be any similar clinics existing outside of Canada. A comprehensive search of published and unpublished literature did not identify any previously published evaluations of the value or impact on students of this type of patient care clinic located within a pharmacy school. Consequently, it is unknown if this model has a positive effect on the learning experiences of junior or senior pharmacy students.

2.5 Summary: Why Explore the Early Experiential Education Opportunities at the MAC?

As discussed previously, the shift towards a PharmD degree requires an expansion of both early and advanced experiential education opportunities. Many pharmacy schools across Canada struggle to provide high quality experiential education primarily due to a limited number of qualified and equipped sites capable and willing to accept pharmacy students.[30,31,34-36] Although there is a struggle to provide high quality clinical sites for both early and advanced experiential education, high quality clinical sites are frequently given priority to advanced experiential education which forces early experiential education to partially fulfill their requirements through community engagement, volunteerism and service learning. Therefore, developing and evaluating new models for delivering early experiential education (such as the MAC) would be useful for pharmacy schools in Canada. Although the MAC offers both early and advanced experiential education opportunities, the majority of student involvement has been at the early experiential level, which presents an opportunity to evaluate its impact on students.

Although previous studies have identified the benefits of early experiential education, the majority of these studies included medical students and none evaluated a patient care clinic that was physically located within a pharmacy school (like the MAC). The studies were primarily qualitative, which limit the generalizability of the results, especially in regards to pharmacy students in a program like the MAC. Therefore, the actual experiences and benefits for students who participate in the early experiential education at the MAC are unknown.

The purpose of this study was to explore the experiences of pharmacy students who volunteered at the Medication Assessment Centre (MAC).

Chapter Three

Methodology

3.1 Research Approach

A qualitative research approach that used focus group discussions was used to explore the experiences of pharmacy students who were exposed to the early experiential education provided by the Medication Assessment Centre (MAC) between September 2014 (when MAC began accepting student volunteers) and November 2015.

Qualitative research intends to explain the changes an experience brings about and explores the link between the intervention and the outcomes, in great detail, from the perspective of the study participants. The researcher does not attempt to control or manipulate the events of the individual(s) being studied.[114] Qualitative research methods use non-restrictive data collection processes that enable researchers flexibility to adapt the processes as new data emerges to ensure the phenomenon is fully explored.[114,115] The data analysis phase is inherently subjective, as results are reported on the basis of researcher's personal interpretations of the data. However, several strategies are used to limit the inherent subjectivity and personal bias to ensure the interpretations and results are trustworthy (e.g., triangulation, member-checking, peer reviewing, use of a peer advisory committee).[115] Researchers generally take a naturalistic or constructivism view to focus on understanding and exploring the meanings people give to their world and experiences. Research questions and results are context-bound to allow a thorough description and understanding of the phenomenon.[115] Results from qualitative studies are also context bound and can only be relatable if sufficient background information is provided.[114,115]

Education research, which includes the exploration of early experiential learning of health professional students, is multifaceted and involves complex social, environmental, and individual factors.[29,116] Flexible research designs that allow for the complexities of a learning environment to be comprehensively studied are noted to be best suited to this area of research.[29,116,117] The most commonly used study designs in education research include descriptive/qualitative and mixed methods. Qualitative methods that have been previously used to collect data on health professional student

perspectives include focus group discussions, one-on-one interviews, written reflective journals, and surveys.[29,116] All the methods except for focus group discussions collect highly individual and independent responses and are unable to collect data within the complex social environment in which learning occurs. Therefore, focus group discussions are a commonly used qualitative data collection method in education research due to their ability to collect data on both group and individual study participant perspectives simultaneously.[116,118] Focus group discussions facilitate an in-depth exploration of the participants' ideas and perceptions with the use of a pre-determined set of questions to prompt discussion (i.e., the focus group guide) amoung the participants. Due to the social nature of the discussion, participants and the moderator have the opportunity to explore particular themes, clarify responses, or raise and discuss topics that the research may not have prospectively considered by asking follow-up and probing questions. Focus group discussions also facilitate observational data to be collected (e.g., body language).[114,118,119]

3.2 Research Setting

In qualitative research, examining the phenomenon in its natural setting enhances the credibility of the results as it can increase the participants' comfort and memory of their experiences.[114] At the time of this study, the "natural settings" were the MAC U of S clinic location on campus and its inner-city satellite clinic at SWITCH. Although students have the opportunity to volunteer at both clinics, the majority of patient appointments and student volunteer experiences occurred at the MAC. Accordingly, all data collection for this study was performed in a conference room near the U of S MAC patient consultation rooms.

3.3 Participants

The goal of the study was to gather an in-depth understanding of student experiences at the MAC and identify if there was any variation in student responses based on their year of study or number of experiences. The study participants were selected with intent to include a wide range of experiences to ensure a robust and

comprehensive description of student experiences. The following sections (inclusion criteria and participant recruitment) outline in detail how this was achieved.

3.3.1 Inclusion Criteria

1) Any individual enrolled as a student in any year of the Bachelor of Science in Pharmacy (BSP) program at the U of S for the 2015-2016 academic year.

2) Any student who had volunteered for at least one patient appointment at the MAC on campus or the satellite clinic at SWITCH between January 2015 and November 23, 2015.

The first criterion allowed for the study participants to be composed of students who had a wide variety of experiences at the MAC (i.e., ranging from those who only volunteered once to those who volunteered many times) to facilitate a robust and comprehensive description of all student experiences with the program and reveal variations and common patterns.[114,118] As well, this first criterion ensured that students who had graduated from the BSP program at the U of S in the spring of 2015 were not invited to participate. These students had experienced at least 15 weeks of advanced experiential training rotations (during their final internship in term two of fourth year) and up to six months of post-graduate work experience by the time data was collected. Consequently, these students would have introduced a large source of recall bias due to the time that had passed and the difficulty of differentiating the memories of their experiences at the MAC from their advanced experiential training rotations and/or their current workplace. The second criterion attempted to reduce potential recall bias, by only including students with a recent exposure to the MAC program.

3.3.2 Participant Recruitment

Purposive sampling, a strategy used to enable deliberate selection of participants with particular characteristics that will provide the best data to answer the research questions,[114,118,120] was used to recruit participants. On November 3, 2015 an *Invitation to Participate* (Appendix D) letter along with the *Research Information Sheet for Participants* (Appendix E) was emailed to students who met the inclusion criteria (Section 3.3.1). Students were offered a $20 Tim Horton's Gift Card as an incentive to

participate. A *Reminder Email* (Appendix F) was sent two weeks later to participants that did not respond. Students were given an additional week to respond after the reminder email, allowing for a total three week recruitment period ending on November 24, 2015.

To gather an in-depth understanding of student experiences, focus group discussions were intended to continue until saturation of data was reached or until all students who agreed to participate had completed a discussion, whichever occurred first. Saturation was defined as the point in the data collection when each successive focus group failed to produce any new information that resulted in new codes, themes, categories, or insights towards answering the research questions.[114,118] Saturation is not predictable; it can only be determined as data is collected by the data collector(s). Therefore, to increase the likelihood of achieving saturation, all students who agreed to participate were enrolled in the study and scheduled for a focus group discussion.

To determine if saturation was reached in this study, the data collectors (i.e., the focus group moderator and assistant) held debriefing sessions immediately after each discussion to review, discuss, and further document (i.e., add to the notes they took during the discussion) their ideas and interpretations from each focus group session. Starting after the second focus group, the moderator and assistant also discussed if saturation was reached by reflecting back on all the previous discussions. Since all focus group discussions took place over a short period of time (i.e., within one week), the moderator and assistant were still familiar with the content of each discussion. However, both moderator and assistant reviewed their notes and documentation to ensure an accurate recollection and assessment of saturation was completed. To determine if saturation had been reached in this study, both the moderator and assistant had to reach consensus on this decision.

3.3.3 Participant Scheduling

All students who agreed to participate were assigned a confidential identification number, which became the primary means of identification in official study documents thereafter. The number of previous student experiences at the MAC was confirmed via email with each student participant. Students were given the opportunity to provide

preference of date and time of their focus group discussion. Final focus group dates and times were chosen based on student preferences and to ensure all discussions were completed within a one-week time period. Focus groups were scheduled to ensure that at least four and no more than eight participants were included in each discussion group, as suggested by focus group best practices.[118,119]

All students who agreed to participate were organized into different groupings based on their: 1) student volunteer role at the MAC (e.g., junior, senior, or MAC Student Clinical Leader (MSCL)), and 2) number of volunteer experiences at the MAC (as of the date of enrollment, November 3, 2015). Two categories were arbitrarily used to group participants based on the number of previous MAC volunteer experiences: 1) "low" = less than three MAC volunteer experiences, and 2) "high" = greater than or equal to three volunteer experiences.

In total, five different groupings were created: 1) "Junior Low" grouping: junior pharmacy students with a "low" number of experiences, 2) "Senior Low" grouping: senior pharmacy students with a "low" number of experiences, 3) "Junior High" grouping: junior pharmacy students with a "high" number of experiences, 4) "Senior High" group: senior pharmacy students with a "high" number of experiences, and 5) "MSCL grouping": students who volunteered in the MSCL role.

The organization of students into the five different groupings was meant to allow for homogenous groups with similar backgrounds and experiences to be scheduled for each focus group discussion. Accordingly, this would increase the ability to answer the previously stated research questions by exploring each different grouping in an in-depth manner.[118] The organization of students was also implemented in this manner to increase the students' comfort level in sharing their experiences openly and to ensure the integrity of the responses due to the potential for junior students to feel intimidated by more senior students within the same focus group discussion.

3.4 Focus Group Guide

A semi-structured focus group guide was developed to assist in the moderation and data collection of the focus group discussions. The development process for the focus group guide involved multiple stages. First, a literature search was performed to

determine if a focus group guide already existed in order to help direct questioning during the focus group discussion. Several useful questions were identified from previously used focus group guides, but an existing comprehensive interview tool was not identified. The researcher and her academic advisor met on several occasions to discuss the issue to allow for the development of a focus group guide that would align with the research questions. A focus group guide comprised of modified questions from the literature, along with original questions was developed. For example, based on research question 2d related to identifying opportunities to improve the MAC experience, a previously used survey question from Quinby et al.[66] "What experiences would you like added to or eliminated from this program?" was modified into a tailored question with probing statements; "What are some ideas you have that could help improve the student experience at the MAC?" with probing questions "explain why" or "how". Once the focus group guide was developed, the researcher and her academic advisor, one committee member, and the focus group assistant reviewed the questions for readability and alignment with the research questions.

The focus group guide was piloted on three recent U of S pharmacy graduates who volunteered in the MAC during the 2014-2015 academic year (and who were therefore not eligible for the study) for readability and comprehensibility. The pilot participants provided feedback to improve the clarity of some of the questions and the guide was revised based on this feedback. The entire process resulted in the creation of the semi-structured *Focus Group Guide* (Appendix G) used in this study.

The *Student Participant Information Form* (Appendix H) and *Focus Group Feedback* Survey (Appendix I) were developed and piloted in similar fashion, including all stages as explained above from the literature search to revising the tools based on the feedback provided by the pilot participants. The *Student Participant Information Form* was developed to increase the transferability and credibility of the study results as suggested by the literature by collecting the following demographics: age, gender, total number and type of volunteer experiences at the MAC, duration and type of prior pharmacy related experiences, leadership position held within a student or professional organization, academic average, and year of study.[29,55,74,85,87] The *Focus Group Feedback Survey* was designed to confidentially collect additional information from the

participants about any experiences that they were unable (or unwilling) to share during the discussion, without revealing to the researchers or the other participants which student within each focus group made the comment. The likert-scaled questions were intended to provide insight into the quality of the participant responses, and the open-ended question was intended to encourage participants to share negative or controversial viewpoints.

3.5 Data Collection

Each focus group was scheduled for 90 minutes (80 minutes for discussion and ten minutes for paperwork) and took place in a conference room near the MAC consultations rooms (See Appendix J for the room configurations). The focus group discussions took place on the evenings and weekends when students were not in class and to maintain the confidentiality of participants (i.e., it was unlikely that MAC staff or faculty would observe which students were participating if the focus groups occurred after-hours). Participants were sent a reminder email one day prior to their focus group discussion to confirm their attendance.

One focus group moderator and one assistant conducted all the focus group discussions. The graduate student who was leading this research project performed the focus group moderator role. The focus group assistant was an existing staff member in the College of Pharmacy and Nutrition (but with no student teaching or evaluation role, including no involvement in the MAC) with previous experience moderating focus group discussions, conducting semi-structured interviews, and collecting observational data.

The moderator and assistant worked as a team to conduct the discussions. The moderator took primary responsibility over facilitating the discussions and the assistant took primary responsibility over note taking during the discussions on both verbal and non-verbal responses. Further best practice guidelines and procedures for the facilitation of focus group discussions were followed to ensure the collection of comprehensive, reliable, trustworthy, and quality data.[118,119] For example, as participants arrived, the focus group moderator and assistant welcomed the participants, handed out name tags (used to assist with the discussion and note taking), paper and pens (used to facilitate brainstorming and recollection), and facilitated the

appropriate paperwork to be completed (sign in forms). All sessions were audio recorded and later transcribed verbatim. The moderator began the discussion by reading the introductory statement then used the questions to facilitate the discussion as per the *Focus Group Guide* (Appendix G). A large flipchart was used to display the topics that were being discussed by the participants. Both the moderator and the assistant took notes during the discussion based on the participants' body language, responses, and interactions with each other. Participants were given the option to take a ten-minute break after 40 minutes of discussion, but all focus groups chose to have a continuous discussion. At 90 minutes, the discussions stopped and the moderator read the closing statement. Prior to leaving, participants completed the *Student Participant Information Form* (Appendix H) and received their $20 gift card.

After the focus group discussions participants were given the opportunity to complete either a paper or electronic (FluidSurveys[TM]) *Focus Group Feedback* survey (Appendix I) to provide feedback and/or additional comments about their MAC experiences or focus group discussion that they may have forgotten or did not feel comfortable sharing.

To enable data analysis, improve the trustworthiness of the results, and protect the confidentiality of the student participants all focus group discussions were confidentially transcribed verbatim, except for any personal identifiers of pharmacy undergraduate students or MAC staff.

3.6 Data Analysis

3.6.1 Participant Information

Descriptive statistics were used to report the student participant demographics using *SPSS 20.0* (SPSS Inc, Chicago, Ill).

3.6.2 Focus Group Discussion Transcripts

Thematic analysis was used to analyze the focus group discussion transcripts. Thematic analysis is the process of encoding qualitative data that involves the use of codes to identify important or common features of the data.[121] These codes enable the identification of common themes to emerge from the data to answer the research

questions.[121,122] While computer-assisted data-coding and data-analysis software was available (i.e., NVivo[TM]), it was not utilized. Due to the manageable amount of data from the focus groups, the thematic analysis of the focus group discussion data was performed manually.

Three distinct stages were used in performing the thematic analysis: 1) independent analyses were completed by three individuals, followed by a consensus agreement of the three individuals regarding common themes, 2) member-checking by all student participants, and 3) peer review completed by two individuals. This methodology is described in more detail below.

The three independent data analysts consisted of the graduate student who was leading this research project (who was also the focus group moderator), the focus group assistant, and a University of Saskatchewan College of Pharmacy and Nutrition faculty member. The focus group assistant and the faculty member analysts were both non-pharmacists with qualitative research and thematic analysis experience. They were also external from the research and MAC teams, but had a basic understanding of the MAC operations.

Prior to starting data analysis, the three analysts met to review and discuss the *Instructions for Focus Group Transcript Analysts and Reviewers* (Appendix K) to ensure the thematic analysis process for each focus group transcript was completed consistently, yet independently. All individuals were reminded to practice reflective journaling and memoing to strengthen the trustworthiness of the data analysis. Reflective journaling and memoing is the process of documenting personal notations in the form of comments during data analysis.[118,121] After an agreement on the analysis process was reached, all individuals were given electronic and hard copies of all of the de-identified focus group transcripts and facilitator documentation notes (i.e., notes taken by the focus group facilitator and assistant during the focus group discussions). The three analysts began by reading through the transcripts once to become familiar with the data prior to performing any analysis or taking any notes. On the second read through, the analysts highlighted the relevant or emerging themes that they identified, which corresponded with the study research questions: (1) What are pharmacy students' experiences with the MAC? (including likes, dislikes, challenges, and other),

(2) What recommendations do pharmacy students have to improve the MAC experience?, and (3) What do pharmacy students perceive they learn from their involvement at the MAC (including what activities or experiences students describe as helping them with their perceived learning)? In addition, the analysts also identified any other emerging themes that seem relevant, but were not captured by the previous three categories.

Thematic analysis in this study was performed using open coding, grouping of conceptual categories, and identification of themes.[121,122] Open coding involved each analyst examining each transcript phrase-by-phrase, line-by-line, and even word-by-word in order to break down the data into segments for interpretation. The interpretations made were labeled with a single word or short phrase known as a code.[121,122] After independently coding the transcripts, each analyst compared their codes for similarities and differences related to the study objectives. The codes identified as conceptually similar in nature or related in meaning were clustered and grouped into categories of information that related to the research questions (conceptually categorized and themed),[123] for example, "what did the pharmacy students enjoy about the MAC". The codes that were identified as an "other category" were reassessed for accuracy and relevance and either adjusted to fit a predefined category (e.g., likes, challenges) or left in an "other category" to be discussed with the other analysts.[121]

This process, from open coding to identification of themes, left each analyst with transcripts containing text that was highlighted in various colours, each signifying different categories and/or themes. After all the analysts completed analyzing all the transcripts independently they met twice, as a group, to discuss their findings and to generate a common list of themes and sub-themes, where applicable.[122] During the discussion, each analyst disclosed the themes they had independently identified from the transcripts. Common themes that were identified similarly by all three analysts were accepted. Since unintentional data fabrication has been noted to be a common problem in the process of interpreting data,[122] disclosure of dissimilar themes resulted in a close examination to the existence or wording of the codes and categories each analyst developed. Themes that reached unanimous consensus by all three analysts were

accepted. Themes that were not unanimously agreed upon were determined to be an inaccurate reflection of the transcripts and were discarded. There were very few dissimilar themes that were presented that needed to undergo close examination. More often, a theme was identified and unanimously agreed upon but the specific wording and/or classification (if it was a theme or sub-theme) underwent great deliberation prior to settling on a common list of themes. Two meetings (1.5 hours and 2.5 hours long) were held between the three analysts. Upon completion of the meetings, a common list of themes along with their sub-themes (where applicable) for each focus group discussion was developed. In addition, the analysts combined the five lists of themes from each focus group discussion into one common list of themes that highlighted the similarities and differences in the themes across all the focus group discussions.

Following the development of the lists of themes by the three analysts, a member checking stage was conducted to confirm the accuracy of the interpretations completed by the analysts.[123-125] All of the focus group participants were emailed a summary of the themes that were identified in their respective focus group (Appendix L) and were given two weeks to review and provide comments. All focus group participants agreed with the identified themes. Two individuals gave additional suggestions for improving the MAC that aligned with the existing themes. This feedback provided from the member-checking stage did not result in any modifications to the existing themes.

After the completion of the member checking stage, two individuals completed a peer review of the final lists of themes. The two peer reviewers consisted of the graduate student who was leading this research project and a practicing pharmacist external to the research team. The practicing pharmacist peer reviewer had previous experience with thematic analysis and a familiarity of the MAC and the U of S pharmacy program. Although this peer reviewer was not an existing member of the MAC team, she was previously involved in the MAC program from 2011 to 2014 as she assisted with the development and evaluation of the MAC pilot program as part of her Master's thesis project. Although this pharmacist was heavily involved with the MAC program throughout its pilot phase, she was no longer affiliated with the MAC during her role as a peer reviewer.

The two peer reviewers re-read all of the focus group transcripts to verify the accuracy of the final lists of themes. If any discrepancies to the existence or wording of a theme were noted they were discussed in detail and revised to reflect a unanimous agreement. During this stage, all themes were unanimously agreed upon, however the wording of some of the themes was modified. The three data analysts were notified of and approved these modifications. The completion of the peer review process resulted in the development of the final list of themes (one comprehensive list that highlighted the similarities and differences across all the focus group discussions).

The mix of three analysts and two peer reviewers from different backgrounds was chosen based on their varied career paths, clinical experiences, and interactions with students to increase the credibility of the thematic analysis. The graduate student, the faculty analyst and the external peer reviewer provided a familiarity of the pharmacy program to both analysis and review stages. The faculty analyst and focus group assistant, who were both non-pharmacists, provided a non-clinical perspective along with qualitative research expertise to the analysis stage.

3.7 Trustworthiness of the Data

A model proposed by Guba in 1981,[126] and further elaborated by Lincoln and Guba in 1985,[123] was implemented into the methodology of this study to increase the trustworthiness of the results. The model is divided into four factors to improve trustworthiness of the findings, each with a list of techniques that were followed in this study: credibility, transferability, dependability and confirmability.[123,126]

Credibility, arguably the most important factor in establishing trustworthiness, helps determine how congruent the findings are in relation to the real world.[123] Techniques that were used in this study to improve credibility included: prolonged engagement, persistent observation, triangulation, member-checking, supportive research setting, and use of a peer advisory committee.[123,126]

Prolonged engagement and persistent observation refer to the researcher spending sufficient time in the field to learn about, understand, and create a positive rapport with the culture of the participating organizations and individuals. Prolonged engagement generally exposes the researcher to the scope of the culture, and

persistent observation provides depth in their observations and interpretations.[123,126] To achieve these strategies the graduate student who led this study became proficient with the MAC policies, procedures, and learning environment over the fourteen months prior to data collection by working as a part-time pharmacist and administrative assistant for the MAC. As a 2011 BSP graduate from the U of S and Communications Chair for the CSHP SK Branch from 2012-2014, the graduate student also had a familiarity of the student culture.

Triangulation is a technique that enables a rich, robust, comprehensive, and well-developed study through use of multiple sources, methods, analyst procedures, and/or theories/perspectives.[123,124,126] This study used investigator triangulation, which involved the use of three independent analysts and one unique external peer reviewer who had to reach a consensus on the final interpretations, therefore strengthening the trustworthiness of the results.[125,126]

Member checking is a technique that involves one or more participants to confirm the accuracy of the researcher's interpretations as they emerge.[123-125] Student participants were sent the common list of themes from their focus group discussion to review and approve prior to the reviewing stage of the data analysis.

Another technique to improve credibility involves developing a supportive research setting to ensure that data collection sessions involve only those who are genuinely willing to participate, and that they are able to respond and act honestly and naturally without any fear of threat or harm.[118,119] Developing a supportive research setting involves conducting the research in its natural setting, or as close as possible, and protecting the participant through maintaining their confidentiality, anonymity, and right to refuse to participate and withdraw from the study.[119,121] Since this study involved a vulnerable population, creating a supportive research setting was a priority. The graduate student who led this study maintained the student participant's confidentiality from faculty and staff members outside the focus group team by scheduling the focus group discussions on evenings and weekends. MAC staff members and/or U of S faculty with direct student contact were not present at this time and therefore were not able to deduce which students participated in the study. Student participant confidentiality was upheld during the feedback process through the use of a confidential

feedback form submitted electronically or physically. The student participants were reminded of their right to refuse to participate and withdraw from the study multiple times through the full disclosure consent form, before and after the focus group discussion, as well as during the member checking phase.

The final step taken to ensure credibility involved the use of a peer advisory committee throughout the duration of the project.[118,119] The graduate student's advisory committee consisted of her academic supervisor and three other U of S College of Pharmacy and Nutrition faculty members with varying research and practice backgrounds. The advisory committee reviewed the research proposal and study results to ensure appropriate research methods were implemented and followed.

The second strategy to ensure trustworthiness of data, transferability, refers to the ability of the findings to have applicability in other contexts.[123,126] Although the purpose of qualitative research is not necessarily to produce widely generalizable results, relatable results can be achieved through the use of 'thick description'. Thick description involves provision of sufficient contextual information about the phenomenon under investigation to allow the readers to gain a comprehensive understanding of the phenomenon (i.e., student involvement in the MAC) and relate the findings to their own practice.[116,118,123,126] The background section of this document provided a detailed description of the MAC, specifically in regards to student involvement, the structure of the learning environment, and the patient care environment. The student participant information data collected and reported allows the reader to understand the demographics of the student volunteers at the MAC. The information made available in this thesis should allow readers to confidently decide if the results are transferable to their own practice.

The third strategy to ensure trustworthiness is dependability.[123,125,126] To ensure dependability of the data, a detailed account of the processes and/or methods used must be disclosed to theoretically allow another researcher to repeat the study but not necessarily reach identical conclusions, as well as to allow for an external audit to be conducted.[123,125,126] An external audit is a technique that involves an examination of the process and product of the research study by a researcher not involved in the research project to evaluate the accuracy of the findings.[125,127] To enhance the quality of an

external audit, an audit trail is recommended to be kept. An audit trail is a comprehensive and transparent description of all research steps taken from the inception of the research project to the finalization of the findings.[123,125,126] The methods of this study have been described in detail and the tools and guides used to gather the data have been included in the appendices to enable their use in future studies. The graduate student who led this study maintained a comprehensive audit trail that includes raw data, process notes, reflective journaling, and instrument development information.

The final strategy, confirmability, involves techniques used throughout the data collection and analysis phases to ensure the findings emerge from the experiences and ideas of the participants, and are not influenced by the bias, motivations, or interests of the researcher(s).[123,125,126] Use of an audit trail, triangulation, and reflexivity are three techniques commonly used. The audit trail and triangulation techniques have been previously described. Reflexivity is "an attitude of attending systematically to the context of knowledge construction, especially to the effect of the researcher, at every step of the research process (p. 484)."[127] Reflexivity is of particular importance in qualitative research since the researcher is a vital instrument in the research process. The researcher who led this study achieved reflexivity through the use of reflective journaling throughout the entire research process (documents are all part of the audit trail) and the declaration of her experiences, perspectives, beliefs, and values in the *Researcher's Story* in Section 3.8.

3.8 Researcher's Story

To increase the trustworthiness and confirmability of the data and for the purposes of transparency of potential researcher biases, the following is a declaration of my experiences, perspectives, beliefs and values in relation to the research topic. This declaration will allow the reader to determine if the findings emerged from the data collected and if they were influenced by the bias of the primary researcher.

My interest in pharmacist education research comes from a relatively short yet dedicated career as a pharmacist and a much longer career as a student. I entered the post-secondary education system in 2004 and completed three years of a kinesiology

undergraduate program in two different universities in North America. I entered the BSP program at the U of S in 2007 after having the opportunity to shadow a clinical hospital pharmacist. The clinical pharmacist I shadowed introduced me to the opportunity pharmacists had to interact with other health professionals and patients to work towards the ultimate goal of improving the well-being of patients through the delivery of patient-centred care. I immediately felt my calling.

After completing a BSP at the U of S in 2011, I pursued a career in hospital pharmacy at the Yorkton Regional Health Center (YRHC) in Yorkton, SK. After just six short months working as a pharmacist I took on my first role as a structured practice experience program (SPEP) preceptor with assistance from a senior pharmacist. Barely feeling prepared to work independently, I found myself trying to pass on the limited experience I had accumulated to prepare and inspire my fourth year students for their future careers. As I got to know my first SPEP students personally and professionally we spoke candidly about our experiences and opinions on the U of S BSP program. I was surprised to hear that these students held many similar concerns about practicing independently as I had less than a year ago. This included a lack of exposure to direct patient care practice settings prior to the final semester in the BSP program which left the students feeling ill-prepared and unconfident, especially in their clinical practice abilities (e.g., decision making and problem solving). As a SPEP preceptor I also had the responsibility for evaluating my students and providing constructive feedback. My students had deficiencies in many required skills at the beginning of their rotation but quickly improved with each patient and health professional interaction.

I fulfilled the role of a SPEP preceptor at the YRHC from 2011-2013, and at the Royal University Hospital in Saskatoon from 2013-2014. From 2012-2014 I held the position of CSHP SK Branch Communications Chair where I had the opportunity to organize and assist with many student-centered activities. As I continued to precept third and fourth year pharmacy students over the next few years, the same patterns and feedback about the BSP program continued. Seeing the vast improvements in students who were exposed to direct patient care practice experiences strengthened my belief in the benefits of both early and advanced experiential education for pharmacy students.

I was given the opportunity to evaluate the student experiences at the MAC by its founder and director who is also a professor in the College of Pharmacy and Nutrition and my academic advisor. A former classmate and colleague is the MAC coordinator and full time pharmacist. I was hired on as casual pharmacist and part time administrative assistant at the MAC when I enrolled as a graduate student in the College of Pharmacy and Nutrition due to my extreme interest in the program. My position at the MAC also gave me the opportunity to provide some student mentoring to the MAC student volunteers, but mostly to the MSCL volunteers. As a graduate student and licensed pharmacist I was also recruited to help in the practice based laboratory exercises for third and fourth year BSP students. Through these new experiences, I found my motivation to help improve patient care through practice change and the provision of exceptional pharmacist training continued to grow.

As the primary researcher of this study, I fulfilled the roles of participant recruiter, focus group moderator, interviewer, analyst, and peer reviewer. To assist me with these roles, I completed a qualitative research methods course in 2014. I also reviewed the literature and read many papers and book chapters regarding best practices in performing focus groups and analyzing qualitative data. In addition, I had multiple personal consultations with qualitative researchers of various levels of expertise to prepare to conduct this study. Due to my passion for the profession, desire to provide exceptional pharmacist training, and involvement with the current pharmacy students I had to be cautious to ensure my personal bias would not enter this study. Specifically, after assisting at the MAC as a pharmacist and student mentor, I personally believed that the MAC experience was extremely beneficial for students. I often contemplated how useful an experience such as the MAC would have been during my undergraduate training.

Several precautions were taken to ensure my personal opinions and biases did not influence the research. Throughout the entire research process I utilized and maintained a reflective journal to document personal notations, opinions and ideas to avoid those biases influencing the data. I also maintained a thorough audit trail of all documents from all researchers and analysts. The focus group discussion guides were reviewed by individuals who were both familiar with, and external to the program, to

avoid bias in the questions. Although I performed the focus group discussions I maintained complete confidentiality and professional conduct in regards to my position as a researcher and MAC staff member. All focus group discussions were transcribed by myself. Finally, the transcribed focus groups were analyzed and reviewed by multiple individuals that included individuals both internal and external to the research advisory committee, MAC program and research project.

3.9 Ethical Considerations

This protocol was approved by the University of Saskatchewan Behavioural Research Ethics Board on November 3, 2015 (BEH 15-333). The research project was deemed exempt from having to obtain formal written informed consent from the participants due to the project's focus on program evaluation activities for the purpose of internal assessment and quality improvement. Despite this exemption, the research project was carried out following standard behavioural ethical protocols, especially since the participants used in this study are a known vulnerable population. Although the content and concepts discussed by the participants in this study were of minimal risk to the participants, participant confidentiality was strictly maintained through the use of confidential participant numbers during data analysis and dissemination of the research findings. As well, by conducting the focus group discussions during the evenings and weekends it also limited the potential for participants to be identified by faculty or staff. To prevent any undue influence, coercion, or inducement all individuals involved in the recruitment of participants as well as data collection and analysis had no influence on the pharmacy students' academic status during the time of this study. Participants were fully informed of the study prior to providing verbal consent to participate and were also reminded of their ability to withdrawal from the study numerous times throughout the data collection phase. In addition, all data obtained from this study will be securely stored for a period of five years by the research supervisor until it will be permanently destroyed.

Chapter Four

Results

4.1 Participants

A total of 85 students volunteered at the MAC between September 2014 and November 23, 2015. Four of these 85 students were current pharmacy students but did not have a recent MAC experience (i.e., since January 2015), and 14 students graduated from the pharmacy program in the spring of 2015 and therefore were excluded from the study. A total of 67 students were therefore eligible to participate and 29 students agreed to participate. These 29 participants were organized in the following previously described groupings and one focus group was held for each grouping:

1) Junior Low: five participants
2) Senior Low: seven participants
3) Junior High: eight participants
4) Senior High: five participants
5) MSCL (MAC Student Clinical Leaders): four participants

All five focus group discussions were completed within a one-week period (no more than one discussion was conducted per day). Focus group discussions were intended to continue until saturation of data was reached or until all students who agreed to participate had completed a focus group discussion, whichever occurred first. Starting after the second focus group, the moderator and assistant discussed if saturation was reached. After the fourth focus group the moderator and assistant felt that saturation was being approached but was not reached. After the fifth focus group discussion was completed, the moderator and assistant identified new information that could result in new themes and therefore did not feel saturation was reached. However, at this point all scheduled students who agreed to participate had completed a focus group discussion. No students who were interested in participating (and who met in the inclusion criteria) were turned away. Therefore, the end of data collection occurred when all 29 students participated in the study, but saturation of data was not achieved.

The student participants were mostly female (n = 24, 83%), and on average were 24.2 years of age and had volunteered at the MAC an average of 5.2 times. See Table 4-1 for a summary of the participant demographics.

Table 4-1: Participant Demographics by Year of Study

	Year 2	Year 3	Year 4	Total
Total number of MAC[1] study participants (%)	1 (3.4%)	12 (41.4%)	16 (55.2%)	29 (100%)
Gender				
Male (%)	0 (0%)	2 (16.7%)	3 (18.8%)	5 (17.2%)
Female (%)	1 (100%)	10 (83.3%)	13 (81.2%)	24 (87.8%)
Average Age (years)	20.0	24.3	24.4	24.2
Average number of exposures	1.0	4.6	5.9	5.2
Average number of initial assessments	1.0	2.8	2.9	2.8
Average number of follow up appointments	0.0	1.9	2.1	1.9
Average number of MSCL[2] experiences	0.0	0.1	1.1	0.7
Average academic average	78.6%			

[1] Medication Assessment Centre (MAC)
[2] MAC Student Clinical Leaders

All participants were a member of at least one pharmacy organization (e.g., Canadian Society of Hospital Pharmacists, Pharmacy Association of Saskatchewan, Canadian Association of Pharmacy Students and Interns or Saskatchewan Pharmacy and Nutrition Student Society) and 10 students held a council position in one of these pharmacy organizations. Participants reported having a wide range of previous pharmacy experiences in both paid employment outside of school (two months to seven years) and mandatory structured practice experience program (SPEP) placements (zero to eight weeks). During these SPEP experiences, students reported that the majority of their time was spent on dispensary related tasks (59% work, 49% SPEP) and the rest of their time was spent on general patient interactions (22% work, 27% SPEP), patient counseling (10% work, 11% SPEP), medication reviews (2% work, 10% SPEP), and other related tasks (7% work, 4% SPEP) such as research, filing, chart reviews, or inter-professional collaboration.

4.2 Focus Group Feedback

Focus group discussions were scheduled for 90 minutes, with 80 minutes allotted for the discussion and 10 minutes for completing the paperwork. The moderator enforced the 90-minute time limit. However, the moderator allowed the discussions to continue over the full 90-minute time limit and requested participants to complete and

return the *Focus Group Feedback* Survey (Appendix I) within 48 hours to allow them time to document the opinions that they were unable/unwilling to share during the discussions.

A total of 28 participants (n = 28/29, 96.6%) completed and returned a feedback form. The single non-responder was from the MSCL grouping. All respondents (n=28/28, 100%) strongly agreed or agreed that the discussions were carried out in a professional manner, were worthwhile to participate in, and that they were able to be honest in their responses. Only one participant from the Senior High grouping (n=1/28, 3.6%) disagreed that their opinion was heard. That same individual, as well as one participant from the Junior Low grouping (n=2/28, 7.1%) also agreed that they felt one individual dominated their focus group discussion. Three respondents, one from the Senior High and two from the Junior Low group (n=3/28, 10.7%), also felt there wasn't enough time allotted for the entire discussion. See Table 4-2 for a summary of the *Focus Group Feedback* results.

Table 4-2: Focus Group Feedback Results

Question	Number (%) of Participants who Strongly Agreed or Agreed	Number (%) of Participants who Strongly Disagreed or Disagreed
The information provided to me before the focus group prepared me to participate in the discussion.	27/28 (96.4%)	1/28 (3.6%)
The focus group was conducted in a professional manner.	28/28 (100%)	0/28 (0%)
I felt I could be completely honest in my responses to the focus group questions.	28/28 (100%)	0/28 (0%)
I felt my opinions were heard during the focus group discussion.	27/28 (96.4%)	1/28 (3.6%)
I felt certain individuals dominated the discussion.	2/28 (7.1%)	26/28 (92.9%)
I felt my participation in the focus group discussion was worthwhile.	28/28 (100%)	0/28 (0%)
I felt there was not enough time scheduled for the discussion.	3/28 (10.7%)	25/28 (89.3%)
The date of the focus group discussion was convenient.	26/28 (92.9%)	2/28 (7.1%)
The time of the focus group discussion was convenient.	25/28 (89.3%)	3/28 (10.7%)
The location of the focus group discussion was convenient.	28/28 (100%)	0/28 (0%)

A total of 13 participants (n = 13/28, 46%) provided open-ended responses to the question "please provide any additional comments that you feel would be valuable for us to know that you may have not felt comfortable or got the chance to share." Every grouping had at least two participants provide open-ended responses to this question. The open-ended responses provided by the participants simply reiterated the positive or negative feedback that was provided in the likert-scaled questions regarding their focus group discussions. The responses did not provide any additional information that could be used to contribute to the development of overall themes in the thematic analysis. No participants provided any additional comments or information that they felt they did not have time to state during their focus group or that they did not feel comfortable sharing during their focus group (including the participants who disagreed his/her opinions were heard, felt that one individual dominated the discussion, and that there was not enough time to complete the discussion).

> *"We could have talked for longer but I feel we got most of our thoughts out! You led a great discussion." (unknown from feedback form – Junior High grouping)*

> *"We got cut off at 90 minutes! It's better to have extra time and end early then to be cut off. It wasn't very clear what it would be like, but it was awesome once we started!" (unknown from feedback form – Senior High grouping)*

> *"Good conversation the entire time but I was certainly dominated by a certain few. I wanted to participate more but felt I couldn't add anything extra. Overall, it was a great experience." (unknown from feedback form – Junior Low grouping)*

4.3 Overview of Identified Themes

Below is an overview of the themes (and corresponding sub-themes) identified in the focus group discussion transcripts. See Table 4-3 for a summary of the themes identified in the focus group discussions.

Table 4-3: Summary of Themes Identified in the Focus Group Discussions

THEME	SUBTHEME
1. Satisfaction and Support for the Medication Assessment Centre (MAC)	
2. Structure of the Learning Experience	Post patient interview discussion
	Student centeredness of the MAC
	Direct and remote observation of patient interviews
	Peer and faculty mentorship
	Sign up process
	Active participation
	Pre patient interview discussion
	Convenience
	Physical space
	Quality of technology
	Patient interview process
3. Understanding and Awareness of the Student Role at the MAC	
4. Benefit to the Patient	
5. Patient Care Environment	
6. Student Clinical Skills	Patient interviewing skills
	Communication skills
7. Student Confidence	
8. Student Clinical and Therapeutic Knowledge	
9. Professional Socialization	Knowledge of professional roles
	Knowledge and perceived value of patient-centered care
	Student attitude
	Affirmation of career choice

4.3.1 Theme #1: Satisfaction and Support for the Medication Assessment Centre (MAC)

Participants expressed a high level of overall satisfaction with their experiences at the MAC. Specifically, participants indicated that they had very positive experiences when interacting with the MAC pharmacists. Participants felt that the MAC pharmacists were skilled, approachable, and were capable of creating a student focused, welcoming,

and engaging learning environment while delivering patient-centered care. Participants also stated their appreciation for the time and effort that is made to involve students in the MAC. Many had strong opinions that the MAC should continue to receive financial and administrative support to operate, despite the fact that funding was not a topic that was meant to be discussed in the focus group guide.

> *" I think that it's most important that it is there as an option for us. The fact that we have access to something like that [the MAC] with a real patient and the interview process and it's really nice and gives us more experience." (S4 – Senior Low grouping)*

> *"It would be an incredible shame for U of S pharmacy students to lose the MAC experience." (unknown from feedback form – MSCL grouping)*

> *"…they [MAC pharmacists] actually want us to reflect on what we learned and I think that they've kind of taken the best approach from all angles. Like they want the best care for the patients, they want the best returns financially probably, they want the best support for their administration, they want the best outcomes for the students to achieve. So I think that everything has been really comprehensively looked at and from a student's perspective I know it's really appreciated that they care that we are getting something out of this more so than just volunteer hours or experience to put on our resume. That we're actually learning from it." (S19 – Junior Low grouping)*

> *"This [the MAC] is what makes you a better pharmacist. Here's your chance to apply everything you learned. In like a super engaging, open, welcoming learning environment. I think that's huge. I don't know how you would ever get rid of that or why would you replace it or why you wouldn't build it any further." (S11 – Senior High grouping)*

Participants also indicated that they were very satisfied with the overall learning experience. Many participants felt that they learned a lot from their experiences at the MAC and that it was a great use of spare time between classes. Participants appreciated the opportunity to be exposed to actual patients (and not just simulations or patient actors) in a clinical practice setting to gain more experience in the "real world". They also enjoyed having the opportunity to volunteer multiple times for a variety of experiences as they felt their learning experience improved with each volunteer experience. They felt strongly that every student should have the opportunity or even be mandated to participate at the MAC. Some participants believed that even students

from other universities should have access to similar clinics, and to further expand the MAC to involve other health professional students.

> *"It's such a rich experience…I think it could work to have a 1st year in for 1 mandatory appointment in a year." (S20 –Junior High grouping)*

> *"I think at the U of S we're really lucky to have this unique opportunity and I think it's a shame if a student graduates here and does not go to MAC at least once" (S16 – Junior High grouping)*

> *"I don't think you should force students should go a certain amount. But I think that every student should go at least once before they graduate cause there's not really many other opportunities out there to get this type of learning experience." (S16 – Junior High grouping)*

> *"I think definitely having experience like this is mandatory, just as it's mandatory for nutrition to go out and do like their public health promotion fairs that they do at the elementary schools… until you actually go out there and see all the things, how people are making a difference in patient's lives and practicing that in school. I don't know if it really weighs on you that much as a student." (S19 – Junior Low grouping)*

> *" I think the more we get to do the better right? Cause we're trying to promote clinical skill services so the more medication assessment, the more experience we get and exposure we get the better for us in the future once we graduate instead of being put into a situation…and you've done your PEBC and you're licensed, are you really competent? And I think it [the MAC] makes you more competent as a care provider." (S28 – Senior Low grouping)*

> *"Especially since pharmacy is changing, it [the MAC] is going on the direction of patient care so we have to do this and it's the right step forward." (S12 – Junior Low grouping)*

> *"I think that it should be offered in other schools too... And then not only do the students get more out of it, but the patients do too because they have somewhere to go, to someone who cares." (S15 – MSCL grouping)*

> *"I think volunteering at the MAC is a great opportunity for all students in pharmacy to learn valuable skills… in the future it would be awesome if nutrition students could be included somehow in the MAC process." (unknown from feedback form – MSCL grouping)*

Participants expressed ideas on how the MAC could be made more available and accessible to pharmacy students so that more could benefit, which included the following: 1) incorporate MAC into the pharmacy curriculum as a mandatory experience for all students or as a class, 2) use patient cases from the MAC as teaching tools within

existing courses, 3) invite the MAC pharmacist(s) to lecture within an existing course, 4) allow first year students to complete a portion of their service learning hours at the MAC, 5) increase the amount of available MAC patient appointments for students to volunteer by considering academic schedules when scheduling patients (i.e., trying to schedule patient appointments when students are not in class), expanding MAC hours of operation, increasing MAC pharmacist staffing (and patient volumes), and increasing promotional efforts targeted to other health professionals and the public, 6) increase the amount of students who can attend each patient appointment, 7) offer more advanced experiential spots for fourth year students in their final internship, 8) regularly schedule students to attend the MAC on a consistent time and or day of the week or month (i.e., once a week, once every three months), and 9) post and/or stream MAC patient appointment recordings to allow students to observe on their own time and then allow students to make appointments with the MAC pharmacist to discuss the patient case.

4.3.2 Theme #2: Structure of the Learning Experience

Participants frequently discussed their perceptions regarding the manner in which the learning experience at the MAC was designed and structured. Overall, participants were very happy with the way the learning experience was designed. However, participants also identified some challenges in the design of the learning experience and offered suggestions for improvement. Participant comments (both positive and negative) regarding the structure of the learning experience were related to the following 11 distinct sub-themes, which will be described in more detail in the subsequent discussion: (1) post-interview discussion, (2) student-centered, (3) direct and remote observation, (4) peer and faculty mentorship, (5) sign-up process, (6) active participation, (7) pre-interview discussion, (8) convenience, (9) physical space, (10) quality of technology, and (11) patient interview process.

Sub-Theme #1: Post patient interview discussion

Regarding the reflective post patient interview discussions (which occur immediately after every patient interview), participants stated that they were highly satisfied with the level of active discussion that was facilitated by the MAC pharmacists

(e.g., being asked questions, listening to other students responses, teaching other students and being invited to share opinions). Many participants enjoyed having to recall pharmacotherapeutic knowledge from their lectures and the reflective nature in which the discussions were held (i.e., in the context of a real patient). Participants felt that the active, social nature of the discussion helped with their learning.

> *"… my favorite part was having that debrief conversation because that's where I learned the most …. from a student learning perspective I always like to be the first with like a 2 hour gap in between or like the last one of the day at like 2 o'clock so I have time to ask all my questions and be selfish with my learning experience." (S11 – Senior High grouping)*

> *" Also like him asking questions back. So it's not just like oh, you are a student and I'm going to um, share my knowledge with you by me just talking. It's like a 2 way street where he asks questions and makes you think." (S12 – Junior Low grouping)*

> *"I really thoroughly enjoyed the process of like reflecting back on the case and why he did certain things, why he asked certain questions, or you know, relating it back to therapeutics. So I think that's the part I enjoyed." (S12 – Junior Low grouping)*

> *"Ya, teaching somebody always just really helps solidify what you know and it, it makes you feel good." (S27 – Senior Low grouping)*

Despite the fact that participants valued the post patient interview discussions, several suggestions to improve them were made, which were: (1) to increase the amount of time allotted for the post patient interview discussion, (2) schedule a time within 24 hours of the appointment for students to return and complete a more thorough discussion if there was not enough time between patient appointments, or (3) omit dual appointments (i.e., husband and wife being assessed simultaneously) so that the focus of the appointment and the discussion can be focused on one patient at a time.

Sub-Theme #2: Student-centeredness of the MAC

Participants commonly stated that they were very pleased with the student-centeredness of the learning experience facilitated by the MAC pharmacist. Many specifically mentioned that the MAC pharmacists created a student centered, non-judgmental, respectful, and safe environment in which they could choose to remain as

an observer without negative judgment or actively participate in the patient interaction with a high level of supervision to ensure the safety of the patient. In addition, participants felt they were treated as an active member of the team through engagement in active discussion throughout the entire experience (i.e., during the post discussion and patient interview). Participants also appreciated that the MAC pharmacist adapted the level of expectations, teaching style, and complexity of the discussions to a level suitable for all students present. Participants stated that this helped them remain engaged in the experience. For example, one participant explained how the MAC pharmacist would ask more advanced therapeutic questions to the senior students while more basic questions were posed to junior students.

> *"[continue to] focus on the students and it's not just the patient it's also teaching the students the process." (S26 – Senior Low grouping)*

> *"There were a few times where we were in a new appointment and [the MAC pharmacist] would ask my opinion about something and I felt like I was, my opinion was valued in that respect." (S6 – Senior High grouping)*

> *" …. And anytime I had any questions, I never ever felt awkward or embarrassed to ask. And [the MAC pharmacist] made it very clear to the patient that I was a student in my 2nd year and I might not even know anything, or things about the conditions, so I never ever felt, you know, embarrassed." (S8 – Junior High grouping)*

> *"… there's no pressure, go in there and learn about these sorts of things without it being so overwhelming having the responsibility of being the pharmacist in the white coat where your word is like the word….So it's good to have that experience now where you can take away from it without being responsible for any of the outcomes…" (S19 – Junior Low grouping)*

The Junior High grouping and the MAC Student Clinical Leaders (MSCL), which were fourth years students who had additional patient care responsibilities and less direct faculty supervision, both described some additional features that they appreciated regarding the patient centred nature of the MAC learning experience, which were unique to their experiences. The MSCL participants stated that they appreciated that the opportunity to become active participants and accept responsibility over patient care was done progressively and that a low student to instructor ratio was used. Both the MSCL and Junior High groupings felt there was a good balance of independent and

supervised patient care opportunities. Some participants also discussed how not all students have the same learning styles and how it could affect their perception of the MAC.

> *"So having that support [MAC pharmacists to be able to speak with], but still that freedom to do it is really a good learning environment ..." (S23 – MSCL grouping)*

Sub-Theme #3: Direct and remote observation of patient interviews

When discussing student observation of the patient interviews, participants stated that the use of both direct (i.e., having a student in the room with the patient) and remote (i.e., viewing from another room via the video cameras) observation was beneficial to facilitate a high number of student volunteers at each appointment. They felt that direct observation kept students engaged by providing the opportunity to participate in the interview and build a connection with the patient. Alternatively, remote observation provided students, who have limited pharmacotherapeutic knowledge, with the opportunity to research various therapeutic details during the patient interaction or discuss the patient case with the other peers who are observing with them.

Participants commonly considered remote observation to be a challenge when participating alone in the observation room, as they felt it was easy to become distracted and disengaged. To overcome this challenge, some participants suggested that the MAC pharmacist could provide remote observers the opportunity to have input in the interview by checking in from time to time or just before the patient interview ends (when the patient is still present). Overall, the majority of participants stated that they preferred to directly observe the patient interview.

> *" …There's a lot more opportunity to be empathetic and I helped [the patient] grab coffee and through the door and like just little things like that you can establish relationships way easier in person and I think it adds to your experience of getting a feel of what the patient is going through…" (S11 – Senior High grouping)*

Sub-Theme #4: Peer and faculty mentorship

Participants commonly stated that they appreciated the opportunity to observe and interact with a combination of practicing pharmacists, faculty, and student peers as a means to improve their own skills and professionalism. Participants perceived the

practicing pharmacists to be well trained and professional. They felt that having these practicing pharmacists lead the experience was a major asset to their experience and the quality of the patient care being offered at the MAC. Participants stated that they enjoyed observing various styles of interviews (i.e., interviews that were led by different pharmacists/faculty members and other students) and the feedback provided by the MAC pharmacist to a student who lead a patient interview. Some participants also stated that they believed the individual pharmacist / student leading the interview had an affect on the overall experience and suggested that the sign up sheet should identify who will be leading the patient interview to give students the choice to strategically select volunteer opportunities to observe different interview styles.

> " And getting to learn from your peers and those who have kind of like been in your footsteps so recently that they can give you guidance. So I think that it's immensely helpful that a 1st year can sign up to be under 4th year …... The 1st year isn't' expected to know anything cause the 4th year knows what it was like 3 years ago not to know anything. So, I think that's a really big benefit too, that we're given the option too if we want and if it fits with the schedule that we can work with students in other years." (S19 – Junior Low grouping)

> "To see different styles I think is valuable. So knowing that beforehand would maybe change how I signed up." (S11 – Senior High grouping)

Participants also felt that being able to observe a pharmacist provide real-time patient-centered medication assessments and then ask questions regarding their interview process contributed to their learning. They also commonly stated that the positive encouragement provided by MAC staff and student peers was a primary motivator to initially volunteer at the MAC.

> "Learning in class is another thing. Seeing it and experience it first hand is another thing, and then you can put it into your own practice once you get out there." (S12 – Junior Low grouping)

> "I felt it was more beneficial in seeing the interaction between pharmacist and patient as opposed to actually understanding the therapeutics and the work up and why they're taking this, what's the problem with this kind of. But I really enjoyed seeing the interaction." (S13 – Junior High grouping)

Participants were also appreciative of the opportunity to collaborate with other pharmacy students from all years of study. Additionally, working with other pharmacy

students provided a source of support during the discussion and observation. Participants in the Junior Low, Junior High, Senior High, and Senior Low groupings viewed their interaction with other students at the MAC as a valuable inter-year collaboration activity. Although these participants enjoyed collaborating with pharmacy students from all years of study they did not view themselves as an official leader or mentor to more junior students because they did not have the MSCL title. Whereas the MSCL participants stated that they enjoyed acting as an official peer-mentor during their telephone based patient follow-up sessions. The non-MSCL participants (i.e., Junior Low, Junior High, Senior High, and Senior Low) expressed a desire for a more prevalent and frequent peer mentorship role for all senior students to fulfill, suggesting that the MSCL role somehow be expanded to most or all senior students.

> *"One thing that I didn't realize I thought so strongly about is the importance of it involving a 1st or 2nd year and I know as a 3rd year student I would be more than happy to go to the 1st year classroom and say: 'Come with me. This is great you guys. Don't be scared. I'll be there with you. I'll guide you through the process and you will have the best time ever and it will be like a great experience for you.'" (S20 – Junior High grouping)*

Sub-Theme #5: Sign-up process

Participants were mostly unsatisfied with the MAC sign up process and presented ideas for how to improve it. Participants specifically felt the following aspects of the sign up process were a major impediment to volunteering at the MAC: (1) limited appointment times that worked with student's class, lab, and personal schedules, (2) limited number of volunteer opportunities / how quickly appointment availabilities fill up, (3) having to compete with other students to sign up for available volunteer opportunities, (4) needing to regularly check the schedule for new volunteer availabilities (because schedule updates are made on an irregular and sporadic basis), (5) sporadic / irregular updates to the appointment scheduler, (6) confusing and unclear rules and procedures for signing up, and (7) difficulty finding the link to the online scheduler. Participants reported that these challenges sometimes contributed to a lack of motivation to volunteer at the MAC.

Conversely, some participants felt satisfied with certain aspects of the sign up process. For example, some participants felt that the use of an online schedule helped to make signing up for opportunities more convenient than if it was not an online system. Just prior to the time when the focus group discussions were scheduled to occur, the MAC coincidentally revised how they updated the scheduler and began posting new volunteer opportunities on a regular/predictable twice-weekly basis (as opposed to an irregular and sporadic basis, as it had been done previously). Participants who were aware of this new process stated that they liked the predictability of the regular updates that were now being made to the online scheduler. These participants who were aware of this new process came from the MSCL, Senior High, and Junior High groupings.

Overall, participants identified the sign up process as one of the biggest challenges to volunteering. In response, participants came up with several ideas on how to improve the sign up process. Ideas on how to improve the sign up process included the following: (1) using social medial (e.g., Facebook) or some other easily accessible technology to send automatic notifications to students regarding updated available volunteer opportunities, (2) increasing accessibility of the online scheduler link, (3) developing a waiting/cueing list in which students are assigned opportunities based on how many they have already attended to decrease the competition involved in volunteering (e.g., students with less frequent previous volunteer experiences get priority access to new appointments), (4) hiding or deleting past appointments from the sign up sheet to prevent students from accidently signing up for past appointments, and (5) simplifying the rules and procedures for the sign up process by using point form or developing a 'frequently asked question' section.

Sub-Theme #6: Active participation

MSCL participants discussed their appreciation for the opportunity to become more actively involved in the MAC. MSCL participants enjoyed independently speaking directly with patients in person or over the phone, reading through patient charts, and following up on care plans. These participants also felt that having the opportunity to

have an expanded degree of independent responsibility and perform these patient care activities with limited supervision had a large impact on their learning experience.

> *"Cause you learn best by doing in my opinion. So, whenever I've talked to patients either at the MAC or through our follow ups with the clinical leaders it just builds my confidence even more and I think that's important to have, cause I mean we know it, we just have to be more confident in answering questions and explaining things in patient friendly ways." (S14 – MSCL grouping)*

> *" And the questions are already there [in the patient's chart] and it's all kind of laid out and it's like, oh, that's pretty easy, but you know part of those, or searching for the solutions would be a huge learning opportunity." (S23 – MSCL grouping)*

> *"I feel like I'm extremely lucky to have that opportunity [MCSL] because I have learned so much." (S14 – MSCL grouping)*

Due to the unique nature of the MSCL role, only the MSCL participants had a significant amount of experience leading patient interviews and were able to discuss their opinions on actively participating in the delivery of patient care. Conversely, the other (non-MSCL) participants did not have these experiences and were only able to express their desire to be more engaged and actively participate in the delivery of patient care as a means to enhance their learning experience at the MAC.

Participants identified two common issues that made it difficult for them to be actively involved in the patient assessments: (1) not attending or observing previous patient appointments at the MAC, and (2) not reviewing the patient chart (and not being aware of the patient's history) prior to observing the patient interaction.

Participants also suggested several ideas on how to enhance student's active participation in patient care, such as: 1) allowing students to regularly follow each patient they initially interact with by participating in all subsequent appointments for that individual patient, 2) providing students with ongoing updates about each patient they initially interact with and the opportunity to discuss the patient's progress with the MAC pharmacist, 3) providing students with access to patient chart information (several hours or days) prior to attending the appointment for preparation (i.e., to learn about the patient's history and/or to review relevant therapeutics), 4) allowing students the option to arrive at least 30 minutes prior to the appointment to review patient information at the MAC, 5) allowing students the opportunity to assist in the development of the care plans

(either in part or in full) and discuss the process with the MAC pharmacist, 6) allowing students the opportunity to speak with patients regarding an aspect of the care plan they assisted with or a topic they are knowledgeable in that has been prearranged with the student, and 7) developing a peer support system (senior students paired with junior students) to guide students through their first experience at the MAC, overview care plan processes and complete aspects of patient care plans.

Sub-Theme #7: Pre patient interview discussion

Participants stated their appreciation for the pre patient interview discussion that occurred prior to each patient interview. They felt that the pre-discussion provided context to the patient interaction, giving the students the opportunity to mentally prepare and remain engaged for the patient interview. This sub-theme was only identified in the Senior Low, MSCL, and Junior High group discussions.

> *"… and you have that background information going into the interview. Whereas I feel if you were just to go into an interview I would be a little lost." (S16 – Junior High grouping)*

Sub-Theme #8: Convenience

Participants described their appreciation regarding the convenience of the learning experience at the MAC. Participants felt that having the MAC physically located on campus made it very accessible and convenient to volunteer in between classes. They also enjoyed being able to "just show up" without having to do any additional preparation prior to attending the patient appointment. This sub-theme was only identified in the Senior Low, MSCL, and Senior High focus group discussions.

> *"What was also good was the location and time. Being at school is a lot easier to get here during spares versus a shift at SWITCH... It's so easy to get access to a patient, get access to a pharmacist, get access to a complex case and see things you wouldn't see in school" (S23 – MSCL grouping)*

> *"I also like how it wasn't too labour intensive. You just came in for an hour and you learned something and you got to ask a couple of questions if you needed to. It was a really good use of an hour and at the same time not too much of a commitment." (S2 – MSCL grouping)*

Participants also discussed their appreciation of the convenience and accessibility of the orientation materials. (e.g., being able to access the materials online and use them in completing medication assessments in other environments). This particular topic was only discussed between participants in the Junior Low grouping.

Sub-Theme #9: Physical space

Participants discussed how the MAC pharmacists and the amenities in the room (e.g., coffee, chairs) created a casual environment for the patient that appeared to positively contribute to the patient's experience. Not all focus groups had this discussion, only participants from the Senior Low, MSCL, Junior High, and Junior Low groupings.

> *"And I think that [coffee and furniture] makes them feel more at home, and more relaxed. It's more of an open environment and I think that really appeals to a lot of patients." (S3 – Junior High grouping)*

Participants also felt the size of the interview rooms limited the number of students that could directly participate and the type and configuration of the furniture inhibited eye contact and open communication between all persons involved in the patient interview. Some participants suggested increasing the size of the interview room and modifying the type and configuration of the furniture to improve the student experience at the MAC. Participants in the Senior High, MSCL, and Junior Low groupings only presented these suggestions.

Sub-Theme #10: Quality of technology

Participants who had participated in a MSCL experience and/or indirectly observed a patient interview using the audio/video capture system in an adjacent room found the quality of the technology to be a challenge to remaining engaged in the experience. Specifically, participants noted that the size of the monitor made it difficult to see the video feed and/or documentation. Others had experiences where the computer would sporadically freeze or shutdown, making it impossible to continue observing. Finally, some stated that the audio was quiet or muffled, making it difficult to hear the discussion between the pharmacist and the patient. These participants

suggested that it would be helpful to use a larger monitor and better computer, or to consider the installation of a one-way mirror.

Sub-Theme #11: Patient interview process

Participants in the Senior Low, Senior High, and MSCL focus group discussions spoke about how they valued the different types of appointments that were available to observe at the MAC (i.e., initial assessment and follow up assessment) and they appreciated how each appointment highlighted different aspects of the medication assessment process. Participants felt that the initial assessment highlighted the process involved in conducting a patient interview, which was helpful in assisting them to learn about this process. They also liked how the follow up appointments highlighted various communication styles, which they also felt to be a useful learning experience.

> *"The first one [initial assessment] helps with that in terms of learning your process, seeing a professional do it kind of thing And then the follow up was more in terms of, like it wasn't motivational interviewing but it was, you definitely get to see ways in terms of how maybe persuade somebody to take your follow up like, take your recommendations. So like each one specifically has some things to pull out from it." (S23 – MSCL grouping)*

4.3.3 Theme #3: Understanding and Awareness of the Student Role at the MAC

Participants commonly stated that a challenge to initially volunteering at the MAC was an uncertainty about the extent to which they were expected and/or allowed to participate in the patient interactions. They felt this was a result of being provided with a vague description of their role at the MAC prior to participating in their first patient appointment. In addition, participants stated that the online orientation videos seemed to imply that their role at the MAC might require a high level of active participation even with their first volunteer experience, which made participants feel anxious and scared to volunteer for the first time.

> *"The biggest challenge for me was not knowing. I knew my role going in there to be an observer but I wasn't sure where the boundary was where I could interject and ask a question during the process of the medication assessment So, it's not that I felt uncomfortable there was just multiple times that I thought I'd really like to say something right now or ask my own question to the patient but wasn't sure exactly how that fit in there. And that could have been just because it was my first*

time and I haven't had experience like that and I hadn't met [the MAC pharmacist] before so it was a whole new experience. But I just thought that was a big challenge for me because I always want to be like knowing more and knowing more so, to have to keep those questions to myself is difficult" (S19 – Junior Low grouping)

" [watching the orientation videos] just made me kind of antsy, like am I supposed to know this process? And I was a bit more anxious entering the first one because I didn't know what to expect. I was just told you should know all these things, review your notes or review your process and check out these videos about what an interview is and then I go in and I'm like well, it's all nice and all but at the end of the day I'm watching this person do this and we're going to debrief it together." (S11 – Senior High grouping)

Participants also identified an issue related to email fatigue and felt it was a primary contributor to missed updates and announcements from the MAC, which are typically communicated to students by email. Students felt that it would have likely improved their understanding and awareness of the student role at the MAC had they read these email communications more thoroughly.

This lack of understanding and awareness of the student role at the MAC was evident throughout the focus group discussions. Participants frequently made inaccurate statements regarding MAC operations or were unaware of recent updates and additions to the learning experiences offered at the MAC. For example, many participants were unaware of the MSCL experiences and/or the recent change to the frequency of updating the sign up sheet even though an email notification was sent to the entire pharmacy student body when these changes occurred in September and November 2015. Participants with "high" experiences made less frequent inaccurate statements regarding the MAC than students with "low" number of experiences.

Participants also stated that they felt the limited advertising that they receive about their role at the MAC was a contributor to their lack of understanding and awareness of their role at the MAC. In addition, participants felt that these issues could be a possible explanation as to why not all students volunteer at the MAC on a regular basis. In response, participants felt that by enhancing the understanding and awareness of the MAC, more pharmacy students would volunteer and feel more comfortable during their volunteer experiences. Participants felt this could be achieved through the following suggestions: (1) increasing and enhancing the orientation provided to students

who volunteer for the first time regarding student roles, responsibilities, and the sign up processes through the use of clear presentations, frequent reminders, social media, physical advertisements (e.g., posters), and concise announcements and instructions, (2) when advertising the MAC to students, highlighting the benefits students can get from volunteering regardless of their prior pharmacotherapeutic knowledge, (3) increasing peer-led promotion of the MAC by developing MAC representative positions on the student council or encouraging second year "buddies" to promote the MAC to first year students, (4) using written testimonies from alumni in MAC student promotional endeavors (e.g., online) describing their role and the benefits to volunteering, and (5) increasing the amount of professors who promote the MAC, specifically those in the area of practical based education.

4.3.4 Theme #4: Benefit to the Patient

Participants commonly spoke about the benefits that they believed patients received from the MAC and how the MAC pharmacist was primarily responsible for this. However, they also felt that the student's role contributed to this patient benefit. They believed that patients benefited from the education they received about their medications, the optimization of their medication regimens (e.g., timing of medications, decreasing the number of total medications, management of side effects), and the opportunity to speak freely about their medication concerns and be heard by someone who is willing to help. Participants indicated that they often found MAC patients very appreciative of the service and that they enjoyed being a part of the patient's care. Participants also felt that patients benefitted from the open access of the MAC (e.g., free of charge, ability to self-refer).

> *"It's very impactful for both patients and students who are volunteering. You can see first-hand how appreciative these patients are and how interested they are in their own health. And being able to commit an hour to them and being able to help solve some of these problems that they have I think is awesome and of course being a free service is that much better." (S6 – Senior High grouping)*

> *" I liked how it seemed like you're really providing a lot of benefits to the patient and even if they seemed sort of hopeless to me and I had no idea what to do, there was always changes that could be made. And even just being able to take*

that whole one hour to talk to someone, just seeing how much everyone appreciates that was really nice. (S2 – MSCL grouping)

" I really enjoy going and seeing that the patient has the opportunity to, instead of just talk about their medical conditions, actually just talk about their medications because I feel that you don't have that much opportunity in the regular health care experience and actually having a community resource to go and sit down and talk about your specific medications. It's a really good educating process for the patient too." (S20 – Junior High grouping)

"… I had the opportunity to meet a patient [in a first year experience] that she was telling us from her experience that she just really wanted, in a health care [setting] to have someone just sit there and listen and I feel like MAC was able to, from my experience at the MAC, was able to offer that … I think it was a good opportunity for the patient to just like get that full, health care, I guess patient centered full health care approach to their care." (S3 – Junior High grouping)

"I enjoy seeing the people that come in actually benefit from the experience. They actually really get a lot out of it and you can see it make a difference right away because they can take home real things to do when they get home to make a change in their medications which is cool." (S21 – Junior High grouping)

"There's been a lot of times, or where a patient has said it's not about whether you solve the problem or not, it's just getting to be at a place where they can talk to you and they can just get out what they're feeling." (S14 – MSCL grouping)

"That's one aspect that I kind of enjoyed about it is that it makes yourself feel good. Well, just making a difference in that patient's life. They acknowledge, they thank you, they're just so grateful that you're able to provide them with that information. And I feel like in a normal pharmacy setting that interaction or that time is not often given to the patients so. I guess it goes along with the patient centered care as well. (S8 – Junior High grouping)

4.3.5 Theme #5: Patient Care Environment

A strong theme that emerged from the data was regarding the patient care environment at the MAC. Participants valued and were highly satisfied with the "real world" patient care environment that the MAC provided. Participants commonly discussed how being exposed to a learning environment with real patients of all ages, demographics, and complexities of health care needs in real, unpredictable scenarios was valuable to their learning experience and an enjoyable experience. The enthusiasm, appreciation, and engagement of the patients in their own care was

another aspect of the "real world" patient care learning environment that the student participants identified as valuable and enjoyable.

>*"Compared to our OSCEs and stuff that I could pretend all you want but they're not a real patient. Whereas these people, I had a man and his father and it was nice to see how, how active his son was in his health care. So I really enjoyed having a real patient." (S4 – Senior Low grouping)*

>*"I like the complexity. It's just always so challenging. These patients that I've had there's just so much going on … And I like the patients they're appreciative and the ones I've had they're super excited and they ask if they could come back later and follow up and very engaged and involved in their own care." (S11 – Senior High grouping)*

>*" I enjoyed how each experience is completely unique. And uh, every time you go in the patients are going to have different problems and like it's nice because they're a lot more complex than what you would normally see. Like in class or like, so straight forward with their examples and the care plans and that kind of stuff we do. And these patients have, it's a lot more real world experience than just what you learn from a text book." (S5 – Junior High grouping)*

Participants also described the MAC as a "one of a kind experience" that does not exist in any other context within their pharmacy training. Participants felt that the MAC is the only place in which they can be exposed to direct patient care during the school year that helps them develop "real world" skills.

>*"There's no other opportunity that we have as student to actually sit down with a patient that's unpredictable… this is the one opportunity that students have, so if there was more accessible why wouldn't you want 100% of the population of our students be doing this because it's their one opportunity to be doing this with patients." (S19 – Junior Low grouping)*

>*"I think that would be really hard to get an even vaguely similar experience somewhere else. Nothing like [the MAC]." (S2 – MSCL grouping)*

>*" It's just the real life experience you can't ever get that in school. You can't get that by counseling your friend on cough and cold. You know you need to have that real patient and you take it more seriously." (S14 – MSCL grouping)*

>*"Where else as a student, if you don't have a work experience, can you get practical and opportune environment to practically apply the skills you are learning in class? … this is the only way you can do that [get clinical experience prior to the final SPEP rotations] and it facilitates for students and people who are out of town or don't have transport to jobs or whatever barriers to getting that experience they may have, this is something to knock those barriers down. And*

so if this, that having that environment to apply those skills and like a practical environment with real people. That's what makes you a better pharmacist. Is you're taking everything you learn and actually doing something with it instead of just running along task to task. And if you don't have those opportunities to work or you haven't seeked them out for themselves, or maybe you can't for whatever reason. This is what makes you a better pharmacist." (S11 – Senior High grouping)

4.3.6 Theme #6: Student Clinical Skills

Participants discussed how their experiences at the MAC helped improve their clinical skills. Many participants stated that their clinical skills improved as a result of observing the pharmacist complete the patient interview and actively participating in the post patient interview discussions. MSCL participants additionally stated that leading patient interviews independently further helped to improve their clinical skills. The two clinical skills that students most commonly discussed were patient interviewing and communication skills, which are discussed below.

Sub-Theme #1: Patient interviewing skills

Participants felt that their patient interviewing skills had improved as a result of volunteering at the MAC. The specific aspects of the patient interviewing skill that participants thought were improved were: (1) development of a systematic process for completing a patient interview, (2) controlling the timing and the flow of an interview in a professional and patient-centered manner, by finding a balance between collecting information and proving education, (3) creating a comfortable and trusting environment for the patient, and (4) dealing with difficult, complex, or emotional patients.

"It's such a unique thing to see someone to like bring back the focus without saying like I don't want to hear your story. It's such a unique balance to be like hearing them out and saying, okay we don't want to be here all day. So that was like really cool to see. And I think I learned from that just some techniques." (S5 – Junior High grouping)

Participants also described how they better understood the importance of the 'head to toe' or 'review of systems' assessment and how to conduct it effectively. In addition, they felt that the MAC had increased their ability to recognize and respond to a patient's non-verbal body language and increased their comfort with using silence as an

interview technique. Some participants discussed how the MAC had increased their ability to actively listen and respond to patient statements, questions, and concerns through the use of properly worded open-ended questions and probing statements.

> "…being able to see like [the MAC pharmacist]'s style and how he does the information gathering and counseling and just how to identify any problems and work it out with the patient has been like invaluable. It's been amazing... I've been able to have higher quality patient interview skills just from watching his style. So I think it's definitely helped improve my communication and interpersonal skills and like working with patients who are a little bit more difficult cause you don't get that same experience in the lab." (S6 – Senior High grouping)

> "I think every time I come here I always feel I'm learning a little bit more in terms of probing and finding the right questions to ask. And I always feel I'm never asking the right questions or not enough of them. So again, every time I come I think I build a better process kind of thing." (S23 – MSCL grouping)

> "One thing I think I noticed right away was is how they asked a certain question. And often the way I would phrase a question would be a lot different than how they would phrase the question. And I would really see the benefit to they way they would phrase a certain question they wanted to ask. Just how it would open up the floor for like a lot of discussion. So I think that's one of the biggest thing I've learned." (S3 – Junior High grouping)

Sub-Theme #2: Communication skills

Participants felt that their patient-centered communication skills had improved as a result of volunteering at the MAC.

> "I think it's definitely improved my communication skills even thought I haven't been able to participate directly in the patient interview." (S6 – Senior High grouping)

> " Just being able to see how someone else phrases it to the different understanding to each participant involved. So it's gaining those skills that you may not experience when you're practicing with someone in your class with the same skills." (S25 – Senior Low grouping)

> "I think the patient centeredness of it. We always say, oh we know we're just gathering information from you and then we'll do some research and then present you with the options and we can all decide collaboratively. And the final decision is up to the patient, so I guess learning how to present or how to give the patient the knowledge or the tools to make the best decision for themselves. Or make the best decision with them instead of for them." (S2 – MSCL grouping)

" …It's good to learn how to explain things in a more simple manner and I've definitely learnt that a lot." (S14 – MSCL grouping)

"Because we had [a patient] who was taking something to cleanse [their] liver and [the MAC pharmacist] had to explain to [them] how you don't cleanse your liver. So, taking all of your technical and physiological knowledge and the liver processes and stuff and taking that down to the level that the patient can understand. Now whenever we learn things I always think, okay, how would I actually explain that to the patient…It's so important to have other ways to say things like that and I feel that I have learned that." (S20 – Junior High grouping)

4.3.7 Theme #7: Student Confidence

Participants felt that their confidence in their abilities had improved as a result of volunteering at the MAC. Many participants stated that their confidence improved as a result of observing the pharmacist complete the patient interview and actively participating in the post patient interview discussions. MSCL participants additionally stated that leading patient interviews independently further helped improve their overall confidence, including their ability to make decisions in the face of uncertainty. Some participants further specified that they felt their confidence in making decisions, interacting with patients, or performing in OSCE exams improved.

> *"I feel [the MAC] helps build your confidence. And also like in not necessarily from conducting the interview, but from watching somebody else conduct it and being able to be like, ya, that's pretty much what I would do. Or, just reassuring what you're being taught and the process is very similar and it get results kind of thing. Is ya, how it helps build confidence." (S29 – Senior Low grouping)*

> *"Ya, like normally if you freeze up on like an OSCE situation and you don't know what to do… just take a breather and get back to it cause you can't focus on it right now. This makes you feel a little bit better and more confident going into other situations." (S28 – Senior Low grouping)*

> *"I think that just reminding you to be confident in yourself. Because these people are here and they trust you. They know you've gone to school and have all this education, and so use your skills and the information that you learned and just like be confident in your decisions." (S8 – Junior High grouping)*

MSCL participants also discussed their confidence as a challenge to participating at the MAC within the MSCL role. With their first few patient interactions the MSCL participants reported feeling overwhelmed and intimidated by the complexity of the

patients and the task to be completed independently. However, after completing their first few patient interactions they no longer felt overwhelmed, but more confident in their problem solving abilities and in interacting with patients.

> *"…when he asks you a question I would be like 'I should know that answer, but for some reason it's not coming'. It's kind of a little bit intimidating because [the MAC pharmacist] is just so good at what he does and when he asks you a question and you're kind of scared cause you don't want to answer wrong, but you want to sound smart at the same time" (S14 – MSCL grouping)*

> *"…you don't realize you know what to ask until you're all of a sudden asking all these questions that you didn't know you had in you. I thought that was a really awesome idea that you came up [MSCL] with to help us learn." (S14 – MSCL grouping)*

> *"It's probably made complex cases less overwhelming. I'm like oh, there was this person in MAC and this one's actually not that complex. We can do it guys. Real world is more complicated. Ya, so I guess confidence and dealing with complicated things." (S2 – MSCL grouping)*

4.3.8 Theme #8: Student Clinical and Therapeutic Knowledge

Participants commonly indicated that their limited clinical and therapeutic knowledge prior to volunteering at the MAC was a challenge to remaining engaged in the patient interview or contributing to the post patient interview discussions. Many participants stated they had not previously received course instruction on the clinical and therapeutic topics that arose in the patient interviews. As a result, they were sometimes unable to understand and follow the patient interview, or feel comfortable in contributing to the post patient interview discussions.

> *"…during the initial interview I don't feel confident enough to speak up or say anything that I may have noticed or felt just because I'm [third year pharmacy student] not as knowledgeable as the other people in the room..." (S11 – Senior High grouping)*

> *"In the beginning feeling like you don't know anything and then being asked if you had any questions when everything is really a question its kind of. That was a challenge for me, being comfortable asking when I really have no idea what I'm talking about. Or I didn't feel like I had any idea what I was talking about." (S13 – Junior High grouping)*

However, participants also discussed that after volunteering at the MAC their clinical and therapeutic knowledge had improved, consolidated, and/or solidified.

Participants felt that they "learned a lot", including lessons that cannot be taught in lectures. Participants also felt that the MAC made their learning "real", which increased their ability to remember the lessons they learned in their lectures. Although all focus group participants discussed this, participants within the MSCL group spoke most strongly regarding their perception of an improvement in their clinical and therapeutic knowledge as a result of volunteering at the MAC.

"I just feel like it [the MAC] taught what books don't teach. And I don't know how to explain that but that's the main things that I got out of it that every time I come there's something new I learn whether it's I learned it in class or not, but like it's different as opposed to you know I sit down and read about it or memorize it or whatever." (S15 – MSCL grouping)

"I think you just retain it more when you see. You're able to put a face to this person and, this person has condition A, B and C and they're taking these drugs as opposed to sitting in class or sitting behind your notes and trying to memorize things one after another. I feel things stuck with me a lot better than they normally do." (S8 – Junior High grouping)

"It's just one thing learning drugs by itself and seeing a patient right there in front of you and having an interaction and seeing what problems they have. Just the whole interaction of how they're communicating as well. I think I enjoyed that the most cause like most people I feel experiences stuck in my brain better than just bookish knowledge." (S12 – Junior Low grouping)

"And I think in class we learned about metoprolol and all these drugs, but we never, I didn't connect them maybe as much as to what they did until you came to MAC… it kind of consolidated what we were learning in class." (S15 – MSCL grouping)

"Just the real life experience of it. Considering all the medications and all the disease states and everything in one person and together and how it interacts with each other and how it affects their lives. Ya, it's different about learning about them separately in class." (S2 – MSCL grouping)

Many participants also stated that they felt the post patient interview discussion had a positive impact on their clinical and therapeutic knowledge. Specifically, the opportunity to teach other students, listen to other students' responses, and to answer the questions posed by the MAC pharmacist, all within the context of a real patient. Participants also felt that observing the pharmacist complete the patient interview impacted their learning. "MSCL" participants additionally stated that actively preparing

and leading patient interviews (i.e., reviewing the patient's chart and speaking with patients) also had an impact on their clinical and therapeutic knowledge.

> *"Ya, teaching somebody always just really helps solidify what you know and it, it makes you feel good." (S27 – Senior Low grouping)*

> *"I honestly think that most of my learning just comes from like the discussion before hand and the discussion after. I learn all the soft skills during the actual appointment. But my learning of 70% of what I learn is from those discussions." (S20 – Junior High grouping)*

Participants additionally discussed how a students' year of study directly influenced how much prior clinical and therapeutic knowledge they had. Participants believed this would affect the benefits that a student would get from volunteering at the MAC and what appointment types were best suited for particular students. They stated that because first and second year students have not received many therapeutic lectures they would primarily learn about the role of the pharmacist and the medication assessment process as a result of volunteering at the MAC. As such, they felt initial appointments were most beneficial for first and second year students. On the other hand, they felt that the follow up appointments were better suited to third and fourth year students because they had received therapeutic lectures and would be able to understand and be more engaged in the patient's care plans and therapeutic discussions that follow the patient interaction.

> *"…if you [don't have] that therapeutic knowledge it's hard to follow the interview process. So I found that sometimes I was like 'why is he asking that question?'… I can't make that connection as a 1ˢᵗ of 2ⁿᵈ year. Where as now [as a 4ᵗʰ year student] I feel like I could, so it makes me feel more engaged or knowing what's going on. You could get lost in the therapeutics because some of it does just go over your head cause it's so complex. So I guess it sucks when you're younger or earlier in the program, but now it's one of my favorite parts. So it changes." (S11 – Senior High grouping)*

4.3.9 Theme #9: Professional Socialization

Participants discussed how they felt their experiences at the MAC impacted their professional socialization. As discussed previously, professional socialization is "the *transformation* from students to professionals that are able to understand and then internalize the attitudes, behaviors and values of the profession (p. 552)."[105] Participants

felt this impact was a result of their entire MAC experience, from observing and interacting with a practicing pharmacist to interacting with a variety of real patients in real scenarios. MSCL participants additionally stated that actively completing patient interviews had an impact on their professional socialization.

Four sub-themes related to the transformation of students from learners to professionals were identified and are described in more detail below: 1) knowledge of professional roles, 2) knowledge and perceived value of patient-centered care, 3) student attitude, and 4) affirmation of career choice.

Sub-Theme #1: Knowledge of professional roles

Participants felt that their exposure to the MAC improved their understanding of the role and potential impact of a clinical pharmacist. This included a deeper understanding of where and how the pharmacist fits within the health care system and the concept of collaboration.

> *"Seeing how much a pharmacist can do and how much benefit they can provide. Just a really unique job or, I mean, most pharmacists are doing something like this. So just that this is possible and this service exists and I think it's amazing." (S2 – MSCL grouping)*

> *"I've learned a lot about professional inter-collaboration. You are just one piece of the big ol' puzzle that these people are going through with the health care system so it's really important to not throw anyone under the bus... We've never really been taught collaboration with other professionals, they're [the labs] not real life. So I think that you can't replace this experience in terms of learning about collaboration either." (S14 – MSCL grouping)*

> *"… seeing the role of the pharmacist in that medication management team, in health care team, made me more confident that pharmacists can help people and other members of the team to help the patient." (S7 – Junior High grouping)*

> *"…when I started in 2nd year, I think I was like most pharmacy students. You kind of wonder what your place is, not necessarily in the college but more like once you get out. Like what can you actually do? So for me, I don't have, I didn't have any community experience, so I hadn't seen that role. So when I went to the MAC I kind of saw a role that I never knew existed for pharmacists so that was really cool. So I think that I enjoyed going last year to kind of like reassure myself that like, I actually could do something like that." (S13 – Junior High grouping)*

"I gained a better understanding of what a different role is for a pharmacist and it can actually make a difference." (S13 – Junior High grouping)

"… I think it really reiterated to me [going to the MAC] how influential a pharmacist can be without wearing the white coat, without standing behind the counter and seeing how much respect and confidence the patient had in the care that they were receiving from the pharmacist..." (S19 – Junior Low grouping)

Participants also felt that they gained a better understanding of the professional aspect of being a pharmacist. Participants felt the MAC pharmacist modeled a professional pharmacist. They commonly discussed that observing how a professional pharmacist conducts themselves with patients and students helped them learn how they should conduct themselves in a professional manner.

"… Just being able to watch somebody do something their way and then being able to take a step back from it and kind of reflect myself and think about how I would've approached a situation. So that I put the ownership on myself to think like if I was in his shoes, what would I have done in that situation? So that was definitely contributed to my learning is who am I going to be as a professional. Like what is my professional identity going to be." (S19 – Junior Low grouping)

Some participants also identified that their experience at the MAC made them realize the importance of being involved in high quality and professionally relevant employment, volunteer, and experiential education experiences to better themselves as professionals. Only participants from the Junior Low group had this discussion.

Sub-Theme #2: Knowledge and perceived value of patient-centered care

When discussing their experiences at the MAC, participants felt that they better understood the aspects and importance of patient-centered care after volunteering at the MAC. This included understanding the patient's perspective, appreciating the individual needs of the patient, and personalizing the patient's interview and care.

" I've been in an interview where it's been quite emotional and I think it's important to have those types of experiences because then you learn how to deal with those as well. Cause, like I'm an emotional person. I'll get emotional right with them, and you can't, you have to keep it in check. But you have to be nice about it. You can't, you still have to care." (S14 – MSCL grouping)

"But really looking at the patient factors and putting the ownership on me to start thinking about those sorts of things. I haven't taken a patient care class yet and we really haven't done a whole lot with that stuff, so just being able to see [the MAC pharmacist] respect [the patient], how he was so non-judgmental with the patient and able to communicate with them person to person. It wasn't like he was wearing a white coat and he was standing behind the counter telling you this is right and this is wrong. But he was actually listening to the patient and figuring out why they were doing what they were doing." (S19 – Junior Low grouping)

Some participants also discussed how interacting with real patients at the MAC facilitated their understanding of empathy and caring about the whole patient and not just their medical conditions.

"I find you learn that health is a lot of other stuff too. Like someone calling to cancel their appointment because my husband had an accident at work. You really start to care about them as a whole person." (S14 – MSCL grouping)

"And putting a personality behind every problem. For me it's just different when you see it in person. I think it adds to the empathetic nature you show someone just cause you seen it. Cause when I see a case, or a drug interaction wise, and you see the patient in person and it makes me re-prioritize all the time just speaking with them and things that they bring up will totally change how I would make their game plan to deal with their problems just based on them." (S11 – Senior High grouping)

Sub-Theme #3: Student Attitude

Participants discussed the existing curriculum within the pharmacy program at the U of S and questioned the relevance of some material. They stated that their time at the MAC illustrated the relevance of certain aspects of the coursework that they had not previously appreciated (e.g., foundational teachings) and increased their confidence with the overall quality of the pharmacy program.

"…coming to the MAC, it really makes you realize that everything there that I learned is like super useful and you get to see it first hand and it does affect someone's life." (S3 – Junior High grouping)

"I think that it's really helpful for students and it brings it all into real life because you're taught all these things in class and you trying to figure out when you're going to use them and how you're going to put them into an interview and seeing it first hand it kind of makes you think I can do this. It just makes it real. Cause as a student you want to apply all these things and you want to think that you made a difference and I think this is a way that you can, or makes you think a bit that you're a student and you can still do these things." (S27 – Senior Low grouping)

" … [a classmate] didn't really realize how important the pharmacology and the pathology that we are learning in class and how relevant it really is to patient care because sometimes I think when you are a student you get so disconnected from the end goal of what you're going to be doing in your profession and you just get really concerned about the curriculum and kind of meeting the objectives of the course and forgetting how to apply it to real life. So she said that when she volunteered that's kind of the connection that she made, how important it really is to be taking the knowledge from your classes and applying it to real life." (S19 – Junior Low grouping)

Participants also felt that the MAC increased their motivation to learn to ensure they become and remain competent pharmacists.

"I learned a lot at the appointments… It made me more motivated to learn because I saw the importance of it here." (S2 – MSCL grouping)

"For me it's a nice little slap in the face of how many things I forget real quickly. And how on top I need to be. Just stuff we were talking about, or stuff that I learnt 3 months ago and it's like I know where it's from and I can picture that slide but I can't remember it. And then realize I didn't know that as well as I did so it was a nice little refresher to get on top of your stuff." (S19 – Junior Low grouping)

Some participants also discussed the importance of the student's attitude while volunteering at the MAC in relation to their experience. 'Being dedicated to learn and willing to put the effort into the experience to get the benefits out of it' is the frame of mind student participants feel is required to benefit from the MAC. Additionally, some students felt that maintaining the voluntary nature of participating at the MAC was important to keep the positive learning environment.

"And I find that it's one of those things that I find you get out of it what you put into it and how many times have we been told that? But, it's real. Like if you don't want to be there and you don't want to listen to what someone else is like saying. You're not going to get out of it and you're taking away that opportunity for someone that really does want to be there and does want to learn." (S14 – MSCL grouping)
"When something gets forced upon you I feel like there's more of a negative connotation to it as opposed to when I'm going to something voluntary." (S3 – Junior High grouping)

Sub-Theme #4: Affirmation of career choice

Participants felt inspired to practice pharmacy after volunteering at the MAC. They felt the MAC reignited their passion for pharmacy. This sub-theme was only

identified in the MSCL, Junior High, and Junior Low group discussions. However, participants within the Junior Low group spoke most passionately about this sub-theme.

> *"I thought it was really neat how it reignited my passion for patient care. Sometimes when you're in class you forget what the end goal is and why you wanted to pursue a career like this." (S19 – Junior Low grouping)*

4.4 Review of the Similarities and Differences of the Identified Themes

Overall, few differences were identified between the focus groups. All nine primary themes were observed in all five-student groupings, with minor differences regarding the specific details of each theme. For example, within *Theme #6, Sub-Theme #1: Patient Interviewing Skills*, all of the focus groups discussed how they felt the MAC improved their interview skills, but not all groups provided similar examples regarding the specific skills that had improved. Similarly, while all of the focus groups discussed controlling the timing and the flow of an interview in a professional and patient-centered manner, only select focus groups discussed other aspects of the interview process (e.g., better understanding of the importance of the 'head to toe' or 'review of systems' assessment, increased comfort with using silence as an interview technique).

There were some instances where particular sub-themes only emerged from specific focus groups. Furthermore, the context in which these sub-themes were discussed sometimes varied between focus groups. These variations have been previously discussed within each of the themes and/or subthemes. The following table summarizes these variations.

Table 4-4: Summary of the Theme Differences Between the Focus Groups

THEME	SUBTHEME	CONTEXT	Sr Low[2]	Sr High[3]	MSCL[4]	Jr High[5]	Jr Low[6]
Structure of the learning experience	Sign up process	Challenge, Suggestion	X	X	X	X	X
		Like		X	X	X	
	Active participation	Like, Learning Activity			X		
		Suggestion	X	X	X	X	X
	Pre patient interview discussion	Like	X		X	X	
	Convenience	Like	X	X	X		X
	Physical space	Like	X		X	X	X
		Suggestion		X	X		X
	Patient interview process	Like	X	X	X		
Understanding and Awareness of the Student Role at the MAC[1]		Challenge	X	X		X	X
		Suggestion	X	X	X	X	X
Student Confidence		Challenge			X		
		Perceived benefit	X	X	X	X	X
Professional Socialization	Affirmation of career choice	Perceived benefit			X	X	X

[1] Medication Assessment Centre (MAC)
[2] Senior Low (Sr Low) – pharmacy students in year four of study with less than three experiences
[3] Senior High (Sr High) – pharmacy students in year four of study with three or more experiences
[4] MAC Student Clinical Leaders (MSCL) – pharmacy students in year four of study in an active participation role
[5] Junior High (Jr HIgh) – pharmacy students in years one – three of study with three or more experiences
[6] Junior Low (Jr Low) – pharmacy students in years one – three of study with less than three experiences

In addition, different patterns between the groupings were identified that were not clearly reflected in the overview of the themes. The discussions held between participants with high experiences (Senior High, MSCL, and Junior High) were more in-depth, detailed, interactive, and informed. Each participant within these focus groups was able to reflect on multiple MAC experiences and comment on various aspects of the MAC. Participants with "high" experiences also made less frequent inaccurate statements regarding the MAC than students with "low" experiences. In addition, only the MSCL participants had a significant amount of experience leading patient interviews and were the only participant group that was able to discuss their opinions on actively participating in the delivery of patient care.

Another pattern identified was the strength in which the themes emerged from the transcripts. Overall, the strength of the identified themes were consistent across all focus groups. However, there were two notable variations. Within the MSCL discussion, participants commonly spoke about *Theme #8: Clinical and Therapeutic Knowledge*, and Junior Low participants commonly spoke about *Theme #9, Sub-Theme #4: Affirmation of career choice*.

4.5 Review of the Recommendations for Improvements Suggested by the Participants

The participants provided many recommendations on how to improve the MAC experience. These recommendations were previously introduced under each theme however, for ease of understanding, the recommendations made by the participants can be summarized into five primary categories: (1) improve the sign-up process, (2) enhance student engagement in the patient care process, (3) expand student exposure to the MAC, (4) enhance the students' understanding and awareness of the MAC, and (5) optimize the physical environment of the clinic. Table 4-5 provides a summary of all of the suggestions for improvement made by participants throughout all of the previously discussed themes.

Table 4-5: Summary of the Recommendations for Improvements

Improve the sign up process.
Use social medial (e.g., Facebook) or some other easily accessible technology to send automatic notifications to students regarding updated available volunteer opportunities.
Increase the accessibility of the online scheduler link.
Develop a waiting/cueing list in which students are assigned opportunities based on how many they have already attended to decrease the competition involved in volunteering.
Hide or delete past appointments from the sign up sheet to prevent students from accidently signing up for past appointments.
Simplify the rules and procedures for the sign up process by using point form or developing a frequently asked question section.
Identify who will be leading the patient interview on the sign up sheet to give students the choice to strategically select volunteer opportunities to observe different interview styles.

Table 4-5 continued

Enhance student engagement in the patient care process.
Allow students to regularly follow each patient they initially interact with by participating in all subsequent appointments for that individual patient.
Provide students with ongoing updates about each patient they initially interact with and the opportunity to discuss the patient's progress with the MAC pharmacist.
Provide students with access to patient chart information (several hours or days) prior to attending the appointment for preparation (i.e., to learn about the patient's history and/or to review relevant therapeutics).
Allow students the option to arrive at least 30 minutes prior to the appointment to review patient information at the MAC.
Allow students the opportunity to assist in the development of the care plans (either in part or in full) and discuss the process with the MAC pharmacist.
Allow students the opportunity to speak with patients regarding an aspect of the care plan they assisted with or a topic they are knowledgeable in that has been prearranged with the student.
Develop a peer support system (senior students paired with junior students) to guide students through their first experience at the MAC, overview care plan processes and complete aspects of patient care plans.
Increase the amount of time allotted for the post patient interview discussion.
Schedule a time within 24 hours of the appointment for students to return and complete a more thorough discussion if there was not enough time between appointments.
Omit dual appointments (i.e., husband and wife being assessed simultaneously) so that the focus of the appointment and the discussion can be focused on one patient at a time.
Throughout or just before the patient interview ends (when the patient is still present), allow students who are remotely observing the opportunity to have input into the interview (i.e. ask any additional questions they may have to the patient).
Expand the MSCL role to most or all senior students.

Expand student exposure to the MAC.
Use patient cases from the MAC as teaching tools within existing courses.
Incorporate MAC into the pharmacy curriculum as a mandatory experience for all students or as a class.
Invite the MAC pharmacist(s) to lecture within an existing course.
Allow first year students to complete a portion of their service learning hours at the MAC.

Table 4-5 continued

Increase the amount of available MAC patient appointments for students to volunteer by considering academic schedules when scheduling patients (i.e. trying to schedule patient appointments when students are not in class), expanding MAC hours of operation, increasing MAC pharmacist staffing (and patient volumes), and increasing promotional efforts targeted to other health professionals and the public.
Increase the amount of students who can attend each patient appointment.
Offer more advanced experiential spots for fourth year students in their final internship.
Regularly schedule students to attend the MAC on a consistent time and or day of the week or month (i.e., once a week, once every three months).
Post and/or stream MAC patient appointment recordings to allow students to observe on their own time and then allow students to make appointments with the MAC pharmacist to discuss the patient case.

Enhance the students' understanding and awareness of the MAC.

Increase and enhance the orientation provided to students who volunteer for the first time regarding student roles, responsibilities, and the sign up processes through the use of clear presentations, frequent reminders, social media, physical advertisements (e.g., posters), and concise announcements and instructions.
When advertising the MAC to students, highlight the benefits students can get from volunteering regardless of their prior pharmacotherapeutic knowledge.
Increase peer-led promotion of the MAC by developing MAC representative positions on the student council or encouraging second year "buddies" to promote the MAC to first year students.
Use written testimonies from alumni in MAC student promotional endeavors (e.g., online) describing their role and the benefits to volunteering.
Increase the amount of professors who promote the MAC, specifically those in the area of practical based education.

Optimize the physical environment.

Increase the size of the interview room.
Modify the type and configuration of the furniture in the room to facilitate open communication, eye contact, and maximize overall comfort.
Use a larger monitor and better computer to improve the quality of the audio/visual when remotely observing.
Install a one-way mirror to improve remote observation.

Chapter Five

Discussion

5.1 Interpretation of the Results

5.1.1 Research Question 1

What are pharmacy students' experiences with the MAC?

The results of this study found that pharmacy students were satisfied with their experiences at the MAC, primarily due to the positive experiences they had with the MAC pharmacists and patients, as well as the value they perceived from the overall learning experience. Participants showed their support for the MAC by strongly expressing their opinions that every student should participate at the MAC. This result is consistent with previous studies that examined the perspectives of health professional students that were exposed to a variety of early experiential programs, which found that students were generally satisfied with their experiences and supportive of ongoing student involvement, especially when they perceived they benefited from the experience.[65-67,72,73,76,81,85,89,90,100-102]

Prior to this study, little was known about pharmacy student's experiences with early experiential education programs, particularly one that is comprised of a patient care clinic that is physically located in a pharmacy school (such as the MAC). Consequently, this study adds to the existing literature by confirming what has been found in other studies, of other programs, that student volunteers are generally happy and satisfied with volunteering at the MAC because they perceive the MAC to be a positive and valuable learning experience.

5.1.1.1 Research Question 1a

What do pharmacy students enjoy about the MAC?

The participants identified several aspects of the MAC that they found enjoyable. These included the structure of the learning experience, the patient care environment at the MAC, and benefits that they perceived patients receive from the MAC. When discussing the structure of the learning experience the participants noted several

specific features that they found enjoyable, which included the following: (1) the post patient interview discussions, (2) the student-centered nature of the MAC experience, (3) observing the patient interview both directly and remotely, (4) the combination of peer and faculty mentorship, (5) the sign-up process, (6) actively participating in the patient care process, (7) the pre patient interview discussion, (8) the convenience of volunteering, (9) the physical space of the clinic, and (10) the patient interview process.

Previous studies within the field of early experiential education of health professionals primarily focused on the perceived impact on health professional students of the programs and not the specific features of the programs that were enjoyed by the participants. Therefore, these results add useful information to the body of literature on this topic and may be helpful for future educational institutions that are developing new early experiential training programs for health professional learners, or for existing programs looking to improve their students' experiences.

These results are not surprising because many of the features of the MAC that were identified as enjoyable by the participants in this study are similar to the features of previously studied early experiential education programs as suggested by the literature and described previously in *Section 2.2.2 (Features of Previously Studied Early Experiential Education Programs).* However, this is the first time that a study has determined that the features that previous studies have suggested make a program effective are similar to the features that students enjoy. For example*,* one of the features of previously studied experiential education programs from the literature is exposure (of students) to a 'concrete, direct patient care, clinical experience'. Participants in this study stated that they enjoyed the "patient care environment" at the MAC, primarily because they were able to be actively involved in caring for real patients in the real health care setting at the MAC.

Additional features of experiential education programs from the literature, such as: (1) reflection on the experience immediately after it has been completed, (2) close supervision and guidance provided by an experienced mentor, and (3) opportunity for the student to apply the knowledge and skills gained in another direct patient care clinical situation,[25,29,30,45-48] were all mentioned by students in this study when they talked about how they enjoyed the "structure of the learning experience" at the MAC.

For example, when talking about the structure of the MAC learning experience, students specifically commented that they appreciated: (1) the post patient interview reflective discussions that occurred after the patient interview was completed, (2) the close supervision that occurred through both faculty and peer mentorship, and (3) the patient interview process, which included ongoing student participation in the patient care.

Two features of the MAC that the students indicated that they liked, but do not correspond to the features of previously studied early experiential education programs were: (1) the convenience of volunteering (e.g., students appreciated that the MAC is located physically on campus and volunteer opportunities were made available during weekdays and regular school hours, Monday to Friday 9am to 4pm, which gave them the opportunity to volunteer between their classes) and, (2) their perception that patients benefitted from the MAC. This suggests that this study adds new information to the literature regarding early experiential education.

5.1.1.2 Research Question 1b
What do pharmacy students dislike about the MAC?

Focus group participants did not specifically state that they disliked anything about the MAC during the discussions. However, they did highlight several aspects that they referred to as "challenges" (discussed below) that impeded their participation and their learning. One possible explanation for this surprising finding that students didn't "dislike" anything about the MAC is that participants took a mature perspective of their experiences (or were simply being polite) and described any negative experiences that they had as a "challenge" and not a "dislike". This is supported by the fact that when asked during the focus groups about any aspects of the MAC that should be completely omitted or discontinued, participants consistently had no suggestions. Instead they answered this question by stating that they recognized the importance of each specific aspect or activity at the MAC and they brainstormed ways to improve them instead of removing them.

Another possible explanation as to why participants did not discuss any aspects of the MAC that they disliked is that students might not have felt comfortable expressing all their negative opinions in front of their classmates and/or the focus group moderator

(who was also a MAC staff member). However, when providing comments in the focus group feedback survey after the sessions were completed, students stated that they were able to be open and honest with their responses during the focus group discussions. In addition, when given with the opportunity to provide additional comments in the feedback survey, students who were uncomfortable expressing negative opinions could have, but did not, discuss aspects about the MAC that they disliked.

Previous studies within the field of early experiential education of health professionals primarily focused on the perceived impact on health professional students of the programs and not the specific features of the programs that participants disliked. Unfortunately, the results of this study do not add to the existing literature since students did not discuss anything that they disliked about the MAC.

5.1.1.3 Research Question 1c

What are the challenges that exist for pharmacy students to be involved in the MAC?

Participants perceived several challenges to being involved in the MAC, such as:
- They were unsure about the student's role in the patient care process, which caused some anxiety for first time volunteers and may have discouraged some students from participating. (Theme #3)
- They found it difficult to remain engaged in the patient interview and contribute in the post patient interview discussions because they didn't have the prior clinical and therapeutic knowledge to understand and follow the discussion. (Theme #8)
- MSCL participants initially felt nervous, overwhelmed, and intimidated by the complexity of the patients and the tasks that needed to be completed, which may have inhibited the quality of their first patient interaction. (Theme #7)
- They felt that the sign-up process was complicated and frustrating. (Theme #2, Sub-Theme #5)
- They found the quality of the audio/video capture system to be poor (e.g., small screen size, muffled voices, irregular video feed) which caused them to sometimes become distracted and disengaged. (Theme #2, Sub-Theme #3 & #10)

- The size and configuration of the interview room was not as efficient as possible, which they felt limited the number of students that could be in the same room as the patient and inhibited eye contact and open communication between all persons involved in the patient interview. (Theme #2, Sub-Theme #9)
- They were unable to become as actively involved in direct patient care as they wanted to because they did not have the opportunity to gain an in-depth knowledge of the patient history prior to attending the appointment. (Theme #2, Sub-Theme #6)

These critical viewpoints provide evidence that the focus group participants were able to be open and honest in their responses; they simply referred to them as challenges and not dislikes. If participants only provided positive responses, it would have raised suspicion regarding the credibility of the data in capturing the complete experiences of the study participants.

The majority of previous studies within the field of early experiential education primarily focused on the perceived outcomes of health professional students in their programs and not the specific features that were perceived as challenging by the participants. However, there were some studies (three from medicine, one from pharmacy) that reported negative statements made by the study participants in regards to feeling a lack of confidence, anxiety, fear, and feeling ill prepared to actively complete initial patient care tasks.[64,81-83] The challenges reported by students at the MAC are consistent with these findings.

It appears that the results of this study on the MAC are consistent with the literature regarding what medicine and pharmacy students perceived as challenging with their experiences. Furthermore, this study identified several challenges as perceived by the participants that were not previously identified in the literature. This study adds to the existing literature because the majority of previous studies have focused on medical students and have not evaluated a pharmacist led clinic located within a pharmacy school. Therefore, these results can provide further insight into areas within early experiential education programs that students may find challenging and require careful thought and consideration during program development and improvement.

<u>5.1.1.4 Research Question 1d</u>

What recommendations do pharmacy students have to improve the MAC experience?

The participants provided many recommendations on how to improve the MAC experience that corresponded to the challenges that were outlined in the previous section and which were described in detail in the results section. These recommendations can be summarized into five primary categories: (1) improve the sign-up process, (2) enhance student engagement in the patient care process, (3) expand student exposure to the MAC, (4) enhance the students' understanding and awareness of the MAC, and (5) optimize the physical environment of the clinic. See Table 4-5 for a list of the recommendations made by the participants.

Some of the suggestions made by the participants come with inherent logistical and operational barriers to implementation. These barriers were commonly identified by the participants, which included patient confidentiality, coordination of patient/pharmacist/student schedules, limited appointment opportunities in proportion to pharmacy students, and staffing resources. These barriers are not unique to the MAC. The reports released by and in affiliation with the Canadian Experiential Education project for Pharmacy (CanExEd) indicate that these are common barriers in the implementation of early experiential education programs. The barriers that are most commonly discussed in the literature are staffing resources and the limited number of experiential education opportunities in relation to the number of student learners.[30,36,51,53]

The majority of previous studies within the field of early experiential education primarily focused on the perceived outcomes of health professional students in their programs and not suggestions that students might make to improve the programs. However, there was one recent study by McLaughlin et al. (2015)[80] that collected suggestions from program administrators (not students) on how to improve their program (second-year pharmacy students actively collecting medication histories in a hospital setting). Suggestions for improvement included considering students' prior commitments during the scheduling phase to reduce the amount of no-show student appointments, increasing the amount of orientation and training to reduce initial student

anxiety associated with the task and work environment, and adjusting the task requirements of the students to allow for adequate time to complete the learning activities (e.g., present the patient to the mentor, assist in the development of patient care plans).[80] Although these results did not come from students, they are consistent with many of the recommendations made by the students in this study, such as: improving the sign-up process (e.g., considering student class schedules when booking patient appointments), enhancing the student's understanding and awareness of the their role at the MAC, and improving student engagement in the patient care process (e.g., increase the time available for the post patient interview discussions).

The results of this study are useful and adds to early experiential education research because there is very little pre-existing literature that has examined this topic in the context of an operating program. Therefore, these results can provide detailed ideas on how to improve a student's experience within an early experiential education program like the MAC. It is likely that if these areas are addressed, the MAC could become an even more effective early experiential education program. As well, if other schools initiate a program similar to the MAC and address these areas during development, they may decrease the challenges students have to participating in their program.

5.1.2 Research Question 2

What do pharmacy students perceive they learn from their involvement with the MAC?

Study participants perceived an improvement in their clinical skills as a result of volunteering at the MAC, which included both their communication and patient interviewing skills. This is consistent with the literature, which has reported that exposure to early experiential learning leads to improvements in student self-perceived verbal and non-verbal communication skills and in their ability to gather detailed information and history from patients.[64,68,70,72,75,80,81,84,89,91-93] The studies that involved pharmacy students exclusively also reported that students perceived an improvement in clinical skills needed to perform medication management and reconciliation services.[79,80,100] Furthermore, studies that have involved medical students in early experiential education programs have also reported student perceived improvements in

the clinical skills that would be comparable to the clinical skills that would be useful for pharmacy students: clinical ways of thinking and reasoning,[81,83,85,94] physical examination skills,[69,72,81,94,96] generating differential diagnosis,[72] and general clinical skills.[66,70,81,83,98]

This study also found that students who volunteered at the MAC perceived an improvement in their confidence, specifically in making decisions, interacting with patients and performing in objective structured clinical exam (OSCE) scenarios. This is also consistent with the literature, which has previously identified that health professional students who were exposed to early education programs perceived an increase in their comfort and confidence in patient interactions.[65-83]

The results of this study also found that participants perceived an improvement, consolidation, and/or solidification in their clinical and therapeutic knowledge after volunteering at the MAC. They reported that the MAC facilitated knowledge retention by making learning "real", and that they learned lessons that could not be taught in lectures. This result is also consistent with the findings from previous studies that involved various health professional students in a variety of different early experiential education programs, which identified the following learning benefits: (1) enhanced student's knowledge of subject matter and study skills by making diseases "come alive" by seeing it first hand,[74,81,101] (2) learned lessons that cannot be taught through didactic lectures,[69,72,74,85] (3) provided context for application and comprehension of didactic subject matter,[65,67,71-73,80,81,85,89,98,101] and (4) facilitated knowledge retention.[72,80,81,100]

Finally, the results of this study show that participants felt their experiences at the MAC impacted their transformation from student learners to professionals, also known as professional socialization. Results from other studies in the literature that involved a variety of health professional learners who were exposed to a variety of early experiential education programs are consistent with this finding. The results from these studies similarly showed students self-reporting an increase in their understanding of the health care system,[84] understanding of the role of their own profession,[67,72,74,80-83,85-88] understanding of the importance of PCC,[65] appreciation of the individual needs of the patient,[81,82,87] empathy and respect towards the patient,[72,73,82,87,89] overall motivation to learn and independently seek additional knowledge,[67,70-73,81,85,89,102] satisfaction with the

overall quality of their educational program,[68,70,76,85,90] and attitude toward their profession.[66,72,73,84]

Interestingly, it appears that the results of this study on the MAC are consistent with the literature regarding what students from a variety of different health professions perceive they learn from involvement with early experiential education programs. This study adds to the existing literature because the majority of studies that have been previously performed in this area have focused on medical students and none have evaluated a pharmacist led clinic located within a pharmacy school.

5.1.2.1 Research Question 2a

What activities or experiences at the MAC do the students describe as helping them with their learning?

Although students reported that they were very satisfied with the overall MAC program and that they felt the entire program that facilitated their learning, participants identified the following specific activities or experiences that they felt were particularly helpful with their learning: (1) reflective post patient interview discussions, (2) peer and faculty mentorship, (3) active student participation in patient care activities, and (4) the overall patient care environment at the MAC (i.e., a learning environment with real patients who are receiving services of a real clinical pharmacist).

The importance and value of these specific learning activities and experiences, as expressed by the research participants in this study, are consistent with the learning theories of Dewey, Kolb and other socio-cultural theorists. Kolb's Experiential Learning Theory defines learning as a "process whereby knowledge is created through the transformation of experience (p. 41)".[45] Kolb's learning cycle begins with the "concrete experience", then moves through two complex learning processes: "reflective observation" then "abstract conceptualization", then is completed by "active experimentation".[45] The works of Dewey complement Kolb's learning cycle and outline the importance of a "concrete experience" and engaging the learner in active participation and a guided reflection process to allow learners to acquire practical rather than abstract knowledge.[45-47] Socio-cultural perspectives further expand on the aspect of supported learning and the importance of the social environment that is created by all

the individuals involved in the experience. They theorize that an individuals learning is not only internal but is a collective experience between the learner and educators.[29,48]

The patient care environment that the participants in this study commonly identified as important in facilitating their learning at the MAC is consistent with the importance of the "concrete experience" from Dewey and Kolb. Participants felt being exposed to a variety of real patients of all ages, demographics, and complexities of health care needs in real, unpredictable scenarios were extremely valuable. This exposure to a "real-world" experience begins Kolb's learning cycle, which is consistent with the start of the student's learning experience at the MAC.

The reflective post patient interview discussions that the participants in this study commonly identified as important in facilitating their learning is consistent with the middle two processes of Kolb's learning cycle: ""reflective observation" and "abstract conceptualization". Through this active, reflective post patient interview discussion, student volunteers commented that they were able to make sense of the experience, relate it to previous knowledge, become aware of performance gaps, identify future learning needs, and assimilate the learned lessons into their existing knowledge in a personalized manner.

Just as the act of reflection is critical to the learning cycle, so is the guidance and environment in which this activity is carried out. The works of Kolb and Dewey both support the importance of a guided reflection process by a well-educated and skilled person to allow learners to acquire practical rather than abstract knowledge.[45-47] Furthermore, the works of socio-cultural theorists further expand on this aspect of supported learning by emphasizing the importance of the social environment that is created by all the individuals involved in the experience.[29,48] This is consistent with the results of this study. Participants identified the social environment with respect to having the opportunity to teach other students, listen to other students responses, and answer the questions posed by the MAC pharmacist all within the context of a real patient during the reflective post patient interview discussions as helpful with their learning. As well, participants recognized the guidance and mentorship that the student volunteers receive from both the MAC pharmacists and other students during these stages as an important learning experience. Participants felt that the MAC pharmacists were skilled,

approachable, and capable of creating a student focused, welcoming, and engaging learning environment all while delivering patient-centered care. They felt that the MAC pharmacist guided them through their learning by actively involving them in the discussion (i.e., not simply lecturing but posing questions for students to answer and reflect upon). Some participants in this study believed that the more skilled the person facilitating the patient interaction and learning experience the higher the quality of the experience was for both the patient and the student. This statement is supported by literature that states the employment of highly skilled and educated mentors has been shown to not only assist in the fulfillment of the responsibilities and expectations of the service but also in facilitating an enriched learning environment for learners.[30,31,35,52]

The final learning activity that participants in this study identified as helpful to their learning was active student participation in the patient care activities. This is consistent to Kolb's "active experimentation" stage where the learner trials the knowledge and/or skills they just gained in similar subsequent situations to help solidify their learning.[45]

Although these theories can help explain why participants identified these learning activities and experiences as helpful with their learning, learners must enter into the learning experience with the right frame of mind in order for the learning cycle to be effective. Moon explains it well stating that experiential learning requires an "intention to learn" and an "active phase of learning" in order to produce deliberate, deep learning.[60] Some participants in this study identified this notion and discussed the importance of being dedicated to learn and willing to put the effort into their time at the MAC to get the benefits out of their experiences.

The learning activities that participants identified as facilitating their learning are also consistent with the previous studies of early experiential education programs for health professionals. These studies have also reported that students learn better when the experience occurred in a "real" patient care environment with "real" patients.[65-109] More specifically, previous studies on health professional students have identified that students learn from programs that give them opportunities to participate in direct patient care (i.e., real patients) in multiple capacities including active student participation in patient care,[64,65,79,80,82] observational student roles,[66,74,97,100] a combination of both

observational and active student participation,[81,83,90,103] and a progressive sequence from observational to active participation.[88] The value of an educational discussion supervised and mentored by a practicing professional that was reflective in nature,[64-69,100] and/or held within a social environment (e.g., multiple students, multiple years of study)[64,79,81,81-83] was also identified in the literature as a critical element to support learning.

Although these previous studies showed benefits to students through various combinations of the learning activities, one study conducted by Steven et al. (2014)[64] strongly suggested that the combination of both an exposure to direct patient care and an educational component (e.g., supportive discussions by practicing professionals) are two learning activities essential to student learning. Steven et al. (2014)[64] made the argument that students still learn from being exposed to patient care and having educational discussions independently, however pairing these activities makes the learning more effective. This concept is consistent with the findings of this study that identified the entire MAC experience as helpful with their learning.

Furthermore, studies have found that the quality of student learning is directly related to the quality of the professional guiding the educational discussion.[29,30,35,39,45,47,48,51,64] This concept is consistent with the findings of this study that identified the post patient interview discussion as a critical activity responsible for student learning. Participants specifically discussed the quality and reflective nature of the post patient interview discussion held within the context of a real patient. This also further supports the concept, as presented in learning theories and previous literature, that direct exposure to patient care creates the *learning opportunities* and the reflective supportive discussion enriches the *learning experience*.[29,45,47,48,64]

The results of this study on the MAC are consistent with the learning theories of Kolb, Dewey, and socio-cultural theorists along with previous studies of experiential education programs regarding what activities and experiences students perceive as being helpful to their learning. This is useful and adds to the existing literature because the majority of studies that have been previously performed in this area have focused on medical students and none have evaluated a pharmacist led clinic located within a pharmacy school.

Does the number of experiences that individual students have at the MAC influence their reaction to the program, their perceived learning or their recommendations?

One of the features of early experiential education programs as suggested by the literature and described previously in *Section 2.2.2 (Features of Previously Studied Early Experiential Education Programs)* includes ongoing opportunities for students to be regularly exposed to direct patient care experiences.[25,26,29,53] However, a high degree of controversy exists over the optimal duration and frequency of exposure to early experiential education in health professional literature. The current guiding principle encourages a personalized duration and frequency of the experience based on the degree of active participation and presence of other aspects of the early experiential education program.[25] The purpose behind this research question was to provide a suggestion regarding the optimal duration or frequency of exposure to the MAC. However, there was no evidence from the results of this study that suggest the number of MAC experiences influenced student reaction to the program, their perceived learning, or their recommendations even though participants shared their ideas on how often they would like to be exposed to the MAC (e.g. once per week, once per month).

There was some evidence that suggests students with more MAC experiences may have been better able to comment on their experiences and provide more in-depth data. The results indicate that focus group discussions held between participants with a "high" (three or more) number of experiences (Senior High, MSCL, and Junior High) were more in-depth, informed, detailed and interactive compared with those with a "low" (one or two) number of experiences (Senior Low and Junior Low). For example, participants with more MAC experiences were able to share more detailed opinions and experiences regarding the specific features of the MAC that were valuable, compared with those with fewer experiences. Participants with a "high" number of experiences also made less frequent inaccurate statements regarding the MAC than students with "low" number of experiences. For example, participants with three or more experiences stated that they enjoyed the recent change to the MAC sign-up process that made checking for updates more predictable, whereas the others inaccurately believed that

the old sign-up process had not changed. A possible explanation for these observations and variations is that participants with a "high" number of experiences, being exposed to the MAC more, were able to reflect on a greater variety of experiences and were able to gain a better understanding of MAC operations through multiple exposures.

The majority of previous studies within the field of early experiential education did not attempt to compare students with different levels of exposure to the programs. However, one study completed by Johnson and Scott (1998)[90] completed a comparative study between medical students with various degrees of exposure to early clinical experiences using a scaled questionnaire. This study found that students with at least five full days of exposure to clinical experiences were more satisfied with their overall education program compared with students with fewer experiences.[90] The results of this study are not consistent with the findings of Johnson and Scott (1998)[90] as no differences in responses were identified that could be explained by the number of MAC experiences a students had. Unfortunately, the results of this study do not add to the existing literature.

5.1.4 Research Question 4

Does the student volunteer's year within the pharmacy program (i.e., 1st year, 2nd year, 3rd year or 4th year) influence their reaction to the program, their perceived learning or their recommendations?

The results of this study suggest that the student volunteers' year within the pharmacy program had a minimal influence on their reaction to the program, their perceived learning, or their recommendations. Participants in their fourth year of study (Senior High, Senior Low, and MSCL) reported that they enjoyed the patient interview process and the convenience of volunteering at the MAC (since it was located on campus and clinics were running during normal school hours), which was not discussed by the junior participants (in first to third year). Furthermore, the Junior Low, Junior High, and MSCL participants stated that they also felt a greater affirmation for their career choice.

It is likely that these minor differences that were noted between junior and senior students can be explained due to random chance and that they do not likely represent

an important or significant difference between groups. There is no strong rationale to explain or hypothesize why senior participants might enjoy these two features of the MAC more than junior students and it is more likely that these two features were simply not discussed during the junior focus groups due to a lack of time.

Despite the lack of significant differences between the junior and senior students, participants discussed how they believed a student's year of study would affect the benefits that a student might get from volunteering at the MAC. Participants felt that because first and second year students had not received many therapeutics lectures that they would primarily learn about the role of the pharmacist within the primary care system and professional skills (e.g., patient interviewing, empathy). Consequently, students suggested that volunteering for new patient appointments would be more beneficial for first and second year students. On the other hand, students felt that the follow up patient appointments were better suited to third and fourth year students because they had received more therapeutics lectures and would be able to understand and be more engaged in the patient's care plans and therapeutic discussions. These student conclusions are consistent with adult learning theories, which state that experiential education is a means in which knowledge is transformed through the experience and that formal didactic knowledge should precede the experience.[29,45,47] This potential difference in how junior and senior students might benefit from volunteering at the MAC (based on the type of patient appointment) likely was not identified in the primary themes of this study because most student participants had volunteered for a variety of new patient appointments and follow up appointments (see Table 4-1), making it impossible to discern a difference between the two experiences. Although the relationship between the type of patient appointment and the self-perceived benefits were not explored within this study, it may be advantageous to consider for future research to gather a more comprehensive understanding of student learning at the MAC.

The majority of previous studies within the field of early experiential education did not compare and analyze data from students within various years of study in the same early experiential education program. Those that did include students in multiple years of study did not investigate if their year of study influenced their reaction to the program,

their perceived learning, or their recommendations. Unfortunately the results of this study do not add to the literature on this topic.

<u>5.1.5 Additional Themes</u>

There were some themes that emerged from the data that did not directly relate to any of the pre-defined research questions.

Participants expressed their opinion that students may get different benefits from different patient appointment types (e.g., initial assessment, follow up). There were also differences identified between the MSCL grouping and all other focus groups. For example, only the MSCL participants discussed their opinions regarding actively participating in the delivery of patient care. Therefore, the MSCL participants were the only group that positively identified "active participation" as enjoyable and valuable to their learning. Another difference between the MSCL grouping and all other focus groups is that the MSCL group spoke most strongly regarding their perception that the MAC improved their clinical and therapeutic knowledge. Finally, all of the focus groups, except the MSCL focus group, reported a lack of understanding and awareness of their role during MAC patient consultations as a challenge to volunteering at the MAC. These differences are likely a result of the MSCL participants being the only group of students who had significant experience independently leading patient interviews, making them distinctly unique from the other focus groups.

These differences identified between the MSCL grouping and all other groupings are consistent with the results of two studies by Bell et al. (2009)[81] and Wenrich et al. (2013).[83] These studies provide evidence that different learning activities are likely to produce different outcomes. They suggest that affective outcomes (e.g., enhanced confidence, motivation, satisfaction, professionalism) are more likely a result of exposure to direct patient care environments, whereas cognitive outcomes (e.g., increased understanding the role of the health professional, knowledge, clinical skills) are more likely a result of the quality of the mentorship (i.e., supportive discussions by practicing professionals). Although the results of this study only found a difference in the strength of a theme, and not a more definitive difference (i.e., presence of an entire theme), it does suggest that there may be differences in student experiences based on the type of experience / learning activities and not just the number of experiences they

have. These results suggest that exploring the effect of the type of experiences student volunteers have at the MAC may be worth studying to further to gain a more comprehensive understanding of student experiences at the MAC.

Another belief stated by the participants that was not explored in this study was learning styles. Some participants discussed how not all students have the same learning style and felt that this could affect a student's perception of the MAC. These participants did not personalize this statement or provide further reasoning behind their opinion. However, the concept and importance of understanding student learning styles in order to develop a more student-centered learning experience is currently a popular area of education research.[24,64,72,78,80,83] Studies that involve student-learning styles are currently being used to help further understand how students learn. Although student-learning styles were not explored within this study, it may be advantageous to consider for future research to gather a more comprehensive understanding of student learning at the MAC.

5.2 Limitations

5.2.1 Researcher bias

As the primary researcher who carried out data collection and analysis, there was potential for my personal biases to influence the results of the study during both the data collection and analysis. My previous experiences with experiential education in general and with the MAC specifically (as described in Section 3.8 *Researcher's Story*) potentially bias me towards having pre-conceived / pre-existing positive opinions regarding the benefits and value that the MAC adds to student learning at the University of Saskatchewan. Consequently, there was a possibility that my personal bias could have consciously or unconsciously influenced the results by recruiting students with a vocally positive opinion of the MAC, asking leading questions during the focus groups, or incorrectly interpreting and analysing the focus group transcripts. The steps taken to minimize this potential researcher bias were previously described in detail in Section 3.8 entitled *Researcher's Story*, which include recruiting all students who volunteered at the MAC and using other individuals with a variety of backgrounds to assist in the collection

and analysis of the data. Consequently, I believe that everything possible was done to minimize the potential impact of researcher bias, however, it is still possible that this may have had some minimal influence on the results.

The potential negative impact of researcher bias can also be somewhat mitigated by the benefits of including a researcher with detailed prior knowledge of, and experience with, the program being evaluated. For example, this prior knowledge can be useful in ensuring that focus group transcripts and subsequent themes are interpreted in the proper context and that the final results accurately relate to the program being evaluated.

5.2.2 Volunteer bias

Volunteer bias refers to a specific bias that can occur when individuals who volunteer to participate, typically in research projects, are inherently different in some way from the general population.[118,128] Usually these differences are unknown, however it is thought that those who do volunteer are most often from a higher social status and intelligence, exhibit an increased need for approval, are particularly interested in the topic (e.g., enthusiastic or dedicated), and who are expected to be evaluated on a positive level.[128] Providing an incentive to participate may also cause volunteer bias. The details of the incentive used in this study are discussed later. In a study where volunteer bias occurs, it is possible that the data gathered is not representative of the intended population, only the subset who choose to volunteer.

Based on the gender, year of study, and MAC student volunteer records available from the MAC administrative office, the students that participated in this study appear to be a representative sample of all the MAC student volunteers. A total of 85 pharmacy students had volunteered at the MAC during the study period (September 1, 2014 to November 23, 2015). The majority of MAC student volunteers have been female (n = 74/85, 87.1%) and attended on average 2.9 sessions, with a combination of initial assessments (mean = 1.5 per student) and follow up appointments (mean = 1.2 per student), and MSCL (mean = 0.3 per student). The students who participated in this study were mostly female (n = 24/29, 82.8%), and on average were 24.2 years of age and had volunteered at the MAC, on average, 5.2 times (2.8 initial assessments, 1.9

follow up appointments, and 0.7 MSCL experiences), which is similar to the overall MAC student volunteer demographics. However, despite the fact that the participants who volunteered for this research study were demographically similar to those who did not, it is still possible that volunteer bias occurred, which could explain the lack of significantly negative comments that were made about the MAC during the focus groups.

Volunteer bias may also exist between students who volunteered at the MAC (and who were eligible to participate in this study) with those who did not volunteer at the MAC. Consequently, this may limit the relatability of the results of this study to the entire student population. For a student to volunteer at the MAC they must be registered as an Intern with the Saskatchewan College of Pharmacy Professionals (SCPP), which is mandatory for all pharmacy students starting in their first year of study however some students do not complete the paperwork until the end of their first year. Consequently, students who volunteered at the MAC, and who were eligible to participate in this study, represent a sub-set of the student population that is not exactly representative of the entire student body.

In summary, both of these types of potential volunteer bias may have contributed to a recruitment of students who were more enthusiastic and dedicated to self-growth and consequently may have had more positive experiences at the MAC compared with the general pharmacy student population. It is possible that the results presented in this thesis are not a comprehensive representation of all student experiences at the MAC.

5.2.3 Lack of saturation

Saturation was defined, for the purposes of this study, as the point in the data collection when each successive focus group failed to produce any new information that might result in new codes, themes, categories, or insights to emerge related to the research questions.[114,118] Although saturation of data was being approached, it was not achieved in this study after all interested participants had completed a focus group discussion. There are no standard rules for an acceptable number of participants in qualitative research, but studies typically recruit a small number of carefully selected individuals that will allow for an in-depth exploration of the phenomenon.[114,118,120] Continuing with recruitment until saturation of data is achieved is a common, but not

mandatory methodology that is used in this type of research. Although a relatively large number and proportion of eligible students participated in this study (n=29/67, 43.3%), the fact that saturation of data was not reached suggests that the breadth and depth of the data collected in this study could have been better if additional focus groups were completed.

5.2.4 Credibility of the responses

Multiple steps were taken throughout this project to ensure the credibility of the responses, which included prolonged engagement, persistent observation, and use of a supportive research setting.[123,126] Detailed descriptions of these strategies are outlined in *Section 3.7 Trustworthiness of the Data*. To test the success of these strategies, participants were given a focus group feedback survey. Overall, the positive feedback received from 28 of the possible 29 participants, specifically in regards to providing honest responses, provides evidence towards the credibility of the responses provided by the participants during the focus group discussions. However, two of the participants who completed the feedback survey reported that their focus group discussion was dominated by a small number of other participants, one participant felt that their opinion wasn't heard, and three participants felt that there wasn't enough time allotted for the discussion (in total, four different individuals shared these viewpoints). Despite the moderator's efforts to recognize the more passive individuals during the discussion and the pre-testing that was completed to ensure the discussion would be able to be completed within the specified 90-minute time frame, it is evident that four individuals still felt that the discussions were not equitable. None of these participants who felt that there was not enough time or that their opinion wasn't heard during the discussion provided additional comments or information in the post focus group feedback form. It is possible that these individuals did not have any significant additional comments to contribute, despite their observations regarding the focus groups, and that this situation did not have an impact on the completeness of the results. However, it is also possible that these individuals became disengaged and were not interested in taking the time to contribute their additional thoughts in writing after the focus group, suggesting that this situation may have affected the comprehensiveness of the results. Fortunately, this

issue was only reported by four of the 29 participants (n=4/29, 13.8%), suggesting that the overall impact on the results as a whole is likely minimal.

5.2.5 Breadth and depth of data collected

Several aspects of this study suggest that the breath and depth of the results may be less than optimal. The focus group discussions produced a high degree of positive (as compared with negative) feedback, which could be a true and complete reflection of a student's experiences at the MAC. However, it also raises the possibility that a comprehensive understanding of student experiences at the MAC may not have been achieved and that not all negative viewpoints were collected. This may in part be explained by the previously discussed limitations, such as volunteer bias, credibility of the responses, and saturation not being achieved.

In addition, this study's inclusion criteria may have limited the breadth and depth of data collected. Of the 85 students who had volunteered at the MAC since its inception, 67 were eligible to participate in a focus group discussion based on the inclusion criteria, which stated that only <u>current</u> undergraduate pharmacy students who had a <u>recent</u> experience (since January 2015) at the MAC were eligible to participate. Consequently 21.2% of students (n=18/85) were not eligible to participate. These inclusion criteria were created to limit other types of bias that arguably may have been more detrimental to the study results (i.e., recall bias from enrolling students who had volunteered at the MAC only once in the distant past); however, the possible impact on the breadth and the depth of the data collected cannot be ignored.

Future program evaluations should proactively attempt to collect data to the point of saturation along with more information about negative experiences at the MAC. This could be achieved with enhanced efforts in participant recruitment, or by targeting recruitment efforts to students most likely to have had a negative experience (e.g., students in their 1st to 3rd years of study with a "low" number of experiences).

5.2.6 Influence of incentive to participate

In an effort to recruit participants and to show appreciation to participants for their time and contribution to the study, a $20 gift card was provided to participants who

completed a focus group discussion. The invitation to participate sent to all eligible participants highlighted this small gift and the fact that it was meant to show appreciation for their participation, but not compensate them for their time. However, the students (for whom $20 can be a lot of money) could have viewed the gift card as an incentive to participate, and may have participated with the primary motivation of getting the gift card.

Offering incentives can create an environment where individuals who agree to participate are only interested in the reward of the study and not the primary purpose of the study. This can lead to participants who provide superficial responses (to simply get the session completed as quickly as possible) that require the moderator to coax an interactive discussion. Any type of incentive can create this environment, however, cash incentives greater than 5 dollars are most likely to create this environment.[129,130] Although a gift card was offered in this study, and not cash, the monetary value was greater than 5 dollars. This leads to the possibility that some of the participants that chose to volunteer in this study did so because they wanted the gift card and not because they wanted to provide information to help identify what is working, what can be improved, and what students get out of volunteering at the MAC.

It is unlikely that the gift card incentive had a significant impact on this study. All focus group discussions were dynamic and interactive, and none of the sessions ended early. In fact, some respondents commented that they felt that the sessions should have been longer in duration. This suggests that most participants were probably genuinely interested in sharing their ideas, opinions, and experiences of the MAC, and that they were providing more than just superficial responses.

5.3 Implications for Practice

Since this study was initiated for internal program quality improvement and development the major implications of this study are with the program itself. Many recommendations were suggested to improve the student experience at the MAC. It is likely that if these recommendations are addressed, the MAC could become a more effective early experiential education program. Consequently, this may allow the MAC to proceed to their other long-term goals of creating an interdisciplinary training site for

HCP students (e.g., nutrition, nursing, medicine) that will more closely emulate real-world settings in primary care (i.e., multiple disciplines working under the same roof).

The importance of clear learning outcomes and corresponding assessments for the betterment of students and mentors is well documented in the education literature. Learning outcome statements and assessments inform both the student and mentor on what and how much is expected of them as a learner and instructor, allowing both parties to hold each other accountable for the outcome of the educational experience.[50] At the time of this study, the MAC had clearly defined learning outcomes and assessment strategies for their advanced experiential program and general learning goals for their early experiential program. The results of this study can be used to develop clearly defined learning outcomes and expectations, along with practical assessment strategies, for the early experiential program.

As the U of S prepares to transition to the entry-level PharmD program starting the 2017-2018 academic year, they are faced with a lack of clinical based early experiential education sites for pharmacy students. The results of this exploration may be used to encourage the incorporation of participation in the MAC as a component of the mandatory early experiences for junior entry-level PharmD students.

On a broader scale, the results of this study has provided insight into students' perspectives of the usefulness of the early experiential education program offered at the MAC, which has not been previously evaluated anywhere in the world, to the best of our knowledge. This may be used to contribute to the Canadian national priority, as defined by the CanExEd, of identifying new models for offering high quality early experiential education learning opportunities for pharmacy students.

5.4 Future Research

The findings of this study provide valuable insights into the experiences of pharmacy students at the MAC and practical recommendations for program improvement. However, a few key opportunities for further research were identified that would be worthwhile.

The first opportunity could be an extension of this qualitative research project to further understand why students choose to volunteer at the MAC and if their

perspectives of the MAC change as they progress through the pharmacy program and/or as they continue to volunteer at the MAC. This study provided some preliminary findings that showed students from different years of study or with different degrees of exposure to the MAC had some variations in their perspectives. It could be useful to collect longitudinal data on the same participants to further explore this finding.

The findings of this study only provided insight into the perspectives of early experiences of MAC volunteers and did not include non-MAC volunteers or MAC volunteers with advanced experiences (i.e., 4th year students during their final internship in term two). Gathering the opinions of non-MAC volunteers to determine why they have not volunteered at the MAC and the perceived impact of not participating in additional experiential education programs could be useful research to pursue. Determining if it is due to the fact that they are unaware of the opportunity, if they do not value the program, or if they do not have the time luxury to volunteer due to previous commitments (school, work, or home), would provide insight into increasing student volunteer rates in the future. Expanding this study to assess the perspectives of MAC volunteers who have participated in advanced experiences would also generate a more comprehensive understanding of the impact of the MAC on all types of pharmacy students. In addition to understanding the impact on their learning, the study could also look to gather students' perspectives on their preparedness to practice patient-centered care upon graduation and if the MAC helped them overcome the known barriers to delivering patient-centered care.

Another opportunity could be further qualitative studies with a change in focus to better understanding how students learn. Within this study, students touched on the idea of learning styles and its importance in their experiences. A grounded-theory (qualitative) research study that employs a variety of data collection methods at preset intervals could focus on developing an emerging theory on students' preferred learning styles. This in turn may help provide a better understanding of the essential activities and processes at the MAC that are associated with positive outcomes. These findings could help identify the 'why' and 'how' of the MAC program and could further assist other universities initiate similar programs that are tailored to their student population. Furthermore, these findings could be useful in assisting all experiential education

programs find ways to better deliver student-centered learning experiences. These findings could then be related back to the learning styles of other health professionals (e.g., medicine, nursing, dentistry) to identify how closely related pharmacy students are to other health professionals.

The findings from this study suggest that these outcomes may be affected based on the type of volunteer experience and how active the student participates in direct patient care. Another future research prospect is to use a longitudinal mixed methods study design to verify if and/or how much students show improvements in their perceived learning as a result of the MAC. More specifically, these studies could identify which activities are responsible for these improvements and if the type of volunteer experience or degree of active participation has an affect on these outcomes. It will be imperative to simultaneously follow a control group of non-MAC volunteers and carefully consider all participant demographics and other professional and learning related experiences to be able to isolate the cause and effect of volunteering at the MAC. Equally important will be the methods used to assess the cause and effect relationship. Although most learning outcomes can be assessed with use of quantitative methods such as surveys, test results, and objective structured clinical exam (OSCE) scores, some require mixed methods. For example, professionalism is one outcome where researchers suggest that best practice guidelines to assess a student's professionalism should use qualitative and/or multi-method study designs that use multiple assessors and multiple settings.[77,131] One way to achieve multiple assessors and multiple settings for this future study would be to have other stakeholders at the MAC (e.g., patients, physicians, pharmacists) and the university (e.g., faculty) assess the students' skills.

The findings from this study suggest that students can benefit from the patient care processes that are used (e.g., conducting the patient interview) and the shared therapeutic knowledge (e.g., post patient interview discussion) and that there is a point at which these change. Future studies could determine at what point improvements begin, advance most rapidly, and/or/if they plateau. These studies could also determine if these changes are related to their year of study and/or number and type of experiences at the MAC.

This study focused on exploring pharmacy student experiences at the MAC and more specifically determining what impact the early experiential program provided by the MAC has on the students. Reversing the question to determine what impact students have on the MAC (e.g., frequency of patient follow ups, patient satisfaction, achievement of care plan goals) would provide further evidence on the benefits of student involvement in practice sites. For example, determining if the number and frequency of patient follow-ups increase with student involvement or assessing the success rate of achieving therapeutic goals (e.g., blood pressure control, blood glucose control). In combination with the findings of this study, it could also provide further incentive for other universities to set up similar experiential education programs.

Finally, multi-site projects could also be pursued with PharmD students with the two other similar patient care clinics that are located with pharmacy schools (e.g., University of British Columbia (UBC) and Memorial University of Nova Scotia (MUN)) perhaps comparing outcomes with students at other Canadian universities who are offer a similar curriculum, but without faculty run clinics (e.g., Universities of Toronto, Alberta, Waterloo).

Chapter Six

Conclusions

The results of this study suggest that students perceive the MAC as a valuable learning experience that has a positive effect on their learning and competence in the following areas: (1) clinical skills (patient interviewing and communication), (2) confidence, (3) clinical and therapeutic knowledge, and (4) professional socialization (knowledge and professional roles, knowledge and perceived value of patient-centered care, student attitude, and affirmation of career choice). The findings indicate that students identified the post patient interview discussions, MAC peer and faculty mentorship, active student participation in the patient care, and the patient care environment at the MAC as the attributes and activities that were most instrumental in their learning. In addition, the most enjoyable aspects of the MAC for students include: (1) the structure of the learning experience at the MAC, (2) the perceived benefit of the MAC to patients, and (3) the overall patient care environment created by the MAC. It is the combination of these attributes that resulted in a high level of overall satisfaction and support reported by the students, who stated that they felt every student should participate in the MAC.

The results also suggest that there is minimal difference between the experiences of students in different years of the pharmacy program or with different numbers of experiences. However, the results indicate that the type of experience a student has at the MAC (i.e., the degree of active participation in direct patient care) may have the largest influence on their reaction to the program and their perceived learning.

The early experiential education program provided by the MAC has demonstrated a successful foundational model from which to grow and expand faculty supervised patient care clinics that are physically located on a university campus. Despite receiving many positive remarks from the participants, some aspects of the early experiential model provided by the MAC were noted as being barriers to student involvement, including the sign-up process and the quality of the technology being used. Students provided several suggestions to improve the learning experience provided by

the MAC, which should be considered by the MAC team. It is likely that if these areas are addressed, the MAC could become a more effective early experiential education program.

The study findings contribute to the existing literature on experiential education for health professionals by reporting the experiences of pharmacy students who have volunteered at a faculty supervised patient care clinic that is physically located within a pharmacy school.

Future opportunities for research include qualitative studies examining why students choose to volunteer at the MAC or how students learn and mixed methods studies verifying and quantifying how much students show improvements in their perceived learning as a result of the MAC. Multi-site projects could also be pursued with the two other similar patient care clinics that are located with pharmacy schools (e.g., University of British Columbia (UBC) and Memorial University of Nova Scotia (MUN)).

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Appendices

Appendix A: University of Saskatchewan BSP Curriculum

First-Year Pharmacy

Didactic lectures:
    Biomedical Sciences 200.3 (Biomolecules)
    Biomedical Sciences 230.3 (Metabolism)
    Chemistry 255.3 (Organic Chemistry II)
    Physiology 208.6 (Human Body Systems)
    Mathematics 125.3 (Mathematics for the Life Sciences)
    Nutrition 120.3 (Basic Nutrition)
    Pharmacy 200.1 (Pharmacy Skills I)
        Provides an introduction to the profession of Pharmacy and the pharmacy program with emphasis on early development of basic research skills.
    Pharmacy 201.5 (Physicochemical Principles of Drugs)
    Pharmacy 203.5 (Pharmaceutical Dosage Forms and Dispensing I)
    Pharmacy 216.2 (Introduction to Pharmacy and the Health Care System)
        Provides a description of the profession of pharmacy in relation to the provincial health care system with a focus on service to the patient, governing bodies, and the influential federal policies.

Experiential Learning:
    Pharmacy 280.2 (Structured Practice Experience I) – in Fall & Winter Sessions
        Students complete 60 intermittent hours of service-learning in a health care setting, or with a health care or service organization and complete a final reflection journal and group discussion to gain an appreciation of what "care" means to individuals.

Second-Year Pharmacy

Didactic lectures:
    Microbiology 224.3 (Microbiology for Pharmacy & Nutrition)
    Pathology 205.3 (Elementary Pathology)
    Pharmacology 350.6 (Pharmacology)
    Pharmacy 300.1 (Pharmacy Skills II)
        Provides opportunity to continue the development of necessary learning and research skills. Public speaking and written communication skills are targeted through workshops and assignments.
    Pharmacy 303.4 (Pharmaceutical Dosage Forms and Dispensing II)
    Pharmacy 307.2 (Pharmacokinetics and Biopharmaceutics)
    Pharmacy 372.2 (Research Methods and Evidence-Based Practice)
    Pharmacy 310.3 (Introduction to Drug Discovery and Design)
    Statistics 246.3 (Biostatistics)

Combination courses (didactic & practice based):
    Pharmacy 300.1 (Pharmacy Skills II)
        Provides opportunity to continue the development of necessary learning and research skills. Public speaking and written communication skills are targeted through workshops and assignments.

Pharmacy 365.5 (Patient Care I)
> *The first of three courses that provides an introductory course in patient care, especially the areas of health promotion, disease prevention and self-care, and the role of the pharmacist in these areas. Patient care skills are targeted for development (therapeutic knowledge, patient assessment, professionalism, identifying and overcoming patient barriers, and handling situations of ambiguity) through interviewing and other communication skills activities.*

Experiential Learning:
Pharmacy 380.4 (Structured Practice Experience II) – in Spring & Summer Sessions
> *Students complete 160 consecutive hours of structured practice experience in the community setting to apply their technical skills and introduce them to patient care activities.*

Third-Year Pharmacy

Didactic lectures:
Pharmacy 408.3 (Pharmaceutical Dosage Forms and Dispensing III: Sterile Dosage Forms)
Pharmacy 409.3 (Pharmaceutical Biotechnology)
Pharmacy 417.4 (Management in Pharmacy)
Pharmacy 472.2 (Evidence-Based Practice)
Pharmacy 418.2 (Issues in Pharmacy I)
> *A study of the ethical aspects of pharmacy practice and issues related to the professional responsibilities.*

Pharmacy 455.7 (Pharmacotherapeutics I)
> *The first of three courses involving the study of the clinical application of drug therapy in various disease states, including discussion of relevant principles of medicinal chemistry, applied pharmacokinetics, adverse effects or interactions, and toxicology. Covers topics from dermatology, ears-eyes-nose-throat (EENT) and infectious diseases (ID).*

Pharmacy 456.7 (Pharmacotherapeutics II)
> *The second of three courses involving the study of the clinical application of drug therapy in various disease states, including discussion of relevant principles of medicinal chemistry, applied pharmacokinetics, adverse effects or interactions, and toxicology. Covers topics from hematology and the cardiovascular, endocrine, gastrointestinal, and renal systems.*

Combination courses (didactic & practice based):
Pharmacy 400.1 (Pharmacy Skills III)
> *Continues the development of necessary learning skills and those required to provide drug information to consumers. Targeted skills include communication, critical thinking, self-directed learning and development of one's professional identity.*

Pharmacy 465.2 (Patient Care II)
> *The second of three courses dealing with Patient Care activities, specifically the development of skills in providing patient-centred care to patients. These skills include patient communication (obtaining history, interviewing and education),*

care planning, documentation, identification and solving of pharmacotherapy problems, professional note writing and seamless care documentation.

Experiential Learning:
> Pharmacy 480.4 (Structured Practice Experience III) – in Spring & Summer Session
>> *Students complete 160 consecutive hours of a structured practice experience in a hospital setting after completion of third year, which will provide an opportunity for students to expand their technical, professional and patient care skills.*

Fourth-Year Pharmacy

Didactic lectures:
> Pharmacy 518.2 (Issues in Pharmacy II)
> Pharmacy 557.6 (Pharmacotherapeutics III)
>> *The third of three courses discussing the clinical application of drug therapy in various disease states, including discussion of relevant principles of medicinal chemistry, applied pharmacokinetics, adverse effects or interactions, and toxicology. Covers topics from neurology, psychiatry, oncology, and those involving the musculoskeletal and skeletal system.*

Didactic lectures (students have the option to take one of the following):
> Pharmacy 519.2 (Marketing in Pharmacy)
> Pharmacy 462.2 (Hospital Pharmacy)
> Pharmacy 573.2 (Complex Cases)
>> *This course integrates the skills required to provide patient-centered care in a case based setting for simulated patients in ambulatory and acute care. Targeted skills include critical thinking, problem solving, decision making, written and verbal communication skills.*

Combination courses (didactic & practice based):
> Pharmacy 500.1 (Pharmacy Skills IV)
>> *This course will continue the development of necessary learning skills, problem-solving skills and those required to provide drug information to health professionals.*
> Pharmacy 565.2 (Patient Care III)
>> *The third of three courses dealing with patient care, specifically refining the skills required to provide patient-centred care, and developing the skills needed to care for specific complex patient populations such as the elderly, neonates, infants, children and pregnant women.*

Experiential Learning:
> Pharmacy 580.16 (Structured Practice Experience IV) – in Winter semester
>> *Students complete 640 consecutive hours of structured practice experiences to provide an opportunity for students to expand their technical, professional and patient care skills in practice settings, including both a community pharmacy and hospital. Students will also have the opportunity to select an additional practice site to gain further professional experience.*

Appendix B: MAC Appointment Brochure

HOW DO I GET TO THE CENTRE?

DIRECTIONS

- From College Drive turn onto Hospital Drive heading towards Royal University Hospital.

- Take the second right turn onto Clinic Place. Entrance to underground parking is to the left of main doors.

- Take a parking ticket from the machine. We will validate your ticket before you leave.

- Take the elevator from the parkade to the 3rd floor.

- Turn left when you exit the elevator and check in at the main desk (room 3134).
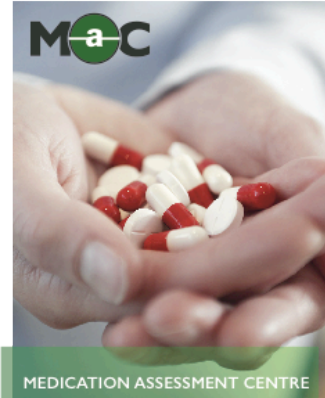
CONTACT

INFO

Medication Assessment Centre
104 Clinic Place
Health Sciences Building
E Wing, 3rd Floor
U of S Campus
(p) 306-966-6392

PARKING ENTRANCE   MAIN ENTRANCE

MaC

MEDICATION ASSESSMENT CENTRE

Your appointment with MAC is:

Date:

Time:

Name of Pharmacist:

Location:
104 Clinic Place, Health Sciences Building
E Wing, 3rd Floor, U of S Campus
For changes to appointment call:
306-966-6392

UNIVERSITY OF SASKATCHEWAN

WHY AM I SEEING A PHARMACIST?

- To have your medications reviewed to ensure they are safe and effective

- To assess if your medications can be simplified

- To identify and address any possible drug interactions

- So you can discuss any concerns you may have about your medications

WHAT WILL THE PHARMACIST DO?

The pharmacist will meet with you to:

- Ask you questions about your medications

- Review your relevant medical history

- Explain why you are taking each of your medications, and how they work

- Answer any questions you may have about your medications

- Make suggestions to your doctor to ensure you are on the best medications

WHAT SHOULD I BRING TO MY APPOINTMENT?

- All of your medications (this includes prescription and non-prescription drugs, vitamins, and natural products)

- A list of questions you have for the pharmacist

- Any recent records you may keep of blood pressures, or blood sugars

- A list of any allergies (drug, food, environmental)

Appendix C: MAC Student Rules, Responsibilities, and Instructions for Volunteering

<u>Confidentiality Agreement for Staff & Students of the Medication Assessment Centre</u>

I, the undersigned Staff member or student of the Medication Assessment Centre ("MAC") of the College of Pharmacy and Nutrition, University of Saskatchewan, do agree that in accordance with the *Health Information Protection Act* ("HIPA"), any patient information gained while at the centre must remain confidential.

As a MAC Staff member or student, I acknowledge that the nature of my work will include having privileged access to personal and confidential patient information. As a "trustee," defined under the terms of *HIPA*, I acknowledge that MAC is bound to protect the privacy and personal health information of individuals as defined under the Act. I agree to do my utmost to support the efforts of MAC in the protection of this information. I understand that confidentiality shall apply to any patient information whether obtained from the referring Health Care Provider, the patient's record, conveyed by MAC Staff or students, received directly from patients themselves, or by any other means.

The collection, use and disclosure of personal health information is only for the intended purpose of provision of care to patients at MAC.

I acknowledge that MAC has policies and procedures regarding privacy, confidentiality, and security of personal health information as mandated by HIPA. I understand that it is my responsibility to be familiar with the content of these policies and procedures in their most current form.

I agree that any perceived breach of confidentiality shall be reported to the MAC Privacy Officer, or alternatively, directly to the Privacy Officer of the University of Saskatchewan. I acknowledge that any breach of confidential personal health information, for which I am responsible, may result in disciplinary action by the University of Saskatchewan, which may include, but is not limited to, loss of employment or affiliation with MAC, or legal action.

I confirm that as a MAC student I am registered as a pharmacy intern or licensed pharmacist in the province of _____ and am in good standing with this province's pharmacy regulatory College.

After having read and understood the above policies and procedures, I agree to maintain my obligations under this agreement and that I have answered truthfully and without misrepresentation. I agree that my obligations with respect to confidentiality extend beyond my term of employment or affiliation with MAC.

_____   _____
              Name (print)   Signature

                      _____
                                  Date

Student Volunteer sign-up instructions for the Medication Assessment Centre

In order to provide increased exposure and experience to the patient care process, the Medication Assessment Centre (MAC) is providing volunteer opportunities for pharmacy students. Students in their **fourth year** of study will be considered **"Senior students"** and **all others (first – third years) will be "Junior students."** Under the mentorship of the MAC staff, junior students will primarily have an observational role in order to gain exposure to the patient care process. Junior students completing their second semester in their third year of study, and all senior students will have the opportunity to progress to a more involved role (ex. leading part or all of a patient interview). The most senior student will have precedence for the advanced involvement roles. Senior and junior students may also have opportunities to work as a team on patient cases when conditions permit.

During the winter semesters, only the fourth year student(s) currently completing their assigned SPEP MAC rotation are permitted to volunteer/work at the MAC **as the senior student.** Fourth year students who wish to volunteer can only do so during the scheduled SPEP breaks, or after the completion of the third SPEP rotation, up until the time the PEBC exams have been completed.

If you would like to volunteer with MAC, you can sign up in the available openings on the excel workbook. Each calendar month has its own sign-up sheet. For each opportunity, there is (typically) room for a maximum of **2 students to be in the same room as the patient.** Students in excess of 2 will be able to observe the same interview **remotely** from another office, using the MAC audio/visual capture system. The most senior students will be given priority to be in the room with the patient. We ask **all students** **to bring headphones** to each appointment.

As opportunities become available, they will be added to the spreadsheets on Wednesday and Friday between 1-4pm. Check back regularly for an opportunity to sign up.

When volunteering, you will need to **sign-up at least 24 hours before the scheduled appointment.** If you have to **cancel, please remove your name from the sign-up sheet at least 24 hours before** the scheduled appointment time. In emergency situations where you have to cancel within 24 hours, please email the Coordinator of MAC, Eric Landry at **e.landry@usask.ca** as soon as possible to inform him that you cannot attend.

In order to allow equal opportunity for all students to participate, students are only eligible to sign up for a maximum of **one volunteer experience per week**. However, in order that no patient care opportunity should be wasted, **any student (junior or senior) may sign up for any slot that remains unfilled within 24 hours of that appointment,** even if that student had volunteered within the last week. These limits are subject to change. If you are interested in additional involvement with MAC, express your interest to Dr. Jorgenson or to Eric Landry.

The sign-up process relies on the honesty of students participating. In order for this online sign-up format to function, students must have the ability to edit the sign-up sheet, as they are required to insert their name and contact information in selected blocks. Abuse or misuse of this system will not be tolerated, and may be treated as academic dishonesty.

The colour legend located at the top of each page indicates the type of appointment that has been scheduled. Volunteer experiences may range from 1 hour to 3 hours and the expected duration of each experience is indicated on the spreadsheet.

When you volunteer:

Meet at Room 3204 in E-Wing Health Sciences, at least 15 minutes before the time you signed up for. This time will be used to provide an orientation of MAC, a brief introduction of the patient case, reviewing the assessment process, etc. Time permitting, a short 'debrief' may also occur following the patient appointment. Please also bring with you **a signed copy of Appendix E (**in the MAC policy and procedures manual), **which is a confidentiality agreement.** Please bring some headphones as at times we have students observe appointments via our video/audio captured system and it greatly improves audio quality when headphones are used.

MAC Student Clinical Leaders – Patient Follow up

The MAC is always looking for new and innovative ways to train our students. One such innovation is by using a peer-teaching model in which our experienced, senior students (Student Clinical Leader) assist in the teaching of their junior colleagues and fellow classmates by leading follow up sessions with patients by phone. The patients that are contacted during this time have already been seen at the MAC and have had recommendations already made to their family physicians. Although the Student Clinical Leaders are responsible for facilitating the entire session one of the MAC pharmacists will be present to offer support or answer questions as needed. As with other volunteer opportunities, these sessions are available to 2 junior students and 2 senior students. These volunteer spots are marked in **purple, and may range in length from 1 hour to 3 hours.**

Prior to making a phone call the Student Clinical Leaders will discuss the patients with the other volunteer students. This discussion will include an overview of the patients' histories, previously identified drug therapy problems, and previously proposed interventions and a brainstorming session on what follow up questions would be appropriate to ask during the phone follow up.

After each patient phone call Student Clinical Leaders may lead a debriefing session discussing a variety of topics including therapeutics, medication assessment processes, and patient interviewing technique if time permits.

Appendix D: Student Invitation to Participate

Good day,

You are receiving this email because your past volunteer experiences have made you eligible to participate in a Medication Assessment Centre (MAC) research project. The purpose of the study is to explore the experiences of pharmacy students who volunteer at the MAC and to identify opportunities to improve the learning experience provided by the MAC.

We are looking for students with a wide variety of exposure to the MAC, including students who have volunteered only once and those who have volunteered many times. All students who have volunteered at the MAC at least once since January 1, 2015 who would like to participate in the study will have the opportunity to be included.

Participation in the study involves:
• Participating in a focus group discussion with 4-5 other MAC pharmacy student volunteers in your same year of the program that will take 60-90 minutes of your time.

Your participation in this project will be extremely valuable to help identify what is working and what can be improved at the MAC. Your participation is very much appreciated.

If you agree to participate, you will be given a $20 gift card as a token of appreciation for your time. Also, complimentary beverages and food will be available during the focus group discussion.

Attached is a "Research Information Sheet for Participants" that has all the details regarding the research process if you are interested in reviewing before you agree to participate.

If you agree to participate in my study simply reply to this email within 2 weeks of receiving the email (by Nov. 17,2015). After you respond I will email you back to find a focus group date that works for your schedule. The focus groups are temporarily planned for school day evenings (starting ~ 5:30pm) from Nov. 23 – 27, and Nov. 30 – Dec. 4 and/or during the day of the Nov. 28 & 29 weekend. Scheduling of participants is based on a "first come first serve basis".

If you have any questions at all, please don't hesitate to email them or ask to meet me in person.

I look forward to the opportunity to hear your experiences and opinions about the MAC.

UNIVERSITY OF SASKATCHEWAN

Exploration of Student Involvement in the Medication Assessment Centre (MAC).

Project Title:

Exploration of Student Involvement in the Medication Assessment Centre (MAC).

Researcher:	**Supervisor:**
Katherine Lysak, BSP, MSc candidate	Dr. Derek Jorgenson, BSP, PharmD
College of Pharmacy and Nutrition,	College of Pharmacy and Nutrition,
University of Saskatchewan	University of Saskatchewan
Phone #: 306-290-9436	Phone #: 306-966-2009
E-mail: katherine.lysak@usask.ca	E-mail: derek.jorgenson@usask.ca

Purpose and Objectives of the Research:

The purpose of this study is to explore the experiences of pharmacy students who volunteer at the University of Saskatchewan's Medication Assessment Center (MAC). The researchers hope to understand the experiences of pharmacy students who volunteer in the MAC and identify opportunities to improve the experience provided by the MAC.

Procedures:

Participation in this study involves participating in a focus group discussion. Each focus group discussion will aim to have a total of 5-6 MAC student volunteers from the same or similar year in the pharmacy program and will take 60-90 minutes to complete. During the focus group you will be asked several open-ended questions to prompt discussion between all the participants. The last 10 minutes will be reserved for you to complete a student participant information form. All focus group discussions will be recorded and later transcribed.

A focus group moderator and a focus group assistant will be present at each focus group discussion. The focus group assistant is not one of your professors and is not be involved with the delivery of MAC services or your education. The focus group moderator is also the researcher and occasionally works as a pharmacist at the MAC, pharmacy practice lab assistant, and clinical exam assessor. It is important to note that the graduate student may continue to supervise you at the MAC or in your practice labs after the focus groups are completed, but this role involves no assignment of grades. The graduate student may also continue to assist with student evaluation in clinical exams (ie - OSCE exams) after the focus groups, but there will be no chance that she will evaluate one of your OSCE stations.

Please feel free to ask any questions regarding the procedures and goals of the study or your role at any time to the graduate student researcher, Katherine Lysak (contact information on page 1).

Funded by:

The graduate student researcher has received a scholarship to conduct this study from the University of Saskatchewan, College of Pharmacy and Nutrition. The researcher does not perceive any conflict of interest on their part or that of the scholarship provider.

Potential Risks:

There are no known or anticipated risks to you by participating in this research.

Potential Benefits:

The possible benefits of the study, while not guaranteed, include contributing to state of knowledge in regards to the experience of pharmacy students in an early experiential training environment provided by a pharmacist-delivered comprehensive medication management service (the MAC). Information gathered from this research project may also contribute to the improvement of the pharmacy student experience at the MAC.

Compensation:

You will receive a $20 gift card as a token of appreciation for you time. Complimentary beverages and food will also be made available during the focus group discussions.

Confidentiality:

To safeguard the confidentiality of your responses you will be assigned a confidential participant code that will be known only by the graduate student researcher. This code will be used to label your student participant information form and transcribe your focus group discussion. While transcribing, the researcher will omit any other identifiable facts about you or any other persons that you may reveal throughout your focus group discussion. No one will be able to identify you by your responses and the faculty and staff at the U of S will not know whether or not you were a participant in this study. Your participation in this study will not affect your grades, convocation status, or future experiences at the MAC in any way.

The research results will be used mainly for internal purposes, but may also be presented at conferences and/or published in peer-reviewed journals. All the information collected from this study will be reported as a whole. If something that you say is directly used, only your confidential code will be used.

Right to Withdraw:

Whether you choose to participate or not will have no effect on the future opportunities and experiences you will have at the MAC, any impact on the formal education you receive, or your academic standing. Your participation is voluntary and you can answer only those questions during the focus group that you are comfortable with. It is not expected that any sensitive questions will be asked. You may withdraw from the research project for any reason at any time (even part way through the focus group discussion) without explanation or penalty of any sort.

Your right to completely withdraw data from the study will apply until the focus group discussion has started. After the group discussion has started it will not be possible to exclude any comments that you contributed to the discussion, or the affect your comments will have had on any of the other participant's responses. You still have the right to withdraw during the focus group discussion at any time to ensure any of your further responses or presence is omitted from the study. Should you wish to withdraw during the focus group discussion, you can inform the moderator or assistant and the discussion will pause so you can leave the room.

Follow up:

You will be given the opportunity to review and comment on the themes that were identified from your focus group discussion prior to the completion of the data analysis phase of this study. To obtain a summary of the complete results from the entire study, please contact Katherine Lysak (contact information on page 1).

Questions or Concerns:

If you have any questions or concerns, please contact the researcher, Katherine Lysak (contact information on page 1).

Ethics Approval

This project was reviewed by the U of S Behavioural Research Ethics Board (BEH 15-333) and received an exemption on November 3, 2015. Any questions regarding your rights as a participant may be addressed to the Research Ethics Office ethics.office@usask.ca (306) 966-2975 or toll free 1-888-966-2975.

Appendix F: Reminder Email to Participate

Good day,

You are receiving this email to remind you that your past volunteer experiences have made you eligible to participate in a Medication Assessment Centre (MAC) research project. The original email that I send ~ 2 weeks ago had a summary of what is involved with participating, as well as an attachment that had all the details of the research process.

Just to remind you, participation in the study involves:
- Participating in a focus group discussion with 4-5 other MAC pharmacy student volunteers in your same year of the program that will take 60-90 minutes of your time.
- If you agree to participate, you will be given a $20 gift card as a token of appreciation for your time.
- Complimentary beverages and food will be available during the focus group discussion.

Your participation in this project will be extremely valuable to help identify what is working and what can be improved at the MAC. Your participation is very much appreciated.

If you agree to participate simply reply to this email by Nov. 24, 2015 at noon; **this will be your last chance to participate in the study.** After you respond I will email you back to find a focus group date that works for your schedule.

If you have any questions at all, please don't hesitate to email them or ask to meet me in person.

I look forward to the opportunity to hear your experiences and opinions about the MAC.

Appendix G: Focus Group Guide

**Turn on audio recorders x 3 **
Hello everyone and welcome to our discussion.

Thanks for taking the time to join us to talk about your experiences at the MAC. My name is Katherine and this is Stephanie. I will conduct the discussion and Stephanie will observe and take notes. I am a master's student here at the U of S under the supervision of Dr. Derek Jorgenson and I'm studying student volunteer experiences at the MAC.

You were invited because you have participated at the MAC [1-2] OR [3 or more] times. We are very interested in hearing from everyone about your experiences, opinions, and ideas you have about what is working well, what can be improved, and about what learning experiences you feel the MAC has provided you. The information gathered today will be used mainly for internal purposes, but they may also be shared through presentations at conferences and publication in peer-reviewed journals. However, all data will be reported comprehensively and any direct quotes used will be identified with your study identification number only.

Just a few housekeeping items. I want to remind you that this is a relaxed environment, so please feel free to get up and move around, grab any snacks or drinks or go to the bathroom at any time. The only thing I ask is you turn your cell phones on vibrate or silent. I would kindly ask that you respect your classmates and keep any information discussed here today between yourselves and not talk about it outside of this time or with anyone else. We will take a break about half way through our 60-90min discussion. During the discussion I will ask you several open-ended questions to get you thinking about certain aspects of the MAC and start up a lively discussion about these topics with your fellow classmates here.

I want to remind you all that your participation is voluntary and you can answer only those questions that you are comfortable with. You can withdraw from the study at any point today for any reason. Information you provide today will be kept confidential and will not have any negative effect on any future MAC experiences, your convocation status, or your grades. With that in mind, I urge you to openly share your experiences and comments, both good and bad. It is very important to us that we hear all of your personal opinions. There are no wrong answers but rather differing points of view. Keep in mind that we're just as interested in differing opinions and negative comments as agreeing opinions and positive comments, and at times the negative comments are sometimes the most helpful. I do ask that everyone be respectful of each other's opinions. Please allow someone to finish speaking before you. If you think of a point while someone is talking, please feel free to write it down on the notepads that have been provided to you if you think you will forget it in the meantime.

You've probably noticed the recorder. We're audio recording the session because we don't want to miss any of your comments. People often say very helpful things in these discussions and we can't write fast enough to get them all down. Even though you may say someone's name during this discussion, I want to assure you that the transcribed documents with omit all personal identifiers to ensure your confidentiality.
Do does anyone have any questions for me before we begin?

*Does everyone understand your rights in regards to withdrawal, voluntary participation and confidentiality? And is everyone OK to continue? **(achieve informed consent)**

I know everyone has nametags and you most likely know everyone, but I'd still like quickly have everyone to go around and say their name and which year of the pharmacy program you are in. _____ could you start us off please?

QUESTIONS: (probing questions *italicized*)
To start off the discussion, I would like you all to think back to your very first experience at the MAC and think about:
        a) What made you sign up?
        b) What did you expect?
        c) How was it different from what you expected?
        d) How did it meet your expectations?
Would anyone like to share their first experience? *(Try and get at least 2 people to share; use the questions listed a-d to get a well-rounded answer by asking them one by one if needed)*

Now, thinking about all your experiences at the MAC…..
    1) QUESTIONS ABOUT WHAT STUDENTS ENJOY MOST: *(ask until saturation)*
        a. What has made you sign up for more appointments after your first experience?
        b. What do you like the best about your experiences at the MAC?
        c. Can you describe some positive experiences you've had or aspects of the MAC that you enjoy?
        d. What aspects of the MAC learning experience should we definitely not change?

    2) What are some of the challenges you face volunteering at the MAC?
        a. *Some of the students have told me before that the volunteer times are always during their classes.*
        b. *Some students have also told me that coming has pushed them out of their comfort zones because they haven't learned the background knowledge to understand the patient cases well enough to contribute to the post-appointment discussion.*

    3) QUESTIONS ABOUT WHAT STUDENTS DISLIKE: *(ask until saturation)*
        a. For those of you who have not volunteered recently at the MAC, what made you stop signing up for shifts?
        b. Can you describe some negative experiences you've had at the MAC?
        c. What do you dislike about the MAC?

    4) What are some ideas you have that could help improve the student experience at the MAC? If you have some can you explain a little bit why or how.
        a. *any additions?*
        b. *any deletions?*
        c. *Could anything be done to improve the sign up process?*

   d. *Could anything be done to encourage more students to participate?*
   e. *What would be the ideal amount of time to spend in MAC, given all your other responsibilities in your year?*
   f. *Should the MAC be compulsory or voluntary for pharmacy students?*

5) How do you feel your experience at the MAC has impacted you as a student?[1]
  a. *What specific skills, abilities, or experiences did you gain from your involvement?*
   i. *In similar learning environments that have been studied, med students have reported such things like confidence, or more motivated to learn.*

6) What specific activities or experiences at the MAC were most helpful in contributing to the learning that was described in Q#5?
  a. *Do you personally do anything before or after your MAC experience your that you feel effects your learning?*
  b. *How did new medication assessments and follow up appointments impact you differently? (refer to answers given from questions about impacts)*

Ending Questions:
1) Of all the things we discussed, what to you is the most important we should know about the MAC from your point of view?

2) Is there anything outside of the topics that we discussed that you feel is important to share about the MAC?

That concludes our focus group discussion. Thank you so much for coming and sharing your thoughts and opinions with us.

We are passing out the student participant information form for you to complete before you go today. As well, we are passing out a feedback form that will tell us what you thought of your experience here today and give you a chance to express any opinions about any of the topics we discussed here today that you didn't get to say or didn't feel comfortable sharing. The feedback form can also be completed online through a link that I will send to your emails shortly after we are done today. I want to assure you that whether you complete the feedback form online or by hand, all your responses will be anonymous to myself and the research team, so please use this as an opportunity to ensure your true feeling of the MAC is shared which includes positive and negative opinions. We ask you to complete the feedback form in the next 3 days. If you complete it by hand, please hand it in to Claire at the Pharmacy office in Thorvaldson. If you do want to speak with me privately about anything, please do not hesitated to contact me via email or phone to arrange a time for us to meet.

Just a reminder, in a few weeks time you will receive a summary of the themes identified during this focus group that I would like you to review to see if I was able to capture the essence of this discussion. I will send more information with the email when the time comes.

---

[1] Mann MP. A light at the end of the tunnel: The impact of early clinical experiences on medical students. . 1994.

Materials and supplies for focus groups
- Sign-in sheet
- Participant Information Form and Feedback Form (1 per participant)
- Name tags
- Pads of paper & pens for each participant
- Focus group discussion guide for moderator
- Focus group discussion questions per page for assistant documentation
- 1 laptop computer (monitor audio recording) + 2 additional recording devices
- Batteries and power adaptors for recording devices
- 1 laptop computer (monitor audio recording)
- Flipchart for visual aid during discussion with questions pre-written
- Snacks/food, Refreshments
- $20 gift cards for participants

Appendix H: Student Participant Information Form

UNIVERSITY OF SASKATCHEWAN

Pharmacy Student Perceptions of Volunteering at a Medication Assessment Clinic Located Within a Pharmacy School

Please note: all questions are optional, but your completeness is appreciated. All answers will be kept confidential and will not affect your experience at the MAC or your formal education in any way.

Date:_____   Year of Study (circle):   1   2   3   4

Age:_____ (years)   Sex (circle):   Male   Female

Academic Average:_____   ** if you know an estimate of your current average, please fill that in; if you unsure and **consent to the researcher contacting the head office to obtain your actual average**, please sign and date the additional sheet provided.

Are you a member of any of the following organizations:

CSHP_____   PAS____   CPhA /CAPSI_____   SPNSS _____   Other:_____

Do you hold a council position on any of the above listed organizations (circle):   yes   no

Prior pharmacy experiences (other than the MAC) *note this includes all SPEP rotations*

1) Type of business/institution: Hospital ____ Community____ Other (specify) _____

   Reason: Work ___ Volunteer___ Other (specify)____ Date of experience: ____ to _____

   Tasks completed & **average estimated** time spent on each task/week:

   Dispensing: ___hours/ week   General Patient Interactions: _____hours/ week

   Patient Counseling: ____hours/ week   Medication Reviews: _____hours/ week

   Other: _____hours/ week: (please specify) _____

2) Type of business/institution: Hospital ____ Community____ Other (specify) _____

   Reason: Work ___ Volunteer___ Other (specify)____ Date of experience: ____ to _____

   Tasks completed & **average estimated** time spent on each task/week:

   Dispensing: ___hours/ week   General Patient Interactions: _____hours/ week

   Patient Counseling: ____hours/ week   Medication Reviews: _____hours/ week

   Other: _____hours/ week: (please specify) _____

3) Type of business/institution: Hospital _____ Community_____ Other (specify) _____

Reason: Work ____ Volunteer___ Other (specify)_____ Date of experience: _____ to _____

Tasks completed & **average estimated** time spent on each task/week:

Dispensing: ____hours/ week   General Patient Interactions: _____hours/ week

Patient Counseling: _____hours/ week   Medication Reviews: _____hours/ week

Other: _____hours/ week: (please specify) _____

4) Type of business/institution: Hospital _____ Community_____ Other (specify) _____

Reason: Work ____ Volunteer___ Other (specify)_____ Date of experience: _____ to _____

Tasks completed & **average estimated** time spent on each task/week:

Dispensing: ____hours/ week   General Patient Interactions: _____hours/ week

Patient Counseling: _____hours/ week   Medication Reviews: _____hours/ week

Other: _____hours/ week: (please specify) _____

5) Type of business/institution: Hospital _____ Community_____ Other (specify) _____

Reason: Work ____ Volunteer___ Other (specify)_____ Date of experience: _____ to _____

Tasks completed & **average estimated** time spent on each task/week:

Dispensing: ____hours/ week   General Patient Interactions: _____hours/ week

Patient Counseling: _____hours/ week   Medication Reviews: _____hours/ week

Other: _____hours/ week: (please specify) _____

6) Type of business/institution: Hospital _____ Community_____ Other (specify) _____

Reason: Work ____ Volunteer___ Other (specify)_____ Date of experience: _____ to _____

Tasks completed & **average estimated** time spent on each task/week:

Dispensing: ____hours/ week   General Patient Interactions: _____hours/ week

Patient Counseling: _____hours/ week   Medication Reviews: _____hours/ week

Other: _____hours/ week: (please specify) _____

Researcher:
Katherine Lysak, BSP, MSc candidate
College of Pharmacy and Nutrition,
University of Saskatchewan
Phone #: 306-290-9436
E-mail: katherine.lysak@usask.ca

Supervisor:
Dr. Derek Jorgenson, BSP, PharmD
College of Pharmacy and Nutrition,
University of Saskatchewan
Phone #: 306-966-2009
E-mail: derek.jorgenson@usask.ca

I, _____ consent to the graduate student researcher, Katherine Lysak, obtaining my current academic average for purposes of the study "Exploration of Student Involvement in the Medication Assessment Centre (MAC)". I understand that my academic average will remain confidential and will be used to calculate and report the total average of all student participants in this study.

UNIVERSITY OF SASKATCHEWAN

Pharmacy Student Perceptions of Volunteering at a Medication Assessment Clinic Located Within a Pharmacy School

Please complete and hand in this form to Claire at the Pharmacy & Nutrition Office (Thorvaldson) <u>within 2 days</u> of your focus group date. If you prefer, an electronic version of this form is available on FluidSurveyTM (please check your usask email for the link).

Thank you for participating in the focus group discussion on student experiences at the MAC. We hope that you take the time to complete this questionnaire because your input is vital to improving future focus groups and the quality of the data we collect. Your responses are anonymous and voluntary. You can choose to skip any of the questions, but your help is greatly appreciated.

Date of focus group discussion: _____

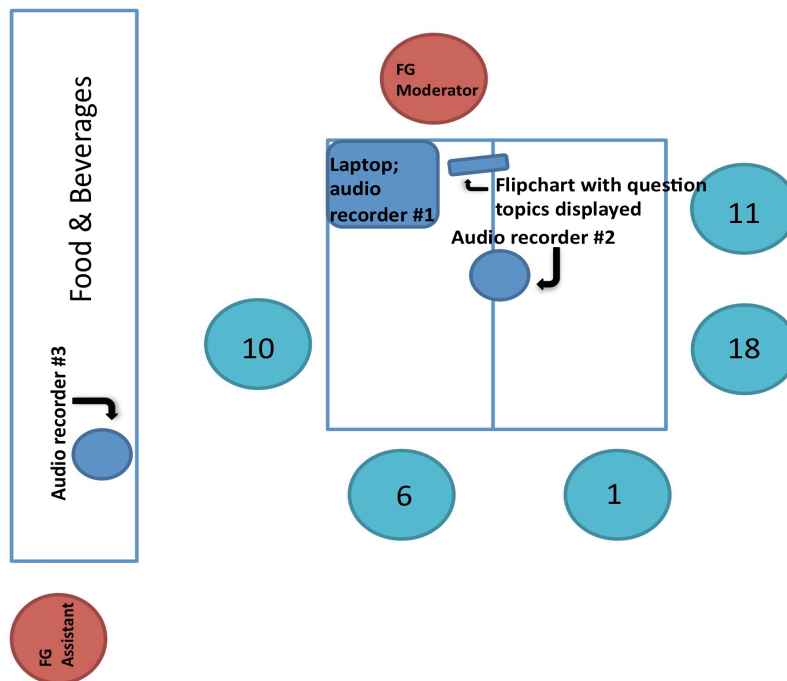| Using the following scale, please circle your best response:	Strongly Disagree	Disagree	Agree	Strongly Agree
The information provided to me before the focus group prepared me to participate in the discussion.	1	2	3	4
The focus group was conducted in a professional manner.	1	2	3	4
I felt I could be completely honest in my responses to the focus group questions.	1	2	3	4
I felt my opinions were heard during the focus group discussion.	1	2	3	4
I felt certain individuals dominated the discussion.	1	2	3	4
I felt my participation in the focus group discussion was worthwhile.	1	2	3	4
I felt there was not enough time scheduled for the discussion.	1	2	3	4
The date of the focus group discussion was convenient.	1	2	3	4
The time of the focus group discussion was convenient.	1	2	3	4
The location of the focus group discussion was convenient.	1	2	3	4

Any addition comments that you feel would be valuable for us to know that you may have not felt comfortable or got the chance to share:

_____

_____

_____

_____

_____

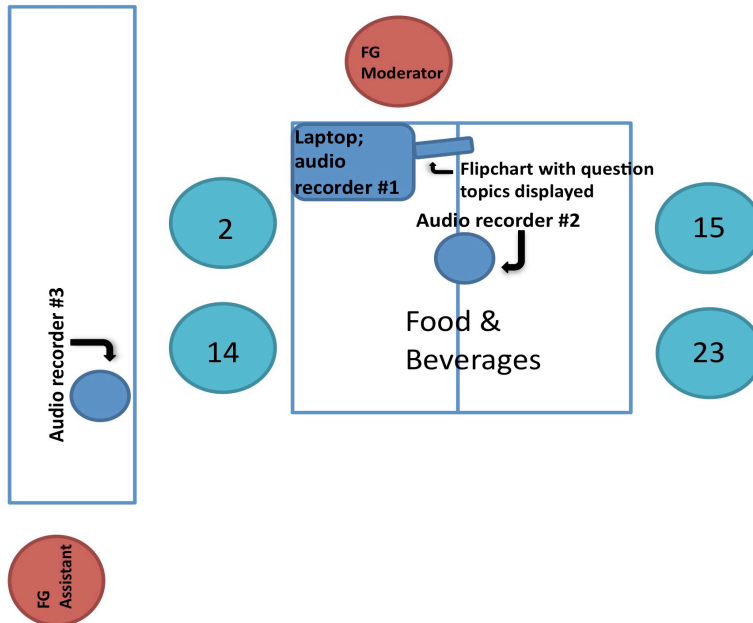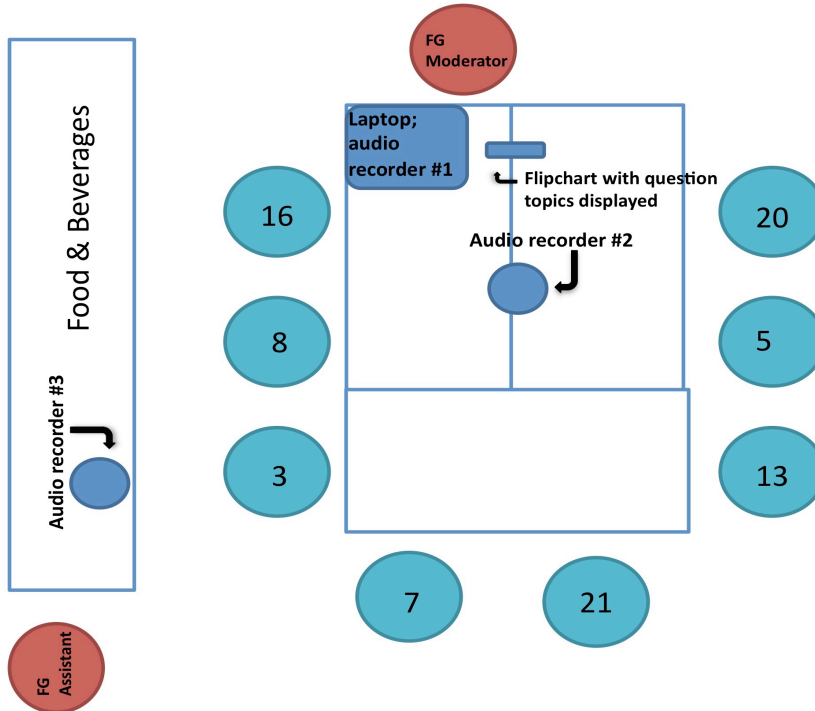## Appendix J: Room Configurations for the Focus Group Discussions

Focus Group #1: "Senior Low"
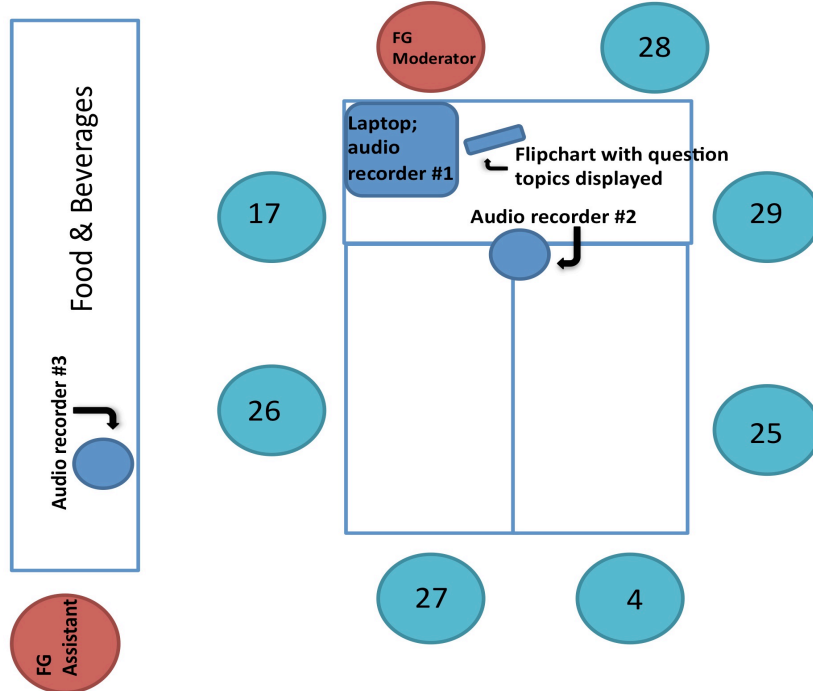
Focus Group #2: "Senior High"

Focus Group #3: "MSCL"
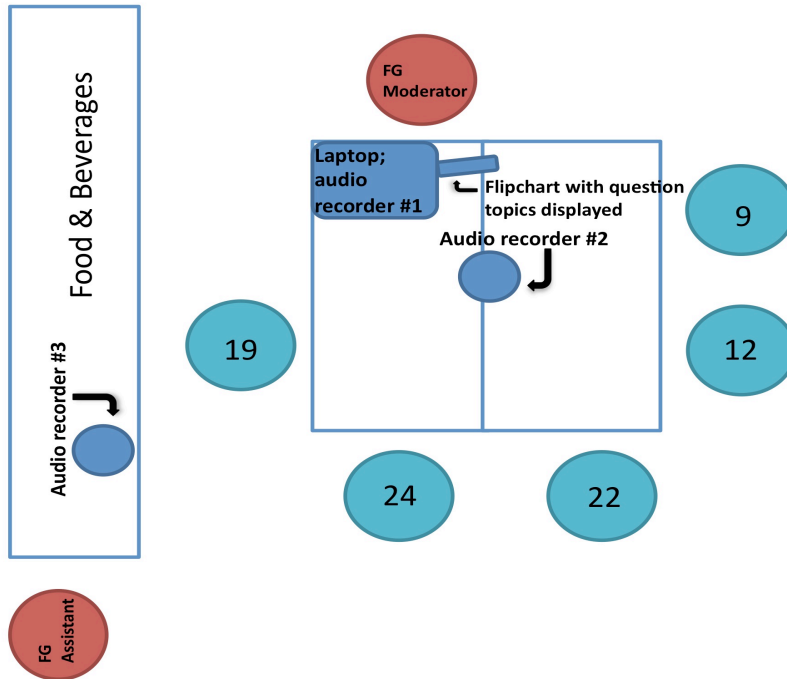

Focus Group #4: "Junior High"

Focus Group #5: "Junior Low"

Food & Beverages

Audio recorder #3

FG Moderator

Laptop; audio recorder #1

Flipchart with question topics displayed

Audio recorder #2

FG Assistant

9

12

19

24

22

Appendix K: Instructions for Focus Group Transcript Analysts & Reviewers

Overview of the research project

Purpose: The purpose of this study is to explore the involvement of pharmacy students at the University of Saskatchewan's Medication Assessment Centre (MAC). The researchers hope to understand the experiences of pharmacy students who volunteer in the MAC and identify opportunities to improve the learning experience provided by the MAC.

In 2011 the University of Saskatchewan (U of S) implemented a consultant pharmacist-delivered comprehensive medication management (CMM) service located on campus, known as the MAC. The MAC provides CMM services free of charge to the residents of Saskatchewan based on referrals from physicians, other health care professionals or patient self-referrals in a primary health care setting located on the U of S campus. The primary purpose of the MAC is to provide an enriched, clinical education environment to which pharmacy students can be exposed early in their formalized education. Through their exposure to the clinic, pharmacy students are given the opportunity to develop and refine their competencies to practice under the supervision of highly trained pharmacists and faculty members of the U of S. Due to a high demand for volunteer spots, students are not allowed to sign up for more than one patient appointment per week. Each appointment can accommodate up to four students (two students from years 1-3 of study, and two students from year 4). During each appointment, students have the opportunity to observe and/or participate depending on their degree of formalized training, amount of previous experience and willingness to take on a more advanced role. At the time of this study, pharmacy students have had the opportunity to volunteer at the MAC for approximately one calendar year (September 2014 to November 2015). Pharmacy student involvement at the MAC is currently ongoing.

The exploration of student involvement at the MAC aims to investigate the following questions:
1) What are pharmacy students' experiences with the MAC?
   a. What do pharmacy students enjoy about the MAC?
   b. What do pharmacy students dislike about the MAC?
   c. What are the challenges that exist for pharmacy students to be involved in the MAC?
   d. What recommendations do pharmacy students have to improve the MAC experience?
2) What do pharmacy students perceive that they learn from their involvement with the MAC?
   a. What activities or experiences at the MAC do the students describe as helping them with their perceived learning?
3) Does the number of experiences that individual students have at the MAC influence their reaction to the program, their perceived learning or their recommendations?
4) Does the student volunteer's year within the pharmacy program (e.g., 1st year, 2nd year, 3rd year or 4th year) influence their reaction to the program, their perceived learning or their recommendations?

The data from the focus group discussions will include confidential transcripts, assistant notes, and observational notes that you will analyze to investigate all the study questions based on the personal objectives of the student volunteers. A copy of the semi-structured focus group guide used during each focus group has also been provided to you.

Analysts
The following persons will be analyzing the focus group transcripts:
      Katherine Lysak (primary researcher, focus group moderator)
      Stephanie Mulhall (focus group assistant)
      Jason Perepelkin

Reviewers
The following persons will be reviewing the analyzed focus group transcripts:
      Katherine Lysak (primary researcher, focus group moderator, analyst)
      Julia Bareham

Instructions
As you read through the transcripts, you will be asked to identify themes that fall into 1 of 5 categories:
1) What are pharmacy students' experiences with the MAC? (including likes, dislikes, challenges, other)
2) What recommendations do pharmacy students have to improve the MAC experience?
3) What do pharmacy students perceive they learn from their involvement at the MAC? (including what activities or experiences students describe as helping them with their perceived learning)
4) Any other topics/themes that you feel are relevant, but not captured by the above 3 themes.

To help you organize the transcripts into the above 5 categories, you will have 2 tools to assist you. The first tool is a color-coding scheme and the other is a blank document that contains only the category as its title (7 total pages). You can choose to complete this process electronically or by hand. We can discuss the details more thoroughly during our first meeting.

My thought is that as you read through the transcripts, if you identify a statement or quote that fits into one of the categories you can highlight the text with the coordinating colour (see below) to make referring back to the transcripts easier when we review our findings. (I will provide you with the appropriate color highlighters if you chose to do this by hand) You can also copy and paste any statements or quotes in the second tool (blank document) during this time. However, one of the copy of the blank document is intended to be used to transcribe your identified codes and corresponding themes at the end of your analysis prior to us meeting to decide upon a list of themes.

As you analyze the documents I ask you to use a form of reflective journaling or memoing (jotting down notes throughout your analysis/review to capture your personal thoughts or comments) during your analysis. This can be done by adding "comments" to the electronic documents you are using along the way, using sticky notes to place on the physical documents, or starting a separate document/journal. Please try to date (and time) and strategically document any notes or comments you make to help jog your memory as to what made you think of what you did. As well, I kindly ask you to please keep copies of each stage of your analysis documents so that a comprehensive audit trail can be compiled.

Category	Colour
#1 – What are pharmacy students' experiences with the MAC?	LIKES - Green
	DISLIKES - Red
	CHALLENGES - yellow
	OTHER - Dark Blue
#2 - What recommendations do pharmacy students have to improve the MAC experience?	Orange
#3 – What do pharmacy students perceive they learn from their involvement at the MAC? (including what activities or experiences students describe as helping them with their perceived learning)	WHAT (impact) - Pink
	HOW (activities/experiences) – Light Blue
#4 – Other relevant themes	Purple

Where to start
Please note that each focus group discussion should be analyzed independently:

1) Nov. 24, 2015: year 4, "low" (one – two) exposure (Senior Low) n = 7
2) Nov. 25, 2015: year 4, "high" (more than three) exposure (Senior Hig") n = 5
3) Nov. 27, 2015: year 4, MSCL (MSCL) n = 4
4) Nov. 28, 2015: year 1-3, "high" (more than three) exposure (Junior Low) n = 8
5) Dec. 1, 2015: year 1-3, "low" (one – two) exposure (Junior High) n = 5

I suggest you start by simply reading through the transcripts without attempting to identify themes or codes to ensure you have a better idea of the content of the focus group discussions and what the responses might look like. Once you have looked through all the transcripts for the first time, then you can go back and start "coding" each transcript individually. To code a section look at the transcript phrase-by-phrase, line-by-line, or word-by-word and place a descriptive word or small phrase that describes your interpretation of as little or as much text that applies to your code. For example, if a student said "I would like it if I could come every week to the MAC" you could code this as ideal frequency, which would fit into the second category (suggestions for improvement).

Once each transcript has been coded, review your codes and combine them into common categories that are described above, or into new categories that better fit the data. If any of the codes that you identified are found to be completely unrelated, please reassess the code you used for accuracy and relevance and re-code as necessary to complete the categorization.

Once you have completed categorizing each transcript we will arrange a time to meet to discuss our categories and generate a list of common themes and sub themes (where applicable) for each exposure group. Please bring all your documents, journals, and any other notes you made along the way (no matter how messy you think they are) in case we need to discuss a code or category in the event of a discrepancy before assigning a common theme. Please note that although we will all try to interpret the data objectively, it is very likely that our personal biases will show in our interpretations. This is a common occurrence in qualitative data analysis, which

is why we have three separate analysts working on the same transcripts. Do not take offence if a code or category that you identified was unique to the other analysts and we have to discuss it in depth. This is just good quality assurance for data analysis. After the lists of common themes have been developed for each exposure group, your job is done. The lists we generate will be sent to the respective focus group participants to review and comment on our interpretations (member checking). If any of the participants have any concerns about our themes I will have an in-person discussion with the participant. I will take their comments into consideration and revise the list of themes as needed.

Once the member-checking phase is completed finalized, two individuals will review the analysis process and themes that were identified. They will use a very similar process as conducting the analysis from scratch, but instead they will be looking at the interpretations of the analysts to see if they also come to the same conclusions. They will also be looking to see if all the analysts were able to reach a consensus on our final list of themes. This is also where using reflective journaling and memoing will be important so that the reviewers can confirm the credibility of the themes identified.

If you wish to review some additional material prior to tackling this process, please contact me and I will direct you to some great resources.

Appendix L: Member Checking Email

Hello,

You are receiving this email as the last part of your participation in my research project on students at the Medication Assessment Centre (MAC). I understand it has been almost 3 months since you participated in the focus group discussion (I apologize for the delay) and this step maybe a little difficult for you to remember what was said that day. You don't need to remember everything that was said verbatim, but I ask that you review the list of themes that myself and 2 other individuals identified from the discussion to see if we were able to capture the general essence of the discussion. I do have copies of the transcripts that are blinded for you to read and review if you would like, but please do not feel this is necessary at all.

If you have any questions, concerns, or comments about anything please do not hesitate to let me know. I would be happy to answer any of your questions or concerns and/or consider any of your comments in the development of the final list of themes that I will use in my thesis and possibly publish and present. If you feel I have adequately captured the essence of your focus group discussion, it would be great to know that as well (please feel free to reply with "everything looks good" or something along that line). Please reply by **<u>NOON on FRIDAY, FEB 26, 2016.</u>**

Again, sorry for the delay in having you review these themes and thank you very much for your participation in my study. I feel that I have some great results that will be used to not only improve future MAC experiences for students, but also to contribute to the growing state of knowledge in regards to the experience of pharmacy students in an early experiential training environment.

See below for the list of themes that we identified.
Have a great rest of the weekend and good luck with the rest of the semester!

Katherine Lysak, BSP, MSc candidate
University of Saskatchewan
College of Pharmacy & Nutrition
Ph: (306) 966-6469 / 306-290-9436

THEMES (insert as appropriate)